S. Hrg. 116–192

AGRICULTURAL RESEARCH AND 2018 FARM BILL IMPLEMENTATION

HEARING

BEFORE THE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY UNITED STATES SENATE ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

JULY 18, 2019

Printed for the use of the Committee on Agriculture, Nutrition, and Forestry



Available via the World Wide Web: http://www.govinfo.gov/

39–842 PDF

U.S. GOVERNMENT PUBLISHING OFFICE WASHINGTON : 2020

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

PAT ROBERTS, Kansas, Chairman

MITCH McCONNELL, Kentucky JOHN BOOZMAN, Arkansas JOHN HOEVEN, North Dakota JONI ERNST, Iowa CINDY HYDE-SMITH, Mississippi MIKE BRAUN, Indiana DAVID PERDUE, Georgia CHARLES GRASSLEY, Iowa JOHN THUNE, South Dakota DEB FISCHER, Nebraska DEBBIE STABENOW, Michigan PATRICK J. LEAHY, Vermont SHERROD BROWN, Ohio AMY KLOBUCHAR, Minnesota MICHAEL BENNET, Colorado KIRSTEN GILLIBRAND, New York ROBERT P. CASEY, JR., Pennsylvania TINA SMITH, Minnesota RICHARD DURBIN, Illinois

JAMES A. GLUECK, JR., Majority Staff Director DANITA M. MURRAY, Majority Chief Counsel JESSICA L. WILLIAMS, Chief Clerk JOSEPH A. SHULTZ, Minority Staff Director MARY BETH SCHULTZ, Minority Chief Counsel

CONTENTS

Thursday, July 18, 2019

Page

HEARING:	
Agricultural Research and 2018 Farm Bill Implementation	 1

STATEMENTS PRESENTED BY SENATORS

Roberts, Hon. Pat, U.S. Senator from the State of Kansas, Chairman, Com- mittee on Agriculture, Nutrition, and Forestry Stabenow, Hon. Debbie, U.S. Senator from the State of Michigan	$\frac{1}{3}$
WITNESS	

APPENDIX

Prepared Statements:	
Hutchins, Scott, Ph.D.	26
DOCUMENT(S) SUBMITTED FOR THE RECORD:	
Stabenow, Hon. Debbie	
Agricultural and Applied Economics Association, prepared statement for	
the Record	36
American Statistical Association, prepared statement for the Record	38
Catherine E. Woteki, Ph.D., prepared statement for the Record	102
Gail A. Buchanan, prepared statement for the Record	105
Jeffrey J. Steiner, Ph.D., prepared statement for the Record	128
Katherine Smith Evans, prepared statement for the Record	131
Sonny Ramaswamy, prepared statement for the Record	133
Susan Offutt, prepared statement for the Record	
Union of Concerned Scientists, prepared statement for the Record	138
QUESTION AND ANSWER:	
Hutchins, Scott, Ph.D.:	
Written response to questions from Hon. Pat Roberts	144
Written response to questions from Hon. Debbie Stabenow	148
Written response to questions from Hon. Charles E. Grassley	159
Written response to questions from Hon. John Thune	159
Written response to questions from Hon. Patrick Leahy	164
Written response to questions from Hon. Sherrod Brown	167
Written response to questions from Hon. Michael Bennet	171
Written response to questions from Hon. Tina Smith	172
Written response to questions from Hon. Richard Durbin	175

AGRICULTURAL RESEARCH AND 2018 FARM BILL IMPLEMENTATION

THURSDAY, JULY 18, 2019

U.S. SENATE, COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY, *Washington, DC*.

The Committee met, pursuant to notice, at 10:28 a.m., in room 328A, Russell Senate Office Building, Hon. Pat Roberts, Chairman of the Committee, presiding.

Present: Roberts, Boozman, Hoeven, Ernst, Hyde-Smith, Braun, Perdue, Grassley, Thune, Fischer, Stabenow, Leahy, Brown, Klobuchar, Casey, and Smith.

STATEMENT OF HON. PAT ROBERTS, U.S. SENATOR FROM THE STATE OF KANSAS, CHAIRMAN, U.S. COMMITTEE ON AGRI-CULTURE, NUTRITION, AND FORESTRY

Chairman ROBERTS. Good morning. I call this meeting of the Senate Committee on Agriculture, Nutrition, and Forestry to order.

Over two years ago, we kicked off the 2018 Farm Bill, and that whole process by holding a hearing at Kansas State University, our land grant institution in Manhattan, Kansas.

A few months later, we held a hearing in this room, where we heard from the United States Department of Agriculture officials, representatives from research institutions, and agricultural producers. We heard about the critical role that agricultural research has played throughout our Country's history. We also heard about the research priorities for the 2018 Farm Bill.

The needs are certainly great. Every day our producers encounter extreme and unpredictable weather, pests, and disease, just to name a few. Researchers and institutions tasked with addressing these challenges are asked to do so with minimal Federal resources and an aging infrastructure.

The United States produces the safest, most affordable, and abundant food and fiber in the world, ever.

In crafting the Agriculture Improvement Act of 2018, the distinguished Ranking Member Deborah Stabenow and myself along with members of this Committee recognized that we had to continue to build on the strong history of agricultural research in the United States.

With the enactment of the bill, the primary Department of Agriculture Research, Education, and Extension authorities were reauthorized, including the Agriculture Research Service and the National Institute of Food and Agriculture. Land-Grant University formula funds, including the Hatch Act, Smith-Lever, McIntire-Stennis, and Evans-Allen were extended, and competitive grant programs were included to support research facilities and equipment improvements.

Provisions were included to bring equity to 1890 and 1994 institutions. The Farm and Ranch Stress Assistance Network was reauthorized and strengthened to support the mental health of farmers and individuals facing highly stressful working conditions.

New authorities were established, including the Agriculture Advanced Research and Development Authority, AGARDA. It was modeled after authorities at other agencies, including DARPA and BARDA, which allows the USDA to carry out advanced research and development of qualified products, technologies, and research tools.

During the Farm Bill process, budgets were tight, and many difficult choices were made in an effort to negotiate a bill that provides certainty and predictability.

Notably, the Research title was one of the few in the Farm Bill to receive an increase in mandatory funding over the life of the bill. In fact, it included nearly \$800 million in mandatory funding over five years for research programs. That is a big investment, a needed investment.

I am very proud of the bipartisan effort to support agricultural research and the Agriculture Improvement Act of 2018, and I know the Ranking Member shares that pride.

This morning I look forward to hearing an update from the Department about the implementation of these updated and new provisions.

I am also interested to hear about the status of other efforts related to Research, Education, and Economics, the REE mission area, including the relocation of the Economic Research Service, ERS, and NIFA to the Kansas City Region.

My home State of Kansas has a strong history of agricultural research, including Kansas State University, the National Bio and Agro-Defense Facility currently under construction, and the broader Animal Health Corridor, stretching from Columbia, Missouri, to Kansas City on the way out to Manhattan. The relocation of ERS and NIFA to this region would allow these agencies to access the many existing resources and benefits of the region.

Research and analysis are essential to the work that the Department does for producers and for the agricultural economy. With any significant structural change, it is vital that we ensure the research mission remains intact and is supported and strengthened for this Nation's growers. For instance, we need to ensure that the Department continues to produce quality analytic reports, without delay, during this transition.

From the onset of the Farm Bill process, agricultural research was something every member could unite behind and support. This is true regardless of what State each member hails from or what crops are grown there.

This bipartisan, bicameral support for agricultural research will continue and is key as we seek to keep working together to strengthen U.S. agriculture. I now recognize the distinguished Ranking Member, Senator Stabenow, for her remarks.

STATEMENT OF HON. DEBBIE STABENOW, U.S. SENATOR FROM THE STATE OF MICHIGAN

Senator STABENOW. Thank you very much, Mr. Chairman, and thank you very much for holding what is a very important hearing.

Before giving my opening remarks, I want to put into the record, with your agreement, testimony from a number of groups and individuals regarding the relocations of ERS and NIFA. This includes statements from organizations representing researchers, agricultural economists, and former USDA researchers from both Republican and Democratic administrations. So I would ask submission.

Chairman ROBERTS. So ordered.

[The following information can be found on pages 36-143 in the appendix.]

Senator STABENOW. Thank you very much.

Thank you very much for the hearing, as I indicated, and I share the Chairman's commitment to what has been really a source of pride for us in terms of support for not only traditional agriculture but the new foundation that we have now had in place for two Farm Bills that we worked together on.

Dr. Hutchins, welcome back, and thank you for being here. Agricultural research has always been the heart of the Department of Agriculture since its beginning, and you have a very important responsibility at a very challenging time, in my judgment.

sponsibility at a very challenging time, in my judgment. In 1862, President Lincoln created the USDA with the mission to procure, propagate, and distribute agricultural knowledge. That strong foundation created our modern system of land-grant universities, including, Mr. Chairman, our alma maters of Michigan State and Kansas State.

It has also led to breakthroughs that have made our farmers more productive, more profitable, and more resilient.

The development of the first hybrid corn seeds have resulted in better yields in many types of crops. Extension specialists helped farmers utilize crop rotation to replenish soil after the Dust Bowl.

USDA studies have made wheat more resistant to drought and disease, developed more nutritious rice varieties, and improved vaccines to prevent foot and mouth disease.

Even off the farm, a wide variety of interesting research, important research. Ag research has enhanced the life for all Americans, improving the disposable diaper, making the U.S. military uniforms resistant to mosquitos, and developing better turf for NFL fields so that my Detroit Lions can tear up the Chairman's Kansas City Chiefs without tearing up the grass.

Even with these great innovations-

It is my opening statement, Mr. Chairman.

[Laughter.]

Senator STABENOW. Even with these great innovations, we consistently hear we need more research and a broad array of research, not less. That is why the bipartisan 2018 Farm Bill increased funding for USDA research efforts in animal disease, specialty crops, urban agriculture, organics, and expanded public-private partnerships in the Foundation for Food and Agriculture Research.

Unfortunately, the bipartisan commitment to agricultural research, which started over 150 years ago, is now at risk. I am deeply concerned that this administration is undermining the foundation of the USDA's scientific research mission.

The administration's haphazard decision to relocate two critically important research institutions—the Economic Research Service and the National Institute of Food and Agriculture—will affect real people who rely on the USDA services and hamper its capacity to support farmers, families, and rural communities for years to come.

support farmers, families, and rural communities for years to come. And for what? For what? It is still unclear to me what problem the USDA is trying to solve with this move, but we can see the problems and the risks related to this move.

The administration is requiring employees to uproot their families and move by September 30th, even though they have not secured a permanent office space. There are questions about their authority and budget for the relocation. According to the USDA, at least 63 percent of employees directed to move will leave instead of relocating, 63 percent or more. That is on top of extremely high current vacancy rates at these agencies.

Rebuilding an entire workforce will take time. In the interim, these agencies will not have the capacity to do their important work.

The USDA will also lose irreplaceable expertise. For example, the USDA is losing Vince Crawley, an army veteran originally from Indiana, whose work publishing reports is critical to expanding export markets, supporting transparent commodity prices, and strengthening rural economies.

The USDA is losing Jeffrey Steiner, one of the Nation's leading experts on hemp research, which we are doing a hearing on this as we move forward, the leading expert on hemp research whose knowledge would have helped develop new markets for hemp, which was legalized in the Farm Bill.

The USDA is losing Tim Steinberg, whose economic research supports rural manufacturing and business innovation. His critical work on the competitiveness of rural America will shut down on September 30 because no one else in the Department is qualified to work with this confidential, highly sensitive data.

There are hundreds more stories like these that we could share, the knowledge that we are throwing away and the expertise we are throwing away with this move.

It is no wonder that leading scientists, land-grant universities, former USDA officials from both sides of the aisle stand in staunch opposition to this move.

Now, the administration could keep these experts from leaving by giving employees the flexibility to continue their important work here until at least a permanent location is ready. The administration could extend the deadline for researchers to decide whether they will leave their jobs or relocate themselves and their families to a new city over a thousand miles away.

Instead, the administration is forcing out its employees with rushed, politically calculated ultimatums designed to derail important agricultural research, and I do not say that lightly. This relocation fits a troubling pattern of this administration undermining the important work of the USDA, including critical research our farmers need to address the impacts of the severe weather caused by the changing climate.

Congress has resoundingly rejected multiple budget proposals that would have cut USDA economic research by 50 percent, rejected, both sides of the aisle. I am concerned that this so-called relocation is an attempt to go around Congress and to carry out the steep reductions in capacity and research, anyway.

It is clear to me that this is not a relocation; it is a demolition. It is a thinly veiled, ideological attempt to drive away key USDA employees and bypass the intent of Congress.

I urge the administration to stop this and salvage what valuable expertise is left. This decision does far more than hurt USDA employees. If this chaotic plan is not stopped, our farmers, our families, and rural communities will be the ones that suffer in the long run.

Thank you, Mr. Chairman.

Chairman ROBERTS. I will remind members of the Committee, time is very limited. We have votes at 11:30. That is most unfortunate, given the issues that are concerned.

I would like to welcome our witness before the Committee this morning. Dr. Scott Hutchins is the Deputy Under Secretary for Research, Education, and Economics, REE, at the Department of Agriculture. Prior to working at the Department, Dr. Hutchins held a variety of roles in the Agricultural Research and Development, most recently as the Global Research Development Leader of Corteva Agriscience, the agricultural division of Dow-DuPont.

He received his bachelor's degree in entomology from Auburn University, a master's degree from Mississippi State University, and his doctorate from Iowa State University.

Notably, Dr. Hutchins last testified in this room in November after he was nominated to serve as the Under Secretary for Research, Education, and Economics, and his nomination was reported out of this Committee on a voice vote for a second time on May 14th.

Welcome back to the Committee, Dr. Hutchins. I look forward to your testimony.

STATEMENT OF SCOTT HUTCHINS, Ph.D., DEPUTY UNDER SEC-RETARY, RESEARCH, EDUCATION, AND ECONOMICS, U.S. DE-PARTMENT OF AGRICULTURE, WASHINGTON, D.C.

Dr. HUTCHINS. Thank you. Good morning, Chairman Roberts, Ranking Member Stabenow, and members of the Committee. Thank you for the opportunity to discuss agricultural research and implementation of related provisions in the 2018 Farm Bill.

The Research, Education, and Economics Mission Area at USDA is an incredible team and powerful force for the good of U.S. agriculture.

The REE Mission Area is comprised of four agencies: the Agricultural Research Service, the Economic Research Service, the National Agricultural Statistics Service, and the National Institute of Food and Agriculture. I will offer a few updates on each followed by some comments on some current topics.

ARS, or the Agricultural Research Service, under the leadership of Dr. Jacobs-Young, is the primary intramural research agency for USDA. ARS has as long track record of scientific breakthroughs that benefit U.S. producers, consumers, and ARS is also one of the two USDA agencies, along with APHIS, responsible for the standup and management of the National Bio and Agro-Defense Facility, NBAF, in Kansas.

Just recently, with Chairman Roberts joining, I was pleased to cosign with Under Secretary Ibach a memorandum of agreement with the Department of Homeland Security to enable the transfer of responsibilities to USDA.

ERS, or the Economic Research Service, currently led by Acting Administrator Leibtag, continues to be a trusted source of highquality and objective economic research to inform and enhance public and private decision-making. Recent ERS reports have highlighted trends in sales and development of veterinary antibiotics, a slowing of retail food price inflation, food loss amounts at the farm level, and additionally, ERS has provided studies showing the impact that agriculture has on the larger economy. They have modeled shifts on the impact of climate on farm productivity and balance of public versus private R&D sector investment.

NASS, or the National Agricultural Statistics Service, led by Administrator Hamer, provides timely, accurate, and useful statistics and service to U.S. agriculture. They conduct hundreds of surveys each year and produce reports for the entire agricultural sector, including production and supplies of food and fiber, prices paid and received by farmers, farm labor and wages, farm finances, chemical use, and changes in the demographics of U.S. agriculture.

Earlier this year, we were proud to have the opportunity to provide NASS's largest and most visible report, the Census of Agriculture.

NIFA, or the National Institute of Food and Agriculture, under the leadership of Dr. Angle, is USDA's extramural research agency providing funding and leadership to support research, education, and extension programs that address national agricultural priorities and transformative practices. NIFA primarily does this through competitive and formula grants.

An additional aspect of NIFA is the support workforce development in agriculture, including the 4-H organization. In 2018, NIFA-funded programs supported over 104,000 students through recruitment, retention, and curriculum development and faculty development. Through 4-H, NIFA supports a new generation of community leaders.

The Office of the Chief Scientist serves to coordinate all four agencies on certain topics and also supports all of USDA via the Science Council. The council facilitates cross-departmental scientific coordination and includes the important function and oversight of scientific integrity.

With regard to the 2018 Farm Bill implementation, first let me congratulate this Committee and particularly Chairman Roberts and Ranking Member Stabenow on the timely and positive bill in support of U.S. agriculture. REE held a special listening session on March 21st of this year to begin the process of Farm Bill implementation with all the REE leadership present. While each of the four REE agencies and the Office of the Chief Scientist are included in the Farm Bill, the vast majority of the provisions pertained to NIFA, and I am pleased to report that, thus far, NIFA has addressed the key expectations of the legislation that are funded. We are aggressively implementing it across the Department.

With regard to relocating the ERS and NIFA agencies, Secretary Perdue announced in June that ERS and NIFA will relocate to the Kansas City region after a long deliberative process. The Kansas City region is a vibrant urban center in the Heartland, a growing agricultural hub, and a home to considerable Federal workforce already. Long-term savings, the ability to attract top agricultural talent and proximity to numerous agricultural constituents will enhance the mission of these agencies in the long term.

USDA is fully committed to seeing NIFA and ERS thrive as mission-critical agencies, and in fact, we will welcome six brand-new ERS employees to Kansas City this coming Monday.

In conclusion, thank you for the opportunity to be with you today. I respect the role this important Committee plays in the success of the REE mission and look forward to answering your questions.

Thank you also for the unwavering bipartisan support that this Committee has always shown for the critical missions of research, education, and economics. On behalf of U.S. agriculture, it is an honor to support the USDA mission to do right and feed everyone.

I am happy to answer your questions.

[The prepared statement of Dr. Hutchins can be found on page 26 in the appendix.]

Chairman ROBERTS. Thank you, Doctor.

I want to remind everybody that has just come to the Committee, time is very limited today. We have votes at 11:30. We will let the floor know that if we are here still in session that we will wait for maybe 14 minutes to expire or something like that, but I am going to enforce the 5-minute rule. I think I have kept mine under five. [Laughter.]

Chairman ROBERTS. So I just want to encourage people to be brief if they possibly can. I know there is a lot of concern with regards to the relocation issue.

I thank the distinguished Member for asking unanimous support for questions to be submitted for the record on many of the concerns people have. I know that the Department will respond. I will make sure of that, along with the distinguished Ranking Member.

Doctor, the research title, the 2018 Farm Bill, was truly a bipartisan collaboration for members of this Committee and others throughout the Congress. One example of this collaboration is the new Agriculture Advanced Research and Development Authority, or AGARDA.

The Ranking Member and I worked closely on this authority to provide the Department with a new set of tools to promote and ensure innovation with private entities for research, and development solutions. Dr. Hutchins, how does the USDA envision utilizing this new authority to complement your mission to advance research and develop the tools necessary to protect our U.S. food supply?

Mr. HUTCHINS. Thank you for the question, Mr. Chairman.

AGARDA presents a truly unique opportunity in agricultural science. Much like the DARPA and the ARPA-E in other Departments, this proposed program provides the ability to partner in unique ways with private entities to allow USDA and Ag Research to stay on the cutting edge with technology.

We would envision within USDA and REE, AGARDA operating similarly in these other agencies, and once we stand it up, we would love to collaborate with those agencies and understand how best practices could be incorporated.

I would be particularly excited to see what we would be able to do if the potential collaborations that would transpire between the private sector and the public sector would turn out, as an example. NBAF would be an excellent role model for that.

Unfortunately, at this point in time, AGARDA was not funded in the fiscal year appropriations, but we stand ready and excited to stand this up and to participate and bring it to life as you have envisioned it.

Might I add, on a broader point, I believe the U.S. needs a more comprehensive ag innovation strategy, one that incorporates not just the capabilities and the contributions that can come from the public sector but also one that can come from the private sector so that we can benefit from a total integration of efforts to stay ahead of the challenges that we face, including climate change.

Issues along these lines have demonstrated that the private sector is funding, through recent ERS reports, three times what the public sector is funding. So it becomes important for U.S. agriculture truly to synergize and partner in this way to make sure that we get the most bang for the buck, if you will, from our investments that we are enabled to have.

Chairman ROBERTS. Doctor, the National Institute of Food and Agriculture, NIFA, and the Economic Research Service, ERS, provide valuable research and data that producers and industry stakeholders rely on. The external Research Extension and Education programs operated through NIFA supports producers and consumers in communities all across our Country. ERS provides valuable data, research and reports on several items such as U.S. farm income, not where we want that to be, commodity cost and returns, and monthly commodity outlook reports, which we are waiting on the last report here in just a few short days.

Could you assure me, Dr. Hutchins, that these critical reports will not be delayed within the transition occurring with the ERS? Mr. HUTCHINS. Thank you, Mr. Chairman.

Yes, I can assure you, and more so, I assure you that we will seek more opportunity to expand the research and the influence of ERS through the use of considerable cost savings from this move. That is our goal. Our intention is to make this and our desire to make this, and the recognition is to make this an opportunity for us to allow this agency to grow and to be sustainable in the long term. It is a very important aspect.

Now, if I could add, with regard to my role with this project and the role that we are currently in, when I was with this Committee last time, I was asked about these topics, and I indicated to you that I believe that the goals that the Secretary had for this were the right goals. I still believe that.

As we move forward, there are really two key primary and focus areas that I am aligned on. One is to support our employees. This is a difficult move. Any move is difficult. I have done these moves in my professional life over time. They are very, very difficult, and so what I have realized through those experiences is that we need to support our employees in a number of ways. That includes continuous communication. It includes being as decisive as we can on various aspects of things, and it means supporting them in every way possible. That means the employees that are choosing to relocate as well as the employees who are choosing not to relocate.

The second aspect of this, which is more to your point, I think, is to ensure the continuity of mission, and I have given my assurances to the Secretary and all who have asked that we will continue this mission. We will have a difficult time. As I have said to others, I am not trying to sugarcoat the difficulty that this will post, but we are actively working with the Office of the Secretary and with all the agencies that can contribute to ensure continuity of mission.

ERS' economists are rock stars, and I have described them as that. The work that they do is tremendous, and so we have every intention—and I do give you my assurance—that we will maintain that capability.

Chairman ROBERTS. Senator Stabenow?

Senator STABENOW. Thank you, Mr. Chairman, and again, thank you, Dr. Hutchins.

I realize that you were not here at the beginning when this decision was made, but it is in your lap now. You are in charge, and it is incredibly important what decisions are made and how they are made.

I agreed with you that the mission is the focus in making sure we are not losing the important service and mission provided to farmers and families in rural communities.

There is a huge problem according to the USDA. Sixty-three percent of the employees directed to move will leave instead of moving, and USDA will fire employees that do not relocate by September 30th.

So far, ongoing hiring efforts have resulted in four employees, four employees being ready to start in Kansas City next week, four.

Furthermore, the Government Services Agency says the permanent office space for these agencies will not likely be ready for a year. So my question is, What is the rush? Why is USDA so fixated on moving or firing everybody by September 30th? Mr. HUTCHINS. Thank you, Senator, for the question. I would not describe it as a rush. Through the communication

process that we have had with the employees from the earliest days-and I have personally participated in monthly and sometimes even weekly all-hands meetings-at present time, we are communicating weekly through newsletters and through communication mechanisms.

We are working constructively as best we can through the process with the unions that represent both aspects of it.

What the employees have told us loud and clear throughout this process, which has been a long process—I mean, it was announced last August, and now it is July—is we just want to know when and where. Give us a date, and give us a location.

So we went through a very long deliberative process. It was very much open in communication with your staffs to identify that, and we are staying true to that plan.

We have provided a city. It is a fantastic city. Kansas City has been so opening and welcoming to the opportunities that we have here, and I will not try to sell the city. I suspect someone else in this room could do that better than I, but the—

Senator STABENOW. Well, if I might just interrupt.

Mr. HUTCHINS. Sure.

Senator STABENOW. First of all, next to Michigan, I love Kansas. So this is not about Kansas City.

June 13th, I understand is when employees knew they were going to Kansas City. June 13th. That is a little over a month ago that they knew that, and so that is my concern.

To just add to that and let you respond, I understand that Secretary Perdue had a conversation with Senator Van Hollen, which he said he would consider employees doing telework during the transition, and I am wondering if you will agree to let current employees work in their current location until the permanent facility is ready in Kansas City.

By the way, there is still a lot of vacant space here in D.C., where they could work during that transition.

Is that something that you are willing to do?

Mr. HUTCHINS. Senator, two points. One is through the communication process with the employees, that every time we had indicated that once a city is identified, it would be a 30-day decision period. So we stayed true to that. We actually provided 32, if you count.

The second point, with regard to the telework and the rest of it, those are all demands and requests that have come from the union, and so those will be part of that negotiation process with the two agencies. That process actually begins tomorrow, is the first meeting between the union and with the agency.

Senator STABENOW. So tomorrow is the first meeting with the union. So you have not yet met with them, but tomorrow is the first meeting?

Mr. HUTCHINS. Well, I will not be meeting with them because their agreement, their process is with the actual agency.

Senator STABENOW. I understand. Okay. Tomorrow is-

Mr. HUTCHINS. By agreement of both sides, tomorrow is when that process begins.

Senator STABENOW. Gotcha.

Let me just quickly move through here timewise. I assume that you are as concerned as we are about unnecessary brain drain, with 63 percent of the people have said they are not going to be moving, and you basically gave 547 employees 30 days to decide if they were going to move halfway across the country and take their families. Right now I understand there is enough space for 270 employees in Kansas City.

Given time, I want to ask one other important question, though. Recent press reports, including a new article published today, suggest that USDA has taken steps to suppress public release of the agency's work related to climate change.

I am very proud of the fact that this Committee did a thoughtful bipartisan—it may have been the first thoughtful bipartisan—Senate hearing on climate change and how farmers can be a part of the solution going forward, which is absolutely critical.

You addressed the downplaying of climate research in your testimony, and in a letter you sent to me yesterday, I appreciate the response. However, this morning's story suggests that senior Trump officials also held back an agency-wide Climate Science Plan slated for public release in late 2017, which we certainly could have benefited from.

Let me just ask this. At this point, in terms of publicizing the work of agency researchers and so on, will you commit to provide this committee with all studies related to climate change that have involved USDA researchers and were published after January 21, 2017?

Mr. HUTCHINS. Thank you, Senator.

May I clarify and ask are you talking about the research studies? Senator STABENOW. I am talking about all the research studies that have been done, everything the USDA has done with public money, the universities and so on. We know there is a lot of work, really important work, that has been done, and we need to have that information.

Mr. HUTCHINS. Yes, ma'am. That is all in the public domain.

Just as an example, if you look at the ramp-up rate of climate research through NIFA, from 2016 there were 964 reports, if you were to use Google Scholar, as an example. In 2018, there were over a thousand, and we are on target or on pace in 2019 to have over 1,200.

The climate work focus, primarily in my context on adaptation and mitigation, is expansive and robust, and we would be more than happy—

Senator STABENOW. Does that include, though, the public release of the agency-wide Climate Science Plan that was referred to in the press today?

Mr. HUTCHINS. The plan that was referred to in the press was an internal document in order for us to design and implement all aspects of this overall research program. It was not ever intended to be released to the public. No problem with it being released to the public because it really signals very clearly all the work that is being done, and all the work that is in that document is actually being done. That is our guidepost, and that is what we were using to develop our research program.

Senator STABENOW. I look forward to receiving that. Thank you. Thank you, Mr. Chairman.

Chairman ROBERTS. Again, we have limited time today. We are like King Tut. We are pressed for time. We have votes at 11:30. We can hold it off until about 11:45. Questions for the record will be available, and the Chair will have to enforce the 5-minute rule. Thank you.

Senator Boozman?

Senator BOOZMAN. Thank you, Mr. Chairman, and thank you for having the meeting.

We have got a lot of concern, disagreement, but I think that the one thing that we can all agree on is that, as a nation, we must continue to invest in ag research and the future of agriculture.

We can look at Arkansas, for example, and how far we have come in Arkansas. We can take rice, for example. From 1980 to 2015, rice yield per acre increased by 62 percent. Over the same time, the water use associated with growing rice decreased by 52 percent. Soil loss decreased by 28 percent, and energy use decreased by 34 percent. None of this would have been possible without the innovation that has come about from the research and technology.

Ag research will become even more important so that we can feed and clothe 9 billion people by 2050 on the same amount of arable land, essentially, that we have today.

So I guess the question is, Dr. Hutchins, understanding the challenges that agriculture will have to overcome as the global population grows, what do you see as the most important research areas to focus on in both the short term and long term?

Mr. HUTCHINS. Thank you, Senator, for the question.

One of the things that we have done with the leadership team with REE is to identify one of the primary themes of research and focus and impact and influence that we really need to have for U.S. agriculture, and if I can, I will just briefly overview those.

The first is sustainable intensification, and this would capture a lot of the things that you have just listed. It is the opportunity for us to really focus in a sincere and expansive way on soil health, an opportunity to focus on water conservation and water quality, and the opportunity really to take advantage of the tremendous digital revolution that is happening today within agriculture. All of that will allow farmers to not only be more productive but clearly more profitable as they are able to maximize the inputs that they put forth. So that is one of the key themes.

By the way, as we do soil health and these other things, that will have very positive impacts on carbon sequestration and on overall greenhouse gas production.

The second piece, if I could just do one more, the second piece is actually ag climate adaptation, and that is another key theme that we have where we are investing well over \$100 million of research just in that theme.

Senator BOOZMAN. We in Arkansas benefit from several research universities, which has been so, so important. One of these, the University of Arkansas at Pine Bluff, is an 1890's institution. UAPB is especially important to Arkansas' aquiculture industry, as they are a leader in aquiculture research.

In the Farm Bill, there were several provisions regarding the 1890's institutions. Could you update us on the implementation of those provisions?

Mr. HUTCHINS. Yes, sir. There were a number of them in the context of scholarship programs, for example, and the USDA hosted a tremendous event where they outlined and demonstrated with bipartisan support how that program was being stood up and put forth.

The 1890 institutions overall are very highly supported by the Secretary as well as by the Department, and all of the provisions that are within that for both the individual ones as well as the others are being implemented with speed and rigor to ensure that the intent of this Committee and the intent of the 1890 institutions is fulfilled.

Senator BOOZMAN. Good. We appreciate that, and I think I can speak for the Committee that I think this is something that is very, very important that we do that with as much speed as possible. If you need any help in that regard, be sure and let us know.

Thank you, Mr. Chairman. I yield back on time.

Chairman ROBERTS. That helps.

Senator Smith? Oh, pardon me. Senator Leahy?

Senator LEAHY. Thank you, Mr. Chairman. Good to see you.

Chairman ROBERTS. Good to see you too.

Senator LEAHY. I try to keep an eye on you when I am not in the room.

Chairman ROBERTS. Yes, I know that. I do not look at your picture. They have a hypnotizing effect on me.

[Laughter.]

Senator LEAHY. I am concerned, Doctor, listening to some of the discussion here. I remember in a previous administration, the head of one of our environmental agencies kept reorganizing, reorganizing, and reorganizing so that they would never have to do anything, enforce the environmental laws. A Republican Senator called her on that, and that was Robert Stafford of Vermont.

When I look at the Department's planned relocation of ERS and NIFA, I do not see where it has any merit or justification. I believe it really undermines the mission of both agencies. I am saying that with New England understatement.

The move has already dealt a significant blow to the Department's scientific and economic research capacity, and many employees within these agencies will tell you, honestly, they feel this is the intent, to undermine the research capacity.

Further, though, USDA failed to submit with its 2020 budget justification reporting all the costs and benefits for the move as well as a detailed analysis of any research benefit of a relocation. Those are required, and as Vice Chairman of the Appropriations Committee, I am well aware of this. They are required by Congress to the enacted fiscal year appropriations bill. That is a requirement which USDA totally ignored and violated.

On the contrary, USDA requested \$15.5 million for ERS relocation, even at the same time they are proposing a \$26 million cut in the agency. You know, it is Kafkaesque.

The final thumb in the eye, the USDA sent the Appropriations Committee a reprogramming request just 6 days prior to publishing its intent in the Federal Register. That violates the 30 days that is required. It is like you guys do not even care what the law is.

Congress is irrelevant, including the appropriators and the authorizers. So let me ask you. Insofar as you are ignoring congressional mandates, not following the law, Doctor, let me ask you this. Yes or no. Will you submit to the committees of jurisdiction all analyses related to relocation, including the full report by Ernst & Young on which USDA's cost-benefit analysis released last month was based? Yes or no.

Mr. HUTCHINS. Yes, sir. We have released and published and made public the cost-benefit analysis prepared by Ernst & Young.

Senator LEAHY. What cost-benefit analysis was conducted prior to the Secretary's August 2018 announcement they would relocate the agencies?

Mr. HUTCHINS. Senator, I did not join USDA until January of this year.

Senator LEAHY. I understand that.

Mr. HUTCHINS. So I really do not know what was prepared for this.

Senator LEAHY. Okay. Will you—yes or no. Will you find what cost-benefit analysis was conducted prior and supply it to this Committee?

Mr. HUTCHINS. I will inquire with the Secretary as to what is available.

Senator LEAHY. So you cannot give us an answer that you will? Mr. HUTCHINS. I do not know what is available, sir, but I will do all that I can to provide what is available.

Senator LEAHY. Well, was all that was provided, did you give us all that was provided, or did you give us just a summary?

Mr. HUTCHINS. We provided all that exists for the cost—

Senator LEAHY. It was not a summary. It was all that exists?

Mr. HUTCHINS. The summary captured all of the-

Senator LEAHY. Oh, so you gave a summary. You did not give all?

Mr. HUTCHINS. No, sir. We provided it all, and in the summary, it referenced all the data and all the information that went into that. So it was the cost-benefit analysis. I would be happy to—

Senator LEAHY. So that is available? All that data is available to the Committee?

Mr. HUTCHINS. Yes, sir.

Senator LEAHY. So we should be able to get the prior, prior to your time there also?

Mr. HUTCHINS. I will inquire on your behalf.

Senator LEAHY. If Congress does not provide relocation funds in fiscal year or blocks funds from being used for such a relocation, will USDA follow the law, as enacted by Congress?

Mr. HUTCHINS. USDA, from my standpoint, always follows the law and has deep respect for how it is created and how it is implemented.

Senator LEAHY. Well, then watch what we put because if we put that, you are going to have to.

Lastly, EFNEP, that in the 2019-enacted appropriations bill, Congress called for a pilot expansion to provide evaluation and improved food resources. What has USDA done to implement these instructions in the fiscal year law, and would a land-grant institution with an established EFNEP program be well positioned to undertake the pilot? Mr. HUTCHINS. Yes, sir. The Agriculture appropriations report included language encouraging the Secretary to support a special pilot extension of EFNEP, and NIFA at present is assessing how to incorporate that into further effectiveness of that program.

I might also add for that program, I had the honor to address that group and visit with that group earlier this year. Their mission and their focus is just tremendous, and so—

Senator LEAHY. I agree with you on that.

Mr. HUTCHINS. What they do is something that we absolutely want to encourage, and we will make every effort from our standpoint to ensure that that pilot is successful.

Senator LEAHY. I can find you a good land-grant institution to do it.

Thank you. Mr. Chairman, it is so nice to be here with you.

Chairman ROBERTS. Well, thank you, sir. You are only about 40 seconds overtime. This is of great concern to me because it did not give me enough time to congratulate you on your 16,000th vote on the floor of the U.S. Senate. I will tell you in private how many times I voted with you.

Senator LEAHY. I have the list on a small card here.

[Laughter.]

Senator LEAHY. On the Farm Bill, we have always voted together.

Senator STABENOW. That is right.

Chairman ROBERTS. That is correct, and that is the most important thing.

Senator Braun?

Senator BRAUN. Thank you, Mr. Chairman.

Acknowledging the comments of Senator Stabenow and Leahy, I think those are valid, but I would also cite a few things. One, I am glad we are relocating to Kansas City. It is in the middle of the Farm Belt. I am a farmer, a tree farmer, involved with a lot of farmers, and I think it makes sense to be in the middle of where the bread basket is.

When it comes to the talent pool, I have got to believe there is more of it in the universities that specialize in ag in that area as well.

Then what is normally not talked about here would be can we lower the cost of operation in a place like that, and I am almost certain that it will be lower cost of doing business in Kansas City than D.C.

I am looking forward for you to carry out this smooth transition, what you think can be done.

I want to get to a question of what your agency is all about. African swine fever, foot and mouth disease, wheat stem rust, all examples of current threats to global agriculture that know no borders. I am sure there are others as well.

Where are you at on diseases like that, and are we making headway, or are we being overwhelmed by more of them that seem to crop up every year?

Mr. HUTCHINS. Thank you, Senator, for the question.

The answer is that we are making headway on many, and as an entomologist, I am familiar with the whole concept of invasive species and those kinds of difficult topics. We are making headway on a number of those, but there will always be more. We are in a global travel situation, and so there is always a risk. APHIS does a fantastic job, but there is always a risk of more. We always have new challenges. We have them in all parts of the country.

Growers every year face some sort of new challenge or outbreak. Much of that is stimulated by some sort of current weather pattern or what have you, but I can tell you with confidence that the Agricultural Research Service and NIFA both—and NIFA working more recently and locally through all of the great land grants in this country—are doing world-class science and making tremendous efforts. If you combine that with the great system we have of cooperative extension, it allows us to get that research. It allows us to get those advancements and those discoveries into the hands of our farmers quickly enough so that they can respond and minimize any losses from those kinds of pests.

Senator BRAUN. So, as a tree farmer, does forestry, which I think in Indiana has almost twice the financial impact of row crops, which many people do not realize that—and I am sure that varies by State somewhat. Emerald ash borer, Japanese stiltgrass, tree of heaven, and most of that stuff has arisen in the last 10 to 15 years. Some of it, like Japanese bush honeysuckle, is so prevalent that most people do not even know it is not a native. Are we spending as much time and effort there when in many States, forestry has more impact than agriculture in the sense of row crops? Are we putting resources to that as well?

Mr. HUTCHINS. Thank you, sir, for the question.

Two things I would point out. One is the Forest Service, which is not part of this mission area, has its own R&D organization that is focused specifically on a lot of those diseases, insects, and so forth associated with forestry, but we work very closely together. So a lot of the basic biology, the basic information, and the con-

So a lot of the basic biology, the basic information, and the control methods for pests like Emerald ash borer, which has cost me a number of ash trees myself, is collaborative.

In fact, we use within our leadership team—we utilize the R&D leader for the Forest Service as part of our leadership team.

So we are doing all we can to coordinate, and we do include the ecosystems, the forest ecosystems as part of our mandate and part of our challenge.

Senator BRAUN. Thank you. Good luck in your transition to Kansas City.

Mr. HUTCHINS. Thank you, sir.

Senator BRAUN. I yield back.

Chairman ROBERTS. Thank you, Senator.

Senator Klobuchar?

Senator KLOBUCHAR. Thank you very much, Mr. Chairman.

Thank you for being here, Dr. Hutchins.

I have already expressed my concern, and Senator Stabenow focused on that in her questions about this relocation.

Do you truly believe that you are not going to lose significant expertise in areas of research, agricultural research, Dr. Hutchins, with this move?

Mr. HUTCHINS. Thank you for the question.

Ma'am, I have never suggested that we would not lose expertise. I have been part of some major moves in the past, some large mergers and so forth, and they are never easy. There is always a large attrition with that, and there are good personal reasons for that. People are making choices.

In this particular situation, every employee has been offered a job. I have never been through one of these where there was no workforce reduction in the context of mandated. So the opportunity is there.

The numbers that came from this were not at all unexpected. We expect that for these kind of moves. We will be working desperately and deliberately to make sure, as Chairman Roberts has requested, that we do not drop the ball on the mission in the short term, but I want us to keep an eye on the long term. I want us to keep an eye on what the next version, with the expertise that we are retaining, how we build on that and how we take these agencies to the next level.

The Secretary has committed to reinvest some of these considerable savings, \$300 million nominally over the first least period, in order to allow us to grow these agencies, grow their impact, and grow their influence and expand the research capabilities.

Senator KLOBUCHAR. Just as we are out of time with climate change and climate science where this research is just important across the Government, and last month I wrote to Secretary Perdue with concerns about a news report that detailed the suppression of scientific studies conducted by the Agricultural Research Service related to the effects of climate change on agricultural production. This is having been seen in the Midwest the flooding that we are having and the broken levees and farmers that are no longer able to produce because their cropland is under water. We are having huge problems right now in Minnesota.

Dr. Hutchins, can you elaborate on how the Department determines which type of research projects to publicize as opposed to just get them done?

We have had an issue where a lot of this climate research seems to come out on late Friday afternoons, where maybe people will not notice it, not just out of USDA but out of other agencies, when I think we should be highlighting this as we look at solutions to what is an obvious crisis that is not happening in 100 years. It is happening now.

Can you talk about how the Department determines which type of research projects to publicize?

Mr. HUTCHINS. Thank you for the question.

I can certainly provide you with an overview of that.

First of all, with 5,000 publications coming just out of ARS alone across a number of topics, we need to look at which ones really will set the stage. We have over 450 research publications just in the climate area from just ARS, not to count the thousand that are sponsored by NIFA.

So what we are looking for is a standard that says is there something new and novel here, is it most relevant to U.S. growers and U.S. agriculture, and is it something that we could ultimately translate and take to a point where we can reduce it to practice? I have returned a response to your letter. I do not know if you have seen that, but that particular publication that was in question was specifically focused on rice varieties in China and Japan. So it did not meet the standard relevant to U.S. rice growers. It focused on the concept of nutrition. There were 18 varieties evaluated. Two of those varieties clearly showed a reduction in vitamin B. Two of those varieties showed an increase in vitamin B, and 16 had no change.

So we looked at that and said that it is not as conclusive with the type of promotion that was being suggested. It has nothing to do with climate change. It simply has to do with what we felt like the promotion of that did not meet the standard.

There will be many other articles and many other studies that we will promote that meet those other standards.

Senator KLOBUCHAR. Okay. Because I just know there have been a number of these studies that have been kind of, in my mind, deep-sized, and it is not just at USDA. I think that, as a whole, the administration is not dealing with climate change, and we are losing time by not dealing with it.

losing time by not dealing with it. Questions were asked by—and I will not go on here—by Senator Braun about animal and plant diseases, and I worked to include several animal disease provisions in the 2018 Farm Bill. How are you working to better deliver research solutions that combat these disease threats?

Mr. HUTCHINS. Well, one of the, I think, outcomes of a shifting climate or a warming climate is that there will be, I think, an additional increase, a range change, if you will, in terms of some of these diseases and so forth.

One of the key areas of focus under this area I had mentioned previously of sustainable intensification is really a deep understanding and development of management tactics that are practical and useful, both short term and long term, in terms of dealing with these kinds of diseases. Some of them are an annual basis. Some of them, we would need to be able to deal with, with biological control and other kinds of things.

Rest assured that it is a primary area of focus for both ARS and NIFA to give our growers the opportunity to manage their pests.

Senator KLOBUCHAR. Okay. Thank you very much. I will submit some more questions on the record.

Mr. HUTCHINS. Thank you. Thank you.

Chairman ROBERTS. Senator Grassley? Mr. Chairman?

Senator GRASSLEY. Thank you very much, Mr. Chairman, and welcome, Dr. Hutchins.

Senator Braun brought up about diseases, et cetera. I would like to zero in on something that affects pork producers in Iowa, and they are concerned about the potential of African swine fever coming to the United States. Could you give me an update specifically on that disease, the Department's efforts to research methods to detect and treat African swine fever?

If you were in another Department, Homeland Security, I would ask you to do what you are doing to keep it out of the Country.

Mr. HUTCHINS. Thank you, Senator, for the question.

The entry of that horrible disease is really under the purview of APHIS, and they are doing a fantastic job getting ahead of things

in terms of making sure everything is in place. They have intercepted a number of shipments that should not be coming in because they could be potentially contaminated.

To your point with regard to research, that is really a key priority for our organization to develop a vaccine in partnership with the private sector and make sure that our farmers never have to deal with what a large part of the world is dealing with today. So that is a primary focus.

The completion and utilization of the NBAF facility, referenced earlier, is going to be front and center in our ability to do that work, which is presently being done, for example, in Plum Island and a number of areas.

That is an excellent example of how one disease can radically change and alter a significant commodity such as our pork producers rely on. Over \$200 billion are some of the estimates, depending on how long the outbreak would last.

Senator GRASSLEY. Okay. My next question is a provision in the Farm Bill calling for the development of Genome to Phenome research program at NIFA. The intent of the program is to better understand how plant and animal genomes interact with particular environments to control crop and animal growth in order to stabilize and increase our yields. Can you give an update on the Department's effort so far to implement the project?

Mr. HUTCHINS. Senator, that theme, that area of Genome to Phenome, is a fantastic opportunity for us in a number of ways. You had mentioned plants and animals, but also, let us not forget microbes. That opportunity to use technologies in that way and to make that resolution is going to be, in some ways, at the core of the soil health approach with the soil microbiome.

From our standpoint, what we are looking to do is be able to understand how that links together the ability to predict performance through phenome. It is critical to understanding how plants and animals and microbes will respond, for example, to climate.

The current 2018 Farm Bill authorizes \$40 million for the program. However, no discretionary funding has been appropriated to this effort. We would love to be able to stand that up and to incorporate that within our research programs, and I would also add, because I know there is tremendous capability in Iowa, to be able to use this as another example of how we partner with the private sector in order to make larger advances than we might be able to on our own.

Senator GRASSLEY. I will submit two questions for answer in writing and yield back my time.

Chairman ROBERTS. Senator Casey?

Senator CASEY. Chairman Grassley just put pressure on all of us, so I will try to comply.

Thank you, Mr. Chairman.

I want to start with a Federal employee, the story of a Federal employee. Often in this town, Government workers are the subject of denigration, not commendation. We do not talk about their work enough, and so I want to try to give you one example and then use that as a predicate for my question for Dr. Hutchins. This is a story of Catherine Greene. She is senior agricultural economist at the Economic Research Service, which we know here in the hearing as ERS. She has been there for more than 30 years.

In the 1980's, Catherine Greene initiated the first ERA outlook reporting on U.S. organic production. It seems like a long time ago.

Since then, Catherine has initiated dozens of ERS and USDA projects, collaborating across every single agency of USDA to provide publicly available data, research, and information to U.S. producers interested in organic production and marketing.

Catherine Greene is unable to relocate to Kansas City. Further, three of the young economists Catherine has trained for several years have already resigned rather than be relocated.

Catherine Greene expects most of the institutional knowledge on organic agriculture will be lost when she is forced to retire.

Sometimes we do not put a premium on or pay attention to the fact that in one agency of the Federal Government, you can have thousands of years of combined expertise and experience.

So, Doctor, I have two questions on this subject. One is about attrition rates, and the other is about lost capacity. The first is, What is the expected attrition rate for employees working on organic agriculture in ERS? That is question one, and question two is, How do you anticipate the lost capacity of employees like Catherine Greene, who has spent 30 years developing expertise, to impact the agency's ability to provide accurate and timely data to organic producers? So if you could answer both questions.

Mr. HUTCHINS. Thank you for the question.

Two things. First, with regard to Catherine, we would love for Catherine to join us, if she would. We have offered roles to everyone in those two agencies, and we would be delighted to have her take that opportunity.

With regard to the organic ag and the specific capabilities in that space, sir, I would have to get back with you on that. There are dozens of particular areas, and I do not have right in front of me today what the specifics are for that. I would certainly commit to do in that particular area, as you had requested.

I am sorry. The third?

Senator CASEY. On the lost capacity, you will have to get back to us?

Mr. HUTCHINS. Yes, for that specific area.

Senator CASEY. Okay.

Mr. HUTCHINS. In an overall capacity standpoint, we are putting together a strategy that allows us to take advantage of a number of short-term and long-term aspects. We have a very aggressive hiring plan for vacancies in both of these.

As I indicated in my opening remarks, six new ERS employees start to work in Kansas City on Monday.

We also will be looking at several employees who cannot move for personal reasons, have approached us to see can we work after the date in some sort of contractual capacity or in some agreement like that.

Universities have contacted us and asked us, "We can help support you," and so forth.

So a lot of groups at this point are starting to rally together to see how we can make sure we do this, and the commitment I have made to this Committee is that we will put all of those pieces together. We will not drop the ball on any of these, both of these agencies, and we will build them for the future.

Senator CASEY. The point I make is, look, I am just talking about organic production, one part of the responsibility of USDA, and we want to make sure that those organic producers, those organic farmers have accurate and timely data.

It stands to reason that when you have a group of people that have accumulated all this experience that the likelihood, the high likelihood, is there is going to be a drop-off in terms of providing that information. So if you can get us that answer, we appreciate that.

Mr. HUTCHINS. Yes, sir.

Senator CASEY. The second part of it was what I had asked first about the attrition rate for those working. What is the expected attrition rate for those working in organic agriculture at ERS?

Mr. HUTCHINS. Again, I do not have the attrition rate for the organic agriculture aspect of ERS. I can get that back to you.

Senator CASEY. If you can get those in writing to us.

Mr. Chairman, I will submit a second question for the record. Thank you.

Chairman ROBERTS. I thank the distinguished Senator.

Senator Hyde-Smith?

Senator Hyde-SMITH. Thank you, Mr. Chairman, and I commend you and our Ranking Member Stabenow for a job well done for the 2018 Farm Bill. That was such a success. The research, in particular, was very good to me. Our commitment to the ag research is one of the reasons Under Secretary has remained a global leader, as we well know, in ag production. I am really proud of the important research conducted at the Ag-

I am really proud of the important research conducted at the Agricultural Research Service, the ARS, in Stoneville, Mississippi, as well as at our public universities. I think you guys are doing a great job there.

Dr. Hutchins, first of all, thank you for appearing before the Committee today. You have done a fantastic job.

One of the things I want to ask about is the chronic wasting disease, CWD. It is a fatal disease that affects white-tailed deer and several other members of the deer family, very important in Mississippi, and there is still a lot to learn about the cause, the spread, and the management control of CWD.

It has made its way to Mississippi, and I am really concerned about the impact it could have because we have a billion-dollar industry there of deer hunting. A large area of our State has been flooded, more than 500,000 acres for more than 6 months, and it is confining the deer to a very small area in the levees, which obviously would be facilitating the spread of chronic waste disease.

So a provision of the 2018 Farm Bill lists CWD as a high-priority research and extension initiative and for very good reason.

The land-grant universities in the Southeast, such as Mississippi State University, which you are quite familiar with, we have established white-tailed deer research programs, colleges of veterinary medicine, and technical and scientific expertise relevant to CWD.

We are in pretty good position there, but as you proceed with the implementation of the 2018 Farm Bill, will you commit to ensuring that CWD is, indeed, treated as a high-priority research and extension initiative, and would you work continuous, as you have done such a great job, with land-grant universities in the Southeast that are well positioned to join the efforts and combat in many research programs on CWD?

Mr. HUTCHINS. Thank you, Senator, for the question.

Great to see you. The last time I was at the Committee, I think you were in the process of winning your election, so nice to see you and nice to see someone from Mississippi State. That was a great place to go.

To your question, what I can tell you is that chronic wasting disease was added to the high-priority research and extensions initiatives in the Farm Bill. There is no funding there, but we are gearing up to make sure that we support all of these efforts.

The issues with chronic wasting disease are very challenging technically, but we can overcome those. NIFA has funded a study at Iowa State University to attempt to find a skin test for the disease. The incubation period for this disease is two to four year. That makes it particularly challenging from a technical standpoint, but if we develop a rapid, consistent testing regime, we think that we can have a significant impact.

ARS is currently investigating the pathobiology, genetics, and detection of the transmissible aspects of it. It is a spongiform encephalopathy, TSE, that affects not just deer but elk and moose. So it is a very significant disease and challenge for us that we want to contribute and we will contribute to the solution and partnership with the land grants.

Senator Hyde-Smith. Fantastic. Thank you very much, and Go Dawgs.

Mr. HUTCHINS. That is right. Hail State.

Chairman ROBERTS. I thank the Senator.

Senator Hoeven, with the admonition, of course, that we have started the vote. Not to pressure you.

Senator HOEVEN. Thanks, Mr. Chairman.

I will try to keep it moving along here.

I do want to ask. North Dakota is the Nation's top producer of canola, and so we included some—in our NIFA funding, we want to see research for canola. So does NIFA intend to make canola eligible for the program, and can you share a timeline for when that action will be completed?

Mr. HUTCHINS. Senator, I am aware of a Hard Red Spring and Durham Wheat Laboratory involvement within North Dakota. I would need to get back to you with the specifics of that particular question, and I would be happy to do that ASAP.

Senator HOEVEN. Good, because we are going to want to work with you to make sure that that research is included as part of NIFA.

Mr. HUTCHINS. Absolutely.

Senator HOEVEN. So I will look forward to working with you on that.

Also, how about in the sugar beet area? We provided a milliondollar increase in sugar beet research funding. Is that one that you can comment on, or should we follow up on that one later too?

Mr. HUTCHINS. Well, I will to follow up with some details, but I can assure you that sugar beet research in a number of areas is a high priority for us. We are actively engaged in that within the ARS as well as NIFA.

Senator HOEVEN. Good. How about chronic wasting disease?

Mr. HUTCHINS. Yes, sir. We just spoke about that in Mississippi, and I know it is much broader than Mississippi. Certainly, it is identified as a priority, and we are working in both intramural and extramural research efforts and partnering to address that. It is a challenging—it is a real challenging disease. Senator HOEVEN. How about the U.S. Wheat and Barley Scab

Initiative?

Mr. HUTCHINS. The U.S. Wheat and Barley Scab Initiative is on track, and the ARS researchers in Fargo have transferred a number of major genes for that resistance for common wheat and to durum, using multiple backcrosses in selection. So I have got a bit of an update on that, but as with the others, I would be happy to give you as much detail from our subject-matter experts as you desire.

Senator HOEVEN. Good. We will look forward to working with you on those initiatives and others. I personally am a huge fan of ag research. I think it is unbelievable what we have done, both through ARS and NIFA, and we are very committed to funding that ag research and working with you on these and other initiatives.

Mr. HUTCHINS. Thank you, sir, and I would just add to that. We are in a renaissance period right now with ag research and in agriculture more broadly. So we look forward to being part of the next era to make sure that U.S. agriculture is the most competitive.

Senator HOEVEN. Thank you.

Now out of deference to our outstanding Chairman and the fact that we have a vote on the floor, I will yield the rest of my time. Chairman ROBERTS. Thank you very much.

That will conclude our hearing today. Thank you to our witness for taking time to discuss agriculture research, the 2018 Farm Bill, and relocation.

To my fellow Members, we ask that any additional questions you may have for the record be submitted to the Committee Clerk in 5 business days from today or by 5 o'clock p.m., next Thursday, as of Thursday, July the 25th.

I want to at least emphasize one other point. Employees had until July 15 to make a decision. Employees do have until September 30 to report to their new location. I hope they take advantage of that. There is a huge welcoming committee from both Missouri and Kansas to any employee that would visit.

Thank you.

[Whereupon, at 11:38 a.m., the Committee was adjourned.]

A P P E N D I X

July 18, 2019

Testimony of Deputy Under Secretary for Research, Education, & Economics Scott Hutchins U.S. Department of Agriculture before the U.S. Senate Committee on Agriculture, Nutrition, and Forestry Agricultural Research and 2018 Farm Bill Implementation

Good morning. Chairman Roberts, Ranking Member Stabenow and members of the Committee, thank you for the opportunity to speak to you all today to discuss agricultural research and implementation of related provisions in the 2018 Farm Bill. The Research, Education, & Economics (REE) Mission Area at USDA is an incredible team and powerful force for the good of U.S. Agriculture – we have fantastic success stories each and every day, and I appreciate the opportunity to share a few of those with you today, as well as inform you on the progress we have made in the implementation of the 2018 Farm Bill.

The REE Mission Area is comprised of four agencies; the Agricultural Research Service (ARS), the Economic Research Service (ERS), the National Agricultural Statistics Service (NASS), and the National Institute of Food and Agriculture (NIFA). Each of these agencies provide services that are critical to the well being of the American agriculture system- provider of the most affordable, abundant, and safe supply of food and fiber in the world.

<u>ARS</u>

The Agricultural Research Service is United States Department of Agriculture's (USDA) primary intramural research agency. ARS has approximately 2,000 scientists and post-doctoral researchers and 6,000 additional staff supporting around 690 research projects over 90 locations. These researchers produce an immense output of scientific and technical knowledge. ARS scientists produced over 4,500 peer-reviewed journal articles in 2018 alone. Without a doubt,

ARS has produced, and continues to produce, a wide range of scientific breakthroughs that benefit U.S. Producers and Consumers.

Among these are a new bio-based insect repellent that uses fatty acids derived from coconut oil to ward off blood-sucking insects that cost the cattle industry more than \$2.4 billion annually, a test strip for major foodborne pathogens that reduces testing time from 24-72 hours to about 30 minutes, and a new insecticide for use on the fruit fly – methyl benzoate.

As you know, ARS is one of the two USDA agencies, along with the Animal and Plant Health Inspection Service (APHIS), responsible for the stand up and management of the National Bio and Agro-Defense Facility (NBAF). NBAF will be a state-of-the-art science facility whose capability will ensure the U.S. is best prepared for threats to agricultural and food security. Recently USDA signed a memorandum of agreement with the Department of Homeland Security (DHS) to enable the transfer of responsibilities for this facility to USDA.

<u>ERS</u>

The Economic Research Service continues to be a trusted source of high-quality and objective economic research to inform and enhance public and private decision making. ERS research covers a range of topics which fit generally into six buckets: Agricultural Economy, Food and Nutrition, Food Safety, Global Markets and Trade, Resources and Environment, and the Rural Economy. ERS reports provide information to decision makers across the Federal government. I personally request briefings on many reports and analysis of key topics and find them insightful and informative.

Recent ERS reports have highlighted trends in sales and development of veterinary antibiotics, a slowing of retail food price inflation, and food loss amounts at the farm level. Additionally, ERS has provided studies showing the impact that agriculture has on the larger economy. For instance, ERS found that U.S. Agricultural Exports supported 1.2 million full time jobs in 2017.

NASS

The mission of the National Agricultural Statistics Service is to provide timely, accurate, and useful statistics in service of U.S. Agriculture. They conduct hundreds of surveys each year and produce reports on the entire agricultural sector, including production and supplies of food and fiber, prices paid and received by farmers, farm labor and wages, farm finances, chemical use, and changes in the demographics of U.S. Agriculture.

Earlier this year we were proud to have the opportunity to provide NASS's largest and most visible report, The Census of Agriculture. Conducted every five years, the Census of Agriculture provides a complete count of U.S. farms, ranches, and the people who operate them. The Census also looks at ownership, operator characteristics, production practices, income and expenditures.

Highlights from the 2017 Census include:

- One in four producers is a beginning farmer with 10 or fewer years of experience.
- Thirty-six percent of all producers are female, and 56 percent of all farms have at least one female decision maker.
- · Ninety-six percent of farms and ranches are family owned.
- Farms with Internet access rose from 69.6 percent in 2012 to 75.4 percent in 2017.

<u>NIFA</u>

The National Institute of Food and Agriculture is USDA's extramural research agency, providing funding and leadership to support research, education, and extension programs that address national agricultural priorities. NIFA primarily does this through competitive and formula grants.

The competitive grant portion is comprised of different grant programs with the largest being the Agriculture and Food Research Initiative (AFRI). Because of AFRI, grants researchers across the country were able to conduct research and find solutions to problems that face our producers. For instance:

- Researchers at the University of Illinois found that cooperating with neighboring farmers to make decisions about how to manage herbicide-resistant weeds delays the spread of herbicide resistance. Corn and soybean producers in North America lose more than \$40 billion per year to herbicide resistance.
- Clemson University researchers are using new nutrient-management drone and camera technology to save up to \$54 per acre on cotton production.
- Fellow entomologists at my Alma Mater, Auburn University, have discovered a wasp that may help soybean producers and other farmers in the Southeast rid their fields of the invasive pest known as the kudzu bug, enabling them to produce more crops and see higher yields.
- And researchers at Kansas State University are using the gene editing tool CRISPR to improve the wheat genes that control several yield component traits, such as seed size and the number of seeds per plant.

Formula grants are grants that go to land-grant universities to support them in conducting agricultural research and extension. While much of this funding is used to support research projects similar to those conducted on the competitive grant side, formula funding is also used to support the basic research and extension infrastructure needed to disseminate knowledge and provide training to individuals in a variety of ways.

One example of this is at North Carolina State University, where extension professionals and volunteers provided 13,000 educational programs to 1.9 million residents. Their efforts improved the health and well-being of 115,000 North Carolinians through food and nutrition programs, prepared more than 263,000 youth through 4-H programs, and provided \$300 million of economic impact to the state.

However, it is not just farmers and ranchers who benefit from these programs. There are millions of family caregivers and more than 80 percent of them feel they don't have the information or training they need. With a NIFA formula grant, Family & Consumer Sciences educators from Oklahoma State University Cooperative Extension have developed a comprehensive health education curriculum that includes lessons in proper nutrition, aging and finances, and prevention of elder abuse and exploitation.

An additional aspect of NIFA is to support workforce development, including the 4-H organization. In 2018, NIFA-funded programs supported 104,149 students through recruitment/ retention, curriculum development, and faculty development. Through 4-H, NIFA supports a new generation of community leaders.

Office of the Chief Scientist

In addition to serving as Deputy Under Secretary, I oversee the Office of the Chief Scientist. The Office of the Chief Scientist supports scientific prioritization and coordination across the entire Department and regularly convenes the USDA Science Council. The council facilitates cross-Departmental scientific coordination and collaboration, and ensures research supported by and scientific advice provided to the Department and its stakeholders is held to the highest standards of intellectual rigor and scientific integrity.

Recent media reports of suppression of climate change research simply could not be further from the truth. USDA has no policy, no practice, and no intent to minimize, discredit, deemphasize, or otherwise influence the excellent climate-based science of any agency or partner institution. We support the work done by our scientists in this area of our research. Tools such as USDA's Climate Hubs and the Long-Term Agroecosystem Research (LTAR) Network communicate climate research *directly* to the producers these changes most directly impact. Additionally, the National Climate Hub Coordinator compiles a quarterly report that provides information on publications, outreach events, and technical support. We are fully committed to supporting research that ensures U.S. producers will be able to adapt to a changing climate, even as we develop and advocate for a wide range of sustainable intensification practices that will help mitigate any contribution from agriculture to the broader core issues of greenhouse gas emissions.

2018 Farm Bill Implementation

REE held a special listening session on March 21, 2019 to begin the process of Farm Bill implementation, with all REE leadership present. While each of the four REE agencies and the Office of the Chief Scientist were included in the Farm Bill, the vast majority of the provisions pertain to NIFA. Thus far, NIFA has:

- Published the Request for Applications (RFA) for the Organic agriculture research and extension initiative (OREI).
- Published the updated matching requirements chart and indirect cost chart on its website and sent an update to all stakeholders.
- Published the RFA for The Beginning Farmer and Rancher Development Program (BFRDP) component of the Farming Opportunities Training and Outreach.
- Published a Federal Register Notice regarding new Non Land-Grant Colleges of Agriculture certification process. Currently, NIFA has certified 39 Non Land-Grant Colleges of Agriculture using the updated definition.
- Held multiple listening sessions and webinars for feedback on how to best implement the new 1890 Scholarship program.
- Provided guidance to 1890 universities regarding the change to carryover of funds for extension at these institutions.
- Published the RFA for the Gus Schumacher Nutrition Incentive Program (Formally known as FINI)

ERS/NIFA

In August 2018, Secretary Perdue announced that the Department would be relocating both the Economic Research Service (ERS) and the National Institute for Food and Agriculture (NIFA) outside of the National Capital Region. We believe this decision will improve USDA's future ability to attract and consistently retain highly qualified staff with training and interests in agriculture from numerous land-grant universities to complement the current talented staff, to place these important USDA resources closer to many of our stakeholders and to benefit the American taxpayer. Following a rigorous site selection process, on June 13, 2019, the Secretary announced the final selection of the Kansas City Region as the new home for these agencies. A short driving distance from multiple land-grant and research universities, Kansas City is a vibrant urban center in the heartland of America and a growing agriculture hub. It is also already home to a considerable Federal workforce, including a significant presence of USDA employees and the Kansas City 'Ag Bank' Federal Reserve. Potential savings will allow more funding for research of critical needs like rural prosperity and agricultural competitiveness, and for programs and employees to be retained in the long run, especially in the face of tightening budgets.

As a result of this move, no ERS or NIFA employee will be involuntarily separated. Every employee who wants to continue working in their position will have an opportunity to do so, although that will mean moving to a new location for most. Employees will be offered relocation assistance and will receive the same base pay as before in tandem with the locality pay for the new location.

The work of NIFA and ERS is essential, and we know that our employees are our most valuable asset. ERS and NIFA leadership, under the direction of the REE Mission Area, are working diligently to implement this transition efficiently and with minimal disruption to our employees and mission critical work.

In conclusion, thank you for allowing me the opportunity to highlight some of the fantastic research being done in the Research, Education, & Economics mission area, provide an update on the status of Farm Bill Implementation as well as address some specific topics of interest. Thank you for your continued support of this vital aspect of the services USDA provides in our quest to "Do Right and Feed Everyone." I look forward to answering your questions and I thank you for the unwavering bipartisan support that this Committee has always shown for Agriculture and Agricultural research and innovation.

DOCUMENTS SUBMITTED FOR THE RECORD

JULY 18, 2019

Agricultural & Applied Economics Association 555 East Wells Street, Suite 1100 Milwaukee, WI 53202 Phone: (414) 918-3190

July 17, 2019

Dear Chairman Roberts and Ranking Member Stabenow:

The AAEA appreciates that you are taking the time to discuss the 2018 Farm Bill Research title at today's hearing. We deeply appreciate your support of the integrity of the agricultural economic statistical investments. Indeed, we as a discipline wish to be of service to the nation. As such, we are committed to providing timely, accurate, and useful agricultural economic statistics, analysis, research and extension in service to U.S. agriculture.

Our members are active in public sector research, education and extension on a wide variety of issues that span the agricultural, food, and resource supply chains. Within the REE Mission Area portfolio, we would like to emphasize key programs that underpin the investments in agricultural economics.

- The National Institute of Food and Agriculture (NIFA) supports agricultural economics via the nation's premier competitive grants program, the Agricultural and Food Research Imitative broadly, but especially related to the Agriculture Economics and Rural Communities Program Area. We also value capacity funding for education, Extension, and research in colleges of agriculture.
- The Economic Research Service (ERS) provides a flow of objective, credible statistics to support the decisions of individuals, households, governments, businesses, and other organizations. The ERS is one of the U.S.' designated principal statistical agencies and we strongly find it should be subject to internal controls that maximize the objectivity, utility, and integrity of information. The structure of the ERS Office of the Administrator and four divisions
 - Market and Trade Economics Division
 - Food Economics Division
 - Resource and Rural Economics Division
 - Information Services Division

organized by sub-disciplines. This structure results in an effective and productive research unit that is recognized internationally for the quality of its research. We believe that the importance and complexity of the U.S. agricultural and food system requires the nationalscale, specialized research that the current ERS structure and location supports.

 Lastly, but not least, the USDA National Agricultural Statistics Service (NASS) conducts hundreds of surveys every year and prepares reports covering virtually every aspect of U.S. agriculture. Production and supplies of food and fiber, prices paid and received by farmers, farm labor and wages, farm finances, chemical use, and changes in the demographics of U.S. producers are only a few examples. We highly value NASS' commitment to providing timely, accurate, and useful statistics in service to U.S. agriculture. In light of the USDA's plan to relocate the first two agencies out of the National Capital Region, we remain concerned. Our concern stems from two branches of the same tree. Firstly, the nation's capital is the best place for the Economic Research Service, a principal statistical agency that provisions economic statistics and analysis for informed decision-making both at USDA and in service to you, our national legislative leadership. Our primary objective is to retain this capacity and full function. However, the accelerated timeline with which USDA is undertaking the move is already devastating the human capital inside the agency. As a result, we respectfully request that you ask the USDA to delay the relocation until a final location can be determined so that employees can make a clear decision or relocation and perhaps be incentivized to relocate to it. We hope this will accommodate retention of employees so that both agencies can maintain proper function and undertaking of their mission. The goal is to preserve the human capital and plan for a relocation that will retain the capacities of the agencies.

The AAEA would also like to work with you in the near future on critical issues facing our agricultural economy. As the agricultural and food sectors continues to evolve, we hope to adapt our NIFA based research, education, extension, and economics systems to evolve with it. We appreciate your leadership and consideration of our comments.

Best regards,

David Zilberman AAEA President

Keith Coble AAEA President Elect

Scott Swinton AAEA Past President



American Statistical Association Public Witness Testimony for the US Senate Committee on Agriculture, Nutrition and Forestry Hearing:

Agricultural Research and 2018 Farm Bill Implementation

July 16, 2019

Chair Roberts, Senator Stabenow and members of the committee, the American Statistical Association (ASA) is grateful to you for holding this hearing and for this opportunity to provide testimony. We are the oldest scientific professional association in the United States and have 18,000 members in industry, academia, and government. Founded in 1839 with a focus to help modernize the decennial census, the ASA has a long history of supporting the federal statistical agencies, which now of course include the Economic Research Service (ERS) and the National Agricultural Statistics Service as two of the designated "principal" federal statistical agencies.

In promoting the practice and profession of statistics, the ASA also has a long history of supporting statistics, the science of learning from data. Our discipline has played a fundamental role in agriculture, which has helped to improve crop yields by quantifying the effects of such factors as crop varieties, nutrients, and fertilizers. Indeed, many important statistical developments were born out of agricultural research. For example, Ronald Fisher, one of statistics' most important historical figures, developed his principles of experimental design in the context of agricultural field trials in the 1910s and 20s. Fisher invented statistical models to account for confounding factors affecting crop yields such as soil type and weather. These principles, along with new statistical methods, continue to have an important role in agricultural research, such as in precision agriculture where interventions are targeted to the needs of a crop at a specific location in a field.

Given the ASA's long history of supporting the federal statistical agencies and statistics contributing to food and agricultural research, we have repeatedly expressed profound concern

and opposition to the relocation of the ERS and National Institute of Food and Agriculture (NIFA) from their present location since the announcement last August.

The reasons for our concern and opposition are the following: (i) USDA's rushed process that also sidesteps congressional input and oversight; (ii) the detrimental impacts to the agencies and greater USDA mission area; (iii) the lack of justification for the moves and of transparency; (iv) the lack of consultation with experts and the stakeholder community; and (v) concern for the underlying motives for the moves and for the integrity of USDA science.

Despite USDA's history of careful consultation with Congress and stakeholders, USDA has rushed these moves and eschewed, ignored, or sidestepped such consultation in unilaterally deciding to relocate ERS and NIFA. We urge you as leaders of the US Senate Committee on Agriculture, Nutrition, and Forestry to tell Secretary Perdue to halt these relocations until Congress has considered the plans and given its consent in the FY20 appropriations bill.

If the moves are worth making, they are worth making through a methodical process that provides Congress the time it needs for consideration and incorporates stakeholder and expert input.

To the best of our knowledge, neither Secretary Perdue nor his staff consulted Congress or any of the USDA research community, including: (i) current or former leadership of the Research, Education and Economic (REE) mission area, ERS, or NIFA; (ii) any land-grant university representatives that have been USDA's partners in agricultural research since 1862; and (iii) USDA REE stakeholders and other research/analysis experts. While the USDA acknowledged some communications missteps regarding their initial announcement and have promised they are now listening to Congress and the research community, they have not heeded Congress's FY19 appropriations report language <u>directing USDA</u> to "include all cost estimates for the proposed move of the two agencies, as well as a detailed analysis of any research benefits of their relocation" as part of their FY20 budget justification or made changes to their initial relocations plans in a way that indicates they are taking the relocation concerns to heart. To their credit, USDA did retreat from their plans to administratively shift the ERS from its research arm to the office of the chief economist.

Secretary Perdue's June 13 announcement is a win for Kansas City but it comes at too great a cost for the nation. National policy is made in Washington, DC. It is common sense that ERS and NIFA, so vital to informing food and agriculture policy, should be located where national policy is made.

We all pay for a dismantled ERS that may never get back to its current <u>number-three ranking in</u> <u>the world for agricultural economics research</u>. Experts estimate that it will take at least five years for both agencies to get back to currently operating capacity.

The relocation disrupts the quality, breadth and timeliness of ERS' reports on topics ranging from trade and farm income to nutrition assistance and commodity projections to rural

economies and food safety. Being located outside DC also means it will be far removed from its primary audiences and collaborators, not to mention the rich talent pool so appealing to Amazon for its new headquarters. Such setbacks will affect the work of ERS in the long-run.

We will also pay for USDA's extramural research funding agency, NIFA, being dissociated from the planning and collaborations that happen in person in Washington with funding agencies for health, energy, international development, basic research and more. The interdisciplinary research NIFA coordinates with the other agencies is especially important to ensuring we keep a growing population fed and nourished on existing farmland.

In short, helping a local economy should not come at the expense of scientific research and evidence-based policymaking for food, agriculture and rural economies more broadly.

USDA has also asserted with little documentation that these moves will save taxpayers \$30 million annually. Their analysis is, in reality, a post-hoc justification for their move. As the <u>cost-benefit analysis of the Agricultural and Applied Economics association demonstrated</u>, the move will end up costing taxpayers. AAEA explains that USDA didn't include accurate rent estimates for other space in the National Capital Region or the cost of replacing the top talent leaving the agencies. Among the many other omitted considerations in the USDA cost justification are the additional costs of doing business from two locations; of leadership and staff having to travel between the two locations in addition to the locations they currently visit; of ERS and NIFA stakeholders needing to travel to Kansas City in addition to DC; and of the effects to the quality, breadth and timeliness of the agencies' work.

Beyond the discounted cost savings assertion, USDA's other justifications for the move fall short. The USDA stakeholder community has thoroughly dissected Secretary Perdue's rationale provided in the USDA <u>short press release in August</u>, which gave three main reasons: (i) "to improve USDA's ability to attract and retain highly qualified staff"; (ii) "to place these important USDA resources closer to many of its stakeholders"; and (iii) "to benefit the American taxpayers." It was asserted the realignment will "enhance the effectiveness of economic analysis at USDA." The ASA provided an especially thorough consideration of USDA's rationale and concluded the <u>"likely negative effects of the USDA plans seem far greater than any supposed problems or asserted benefits."</u>

USDA's credibility in presenting a justified and transparent case for moving ERS and NIFA was further undermined by the absence of a publicly available cost-benefit analysis and the use of misleading data. In supporting their claim that ERS suffered a staff attrition problem, USDA reported the ERS had a 4.5 percentage point greater annual average attrition rate than the rest of USDA for the past five years. It was <u>later revealed</u> the administration used attrition data that included summer interns. More accurately, the ERS annual attrition rate is less than <u>1% higher</u> than the whole of USDA for permanent employees for the last five years (FY13–FY17), according to data provided by the USDA to Sen. Pat Roberts and Sen. Debbie Stabenow. These actions

also present concerns for practicing sound evidence-based policymaking and being stewards of objective, reliable data.

USDA has been unable to show that recruitment has been an overly burdensome challenge for either agency or that any challenges will be lessened in Kansas City. Indeed, especially for ERS, recruitment is likely to be more of a challenge outside Washington, DC. The Office of Personnel Management noted last fall the challenge of recruiting economists and other science-related professionals and put in place <u>direct hire-appointing authorities</u> and a <u>new pay system</u>. Therefore, recruiting challenges will likely be greater in Kansas City, at least for economists where the expected lower pay will negate any cost-of-living gains. The Washington area has several advantages for hiring specialized professionals as noted already by Amazon's decision to place its second headquarters there. Among the advantages are the many opportunities for dual-career households. For economists specifically, the other three of the top four <u>ranked</u> <u>agricultural economics research</u> institutions in the world are all in the Washington, DC, area.

Because USDA's stated rationale doesn't come close to justifying the relocation, there is broad concern for other motives, which is part of our grave concern for the <u>integrity of USDA science</u>. Secretary Perdue's relocations of ERS and NIFA and realignment of ERS appear, at least, to disregard the work of ERS and NIFA and, at worst, as an attempt to undermine their work. The secretary's budget requests to slash ERS funding indicate a desire to undercut the work of ERS. USDA's requirement that its scientists label their journal-published work as "preliminary"—finally <u>reversed last month after an outcry</u>—also seems more an attempt to undermine USDA science than good policy. If Secretary Perdue had consulted with scientific leaders and experts before announcing his ERS and NIFA plans or had made course corrections since, perhaps we wouldn't be as concerned for USDA scientific integrity. Our concerns would also likely be lessened if there were a Senate-confirmed—with broad bipartisan support—chief scientist in place at USDA. One role of the chief scientist is to protect USDA scientific integrity.

Without a Senate-confirmed chief scientist and other checks in place for the integrity of science at USDA, we call on the US Senate to protect the integrity of USDA science and evidence-based policymaking by at least slowing down the relocation.

The opposition to Secretary Perdue's plans has been broad. The ASA is one of many groups opposing the moves. In June, <u>177 organizations signed a letter to Senate appropriators</u> urging they block the USDA moves. In March, <u>108 organizations signed a letter to House and Senate appropriators</u> urging they block the USDA moves. The chief scientists and REE undersecretaries from the previous two administrations have also actively opposed the moves, including in testimony before the House Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies and a letter to Congress that has since been signed by 79 other leaders in the land-grant university system. Former USDA officials and leaders of federal statistical agencies also voiced their concerns in October. In November, the ASA Board of Directors issued a statement of concern for the USDA Economic Research Service and on the vital and unique role of federal statistical agencies. We attach these letters.

The Honorable Richard Shelby United States Senate Chair, Committee on Appropriations Washington, DC 20510

The Honorable Patrick Leahy United States Senate Ranking Member, Committee on Appropriations Washington, DC 20510

The Honorable John Hoeven United States Senate Chair, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Washington, DC 20510

The Honorable Jeff Merkley United States Senate Ranking Member, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Washington, DC 20510

June 26, 2019

Dear Chairmen Shelby and Hoeven and Ranking Members Leahy and Merkley:

We, the undersigned stakeholders, are committed to scientific integrity and to growing public funding of food and agricultural research to address pressing global, domestic, and local challenges. We are grateful for the increases you have been able to make for research over the past several years in the agricultural appropriations bill, and we urge you to keep moving forward to revitalize the research budget. We are very concerned, however, that this progress, and indeed the integrity of USDA science, is being undermined by recent administrative decisions.

In light of our commitments to scientific integrity and to enhancing agricultural research funding, commitments we share with you, we urge you to immediately take all steps necessary to support agricultural research by rejecting funding cuts and rejecting the expenditure of funds to relocate the United States Department of Agriculture's (USDA's) National Institute of Food and Agriculture (NIFA) and Economic Research Service (ERS) outside the hub of science and statistical agencies located in the National Capital Region (NCR).

As stakeholders, we know firsthand the importance of scientific research, education, extension, economics, and statistics to our nation's trillion dollar plus agricultural economy. The investments made through USDA's Research, Education and Economics (REE) mission area are essential for American trade, agricultural production, human health and nutrition, innovation, and to complement our nation's broader basic research and statistical investments. As partners who leverage public dollars to achieve solutions to local and global agricultural problems, we do not support severing beneficial ties across science and statistical institutions. We also believe that

relocating these agencies with no clear multi-stakeholder engagement plan will have severe short- and long-term effects on investment efficiency and result in unnecessary transaction costs that will undermine the agencies' viability into the future.

Relocating NIFA and ERS will have a significant negative impact on the future role and strength of America's vaunted agricultural research and extension enterprise. The action jeopardizes the efficacy of state, local, private, and non-governmental sector funding for agricultural research and extension, creating a potential economic loss of more than \$26 billion,^{i,ii} and impacting tens of thousands of direct and indirect jobs in every district of every state. Keeping NIFA in NCR is essential for its interactions with the other major research agencies in Washington. Moving it away sends a clear message that agricultural research is not as important as research funded by the National Science Foundation, Department of Energy, the National Institutes of Health, and numerous other major research agencies. Simply put, these actions would needlessly unravel a strong system that provides innumerous benefits to our nation's productivity, profitability, and rural economy and human health.

We note, with alarm, that Congress was not given a cost benefit justification prior to the announcement in August 2018. Additionally, Congress has still not been given a cost benefit analysis that is informed by OMB circular guidance, a detailed budget plan, the Office of the Inspector General report, or a multi-stakeholder plan to provide input on the future of agricultural research and statistics.

We therefore respectfully request that you include bill language stating that no funding be used for relocation or reorganization of ERS and NIFA in FY20. We further urge you to withhold approval of any and all reprogramming requests. We believe a robust congressional response is necessary to uphold the future efficacy of public agricultural research investments.

Sincerely,

Aaniiih Nakoda College Academy of Nutrition and Dietetics Acadia Foods Agricultural & Applied Economics Association Agriculture and Land Based Training Association Alabama Sustainable Agriculture Network Alamosa Farmers' Market American Association for Public Opinion Research American Association for the Advancement of Science American Association of Family & Consumer Sciences American Dairy Science Association American Federation of Government Employees American Heart Association American Indian Higher Education Consortium American Indian Mothers Inc. American Institute of Biological Sciences American Malting Barley Association American Public Health Association American Samoa Community College, Agriculture, Community & Natural Resources Division American Society for Horticultural Science American Statistical Association Antibiotic Resistance Action Center, GW Milken Institute School of Public Health Appetite for Change Arkansas Land and Community Development Association of American Veterinary Medical Colleges Association of Population Centers Association of State Public Health Nutritionists California Institute for Rural Studies California Polytechnic State University, College of Agriculture, Food and Environmental Sciences Carolina Farm Stewardship Association CASA del Llano, Inc. Center for Agricultural Development and Entrepreneurship Center for Foodborne Illness Research & Prevention Center for Rural Affairs Center for Science in the Public Interest Certified Naturally Grown Child Care Aware of America Clif Bar & Company Coalition on Human Needs Coastal Enterprises, Inc. Colorado Blueprint to End Hunger Colorado Springs Food Rescue Community Farm Alliance Consortium of Social Science Associations Consumer Federation of America **Cooperative Development Institute** Cornell University, College of Agriculture and Life Sciences Council of Professional Associations on Federal Statistics Dawson Resource Council **Decision Demographics** Defenders of Wildlife Detroit Food Policy Council Double Up Food Bucks Garfield County Entomological Society of America Fair Food Network Family Farm Defenders Farm Aid Farm and Ranch Freedom Alliance Farm to Institution New England Farm Women United Farmworker Association of Florida Federation of Animal Science Societies First Focus Campaign for Children Food & Water Watch

Food Animal Concerns Trust Food Policy Action FoodCorps Friends of the Earth Friends of the Earth Good Food for All Groundwork Center for Resilient Communities HEAL (Health, Environment, Agriculture, Labor) Food Alliance Hempstead Project Heart Holy Moly Farm Hunt or Gather Ilisagvik College Institute for Agriculture and Trade Policy Jefferson County Food Policy Council Johns Hopkins Center for a Livable Future Kansas Black Farmers Association, INC La Semilla Food Center Land for Good Little Big Horn College LiveWell Colorado Maine Farmland Trust Maine Organic Farmers and Gardeners Association Michael Fields Agricultural Institute Michigan Food and Farming Systems Michigan State University, AgBioResearch Michigan State University, College of Agriculture & Natural Resources Missouri Coalition for the Environment Montana Organic Association Montana State University National Association of University Fisheries and Wildlife Programs National Barley Improvement Committee National Family Farm Coalition National Farm to School Network National Farmers Union National Hmong American Farmers, Inc. National Latino Farmers and Ranchers Trade Association National Latinos Farmers and Ranchers National Organic Coalition National Sustainable Agriculture Coalition National WIC Association National Young Farmers Coalition Natural Resources Defense Council Nebraska Indian Community College NETWORK Lobby for Catholic Social Justice New Orleans Food Policy Advisory Committee North American Regional Science Council

North Carolina Association of Black Lawyers Land Loss Prevention Project Northeast Organic Farming Association (NOFA) Northeast Organic Farming Association of Massachusetts (NOFA-MA) Northeast Organic Farming Association of New York (NOFA-NY) Northeast Organic Farming Association of Vermont (NOFA-VT) Northeast Organic Farming Association-Interstate Council Northwest Forest Worker Center Northwest Indian College Ohio Ecological Food and Farm Association Oregon State University, Center for Small Farms & Community Food Systems Oregon State University, College of Agricultural Sciences Oregon Tilth Organic Farming Research Foundation Organic Seed Alliance PCC Community Markets Peace Roots Alliance Penn State University, College of Agricultural Sciences Pesticide Action Network **Pinnacle** Prevention Poetry X Hunger Population Association of America Renewing the Countryside Restoration Urban Farm of New England Rhode Island Food Policy Council Rhode Island Healthy Schools Coalition Roots of Change Rural Advancement Foundation International-USA **Rural Coalition** Rural Sociological Society Saginaw Chippewa Tribal College San Luis Valley Local Foods Coalition Society for Nutrition Education and Behavior South Carolina State University South Dakota State University Southeast Michigan Census Council Southern Regional Science Association Southwest Institute for Resilience Strategic Consulting Services Sustainable Food Center SustainFloyd The American Phytopathological Society The Food Trust The Ohio State University, College of Food, Agricultural, and Environmental Sciences Union of Concerned Scientists United States Breastfeeding Committee University of California, Agriculture and Natural Resources

University of California, Berkeley University of California, Davis University of California, Merced University of California, Riverside University of California, Santa Cruz University of Colorado, Colorado Springs - Sustainability, Wellness and Learning Program University of Maryland University of Rhode Island, College of the Environment and Life Sciences University of Tennessee, Institute of Agriculture University of Vermont, College of Agriculture and Life Sciences US Dairy Forage Research Center Stakeholder Advisory Committee Utahns Against Hunger Virginia Association for Biological Farming Washington State Department of Health Washington State University World Perspectives, Inc. Xerces Society for Invertebrate Conservation

¹ OECD (2016), *Innovation, Agricultural Productivity and Sustainability in the United States*, OECD Food and Agricultural Reviews, OECD Publishing, Paris, <u>https://doi.org/10.1787/9789264264120-cn</u>. ^{||} Alston, J.M. Andersen, J. James, and P.G. Pardey (2011), "The economic returns to US public agricultural research", American Journal of Agricultural Economics Vol. 93, pp. 1257–1277. <u>http://ajac.oxfordjournals.org/content/93/5/1257.abstract</u>.

The Honorable Richard Shelby United States Senate Chair, Committee on Appropriations Washington, DC 20510

The Honorable Patrick Leahy United States Senate. Ranking Member, Committee on Appropriations Washington, DC 20510

The Honorable John Hoeven United States Senate Chair, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Washington, DC 20510

The Honorable Jeff Merkley United States Senate Ranking Member, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Washington, DC 20510

June 26, 2019

Dear Chairmen Shelby and Hoeven and Ranking Members Leahy and Merkley:

We, the undersigned stakeholders, are committed to scientific integrity and to growing public funding of food and agricultural research to address pressing global, domestic, and local challenges. We are grateful for the increases you have been able to make for research over the past several years in the agricultural appropriations bill, and we urge you to keep moving forward to revitalize the research budget. We are very concerned, however, that this progress, and indeed the integrity of USDA science, is being undermined by recent administrative decisions.

In light of our commitments to scientific integrity and to enhancing agricultural research funding, commitments we share with you, we urge you to immediately take all steps necessary to support agricultural research by rejecting funding cuts and rejecting the expenditure of funds to relocate the United States Department of Agriculture's (USDA's) National Institute of Food and Agriculture (NIFA) and Economic Research Service (ERS) outside the hub of science and statistical agencies located in the National Capital Region (NCR).

As stakeholders, we know firsthand the importance of scientific research, education, extension, economics, and statistics to our nation's trillion dollar plus agricultural economy. The investments made through USDA's Research, Education and Economics (REE) mission area are essential for American trade, agricultural production, human health and nutrition, innovation, and to complement our nation's broader basic research and statistical investments. As partners who leverage public dollars to achieve solutions to local and global agricultural problems, we do not support severing beneficial ties across science and statistical institutions. We also believe that

relocating these agencies with no clear multi-stakeholder engagement plan will have severe short- and long-term effects on investment efficiency and result in unnecessary transaction costs that will undermine the agencies' viability into the future.

Relocating NIFA and ERS will have a significant negative impact on the future role and strength of America's vaunted agricultural research and extension enterprise. The action jeopardizes the efficacy of state, local, private, and non-governmental sector funding for agricultural research and extension, creating a potential economic loss of more than \$26 billion,^{i,ii} and impacting tens of thousands of direct and indirect jobs in every district of every state. Keeping NIFA in NCR is essential for its interactions with the other major research agencies in Washington. Moving it away sends a clear message that agricultural research is not as important as research funded by the National Science Foundation, Department of Energy, the National Institutes of Health, and numerous other major research agencies. Simply put, these actions would needlessly unravel a strong system that provides innumerous benefits to our nation's productivity, profitability, and rural economy and human health.

We note, with alarm, that Congress was not given a cost benefit justification prior to the announcement in August 2018. Additionally, Congress has still not been given a cost benefit analysis that is informed by OMB circular guidance, a detailed budget plan, the Office of the Inspector General report, or a multi-stakeholder plan to provide input on the future of agricultural research and statistics.

We therefore respectfully request that you include bill language stating that no funding be used for relocation or reorganization of ERS and NIFA in FY20. We further urge you to withhold approval of any and all reprogramming requests. We believe a robust congressional response is necessary to uphold the future efficacy of public agricultural research investments.

Sincerely,

Aaniiih Nakoda College Academy of Nutrition and Dietetics Acadia Foods Agricultural & Applied Economics Association Agriculture and Land Based Training Association Alabama Sustainable Agriculture Network Alamosa Farmers' Market American Association for Public Opinion Research American Association for the Advancement of Science American Association of Family & Consumer Sciences American Dairy Science Association American Federation of Government Employees American Heart Association American Indian Higher Education Consortium American Indian Mothers Inc. American Institute of Biological Sciences American Malting Barley Association American Public Health Association American Samoa Community College, Agriculture, Community & Natural Resources Division

American Society for Horticultural Science American Statistical Association Antibiotic Resistance Action Center, GW Milken Institute School of Public Health Appetite for Change Arkansas Land and Community Development Association of American Veterinary Medical Colleges Association of Population Centers Association of State Public Health Nutritionists California Institute for Rural Studies California Polytechnic State University, College of Agriculture, Food and Environmental Sciences Carolina Farm Stewardship Association CASA del Llano, Inc. Center for Agricultural Development and Entrepreneurship Center for Foodborne Illness Research & Prevention Center for Rural Affairs Center for Science in the Public Interest Certified Naturally Grown Child Care Aware of America Clif Bar & Company Coalition on Human Needs Coastal Enterprises, Inc. Colorado Blueprint to End Hunger Colorado Springs Food Rescue Community Farm Alliance Consortium of Social Science Associations Consumer Federation of America Cooperative Development Institute Cornell University, College of Agriculture and Life Sciences Council of Professional Associations on Federal Statistics Dawson Resource Council Decision Demographics Defenders of Wildlife Detroit Food Policy Council Double Up Food Bucks Garfield County Entomological Society of America Fair Food Network Family Farm Defenders Farm Aid Farm and Ranch Freedom Alliance Farm to Institution New England Farm Women United Farmworker Association of Florida Federation of Animal Science Societies First Focus Campaign for Children Food & Water Watch

Food Animal Concerns Trust Food Policy Action FoodCorps Friends of the Earth Friends of the Earth Good Food for All Groundwork Center for Resilient Communities HEAL (Health, Environment, Agriculture, Labor) Food Alliance Hempstead Project Heart Holy Moly Farm Hunt or Gather Ilisagvik College Institute for Agriculture and Trade Policy Jefferson County Food Policy Council Johns Hopkins Center for a Livable Future Kansas Black Farmers Association, INC La Semilla Food Center Land for Good Little Big Horn College LiveWell Colorado Maine Farmland Trust Maine Organic Farmers and Gardeners Association Michael Fields Agricultural Institute Michigan Food and Farming Systems Michigan State University, AgBioResearch Michigan State University, College of Agriculture & Natural Resources Missouri Coalition for the Environment Montana Organic Association Montana State University National Association of University Fisheries and Wildlife Programs National Barley Improvement Committee National Family Farm Coalition National Farm to School Network National Farmers Union National Hmong American Farmers, Inc. National Latino Farmers and Ranchers Trade Association National Latinos Farmers and Ranchers National Organic Coalition National Sustainable Agriculture Coalition National WIC Association National Young Farmers Coalition Natural Resources Defense Council Nebraska Indian Community College NETWORK Lobby for Catholic Social Justice New Orleans Food Policy Advisory Committee North American Regional Science Council

North Carolina Association of Black Lawyers Land Loss Prevention Project Northeast Organic Farming Association (NOFA) Northeast Organic Farming Association of Massachusetts (NOFA-MA) Northeast Organic Farming Association of New York (NOFA-NY) Northeast Organic Farming Association of Vermont (NOFA-VT) Northeast Organic Farming Association-Interstate Council Northwest Forest Worker Center Northwest Indian College Ohio Ecological Food and Farm Association Oregon State University, Center for Small Farms & Community Food Systems Oregon State University, College of Agricultural Sciences Oregon Tilth Organic Farming Research Foundation Organic Seed Alliance PCC Community Markets Peace Roots Alliance Penn State University, College of Agricultural Sciences Pesticide Action Network **Pinnacle Prevention** Poetry X Hunger Population Association of America Renewing the Countryside Restoration Urban Farm of New England Rhode Island Food Policy Council Rhode Island Healthy Schools Coalition Roots of Change Rural Advancement Foundation International-USA **Rural Coalition** Rural Sociological Society Saginaw Chippewa Tribal College San Luis Valley Local Foods Coalition Society for Nutrition Education and Behavior South Carolina State University South Dakota State University Southeast Michigan Census Council Southern Regional Science Association Southwest Institute for Resilience Strategic Consulting Services Sustainable Food Center SustainFloyd The American Phytopathological Society The Food Trust The Ohio State University, College of Food, Agricultural, and Environmental Sciences Union of Concerned Scientists United States Breastfeeding Committee University of California, Agriculture and Natural Resources

University of California, Berkeley University of California, Davis University of California, Merced University of California, Riverside University of California, Santa Cruz University of Colorado, Colorado Springs - Sustainability, Wellness and Learning Program University of Maryland University of Rhode Island, College of the Environment and Life Sciences University of Tennessee, Institute of Agriculture University of Vermont, College of Agriculture and Life Sciences US Dairy Forage Research Center Stakeholder Advisory Committee Utahns Against Hunger Virginia Association for Biological Farming Washington State Department of Health Washington State University World Perspectives, Inc. Xerces Society for Invertebrate Conservation

 ¹ OECD (2016), Innovation, Agricultural Productivity and Sustainability in the United States, OECD Food and Agricultural Reviews, OECD Publishing, Paris, <u>https://doi.org/10.1787/9789264264120-en</u>.
 ¹¹ Alston, J.M. Andersen, J. James, and P.G. Pardey (2011), "The economic returns to US public agricultural research", American Journal of Agricultural Economics Vol. 93, pp. 1257–1277. <u>http://ajae.oxfordjournals.org/content/93/5/1257.abstraci.</u>

December 14, 2018¹

The Honorable K. Michael Conaway Chair, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Pat Roberts Chair, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510 The Honorable Collin Peterson Ranking Member, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Debbie Stabenow Ranking Member, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510

Dear Chairs Roberts and Conaway and Ranking Members Stabenow and Peterson,

We write to express our profound concern for USDA's plan to relocate the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA) outside of Washington, DC and to realign ERS out of the USDA Research, Education, and Economics (REE) mission area. We believe the restructuring will undermine our food and agriculture enterprise by disrupting and hampering the agencies' vital work in support of it—through research, analyses, and statistics. We are also deeply troubled such a major upheaval of the USDA research arm would be carried out with such haste and without the input and prior consultation of the USDA research stakeholders.

In the best interests of American agricultural, food, and rural sectors, we respectfully request that you intervene to stop the restructuring of REE at least until there has been a comprehensive independent study and full consultation with the stakeholder community.

We write from the perspective of current and former university agricultural administration leaders and former USDA chief scientists. Our positions in land grant universities (LGUs) as well as our broader experience and leadership in food and agriculture provide us a unique and important perspective on the US food and agriculture enterprise. LGUs and the broader academic network work hand in hand with the USDA to identify priorities, carry out research and analysis, and disseminate results to the broader community. An integral part of USDA's support for our food and agriculture enterprise along with ERS, NIFA takes an integrated approach to support programs to find innovative solutions to the most pressing local and global problems to ensure the long-term viability of agriculture.² The mission of ERS complements that of NIFA by anticipating "trends and emerging issues in agriculture, food, the environment, and rural America

 ¹ This letter was originally sent November 27 with 21 signers. It is being updated as additional signers are added. The current count is 81. Note also an <u>identical version of this letter has been sent to appropriators</u>.
 ² <u>https://nifa.usda.gov/about-nifa</u>

and to conduct high-quality, objective economic research to inform and enhance public and private decision making."³

Through the partnership of LGUs, USDA, other federal research funding agencies, and the private sector, agricultural research has increased many-fold the productivity of our farms and farmers, despite the continual challenges of disease, pests, extreme weather, and invasive species. The progress and accomplishment are by design, through the leadership and vision of many in the USDA, LGUs, and larger private-sector community over the past many decades.

The engagement of the broader scientific funding research community—the National Science Foundation (NSF), the USDA Agricultural Research Service (ARS), the National institutes of Health (NIH), and many more—has also been integral to the impressive progress. For example, NIFA partnered with NSF, NIH, and the Department of Energy to launch the Plant Genome Initiative. This initiative has sequenced the genomes of economically important plants and led to improved bean, potato, tomato, wheat and barley cultivars while at the same time training thousands of undergraduate and graduate students who will be the next generation plant scientists and breeders.

To further exemplify the advances that have come from multi-agency involvement, consider the Porcine Reproductive and Respiratory Syndrome (PRRS) virus, which was first detected in the U.S. in 1987 and that costs North American farmers more than \$660 million annually. A collaborative effort between land-grant universities and the private sector supported by NIFA and NSF has resulted in the breeding of pigs that are not harmed by the disease. Another example is a university-ARS collaboration supported by USDA-ARS, NIFA, and other federal funding agencies to create soybean oil with no trans fats.

The advances that have occurred because of the close collaboration of numerous research funding agencies have been greatly facilitated by their proximity. This is because of the close collaboration that must occur between the agencies, researchers, and university leaders like ourselves. University agricultural leaders and researchers make regular visits to Washington, DC to meet with USDA offices, research funding agencies, our congressional delegations, and other farm and research organizations based or meeting in Washington. Locating NIFA outside the Washington, DC area will hamper our work and the effective integration of NIFA with other research agencies and stakeholders.

Such integrative science is essential for meeting the challenges of the next 50 years. For example, NIFA is currently partnering with NSF on an Initiative at the Nexus of Food, Energy and Water Systems to significantly advance our understanding of how these three interrelated systems interact and function with the objective of increasing their resilience and ensuring long-term sustainability.

We are also concerned the relocation of NIFA will undermine USDA funding of research, which has stagnated for the last 40 years. Since 1976, it has lost two thirds of its purchasing power.⁴

³ https://www.ers.usda.gov/about-ers/

⁴ https://www.aaas.org/sites/default/files/s3fs-public/TotRes%253B.xlsx

With NIFA being relocated outside of Washington, we worry it will become less relevant and therefore more susceptible to further degradation of its budget.

In addition, the relocations are likely to weaken the coordination of NIFA and ERS with their sister REE agencies, the ARS and the National Agricultural Statistics Service. This would set back the work of Congress over several farm bills and appropriations bills to ensure more coordination and integration between the agencies. Equally important, it will remove ERS and NIFA from the important role of bringing science to bear on the work of the USDA frontline program agencies, all of which will also remain in Washington. Separating the agencies between a new location and Washington, DC, with leadership and some staff of each agency being kept close to USDA headquarters, could also undermine the respective internal operations and coordination.

For the ERS specifically, we believe the relocation will set back the agency for 5-10 years and undermine its independence as a federal statistical agency. In a major relocation, there will be substantial staff loss because of either an unwillingness or other preventing circumstances to move. Given the ERS's highly specialized work, it will be a long process to replace the loss of experience and expertise. We also believe ERS's work is served well in DC where its many of its primary audiences, partners, and collaborators are located.

ERS also thrives both in its independence and its work in REE thanks to the leadership of the USDA chief scientist and the synergies it enjoys with the other REE agencies. Congress was wise in placing ERS within REE, and it would be most unfortunate to allow that deliberative choice to be undone by administrative fiat.

Given the decades of planning and adjustments to optimize the work of REE, we are troubled the USDA seeks to dismantle the research arm in such a major way in a matter of months without a confirmed chief scientist, consultation of current or former REE, NIFA, and ERS leaders, prior engagement and input of the greater research community, and other good-government procedures. Indeed, there seems to be little evidence of any planning or study before the announcement to make the relocation.

Making changes in a successful enterprise should be based on two criteria: (i) to fix a real problem that jeopardizes future success; or (ii) to ensure further improvements for the system. The ERS-NIFA moves satisfy neither. In addition, stakeholders have been waiting for a cost-benefit analysis of the proposal to be presented and an explanation of how this move relates to REE's existing long-term strategic plan. For these reasons, it is premature to allow any final action to be taken in the absence of basic good government practice.

In closing, as leaders in the USDA agricultural research partnership committee, we have deep concerns about USDA's upheaval of its research mission area without broader consultation. The Research, Education, and Economics mission reached its current make-up following years of planning, adjustments, and optimization informed by consultation, study, and public comment. We see no justification that it should be restructured on such a large scale on USDA's short timeline and without proper study.

We urge you to intervene to ensure the integrity of our food and agriculture enterprise over the next 50 years.

Sincerely,

ale & Buchanon

Gale Buchanan

Former USDA Chief Scientist and Under Secretary of Agriculture for Research, Education & Economics; Dean and Director Emeritus, University of Georgia, College of Agricultural and **Environmental Sciences**

Tharing Z Watch

Catherine E. Woteki

Former USDA Chief Scientist and Under Secretary of Agriculture for Research, Education & Economics

Rope n. Beachy

Roger Beachy Former USDA Chief Scientist and Director of National Institute of Food and Agriculture

Som

Sonny Ramaswamy Former Director of National Institute of Food and Agriculture

Tchal

David Ackerly Dean, College of Natural Resources, University of California, Berkeley

19 Andreadic

Theodore G. Andreadis Director, The Connecticut Agricultural Experiment Station

Aufa'i Apulu Ropeti Areta

Agriculture, Community and Natural Resources Division (Land Grant Program), American Samoa Community College

anil J. ap

Dan Arp Dean Emeritus, College of Agricultural Sciences, Oregon State University

Ker the '.≰

Ken Blemings Interim Dean, Davis College of Agriculture, Natural Resources, and Design, West Virginia University

Kathryn J. Boor Robert P. Lynch Dean, College of Agriculture & Life Sciences, Cornell University

Dyer

Charles Boyer Vice President for Agriculture, Dean, and Director, Montana State University College of Agriculture

Douglas D. Buhler Director, MSU AgBioResearch & Assistant Vice President for Research and Innovation, Michigan State University

Daniel Bush Vice Provost for Faculty Affairs, Colorado State University

/Neville Clarke/ Neville Clarke

Director Emeritus, Texas Agricultural Experiment Director; Former Executive Director, Southern Association of State Agricultural Experiment Station Directors; Chair, Experiment Station Committee on Organization and Policy (ESCOP)

Mark // Corlican

Mark J. Cochran Vice President for Agriculture, University of Arkansas System

NB Comenford

Dean and Director for Research and Cooperative Extension, College of Tropical Agriculture and Human Resources, University of Hawai'i at Mānoa

Taney M. Cax

Nancy M. Cox Dean, College of Agriculture, Food and Environment, University of Kentucky

Gerand C. Dilong

Gerard D'Souza Dean and Director of Land Grant Programs, Prairie View A&M University

2

Helene Dillard Dean and Professor, College of Agricultural and Environmental Sciences, University of California, Davis

Volley

Dan Dooley Former Vice President, Agriculture and Natural Resources; Former Senior Vice President for External Relations, University of California

/Robert Easter/

Robert Easter

President Emeritus; Dean Emeritus College of Agricultural, Consumer and Environmental Sciences, University of Illinois

Camer Jaur mos

Cameron Faustman Interim Dean, College of Agriculture, Health and Natural Resources, University of Connecticut

John D. Ploros

John D. Floros President, New Mexico State University

Robert W Godfrey

Robert Godfrey Director, Agricultural Experiment Station, University of the Virgin Islands

un M

Robert M. Goodman Executive Dean, School of Biological and Environmental Sciences, Rutgers, The State University of New Jersey

Olan Grant

Alan L. Grant Dean, College of Agriculture and Life Sciences, Virginia Tech

Jim Hanson Digitally signed by Jim Hanson Date: 2019.02.19 10:30:42 -05'00'

Jim Hanson Associate Dean and Associate Director, University of Maryland Extension

Condel I Hendrick

Ronald Hendrick Dean, College of Agriculture and Natural Resources, Michigan State University

a configuration of the formation of the second s Bret W. Hess

Interim Dean, College of Agriculture and Natural Resources; Director, Wyoming Agricultural Experiment Station, University of Wyoming

Wat Field

Walter A. Hill Vice Provost, Dean, College of Agriculture, Environment and Nutrition Sciences, Research Director and Extension Administrator, Tuskegee University

la Kuniston Glenda Humiston

Glenda Humiston Vice President, Agriculture and Natural Resources, Director of the Agricultural Experiment Station, Director of Cooperative Extension, University of California

xey Jelesso J

Jody Jellison Director, UMass Extension; Director, Massachusetts Agricultural Experiment Station; Assistant Vice Chancellor, Agricultural Research and Engagement, University of Massachusetts

7

Moses T. Kairo, Dean, School of Agricultural and Natural Sciences, University of Maryland Eastern Shore

Govind Kannan Former Dean, College of Agriculture, Family Sciences and Technology, Fort Valley State University

John Killefer, South Dakota Corn Endowed Dean, College of Agriculture, Food & Environmental Sciences, South Dakota State University

John Kirby Dean, College of the Environment and Life Sciences and Director, Agricultural Experiment Station and Cooperative Extension, University of Rhode Island

Cathann A. Kress Vice President for Agricultural Administration and Dean, College of Food, Agricultural, and Environmental Sciences, The Ohio State University

Mithul D. Laimone

Michael D. Lairmore DVM, PhD Dean and Distinguished Professor, School of Veterinary Medicine, University of California, Davis

Dary Fund

Daryl Lund Former Dean of Agricultural and Natural Resources, Rutgers University & Cornell University; Former Executive Director of the North Central Regional Association of State Agricultural Experiment Stations

Michael V. Martin President, Florida Gulf Coast University

Ø Steehuth

Ali Mitchell Executive Director, Association of Northeast Extension Directors

Motelhame 10

Ron C. Mittelhammer Dean Emeritus, College of Agricultural, Human and Natural Resource Services, Washington State University

Citty D. Moren

Bobby Moser Former Vice President, College of Food, Agricultural and Environmental Sciences, The Ohio State University

Sabine O'Hara

Dean, of CAUSES and Land-grant Programs, College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES), University of the District of Columbia

Taskon Farge

Jack Payne Senior Vice President, Institute of Food and Agricultural Sciences, University of Florida

T.L. Payne

Thomas L. Payne Vice Chancellor and Dean Emeritus, College of Agriculture, Food and Natural Resources, University of Missouri

Ġ

William A. Payne Dean, College of Agriculture, Biotechnology and Natural Resources, University of Nevada Reno

Barbara & Petty

Barbara Petty Associate Dean and Director of Extension, University of Idaho

Un her

Chandra Reddy Dean and Director of Research/Administrator of Extension, College of Agriculture, Human, and Natural Sciences, Tennessee State University

le P. Por J

Chuck Ross Director, University of Vermont Extension

Apr 4

Alan Sams Reub Long Dean, College of Agricultural Sciences, and Director, Oregon Agricultural Experiment Station, Oregon State University

G. Sander

Eugene G. Sander President Emeritus, Former Vice President and Dean for Agriculture and Life Sciences, University of Arizona

E. Sud Selbott J.

Fred Schlutt Vice Provost for Extension and Outreach and Director of Cooperative Extension Service, University of Alaska Fairbanks

. J. Shult

Milo Shult Vice President for Agriculture, Emeritus, University of Arkansas

Robert W. Taylor Dean, College of Agriculture and Food Sciences, Florida Agricultural and Mechanical University

Andrew J. Thulin Dean, College of Agriculture, Food, and Environmental Sciences, California Polytechnic State University

I Arman C Vogelimm

Thomas Vogelmann Dean, College of Agriculture and Life Sciences, University of Vermont

Chris B. Wron

Christopher B. Watkins Associate Dean, College of Agriculture & Life Sciences and College of Human Ecology and Director, Cornell Cooperative Extension, Cornell University

Ling P Wooten

Lynn Wooten Dean, The Charles H. Dyson School of Applied Economics and Management, Cornell University

fm what

Jon Wraith Dean, College of Life Sciences and Agriculture and Director, NH Agricultural Experiment Station, University of New Hampshire

André-Denis Girard Wright Dean, College of Agricultural, Human, and Natural Resource Sciences, Washington State University

Delegates to the Council for Agricultural Research, Extension, and Teaching (CARET)

Nathan Andre, Ohio

Línda Ameroso Linda Ameroso, New York

C.S. d

James J. Bittner, New York

James G Brown, Jr., Tennessee

Jusan M. Crowell Susan Crowell, Ohio

William & Cutto

William J. Cutts, New Jersey

~~~

Jeremy Drew, Nevada

KudonfluglesErana\_

Kristin Hughes Evans, Virginia

Blatting R. Fields Beatrix Fields, District of Columbia

Jang & Johner

Larry Holmes, Virginia

Terry McChure, Ohio

Mushal a M\_\_\_\_\_ Michael A. Mellano, California

13

Roberta A. Moseley, New Jersey

Madeline Mallinger Madeline Mellinger, Florida

firmeth of Miciuria

Kenneth Nicewicz, Massachusetts

Caird Rexroad, West Virginia (also former Associate Administrator, ARS, USDA)

Didden F. Strates

Christopher M. Streeter, New Hampshire

/Eric Tanouye/ Eric Tanouye, Hawaii

/Oscar Taylor/ Oscar Taylor, Texas

be tophith

Jake Tibbitts, Nevada

The Honorable Nita Lowey Chair, Appropriations Committee United States House of Representatives Washington, DC 20515

The Honorable Kay Granger Ranking Member, Appropriations Committee United States House of Representatives Washington, DC 20515 The Honorable Richard Shelby Chair, Appropriations Committee United States Senate Washington, DC 20510

The Honorable Patrick Leahy Ranking Member, Appropriations Committee United States Senate Washington, DC 20510

Dear Chairs Shelby and Lowey and Ranking Members Leahy and Granger,

As strong supporters of the U.S. Department of Agriculture (USDA) research mission area, we write to express serious concern regarding the USDA's proposed relocation of the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA) and the reorganization of ERS. In our view, these proposals are likely to result in a major negative impact on U.S. farmers, ranchers, consumers, and researchers.

As you prepare FY 2020 agriculture appropriations legislation, we respectfully request that you include bill language stating no funding be used for relocation or reorganization of ERS and that no funding be used for the NIFA relocation outside the National Capital Region. We also request that you deny any FY 2019 reprogramming requests from USDA for them to continue to implement relocation.

Our shared fundamental belief is that the proposed relocation and reorganization will undermine the quality and breadth of the work these agencies support and perform – work that is vital to informing and supporting US agriculture, food security, and rural development. The rationale provided by the USDA for the relocation also fails to identify problems substantive enough to justify such a disruption of ERS's and NIFA's operations, and jeopardizes the much needed growth in funding for both agencies' programs.

Equally concerning is that USDA made their decision last summer without stakeholder or congressional input. How USDA fosters, supports, and guides US agriculture and food research and analysis has evolved through the decades in close consultation with the broader community. Secretary Perdue's unilateral decision goes against decades of improvements and collaboration and contradicts the Department's stated goal of better serving stakeholders.

<sup>&</sup>lt;sup>1</sup> This letter was originally sent on March 25 with 101 signers. The <u>letter is being kept open</u> for additional signers, with the total number now 108.

The USDA proposal has the potential to reverse the significant progress your subcommittees have made in recent years to revitalize agricultural research, education, extension, and economics. Consequently, we believe that preventing the proposal from moving forward is in the best interest of American food and agricultural research, and the millions who depend on it.

Thank you in advance for your consideration of this request. We would welcome the opportunity to further discuss these issues with you.

Academy of Nutrition and Dietetics Agricultural & Applied Economics Association Alianza Nacional de Campesinas American Association for Public Opinion Research American Dairy Science Association American Heart Association American Indian Mothers Inc American Malting Barley Association American Phytopathological Society American Public Health Association American Pulse Association American Society for Nutrition American Society of Animal Science American Statistical Association Antibiotic Resistance Action Center, The George Washington University Association of American Veterinary Medical Colleges Association of Population Centers **BioRegional Strategies** California Institute for Rural Studies Carolina Farm Stewardship Association Center for Foodborne Illness Research & Prevention Center for Rural Affairs Center for Science in the Public Interest Concerned Citizens of Tillery, NC Consortium of Social Science Associations Consumer Federation of America Cooperative Development Institute Council of Professional Associations on Federal Statistics **Decision Demographics** Entomological Society of America

Fair Food Network Family Farm Defenders Farm to Institution New England FASS Fertile Ground First Focus Campaign for Children Food & Water Watch Food Animal Concerns Trust Food Research and Action Center FoodCorps Friends of the Earth Harvest Time Outreach Ministries Idaho Barley Commission Indigenous Environmental Network Institute for Agriculture and Trade Policy Johns Hopkins Center for a Livable Future Kansas Black Farmers Association Keep Antibiotics Working Land For Good Laurie M. Tisch Center for Food, Education & Policy, Teachers College Columbia University Maine Farmland Trust Michael Fields Agricultural Institute Michigan State University AgBioResearch Mississippi Association of Cooperatives Missouri Coalition for the Environment National Barley Growers Association National Barley Improvement Committee National Family Farm Coalition National Farmers Union National Latino Farmers & Ranchers Trade Assn National Organic Coalition

National Sustainable Agriculture Coalition National WIC Association National Young Farmers Coalition North American Regional Science Council North Carolina Association of Black Lawyers Land Loss Prevention Project Northeast Organic Farming Association of Vermont Northeast Organic Farming Association, Interstate Council Northeast Sustainable Agriculture Working Group Northern New Mexico Stockmen's Association Northwest Forest Worker Center O'Connor Analytics LLC Ohio Ecological Food and Farm Association Oklahoma Black Historical Research Project, Inc. Oregon State University Center for Small Farms & Community Food Systems Oregon Tilth Organic Farming Research Foundation Organic Seed Alliance Peace-Work Pesticide Action Network Pima County Food Alliance pineapple collaborative **Pinnacle Prevention** Population Association of America Restaurant Services, Inc.

Rural Advancement Fund of the National Sharecroppers Fund **Rural Coalition** Rural Development Leadership Network Rural Sociological Society Share Our Strength Slow Food USA Society for Nutrition Education and Behavior Southeast Michigan Census Council SouthEast Michigan Producers Association (SEMPA) Southern Regional Science Association Sustainable Agriculture of Louisville Sustainable Food Center Union of Concerned Scientists University of California, Davis US Canola Association US Dairy Forage Research Center Stakeholder Committee USA Dry Pea & Lentil Council Utahns Against Hunger Virginia Association for Biological Farming WineAmerica World Farmers World Perspectives, Inc. Xerces Society for Invertebrate Conservation

CC: Members, House and Senate Appropriations Subcommittees on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies

NB: An identical version of this <u>letter</u> was sent to the chair and ranking members of the House and Senate Appropriations Subcommittees on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies.

## February 1, 2019

The Honorable Nita Lowey Chair, Appropriations Committee United States House of Representatives Washington, DC 20515

The Honorable Kay Granger Ranking Member, Appropriations Committee United States House of Representatives Washington, DC 20515 The Honorable Richard Shelby Chair, Appropriations Committee United States Senate Washington, DC 20510

The Honorable Patrick Leahy Ranking Member, Appropriations Committee United States Senate Washington, DC 20510

Dear Chairs Shelby and Lowey and Ranking Members Leahy and Granger,

We thank you for the pending conference report language accompanying your FY19 spending bills regarding the proposed moves of the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA) outside of the National Capital Region and the realignment of ERS out of the USDA Research, Education, and Economics (REE) mission area.

The language directly addresses our fundamental concern that the proposed relocation and realignment is likely to undermine the quality and breadth of the work these agencies support and perform – work that is vital to informing and supporting the US agriculture, food and rural economies and US food security. We also believed the rationale provided by the USDA for the relocation failed to identify problems substantive enough to justify such a disruption of ERS's and NIFA's operations and were deeply troubled that USDA acted without stakeholder and congressional input.

We also appreciate that you heard our concerns about the proposed transfer of ERS to the Office of the Chief Economist by directing the USDA to indefinitely delay it.

We strongly support the adoption of this language with the final 2019 appropriations bill and trust that USDA will abide by its directives and halt any further action on relocation or reorganization. Thank you again for your leadership on and attention to this issue.

### Sincerely,

Academy of Nutrition and Dietetics Agricultural and Applied Economics Association American Association for Public Opinion Research American Association of Mycobacterial Diseases American Dairy Science Association

American Educational Research Association American Malting Barley Association American Phytopathological Society American Public Health Association American Society for Nutrition American Society of Animal Science American Society of Farm Managers and Rural Appraisers American Sociological Association American Statistical Association Antibiotic Resistance Action Center, The George Washington University Association of American Veterinary Medical Colleges

1

Association of Population Centers Carolina Farm Stewardship Association Center For Foodborne Illness Research & Prevention Center for Rural Affairs Center for Science in the Public Interest Charles Valentine Riley Memorial Foundation Consortium of Social Science Associations **Consumer Federation of America Council of Professional Associations on Federal** Statistics **Decision Demographics** FASS Food & Water Watch Food Animal Concerns Trust Food Research and Action Center Institute for Agriculture and Trade Policy Johns Hopkins Center for a Livable Future Keep Antibiotics Working Maine Farmland Trust Michael Fields Agricultural Institute Mycobacterial Diseases of Animals Multi-State Initiative

National Barley Improvement Committee National Farmers Union National Organic Coalition National Sustainable Agriculture Coalition National WIC Association **National Young Farmers Coalition** Natural Resources Defense Council North American Regional Science Council Northeast Organic Farming Association **Ohio Ecological Food and Farm Association Oregon State University Center for Small Farms** & Community Food Systems **Organic Farming Research Foundation Organic Seed Alliance Pinnacle Prevention** Population Association of America Restaurant Services, Inc. **Rural Sociological Society** Southeast Michigan Census Council Union of Concerned Scientists US Dairy Forage Research Center Stakeholders World Perspectives, Inc. Xerces Society for Invertebrate Conservation

CC: Member, House and Senate Appropriations Subcommittees on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies

NB: An identical version of this letter was sent to the chair and ranking members of the House and Senate Appropriations Subcommittees on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies.

# 74



# Addressing the USDA's Rationale for Relocating and Realigning the Economic Research Service

In August 2018, the USDA <u>announced</u> it would relocate the Economic Research Service (ERS) outside of Washington, DC, and realign it from the Research, Education, and Economics (REE) mission area to the Office of the Chief Economist (OCE). The USDA cited three main reasons for the relocation: (i) "to improve USDA's ability to attract and retain highly qualified staff"; (ii) "to place these important USDA resources closer to many of its stakeholders"; and (iii) "to benefit the American taxpayers." The USDA asserts the realignment will "enhance the effectiveness of economic analysis at USDA."

This document is an examination of the USDA's reasons and assertions, compiling responses by the ERS stakeholder community. The reasons are generally found to be lacking in substance or evidence, or needing additional and independent study. Indeed, it remains unclear what problems the USDA seeks to address with their plans. The attrition rate amounts to an average of three more employees leaving ERS annually than would be the case if ERS's rate were the same as that of USDA, hardly a reason to help justify moving ERS's 260 employees to another location. The USDA provides no data to substantiate a recruitment challenge and is not releasing its cost-benefit analysis. The USDA does not cite problems with ERS being located in Washington, DC, or with the extensive system in place to reach its many audiences, many of the primary ones being in the nation's capital. Similarly, the USDA does not identify any problems with ERS being in REE.

In reality, the ERS is an effective and well-run agency. It is the #3-ranked agricultural economics research institution in the world, providing research, statistics, and analysis covering broad aspects of our food, agriculture, and the rural economy. It is also one of the 13 primary federal statistical agencies, thereby playing a bedrock role in evidence-based policymaking and, more broadly, US data infrastructure. It has been at the forefront of addressing the challenges facing the federal statistical agencies, including illustrating what can be achieved by linking data from different agencies.

The likely negative effects of the USDA plans seem far greater than any supposed problems or asserted benefits. Experts expect high attrition rates among ERS employees preferring to stay in or unable to move their households from the Washington area. The loss of staff in turn is expected to impinge upon ERS's ability to continue to produce the same quality, quantity, and breadth of reports, analyses, and statistics. It will likely take years for ERS to build back up to its current level of high-quality production and operations. The remote location of the majority of ERS staff is also expected to reduce ERS's influence on and relevance to evidence-based policymaking at USDA and nationally. Finally, the move of

ERS from the information-producing arm of USDA, REE, to the policy-supporting arm, OCE, raises the risk of ERS reports being perceived as less objective and neutral.

The USDA's rationale and plans are also questionable for their rapid, closed process and for not considering other resources or ERS challenges. The USDA announced its plans in August 2018 while Congress was away for its summer recess. To the best of the community's knowledge, they did not consult any stakeholders, agency leadership, or Congress and are proceeding in haste without a public comment process, an independent study, or congressional consideration.

Their approach is to be contrasted with other government reorganization efforts. For example, the White House proposed this summer, as part of its government reorganization plan, to move the Bureau of Labor Statistics from the Department of Labor to the Department of Commerce. Their plan followed a year of planning facilitated and overseen by the Office of Management and Budget, is to be considered over several years, and includes congressional consideration and public comment.

Consider also the Department of Transportation (DOT) proposal to move the Bureau of Transportation Statistics to the Office of the Under Secretary of Policy. The move is concerning to the federal statistical community for many of the reasons discussed here, but the process has been more open, with DOT commissioning a study by the National Academy of Public Administration during the many months between proposal and implementation.

USDA also seems to not have engaged the Office of Personnel Management (OPM) for the apparent recruitment and retention challenges they say ERS faces. Had USDA done so, they might have been informed of OPM's intent to introduce in October new authorities and systems for hiring economists, as discussed below. Further, USDA neglects to mention ERS's biggest challenge: Its budget has lost 19% in purchasing power due to inflation since FY09. Its staff size has shrunk from 388 in FY09 to 303 in March 2018. It's probable that such restricted funding has had an impact on ERS recruiting and retention.

The American Statistical Association and the broader community remain concerned about the USDA's plans for ERS. The alleged problems being addressed seem minor, nonexistent, or unsubstantiated. Similarly, any possible benefits are asserted without support. Meanwhile, the disruptions that would likely result to ERS work are clear and would have ramifications for at least the next decade.

For the sake of good government and evidence-based policymaking in the food, agriculture, and rural sectors, we again call for Congress to intervene and stop the USDA actions to relocate and realign the ERS until an independent cost-benefit analysis is conducted and made public.

### ###

This is a working document intended to illustrate the community's attempts to understand the USDA's rationale for the move and realignment of ERS out of REE. Any comments can be sent to Steve Pierson, ASA director of science policy, at <u>pierson@amstat.org</u>.

# 76

Addressing the USDA's Rationale for Relocating and Realigning the Economic Research Service

| · · · · · · · · · · · · · · · · · · ·                                                |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Attrition: USDA says ERS<br>employee attrition is a<br>reason to relocate the agency | 1. | The ERS annual attrition rate is less than 1% higher than the whole of USDA for permanent employees for the last five years (FY13-FY17), according to data provided by the USDA to Senator Pat Roberts and Senator Debbie Stabenow. <sup>1</sup> With an average of 316 ERS employees for each of the past five years, the average number of permanent ERS employees leaving annually was 25: four to another federal agency; seven quitting federal service altogether; and 13 to retirement. <sup>2</sup> If the ERS average attrition rate were the same as that of the whole of USDA, an average of 22 employees would leave ERS annually. This is a minor difference in attrition.<br>o The administration initially used attrition data that included interns or other nonpermanent employees to justify the move. <sup>3</sup> With summer intern data included, ERS has a 4.5 percentage point greater annual average attrition rate than the rest of USDA for the past five years because of its active summer |
|                                                                                      | 2. | <ul> <li>internship program.</li> <li>The ERS attrition rate could be slightly higher due in part to the high demand for economists and ERS's employees being recruited away to other opportunities.</li> <li>OPM just called economists a "high-risk, mission-critical" occupation in need of a "new approach" for pay. They will issue their "first alternative pay system for economists in the federal government."<sup>4</sup></li> <li>In October 2018, OPM authorized new direct hire appointing authorities for agencies to address "the most pressing hiring needs". Economist is at the top of the list<sup>5</sup>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               |

<sup>&</sup>lt;sup>1</sup> http://www.hagstromreport.com/assets/2018/2018\_0924-USDA-PerdueNIFA-ERS-Response.pdf?utm\_source=MadMimi&utm\_medium=email&utm\_content=The+Hagstrom+Report+%7C+ Monday+09\_24\_2018&utm\_campaign=20180924\_m147316021\_The+Hagstrom+Report+%7C+Monday+ 09\_24\_2018&utm\_term=USDA+\_E2\_80\_94+Secretary+Perdue+response+to+Roberts+and+Stabenow <sup>2</sup> https://www.fedscope.opm.gov/; ERS also lost an average of one employee per year to death.

<sup>&</sup>lt;sup>3</sup> https://www.govexec.com/pay-benefits/2018/10/trump-administration-create-new-pay-systems-somefederal-jobs/151952/; https://www.fedweek.com/fedweek/opm-plans-new-pay-system-for-economistsothers-to-follow/

<sup>&</sup>lt;sup>5</sup> https://chcoc.gov/content/announcing-government-wide-direct-hire-appointing-authorities

|                                                                                                         | <ol> <li>The ERS ranked in the top quartile of best places to work in<br/>the federal government for agency subcomponents in 2016<br/>and 2017.<sup>6</sup> It is the highest ranked USDA agency in this<br/>category, a ranking difficult to square with USDA saying the<br/>agency has attrition (and recruitment) problems.</li> <li>USDA asserts another location with lower cost of living (and<br/>lower salaries) will ease attrition while providing no evidence<br/>their logic will solve the problem they identify. Lower salaries<br/>might fail to attract qualified economists, who have robust<br/>opportunities in the national job market.</li> <li>Where do employees departing ERS but staying in federal<br/>service go? Anecdotally, it seems ERS economists often leave<br/>ERS for or are recruited by other parts of USDA in<br/>Washington, DC.<sup>7</sup> This speaks to the role of ERS in recruiting<br/>useful analytical talent for the USDA as a whole.</li> </ol>                                                                                                                    |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recruitment: USDA states<br>ERS has recruitment<br>challenges that will be eased<br>in another location | <ol> <li>USDA has provided no data publicly to justify ERS has a<br/>recruitment problem or that it will be improved in another<br/>location. Former administrators and deputies have not<br/>confirmed ERS has unique recruitment challenges, other than<br/>needing to hire more economists than other agencies do.</li> <li>Any recruitment challenges could be due to high demand for<br/>economists and other science, technology, engineering, and<br/>mathematics positions noted above. Statistician is also high<br/>on the list provided in the OPM list in their direct hiring<br/>authorities document.</li> <li>ERS's apparent ability to avoid the recruiting challenges faced<br/>across the federal government may be due to several factors.<br/>As the #3-ranked institution in the world for agricultural<br/>economics research,<sup>8</sup> ERS is a top agency for which to work.<br/>The opportunities for meaningful and impactful work also<br/>attract top talent. Further, Washington, DC is likely the largest<br/>concentration of agricultural economists in the world, with</li> </ol> |

<sup>&</sup>lt;sup>6</sup> <u>http://bestplacestowork.org/rankings/overall/sub</u> <sup>7</sup> Consider, for example, the current chief economist, the Farm Services Agency Director of the Economic and Policy Analysis Staff, many senior World Agricultural Outlook Board commodity analysts, current and recent Resources Assessment Division of the Natural Resource Conservation Service economists, recent chief economist of the Risk Management Agency, CIO of the Agricultural Research Service, and many economists in the OCE. <sup>8</sup> https://ideas.repec.org/top/top.agr.html#institutions

|              | <ul> <li>the other three top-four agricultural economics agencies in the world all located there.</li> <li>In spring 2018, the secretary announced telework days would be cut to one day per week. The telework cutback increased employees' commuting burden, which the department had cited as a deterrent to recruiting. The telework cutback also reduced employee flexibility in managing family commitments, which harmed the family-friendly approach ERS has successfully used in recruitment. The telework cutback also may increase rent costs because more staff must be housed onsite, reducing the potential for sharing space. By reversing the telework cutback, USDA can address the problems it alleges can only be solved by relocation.</li> <li>The administration may not appreciate the hiring cycle for ERS. New PhDs are recruited between January and March each year, and then join the agency the following fall during the subsequent fiscal year. The job searches authorized have not been timed to this cycle. For the last three budget cycles, ERS was not permitted to meet the optimal recruitment period for PhD candidates, which is between January and March of each year.</li> </ul>   |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cost savings | <ol> <li>While there may be cost savings for cost of living and rent,<br/>administration after administration has explored such cost<br/>savings and ultimately left agencies in Washington, DC. USDA<br/>should be required to document the savings. Indeed, USDA<br/>backed off the claim in its August 9 press release that "there<br/>will be significant savings on employment costs and rent" to<br/>say in its September 20 letter to senators Roberts and<br/>Stabenow, "there will be potential for saving on employment<br/>and facility costs"</li> <li>Many other costs should be considered, including<br/>relocation/moving costs, early retirement and other buyouts,<br/>lease termination costs, travel for staff in new location to<br/>Washington, DC, and for HQ staff to new location, and new<br/>staff recruitment. For example, it is likely staff in the new<br/>location will be required to travel more to effectively partner<br/>with World Agricultural Supply and Demand estimates,<br/>National Agricultural Statistics Service (NASS), Bureau of the<br/>Census, Congressional Research Service, OMB, the other 12<br/>principal statistical agencies, and others. Travel costs to</li> </ol> |

| T |                                                                         |
|---|-------------------------------------------------------------------------|
|   | Washington, DC, might also mean less travel to visit                    |
|   | stakeholders in other parts of the country.                             |
|   | <ol><li>USDA's plan needs to consider impacts to the breadth,</li></ol> |
|   | quality, and impact of the agency's work due to attrition, lost         |
|   | in-person interactions, distance from key stakeholders, and             |
|   | other factors. In particular, since it is highly likely that a          |
|   | significant share of staff is expected to not relocate and              |
|   | recruiting highly talented staff is costly, the costs associated        |
|   | with recruiting new staff should not be underestimated.                 |
|   | 4. According to a September 2018 document responding to ERS             |
|   | employee questions, USDA conducted a cost-benefit analysis              |
|   | that is an "internal deliberative document that will not be             |
|   | published or issued to the public."                                     |
|   | <ol> <li>Congress, stakeholders, and taxpayers deserve an</li> </ol>    |
|   | independent entity to do a full and transparent cost-benefit            |
|   |                                                                         |
|   | analysis to fully understand the costs, benefits, and other             |
|   | ramifications of the move, as well as the rationale. Any                |
|   | actions should also be delayed until the office of inspector            |
|   | general for the Agriculture Department has completed its                |
|   | probe of the legal basis for the USDA decision to move ERS              |
|   | and NIFA. <sup>9</sup>                                                  |
|   | 6. Congress has provided no funding for a move of ERS in their          |
|   | FY19 appropriations deliberations to date. How would USDA               |
|   | pay for their move? A likely offset for the cost of the move            |
|   | would be ERS programs. If ERS programs are the offset, USDA             |
|   | should explain how they will pay for the move and how this              |
|   | would impact ERS products.                                              |
|   | 7. Cost savings on rent could be achieved by moving ERS into the        |
|   | USDA South Building once the long-term renovations are                  |
|   | completed. Indeed, the FY19 budget request notes "the                   |
|   | modernized building will accommodate an increased                       |
|   | population." <sup>10</sup>                                              |
|   | 8. The GSA lease for ERS space runs through March 2026. <sup>11</sup>   |
|   | There is no reason for moving ERS for lease reasons and the             |
|   | process should be slowed to fully understand the rationale for          |
|   | moving ERS and the ramifications of doing so.                           |
|   | moning and the rannineations of doing so.                               |

 <sup>&</sup>lt;sup>9</sup> <u>https://www.govexec.com/oversight/2018/11/agriculture-watchdog-investigating-secretarys-plan-move-offices-out-dc/152539/
 <sup>10</sup> <u>https://www.dm.usda.gov/oo/sb-overview.htm</u> p. 12-9.
 <sup>11</sup> <u>https://www.gsa.gov/cdnstatic/FY14\_Reg11\_LDC02141\_files.zip</u>
</u>

| Proximity to stakeholders: | 1. Many of ERS's primary stakeholders are in Washington, DC,    |
|----------------------------|-----------------------------------------------------------------|
| The USDA says ERS needs to | because its focus is on <i>national</i> statistics and research |
| be closer to stakeholders  | relevant to national policies. In particular, the top-tier      |
|                            | customers of ERS are other parts of USDA, Congress, and         |
|                            | other key policymakers. ERS has a reputation for providing      |
|                            | objective economic indicators of agriculture and rural          |
|                            | America, and it often does so in collaboration with key USDA    |
|                            | partners such as NASS and the World Agricultural Outlook        |
|                            | Board, which are largely located in Washington, DC.             |
|                            |                                                                 |
|                            | 2. Moving ERS to a single location outside the national capital |
|                            | area will not bridge any supposed gaps between ERS and          |
|                            | farmers, ranchers and agribusinesses, which are distributed     |
|                            | broadly across the nation.                                      |
|                            | 3. Because national policy is made in Washington, DC,           |
|                            | representatives of all ERS stakeholder groups have offices      |
| 1                          | there. These include major farm and commodity                   |
|                            | organizations, the food industry, rural development interests,  |
| <i>•</i>                   | environmental groups, and those concerned with food and         |
|                            | nutrition assistance. Instead of moving closer to stakeholders, |
|                            | the department would increase the distance between the          |
|                            | agency and key stakeholder advocates attuned to federal         |
|                            | matters.                                                        |
|                            | 4. USDA has alleged specifically a problem with the current     |
|                            | location in terms of interactions with stakeholders. Is USDA    |
|                            | receiving criticism about where ERS is located? If there has    |
|                            | been criticism, are there improvements that could be made       |
|                            | through the current USDA system that includes an efficient      |
|                            | and well-functioning extension service and land-grant           |
|                            | universities? How would claimed problems of current location    |
|                            | be rectified with another location, which might narrow the      |
|                            | stakeholder interactions? The scores of organizations that      |
|                            | signed a letter to Congress did not indicate any problem with   |
|                            | interaction with ERS in Washington, DC.                         |
|                            | 5. Farmers are one of many audiences of ERS research. ERS       |
|                            | helps farmers understand the environment in which they are      |
|                            | operating. The results of ERS analysis are widely used by the   |
|                            | extension networks of the land grant universities and reach     |
|                            | -                                                               |
|                            | farmers through this important institution and a variety of     |
|                            | other outlets such as producer groups and the agricultural      |
| · ·                        | media. ERS often plays a role in coordinating state-by-state    |
|                            | and regional research that informs extension efforts.           |

| <ol> <li>ERS provides the required economic research for every<br/>federal agency proposing to assess or repeal regulations. ERS<br/>provides the critical backstopping for regulatory analysis<br/>through both data development and longer-term analysis that<br/>supports short-run analysis within the agencies. This research<br/>also must be regarded as accurate and even-handed to<br/>withstand policy and legal challenges to the underlying<br/>regulations. This collaboration occurs in Washington, DC,<br/>where regulatory agencies are based.</li> <li>In addition to the Washington, DC, location as a logical<br/>location for a research agency with a national policy mission,<br/>location elsewhere may lead to an imbalance in the research<br/>portfolio toward the priorities of the issues facing the<br/>particular locale chosen. It is widely acknowledged that US<br/>agriculture and rural America are highly diverse across<br/>geographic space. If ERS researchers are interacting with<br/>researchers at nearby institutions, ERS researchers are likely<br/>to engage in research activities in which the applications and<br/>examples focus on agricultural or rural issues of importance at<br/>that particular locale, state, or region. This was the experience<br/>of a previous organization of ERS, where a large share of the<br/>staff was located at field stations around the land grants. The<br/>agendas of those staff often reflected the local issues that<br/>were of a lesser priority to an institution with a national policy<br/>focus. Hence, ERS leadership decided to end the field staff<br/>policy in Washington, DC, in the early 1980s.</li> <li>ERS is already ideally located because of the close<br/>collaboration across the principal statistical agencies, all<br/>located in the Washington, DC, area. ERS has a particularly<br/>close working relationship with its sister agency within REE,<br/>the National Agricultural Statistics Service (NASS). Among<br/>their many areas of interest, NASS and ERS staff meet</li> </ol> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul> <li>policy in Washington, DC, in the early 1980s.</li> <li>8. ERS is already ideally located because of the close collaboration across the principal statistical agencies, all located in the Washington, DC, area. ERS has a particularly close working relationship with its sister agency within REE, the National Agricultural Statistics Service (NASS). Among</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                             | statistics. This collaboration is facilitated through the proximity of staff location within the Washington, DC, area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enhanced Effectiveness:<br>USDA states ERS should be<br>moved from Research,<br>Education, and Economics to | <ol> <li>USDA has not identified any problems with ERS aligned under<br/>Research, Education, and Economics and only makes the<br/>assertion the realignment will "enhance the effectiveness of<br/>economic analysis at USDA."</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Office of the Chief Economist<br>to "enhance the<br>effectiveness of economic<br>analysis at USDA"          | <ol> <li>Upon inquiry from Congress, USDA cited in its letter to<br/>Senators Roberts and Stabenow a 1999 National Academies'<br/>report highlighting "some concerns" with ERS under REE and<br/>recommending realignment to OCE. Citing a 19-year-old<br/>report appears to be cherry picking. Congress, ERS<br/>stakeholders, and taxpayers deserve an up-to-date and<br/>independent analysis as noted above.</li> <li>ERS has thrived under REE, achieving its #3 ranking worldwide<br/>as noted above.</li> <li>ERS experts consult on a regular basis with the<br/>undersecretaries of each mission area and the chief<br/>economist to determine what their research and policy<br/>analysis needs are and to develop its annual work plan.</li> </ol>                                                                         |
|                                                                                                             | <ul> <li>Relocation to OCE may also compromise its ability to provide support to other mission areas.</li> <li>5. REE was created by statute by Congress to strengthen and coordinate research to benefit all citizens of the United States. It provides independent research, analysis, and statistics respected widely throughout the US and the world. A role of OCE is to support the secretary's policies. With ERS being in the secretary's office, its objectivity and neutrality is potentially compromised in perception and possibly in reality. It is better to have ERS stay in the information-providing mission of USDA, where it is perceived solely as information providing—not possibly as USDA policy supporting—and where its work can be coordinated, leveraged, and supported by other REE entities.</li> </ul> |
|                                                                                                             | <ul> <li>6. As one of the 13 OMB-designated primary federal statistical agencies, ERS can best serve its mission and stakeholders by staying with NASS in REE—the USDA information-<i>providing</i> arm, rather than the policy-<i>supporting</i> OCE in the secretary's office. The following guidance from the OMB and National Academies documents this point. We especially emphasize the requirement that a statistical agency must "avoid even</li> </ul>                                                                                                                                                                                                                                                                                                                                                                       |

|                                        | the appearance that its collection, analysis, and reporting              |
|----------------------------------------|--------------------------------------------------------------------------|
|                                        | processes might be manipulated for political purposes." OMB              |
|                                        | Statistical Policy Director Number 1 <sup>12</sup> states the following: |
|                                        | It is paramount that federal statistical agencies and                    |
|                                        | recognized statistical units produce data that are                       |
|                                        | impartial, clear, and complete and are readily                           |
|                                        | perceived as such by the public. The objectivity of the                  |
|                                        | information released to the public is maximized by                       |
|                                        | making information available on an equitable, policy-                    |
| `````````````````````````````````````` | neutral, transparent, timely, and punctual basis.                        |
|                                        | Accordingly, federal statistical agencies and                            |
|                                        | recognized statistical units must function in an                         |
|                                        | environment that is clearly separate and autonomous                      |
|                                        | from the other administrative, regulatory, law                           |
|                                        | enforcement, or policy-making activities within their                    |
|                                        | respective departments.                                                  |
|                                        | Similarly, the National Academy of Science document <sup>13</sup> for    |
|                                        | federal statistical agencies begins its independence principle           |
|                                        | section with the following two excerpts:                                 |
|                                        | o The reason for a statistical agency to exist is to serve               |
|                                        | as a trustworthy source of objective, relevant,                          |
|                                        | accurate, and timely information for decision-makers,                    |
|                                        | analysts, and others—both inside and outside the                         |
|                                        | governmentto help them understand present                                |
|                                        | conditions, draw comparisons with the past, and                          |
|                                        | guide plans for the future. For these purposes, it is                    |
|                                        | essential that a statistical agency be distinct from                     |
|                                        | those parts of a department that carry out                               |
|                                        | administrative, regulatory, law enforcement, or                          |
|                                        | policymaking activities. It is also essential that a                     |
| i.                                     | statistical agency have a widely acknowledged                            |
|                                        | position of independence from political and other                        |
| ~                                      | undue external influence in developing, producing,                       |
|                                        | and disseminating statistics, together with the                          |
|                                        | necessary authority to protect independence.                             |
|                                        |                                                                          |

 <sup>&</sup>lt;sup>12</sup> <u>https://www.gpo.gov/fdsys/pkg/FR-2014-12-02/pdf/2014-28326.pdf</u>
 <sup>13</sup> National Academies of Sciences, Engineering, and Medicine. 2017. *Principles and Practices for a Federal Statistical Agency*: Sixth Edition. Washington, DC: The National Academies Press. <u>https://doi.org/10.17226/24810</u>.

| <ul> <li>A statistical agency must be able to execute its<br/>mission without being subject to pressures to<br/>advance a political agenda. It must be impartial and<br/>avoid even the appearance that its collection,<br/>analysis, and reporting processes might be<br/>manipulated for political purposes or that individually<br/>identifiable data collected under a pledge of<br/>confidentiality might be turned over for non-<br/>statistical purposes. Independence from any undue<br/>outside influence is an essential element of credibility<br/>with data users and the public and of trust among</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| data providers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## November 13, 2018

The Honorable Robert Aderholt Chair, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States House of Representatives Washington, DC 20515

The Honorable Sanford Bishop Ranking Member, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States House of Representatives Washington, DC 20515 The Honorable John Hoeven Chair, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States Senate Washington, DC 20510

The Honorable Jeff Merkley Ranking Member, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States Senate Washington, DC 20510

Dear Chairs Hoeven and Aderholt and Ranking Members Bishop and Merkley:

We remain very concerned about the U.S. Department of Agriculture's (USDA) plans for the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA). As you finalize the FY19 spending bill that includes funding for USDA, we respectfully request you specify that no funding be used for relocation or realignment of ERS and that no funding be used for the NIFA relocation beyond that already provided for its relocation within the National Capital Region.

Our fundamental concern is that the proposed relocation and realignment will undermine the quality and breadth of the work these agencies support and perform – work that is vital to informing and supporting US agriculture, food and rural economies. The rationale provided by the USDA for the relocation also fails to identify problems substantive enough to justify such a disruption of ERS's and NIFA's operations. Finally, USDA's decision to move forward with the relocation and realignment without stakeholder and congressional input and without a costbenefit analysis raises serious concern. We have explained these concerns in numerous letters and will not repeat them here.

We ask that you delay long-distance relocations of ERS and NIFA and the realignment of ERS at least until an independent and comprehensive cost-benefit analysis is completed and then a public hearing is conducted to hear from stakeholders. This delay is necessary in order for Congress and stakeholders to understand the problems USDA seeks to address and the ramifications of the USDA's proposed moves. It would also be informative to study alternative solutions to the problems, once illuminated and better characterized.

The USDA moves have the potential to reverse the significant progress your subcommittees have made in recent years to start revitalizing agricultural research, education, extension, and economics. The setbacks would be particularly acute if the USDA were allowed to proceed with its plan in FY19 and no additional appropriations are provided for relocation. Based on the approximately \$20 million provided for NIFA's local move, relocating each agency outside of Washington, DC is likely to cost tens of millions of dollars, costs likely to have to come out of ERS and NIFA programs. We urge you to delay these ill-considered changes that could jeopardize and compromise your good work in recent appropriations bills.

Thank you in advance for your consideration of this request. We would welcome the opportunity to further discuss these issues with you.

Sincerely,

Academy of Nutrition and Dietetics Agricultural & Applied Economics Association American Association for Public Opinion Research American Association of Mycobacterial Diseases American Dairy Science Association American Educational Research Association American Malting Barley Association American Phytopathological Society American Public Health Association American Society for Horticultural Science American Society for Nutrition American Society of Animal Science American Statistical Association APB Associates Association of Population Centers Association of Public Data Users Carolina Farm Stewardship Association Center for Food Safety Center for Foodborne Illness Research & Prevention Center for Rural Affairs Center for Science in the Public Interest **Charles Valentine Riley Memorial Foundation** Consortium of Social Science Associations Consumer Federation of America Council of Professional Associations on Federal Statistics

**Decision Demographics** FASS Food & Water Watch Food Animal Concerns Trust Food Research and Action Center Global Harvest Initiative Institute for Agriculture and Trade Policy International Center for Technology Assessment Johns Hopkins Center for a Livable Future Maine Farmland Trust Michael Fields Agricultural Institute Mycobacterial Diseases of Animals Multi-State Initiative National Barley Improvement Committee National Farmers Union National Organic Coalition National Sustainable Agriculture Coalition National Turfgrass Federation National WIC Association National Young Farmers Coalition Natural Resources Defense Council North American Regional Science Council Northeast Organic Farming Association-Interstate Council Ohio Ecological Food and Farm Association Oregon State University Center for Small Farms & Community Food Systems

Organic Farming Research Foundation

Organic Seed Alliance Pinnacle Prevention Population Association of America Restaurant Services, Inc. Rural Sociological Society The Common Market Union of Concerned Scientists US Dairy Forage Research Center Stakeholders World Perspectives, Inc. Xerces Society for Invertebrate Conservation

## October 10, 2018

The Honorable Robert Aderholt Chair, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States House of Representatives Washington, DC 20515

The Honorable Sanford Bishop Ranking Member, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States House of Representatives Washington, DC 20515 The Honorable John Hoeven Chair, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States Senate Washington, DC 20510

The Honorable Jeff Merkley Ranking Member, Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies United States Senate Washington, DC 20510

Dear Chairs Hoeven and Aderholt and Ranking Members Bishop and Merkley:

We thank you for your attention to the USDA proposal for the Economic Research Service and the National Institute of Food and Agriculture. With USDA funded through December 7 on a continuing resolution, we write to respectfully request you exercise your authorities to convey to USDA that it not take any action to implement any part of the relocations and realignment prior to your action on a final bill.

There are many questions in the USDA community about the justification, rapid timeline, and the ramifications of the moves. We believe the justifications and ramifications should be thoroughly examined and understood before USDA moves forward with either the reorganization or the relocations.

Thank you in advance for your consideration of this request. We would welcome the opportunity to further discuss these issues with you.

Sincerely, Academy of Nutrition and Dietetics

Agricultural & Applied Economics Association

American Association for Public Opinion Research

American Association of Mycobacterial Diseases

American Dairy Science Association

American Malting Barley Association

American Phytopathological Society American Society for Nutrition American Society of Agronomy American Society of Animal Science American Society of Farm Managers and Rural Appraisers American Statistical Association Association of American Veterinary Medical Colleges Association of Population Centers Association of Public Data Users Center for Foodborne Illness Research & Prevention Center for Science in the Public Interest **Charles Valentine Riley Memorial Foundation** Consortium of Social Science Associations Consumer Federation of America Council of Professional Associations on Federal Statistics Crop Science Society of America Decision Demographics FASS, Inc Food Research and Action Center Global Harvest Initiative Institute for Agriculture and Trade Policy Mycobacterial Diseases of Animals Multi-State Initiative National Barley Improvement Committee National Farmers Union National Organic Coalition National Sustainable Agriculture Coalition National Turfgrass Federation National WIC Association National Young Farmers Coalition Natural Resources Defense Council North American Regional Science Council Organic Seed Alliance Population Association of America Rural Sociological Society Soil Science Society of America Union of Concerned Scientists University of Illinois, Department of Agricultural & Consumer Economics WineAmerica World Perspectives, Inc.

The Honorable K. Michael Conaway Chair, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Pat Roberts Chair, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510

The Honorable Collin Peterson Ranking Member, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Debbie Stabenow Ranking Member, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510

October 2, 20181

Dear Chairs Roberts and Conaway and Ranking Members Stabenow and Peterson:

We, the undersigned groups, write to respectfully oppose the USDA's proposed move of the USDA Economic Research Service (ERS) outside of the national Capitol area as well as the realignment of the agency out of the USDA's Research, Education and Economics Mission Area.

The ERS is renowned for its intramural and extramural applied social science research and is ranked third globally as an institution of agricultural economics.<sup>2</sup> The ERS provides high-quality research to inform evidence-based policymaking in the USDA and more broadly in food and agriculture. We have serious concerns that its realignment and relocation out of the Washington, D.C. area would jeopardize the ERS's products, relevance, and timeliness.

To maintain the ERS as the influential, high-quality agency it is, we, the undersigned, respectfully urge the following:

Retain the ERS in the national Capitol region. Relocating the ERS out of the Washington area will certainly mean a significant loss of experienced staff, which, in turn, will jeopardize the ERS operations for, potentially, years to come. Further, there are many strategic reasons to have the ERS in the Washington area, including maintenance of its strong connection with the National Agricultural Statistics Service (NASS) and other parts of the USDA, locality to its product users, staff recruitment and retention, and integration with the 12 other primary federal statistical agencies.

Maintain and strengthen the integrity and independence of the ERS as a statistical agency. USDA's ERS, along with the NASS, is one of the two agencies at the USDA that are designated by the Office of Management and Budget (OMB) as "principal statistical agencies." It is imperative that the ERS is-and, just as importantly, is perceived to be-an independent agency whose work is respected widely. We are concerned that the move out of Research, Education, and Economics (REE) to a more policy-oriented part of the USDA will jeopardize the ERS's autonomy in this regard. For

<sup>&</sup>lt;sup>1</sup> This letter was originally sent August 28 and is being updated ass additional signers are added. <sup>2</sup> https://ideas.repec.org/top/top.agr.html#institutions.

this reason and to take full advantage of the ERS's synergies with the other REE agencies, we urge the ERS remain in REE. Regardless of the ultimate decision, we urge the protections of the ERS as an independent agency be strengthened. It is imperative the ERS Administrator is protected from improper outside influence. Further, the Administrator should be a person with unimpeachably excellent economic research credentials

Keep the budget and personnel for the USDA Economic Research Service at least at FY 2018 levels. We ask that you support the ERS and other research, extension, and integrated economics programs at sustainable levels, e.g., those outlined in FY 2018 and above. This would mean that there would be no personnel reductions (as of September 30, 2017, there were 322 permanent full-time employees). If a permanent full-time employee retires, they would be replaced within a year. Finally, we ask that there be no cuts to data and statistical resources. These resource, information, and research programs are critical for the agricultural, food, and resource economies of rural America.

Thank you in advance for your thoughtful consideration of this request.

Sincerely,

NB. Many of the signers on this letter are members of the Friends of Agricultural Statistics and Analysis. Questions about this letter should be addressed to agricultural.statistics@gmail.com

Academy of Nutrition and Dietetics Agricultural and Applied Economics Association American Association for Public Opinion Research American Association of Mycobacterial Diseases American Dairy Science Association American Educational Research Association American Malting Barley Association American Phytopathological Society American Society for Nutrition American Statistical Association Antibiotic Resistance Action Center, George Washington University **APB** Associates Association for University Business & Economic Research Association of Population Centers Association of Public Data Users Association of American Veterinary Medical Colleges Center for Foodborne Illness Research & Prevention Center for Rural Affairs Center for Science in the Public Interest Charles Valentine Riley Memorial Foundation

Consortium of Social Science Associations Decision Demographics Department of Agricultural Business, California State University, Fresno Entomological Society of America FASS, Inc Food Animal Concerns Trust Food & Water Watch Global Harvest Initiative Hop Growers of America Institute for Agriculture and Trade Policy Johns Hopkins Center for a Livable Future Land for Good Mathematical Association of America Michigan State University, College of Agriculture and Natural Resources Mycobacterial Disease of Animals Multistate Initiative National Association for Business Economics National Family Farm Coalition National Organic Coalition National Sustainable Agriculture Coalition National Turfgrass Federation, Inc. National Young Farmers Coalition National WIC Association North American Regional Science Council Northeast Organic Farming Association Organic Farming Research Foundation Organic Seed Alliance Ornithological Council **Pinnacle Prevention** Population Association of America Restaurant Services, Inc. Rural Sociological Society Southeast Michigan Census Council Union of Concerned Scientists US Dairy Forage Research Center Stakeholder Committee World Perspectives, Inc.

#### October 9, 2018

The Honorable K. Michael Conaway Chair, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Pat Roberts Chair, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510 The Honorable Collin Peterson Ranking Member, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Debbie Stabenow Ranking Member, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510

Dear Chairs Roberts and Conaway and Ranking Members Stabenow and Peterson,

Recently, the U.S. Department of Agriculture (USDA) proposed to move the Economic Research Service (ERS) out of the DC geographic area and place it organizationally under the Office of the Chief Economist. As one of the principal federal statistical agencies, ERS provides Congress, state and local governments, and the commodity community with critical research and data on agricultural and rural communities. Removing the agency from the Washington, DC, area poses risks to the quality and relevance of the information ERS produces.

As former senior administration officials and heads of statistical agencies invested in informing evidence-based policy decisions, our primary concerns are the following:

#### 1. Retaining staff expertise

While current professional staff members will be offered the opportunity to retain their positions, it is anticipated that many will not move. ERS has already lost a respected and effective administrator. Staff attrition will dilute valuable organizational knowledge and expertise and damage established networks, even if newly vacated positions are filled.

### 2. Continuing valuable collaborations

ERS is one of the principal federal statistical agencies, all of which are in the DC area. ERS has an integrated approach to its broad research portfolio, in part due to its ability to collaborate. Locating it far from its collaborators, both within and outside the USDA, will severely limit its contributions to important activities such as the Agricultural Resource Management Survey, which is carried out in cooperation with the National Agricultural Statistics Service.

### 3. Maintaining visibility with policymakers

ERS currently responds efficiently and effectively to requests from Congress and other agencies. ERS provides timely and relevant economic research and analysis to inform important policy decisions. Removing ERS from its proximity to key consumers means policy decisions may be made without the best analysis available, to the detriment of some of our nation's most vulnerable communities.

#### 4. Risks to independence and credibility

The federal statistical agencies provide relevant, accurate, and timely information. Removing ERS from its position in the Research Education and Economics Mission Area to place it under the USDA chief economist jeopardizes its independence as a research agency and increases the potential for interference in the direction, design, analysis, and release of studies and reports. It threatens the independence and credibility necessary for a federal statistical agency to function objectively.

ERS is ranked as number three in the world of institutions in the field of agricultural economics, a reflection of our leadership in economic research. This proposal puts a world-renowned research agency at risk and could set back the federal statistical system at a time when the United States should be leading the world in innovation. In closing, we urge you to keep ERS in the Research Education and Economics Mission Area within the USDA and to keep the agency in the Capital region.

#### Sincerely,

Katharine G. Abraham, Commissioner, Bureau of Labor Statistics, Oct. 1993 - Oct. 2001

Vincent Barabba, Director, U.S. Census Bureau, July 1973 - Nov. 1976, July 1979 - Jan. 1980

William Barron, Deputy Commissioner, Bureau of Labor Statistics, 1983 – 1998; Deputy Director, U.S. Census Bureau, 1999 – 2002

Donald Bay, Administrator, National Agriculture Statistics Service, USDA, 1992 - 1999

William T. Boehm, Branch Chief, Food Economics, ERS, USDA; Senior Economist, Council of Economic Advisors, 1976 – 1981

Raymond R. Bosecker, Administrator, National Agricultural Statistics Service, USDA, 1999 – 2008

Gale Buchanan, Chief Scientist and Undersecretary for Research, Education, and Economics, USDA, 2006 – 2009

Jack Buckley, Commissioner, National Center for Education Statistics, 2011 - 2013

Carol S. Carson, Director, Bureau of Economic Analysis, Commerce Department, 1992 - 1995

Kevin W. Concannon, Undersecretary for Food, Nutrition, and Consumer Services, USDA, 2009 – 2017

Lynda T. Carlson, Director, National Center for Science and Engineering Statistics, 2000 - 2012

Guy Caruso, Administrator, Energy Information Administration, 2002 – 2008

Cynthia Z.F. Clark, Administrator, National Agricultural Statistics Service, USDA, 2008 - 2014

Neilson Conklin, Director, Market and Trade Economics Division, Economic Research Service, USDA, 1999 – 2008

Stephen R. Crutchfield, Assistant Administrator and Staff Analysis Coordinator, Economic Research Service, USDA, 2007 – 2016

Emerson J. Elliott, Commissioner, National Center for Education Statistics, 1984 - 1995

Martha Farnsworth Riche, Director, U.S. Census Bureau, 1996 - 1999

Philip N. Fulton, Associate Administrator, Economic Research Service, USDA, 2000 – 2005

John R. Gawalt, Director, National Center for Science and Engineering Statistics, 2012 - 2018

Erica Groshen, Commissioner, Bureau of Labor Statistics, 2011 - 2013

Hermann Habermann, Chief Statistician of the United States, U.S. Office of Management and Budget, 1988 – 1992

Jay Hakes, Administrator, U.S. Energy Information Administration, 1993 – 2000

George Hoffman, Associate Administrator, Economic Research Service, USDA, 1980 - 1984

Carol C. House, Deputy Administrator, National Agricultural Statistics Service, USDA, 2006 – 2010

John R. Kort, Associate Administrator and Acting Administrator, Economic Research Service, USDA, 2008 – 2011

John Lee, Administrator, Economic Research Service, USDA, 1982 - 1993

James Lynch, Director, Bureau of Justice Statistics, 2010 – 2013

Tom Mesenbourg, Deputy Director, U.S. Census Bureau, 2012 - 2013

Elsa Murano, Undersecretary for Food Safety, Food Safety and Inspection Service, USDA, 2001 – 2004

Steve Murdoch, Director, U.S. Census Bureau, 2008 – 2009

Richard Newell, Administrator, Energy Information Administration, 2009 - 2011

Susan Offutt, Administrator, Economic Research Service, USDA, 1996 – 2006

Gregory L. Parham, Assistant Secretary, Departmental Administration and Administrator, USDA, 2013 – 2017

Thomas Petska, Director, Statistics of Income Division, Internal Revenue Service, 2001 - 2009

Robin Picanso, Associate Administrator, National Agricultural Statistics Service, USDA, 2014 – 2017

Susan Powers, Director, Statistics of Income, Internal Revenue Service, 2010 - 2014

Kenneth Prewitt, Director, U.S. Census Bureau, 1998 - 2001

Joe Reilly, Administrator, National Agricultural Statistics Service, USDA, 2014 - 2016

Richard E. Rominger, Deputy Secretary, USDA, 1993 - 2001

Philip L. Rones, Deputy Commissioner, Bureau of Labor Statistics, 2003 - 2011

William J. Sabol, Director, Bureau of Justice Statistics. 2014 – 2016

Fritz Scheuren, Director, Statistics of Income, Internal Revenue Service, 1980 - 1994

John A. Schnittker, Undersecretary and Deputy Secretary, USDA, 1965 – 1969

Jeffrey L. Sedgwick, Director, Bureau of Justice Statistics, United States Department of Justice, 2006 – 2008

Katherine Smith Evans, Administrator, Economic Research Service, 2007 - 2011

Edward J. Sondik, Director, National Center for Health Statistics, CDC/DHHS, 1996 - 2013

Angie Tagtow, Executive Director, Center for Nutrition Policy and Promotion, USDA, 2014 - 2017

Michael R. Taylor, Administrator, Food Safety and Inspection Service and Acting Undersecretary for Food Safety, USDA, 1994 – 1996

John Thompson, Director, U.S. Census Bureau, 2013 - 2017

Robert L. Thompson, Assistant Secretary for Economics, USDA, 1985 - 1987

Laurian Unnevehr, Director, Food Economics, Economic Research Service, USDA, 2008 - 2012

Katherine K. Wallman, Chief Statistician of the United States, U.S. Office of Management and Budget, 1992 – 2017

Shirley Robinson Watkins, Secretary of Agriculture for Food, Nutrition, and Consumer Services, USDA, 1997 – 2001

James C. Webster, Assistant Secretary for Governmental and Public Affairs, USDA, 1977 – 1981

Kathryn Wilson, Deputy Undersecretary, Food, Nutrition, and Consumer Services, USDA, 2015 – 2017

Catherine E. Woteki, Chief Scientist and Undersecretary for Research, Education, and Economics, USDA, 2010 – 2016

AMERICAN STATISTICAL ASSOCIATION Promoting the Practice and Profession of Statistics<sup>1</sup> 732 North Washington Street, Alexandria, VA 22314-1943 (703) 684-1221 = www.amstat.org = asainfo@amstat.org gf www.facebook.com/AmstatNews C www.thitter.com/AmstatNews

#### August 22, 2018

The Honorable K. Michael Conaway Chair, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Pat Roberts Chair, Committee on Agriculture, Nutrition, and Forestry

United States Senate Washington, DC 20510 The Honorable Collin Peterson Ranking Member, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Debbie Stabenow Ranking Member, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510

Dear Chairs Roberts and Conaway and Ranking Members Stabenow and Peterson,

I write as president of the American Statistical Association (ASA) to respectfully request you exercise your authority to maintain the USDA Economic Research Service (ERS) as a strong and independent statistical agency. We have serious concerns that the August 9 USDA proposal to organizationally realign and relocate ERS out of the Washington area will undermine ERS work and product quality. This proposal will reduce ERS's ability to contribute to evidence-based policymaking in the USDA and, more broadly, for food, agriculture, and the environment.

The ERS is ranked #3 in the world of institutions in the field of agricultural economics (out of 2,512 institutions).<sup>1</sup> Given the portion of the U.S. economy dealing with food, agriculture, and the environment, along with the importance of these areas to our health and well-being, ERS should be kept in the Washington area and under the Research, Education, and Economics Mission Area to maintain its independence and premier work.

The ERS also should stay in the Washington area to maintain the quality and relevance of its work. A sizable portion of the 330 ERS employees will not have the wherewithal to or interest in relocating their families outside the Washington area. The resulting staff loss due to the relocation will likely jeopardize ERS's quality work for decades. The ERS should also stay in the Washington area to remain close to its primary clients. This will ensure continued close and necessary collaboration with the National Agricultural Statistics Service, Agricultural Research Service, and other USDA agencies. It will also ensure

<sup>&</sup>lt;sup>1</sup> <u>https://ideas.repec.org/top/top.agr.html#institutions</u>

close coordination and contribute more effectively to efficiencies and best practices within the 12 major federal statistical system agencies, which are all within the Washington area.

The ERS should remain in the USDA Research, Education, and Economics (REE) Mission Area and not be moved to the Office of the Chief Economist (OCE). REE is the information-producing arm of the USDA that informs the work of not just the USDA, but also the food and agriculture community more broadly. Reporting to the OCE would jeopardize ERS's decades-long standing as an independent and credible statistical agency (a standing granted by the Office of Management and Budget), because one of OCE's roles is to support the position of the Secretary of Agriculture. It is also important to keep ERS in REE to ensure its research portfolio remains broad and sufficiently interdisciplinary.

We ask you to reject this proposal so ERS can continue producing its products at the same high quality and with the same credibility, relevance to national discussions, and timeliness.

Please see the attachment for elaboration on the ASA's concerns for this move.

Thank you for your consideration.

Sincerely, Lisà LaVange Lisa LaVange, Ph.D.

CC:

The Honorable Sonny Perdue, Secretary, US Department of Agriculture

Members of the House Committee on Agriculture and the Senate Committee on Agriculture, Nutrition, and Forestry

An identical version of this letter was sent to the leadership of the House and Senate Appropriations Subcommittees on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies and copied to its members.

#### Attachment: Elaborating on concerns of relocating and realigning ERS

The American Statistical Association's concern for the quality of ERS work and its ability to support evidence-based policymaking at USDA arises for several reasons. Primary among them, ERS is sure to lose a substantial portion of its staff who are not willing or able to relocate outside of the Washington, DC, area. The ERS is composed of a unique combination of staff—including those with expertise or training in economics, agriculture, sociology, nutrition, agricultural economics, and statistics—that is effective because of the staff members' interdisciplinarity. We believe there is a strong likelihood the ERS relocation outside the Washington area would jeopardize ERS's ability to maintain its quality work for years to come because of the staff loss. Just as it has taken years to build such a staff, it would take years to rebuild it in another location.

We are also concerned about the move out of Research, Education, and Economics (REE) to the chief economist's office beyond the policy-informing versus policy-support roles discussed in our letter. The ERS mission is well aligned with the other components of REE and contributes to the portfolio's overall value. In particular, as transdisciplinary research becomes ever more important to solving grand challenges, it is beneficial to have the economics and social science research from ERS informing the physical and biology research supported by the National Institute of Food and Agriculture and Agricultural Research Service. Such synergistic activity is best facilitated by having all the agencies within REE.

Further, it is critical for ERS to maintain its status as an independent federal statistical agency so its products are viewed as objective and credible by all stakeholders. The relevant guidance for a federal statistical agency, as you know, is laid out in Office of Management and Budget (OMB) policy directives—especially Statistical Policy Directive #1—and in the National Academies' *Principles and Practices of a Federal Statistical Agency*.

We also believe in the following strong justifications for keeping ERS in the Washington, DC, area:

- Many of ERS's primary product users, including USDA, are in Washington. It is sensible that ERS
  remain near such users of its products to interact first hand. As one example, when the
  Interagency Commodity Estimates Committees meet to develop the World Agricultural Supply
  and Demand Estimates report, ERS should be present.
- The location facilitates the close collaboration between ERS and the National Agricultural Statistics Service on the Agricultural Resource Management Survey and other programs.
- As one of 13 primary federal statistical agencies in a distributed statistical system, all of which
  are located in the Washington area, ERS's integration to the broader system is facilitated in part
  by proximity. Under the guidance and coordination of the OMB chief statistician's office, these
  agencies are in regular contact on joint projects, best practices, and shared challenges. Indeed,
  ERS has been a leader in taking advantage of new data sources and addressing challenges facing
  all the agencies. Locating ERS out of the Washington area puts ERS at risk of alienation from the
  other federal statistical agencies, which could jeopardize the quality of its work.
- As a federal statistical agency, ERS is bound by the Confidential Information Protection and Statistical Efficiency Act (CIPSEA) and the OMB Statistical Policy Directive (SP) #1, which affords ERS its authority to collect data among other benefits and protections. The chief statistician's

office assures each agency's compliance with CIPSEA and SP #1. ERS should remain in the Washington area to facilitate ERS maintenance of its CIPSEA status.

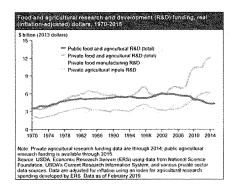
We are also concerned about the scant justification provided for this move. USDA stated that ERS's staff average annual attrition rate over the last five years being higher than that of USDA—16.5% versus 12.0% for USDA—is the problem they are trying to address. Despite years of interaction with ERS, this is the first we or other ERS stakeholders have heard of staff attrition being such a problem. Further, it is far from clear that recruitment and attrition will not be a problem in another location. Indeed, the Washington area has many advantages for staff recruitment and retention. We are also concerned with the speed at which USDA seeks to execute this proposal. Such a move with the risks detailed above deserves careful consideration.

# Testimony of Catherine E. Woteki, Ph.D. Senate Agriculture Committee July 18, 2019

I am Catherine Woteki and from 2010-2016 I held the position of Chief Scientist and Under Secretary for Research, Education and Economics (REE) at USDA. In that capacity, I had direct oversight responsibility for the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA) as well as for the Agricultural Research Service and the National Agricultural Statistics Service.

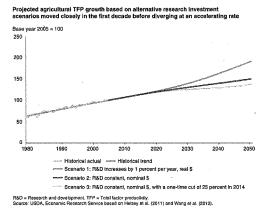
I am opposed to the Secretary's proposal to relocate ERS and NIFA and believe that it will significantly weaken the scientific enterprise that is so critical to America's food, economic and national security. The location of the four agricultural research and statistical agencies in Washington, DC is important to their ability to carry out their missions. The analysis of costs and benefits provided by the Department is inadequate and only provided after its decision was made. Enormous damage is being done to the agencies' functional capacity. I also believe that the proposed relocation of the agencies should be considered together with the President's budget request for FY 2020 which proposed major reductions in funding and staff in ERS. Taken together, they indicate a lack of commitment to strengthen agricultural research and deliberately undermine America's ability to address the looming threats to our food security and economic vitality.

The major reason that I oppose this proposal is that the biggest problem facing agricultural research and statistics is <u>not</u> the location of the agencies, rather it is the historic disinvestment in public funding that has occurred over the last 30 years. As shown in the graph below, the current level of funding for agriculture, food and natural resources research is less than in the 1980's as measured in inflation-adjusted dollars.



Both Federal funding and state funding to support agricultural research have stagnated and the end result is that the US is in danger of losing its leadership role in areas critical to our long-term welfare. This has implications for farmers and for our national security because since World War II, productivity growth in the farm sector has come almost exclusively from sciencebased innovation or what economists call total factor productivity. Based on ERS research, we can expect little change in US farm sector's total factor productivity over the next few years, but beyond that it is expected to slow and how much our agricultural productivity will be harmed depends on the current and future amount of public investment in research.

103



In the meantime, some of our rivals have made substantial investments in agricultural research. China's investment now surpasses ours. For the time being, the US is maintaining its scientific

preeminence in agricultural fields as measured in publications, citations and patents, but each year we are losing ground to other countries that are providing more public support for agricultural research.

All of this has long-term implications for the national security of the United States. The 2019 Worldwide Threat Assessment of the US Intelligence Community<sup>1</sup> identifies the erosion of the US lead in science and technology as one of ten global threats because research produces disruptive technologies and threats to economic competitiveness. The assessment calls out rapid advances in biotechnology, including gene editing and synthetic biology, as posing new economic, ethical and regulatory challenges. At the same time that these technologies hold great promise for agriculture, they also introduce risks as adversaries may use them to develop biological warfare agents and threaten food security. A second global threat pertinent to agriculture is environmental and ecological degradation that is likely to fuel competition for resources, economic distress, and social discontent now and in the future. Drought, floods, wildfires, and soil degradation are intensifying and threatening food security on a global scale which in turn spur social unrest, migration and tension between countries. Agricultural research to develop resilient agricultural systems is key to being able to respond to more unpredictable and extreme weather patterns and provide for long-term food security at home and abroad.

Finally, moving ERS and NIFA will cause loss of key staff that will take many years to recruit and train. Since the Secretary's announcement last August, the agencies report losing 3-5 employees a week. Now that employees have had to decide whether they will relocate to Kansas City, we can expect announcement of further attrition. These are highly specialized jobs that require training and experience to perform and we are losing capacity to perform the agencies' key functions even before the relocation site is identified.

In conclusion, I want to thank the members of this committee for holding this oversight hearing and providing the opportunity for me to share my views on what I consider to be a proposal that is ill-considered and terribly damaging to our long term future.

<sup>&</sup>lt;sup>1</sup> Coats, D.R. Statement for the Record, Worldwide Threat Assessment of the US Intelligence Community, Senate Select Committee on Intelligence, January 29, 2019. https://www.dni.gov/files/ODNI/documents/2019-ATA-SFR---SSCI.pdf

July 15, 2019

The Honorable Pat Roberts Chairman Committee on Agriculture, Nutrition, and Forestry United States Senate 328A Russell Senate Office Building Washington, D.C. 20510

The Honorable Debbie Stabenow Ranking Member Committee on Agriculture, Nutrition, and Forestry United States Senate 328A Russell Senate Office Building Washington, D.C. 20510

Dear Chairman Roberts and Ranking Member Stabenow:

Thank you for the opportunity to share my concerns regarding the relocation of the National Institute of Food and Agriculture (NIFA) and the Economic Research Service (ERS) out of Washington, DC. Having retired many years ago, some would say, "I don't have a dog in this fight". However, I still care deeply about the future success of agricultural research and education programs that support American agriculture. I think they are very important and should be nurtured and supported and only changed with a great deal of care and after careful study.

I'm reminded that soon after the passage of the Morrill Land-grant Act of 1862 that provided for the nation's land-grant university system, it was discovered that if we were going to teach agriculture, there was a need for more information to teach. Such information could only come about through dedicated research. There was much discussion by groups across many states about how to accomplish such a goal. One of the first meetings to discuss agricultural research occurred in 1871 in Chicago. After a 10-year hiatus, the Chicago meeting was followed by meetings in 1881 in Michigan, 1882 in Iowa, 1883 in Ohio, 1884 in New York, and 1885 in Indiana. Finally, legislation providing support for agricultural research was sponsored in the US House of Representatives by William Henry Hatch of Missouri and in the U.S. Senate by Sen. J.Z. George of Mississippi. This legislation, usually referred to as the "Hatch Act of 1887", provided for the state agricultural experimentation system that we have today. By the time this legislation passed, 14 states had already established some form of agricultural experiment Station system. All of this is to say our agricultural research system was created quite deliberately over a considerable period of time with a great deal of thought and input by all concerned parties. This is in sharp contrast to the approach by Secretary Perdue who is making fundamental changes in this important system with little or no careful study, analysis, or input from anyone. Apparently, he has not considered any alternatives to achieve his goals. He has done this essentially with no support by those engaged in the agricultural research process.

I take no pride in opposing Secretary Perdue. Indeed, I consider him a friend that I've known for many years. I got to know him quite well especially while I served as Dean and Director of the College of Agricultural and Environmental Sciences at the University of Georgia. I recognize him as a leading agribusiness man, state senator, and, finally, as governor of our state. He was always supportive of the programs that I had responsibility for at the University of Georgia. When his appointment was announced, I conveyed to many of my former dean and director colleagues from across the country that I thought President Trump had made an excellent choice in selecting Governor Perdue as the next secretary of agriculture. I thought he would be an outstanding secretary similar to that of Secretary Johann. Secretary Schaefer, and acting Secretary Conner. In President George W. Bush's administration these were, of course, secretaries that I served under while I was chief scientist and Undersecretary for Research, Education, and Economics. Obviously, I have great regard and respect for Secretary Perdue. I would never oppose Secretary Perdue, unless I truly believed this action would not be in the best interest of agriculture research and education programs. Unfortunately, I think this proposed relocation will be extremely counterproductive for our agricultural research system in this country.

My reasons and rationale for opposing this relocation are well documented by articles, op-ed's, webinars, testimony, and comments by me and many of my colleagues (see attached). Consequently, I will not restate my rationale for opposition in this letter.

I hope that you and your colleagues can find a workable solution that will address the Secretary's concern as well as ensure the continued integrity of our agricultural research system. I propose that the USDA and the Association of public and landgrant universities (APLU) jointly request a study by the National Academies of Science who could convene a truly blue ribbon, inclusive panel to review and study our agricultural research system. They could make recommendations for the best course of action that would address the Secretary's relocation plans as well as other aspects of our agricultural research system.

As noted in my book, "Feeding the World: Agricultural Research in the Twenty-First Century", I think we are overdue for a comprehensive review of our agricultural research system. This would be an opportune time to address the Secretary's concerns as well as address the overall nature of agriculture research.

While I represent only myself I can say that I will be supportive of the findings and recommendations of such a distinguished review panel.

Again, thank you for the opportunity for providing input regarding this important matter.

le Buchanon Tale

Gale A. Buchanan Former USDA Chief Scientist and Under Secretary of Agriculture for Research, Education & Economics, Dean and Director Emeritus, University of Georgia College of Agricultural and Environmental Sciences

Work: (229) 386-7057 Home: (229) 896-4056 Cell: (229) 546-5318

Enclosures:

- List of commentaries by USDA stakeholders expressing concern with and opposition to ERS and NIFA relocation.
- Letter from 80 current and former university administrative heads and CARET delegates

# Commentary on the UDSA ERS/NIFA Moves by Members of the Stakeholder Community

1. USDA's plans threaten the integrity and viability of data that farmers need, Katherine Wallman, Des Moines Register, July 3, 2019.

Former Chief Statistician of the US Katherine Wallman says "headlong rush to disrupt the service appears to be a political act designed to undermine the nonpartisan economists at ERS" and explains why we should all be alarmed. Key excepts include the following,

- "Policies built on objective data and credible analyses serve all of us by eliminating political whims from the equation."
- "Government statistics level the playing field by giving everyone Republican and Democrat, family farmer and agribusiness — the same set of facts."
- "Real or perceived political influence on the work of our historically independent, autonomous statistical agencies hurts us all. It erodes our ability to recruit and retain the best experts and shatters the trust of people who depend on the data."

2. This is not the way to move USDA agencies out of Washington, Scott Swinton, The Hill, July 2. Past president of the Agricultural and Applied Economics Association (AAEA) Scott Swinton discusses an AAEA cost-benefit analysis that he co-authored and that found the ERS/NIFA moves would end up costing taxpayers money because of the high cost of replacing the many experienced and highly specialized staff not making the move. Stating that as important in discussing whether a move is sensible is focusing on how this move has been planned and implemented. He concludes, "this move fails the benefit-cost test." Key excerpts include the following,

- "The sad truth is that if done right, the relocation of the ERS and NIFA outside of Washington, might have made sense for America's taxpayers, farmers and food consumers."
- "Many organizations with highly skilled employees make special efforts to retain experienced staff. A common way to do that while moving is to open a branch office and to entice seasoned employees to move with attractive incentives and time to work out the details."
- "Had the consideration of an agency move begun as a planning process that engaged agency staff to weigh the benefits and costs of moving, they would have been aware, and they would have felt included and valued. Instead, they felt alarmed and alienated when Purdue announced on Aug. 8, 2018, that they would be relocated."
- <u>Colorado's food system relies on a strong USDA research base</u>, Laurian Unnevehr and Dawn Thilmany, *The [Grand Junction] Daily Sentinel*, June 23, 2019.
   Colorado State University faculty Thilmany and Unnevehr warn against the ERS move because of how it will diminish research and analysis vital to food and agriculture. Key excerpts include the following,

- "this small USDA agency is seemingly under attack within this administration, for no apparent reason other than doing the job of providing sound information to policy makers."
- "Moreover, bringing the agency closer to stakeholders in one state means that its research is less focused on the needs in the other 49 states."
- "the analysis of cost-savings failed to consider lower cost locations within the capital region, or the substantial up-front costs of relocating hundreds of staff within a few months, in addition to disrupting important price and market reports through the harvest season."
- "Colorado farmers and ranchers need the best support possible as they face all the challenges inherent in a variable climate and an evolving set of local and global demand conditions."
- "A strong national data and research system is particularly important to a state like ours, where agriculture is diverse and faces unique environmental challenges. Now is the time for a stronger agricultural research system, not for dismantling key pieces."
- 4. <u>At Trump's Agriculture Department, science is being plowed under</u>, Gale A. Buchanan and Catherine E. Woteki, *Washington Post*, June 7, 2019.

Former USDA Chief Scientists and Undersecretaries Buchanan and Woteki express their deep concerned about the harm being done to scientific integrity at USDA with the ERS/NIFA moves and several other developments. Key excerpts include the following,

- "Agriculture Secretary Sonny Perdue appears to be taking a multipronged approach toward dismantling the science that for years has undergirded policy decisions."
- "Policymakers in Congress and America's farmers will lack the sound science they need to make decisions about how best to feed the nation, improve the rural economy and bolster U.S. agricultural exports."
- "Food and agriculture in the United States face perennial challenges from a multitude of sources: pests, diseases, droughts, flooding, brutally competitive markets and trade disputes. It is disheartening to think that the science underpinning these vital contributors to the U.S. economy, and to the health and well-being of every American, is under threat from the very government department overseeing them."

5. <u>Agriculture Department plans for feeding the nation miss the mark</u>, Gale A. Buchanan, *The Hill*, June 6, 2019.

Former USDA Chief Scientist and Undersecretary Buchanan points out Secretary Perdue's "Fire, Aim, Ready" approach to moving ERS and NIF and explains how the backwards approach will hurt American food and agricultural research. Key excerpts include the following,

- "With any new administration, preparation should have included a thorough process to understand the Agriculture Department research arm, its strengths and weaknesses, and its stakeholders, not to mention the major agricultural challenges being addressed."
- "For the same reason the federal government has strong research programs in health, defense, and energy, we need strong research programs for our \$1 trillion food and agriculture industry."

- "It is essential that we maintain the vitality and competitiveness of our commodities, which in turn will keep our farms and rural economies vibrant and flourishing."
- "It is true we will still be able to buy groceries at our local stores, however, we need to be concerned about the long term challenges of feeding and nourishing 40 percent to 50 percent more people in the world in the next 30 years on the same amount of land."
- "I see little in current plans by the Agriculture Department to help our nation in any of these areas. In fact, I see the opposite. My resistance and that of the rest of the vocal opposition is not fear of change."
- "The backwards "fire, aim, ready" without preparation approach under Secretary
  Perdue is not good government. To ensure the success of our farmers, our food supply
  and safety, and rural areas, the Agriculture Department should heed a common sense
  approach by withdrawing its plans and fully preparing."
- <u>Time for USDA and Agricultural Research Community to Unite to Tackle Food and Ag Challenges</u>, Gale A. Buchanan, Agri-Pulse, May 29, 2019.

Former USDA Chief Scientist and Undersecretary Buchanan says the USDA proposal has created an unfortunate and unnecessary conflict between the U.S. Department of Agriculture and the agricultural research community. He proposes to USDA and the agricultural research community unite to form a joint commission to plot a course for agriculture research in this country. Key excerpts include the following,

- "Our agricultural research system needs to be reenergized."
- "Agricultural research is far too important to be the subject of conflict between the secretary of agriculture and the agricultural research community. We have enough challenges without expending any energy on this fight."
- "Such an effort could truly be a legacy for the Secretary. This would turn what is now a problem into a golden opportunity."
- "Such an approach has proved productive and transformational in the past."
- "The intent of my proposal is to stop fighting and work together to make the system be all that it can be."
- 7. <u>Moving food feds out of D.C. hurts Florida farms</u>, Jack Payne, *Orlando Sentinel*, May 8, 2019. University of Florida's Senior Vice President For Agriculture and Natural Resources Jack Payne explains how the move of ERS and NIFA outside of the US hurts Florida agriculture and that of all the other states that don't ultimately host the two agencies. Key excerpts include the following,
  - "Other nations have lower labor costs and fewer environmental regulations. Florida farmers' edge is innovation. They keep ahead of global competitors with science and technology to produce locally grown food you can afford."
  - "ERS and NIFA's D.C. addresses keep their focus national and not partial to a particular region and its commodities. The Founding Fathers established the District of Columbia in the first place to create a neutral ground for states to conduct national affairs."
  - "Those who would relocate USDA also contend that the lower cost of living of a remote location would help it attract talent. Amazon doesn't think so."
  - "Such a brain drain would set back the work of NIFA and ERS by years."

 <u>The botched plan to 'fix' USDA's research arm</u>, Steve Pierson, *The Hill*, December 21, 2018. American Statistical Association Director of Science Policy Steve Pierson explains how USDA justification for the move doesn't add up and how USDA is skirting sound government practices.

Key excerpts include the following,

- "USDA's decision not to engage OPM or the Economic Research Service leadership isn't the only instance of the department skirting good-government practice."
- "the move will likely make recruitment more difficult and undermine the quality, relevance, and timeliness of the agency's work to inform evidence-based policymaking across our \$1 trillion food, agriculture and rural economies."
- "If USDA wants to worry about attrition, they should be much more concerned about the brain drain that will result from moving the agency outside of D.C."
- "Congress should exercise its oversight responsibilities and stop USDA's plans."
- 9. Opinion: Florida Benefits if the USDA moves its agencies to...Fargo?, Gale Buchanan, *Tallahassee Democrat*, December 17 2018.

Former USDA Chief Scientist and Undersecretary Gale Buchanan says any relocation of ERS disadvantage states and land-grant universities across the country. Key excerpts include the following,

- "As former USDA chief scientist appointed by President George W. Bush, I urge we
  harken the words of wisdom attributed to a Southern farmer: "If it ain't broke, don't fix
  it."
- "All signs point to this proposal [to relocate ERS] being counterproductive"
- "We're all used to hearing that Washington is broken sometimes metaphorically, sometimes literally. But our government support structure for agriculture is far from broken; in fact, it is the envy of the world."
- 10. <u>Selling off USDA research agency to the highest bidder is a mistake</u>, John E. Lee, Jr, *The Hill*, November 24 2018.

Past administrator of the Economic Research Service under President Reagan and President George H.W. Bush describes his view that relocating ERS will be a long-term negative for USDA. Key excepts include the following,

- "USDA's proposal will be a long-term negative for the department."
- "A major physical move that causes the loss of many experienced staff would cripple the agency and mean years of re-building and training to regain its present eminence. The secretary and the Congress should reconsider this counterproductive move."
- "Moving ERS out of the Washington area will move it away from its most direct stakeholders."
- 11. Opinion: Fargo or Kansas City could "win" the USDA economic research agency but the country will lose, Susan Offutt, The Hill, October 15, 2018.

Past administrator of the Economic Research Service under Presidents Bill Clinton and George W. Bush says an independent assessment of the proposed rationale to relocate ERS must take place to examine potential consequences. Key excerpts include the following,

- "[Relocation of ERS] should be halted pending an independent assessment of the rationale for the potential consequences of realignment and relocation of ERS. Too much is at stake for the agriculture, food, and rural economy to take the drastic actions the USDA proposes without such as assessment"
- "[Relocation of ERS] was not previously discussed with the Congress or those in the
  public and private sectors who use and rely on the agency's work. Subsequently, the
  Department has moved with uncharacteristic speed to implement its plan since it was
  announced in August."
- "The August pronouncement comes on the heels of the Administration's February budget proposal to cut the agency's funding in half, which would eliminate most of the agency's analyses on policy topics in food and nutrition, the environment, and rural development"
- 12. Opinion: Buchanan to USDA on research move: slow down and do careful study, Slashing Food <u>Research Funding Is a Mistake</u>, Gale Buchanan, *Agri-Pulse*, September 28 2018. Former USDA Chief Scientist and Undersecretary Gale Buchanan says any relocation of ERS should involve careful analysis and study. Key excerpts include the following,
  - "Our agricultural research enterprise is far too important to our country and civilization to offer such far-reaching changes as the Secretary has proposed without careful study and analysis"
  - "For the past half-century many agricultural research leaders have been working to
    more fully integrate agricultural research in the national scientific community. Such
    integration is key to sustaining the knowledge-based productivity gains. We have made
    much progress but still have a long way to go to be considered equal players in the
    research community in Washington"
  - "I would encourage the administration to slow down, initiate a useful, comprehensive, in-depth study before taking such an action."
- 13. <u>Knowing the value of America's food</u>, Scott Swinton, *Des Moines Register*, August 27 2018.
   Past president of the Agricultural and Applied Economics Association (AAEA) and Professor at Michigan State University Scott Swinton describes the importance of ERS to the nation's food supply and what is at risk with its proposed relocation. Key excerpts include the following,
  - "[The] plan to relocate ERS employees away from Washington is likely to trigger widespread staff resignations"
  - "Congress should review the plan to reorganize and relocate the ERS to determine whether these changes are in the best interests of the nation"
  - "A hasty move [to relocate ERS] could irreversibly erode the integrity and capacity of the nation's food"

 The Department of Agriculture has a world class economics research institution ... and is throwing it away, Susan Offutt, The Hill, August 27 2018.

Past administrator of the Economic Research Service under Presidents Bill Clinton and George W. Bush explains that ERS is a world-class economic research institution that will be dismantled by the Secretary's relocation. Key excerpts include the following,

- "The Economic Research Service is ranked No. 3 in research quality among more than 2,500 academic and government agricultural economics institutions worldwide."
- "[ERS] is not a "farmer-facing" agency, but rather supports congressional and administration policy officials as well as the program agencies of USDA that deliver key farm, environmental and food services."
- "There has been no consultation with those who use and rely on data and analysis from the Economic Research Service despite the secretary's stated intention to improve customer service."
- "Many of the 330 staff are not likely to make the move, and the loss of their expertise will jeopardize the quality, relevance, and timeliness of the agency's products."

The Honorable K. Michael Conaway Chair, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Pat Roberts Chair, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20510 The Honorable Collin Peterson Ranking Member, Committee on Agriculture United States House of Representatives Washington, DC 20515

The Honorable Debbie Stabenow Ranking Member, Committee on Agriculture, Nutrition, and Forestry United States Senate Washington, DC 20515

Dear Chairs Roberts and Conaway and Ranking Members Stabenow and Peterson,

We write to express our profound concern for USDA's plan to relocate the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA) outside of Washington, DC and to realign ERS out of the USDA Research, Education, and Economics (REE) mission area. We believe the restructuring will undermine our food and agriculture enterprise by disrupting and hampering the agencies' vital work in support of it—through research, analyses, and statistics. We are also deeply troubled such a major upheaval of the USDA research arm would be carried out with such haste and without the input and prior consultation of the USDA research stakeholders.

In the best interests of American agricultural, food, and rural sectors, we respectfully request that you intervene to stop the restructuring of REE at least until there has been a comprehensive independent study and full consultation with the stakeholder community.

We write from the perspective of current and former university agricultural administration leaders and former USDA chief scientists. Our positions in land grant universities (LGUs) as well as our broader experience and leadership in food and agriculture provide us a unique and important perspective on the US food and agriculture enterprise. LGUs and the broader academic network work hand in hand with the USDA to identify priorities, carry our research and analysis, and disseminate results to the broader community. An integral part of USDA's support for our food and agriculture enterprise along with ERS, NIFA takes an integrated approach to support programs to find innovative solutions to the most pressing local and global problems to ensure the long-term viability of agriculture.<sup>2</sup> The mission of ERS complements that of NIFA by anticipating "trends and emerging issues in agriculture, food, the environment, and rural America

<sup>&</sup>lt;sup>1</sup> This letter was originally sent November 27 with 21 signers. It is being updated as additional signers are added. The current count is 81. Note also an <u>identical version of this letter has been sent to appropriators</u>.

<sup>&</sup>lt;sup>2</sup> https://nifa.usda.gov/about-nifa

and to conduct high-quality, objective economic research to inform and enhance public and private decision making."  $^{\rm 3}$ 

Through the partnership of LGUs, USDA, other federal research funding agencies, and the private sector, agricultural research has increased many-fold the productivity of our farms and farmers, despite the continual challenges of disease, pests, extreme weather, and invasive species. The progress and accomplishment are by design, through the leadership and vision of many in the USDA, LGUs, and larger private-sector community over the past many decades.

The engagement of the broader scientific funding research community—the National Science Foundation (NSF), the USDA Agricultural Research Service (ARS), the National institutes of Health (NIH), and many more—has also been integral to the impressive progress. For example, NIFA partnered with NSF, NIH, and the Department of Energy to launch the Plant Genome Initiative. This initiative has sequenced the genomes of economically important plants and led to improved bean, potato, tomato, wheat and barley cultivars while at the same time training thousands of undergraduate and graduate students who will be the next generation plant scientists and breeders.

To further exemplify the advances that have come from multi-agency involvement, consider the Porcine Reproductive and Respiratory Syndrome (PRRS) virus, which was first detected in the U.S. in 1987 and that costs North American farmers more than \$660 million annually. A collaborative effort between land-grant universities and the private sector supported by NIFA and NSF has resulted in the breeding of pigs that are not harmed by the disease. Another example is a university-ARS collaboration supported by USDA-ARS, NIFA, and other federal funding agencies to create soybean oil with no trans fats.

The advances that have occurred because of the close collaboration of numerous research funding agencies have been greatly facilitated by their proximity. This is because of the close collaboration that must occur between the agencies, researchers, and university leaders like ourselves. University agricultural leaders and researchers make regular visits to Washington, DC to meet with USDA offices, research funding agencies, our congressional delegations, and other farm and research organizations based or meeting in Washington. Locating NIFA outside the Washington, DC area will hamper our work and the effective integration of NIFA with other research agencies and stakeholders.

Such integrative science is essential for meeting the challenges of the next 50 years. For example, NIFA is currently partnering with NSF on an Initiative at the Nexus of Food, Energy and Water Systems to significantly advance our understanding of how these three interrelated systems interact and function with the objective of increasing their resilience and ensuring long-term sustainability.

We are also concerned the relocation of NIFA will undermine USDA funding of research, which has stagnated for the last 40 years. Since 1976, it has lost two thirds of its purchasing power.<sup>4</sup>

<sup>&</sup>lt;sup>3</sup> https://www.ers.usda.gov/about-ers/

<sup>&</sup>lt;sup>4</sup> https://www.aaas.org/sites/default/files/s3fs-public/TotRes%253B.xlsx

With NIFA being relocated outside of Washington, we worry it will become less relevant and therefore more susceptible to further degradation of its budget.

In addition, the relocations are likely to weaken the coordination of NIFA and ERS with their sister REE agencies, the ARS and the National Agricultural Statistics Service. This would set back the work of Congress over several farm bills and appropriations bills to ensure more coordination and integration between the agencies. Equally important, it will remove ERS and NIFA from the important role of bringing science to bear on the work of the USDA frontline program agencies, all of which will also remain in Washington. Separating the agencies between a new location and Washington, DC, with leadership and some staff of each agency being kept close to USDA headquarters, could also undermine the respective internal operations and coordination.

For the ERS specifically, we believe the relocation will set back the agency for 5-10 years and undermine its independence as a federal statistical agency. In a major relocation, there will be substantial staff loss because of either an unwillingness or other preventing circumstances to move. Given the ERS's highly specialized work, it will be a long process to replace the loss of experience and expertise. We also believe ERS's work is served well in DC where its many of its primary audiences, partners, and collaborators are located.

ERS also thrives both in its independence and its work in REE thanks to the leadership of the USDA chief scientist and the synergies it enjoys with the other REE agencies. Congress was wise in placing ERS within REE, and it would be most unfortunate to allow that deliberative choice to be undone by administrative fiat.

Given the decades of planning and adjustments to optimize the work of REE, we are troubled the USDA seeks to dismantle the research arm in such a major way in a matter of months without a confirmed chief scientist, consultation of current or former REE, NIFA, and ERS leaders, prior engagement and input of the greater research community, and other good-government procedures. Indeed, there seems to be little evidence of any planning or study before the announcement to make the relocation.

Making changes in a successful enterprise should be based on two criteria: (i) to fix a real problem that jeopardizes future success; or (ii) to ensure further improvements for the system. The ERS-NIFA moves satisfy neither. In addition, stakeholders have been waiting for a costbenefit analysis of the proposal to be presented and an explanation of how this move relates to REE's existing long-term strategic plan. For these reasons, it is premature to allow any final action to be taken in the absence of basic good government practice.

In closing, as leaders in the USDA agricultural research partnership committee, we have deep concerns about USDA's upheaval of its research mission area without broader consultation. The Research, Education, and Economics mission reached its current make-up following years of planning, adjustments, and optimization informed by consultation, study, and public comment. We see no justification that it should be restructured on such a large scale on USDA's short timeline and without proper study.

We urge you to intervene to ensure the integrity of our food and agriculture enterprise over the next 50 years.

Sincerely,

le Buchanon ale

Gale Buchanan

Former USDA Chief Scientist and Under Secretary of Agriculture for Research, Education & Economics; Dean and Director Emeritus, University of Georgia, College of Agricultural and Environmental Sciences

Tharine EWatch

Catherine E. Woteki

Former USDA Chief Scientist and Under Secretary of Agriculture for Research, Education & Economics

Rope n. Beachy

Roger Beachy Former USDA Chief Scientist and Director of National Institute of Food and Agriculture

Spring Van

Sonny Ramaswamy Former Director of National Institute of Food and Agriculture

Acherly

David Ackerly Dean, College of Natural Resources, University of California, Berkeley

Induadi

Theodore G. Andreadis Director, The Connecticut Agricultural Experiment Station

Aufa'j/Apulu Ropeti Areta Agriculture, Community and Natural Resources Division (Land Grant Program), American Samoa Community College

anil J. ap

Dan Arp Dean Emeritus, College of Agricultural Sciences, Oregon State University

Kei N

Ken Blemings Interim Dean, Davis College of Agriculture, Natural Resources, and Design, West Virginia University

athy

Kathryn J. Boor Robert P. Lynch Dean, College of Agriculture & Life Sciences, Cornell University

)oyev

Charles Boyer Vice President for Agriculture, Dean, and Director, Montana State University College of Agriculture

Douglas D. Buhler Director, MSU AgBioResearch & Assistant Vice President for Research and Innovation, Michigan State University

Daniel Bush Vice Provost for Faculty Affairs, Colorado State University

/Neville Clarke/ Neville Clarke

Director Emeritus, Texas Agricultural Experiment Director; Former Executive Director, Southern Association of State Agricultural Experiment Station Directors; Chair, Experiment Station Committee on Organization and Policy (ESCOP)

Mark / Coslican

Mark J. Cochran Vice President for Agriculture, University of Arkansas System

MB Comenford

Dean and Director for Research and Cooperative Extension, College of Tropical Agriculture and Human Resources, University of Hawai'i at Mānoa

Theney M. Cox

Nancy M. Cox Dean, College of Agriculture, Food and Environment, University of Kentucky

Gund & Dilong

Gerard D'Souza Dean and Director of Land Grant Programs, Prairie View A&M University

وسو

Helene Dillard Dean and Professor, College of Agricultural and Environmental Sciences, University of California, Davis

Van Voolez

Dan Dooley Former Vice President, Agriculture and Natural Resources; Former Senior Vice President for External Relations, University of California

/Robert Easter/

Robert Easter

President Emeritus; Dean Emeritus College of Agricultural, Consumer and Environmental Sciences, University of Illinois

Camer Jauranes

Cameron Faustman Interim Dean, College of Agriculture, Health and Natural Resources, University of Connecticut

John D. Plovos

John D. Floros President, New Mexico State University

Robert W Godfrey

Robert Godfrey Director, Agricultural Experiment Station, University of the Virgin Islands

Robert M. Goodman Executive Dean, School of Biological and Environmental Sciences, Rutgers, The State University of New Jersey

ut Hoy

Alan L. Grant Dean, College of Agriculture and Life Sciences, Virginia Tech

Jim Hanson Digitally signed by Jim Hanson Date: 2019.02.19 10:30:42

Jim Hanson Associate Dean and Associate Director, University of Maryland Extension

Rough & Hendrick

Ronald Hendrick Dean, College of Agriculture and Natural Resources, Michigan State University

- Rest to Coldina and Bret W. Hess

Interim Dean, College of Agriculture and Natural Resources; Director, Wyoming Agricultural Experiment Station, University of Wyoming

share Found

Walter A. Hill Vice Provost, Dean, College of Agriculture, Environment and Nutrition Sciences, Research Director and Extension Administrator, Tuskegee University

La Kumiston Glenda Humiston

Glenda Humiston Vice President, Agriculture and Natural Resources, Director of the Agricultural Experiment Station, Director of Cooperative Extension, University of California

J ody G

Jody Jellison Director, UMass Extension; Director, Massachusetts Agricultural Experiment Station; Assistant Vice Chancellor, Agricultural Research and Engagement, University of Massachusetts

6

Moses T. Kairo, Dean, School of Agricultural and Natural Sciences, University of Maryland Eastern Shore

Govind Kannan Former Dean, College of Agriculture, Family Sciences and Technology, Fort Valley State University

John Killefer, South Dakota Corn Endowed Dean, College of Agriculture, Food & Environmental Sciences, South Dakota State University

DK

John Kirby Dean, College of the Environment and Life Sciences and Director, Agricultural Experiment Station and Cooperative Extension, University of Rhode Island

Cathann A. Kress Vice President for Agricultural Administration and Dean, College of Food, Agricultural, and Environmental Sciences, The Ohio State University

Michael D. Lainane

Michael D. Lairmore DVM, PhD Dean and Distinguished Professor, School of Veterinary Medicine, University of California, Davis

Dary Lund

Daryl Lund Former Dean of Agricultural and Natural Resources, Rutgers University & Cornell University; Former Executive Director of the North Central Regional Association of State Agricultural Experiment Stations

Å Hi.

Michael V. Martin President, Florida Gulf Coast University

Hechill

Ali Mitchell Executive Director, Association of Northeast Extension Directors

for Mitteltrame

Ron C. Mittelhammer Dean Emeritus, College of Agricultural, Human and Natural Resource Services, Washington State University

City D. Moren

Bobby Moser Former Vice President, College of Food, Agricultural and Environmental Sciences, The Ohio State University

Differa Sabine O'Hara

Dean, of CAUSES and Land-grant Programs, College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES), University of the District of Columbia

Tarton & argue

Jack Payne Senior Vice President, Institute of Food and Agricultural Sciences, University of Florida

T.L. Payne

Thomas L. Payne Vice Chancellor and Dean Emeritus, College of Agriculture, Food and Natural Resources, University of Missouri

-H

William A. Payne Dean, College of Agriculture, Biotechnology and Natural Resources, University of Nevada Reno

Barbara & Petty-

Barbara Petty Associate Dean and Director of Extension, University of Idaho

Un her

Chandra Reddy Dean and Director of Research/Administrator of Extension, College of Agriculture, Human, and Natural Sciences, Tennessee State University

Clarke F. Ron J

Chuck Ross Director, University of Vermont Extension

AAS 4

Alan Sams Reub Long Dean, College of Agricultural Sciences, and Director, Oregon Agricultural Experiment Station, Oregon State University

e G. Sand

Eugene G. Sander President Emeritus, Former Vice President and Dean for Agriculture and Life Sciences, University of Arizona

E. Sud Selbert J.

Fred Schlutt Vice Provost for Extension and Outreach and Director of Cooperative Extension Service, University of Alaska Fairbanks

f. Shult

Milo Shult Vice President for Agriculture, Emeritus, University of Arkansas

Robert W. Taylor Dean, College of Agriculture and Food Sciences, Florida Agricultural and Mechanical University

Andrew J. Thulin Dean, College of Agriculture, Food, and Environmental Sciences, California Polytechnic State University

Mound Vigel.

Thomas Vogelmann Dean, College of Agriculture and Life Sciences, University of Vermont

Unis B. Wrow

Christopher B. Watkins Associate Dean, College of Agriculture & Life Sciences and College of Human Ecology and Director, Cornell Cooperative Extension, Cornell University

Syno Wonten

Lynn Wooten Dean, The Charles H. Dyson School of Applied Economics and Management, Cornell University

Im what

Jon Wraith Dean, College of Life Sciences and Agriculture and Director, NH Agricultural Experiment Station, University of New Hampshire

André-Denis Girard Wright Dean, College of Agricultural, Human, and Natural Resource Sciences, Washington State University

Delegates to the Council for Agricultural Research, Extension, and Teaching (CARET)

Nathan Andre, Ohio

*Línda Ameroso* Linda Ameroso, New York

for J

James J. Bittner, New York

James G Brown, Jr., Tennessee

Jusan M. Crowell Susan Crowell, Ohio

William & Cutto

William J. Cutts, New Jersey

Jeremy Drew, Nevada 5

Andon Huges Evans

Kristin Hughes Evans, Virginia

Blating R. Fields\_ Beatrix Fields, District of Columbia

Jong Folmer

Larry Holmes, Virginia

Temy Michine

Terry McClure, Ohio

Michael A. Mellano, California

Roberta A. Moseley, New Jersey

*Thadelise Hellinges* Madeline Mellinger, Florida

zimmetk J Miciwicz Kenneth Nicewicz, Massachusetts

Caird Rexroad, West Virginia (also former Associate Administrator, ARS, USDA)

Anderia & Mizzla

Christopher M. Streeter, New Hampshire

/Eric Tanouye/ Eric Tanouye, Hawaii

/Oscar Taylor/ Oscar Taylor, Texas

be tip with

Jake Tibbitts, Nevada

# Public Witness Testimony for the hearing on Agricultural Research and 2018 Farm Bill Implementation

U.S. Senate Committee on Agriculture, Nutrition, & Forestry 328A Rüssell Senate Office Building Washington, DC, 20510 Jeffrey J. Steiner, Ph.D. (retired) Division Director for Plant Production USDA National Institute of Food and Agriculture

I appreciate the opportunity to provide my perspectives on why I recently left Federal service with the USDA; my take on the NIFA relocation; and what I see can be done for NIFA to move ahead successfully from this time forward.

Many factors added together led me to retire this past May.

I believe in my responsibility as a Federal employee to follow the leading of the Administration and directions of our Congressional leaders. It is a fair political debate as to what the right size of Federal government should be, the right balance between Federal and State governance and responsibilities, and so whether it is better for Federal agencies to be located in the D.C. Capitol Region, or elsewhere across the country.

The proposal to move NIFA outside of the D.C. region for beliefs such as above is fair, and in my opinion, if the Administration would have stayed with that reason, it would have been more palatable for NIFA employees to accept. However, this was just one of a number of factors added together with the relocation proposal led me to decide to retire.

I have more than 25 years of service with the USDA – I owe a great deal to the department for my professional develop and the opportunities provided me throughout my career. During my tenue at USDA, I have held positions that were best served by me being close to our farming community customers in Pacific Northwest, and jobs that brought me close to agricultural organizations headquartered in D.C. that represented farmers across the country. My proximity to other federal agencies and organizations that likewise served agriculture across the country and the world, helped my agency and me serve the public. Because I have lived and worked close and far from agricultural producers, I know first-hand the difference and how and where to be most effective with my service, so the justification to move NIFA closer to the agricultural community just didn't ring true.

But this alone was not the reason it was time to leave NIFA.

Moving back in my time, a strong incentive to work hard was knowing to what bigger purpose I was making a contribution at USDA. During my tenure since 1988, in addition to contributing to my agencies' missions, I have had the privilege to provide support to staff in the Bush, Obama, and Trump administrations. But the past two years at NIFA have been filled with uncertainty as

to what we were about, what were the unspoken landmines we should avoid, and even whether we were wanted (or needed) as an agency. As a manager, I prepared staffing plans for my division but watched, along with the rest of the agency's requests, as those were put on hold by a hiring freeze while we waited for direction from the Department. My staff responded by looking for ways to increase our efficiency, while I watched my leadership try to respond as best they could, and we tried to help our employees maintain perspective.

With the announcement last year of the intent to relocate NIFA, more uncertainty rocked my group and the rest of the agency: not only was there no relief in sight for replacing those employees who had left, but a future with more attrition was certain and the responsibility weighing on everyone to find ways to effectively provide our services. We continued to rearrange duties, and double up as needed, but the sense was, "If you can do more with less, then you weren't working efficiently from the beginning." From my perspective, while my employees were diligent with their duties, they were also looking for a way out. Added to these above challenges were the uncertainties associated with the five-week government shutdown, and the resulting compressed time-lines we faced to deliver our programs and obligate appropriated funds before the end of this fiscal year.

However, a starting point for my decision to retire goes back two years ago when we were ordered to work four days per week in our offices, and so could not use more than one scheduled telework day per week. The reason we were given was the same for why NIFA should relocate: to better serve our farming community clientele'. It may seem like a minor issue, but everyone knew this wasn't a valid reason, and commuting into work four days a week had a physical toll on me, because I had chosen to live a two-hour commute away from D.C.

NIFA does not directly serve the farming community, and so farmers and ranchers do not walk in the door for us to serve them. Rather our programs help enable our university, other federal agencies, and industry partners deliver their research, education, and engagement services directly to agricultural producers, rural and urban communities, and others engaged in the food and agriculture value chain.

Any one of these above points may seem small and not the best reason to retire, but when added together with other justifications that were given for the need to relocate NIFA: there is a better quality of life for employees elsewhere, greater access to a diverse workforce, greater ease in recruiting employees not willing to work in DC – those reasons given by our leaders didn't ring true, and so trust in leadership could not be built for me to support the idea that it would be better to have NIFA and its employees outside of D.C.

I believe in the USDA mission and the purposes for its agencies, and have been proud to contribute. I am grateful for the service opportunities afforded me by NIFA these past three years.

So what suggestions do I have that can help NIFA move ahead successfully from this time forward:

There is deep knowledge among the program leaders and other staff who manage and deliver NIFA research, education, and extension programs. There could be as high as 80% attrition within my former division. This institutional capital represents significant and large competitive grant programs that greatly benefit American agriculture, and their experience cannot be replaced solely by newly recruited employees. Short-term flexibility should be provided to retain experienced employees and utilize their knowledge and services remotely, even if they choose not to relocate to Kansas City.

With a geographically split program leadership structure – those positions remaining in D.C. and those located in Kansas City – a high quality professional scientific staff must be retained at both locations. The programs delivered must remain relevant and overseen by highly qualified and creative scientific professionals. These leaders must be resourced in a way that allows connections to not only the NIFA partners and stakeholders that depend on its programs, but who are science-leaders themselves with professional standing among peers outside of NIFA. This cannot be served by only a small cadre of scientists that remain the D.C. region – NIFA program management success cannot be measured solely by award processing efficiency. It is also critical that connections among NIFA scientists and services be of the highest quality, and so IT virtual connections and travel must be seamlessly facilitated. There is a poor history of this being accomplished with present technology and policies.

It is important that the perspectives of all NIFA employees and their views of place, home, quality of life, and diversity be truly respected and acted upon on their behalf by Department and NIFA leadership. It is critical that truthful reasons and explanations for all decisions be made from this point forward. Doing so will be most beneficial to help NIFA serve its clientele' and the rest of agriculture that depend on USDA programs and the rest of the Department's services.

Thank you for this opportunity to contribute to your deliberations.

#### Testimony of Katherine Smith Evans Regarding the proposed relocation of the USDA Economic Research Service Before the Senate Committee on Agriculture, Nutrition, and Forestry July 2019

My three decades of experience with principle statistical agencies, including my position as Economic Research Service (ERS) Administrator 2007-2011 and my service as Executive Director of the Council of Professional Associations on Federal Statistics (COPAFS) from 2012-2017 make me uniquely qualified to comment on the vulnerable infrastructure for U.S. federal statistics. But in this statement, I call equally upon my experience in having held officer and staff positions at several different scientific societies.

Scientific societies are vital contributors to the research ecosystem. In this statement I wish to draw attention to actions by two solid and somewhat staid societies that, perhaps at the edge of their comfort zones, express concerns about USDA plans for the Economic Research Service (ERS).

The American Economic Association (AEA), established in 1885, is a non-profit, non-partisan, scholarly association dedicated to the discussion and publication of economics research. It's more than 20,000 members come from academia, government, and the private sector. The AEA represents the interests of the economics profession without taking a position on questions of economic policy or on any partisan matter. The AEA's Statement on Principles of Economic Measurement HERE lays out the imperative for Principal Federal Economic Indicators and other federal statistics, and the basic standards they must meet, including reliability, objectivity, accuracy, relevance, transparency, consistency in a changing world, timeliness, and accessibility. In early 2019, AEA's Committee on Economic Statistics issued a Statement of Support for Maintaining Statistical and Scientific Integrity of the USDA's Economic Research Service HERE. This Statement indicates that USDA's announced plans would threaten or violate ERS's achievement of basic principles of economic measurement. It says that "Relocating the ERS will require substantial resources and will likely result in the loss of a substantial number of professional researchers. If replacements are hard to find outside of the Washington DC employment area, and funds appropriated for research are devoted instead to relocation, neither staff nor financial resources may be adequate for ERS' on-going, high- quality economic measurement responsibilities." It also says that the presently called-off plan to realign ERS from the Undersecretary For Research, Education and Economics to the Secretary's Office would conflict with AEA's Principles "as well as with Title III of the Foundations for Evidence Based Policymaking Act ...both of which suggest that to be credible, trustworthy, and unhindered in its mission, a statistical agency must maintain a position of independence from undue external influences, avoiding even the appearance that its collection, analysis, or dissemination processes might be manipulated for political or partisan purposes."

The Agricultural & Applied Economics Association (AAEA), established in 1910, is a not-for-profit association serving the professional interests of its roughly 3,000 members working in food, agricultural, natural resource, rural development and broadly related fields of applied economics. In a review of USDA's plan to relocate the Economic Research Service (ERS) and National Institute of Food and Agriculture (NIFA) from Washington, DC, to Kansas City, a team of AAEA member economists find that the ERS move will result in a net cost to taxpayers rather than a net savings, and that a rushed, unplanned move will undermine the quality of USDA agricultural economic information at a critical time for the nation's agricultural and rural economy. The AAEA Review <u>HERE</u> finds that the proposed move

would cost United States taxpayers \$83 to \$182 million dollars, instead of saving them \$300 million as the USDA's analysis claims. AAEA's analysis corrects two errors in the original USDA analysis: 1) the USDA had overstated the cost of keeping the agencies in the National Capital Region, and 2) the USDA had failed to take account of the value of research and data lost through resignations and retirements.

Says former AAEA President, Scott Swinton, "The ERS and NIFA have ... a world-class staff, who have a deep knowledge and understanding of agriculture and rural issues, to support the U.S. food and agriculture sector, as well as the data and information systems that support timely, objective research and analysis of major agricultural issues." "Few people realize how much the USDA Economic Research Service's analysis has saved American taxpayers," stated current AAEA president David Zilberman. "To be frank, America's agricultural economy today faces serious challenges," continued Zilberman. "This is the worst possible time to dismantle the USDA's capability to analyze agricultural markets, crop insurance, and trade policy."

Thank you for the opportunity to highlight the public statements of these two respected scientific societies and AAEA officers.

Testimony of Sonny Ramaswamy July 18, 2019 Redmond, Washington

Chairman Pat Roberts, Ranking Member Debbie Stabenow, and members of the committee.

I thank you for giving me the opportunity to submit this written testimony for the record at the Full Committee Hearing of the United States Senate Committee on Agriculture, Nutrition, and Forestry on Agricultural Research and 2018 Farm Bill Implementation.

My name is Sonny Ramaswamy. I currently serve as the president of the Northwest Commission on Colleges and Universities located in Redmond, Washington.

From May 6, 2012 to May 5, 2018 I served as director of the National Institute of Food and Agriculture (NIFA) in the Obama and Trump administrations.

Your committee was instrumental in establishing NIFA in the 2008 Farm Bill, as the federal food and agricultural science counterpart to the National Science Foundation (NSF) and the National Institutes of Health (NIH). By investing in science and solving critical issues—such as farm productivity and profitability, nutrition, obesity, climate change, renewable energy, and positive youth and workforce development—NIFA's work is integral to the health and security of ALL Americans.

The United States Department of Agriculture (USDA) shocked the scientific, academic, and farm communities with the announcement on August 8, 2018 (<u>https://www.usda.gov/media/press-releases/2018/08/09/usda-realign-ers-chief-economist-relocate-ers-nifa-outside-dc</u>) to relocate NIFA and ERS to Kansas City (<u>https://www.usda.gov/media/press-releases/2019/06/13/secretary-perdue-announces-kansas-city-region-location-ers-and-nifa</u>).

The proposal to relocate NIFA and the Economic Research Service to Kansas City will have significant negative impact on the research and extension portfolio under Title VII of the 2018 Farm Bill.

As a scientist and former director of NIFA, I will speak to the potential negative impacts of the proposed relocation of NIFA to Kansas City and action your committee could take to prevent the same.

I can state unequivocally the rationale for the proposed relocation—attracting and retaining highly qualified staff, placing the agency closer to stakeholders, and cost-savings—does not stand to reason and evidence.

Since the announcement of the proposed relocation, NIFA has been hemorrhaging and losing three to five staff members each week; just today, July 17, 2019, I have learned that only 73 NIFA employees (out of a total of 400 full time equivalents) have agreed to moving to Kansas City.

The scientific staff has been decimated—they're leaving because of family reasons such as health, education, costs of relocation, intimidation and lack of support—and in the Awards

Ramaswamy Testimony, July 18, 2019, Page 2

Management Division of the Office of Grants and Financial Management only three staff members remain.

This above situation is resulting in tens of millions of dollars, if not hundreds of millions, not being deployed in a timely manner during this fiscal year and it will be worse next fiscal year. These dollars are desperately needed for the urgent research and extension work, for which Congress appropriated funds meant to address issues such as citrus greening disease, damage to crops and livestock in the Midwest due to extreme weather events, diseases of cotton and poultry, to name just a few examples.

In announcing the selection of Kansas City as the site, USDA Secretary Perdue claimed that over \$300 million would be saved. The purported savings has been found to be non-existent and indeed is going to cost the United States government an additional almost \$130 million according to a recent economic analysis (<u>https://www.aaea.org/UserFiles/file/Report-MovingUSDAResearchersWillCostTaxpayers-AAEAReport2019june19final.docx.pdf</u>).

NIFA is part of the United States government's science agenda, created by the Office of Science and Technology Policy, which brings together NSF, NIH, EPA, Food and Drug Administration, Department of Energy, Department of Defense, and others to address compelling societal challenges, including agricultural. Relocating NIFA to Kansas City would not only take the agency out of the critically needed national conversations and partnerships, which NIFA often convenes, but also would have significant negative impact on our nation's ability to solve societal problems and ensure its global competitiveness, a vision articulated by President Donald Trump.

Finally, the proposed relocation would entail significant additional costs to the American taxpayer—none of which has been transparently calculated by USDA—for shutting down operations in the National Capital Region, including buyouts for early retirements, startup costs in a remote location, recruitment of personnel and relocation costs, and costs for the creation and deployment of information technology and grants, financial management, and policy infrastructure.

Recreating NIFA in Kansas City would likely take two to five years, and in the meantime, its ability to convene the best knowledge and ideas and deployment of funding to solve problems of farm productivity and profitability, nutrition and obesity, mitigation of the impacts of droughts, extreme weather events, and environmental and other societal challenges will come to a halt, potentially resulting in decades-long negative impacts on farmers and consumers and our nation's international trade. Farm incomes, which are currently significantly depressed, will suffer further.

Foundational changes in organizations, including relocation, must result in improved efficiency, effectiveness, transparency, and accountability. Indeed, President Donald Trump's 2018 Management Agenda (<u>https://www.whitehouse.gov/wp-content/uploads/2018/03/Presidents-Management-Agenda.pdf</u>) focuses on improved mission, service, stewardship, efficiency, and effectiveness. The proposed relocation of NIFA is not supported by any of these criteria.

During the last few years, NIFA has used evidence-based, six-sigma continuous process improvements in the operations to reduce its footprint, streamline processes, develop and deploy paperless transactions, enhance transparency and accountability, and create dashboards to track changes. These continuous process improvements have already contributed to reduced

Ramaswamy Testimony, July 18, 2019, Page 3

costs and savings of millions of dollars each year—NIFA has the data and your committee can request the same as you make decisions about this proposed relocation.

NIFA's legacy dates back to 1862 when President Abraham Lincoln signed the Morrill Act into law. During the last century and half, the partnership between the federal government through NIFA and its predecessor agencies, state and county governments, and the 1862, 1890, and 1994 Land-Grant Universities resulted in the most effective system of agricultural science and education: there is no other such system in the world!

The outcomes of the oversight and convenings provided by NIFA for our nation's research, education, and extension enterprise have created the most productive agricultural production system in the world, allowing America to become the wealthiest and most powerful nation on Earth.

By relocating NIFA, which could potentially lead to the loss of its global influence, I am perplexed at how USDA believes America can solve the continuing societal and agricultural challenges, while remaining the global leader in the food and agricultural enterprise.

I call on Congress to proscribe USDA from moving forward with its proposal to relocate NIFA and ERS before undertaking a third-party, transparent, evidence-based, and unbiased review and analysis of costs and benefits, lest they destroy the finest research enterprise the world has ever known.

I thank you for this opportunity to submit this testimony.

#### **Testimony of Susan Offutt**

#### Chief Economist, US Government Accountability Office (retired)

#### Regarding the proposed relocation of the USDA Economic Research Service

#### Before the Senate Committee on Agriculture, Nutrition, and Forestry

As a career civil servant, I have a broad and deep understanding of the best practices, principles, and legal and regulatory requirements that underpin good government. My final post in Federal service was as Chief Economist of the US Government Accountability Office, the independent Congressional watchdog. Immediately before that tour, I spent a decade as Administrator of the Economic Research Service of the US Department Agriculture. Also, I was Chief of the Agriculture Branch at the US Office of Management and Budget in the Executive Office of the President. Based on the expertise I gained from these experiences, I find USDA's plan to relocate ERS to be unjustified by any substantive concerns about the agency's functioning and to be so poorly executed as to endanger the agency's ability to provide even minimal levels of research and data analysis.

The Committee should probe USDA's fundamental motivation for upending the ERS program and mistreating its professional staff. This question ought to have a satisfactory answer before any consideration of the (opaque and now chaotic) process by which relocation has been pursued. The claim of cost savings was always risible and has been debunked in analysis by the Agricultural and Applied Economics Association, to which I contributed. The assertion that the agency's functioning could be improved by physical proximity to farmers belied a lack of understanding of the way the agency does its work and represented a cavalier dismissal of the broad range of citizens who use its output. ERS makes serious efforts to plan and disseminate its research and data analysis, all well documented. It catalogues its key outputs in a transparent and accessible way. Where, exactly, does it fall short? In what areas of its expertise could it improve? The Department has not addressed these questions, and Congress should require it to do so. Lacking a cogent and compelling justification, the Department has effectively used relocation as an excuse to degrade the agency's ability to function as an objective policy research organization serving the public.

The "process" by which USDA has pursued relocation lacks even superficial adherence to the practices of good government. Most egregious is the intent to send ERS (and the National Institute for Food and Agriculture) to the locality willing and able to make the "best" bid (based on unspecified incentives). A private firm, Ernst & Young, provided a propriety analysis of alternative locations. This lack of transparency and of regard for established procurement policies and procedures risks wasting taxpayer funds on what may well be a politically motivated site selection. USDA's failure to address the possibility that ERS (and NIFA) could remain in the National Capital Region at lower than current cost betrays its bias against fair and open competition. As for the way it has handled Federal civil servants, the Department has wasted the

investment taxpayers have made in recruiting, training, and motivating the human capital that is the agency's major asset. The proposal to slash the agency's budget sent employees a clear signal about its perspective on the agency's mission, and though Congress rejected the cut, staff began to look for alternative employment. Subsequently, the harsh terms and confusing statements about the consequences of relocation have driven off dedicated analysts and supporting professionals. The Department's continued insistence that it values ERS employees could not, in such circumstances, appear more insincere.

No doubt the Committee is aware of the widespread alarm among stakeholders who were surprised and saddened by the Department's decision to relocate ERS and NIFA. Colleagues in the land grant universities, those who rely on Federal statistics, and citizens in urban and rural America have raised objections to the substance of the plan and the process by which it has unfolded. Consultation with the public is a bedrock principle of government that ensures the most effective use of limited resources. The Congress should remedy this significant omission by insisting on constructive engagement by the Department with its constituents.

In sum, USDA's plan to relocate ERS and NIFA makes a mockery of the way the Federal government should make decisions, manage its resources, and respond to the public that funds it. In my years in Federal service, I have seen few other agency initiatives that have been so weakly rationalized and so ineptly executed. The Congress should take the opportunity to rectify this situation by mandating a halt to this ill-considered scheme.

Union of Concerned Scientists Science for a Healthy Planet and Safer World

> Testimony from the Union of Concerned Scientists: Food and Environment Program on "Agriculture Research and 2018 Farm Bill Implementation" before the Senate Committee on Agriculture, Nutrition, and Forestry July 18, 2019 Washington, DC

Publicly funded agriculture research is the foundation of success for American agriculture. In particular, implementation of mandatory funding provided to the U.S. Department of Agriculture (USDA) Research, Education, and Extension (REE) mission area in the 2018 Farm Bill is a critical piece of ensuring that success.<sup>1</sup> Which is why we respectfully request that this Committee and Congress act immediately to halt the relocation of USDA's Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA). We also request that the Committee ensure that the integrity of USDA research is maintained now and in the future.

The Union of Concerned Scientists (UCS), a national non-partisan, non-profit organization dedicated to evidenced-based policy making, and its 500,000 plus members have and continue to advocate for increases in publicly funded food and agriculture research due to the benefits for farmers, eaters, and the environment.

Over the years, investments in USDA research have led to important scientific breakthroughs. Strong investments in USDA's research programs allowed U.S. drug companies to mass produce penicillin to aide Allied troops during World War II; it has allowed farmers to understand the competitiveness of their products in U.S. and international agricultural markets; and it has provided critical analysis of the impacts of climate change on farmers and the land they hope to pass on to future generations.<sup>2</sup> USDA REE staff also monitor food insecurity in the United States to help ensure that every family can put food on the table. Moreover, publicly funded research employs taxpayer dollars with astounding efficiency, with a benefit-cost ratio of at least 20:1, if not more.<sup>34</sup> Due to the clear and tangible benefits of agriculture research, it's imperative that any proposals to alter the function of USDA research be scrutinized. Over the past year, the bipartisan scrutiny rightly directed toward USDA's relocation proposal has unmasked the proposal for what it is – an attempt to downsize agriculture research into alignment with the Trump Administration's narrow-minded view of what American agriculture should be.

Since the U.S. Department of Agriculture (USDA) unexpectedly announced its intent to relocate the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA) in August 2018, USDA has withheld or simply failed to develop sufficiently compelling information to demonstrate that the relocation would be a net benefit for U.S. agriculture and the nation's food supply.

<sup>&</sup>lt;sup>1</sup> https://fas.org/sgp/crs/mise/R45525.pdf

<sup>&</sup>lt;sup>2</sup> https://www.politico.com/story/2019/06/23/agriculture-department-climate-change-1376413

<sup>&</sup>lt;sup>3</sup> OECD (2016), Innovation, Agricultural Productivity and Sustainability in the United States, OECD Food and Agricultural Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264264120-en.

<sup>&</sup>lt;sup>4</sup> Alston, J.M. Andersen, J. James, and P.G. Pardey (2011), "The economic returns to US public agricultural research", American Journal of Agricultural Economics Vol. 93, pp. 1257–1277. http://ajac.oxfordjournals.org/content/93/5/1257.abstract.

**Program Contacts:** 

Mike Lavender, Senior Manager of Government Affairs, Food & Environment, <u>mlavender@ucsusa.org</u>, 202-331-5425 Erik Kamrath, Washington Representative, Food and Environment, <u>ekamrath@ucsusa.org</u>, 202-331-6947

UCS Food and Environment Program 2

Given our concerns about the relocation proposal - UCS along with hundreds of organizations and universities, thousands of scientists, the overwhelming majority of ERS and NIFA employees, and dozens of bipartisan agriculture leaders – have opposed this relocation.<sup>5,6,7,8</sup> Most recently, in June 2019, UCS and more than 170 organizations wrote Congress in strong opposition to the relocation.

Both agencies impacted by the relocation are known internationally for rigorous and objective food and agriculture research. This research includes reports on the impacts of climate change on U.S. agriculture, the effectiveness of nutrition assistance programs, and the negative impacts of the President's trade war with China. However, since the beginning of the Trump Administration, rigorous and objective research has proven inconvenient to Secretary Perdue's and President Trump's political objectives. The scientific community writ large sees this relocation, and the speed at which the USDA has moved to make it happen, as a way for the administration to effectively hollow out these agencies so that the quality and timeliness of their research is diminished in the short term and that federal investment in them is diminished in the long term.

UCS believes this relocation will negatively impact farmers and eaters across the country for several key reasons:

• Loss of highly qualified staff at ERS and NIFA: In June 2019, Politico reported that because of the pace at which USDA has moved forward with this relocation, it could force as many as four out of five ERS employees to quit, including more than 90 percent of employees who study climate change, conservation, the environment, and the state of the rural economy, and close to 89 percent of employees who work on nutrition and food safety programs.<sup>9</sup> At NIFA, more than 70 percent of all employees are expected to quit. This exodus and the time it will take to re-staff these agencies will impact the quality and timeliness of U.S. food and agriculture research produced by these world-class scientific research agencies. It is estimated that this loss of staff will "set ERS back five to 10 years" according to Gale Buchanan, USDA Chief Scientist under President George W. Bush, and Catherine E. Woteki, Chief Scientist during the Obama administration.<sup>10</sup>

Loss of highly qualified staff will have different impacts at ERS and NIFA. In FY 2018 NIFA distributed over \$1.4 billion in grants, primarily to universities. The grants went to research projects and institutions in about half of all U.S. Congressional districts.<sup>11</sup> These grants fund a range of research, including support for workforce development and family services for military families, building stronger university agriculture programs, and

#### **Program Contacts:**

Mike Lavender, Senior Manager of Government Affairs, Food & Environment, <u>mlavender@ucsusa.org</u>, 202-331-5425 Erik Kamrath, Washington Representative, Food and Environment, <u>ekamrath@ucsusa.org</u>, 202-331-6947

<sup>&</sup>lt;sup>5</sup> https://www.amstat.org/ASA/Files/pdfs/POL-ERS\_NIFA\_FY20.pdf

<sup>&</sup>lt;sup>6</sup> https://s3.amazonaws.com/ucs-documents/food-environment/USDA-reorg-petition-REV.pdf

<sup>&</sup>lt;sup>7</sup> https://www.cnn.com/2019/06/13/politics/usda-employees-relocated-kansas-city-perdue/index.html

<sup>&</sup>lt;sup>8</sup> https://www.amstat.org/asa/files/pdfs/BlueRibbonLetterAgCmtes.pdf

<sup>&</sup>lt;sup>9</sup> https://www.politico.com/story/2019/06/25/department-agriculture-union-relocation-1554201

<sup>&</sup>lt;sup>10</sup> https://www.washingtonpost.com/science/2019/06/13/usda-research-agencies-will-move-kansas-city-regionperdue-announces/?utm\_term=\_d77968a57963

<sup>&</sup>lt;sup>11</sup> https://www.dailyyonder.com/usda-agencys-relocation-affect-grantmaking-abilities-unionsavs/2019/07/10/32779/

UCS Food and Environment Program 3

helping farmers who are experiencing mental health crises.<sup>12</sup> With up to 70 percent of its staff expected to quit by the end of fiscal year 2019, there is a serious concern that such a loss could delay funding from NIFA to grant recipients.<sup>13</sup> Such funds should not be at risk of being delayed in FY 2020 and beyond.

At ERS, consumers, universities, congressional leaders, and international markets rely on data products and reports produced by the agency. With four out of five ERS employees expected to quit due to the hastiness of the relocation, among other reasons, there is legitimate concern that the quality of these products will decline or that they will be delayed. Members of Congress and other stakeholders should also be concerned that some data products or reports may be suspended or discontinued due to low staff levels. For example, ERS is Congressionally mandated to complete the following:

- Monthly Commodity Reports provides monthly updates and short-term outlooks for agricultural commodities.
- Commodity Costs and Returns provides recent and historical cost and return estimates for agricultural commodities.
- 3. USDA Baseline Report USDA's long-term agricultural projections provide a scenario for the farm sector for the next 10 years. Projections cover agricultural commodities, agricultural trade, and aggregate indicators of the sector such as farm income.
- US Food Assistance Landscape examines the effectiveness of the nutrition assistance programs, like the Supplemental Nutrition Assistance Program (SNAP)
- US Food Security Data this data set provides information about food security in the U.S., including the most vulnerable populations (i.e. children and low-income populations).

We have deep concerns that some of these reports and other ERS products may be at risk if the relocation moves forward.

• **Cost to Taxpayers:** An analysis conducted by the Agricultural and Applied Economics Association (AAEA), found that the relocation will cost taxpayers between \$83 and \$182 million, rather than saving \$300 million dollars as predicted by the USDA.<sup>14</sup> AAEA's analysis found that the USDA's analysis did not consider the lost value in research quality that would result from the relocation.

#### **Program Contacts:**

<sup>12</sup> https://portal.nifa.usda.gov/web/maps/nifa-funding-by-congressional-district/

<sup>13</sup> https://www.cnn.com/2019/07/15/politics/usda-climate-research-kansas-city-sonny-perdue/

<sup>14</sup> https://www.aaea.org/UserFiles/file/Report-MovingUSDAResearchersWillCostTaxpayers-

AAEAReport2019june19final.docx.pdf

Mike Lavender, Senior Manager of Government Affairs, Food & Environment, <u>mlavender@ucsusa.org</u>, 202-331-5425 Erik Kamrath, Washington Representative, Food and Environment, <u>ekamrath@ucsusa.org</u>, 202-331-6947

UCS Food and Environment Program 4

- The diminishment of American food and agricultural research: At no point has the USDA provided an explanation for how this relocation will increase or improve public investment in agriculture research. In fact, improving agriculture research wasn't even a stated goal of the relocation.<sup>15</sup> The Administration's FY 2020 budget proposed \$229 million in cuts to USDA research; the deepest cuts were made to ERS (30% budget cut and a 52% cut to staff years at the agency).<sup>16</sup> The FY2020 budget request also proposed eliminating research on beginning farmers and ranchers, rural economies, and food and nutrition assistance programs, among other research topics. At a time when China has surpassed the U.S. as the top investor in agriculture research, we can't afford to fall even further behind.<sup>17</sup> The future of U.S. agriculture and our nation's food supply depends on investing more in agriculture research, not less.
- The abandonment of nationally beneficial research: There is legitimate concern that moving ERS and NIFA to a specific region will skew research or research funding in favor of that region, to the detriment of farmers, ranchers, researchers, and consumers in the rest of the country. The purpose of having science-based and statistical research agencies based in the nation's capital is to prevent any regional bias and to ensure that the national interest is being served. William F. Tracy, a Professor of Agronomy in the College of Agriculture and Life Sciences at the University of Wisconsin Madison stated in testimony on June 5, 2019 before the House Agriculture Committee that:

"By moving the agencies outside Washington some types of agriculture may be favored over others when it comes to research and funding. Even if favoritism is untrue it is likely that some will see bias. Keeping the agencies in Washington helps ensure prioritization of all types of agricultural research and maintains trust in the fairness of the granting process. "18

While the opposition to this relocation continues to mount, it's worth pointing out the sparse and listless support for the relocation proposal, which to date has been mostly limited to an extremely small cohort of Members of Congress. It's unconscionable to allow a proposal that will negatively impact millions of Americans to be carried out based on the unsubstantiated claims of so few.

For all of these reasons, UCS asks the Senate Committee on Agriculture, Nutrition, and Forestry to halt this ill-advised, costly, and detrimental relocation. We also urge the Committee to use its authority to protect the integrity and quality of USDA research, so that it can continue to generate new discoveries and innovations that support U.S. farmers and protect our nation's food supply.

- 17 https://www.sciencedirect.com/science/article/abs/pii/S0306919218308728
- 18 https://agriculture.house.gov/uploadedfiles/hhrg-116-ag14-wstate-tracyw-20190605.pdf

**Program Contacts:** 

<sup>&</sup>lt;sup>15</sup> https://www.usda.gov/media/press-releases/2018/08/09/usda-realign-ers-chief-economist-relocate-ers-nifaoutside-dc

https://www.obpa.usda.gov/budsum/fy2020budsum.pdf

Hogina Contaction Mike Lavender, Senior Manager of Government Affairs, Food & Environment, <u>mlavender@ucsusa.org</u>, 202-331-5425 Erik Kamrath, Washington Representative, Food and Environment, <u>ekamrath@ucsusa.org</u>, 202-331-6947

# **QUESTIONS AND ANSWERS**

July 18, 2019

#### Senate Committee on Agriculture, Nutrition, & Forestry Agricultural Research and the 2018 Farm Bill July 18, 2019 Questions for the Record Deputy Under Secretary Scott Hutchins

#### **Chairman Pat Roberts**

1) Thank you for your commitment to ensure that the critical reporting and other functions performed by the Economic Research Service (ERS) will not be delayed due to the relocation to the Kansas City area. Can I have your commitment that the grant-making and other important functions of the National Institute of Food and Agriculture (NIFA) will also be carried out to obligate fiscal year 2019 grant funds and to meet other pending programmatic and statutory requirements?

Response: Yes, USDA commits that the functions of the National Institute of Food and Agriculture (NIFA) will be performed to obligate fiscal year 2019 grant funds and meet programmatic and statutory requirements.

2) One factor that will be essential to a successful transition of ERS and NIFA to Kansas City is the hiring and training of employees for positions in which staff opted not to relocate from Washington, DC. What are the short term and long-term strategies for recruiting, hiring, and training the specialized personnel needed to ensure ERS and NIFA functions and obligations are fully performed without interruption?

Response: ERS and NIFA have created and are implementing a robust talent acquisition strategy for the short- and long-term needs of both agencies. In the short term, agencies are underway posting job opportunities and initiating the hiring process for vacancies. Job postings for internal and external candidates are through usajobs.gov. Each agency has assessed gaps for which they have obtained short term contractors and accessed assistance from employees in other areas of the Department. Each agency has a training plan in place that includes knowledge transfer from employees that will not be relocating to the new location to their peers to ensuring mission continuity responsibilities and deliverables are captured and transferred prior to employee exit interviews.

Long term strategies include the continuation of hiring for vacant positions across both agencies. In both the short- and long-term, a top priority for ERS and NIFA is to provide a positive experience for existing and new employees and deliver value from respective mission areas to stakeholders.

1

USDA will work closely with the agriculture industry in the Kansas City area and within the nearby and greater land-grant university system to promote the career opportunities within ERS and NIFA located in Kansas City.

3) Building upon the hemp research pilot authorized in the 2014 Farm Bill, the 2018 Farm Bill authorized hemp cultivation in the United States. There is a scarcity of data and research to sufficiently support this new industry. What is USDA, and in particular the REE mission area, doing to meet the rapidly growing needs of producers, the hemp industry, and related input and service suppliers in terms of data, analysis, and research?

Response: REE, through NIFA, has awarded several grants for hemp-related projects including a multi-state, multi-university initiative for a number of topics related to hemp production. Additionally, the REE funded the IR-4 program where USDA will work with EPA to determine what information is needed to initiate pesticide registrations for hemp. Finally, ARS researchers are exploring ways to work under both the 2014 Farm Bill and forthcoming 2018 Farm Bill rules to begin USDA intramural research projects.

4) USDA is planning to take ownership and operational control of the National Bio and Agro-Defense Facility (NBAF), currently under construction by the Department of Homeland Security (DHS), effective in December of 2020. DHS has contracted with the private sector for a portion of the construction and operational needs. I understand from some contracted personnel that their contracts will be expiring in December of 2019, and some of these contracted functions will be brought under USDA. Understanding that USDA and DHS operate in different capacities, how does USDA intend to partner with the private sector to ensure the success of NBAF? Please provide a comprehensive inventory of other significant changes that are expected by the end of December of 2019, one year prior to the transfer of ownership in December of 2020.

Response: USDA and DHS worked closely together to transfer the OPTIC (Operational Planning and Technology Integration Contract) contract from DHS to USDA which occurred on July 1, 2019. USDA has benefitted from DHS' previous operational planning efforts and development of the OPTIC contract and this contract is a critical component of standing up NBAF operations. The US Engineering subcontract for operating the NBAF Central Utility Plant runs through December 2020, not 2019.

Partnership with the private sector is valuable and will take several forms. From the research and development perspective, USDA will have partnership and collaborative opportunities including technology development and veterinary medical countermeasures. The Biologics Development Module (BDM), a new capability at NBAF, is intended to accelerate the process of moving from promising laboratory research to small scale production conditions more rapidly. USDA is currently evaluating the operational model and intends to work closely with private sector partners to scale up

## 145

#### discoveries in the BDM. USDA representatives have interacted with other Government Owned and Contractor Operated Facilities to learn best practices including the Walter Reed Army Institute for Research Pilot Bioproduction Facility and the National Biodefense and Counterterrorism Center because we realize the BDM is an area where we may find improved functionality through contracting operations.

Lastly, there are several support contracts the Department is in the process of researching and awarding including a security contract for the guard force, contracts to train workers in biosafety and high containment, waste removal contracts, uniform supply and laundry service contracts, and utility supply contracts to name just a few services. All are intended to be operational before December 2020.

5) Foot and mouth disease, African swine fever, and wheat stem rust are a few examples of emerging threats that could cause significant damage to U.S. agricultural industries and the agricultural economy. In addition to the harm they could cause to domestic industries, the national security impacts of the spread of pests and disease in the U.S. could be catastrophic in terms of food security and economic damage. NBAF was created specifically to combat these challenges. Understanding that USDA has experience operating research facilities across the country, how will NBAF be elevated to ensure that national security is the top priority? How is USDA planning to meet the capacity needs of NBAF, while also ensuring the current research functions of USDA are not reduced or diminished?

Response: USDA understands that agriculture security is national security and is actively working to ensure that the evolving threat landscape will inform prioritization of research at NBAF. Because of the size, scope, and high priority research areas NBAF will be managed differently from other USDA labs around the country. For example, NBAF will have a director responsible for facility operations and research. This director will report through an elevated reporting structure, directly to the ARS Associate Administrator for National Programs to ensure that oversight of NBAF will be done at the highest levels of ARS and coordinated across the Department as appropriate.

Ultimately NBAF operations will need to be funded in a way that does not disrupt other USDA research programs. USDA has had excellent and consistent support from the administration, Congress and stakeholders to both maintain its current investments across the agricultural research spectrum and to stand up NBAF, a world-class, world leading facility to address foreign, emerging and zoonotic livestock disease challenges. We are fully committed to fulfill this mission.

6) From the onset, the intent of NBAF has been to address emerging threats to national security. There is some concern that with the transfer from DHS to USDA that the mission of national security may be diminished. How does USDA plan to engage DHS to

# ensure that NBAF can fulfill its research requirements while also addressing potential national security threats?

Response: Since 2004, USDA and DHS have maintained a strong partnership at PIADC. This relationship will continue at NBAF. Given NBAF's role as a critical asset for national security relevant to both animal and public health, DHS and USDA are developing a strategy to address homeland security mission priorities and collaborative evaluation of programmatic needs to advance bio- and agro-security. Examples of areas through which these joint USDA-DHS initiatives will take place include:

- Homeland security meetings that include the National Biodefense Analysis and Countermeasures Center (NBACC), Kansas Intelligence Fusion Center (KIFC), and representatives from other federal partners involved in the bio and agro-defense domain to maintain awareness for NBAF programmatic activities and aligned USDA priorities.
- DHS continuing to provide input towards the international gap analysis of animal disease countermeasures conducted by USDA.
- DHS participation in annual NBAF stakeholder meetings in order to gather input and to provide guidance on NBAF research priorities.
- 7) During the development and management of NBAF by DHS, the NBAF Program Executive Office was organized into construction management, operational planning, program support, and partnership development. Will USDA establish any management structure and dedicate resources dedicated to partnership development for NBAF?

Response: Establishment and maintenance of robust stakeholder relationships are critical in the strategic approach for the facility. The bio and agro-defense mission domain is complex and requires the coordinated efforts of multiple government agencies and private partners, particularly for the development of veterinary medical countermeasures (MCM) technologies, knowledge products, and policies/practices necessary for emergency preparedness and response. Within the NBAF structure, the Communication and Technology Dissemination Office, a first for a USDA laboratory facility, recognizes the unique and special role that NBAF partnerships will play. This office will be the first point of contact for the use of several mechanisms to enhance collaborative opportunities and outcomes. Partnership intermediary agreements (PIAs), collaborative research agreements (CRAs) such as cooperative research and development agreements (CRADAs), material transfer research agreements (MTRAs), data transfer research agreements (DTRAs), other transaction authorities (OTAs), cooperative agreements, and prize/ challenges are potentially a few of the mechanisms that may be used. Alignments across NBAF and the stakeholder network will guide partnership formation and strengthen animal and public health protection while also promoting economic growth.

## The types of partnerships engaged by USDA include: Regional Partnerships, U.S. Partnerships, and Global Alliances. Agro-security Partnerships for Innovative Research (ASPIRE) is the conceptual framework to engage creative partners and collaborators well beyond the walls of NBAF and stimulate the entire bio and agro-defense sector. Building on the partnering success that DHS initiated, NBAF will leverage its proximity to the KCAHC, Kansas State University (KSU) and BioNexus KC, and work to attract collaborators from across the U.S. and internationally.

8) The research title of the Farm Bill enacted several "high priority research initiatives", including a fertilizer management initiative. This initiative will help provide farmers with critical information about the most effective management practices to ensure that even in the face of multiple major rain events, nutrients stay in the field and do not run off into the water. How does NIFA plan to implement this and other high priority research initiatives in the Farm Bill?

Response: NIFA will work with the Congress to implement these high priority research initiatives identified in the Farm Bill, should funding be appropriated.

#### **Ranking Member Debbie Stabenow**

- 1) The 2018 Farm Bill attempted to level the playing field for all National Institute for Food and Agriculture (NIFA) sponsored programs, removing matching fund carve-outs for certain eligible grantees. However, in removing the 2014 Farm Bill matching requirement language, entities are now required to provide a full match in the Specialty Crop Research Initiative (SCRI) program without flexibility to include a research institution's indirect costs or allow flexibility to waive the matching requirements. For many research institutions, this change has created a funding burden that is too high for them to participate in the SCRI program. I strongly encourage NIFA to follow previous guidance and congressional intent prior to the 2014 Farm Bill \*(see Sec 710 of the 2013 Ag appropriations bill) by allowing indirect costs to count toward institutional matching fund requirements.
  - a. Will you commit to allowing maximum flexibility for institutions seeking to use indirect costs as part of the matching fund requirement?

Response: NIFA allows in-kind contributions toward required matching for all of its competitive grant programs, as permitted by law. While NIFA's Administrative Provisions [see 7 CFR 3430.52(b)] restrict its treatment of unrecovered indirect costs as in-kind matching contributions for competitive grants including SCRI,

# 148

NIFA is exploring the potential to modify these Administrative Provisions. Any and all changes, however, would be subject to regulatory approval and would only take effect upon NIFA's publication of a final rule.

b. Can you please explain what steps you will take to ensure that all appropriate sources of institutional funding and support from SCRI grantees is included when calculating matching funds assessments?

Response: NIFA has an established process to ensure that all appropriate sources of institutional funding and support from competitive grantees, including SCRI, are included when calculating matching funds assessments. Specifically, in instances where a match is mandatory, any resulting award requires the signature of an Authorized Representative (AR). The purpose of the signature is to ensure that grantees are aware of the matching requirements and their commitment to meet them. Only when NIFA receives the award signed by the AR will award funds be released and available for drawdown. Where a match is required, the award document necessitates a bilateral agreement resulting in all funds being withheld pending NIFA's receipt of the fully executed grant award document. Upon receipt of the counter-signed Notice of Award (Award Face Sheet), NIFA will release grants funds for placement in the Automated Standard Applications for Payment System (ASAP). ASAP, operated by the Department of Treasury's Bureau of the Fiscal Service, is NIFA's designated payment system for awards. NIFA lastly conducts post-award follow up on the match requirement through the receipt and review of the grantee's annual and final SF 425 financial reports, which are used to determine if grantees are reporting match expenditures in accordance with the award. To ensure grantees are complying with matching requirements post award, NIFA may also conduct administrative reviews during the awardee's period of performance.

- 2) I was recently made aware from several research institutions and stakeholders that USDA has stopped collecting local food information on the Economic Research Service's (ERS) Agriculture Resource Management Survey, which is USDA's primary source of information about production practices, resource use, and the economic well-being for farmers and ranchers. This change occurred without any stakeholder input and will significantly hinder the ability for researchers to adequately measure impacts of local and regional foods systems on local economies. The information from this survey also helps provide other agencies within USDA with the data needed to help support these farmers through farm programs, loans, and risk management tools.
  - a. Will you commit to reinstating the local food related questions on the 2020 Agriculture Resource Management Survey and all future surveys?

# 149

## Response: NASS receives an annual appropriation for the Agricultural Estimates Program to produce estimates of farm production expenses and partners with the Economic Research Service in developing content for the Agricultural Resource Management Survey related to information on farm income and other policy relevant topics. Since funding levels for FY 2020 have not been set, NASS and ERS are unable to make this commitment at this time.

#### b. Please explain why these questions were removed from survey in the first place.

Response: Historically these questions have rotated on and off of the Agricultural Resource Management Survey questionnaires. This rotation has allowed data on multiple topics of importance to be gathered over the course of three to four years. Local food related questions have been on the survey for the last several consecutive years. The availability of data from other sources, policy needs, and relevance of the topic are all considerations that are evaluated as content is developed annually. NASS and ERS are currently evaluating content for the 2020 survey and will take the items noted into account when prioritizing content.

c. Please explain why USDA did not have discussions with stakeholders who use this information before the decision was made to remove the questions.

Response: The Agricultural Resource Management Survey is one of several projects which collects data on local foods. On April 11, 2019, NASS released the Census of Agriculture which included detailed information down to the county level on local food marketing practices. In addition, NASS plans to conduct a special local foods study as part of our Census of Agriculture program in FY 2021 if funds are available.

- 3) It has come to my attention that the National Agriculture Statistics Service (NASS) has suspended its data collection on honeybees. This is alarming given the ongoing concerns about pollinator and honeybee population loss. This information is critical not only to the honey industry but to all of the crops that need pollinators to produce food. I am very concerned that NASS has discontinued this data collection.
  - a. Will you commit to resuming this data collection next year and every year in the future?

Response: NASS receives an annual appropriation for our Agricultural Estimates Program. Since funding levels for FY 2020 and beyond have not been set, NASS is unable to make this commitment at this time.

7

#### b. Please explain why USDA made the decision to discontinue this data collection.

Response: NASS made this decision to stay within our resources after reviewing our estimating programs against mission- and user-based criteria, the amount of time remaining in the fiscal year to meet budget and program requirements, and the need to maintain the strongest data in service to U.S. agriculture. The decision to suspend data collection was not made lightly but was necessary given available resources. We will continue to review our federal agricultural statistical programs using the same criteria to ensure timely, accurate and useful statistics.

#### c. Is USDA continuing any parts of this data collection report? If yes, please explain what information NASS is collecting.

Response: NASS will publish the annual Honey Bee Colonies report as scheduled on August 1, 2019. This report will include data from January 1, 2018 through April 1, 2019. The suspension of one quarter in fiscal year 2019 is considered temporary as future fiscal year budgets have not yet been determined. USDA will continue collecting and publishing data for the annual Honey report which records number of colonies producing honey, yield per colony, honey production, average price, price by color class and value and honey stocks nationally and by state. The report also notes trends and changes in the honey production, which is an effective way to monitor bees captures general trends in colony numbers over time

4) The National Institute for Food and Agriculture (NIFA) administers several programs with mandatory funding including the Beginning Farmer and Rancher Development Program, the GUS Nutrition Incentive Program, Specialty Crop Research Initiative, and the Organic Agriculture Research and Extension Initiative. When do you anticipate FY2019 awards to be announced for these competitive grant programs?

Response: NIFA is committed to servicing our partners and customers as quick as we can. NIFA staff are making every effort to obligate all FY 2019 annual awards before September 30. NIFA will announce awards once agreements have been finalized with recipients.

 Will you commit to providing the Senate Committee on Agriculture, Nutrition, and Forestry with all of the scientific reports and studies published after January 20, 2017

that relate to the issue of climate change that USDA researchers either authored or collaborated on? Will you commit to posting all of these reports on USDA's website?

Response: Please see Attachment A for a list and link to the reports requested.

The National Agricultural Library (NAL), <u>www.nal.usda.gov</u>, makes citations and full-text articles of USDA-funded research, including ARS research publications, available through its repository, PubAg, at <u>https://pubag.nal.usda.gov/</u>. These materials are also cataloged and indexed in AGRICOLA, at <u>https://agricola.nal.usda.gov/</u>, NAL's catalog of published agricultural information from around the world.

NAL collaborates with ARS's Office of National Programs (ONP) to ensure ARS scientists submit their final, peer-reviewed, publisher-accepted manuscripts to PubAg for public access. The final, peer-reviewed articles are also available through the scholarly publications that publish the scholarship in its final form. NAL makes every effort to be as comprehensive and as inclusive as possible, but there may be gaps in this publication record, particularly from smaller publishers. NAL is making enhancements to PubAg in the next 12 to 18 months to improve discoverability and access to ARS scientists' research outputs.

Attached is a list of 1,447 citations on climate change, global warming, and global change. The articles include at least one USDA-affiliated author and were published between 2017 and the present. The date assigned for each record is the final publication date of the article; research reported has often been conducted years in advance of article publication.

6) During our July 18, 2019 hearing you indicated that the USDA's climate resilience science plan, as reported in the Politico article published on 7/18/2019, that was developed in 2017 was never intended to be released to the public. However, the 2017 plan itself plainly reads that its development "follows the USDA Climate Science plan published in 2010," which was released publicly. Why do you believe the 2017 plan was never intended to be released to the public? Who told you that and who made this decision? Why did USDA change course and decide to restrict public release of this report – thereby blocking all the information contained therein from American farmers and ranchers – when an earlier iteration of the report was released publicly?

Response: The December 2017 version states, "This document is intended for USDA internal use to ensure that resources are directed toward the most necessary science for advancing the Department's ability to meet the needs of its stakeholders." The document published in Politico was a working draft of an updated USDA Climate Change

Science Plan. The original report was prepared in 2010 by the Office of the Chief Economist with input from agencies across the Department. The purpose of the 2010 report was to coordinate and guide the future direction of climate change research across the Department.

In 2016 and 2017, USDA staff from the across the Department prepared an update to the plan. This update was also coordinated by the Office of the Chief Economist. The update reflected progress in meeting the 2010 goals and outlined future research challenges. As the document states, the primary audience for this update was internal to the Department to aid in planning and priority setting. Technical work on the report was completed in late 2017. The December 2017 version of the report was provided to the research agencies as a staff report for their use in research agency planning.

7) Your written testimony mentioned four Agriculture and Food Research Initiative (AFRI) grants including one to researchers at the University of Illinois regarding the impact of cooperation between neighbors to address the spread of herbicide resistance. The testimony then asserts: "Corn and soybean producers in North America lose more than \$40 billion per year to herbicide resistance." Frankly, the alleged annual losses seem implausibly high. Please provide the data that were used to arrive at the \$40 billion per year.

Response: This was a typographical error. The sentence should have read, "Corn and soybean producers in North American <u>could</u> lose \$40 billion per year to herbicide resistance." This data comes from a Weed Science Society publication in 2016<sup>1</sup>.

8) Section 12618 of the Agriculture Improvement Act of 2018 (P.L. 115-334) requires the Secretary to identify data sets within USDA regarding conservation practices and farm profitability and produce a report within a year of enactment on how access might be granted to university researchers to maximize the research benefits with appropriate privacy safeguards to protect producer privacy. Your mission area has a long history of balancing the interests of producer privacy while providing access to researchers. Who has USDA designated as the lead agency or official for this effort? To what extent has REE engaged with the effort to provide insights on what has worked effectively that could be a model for a conservation and farm profitability effort?

Response: This effort is being led by different entities within USDA including the Farm Production and Conservation (FPAC) mission area in conjunction with the Office of the

#### 10

Chief Economist. REE has engaged and consulted with FPAC on implementation of this section and will work to provide any additional data or support needed to complete this report.

9) Will you commit to providing the Senate Committee on Agriculture, Nutrition, and Forestry with weekly updates on the number of employees working in each office of ERS and NIFA in Kansas City and areas of expertise for each new hire?

Response: USDA can provide the Committee with biweekly updates on NIFA and ERS employee numbers located in Kansas City. New hires will be employed based on meeting the expertise requirements as outlined in the job posting for which they applied, consistent with Department policy. Job postings can be found on usajobs.gov. The rationale for a biweekly cadence is due to pay period cycles which is when the Department tracks employee changes and traditionally onboards new employees.

10) USDA recently announced that 73% of current employees will not relocate to Kansas City.

a. How long do you anticipate it will take to fill all of the vacated positions?

Response: Employees that received a reassignment letter can decide to report to Kansas City on September 30<sup>th</sup> and maintain their job regardless of if they had previously declined. Therefore, it is not possible to provide a detailed response to this question until after September 30<sup>th</sup> when both agencies will know how many employees did opt to relocate.

b. In general, how long do you anticipate it will take a new employee to develop the expertise and capabilities necessary to replace an experienced employee who chose not to relocate to Kansas City?

Response: ERS and NIFA will hire for the positions and capabilities that are needed to deliver their respective missions. The agencies will hire for the qualities and experience needed for each position and determine the training and development needs for each employee on a case-by-case basis.

c. What is your strategic hiring plan to fill those positions? Please provide all ERS and NIFA hiring plans to the Senate Agriculture, Nutrition, and Agriculture Committee.

Response: ERS and NIFA have a talent acquisition strategy for the short- and long-term needs of both agencies. In the short term, agencies are underway

posting job opportunities and initiating the hiring process for vacancies. Job postings for internal and external candidates are through usajobs.gov, and the Department is working with the Office of Human Resources Management to obtain additional Direct Hiring Authority for both agencies to expedite hiring efficiency. Each agency has assessed gaps for which they have obtained short term contractors and accessed assistance from employees in other areas of the Department. Each agency has a training plan in place that includes knowledge transfer from employees that will not be relocating to the new location to their peers to ensuring mission continuity responsibilities and deliverables are captured and transferred prior to employee exit interviews.

Long term strategies include the continuation of hiring for vacant positions across both agencies. In both the short- and long-term, a top priority for ERS and NIFA is to provide a positive experience for existing and new employees and deliver value from respective mission areas to stakeholders. USDA will work closely with the agriculture industry in the Kansas City area and within the nearby and greater land-grant university system to promote the career opportunities within ERS and NIFA located in Kansas City.

d. Will you commit to hiring individuals that have the same specialties and expertise of those employees that are leaving? For example, will you commit to replacing climate change specialists with other climate change specialists and replacing nutrition specialists with nutrition specialists?

Response: We are committed to a robust and mission-driven recruitment process to ensure we have qualified employees with the skill sets and expertise needed to continue and build upon capacity and capability for both agencies upon relocation.

e. Please describe in detail how you plan to ensure these agencies will continue to carry out their missions with such high percentage of vacancies.

Response: NIFA and ERS have assessed the short- and long-term needs for their respective missions and both agencies are committed to meeting congressionally mandated deadlines for their work. Prioritization of work is a constant focus and needed resources are being acquired in the interim for hiring and onboarding new employees.

f. Has USDA made any attempt to or will it attempt to replace the employees who are not accepting the reassignment with contractors? If so, please explain in detail the process USDA will use to do so. Will USDA competitively bid out a contract for such purposes?

Response: Support needs in both agencies are continually assessed. Neither ERS or NIFA plan to replace full-time positions with permanent contractors.

g. Has any USDA official asked ERS or NIFA employees that are not accepting the reassignment if they will continue their work as a government contractor? If yes, please explain in detail.

Response: Employees have expressed interest in knowing what the process is for working with the agencies in contractor positions, however neither agency has offered or promoted this in lieu of an employee accepting their reassignment. USDA has provided information to eligible employees that received reassignment orders about the USDA National Finance Center's Reemployed Annuitant Program. A reemployed annuitant is a person who is receiving a Civil Service Retirement System (CSRS) or Federal Employee Retirement System (FERS) retirement annuity and, at the same time, is earning a paycheck as a Federal Employee. It is the duty of the Department to provide this information to eligible employees and express willingness to work with them should they qualify, be interested in doing so and provide a value to the Department.<sup>2</sup>

- 11) In Secretary Perdue's June 12, 2019 response to the letter that Ranking Members Carper, Peters, and I sent, he stated that USDA's final decision would "include an evaluation of any acceptable incentives." The final decision indicated that incentives of more than \$26 million dollars have been offered but failed to explain what those incentives actually were.
  - a. Please describe in detail the incentives that have been offered.

Response: The Department views the proposals and incentives offered by the States and localities involved to be proprietary business information. The states and localities can release this information to the Committee if they desire to do so.

b. Please provide USDA's analysis on whether there are any legal or ethical concerns in accepting each of these incentives.

#### 13

<sup>&</sup>lt;sup>2</sup> https://www.nfc.usda.gov/Publications/HR\_Payroll/Processing\_Tips/reemployedannuitant.php

Response: The Department views the proposals and incentives offered by the States and localities involved to be proprietary business information. The Office of General Counsel and Office of Ethics are available to brief the committee on legal and ethical considerations should these documents be released publicly.

12) I have concerns that USDA does not really intend to fill all of the current positions that will soon be vacant. There is already a high vacancy rate across USDA's research mission area – 22% vacancy rate – and USDA has been slow to fill those slots. In Secretary Perdue's response to my letter with Ranking Members Carper and Peters he indicated that "essential positions" at ERS and NIFA would be filled and did not commit to ensuring the continuation of some vital research. What does USDA mean by "essential positions"? Which positions will be filled?

Response: ERS and NIFA are working aggressively to fill <u>all</u> vacancies at their respective agencies.

13) How many employees have been hired for the Research, Education, and Economics mission area since January 20, 2017?

Response: From January 20, 2017 to July 20, 2019, 613 permanent positions were hired competitively in the REE mission area.

a. What is the average number of days to identify a vacancy and onboard an employee for this vacancy in the Research, Education, and Economics mission area during the time period of January 20, 2017 to present?

Human Resources tracks time to hire from the date of the job announcement opened until the employee has on-boarded. For REE, during the request timeframe, the average time to hire has been 133 days. In general, PhD positions take longer than average and administrative positions take less than average. Days are in calendar days.

b. How many employees are currently working in the human resources office responsible for hiring employees for ERS and NIFA in Kansas City? How many existing positions in that office are currently vacant?

We have 11 staff and 2 vacancies in the HR office responsible for hiring employees for ERS and NIFA in Kansas City.

14) For a wide range is reasons, many current ERS and NIFA employees are unable to relocate to Kansas City. Many such employees have been trying to move to other parts of USDA by applying for noncompetitive transfers. However, I have heard concerns that such transfers are being denied and that noncompetitive transfers are being held until further guidance is provided. Are otherwise qualified employees of ERS and NIFA that are interested in transferring to another positions within USDA in the Washington DC area being prevented from making such transfers? Please explain in detail the requirements for intra-agency transfers for ERS and NIFA employees who are unable to relocate to Kansas City.

Eligible employees that choose not to relocate to Kansas City can utilize the Career Assistance Transition Program (CTAP). CTAP eligibility provides selection priority for a USDA vacancy in which a CTAP employee applies and is found to be 'well qualified' at a lateral position or below. Eligible employees can apply to vacancies. The Department is actively working to ensure opportunities for those who apply are handled in a fair and consistent manner. The Office of Human Resource Management (OHRM) is working with Department leadership, AFM Human Resources Division and all USDA mission areas on CTAP execution.

15) With regard to the ERS please report the number of employees in each division, i.e., Food Economics Division, Information Services Division, Market and Trade Economics Division, and Resource and Rural Economics Division, and office within each division who have indicated they will accept the reassignment to Kansas City and the number of employees who have indicated they will not accept the reassignment to Kansas City. For each division and office please indicate the total number of years of experience associated with those anticipated departures.

Response: This data can change daily as employees have the option to change their decision to relocate.

16) With regard to NIFA, please report the number of employees in each institute, i.e., Institute of Food Production and Sustainability, Institute of Bioenergy, Climate, and Environment, Institute of Food Safety and Nutrition, and Institute of Youth, Family, and Community, and office within each division who have indicated they will accept the reassignment to Kansas City and the number of employees who have indicated they will not accept the reassignment to Kansas City. For each division and office please indicate the total number of years of experience associated with those anticipated departures.

Response: This data can change daily as employees have the option to change their decision to relocate.

# 158

#### Senator Charles E. Grassley

1) Over the past 3 years, the animal agriculture industry has been successful in significantly decreasing the usage of medically important antimicrobials in food animals through implementation of the Veterinary Feed Directive Rule. Soon the use of these will transition to a prescription-only basis. As antimicrobial resistance continues to be one of the greatest threats to society, human and animal health, and economic prosperity, we are presented with new challenges in how we will continue to ensure animal health and welfare as well as food safety in this country. How will USDA continue to prioritize the mitigation of antimicrobial resistance, while continuing to uphold our country's high standards of safe food and healthy animals and people?

Response: The USDA, as co-chair of the Combating Antibiotic Resistant Bacteria (CARB) Task Force continues its commitment to address antimicrobial resistance (AMR) through a coordinated U.S. Government strategy with its co-chairs, the Departments of Health and Human Services and Department of Defense. The Task Force is currently in the process of drafting a new CARB National Action Plan (NAP) for 2020-2025 and considering recommendations made by the Presidential Advisory Council for Combating Antibiotic Resistant Bacteria in July based on input received from stakeholders through a request for information and public meeting.

USDA is taking into consideration what has been learned in the last 5 years since the CARB National Strategy was released, what has changed in the scientific landscape, and what gaps remain to be addressed to continue progress. While we are still working on specific inputs for the new plan, we intend to build on our efforts by working closely with the Food and Drug Administration to support them in continuing to optimize antimicrobial use stewardship; exploring development of new therapeutics, vaccines, and diagnostics to address animal health and minimize the need for antimicrobials; investigating drivers of AMR to inform development of mitigation strategies; expanding use of next generation sequencing technologies with our partners through the National Antimicrobial Resistance Monitoring System to improve surveillance; and pursuing continued international engagement to find science-based strategies to address AMR with our interagency partners.

#### Senator John Thune

 Over the years, producers have questioned the accuracy of many NASS reports; especially this spring when corn and soybean planting fell far behind schedule. I have heard from producers that NASS planted acre reports this year do not accurately reflect the unplanted acres across South Dakota and other states.

#### 16

Will you be making any changes to NASS data gathering to improve the accuracy of the agency's reports?

Response: NASS continues to be transparent with our procedures and has responded and reached out to many organizations and individuals who have expressed concerns similar to this one, including the National Corn Growers Association. To better communicate to our procedures in the future staff have been asked to do the following: synchronize an announcement of re-survey plans with the *Acreage* report release; add text to the report describing the follow-up survey work; review all survey forms, instruments, and instructions for potential improvements to address weather situations such as were experienced this spring; and expand outreach explaining NASS procedures. NASS is also exploring using new technologies such as precision agriculture and remote sensing. A pilot project for the 2020 growing season is currently being explored.

2) South Dakota State University has established the Wokini – which means new beginning – Initiative, which seeks to strengthen American Indian student success through partnerships with tribal communities. To build upon the success of SDSU's initiative, the 2018 farm bill includes a provision I authored to establish the New Beginnings for Tribal Students Program, a discretionary competitive grant program to allow USDA to match up to \$5 million annually of land-grant and tribal colleges and universities funding used to provide identifiable support specifically for Native American students. Since the farm bill's enactment, several universities, including Michigan State University and North Dakota State University, have expressed support for this initiative. While the New Beginnings for Tribal Students Program is subject to appropriations, the House provided \$2.5 million in its fiscal year 2020 spending bill, and I am advocating for funding in Senate appropriations.

Has USDA started implementation procedures for this program?

Response: NIFA has been holding internal discussions about the best way to effectively implement this program should funding be provided. Additionally, I met with the President of South Dakota State University on this topic back in March to get his perspective on how best to implement this program.

If not, I would encourage USDA to do so as we would like to get the program up and running as soon as funds are appropriated.

3) Do your long-term projections for your mission area include closing any research facilities?

Response: USDA and REE continually evaluate our footprint with the Department's programmatic needs. While REE currently has no plans to close facilities, the average

age of our facilities is 64 years old. Should the need arise to close or consolidate a facility the need arise I would ensure that Congress is appropriately notified.

If so, the members of this committee and I would appreciate any information in advance if you plan to shutter any research facilities.

4) In the 2018 farm bill, we were able to include the term "soil health" as a priority for USDA research funding.

Can you tell me how you plan to expand USDA research in your mission area to place more emphasis on improving soil health?

Response: REE recognizes soil health as a priority. ARS scientists across the country have been tasked with conducting research related to soil health. Future expansion of programs will be dependent on funding levels provided by Congress.

5) Last year, Sen. Klobuchar and I introduced the Agriculture Data Act of 2018, which, in part, was included in the 2018 farm bill. Our intent was to improve agriculture data research of conservation practices to help farmers reduce risk and increase profitability.

# What plans do you have to improve data collection to make it more usable for researchers, farmers, and ranchers?

Response: NASS, in accordance with the Confidential Information Provisions of Title V, Subtitle A, Public Law 107–347 and other applicable Federal laws, can not disclose data collected under a pledge of confidentiality in identifiable form to anyone other than employees or sworn agents. Individual participants in a NASS survey can rest assured that summary data will not be published in a way that would identify them or their operation without their written permission. For instance, if only one farm in a county produced a particular crop, NASS would protect the privacy and sensitive business information of that individual farm by combining the data for that crop with reports from other counties to publish only combined totals.

NASS has been meeting with other USDA agencies in the Data Sharing Working Group under the leadership of the Office of the Chief Information Officer (OCIO). The group is working on the report in section 1247 of the Agriculture Improvement Act of 2018 and has identified data sets and the legal protections for the data. The USDA group has met with AGree to learn what data is a priority. The focus has been on various conservation data sets and ways to increase access. NASS has the authority to grant sworn agent status and allow researchers to access the CPISEA protected data under controlled conditions.

6) African swine fever, foot-and-mouth disease, and wheat stem rust are all examples of current threats to global agriculture that know no borders. As crop and animal pests

and diseases emerge and spread abroad, U.S. agriculture needs to stay at least one step ahead to ensure the development of new technologies to combat these threats before they enter the United States.

# How is the REE mission area working to provide research solutions to combat these threats?

Response: USDA takes the threat of crop and animal pests and diseases extremely seriously and is attune to the damage that these are and can to our farmers and ranchers. REE plays a vital role in the Department's approach in the animal and plant pest and disease threat space.

Animal Diseases: USDA is engaged with international working groups and global plant and animal health communities to gain insights into diseases affecting world communities and anticipates how these diseases could be introduced into the U.S. in order to develop prevention and mitigation plans. For example, USDA is a member of the World Organization for Animal Health. The organization asks its member countries to report animal diseases detections, disseminates that information to other countries, and encourages international solidarity in the control of animal diseases. Using both unintentional and intentional threat analyses, recommendations of the scientific community, and gap analyses as a guide, researchers at REE select diseases that represent the classes of the diseases that are most likely to cause a disease outbreak. USDA will focus on having the right diagnostic tools to do surveillance, having trained animal and plant health first responders, and in the case of animal diseases, having the right vaccines available for control and eradication where possible. USDA continues to develop collaborations.

NBAF will enhance the current work and relationships at the Plum Island Animal Disease Center and will be central to USDA's efforts to respond to an outbreak event involving transboundary and zoonotic animal disease agents of livestock, be it from intentional or unintentional sources. Since APHIS and ARS will be cohoused in the facility, task forces around disease threats involving the two agencies will be formed to coordinate research and diagnostic activities and information sharing. The main response aspects of work at NBAF will include quickly diagnosing what the disease is; performing research to ensure that diagnostics are effective; evaluating whether any existing countermeasure for the disease is protective or if vaccines need to be developed; monitoring the disease outbreak through continually evolving diagnostics; and researching proper decontamination and disposal procedures. APHIS works with the Federal Bureau of Investigation (FBI) to perform diagnostics and ancillary testing for forensic and attribution purposes.

• <u>Plant Diseases</u>: Wheat Stem Rust- A virulent biotype (strain) of wheat stem rust (Ug99) was detected in Uganda in 1999 and has since spread to several countries in

eastern and southern Africa and the Middle East. Ug99 is the most virulent wheat stem rust strain reported in 50 years and threatens worldwide grain production. ARS is leading Ug99 research and breeding for Ug99 resistance in cooperation with NIFA and APHIS. The strategy is to advance breeding lines with one or more resistance genes for all wheat/barley market classes, which is conducted in partnership with more than 15 public U.S. wheat breeding programs. Current USDA efforts include:

- ARS's National Small Grains Germplasm Collection in Aberdeen, ID, conserves more than 147,000 accessions of genetically diverse wheat, barley and other small grains. These resources are the raw material for breeders searching for new sources of genes that confer resistance to Ug99. To date, ARS and collaborators have evaluated more than 7,500 accessions for host-plant resistance to Ug99.
- Since 2005, ARS has supported a specific cooperative agreement to screen elite US wheat and barley breeding lines in East Africa for Ug99 resistance. More than 28 U.S. university wheat and barley breeding programs and 12 private sector companies participate, greatly benefitting U.S. breeders and farmers.
- ARS is contributing to the international Ug99 effort through the Borlaug Global Rust Initiative. ARS is also a subcontractor to Cornell University in the "Delivering Genetic Gain in Wheat" grant funded by the Bill and Melinda Gates Foundation (2016–2020). This external funding is supporting high-risk research to incorporate durable rust resistance genes from three wild relatives of wheat.
- The wheat stem rust pathogen genome was sequenced, and this information was used to develop a sensitive diagnostic method to distinguish Ug99 from similar rust pathogens. The method was validated by APHIS and is being shared with land grant university collaborators as well as the National Plant Diagnostic Laboratory Network, which conducts Ug99 monitoring in the United States.
- ARS researchers in St. Paul, MN, expanded nationwide surveillance and monitoring for the possible appearance of Ug99 in the United States by establishing sentinel plots of susceptible wheat varieties in areas, such as south Texas, where stem rust is most likely to enter first in the United States.
- New genes for Ug99 resistance have been cloned and sequenced. Several new genes for resistance have been identified and are now being used across U.S. breeding programs.
- The Pakistan Wheat Production Enhancement Program (WPEP) was initiated in 2010 in partnership with CIMMYT and the International Center for Agricultural Research in the Dry Areas (ICARDA). WPEP's objectives are to carry out rust pathogen surveillance; prebreeding to enhance wheat diversity for rust resistance; accelerate breeding and testing of newly developed germplasm, seed multiplication, and distribution; and establish better agronomic practices. ARS researchers in Raleigh, NC are cooperating with the Pakistan Agricultural Research Council, CIMMYT, and ICARDA to better identify the rust populations in Pakistan and to develop wheat germplasm having durable rust resistance.

- Two papers, co-authored by ARS scientists and published in 2017 in the journal Science, represent a significant step forward to better understand of how plants interact with the rust pathogen.
- 7) Domestically, U.S. agriculture needs to maintain its competitive edge. After 150 years of investing in public agricultural research, U.S. farmers are the most productive in the world, but funding for public agricultural research in the United States has stagnated in recent years.

How is the REE mission area working with OMB and the administration to increase public ag R&D funding and to prioritize this critical work?

Response: REE has engaged through the budgetary process to ensure that limited funds are used in a manner that is efficient, effective, and responsive to the American Taxpayer.

#### Senator Patrick Leahy

- 1) I have serious concerns about the Department's insistence on relocating two critical agricultural research agencies outside of the National Capital Region. I believe the Department's planned relocation of the Economic Research Service (ERS) and the National Institute of Food and Agriculture (NIFA) lacks merit and justification, and has already led to significant losses of highly-qualified personnel. This has and will continue to undermine the mission of both agencies. This move has already dealt a significant blow to the Department's scientific and economic research capacity, and has had an immeasurable impact on morale at the Department. While I understand that the relocation was proposed and initiated prior to your appointment as Deputy Undersecretary of Research, Education, and Economics at USDA, you now play a pivotal role in its execution.
- 2) In your written responses to questions for the record provided by the Committee on April 12, 2019, you stated: "My understanding is that during the decision-making process, USDA conducted a preliminary cost benefit analysis estimating savings based on facility costs, locality pay adjustments and assumptions on employee behaviors."
  - a. What specific cost-benefit analysis was conducted prior to Secretary Perdue's August 2018 announcement of the proposed relocation of ERS and NIFA? Who conducted the analysis?

Response: A preliminary analysis was done during a deliberative decision-making process. This cost-benefit analysis took into account currently leased facility costs, locality pay comparing DC to other USDA locations around the United

States and made preliminary assumptions about staff behavior. This analysis was completed by USDA staff.

b. What "assumptions on employee behaviors," as you described them, were used during the decision-making process and cost-benefit analysis prior to the Secretary's decision to relocate the agencies outside the National Capitol Region, and upon what were these assumptions based?

Response: The analysis estimated possible attrition.

c. Will you provide any and all cost-benefit analysis documents created prior to August 2018 regarding the relocation of ERS and NIFA?

Response: These are deliberative and pre-decisional documents. USDA released the cost benefit analysis for the location selection in June

d. On June 13, USDA released a report containing a cost-benefit analysis for the relocation of ERS and NIFA to Kansas City. Was this cost-benefit analysis conducted by Ernst & Young?

Response: A cost benefit analysis was completed by E&Y. They consulted with USDA to set the assumptions and to obtain any agency specific information that was needed in their model (square footage, lease information, GS grades of employees, etc) and to ensure they understood how agency missions may benefit with the potential savings.

e. Did USDA make any changes, edits, or redactions to Ernst & Young's cost-benefit analysis prior to its release?

Response: As stated above, E&Y worked with USDA staff to provide agency specific information. Additionally, during internal clearance process the Office of the Chief Economist reviewed the analysis and felt more comfortable with more conservative estimates.

f. If so, will the Department provide the Committee with the unaltered analysis created by Ernst & Young, and all materials created by Ernst & Young related to the relocation of ERS and NIFA?

Response: All relevant materials have been shared with Congress.

3) According to the Department, only 72 ERS employees agreed to relocate, while 99 declined. At NIFA, only 73 employees accepted the relocation, with 151 declining. By itself, this level of attrition is devastating to the missions of both agencies.

However, among the employees who are leaving ERS and NIFA due to the relocation, it is not clear on which issue areas these employees work.

a. Of the employees who have declined to relocate, in which division did each of them work and on which issue areas did they work?

Response: The most recent employee information by division has been provided to the Committee.

- 4) In a written question for the record provided to you on April 12, 2019, I asked you for the Department's estimated cost for the relocation and from what funds the Department will draw to account for this cost. Your written response stated that: "This is dependent upon the final location selected."
  - a. Now that the site has been selected, what is the full estimated cost of the relocation, and from what funds will the Department draw to account for this cost?

Response: Spending updates can be provided to the committee as the process moves forward. Due to multiple variables, the Department is unable to provide solid estimates for FY19 at this time. An FY20 summary can be provided after the start of the new fiscal year. For source of funds, ERS will utilize their annual appropriated salary and expense fund and NIFA will utilize their general operating budget and \$6 million from FY18 appropriations for the relocation.

- 5) Even with an aggressive hiring plan, it is impossible to expect that NIFA's research and grant making responsibilities will not be interrupted or impacted given the staggering levels of employee attrition. Land grant universities, including the University of Vermont, rely on NIFA to award grants and disburse funds in a timely manner. This dysfunction will likely be compounded by the fact that relocating employees are not required to report to Kansas City until September 30, one day before the end of fiscal year 2019.
  - a. What assurances can you provide the Committee that funding for land grant universities and other research partners in fiscal year 2019, fiscal year 2020, and beyond, will not be delayed by the staffing impacts of the Department's proposed relocation?

Response: NIFA and ERS have assessed the short- and long-term needs for their respective missions and both agencies are committed to meeting congressionally mandated deadlines for their work. Prioritization of work is a constant focus and

# 166

needed resources are being acquired in the interim for hiring and onboarding new employees.

#### Senator Sherrod Brown

1) Dr. Hutchins, USDA's half-baked decision to relocate NIFA (NIF-UH) and ERS not only harms and undermines rural America, but hurts the hardworking public servants and their families. For instance, Jodi Williams, a National Program Leader in food safety, has family obligations that will force her to leave NIFA rather than relocate to Kansas City. More than 20 years ago, Ms. Williams received a USDA 1890 scholarship. With her departure, NIFA will lose a valuable science subject matter expert is presently overseeing more than 100 active competitive projects.

Dr. Hutchins, at your nomination hearing, you touted your business experience and acumen and vowed to "do all I can each and every day to expand the long term competitiveness and sustainability of U.S. Agriculture and further develop the framework and capabilities of REE scientists and professionals."

a. Do you think losing half of your staff of highly-skilled Ph.D.'s and other experts in their field is consistent with how thriving organizations assemble and retain talent?

Response: Transitions are difficult, that has never been a point of debate. USDA is doing everything possible to support those employees, like Ms. Williams, who are not able to move for personal reasons. We offered her and all of her colleagues the opportunity to continue their career in Kansas City and we're working to identify opportunities across USDA for those who cannot. The transition will have challenges, but USDA is taking steps to ensure continuity of mission and investing in the long-term success of both agencies.

- 2) The Secretary and the Department have said many times that this move's goal is to have a strong and robust workforce. Yet, If ERS and NIFA lose half of their employees as has been reported, a tremendous amount of skill and institutional memory will also be lost. I can't decide if USDA doesn't know this, or doesn't care about losing talented staff.
  - a. What will be the impact of these losses on the ability of ERS and NIFA and to serve rural communities in Ohio and across rural America?

# Response: ERS and NIFA are committed to delivering on their respective missions. The Kansas City Region will allow ERS and NIFA to increase efficiencies and effectiveness and bring important resources and manpower closer to all of our customers. We did not undertake these relocations lightly, and we are doing it to enhance long-term sustainability and success to these agencies. The considerable taxpayer savings will allow us to be more efficient and improve our ability to retain more employees in the long run. We will be placing important USDA resources closer to many stakeholders, most of whom live and work far from Washington, D.C. In addition, we are increasing the probability of attracting highly-qualified staff with training and interests in agriculture, many of whom come from land-grant universities.

- 3) In May, 204 ERS employees <u>voted overwhelmingly</u> to join a union and a month later, 185 of their colleagues at NIFA followed suit. On June 18, the newly formed union issued a demand to bargain with USDA over the impact and implementation of the relocation. It's my understanding that USDA recently rejected all of the union's requests. It's hard for me to see how USDA is bargaining in good faith with employees who have dedicated their careers to the programs and research that benefit rural America and domestic agriculture.
  - a. Given the rushed nature of this move, and that as of today a final location in the Kansas City region has not been selected for the permanent home of ERS and NIFA, what is your justification for denying these requests?

Response: ERS is currently negotiating multiple requests with the Union and therefore the Department is not able to comment on the requests or negotiations. Once concluded, NIFA will begin negotiations with their Union.

- 4) In USDA's cost benefit analysis, USDA stated that "the largest and most robust incentives package offered providing on the top savings more than \$26 million dollars." Yet, as I understand it, we don't even know if the office will be in Kansas or Missouri.
  - a. What are those incentives? Please share with the Committee what financial or other incentives have specifically been offered related to this move.

Response: The Department views the proposals and incentives offered by the States and localities involved to be proprietary business information. The states and localities can release this information to the Committee if they desire to do so.

<sup>25</sup> 

# b. Are there any ethics requirements that would require the disclosure or prohibit the acceptance of any such incentives?

Response: The Department views the proposals and incentives offered by the States and localities involved to be proprietary business information. Office of General Counsel and Office of Ethics would be happy to brief the committee on legal and ethical consideration should these documents be released publicly.

5) When you appeared before this committee in 2018, you told me that you believe Agriculture can "tell a positive story" as the world struggles to combat and adapt to global climate change. But, as my colleagues have mentioned, USDA has refused to tell that story.

However, it has been reported that USDA has actively suppressed peer-reviewed Agricultural Research Service reports detailing how climate change will affect agriculture around the world – including a report that shows rice, which feeds millions around the globe, will become less nutritious in a high-carbon environment. Dr. Hutchins, you are effectively serving as Chief Scientist of the world's preeminent ag research organization. It is unacceptable that USDA actively downplays—or even worse, suppresses—research on the serious effects climate change will have on both domestic and international agriculture.

At that same hearing last year, you also said the, "most concerning proposed finding" in the fourth National Climate Assessment "is the increase in extreme events."

a. Heavy rainfall and flooding in Ohio and throughout the Midwest have certainly had an extreme effect on farmers—many of whom were unable to plant corn or soybeans this year. What USDA research is being undertaken that could help inform farmers about the risks their crops may face from changing precipitation patterns in the United States affected by climate change?

Response: Farmers rely on USDA to provide information on water management and use, cropping conditions, and climate outlook. Managing water on the farm requires thinking about quantity and timing and planning for too much or too little water at any point in time.

USDA maintains a cooperative relationship with the National Drought Mitigation Center (NDMC). Through this relationship, USDA supports the United States Drought Monitor (USDM) and all the associated decision support tools, services, products and data that accompany it.

#### 26

REE conducts or funds hundreds of studies on climate change every year. That research is disseminated through our Regional Climate Hubs which allows for the most relevant information for producers in a particular area to be more easily located. Information relating to research on the affects you describe can be found here: <a href="https://www.climatehubs.oce.usda.gov/hubs/midwest/climate-impacts/Seasonal%20Shifts">https://www.climatehubs.oce.usda.gov/hubs/midwest/climate-impacts/Seasonal%20Shifts</a>

# b. How will this research, and other programs that you oversee, that help stem the effects of climate change be publicized?

Response: Ensuring the latest research gets into the hands of farmers is a priority. Formal press releases are only one of several forms of communications. REE agencies utilize workshops, events, and conferences, list-serves, newsletters, our website, blogs, webinars, and social media to highlight and publicize USDA research on climate variability and change. The Climate Hubs program is a major resource for highlighting the work of USDA scientists and delivers information using multiple media and approaches. The

Climate Hubs Twitter account can be found here: https://twitter.com/USDAClimateHubs?ref\_src=twsrc%5Egoogle%7Ctwcamp%5E serp%7Ctwgr%5Eauthor

The calendar of Hub events can be found here: https://www.climatehubs.oce.usda.gov/calendar

- c. USDA research, published after your appearance before the Committee, found that climate change could increase the cost of federal crop insurance by 22% and reduce corn and soybean yields. This is alarming.
  - i. What research is USDA funding and what steps are being taken to protect farmers and American taxpayers from these devastating weather events that will have far-reaching impacts on American agriculture?

Response: The recent study by ERS that focused on the intersection of agricultural production and risk management makes an important contribution to our understanding of future risks. The authors note that some aspects of behavioral adaptation were beyond the scope of the analysis, and their results point to the role of technology in improving resilience. REE will continue its mission to promote innovation and conduct the research required to address climate change.

How is REE working with partners in the private sector or nongovernmental organizations to develop policies and practices to help agriculture reduce greenhouse gas emissions? If yes, please provide examples.

Response: REE works to engage the private sector through the research we conduct and through coordination on the topic at the Department level. The private sector has an enormous capacity for innovation in greenhouse gas-reducing technologies, and USDA research on these practices can complement these efforts and facilitate their use, when appropriate.

#### Senator Michael Bennet

- Last year, the National Academies released a study titled "Science Breakthroughs 2030: A Strategy for Food and Agricultural Research." The study concluded that current funding for food and agriculture R&D is inadequate. When you previously came before the committee in November, you told me that you would learn more about this study and the research priorities it outlined.
  - a. Have you since familiarized yourself with the report?

Response: Yes.

b. If so, what steps has the USDA taken to address the food and agriculture R&D shortcomings the report outlines?

Response: USDA has been working to address the goals outlined in the report. Additionally, these goals have helped to set agency and mission area priorities for the Department. These items will be incorporated into future strategic plans created by the Office of the Chief Scientist.

c. Can you guarantee that the decision to move to Kansas City—and the potential loss of long-term scientists and USDA experts—will not negatively affect the USDA's unique and innovative research that is so vital to agricultural producers at this time?

Response: ERS and NIFA are committed to delivering on their respective missions. The Kansas City Region will allow ERS and NIFA to increase efficiencies and effectiveness and bring important resources and manpower closer to all of our customers. We did not undertake these relocations lightly, and we are doing it to enhance long-term sustainability and success to these agencies. The considerable taxpayer savings will allow us to be more efficient and improve our ability to retain more employees in the long run. In addition, we are increasing the probability of attracting highly-qualified staff with training and interests in agriculture, many of whom come from land-grant universities.

#### Senator Tina Smith

 A recent University of Minnesota study documents declining agricultural yields worldwide due to the changing climate. For soybeans, we are already seeing the impacts in our country. Soybean yields are declining in southern and eastern states. For now, climate change has actually helped increase soybean yields in Minnesota though the good times won't last. If we fail to take action to reduce climate change now, the problems we're seeing in the southern and eastern states will reach Minnesota. Under President H. W. Bush, the USDA Agricultural Research Service published 8 news stories about climate research per year. Under President Obama, that number rose to 11 times per year. Under the current Administration, climate news stories have only appeared once per year.

Why has the USDA downplayed the risk that climate change poses to agriculture? What do you plan to do to change that?

Response: USDA has not "downplayed the risk that climate change poses to agriculture." Scientific integrity is of paramount importance to USDA. We have made it clear that we have no policy, practice, nor intent to minimize, discredit, de-emphasize, or otherwise influence the climate-related science carried out by USDA scientists and agencies.

- Farmers are directly impacted by climate change right now. This past spring was one of the wettest planting seasons, which prevented farmers from getting their crops in the ground.
  - a. Can you talk about recent studies by USDA scientists that have looked into how climate change is affecting farmers?

Response: REE Agencies are providing the research and working land managers with the information and tools they need to adapt to changing climate conditions. Our agencies engage and inform agricultural stakeholders and the public of climate science efforts through two critical platforms: 1) The Long-Term Agroecosystem Research (LTAR) Network located here: https://ltar.ars.usda.gov/; and 2) the USDA Climate Hubs located here: https://www.climatehubs.oce.usda.gov/.

The LTAR network is composed of 18 locations distributed across the nation working together to address agricultural priorities and advance the sustainable intensification of U.S. agriculture. A primary goal of LTAR is to develop and to share science-based findings with producers, farmers and ranchers, which it does through the posting of LTAR Working Group accomplishments, research publications, and data inventories, which can be located here: http://usdaars.maps.arcgis.com/apps/MapSeries/index.html?appid=8f2a1f9a38 df4310ae0e9e87bb968b7d.

USDA's Climate Hubs are led by ARS and the Forest Service to link USDA research and program agencies in their delivery of timely and authoritative tools and information to agricultural producers and professionals. Additionally, the Hubs provide information on programs and resources to assist with adaptation to climate change that are available to interested stakeholders via its website. You can find that website here: https://www.climatehubs.oce.usda.gov/actions-andresources/programs.

Information relating to research on the affects you describe can be found here: <u>https://www.climatehubs.oce.usda.gov/hubs/midwest/climate-</u> <u>impacts/Seasonal%20Shifts</u>

b. What specifically is the USDA doing to make sure farmers and ranchers are prepared to make the changes they need to adapt to extreme weather and other impacts of climate change?

Response: REE conducts or funds hundreds of studies on climate change every year. USDA's climate hubs is a convenient location for producers to find relevant information: <u>https://www.climatehubs.oce.usda.gov/hubs/midwest</u>

30

3) At your nomination hearing last November, I asked you about the USDA Agriculture Research Service facility in Morris, MN. The Morris ARS facility houses the North Central Soil Conservation Research Laboratory, which supports critical research on soil and water quality and alternative crops. As we discussed, this facility was marked for closure in the President's FY 2019 budget request. At a time when agriculture producers in

Minnesota face uncertainty in trade markets and climate change threatens productivity, the research being done at this ARS facility is so important for future planning.

At the hearing in November, I asked you to commit to advocating for the ARS facility in Morris and to make sure it gets the funding it needs to continue operations. You committed to visiting and taking a personal interest in understanding the importance of this facility.

a. Now that you have been at USDA for about seven months, have you visited the ARS facility in Morris, or do you have plans to visit?

Response: I have not yet had the pleasure of visiting the facility. However, early on in my tenure I was able to meet with the leaders of the Barnes-Aastad Association to learn more about the facility and the work being done there.

b. Can you commit to making sure the facility stays open?

Response: USDA and REE continually evaluate our footprint with the Department's programmatic needs. While REE currently has no plans to close this or any other facility, the average age of our facilities is 64 years old. Should the need arise to close or consolidate a facility, I would ensure that Congress is appropriately notified.

4) I hear often from farmers about the importance of Agriculture research. Our country's investment in research helps productivity and contributes to American farmers' competitiveness in overseas markets. In Fiscal Year 2018, Minnesota received nearly \$50 million in research grants administered through NIFA. These dollars went to the University of Minnesota but also to the White Earth Tribal College, the Fond du Lac Tribal College, and the Leech Lake Tribal College.

If you look at the grants management office at NIFA there are very real staffing issues. Grant management specialists at NIFA are responsible for the overall management of the grants. Grant system specialists have a steep learning curve and each program has unique characterizations derived from congressional mandate. These jobs require a lot of training and are not easily replaceable.

On February 23, 2019, there were about 30 total grants management staff. Since then, five have left, and reports have indicated that another 21 employees in this office will be leaving because of the relocation. That leaves only 5 current grant specialists to do the work of 30 employees.

Research is being done in Minnesota thanks to NIFA grants on rural health, forestry, and animal health. Because of the NIFA relocation, much of this work is going to come to a

halt. Universities and colleges in Minnesota are rightfully concerned that this hastily planned relocation process will undermine their work and create additional challenges for future NIFA funding proposals.

a. How can you ensure there is no disruption of grants if there are no employees left at NIFA to manage the grants?

Response: ERS and NIFA have a talent acquisition strategy for the short- and long-term needs of both agencies. In the short term, agencies are underway posting job opportunities and initiating the hiring process for vacancies. Job postings are through usajobs.gov, and the Department is working with the Office of Human Resources Management to obtain additional Direct Hiring Authority for both agencies to expedite hiring efficiency. Each agency has assessed gaps for which they have obtained short term contractors and accessed assistance from employees in other areas of the Department. Each agency has a training plan in place that includes knowledge transfer from employees that will not be relocating to the new location to their peers to ensuring mission continuity responsibilities and deliverables are captured and transferred prior to employee exit interviews.

Long term strategies include the continuation of hiring for vacant positions across both agencies. In both the short- and long-term, a top priority for ERS and NIFA is to provide a positive experience for existing and new employees and deliver value from respective mission areas to stakeholders.

# b. How will you guarantee that agriculture research remains a federal priority despite being located out of the D.C. area?

Response: While 90% of USDA's workforce is located outside of the National Capitol Region (NCR), ERS and NIFA are currently the only UDSA agencies that don't have representation outside of the NCR. This relocation will ensure that these important USDA resources, like every other agency in USDA, are in closer proximity to many of our stakeholders, most of whom live and work far from Washington, D.C. Additionally, the headquarters of both of these agencies will remain in the NCR, ensuring a continued synergy between agency and department leadership in advancing critical research priorities.

#### Senator Richard Durbin

1) USDA economists have documented that farm income has dropped 50 percent since 2013. They have reported it will take years for farmers to recover exports markets due

#### to Chinese retaliation against the President's trade strategy. They have reported that in the past thirty years, Chinese public investments in agriculture research has risen eightfold, while American public investment in agricultural research is falling behind. Now they are victim of the worsening American investments in public agriculture research after pointing out these truths.

When you evaluated this relocation plan, what was the USDA attrition estimates
 lower, the same, higher – than what was reported yesterday?

Response: Attrition estimates can change daily as employees have until the end of September to relocate.

#### b. What functions will be most affected?

Response: Attrition estimates can change daily as employees have until the end of September to relocate.

c. If the affected functions are yet unknown – then why were these likely attritions not more fully studied before this move was launched?

Response: Attrition was anticipated.

d. What is your contingency plan to avoid disruption of existing services that benefit farmers?

Response: ERS and NIFA have created a talent acquisition strategy for the shortand long-term needs of both agencies. In the short term, agencies are underway posting job opportunities and initiating the hiring process for vacancies. Additionally, job postings and hiring are also underway for existing vacant positions that are being hired immediately at the new location. Job postings for internal and external candidates are through usajobs.gov, and the Department is working with the Office of Human Resources Management to obtain additional Direct Hiring Authority for both agencies to expedite hiring efficiency. Each agency has assessed gaps for which they have obtained short term contractors and accessed assistance from employees in other areas of the Department. Each agency has a training plan in place that includes knowledge transfer from employees that will not be relocating to the new location to their peers to ensuring mission continuity responsibilities and deliverables are captured and transferred prior to employee exit interviews.

Long term strategies include the continuation of hiring for vacant positions across both agencies.

e. What is the rush? The September 30 deadline indicates to all observers that you are trying to beat the appropriations process – don't you think that's a reasonable conclusion?

Response: September 30<sup>th</sup> is a logical date for business planning purposes because it is the first date of a new pay period and allowed for each agency to start a new business quarter with positions settled across the NCR and Kansas City locations.

- 2) I have heard concerns that USDA employees who choose not to relocate to Kansas City, who have tried to explore lateral moves within USDA, have been told that they are not eligible for these lateral moves, when normally this would not be the case. I have heard that some who have applied elsewhere within the federal government, cannot get interviews despite their qualifications. And I know the federal hiring process is sufficiently cumbersome and opaque that there can be plausible deniability.
  - a. Is this true?

Response: No.

b. Can you confirm that USDA employees who have chosen not to relocate are <u>not</u> being blocked from similar jobs at USDA, or elsewhere within the federal government?

Response: Eligible employees that choose not to relocate to Kansas City can utilize the Career Assistance Transition Program (CTAP). CTAP eligibility provides selection priority for a USDA vacancy in which a CTAP employee applies and is found to be 'well qualified' at a lateral position or below. Eligible employees can apply to vacancies. The Department is actively working to ensure opportunities for those who apply are handled in a fair and consistent manner. The Office of Human Resource Management (OHRM) is working with Department leadership, AFM Human Resources Division and all USDA mission areas on CTAP execution.

3) USDA statisticians issued a critical report June 28, a routine nationwide forecast of how much corn, soybeans, wheat, etc. will be planted for the year, based on actual farmer surveys. The reports have serious influence on markets - USDA goes to great security to protect the information before announcement. Counter to other USDA reports and industry predictions, this June 28 report forecast corn as 3% higher than last year even though just 83 percent had been planted, far lower than the 10-year average. I understand the words of the surveys are locked in place months in advance, and that this report reflected intentions very late in planting. But USDA has years of expertise,

## 177

and you knew the implications of this report, since USDA immediately pledged to conduct another survey with results in August. The American Farm Bureau Federation reports that this USDA forecast tanked the futures market by 19 cents for corn – a \$2.6 billion loss. Illinois Farm Bureau tells me quite a number of farmers who hedged lost tens if not hundreds of thousands of dollars.

## a. Do you agree that USDA anticipated this market reaction? If not, why not?

Response: USDA publishes statistics such as the June WASDE and the June Acreage report according to standards set out in Statistical Policy Directive Number 3<sup>3</sup>, which provides guidance to agencies on the procedures and timing for release of Principal Federal Economic Indicators.

When NASS released the Acreage report on June 28, the corn planted area estimate was significantly higher than most people had anticipated. The World Agricultural Outlook Board in their June World Agricultural Supply and Demand Estimates (WASDE) report, forecast corn planted area to be 89.8 million acres, based only on weather developments and economic conditions at a time when planting was still in its early stages due to the unprecedented planting delays this year. This estimate came in lower than the March Prospective Plantings report. The NASS estimate in the Acreage report was above that WASDE forecast but also lower than the estimate previously published in the March Prospective Plantings report, by 1.1 million acres.

The estimates in the Acreage report were based on two surveys conducted by NASS, which reached out to nearly 100,000 farmers across the United States. Data collection was from May 30 to June 17. Each farmer was asked to report his/her acres planted and acres he/she intended to plant to each of the crops, including corn, at the time of the interview. It should be noted that this includes all corn acres planted for grain, silage, cover crop, and other uses; not simply corn for grain. This same procedure is used each year.

USDA and others have evaluated the impact of crop production reports on commodity markets and is aware that markets will react to data that is released (see for example, Karali, B. 2012. "Do USDA Announcements Affect Comovements Across Commodity Futures Returns?" Journal of Agricultural and Resource Economics, Vol. 37, No. 1 (April): 77-97). However, the degree and direction to which any given USDA report shifts the multiple commodity markets is unknown before it is released. In the case of the June Acreage report, it was clear to the markets that there was a large degree of uncertainty around those

35

https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/assets/OMB/inforeg/statpolicy/dir 3 fr 09251985. pdf

# 179

estimates due to the large amount of acreage that had yet to be planted. Moreover, it was clear that in past years when poor spring conditions has delayed plantings, NASS would often re-survey to get better estimates for the August Crop Production report. As such, while an immediate reaction to a report release is not surprising, it is also expected that continuing information and data will become more available throughout the crop year, which will provide producers and other market participants better information on which to develop hedging strategies and other risk management measures such as forward contracting.

### b. Do you agree USDA should have done a better job of qualifying this report when it was announced?

Response: Following the release, some data users expressed concerns that NASS should not have released the report on June 28, specifically because more acres were left to be planted than normal. The Acreage report is a Principal Federal Economic Indicator report, and as such is part of the major statistical series that describe the current condition of the economy. Also, while Statistical Policy Directive No. 3 acknowledges that Principal Federal Economic Indicators "may affect the movement of commodity and financial markets," it nonetheless states that public release must be prompt and according to an established, publicly available schedule.

Additional concerns were raised that the report did not reflect the challenges farmers faced planting crops due to the extreme weather this year. In fact, the principal crop total (sum of the 22 major crops) published in the Acreage report was down 10.3 million acres from the previous season's plantings.

In addition to the updated information from the re-survey, NASS will also consider FSA Certified Acreage data and satellite-based indications when determining whether or not changes to the planted acreage estimates are necessary. If updates are necessary, they will be published on August 12 in the Crop Production report. It is worth noting that although the sign-up date for FSA acreage is in mid-to-late July, it often takes significant time for the reporting to be fully tabulated, therefore final certified totals will likely not be available in time for the August 12 release. A special notice will be included with the August 12, 2019 Crop Production report detailing the results of the re-interview work and the impacted states.

#### c. What steps are you going to take, so that this doesn't happen again?

### Response: NASS continues to be transparent with our procedures and has responded to and reached out to many organizations and individuals who have expressed concerns similar to these, including the National Corn Growers Association. To better communicate our procedures in the future staff have been asked to do the following: Synchronize an announcement of re-survey plans with the Acreage report release; add text to the report describing the follow-up survey work; review all survey forms, instruments, and instructions for potential improvements to address weather situations such as were experienced this spring; and expand outreach explaining NASS procedures. NASS is also exploring using new technologies such as precision agriculture and remote sensing. A pilot project for the 2020 growing season is currently being explored.

- 4) This year, Illinois farmers faced a very complex equation on what to plant, when to plant, how to minimize costs and losses. University of Illinois Extension experts worked hard to answer these questions providing weekly, even daily advice. I fear these weather patterns are the new normal. That means in the future, we must conduct Extension activities better than ever before we must expand beyond only field visits and webinars by providing more tools for agents and farmers. We need stronger computing technology, interactively reaching farmers instantly, tailored to each farm, allowing farmers to plug in numbers at home, and allowing Extension to adjust their calculations based on these farmer inputs and advise on what farmers need in real time. I included in the Farm Bill a \$5 million/5 year authorization for grants to help universities to begin designing such next generation Extension technology, and I am now working on appropriations.
  - a. Are you aware of this concept?

Response: Yes, we are aware of this provision in the 2018 Farm Bill.

b. Do you agree that this should be a priority?

Response: Yes.

*c.* Can I count on your active support and involvement for this concept in the coming months?

Response: Yes, we look forward to working with you on this concept/provision in the 2018 Farm Bill should the new program be funded.

37

## 180

# Climate Change / Global Warming Peer-Reviewed Articles by USDA Authors Citations Indexed in Scopus for the Period Jan. 1, 2017 – Aug. 30, 2019

Abbas, A. M., Rubio-Casal, A. E., De Cires, A., Grewell, B. J., & Castillo, J. M. (2019). Differential tolerance of native and invasive tree seedlings from arid African deserts to drought and shade. *South African Journal of Botany, 123*, 228-240. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063397382&doi=10.1016%2fj.sajb.2019.03.018&partnerlD=40&md5=b0262a764bd3c02d493ca08f80ccc22b. doi:10.1016/j.sajb.2019.03.018

Abrams, M. D., & Nowacki, G. J. (2018). Large-scale catastrophic disturbance regimes can mask climate change impacts on vegetation – a reply to Pederson et al. (2014). *Global Change Biology, 24*(1), e395-e396. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84923037993&doi=10.1111%2fgcb.12828&partnerlD =40&md5=637bbb662bba68549d375cfb736a3348. doi:10.1111/gcb.12828

Abrams, M. D., & Nowacki, G. J. (2019). Global change impacts on forest and fire dynamics using paleoecology and tree census data for eastern North America. *Annals of Forest Science*, 76(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061078624&doi=10.1007%2fs13595-018-0790-y& partneriD=40&md5=083d657400abac2af5c093e02b041de2. doi:10.1007/s13595-018-0790-y

Adams, A. B., Pontius, J., Galford, G. L., Merrill, S. C., & Gudex-Cross, D. (2018). Modeling carbon storage across a heterogeneous mixed temperate forest: the influence of forest type specificity on regional-scale carbon storage estimates. *Landscape Ecology*, 33(4), 641-658. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042530181&doi=10.1007%2fs10980-018-0625-0& partner/D=40&md5=7cc21349ad719e979676d5ba76afda322. doi:10.1007/s10980-018-0625-0

Adams, B. T., Matthews, S. N., Peters, M. P., Prasad, A., & Iverson, L. R. (2019). Mapping floristic gradients of forest composition using an ordination-regression approach with landsat OLI and terrain data in the Central Hardwoods region. *Forest Ecology and Management*, 434, 87-98. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058224348&doi=10.1016%2fj.foreco.2018.12.018& partnerID=40&md5=7e21c9cde7c810799645f18fbd64d9f6. doi:10.1016/j.foreco.2018.12.018

Adams, H. D., Zeppel, M. J. B., Anderegg, W. R. L., Hartmann, H., Landhäusser, S. M., Tissue, D. T., . . . McDowell, N. G. (2017). A multi-species synthesis of physiological mechanisms in drought-induced tree mortality. *Nature Ecology and Evolution*, 1(9), 1285-1291. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031921138&doi=10.1038%2fs41559-017-0248-x& partnerlD=40&md5=bf7a7d78fa06fba1ed1b710edc373f9e. doi:10.1038/s41559-017-0248-x

Addington, R. N., Aplet, G. H., Battaglia, M. A., Briggs, J. S., Brown, P. M., Cheng, A. S., ... Wolk, B. (2018). Principles and practices for the restoration of ponderosa pine and dry mixed-conifer forests of the Colorado front range. USDA Forest Service - General Technical Report RMRS-GTR, 2018(373), 1-121. Retrieved from https://www.scom/inward/record.uri?eid=2-s2.0-85041411665&partnerID=40&md5=128811ca82de0c 6099e0eaafd7c243a9.

Adesemoye, A. O., Yuen, G., & Watts, D. B. (2017). Microbial inoculants for optimized plant nutrient use in integrated pest and input management systems. In *Probiotics and Plant Health* (pp. 21-40).

Adhikari, K., Owens, P. R., Libohova, Z., Miller, D. M., Wills, S. A., & Nemecek, J. (2019). Assessing soil organic carbon stock of Wisconsin, USA and its fate under future land use and climate change. Science of the Total Environment, 667, 833-845. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062472482&doi=10.1016%2fj.scitotenv.2019.02.42 0&partnerID=40&md5=c570ba15d2ccfe4519a4862fd28d251b. doi:10.1016/j.scitotenv.2019.02.420 Adkins, S., Baker, C. A., Warfield, C. Y., Estévez de Jensen, C., Badillo-Vargas, I., Webster, C. G., ... Naidu, R. (2018)

Viruses of ornamentals emerging in Florida and the Caribbean region. In: Vol. 1193. Acta horticulturae (pp.

17-20).

Adler, P. R., Spatari, S., D'Ottone, F., Vazquez, D., Peterson, L., Del Grosso, S. J., ... Parton, W. J. (2018). Legacy effects of individual crops affect N<inf>2</inf>O emissions accounting within crop rotations. GCB Bioenergy, 10(2), 123-136. Retrieved from

182

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021856016&doi=10.11111%2fgcbb.12462&partnerl D=40&md5=58f5c8f4533c34b8dbfde8ee38f49db7. doi:10.1111/gcbb.12462
- Agne, M. C., Beedlow, P. A., Shaw, D. C., Woodruff, D. R., Lee, E. H., Cline, S. P., & Comeleo, R. L. (2018). Interactions of predominant insects and diseases with climate change in Douglas-fir forests of western Oregon and Washington, U.S.A. Forest Ecology and Management, 409, 317-332. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850349677258&doi=10.1016%2fj.foreco.2017.11.004& partner/D=40&md5=8d85bf97259442f856c5f1e7b9131d9a. doi:10.1016/j.foreco.2017.11.004
- Agnihotri, R., Ramesh, A., Singh, S., & Sharma, M. P. (2017). Impact of agricultural management practices on mycorrhizal functioning and soil microbiological parameters under soybean-based cropping systems. In Adaptive Soil Management: From Theory to Practices (pp. 301-322).
- Ahiablame, L., Sheshukov, A.Y., Rahmani, V., & Moriasi, D. (2017). Annual baseflow variations as influenced by climate variability and agricultural land use change in the Missouri River Basin. *Journal of Hydrology*, 551, 188-202. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020707938&doi=10.1016%2fj.jhydrol.2017.05.055 &partnerID=40&md5=2b6727d993d205f1862e3df6f9ab7792. doi:10.1016/j.jhydrol.2017.05.055

- Ajaz, A., Taghvaeian, S., Khand, K., Gowda, P. H., & Moorhead, J. E. (2019). Development and evaluation of an agricultural drought index by harnessing soil moisture and weather data. *Water (Switzerland), 11*(7). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068559623&doi=10.3390%2fw11071375&partnerl D=40&md5=ecaea26eaadb04233a32c182213633f8. doi:10.3390/w11071375
- Alanya-Rosenbaum, S., & Bergman, R. D. (2019). Life-cycle impact and exergy based resource use assessment of torrefied and non-torrefied briquette use for heat and electricity generation. *Journal of Cleaner Production*, 233, 918-931. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068042791&doi=10.1016%2fjijclepro.2019.05.298 &partnerID=40&md5=244ce4ca07040a4d7621d2a265bddc13. doi:10.1016/jjclepro.2019.05.298

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069893735&doi=10.1002%2feco.2128&partnerlD= 40&md5=566bdbf8a364435b2ad10da87a6fa3d5. doi:10.1002/eco.2128

- Albright, T. P., Mutiibwa, D., Gerson, A. R., Smith, E. K., Talbot, W. A., O'Neill, J. J., ... Wolf, B. O. (2017). Mapping evaporative water loss in desert passerines reveals an expanding threat of lethal dehydration. *Proceedings of the National Academy of Sciences of the United States of America*, 114(9), 2283-2288. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850142041358:doi=10.10738/cpfnas.1613625114&pa rtnerID=40&md5=4bd82180209752a9a0bd6ea03504bf5c. doi:10.1073/pnas.1613625114
- Alexander, P., Prestele, R., Verburg, P. H., Arneth, A., Baranzelli, C., Batista e Silva, F., . . . Rounsevell, M. D. A. (2017). Assessing uncertainties in land cover projections. *Global Change Biology*, 23(2), 767-781. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84982237065&doi=10.1111%2fgcb.13447&partnerID =40&md5=f456ac6f035dc69cf46ebf65a4befc4f. doi:10.1111/gcb.13447
- Alhameid, A., Tobin, C., Maiga, A., Kumar, S., Osborne, S., & Schumacher, T. (2017). Intensified Agroecosystems and Changes in Soil Carbon Dynamics. In *Soil Health and Intensification of Agroecosystems* (pp. 195-214).

Allen, B. L., Fawcett, A., Anker, A., Engeman, R. M., Lisle, A., & Leung, L. K. P. (2018). Environmental effects are stronger than human effects on mammalian predator-prey relationships in arid Australian ecosystems. *Science of the Total Environment*, 610-611, 451-461. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028707663&doi=10.1016%2fj.scitotenv.2017.08.05

1&partnerlD=40&md5=12fa54472e4ae8e90d3dbe7bd1a03046. doi:10.1016/j.scitotenv.2017.08.051 Allen, P. M., Arnold, J. G., Auguste, L., White, J., & Dunbar, J. (2018). Application of a simple headcut advance model for

gullies. *Earth Surface Processes and Landforms*, 43(1), 202-217. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030213122&doi=10.1002%2fesp.4233&partnerID= 40&md5=9bd3c98a150b2c9750886fa644be9206. doi:10.1002/esp.4233

- Almagro, A., Oliveira, P. T. S., Nearing, M. A., & Hagemann, S. (2017). Projected climate change impacts in rainfall
  - erosivity over Brazil. *Scientific Reports, 7*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027494522&doi=10.1038%2fs41598-017-08298-y &partnerID=40&md5=0bbc85396e8cc74f6b1455fc6acfc473. doi:10.1038/s41598-017-08298-y
- Almutairi, K. F., Bryla, D. R., & Strik, B. C. (2017). Potential of deficit irrigation, irrigation cutoffs, and crop thinning to maintain yield and fruit quality with less water in northern highbush blueberry. *Hortscience*, 52(4), 625-633. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019467019&doi=10.21273%2fHORTSCI11533-16& partnerID=40&md5=fa26197c29e4b366c3fbcd02144cb50d. doi:10.21273/HORTSCI11533-16

Alonzo, M., Morton, D. C., Cook, B. D., Andersen, H. E., Babcock, C., & Pattison, R. (2017). Patterns of canopy and surface layer consumption in a boreal forest fire from repeat airborne lidar. *Environmental Research Letters*, 12(6). Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021301898\&doi=10.1088\%2f1748-9326\%2faa6ade \&partnerlD=40\&md5=355a38a605458040fd347ac70fa3a3cb.\ doi:10.1088/1748-9326/aa6ade @gartnerlD=40\&md5=355a38a605458040fd347ac70fa3a3cb.\ doi:10.1088/1748-9326/aa6ade @gartnerlD=40\&md5=356a6ada @gartnerlD=40\&md5=356a6ada @gartnerlD=40\&md5=356a6ada @gartnerlD=40\&md5=356ada @gartnerlD=40\%md5=356ada @gartnerlD=40\%md5=356\%md5=356\%md5=356\%md5=356\%md5=356\%md5=35\%md5=35\%md5=35\%md5=35\%md5=35\%md5=35\%md5=35\%md5=35\%md5=35\%md5=35\%md5=35\%m$ 

Álvarez-Berríos, N. L., Soto-Bayó, S., Holupchinski, E., Fain, S. J., & Gould, W. A. (2018). Correlating drought conservation practices and drought vulnerability in a tropical agricultural system. *Renewable Agriculture and Food Systems*, 33(3), 279-291. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042561811&doi=10.1017%2fS174217051800011X

&partnerID=40&md5=beced9a1cb77940f162e125be1164cdd. doi:10.1017/S174217051800011X Al-Yaari, A., Ducharne, A., Cheruy, F., Crow, W. T., & Wigneron, J. P. (2019). Satellite-based soil moisture provides

missing link between summertime precipitation and surface temperature biases in CMIP5 simulations over conterminous United States. *Scientific Reports*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061295084&doi=10.1038%2fs41598-018-38309-5

&partnerID=40&md5=e0f2fb6214c152aa22dffe83510c49d2. doi:10.1038/s41598-018-38309-5
Amatya, D. M., Fialkowski, M., & Bitner, A. (2019). A Daily Water Table Depth Computing Model for Poorly Drained Soils. Wetlands, 39(1), 39-54. Retrieved from https://www.comput.com/us/active/us/2016-2.20.85052625068/doi=10.1007%2f12157.018.1069.75

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052635806&doi=10.1007%2fs13157-018-1069-7& partnerlD=40&md5=9bd499c24ce3a4f890fd398dc71d4963. doi:10.1007/s13157-018-1069-7 Anache, J. A. A., Flanagan, D. C., Srivastava, A., & Wendland, E. C. (2018). Land use and climate change impacts on

runoff and soil erosion at the hillslope scale in the Brazilian Cerrado. Science of the Total Environment, 622-623, 140-151. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035756363&doi=10.1016%2fj.scitotenv.2017.11.25

7&partnerID=40&md5=e7ea1cc8290eabe66534baec589f1dc5. doi:10.1016/j.scitotenv.2017.11.25 Anapalli, S. S., Fisher, D. K., Reddy, K. N., Krutz, J. L., Pinnamaneni, S. R., & Sui, R. (2019). Quantifying water and CO

<inf>2</inf> fluxes and water use efficiencies across irrigated C <inf>3</inf> and C <inf>4</inf> crops in a humid climate. Science of the Total Environment, 663, 338-350. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060889002&doi=10.1016%2fj.scitotenv.2018.12.47 1&partnerID=40&md5=34432bbb1e3336d9dc86d170d3e70a08. doi:10.1016/j.scitotenv.2018.12.471

Anapalli, S. S., Reddy, K. N., & Jagadamma, S. (2018). Conservation tillage impacts and adaptations in irrigated comproduction in a humid climate. *Agronomy Journal*, *110*(6), 2673-2686. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056631987&doi=10.2134%2fagronj2018.03.0195&partnerID=40&md5=3791dce0fcc6c2b505289e08ad510bd7. doi:10.2134/agronj2018.03.0195

Anderegg, W. R. L., Wolf, A., Arango-Velez, A., Choat, B., Chmura, D. J., Jansen, S., ... Pacala, S. (2017). Plant water potential improves prediction of empirical stomatal models. *PLoS ONE, 12*(10). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031096214&doi=10.1371%2fjournal.pone.0185481 &partnerID=40&md5=b025979052ee04d16f2ed380eac31147. doi:10.1371/journal.pone.0185481

Anderegg, W. R. L., Wolf, A., Arango-Velez, A., Choat, B., Chmura, D. J., Jansen, S., ... Pacala, S. (2018). Woody plants optimise stomatal behaviour relative to hydraulic risk. *Ecology Letters*, 21(7), 968-977. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048657385&doi=10.1111%2fele.12962&partnerID =40&md5=454a21a228a1152d414c75ea38c51333. doi:10.1111/ele.12962

Andersen, J. C., Havill, N. P., Caccone, A., & Elkinton, J. S. (2017). Postglacial recolonization shaped the genetic diversity of the winter moth (Operophtera brumata) in Europe. *Ecology and Evolution*, 7(10), 3312-3323. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017175405&doi=10.1002\%2fece3.2860&partnerlD=40&md5=994e07da94e366981d9c09af9e8d7e69. doi:10.1002/ece3.2860&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10.002&partnerlD=10&partnerlD=10&partnerlD=10&partnerlD=10&pa$ 

Anderson, M., Diak, G., Gao, F., Knipper, K., Hain, C., Eichelmann, E., ... Yang, Y. (2019). Impact of insolation data source on remote sensing retrievals of evapotranspiration over the California delta. *Remote Sensing*, *11*(3). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061375577&doi=10.3390%2frs11030216&partnerl D=40&md5=465057b2843724bb27cc58af3fb2255c. doi:10.3390/rs11030216

Anderson, M., Gao, F., Knipper, K., Hain, C., Dulaney, W., Baldocchi, D., . . . Kustas, W. (2018). Field-scale assessment of land and water use change over the California delta using remote sensing. *Remote Sensing*, 10(6). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048942485&doi=10.3390%2frs10060889&partnerl D=40&md5=8aa3dbd3d1a8acf3b31eec8a5421f538. doi:10.3390/rs10060889

Anderson, P. H., Johnsen, K. H., Butnor, J. R., Gonzalez-Benecke, C. A., & Samuelson, L. J. (2018). Predicting longleaf pine coarse root decomposition in the southeastern US. *Forest Ecology and Management*, 425, 1-8. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047110479&doi=10.1016%2fj.foreco.2018.05.024& partnerID=40&md5=a8fbb93b2f03d17217c0f7d9c0976f6a. doi:10.1016/j.foreco.2018.05.024

- Angel, J. R., Widhalm, M., Todey, D., Massey, R., & Biehl, L. (2017). The U2U Corn Growing Degree Day tool: Tracking corn growth across the US Corn Belt. *Climate Risk Management*, *15*, 73-81. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85005801895&doi=10.1016%2fj.crm.2016.10.002&pa rtherID=40&md5=f247755334674f97aae951b226f1ae00. doi:10.1016/j.crm.2016.10.002
- Ankathi, S. K., Long, D. S., Gollany, H. T., Das, P., & Shonnard, D. (2018). Life cycle assessment of oilseed crops produced in rotation with dryland cereals in the inland Pacific Northwest. *International Journal of Life Cycle* Assessment, 1-15. Retrieved from https://www.comus.com/umard/cercord.uri2aid=2-s2.0.850480022428/doi=10.1007%3fc11367-018\_1488-u8i

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048002242&doi=10.1007%2fs11367-018-1488-y&partnerlD=40&md5=2a452f8f31136c811015d685e52848a6. doi:10.1007/s11367-018-1488-y

- Anyamba, A., Chretien, J. P., Britch, S. C., Soebiyanto, R. P., Small, J. L., Jepsen, R., . . . Linthicum, K. J. (2019). Global Disease Outbreaks Associated with the 2015–2016 El Niño Event. *Scientific Reports, 9*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061508531&doi=10.1038%2fs41598-018-38034-z &partnerlD=40&md5=0437d98fc6caf1ead18ad18a15aef2fe. doi:10.1038/s41598-018-38034-z
- Aradhya, M., Velasco, D., Ibrahimov, Z., Toktoraliev, B., Maghradze, D., Musayev, M., . . . Preece, J. E. (2017). Genetic and ecological insights into glacial refugia of walnut (Juglans regia L). *PLoS ONE, 12*(10). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031289221&doi=10.1371%2fjournal.pone.0185974 &partnerlD=40&md5=0ffc0d8605aa012e590e247c96e80e79. doi:10.1371/journal.pone.0185974
- Araya, A., Kisekka, I., Lin, X., Vara Prasad, P. V., Gowda, P. H., Rice, C., & Andales, A. (2017). Evaluating the impact of future climate change on irrigated maize production in Kansas. *Climate Risk Management*, 17, 139-154. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027103239&doi=10.1016%2fj.crm.2017.08.001&pa rtnerID=40&md5=787a35e8df5c88098132b7c375e7dc31. doi:10.1016/j.crm.2017.08.001

Armatas, C., Venn, T., & Watson, A. (2017). Understanding social–ecological vulnerability with Q-methodology: a case study of water-based ecosystem services in Wyoming, USA. Sustainability Science, 12(1), 105-121. Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-84966693635\&doi=10.1007\%2fs11625-016-0369-1\&partnerlD=40\&md5=b6ee879ac6ca0521971d6cff2255fe34.\ doi:10.1007/s11625-016-0369-1$ 

Arnberger, A., Ebenberger, M., Schneider, I. E., Cottrell, S., Schlueter, A. C., von Ruschkowski, E., . . . Gobster, P. H. (2018). Visitor Preferences for Visual Changes in Bark Beetle-Impacted Forest Recreation Settings in the United States and Germany. *Environmental Management*, 61(2), 209-223. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038809329&doi=10.1007%2fs00267-017-0975-4& partnerlD=40&md5=810fd0c9de3fb44c9e99d60a5ab829d5. doi:10.1007/s00267-017-0975-4

Arthur, F. H. (2018). Residual efficacy of deltamethrin as assessed by rapidity of knockdown of Tribolium castaneum on a treated surface: Temperature and seasonal effects in field and laboratory settings. *Journal of Stored Products Research*, 76, 151-160. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042323620&doi=10.1016%2fj.jspr.2018.02.001&partner/D=40&md5=73fa96e53fa21583d26966138a1c8f69. doi:10.1016/j.jspr.2018.02.001

Asbjornsen, H., Campbell, J. L., Jennings, K. A., Vadeboncoeur, M. A., McIntire, C., Templer, P. H., . . . Rustad, L. E. (2018). Guidelines and considerations for designing field experiments simulating precipitation extremes in forest ecosystems. *Methods in Ecology and Evolution*, 9(12), 2310-2325. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055527025&doi=10.1111%2f2041-210X.13094&partnerlD=40&md5=36d894cf651601900396082eab5a8a8c. doi:10.1111/2041-210X.13094

- Asem-Hiablie, S., Battagliese, T., Stackhouse-Lawson, K. R., & Alan Rotz, C. (2019). A life cycle assessment of the environmental impacts of a beef system in the USA. *International Journal of Life Cycle Assessment, 24*(3), 441-455. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047795163&doi=10.1007%2fs11367-018-1464-6& partnerID=40&md5=101e6b9b1e3a26bf9799c45a23d30212. doi:10.1007/s11367-018-1464-6
- Ashworth, A. J., DeBruyn, J. M., Allen, F. L., Radosevich, M., & Owens, P. R. (2017). Microbial community structure is affected by cropping sequences and poultry litter under long-term no-tillage. *Soil Biology and Biochemistry*, *114*, 210-219. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026351599&doi=10.1016%2fj.soilbio.2017.07.019&partnerID=40&md5=3c70ae525505ed2a9896e57fbc8823ae. doi:10.1016/j.soilbio.2017.07.019

- Ashworth, A. J., Toler, H. D., Allen, F. L., & Auge, R. M. (2018). Global meta-analysis reveals agro-grassland productivity varies based on species diversity over time. *PLoS ONE*, 13(7). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850496484898doi=10.1371%2fjournal.pone.0200274
- &partnerID=40&md5=3883cc9f34c9a3d7e6ab1d0e053b5bf6. doi:10.1371/journal.pone.0200274 Aspinwall, M. J., Fay, P. A., Hawkes, C. V., Lowry, D. B., Khasanova, A., Bonnette, J., . . . Juenger, T. E. (2017). Intraspecific variation in precipitation responses of a widespread C<inf>4</inf> grass depends on site water limitation.
  - Journal of Plant Ecology, 10(2), 310-321. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025072848&doi=10.1093%2fjpe%2frtw040&partn erlD=40&md5=f1e1414f6c218cb3fa952da1b0c01088. doi:10.1093/jpe/rtw040
- Assmann, J. J., Myers-Smith, I. H., Phillimore, A. B., Bjorkman, A. D., Ennos, R. E., Prevéy, J. S., . . . Hollister, R. D. (2019). Local snow melt and temperature—but not regional sea ice—explain variation in spring phenology in coastal Arctic tundra. *Global Change Biology*, 25(7), 2258-2274. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850650384198doi=10.1111%2fgcb.14639&partnerID =40&md5=38fab42a7f8e7d70b17825d2db9f4b88. doi:10.1111/qcb.14639
- Augustine, D. J., Blumenthal, D. M., Springer, T. L., LeCain, D. R., Gunter, S. A., & Derner, J. D. (2018). Elevated
   CO-cinf>2
   CO-cinf>2
   Finduces substantial and persistent declines in forage quality irrespective of warming in mixedgrass prairie. *Ecological Applications, 28*(3), 721-735. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045851112&doi=10.1002%2feap.1680&partnerlD=
- 40&md5=1cf743a3505a625ce050d7b47c04a4f5. doi:10.1002/eap.1680 Augustine, D. J., Derner, J. D., Milchunas, D., Blumenthal, D., & Porensky, L. M. (2017). Grazing moderates increases in C<inf>3</inf> grass abundance over seven decades across a soil texture gradient in shortgrass steppe. *Journal of Vegetation Science, 28*(3), 562-572. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011649670&doi=10.1111%2fjvs.12508&partnerID
- =40&md5=b64ade8bb8f626df5b7d94ba57ef3cda. doi:10.1111/jvs.12508
  Averyt, K., Derner, J. D., Dilling, L., Guerrero, R., Joyce, L., McNeeley, S., . . . Travis, W. (2018). Regional climate response collaboratives: Multi-institutional support for climate resilience. *Bulletin of the American Meteorological Society*, 99(5), 891-898. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048027891&doi=10.1175%2fBAMS-D-17-0183.1& partnerID=40&md5=64ccc4241fe08b2f60a31030b3e9dc17. doi:10.1175/BAMS-D-17-0183.1

- Ávila-Carrasco, J. R., Júnez-Ferreira, H. E., Gowda, P. H., Steiner, J. L., Moriasi, D. N., Starks, P. J., . . . Bautista-Capetillo, C. (2018). Evaluation of Satellite-Derived Rainfall Data for Multiple Physio-Climatic Regions in the Santiago River Basin, Mexico. *Journal of the American Water Resources Association, 54*(5), 1068-1086. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850509166298.doi=10.1111%211752-1688.12672&pa rtnerID=40&md5=9557690f24f527302c8260eb87a20260. doi:10.1111/1752-1688.12672
- Avila-Quezada, G. D., Esquivel, J. F., Silva-Rojas, H. V., Leyva-Mir, S. G., Garcia-Avila, C. J., Quezada-Salinas, A., . . . Melgoza-Castillo, A. (2018). Emerging plant diseases under a changing climate scenario: Threats to our

global food supply. *Emirates Journal of Food and Agriculture, 30*(6), 443-450. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052134160&doi=10.9755%2fejfa.2018.v30.i6.1715 &partnerID=40&md5=d47f68b64e849f74a44538717d090a3f. doi:10.9755/ejfa.2018.v30.i6.1715

Babst, F., Bodesheim, P., Charney, N., Friend, A. D., Girardin, M. P., Klesse, S., . . . Evans, M. E. K. (2018). When tree rings go global: Challenges and opportunities for retro- and prospective insight. *Quaternary Science Reviews*, 197, 1-20. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051103830&doi=10.1016%2fj.quascirev.2018.07.00 9&partnerID=40&md5=c0d09f4846927c7620ff853b741f0e8f. doi:10.1016/j.quascirev.2018.07.009

- Baez-Gonzalez, A. D., de Jesus Torres-Meza, M., Royo-Marquez, M. H., & Kiniry, J. R. (2018). Climate variability and trends in climate extremes in the priority conservation area El Tokio and adjacent areas in northeastern Mexico. Weather and Climate Extremes, 22, 36-47. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058165972&doi=10.1016%2fj.wace.2018.10.001&p
- artnerID=40&md5=9092cf6929455886f63b1365cc8c9de5. doi:10.1016/j.wace.2018.10.001 Baez-Gonzalez, A. D., Kiniry, J. R., Meki, M. N., Williams, J. R., Alvarez Cilva, M., Ramos Gonzalez, J. L., & Magallanes Estala, A. (2018). Potential impact of future climate change on sugarcane under dryland conditions in Mexico. *Journal of Agronomy and Crop Science*, 204(5), 515-528. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044948765&doi=10.1111%2fjac.12278&partnerID
- =40&md5=91e64be478b378e9bff4d75ffabd5f15. doi:10.1111/jac.12278
   Bai, W. N., Yan, P. C., Zhang, B. W., Woeste, K. E., Lin, K., & Zhang, D. Y. (2018). Demographically idiosyncratic responses to climate change and rapid Pleistocene diversification of the walnut genus Juglans (Juglandaceae) revealed by whole-genome sequences. *New Phytologist, 217*(4), 1726-1736. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035205210&doi=10.1111%2fnph.14917&partnerID
   =40&md5=081839b06211cbc23f73c852d92811b6. doi:10.1111/nph.14917
- Bailey, V. L., Bond-Lamberty, B., DeAngelis, K., Grandy, A. S., Hawkes, C. V., Heckman, K., . . . Wallenstein, M. D. (2018). Soil carbon cycling proxies: Understanding their critical role in predicting climate change feedbacks. *Global Change Biology*, 24(3), 895-905. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042143469&doi=10.1111%2fgcb.13926&partnerID =40&md5=b631331c730d405f95b763c80b0b4b43. doi:10.1111/gcb.13926

- Bajracharya, R. M., Lal, R., & Kimble, J. M. (2018). Soil organic carbon distribution in aggregates and primary particle fractions as influenced by erosion phases and landscape position. In Soil Processes and the Carbon Cycle (pp. 353-367).
- Baker, J. M., & Griffis, T. J. (2017). Feasibility of recycling excess agricultural nitrate with electrodialysis. Journal of Environmental Quality, 46(6), 1528-1534. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034262226&doi=10.2134%2fjeq2017.05.0215&par
- tnerlD=40&md5=5c4e72343d5e4039eedaff352fe77833. doi:10.2134/jeq2017.05.0215
  Bakker, M. G., Brown, D. W., Kelly, A. C., Kim, H. S., Kurtzman, C. P., McCormick, S. P., . . . Ward, T. J. (2018). Fusarium mycotoxins: a trans-disciplinary overview. *Canadian Journal of Plant Pathology*, 40(2), 161-171. Retrieved
- from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042911939&doi=10.1080%2f07060661.2018.14337 20&partnerID=40&md5=1d82806f3b473044bba3dc1c25cf12de.doi:10.1080/07060661.2018.1433720
- Ballesteros-Possu, W., Brandle, J. R., & Schoeneberger, M. (2017). Potential of windbreak trees to reduce carbon emissions by agricultural operations in the US. Forests, 8(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018429260&doi=10.3390%2ff8050138&partnerID =40&md5=a4ed21473e54dd877e7f564addac0189. doi:10.3390/f8050138
- Barandiaran, D., Wang, S. Y. S., & De Rose, R. J. (2017). Gridded snow water equivalent reconstruction for utah using forest inventory and analysis tree-ring data. *Water (Switzerland)*, 9(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020674202&doi=10.3390%2fw9060403&partnerID =40&md5=67fe4ac5b4a1ba3190ce52152f8a5aee. doi:10.3390/w9060403
- Barbosa, J. M., Asner, G. P., Hughes, R. F., & Johnson, M. T. (2017). Landscape-scale GPP and carbon density infor} patterns and impacts of an invosive tree across wet forests of0Hawaii. *Ecological Applications*, 27(2), 403-415. Retrieved from

6

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014548437&doi=10.1002%2feap.1445&partnerID=40&md5=00a5803a7ddae0b8849066d49199400e. doi:10.1002/eap.1445

Barrette, M., Bélanger, L., De Grandpré, L., & Royo, A. A. (2017). Demographic disequilibrium caused by canopy gap expansion and recruitment failure triggers forest cover loss. *Forest Ecology and Management, 401*, 117-124. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85023599344&doi=10.1016%2fj.foreco.2017.07.012&partnerlD=40&md5=97db58a564315793e7ba587a0979f112. doi:10.1016/j.foreco.2017.07.012

Barton, A. M., Keeton, W. S., & Spies, T. A. (2019). Ecology and recovery of eastern old-growth forests. Bassil, N., Bidani, A., Hummer, K., Rowland, L. J., Olmstead, J., Lyrene, P., & Richards, C. (2018). Assessing genetic

diversity of wild southeastern North American Vaccinium species using microsatellite markers. *Genetic Resources and Crop Evolution*, 65(3), 939-950. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033673780&doi=10.1007%2fs10722-017-0585-2&partnerlD=40&md5=e87791fefa4d157fdbef652577e64319. doi:10.1007/s10722-017-0585-2

Batllori, E., Parisien, M. A., Parks, S. A., Moritz, M. A., & Miller, C. (2017). Potential relocation of climatic environments suggests high rates of climate displacement within the North American protection network. *Global Change Biology*, 23(8), 3219-3230. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016433316&doi=10.1111%2fgcb.13663&partnerlD =40&md5=2440884495c8e4e7528039ba65354845. doi:10.1111/gcb.13663

Bauer, N., Rose, S. K., Fujimori, S., van Vuuren, D. P., Weyant, J., Wise, M., . . . Muratori, M. (2018). Global energy sector emission reductions and bioenergy use: overview of the bioenergy demand phase of the EMF-33 model comparison. *Climatic Change*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054585395&doi=10.1007%2fs10584-018-2226-y&

https://www.scopus.com/inward/record.un/eid=2-s2.0-850545853958doi=10.1007%zts10584-018-2226-y& partnerlD=40&md5=2164f2683ef479f23f44cde7e64f7f4c. doi:10.1007/s10584-018-2226-y

Baule, W., Allred, B., Frankenberger, J., Gamble, D., Andresen, J., Gunn, K. M., & Brown, L. (2017). Northwest Ohio crop yield benefits of water capture and subirrigation based on future climate change projections. Agricultural Water Management, 189, 87-97. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019092341&doi=10.1016%2fj.agwat.2017.04.019& partnerID=40&md5=ef18dc43cc0e665bbb0b1d5b2c076b78. doi:10.1016/j.agwat.2017.04.019

- Beach, R. H., Sulser, T. B., Crimmins, A., Cenacchi, N., Cole, J., Fukagawa, N. K., ... Ziska, L. H. (2019). Combining the effects of increased atmospheric carbon dioxide on protein, iron, and zinc availability and projected climate change on global diets: a modelling study. *The Lancet Planetary Health*, *3*(7), e307-e317. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068988347&doi=10.1016%2fS2542-5196%2819%2 930094-4&partnerID=40&md5=411277ce776276c9b68b20fcd388b7ed. doi:10.1016/S2542-5196(19)30094-4
- Begum, S., Kudo, K., Rahman, M. H., Nakaba, S., Yamagishi, Y., Nabeshima, E., . . . Funada, R. (2018). Climate change and the regulation of wood formation in trees by temperature. *Trees - Structure and Function*, 32(1), 3-15. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027894788&doi=10.1007%2fs00468-017-1587-6& partnerlD=40&md5=be4cc6e3460030fb8e51d97e399156e0. doi:10.1007/s00468-017-1587-6

- Belyazid, S., Phelan, J., Nihlgård, B., Sverdrup, H., Driscoll, C., Fernandez, I., . . . Clark, C. (2019). Assessing the Effects of Climate Change and Air Pollution on Soil Properties and Plant Diversity in Northeastern U.S. Hardwood Forests: Model Setup and Evaluation. Water, Air, and Soil Pollution, 230(5). Retrieved from https://www.scopus.com/inward/record.ui?eid=2-s2.0-850650273918doi=10.1007%2fs11270-019-4145-6& partnerlD=40&md5=66e849347f907671b7f90094be08587b. doi:10.1007/s11270-019-4145-6
- BenDor, T. K., Shandas, V., Miles, B., Belt, K., & Olander, L. (2018). Ecosystem services and U.S. stormwater planning: An approach for improving urban stormwater decisions. *Environmental Science and Policy*, 88, 92-103. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049341315&doi=10.1016%2fj.envsci.2018.06.006&partnerID=40&md5=e4c943b7b6e867e20804535a763314ec. doi:10.1016/j.envsci.2018.06.006

Benjankar, R., Tonina, D., McKean, J. A., Sohrabi, M. M., Chen, Q., & Vidergar, D. (2018). Dam operations may improve aquatic habitat and offset negative effects of climate change. *Journal of Environmental Management, 213*, 126-134. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042354527&doi=10.1016%2fj.jenvman.2018.02.066 &partnerID=40&md5=0b350d390cb222690b229499e6e71e13. doi:10.1016/j.jenvman.2018.02.066

Benjankar, R., Tonina, D., McKean, J. A., Sohrabi, M. M., Chen, Q., & Vidergar, D. (2019). An ecohydraulics virtual watershed: Integrating physical and biological variables to quantify aquatic habitat quality. *Ecohydrology*, 7 12(2). Retrieved from

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058946424&doi=10.1002%2feco.2062&partnerlD=40&md5=f9cb2b8edb865f5f964f95d46b4f471b.doi:10.1002/eco.2062
- Bentz, B. J., & Hansen, E. M. (2018). Evidence for a Prepupal Diapause in the Mountain Pine Beetle (Dendroctonus ponderosae). *Environmental Entomology*, 47(1), 175-183. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042207967&doi=10.1093%2fee%2fnvx192&partne

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042207967&doi=10.1093%2fee%2fnvx192&partne rlD=40&md5=16c1fc15ef2c27fe35acd2bcf71b0573. doi:10.1093/ee/nvx192

- Bentz, B. J., Hood, S. M., Hansen, E. M., Vandygriff, J. C., & Mock, K. E. (2017). Defense traits in the long-lived Great Basin bristlecone pine and resistance to the native herbivore mountain pine beetle. *New Phytologist, 213*(2), 611-624. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-84987624103&doi=10.1111%2fnph.14191&partnerlD =40&md5=bdb23691a349c36ed8a046e747a1e265. doi:10.1111/nph.14191
- Berger, J., Hartway, C., Gruzdev, A., & Johnson, M. (2018). Climate Degradation and Extreme Icing Events Constrain Life in Cold-Adapted Mammals. Scientific Reports, 8(1). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040774273&doi=10.1038%2fs41598-018-19416-9 &partnerlD=40&md5=b602f5d856610434e10cc8d1a761f8f5. doi:10.1038/s41598-018-19416-9
- Bergman, R. D., & Alanya-Rosenbaum, S. (2017). Cradle-to-gate life-cycle assessment of composite l-joist production in the United States. *Forest Products Journal*, 67(5-6), 355-367. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043698900&doi=10.13073%2fFPJ-D-16-00047&pa
- rtherlD=408md5=09b8ffa194d99568af77dc6113c0f426. doi:10.13073/FPJ-D-16-00047 Berihu, T., Girmay, G., Sebhatleab, M., Berhane, E., Zenebe, A., & Sigua, G. C. (2017). Soil carbon and nitrogen losses
- berniu, T., Gimag, G., Sebrateao, M., Bernane, E., Zenebe, A., & Sigua, G. C. (2017). Solidation and introgen losses following deforestation in Ethiopia. Agronomy for Sustainable Development, 37(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006942675&doi=10.1007%2613593-016-0408-4& partnerID=40&md5=f81cd08c73a1eaa7902e434438eaccb9. doi:10.1007/s13593-016-0408-4
- Berryman, E. M., Vanderhoof, M. K., Bradford, J. B., Hawbaker, T. J., Henne, P. D., Burns, S. P., . . . Ryan, M. G. (2018). Estimating Soil Respiration in a Subalpine Landscape Using Point, Terrain, Climate, and Greenness Data. *Journal of Geophysical Research: Biogeosciences, 123*(10), 3231-3249. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054792596&doi=10.1029%2f2018JG004613&partn erID=40&md5=a0f62316bb16c39bc67f54f99e329fa1. doi:10.1029/2018JG004613
- Berti, M., Johnson, B., Ripplinger, D., Gesch, R., & Aponte, A. (2017). Environmental impact assessment of double- and relay-cropping with winter camelina in the northern Great Plains, USA. *Agricultural Systems*, 156, 1-12. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019739305&doi=10.1016%2fj.agsy.2017.05.012&p artnerID=40&md5=b260b17edb9e06e525638113e1fe0771. doi:10.1016/j.agsy.2017.05.012 Bertolet, B. L., Corman, J. R., Casson, N. J., Sebestyen, S. D., Kolka, R. K., & Stanley, E. H. (2018). Influence of soil

- Let Oler, B. L., Colman, J. A., Cassoli, N. J., Sebestyeri, S. D., Koika, K. K., & Staniey, E. H. (2018). Initiative of solid temperature and moisture on the dissolved carbon, nitrogen, and phosphorus in organic matter entering lake ecosystems. *Biogeochemistry*, *139*(3), 293-305. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050300516&doi=10.1007%2fs10533-018-0469-3& partnerlD=40&md5=8f308408a74e664ecb705a9c183b31e9. doi:10.1007/s10533-018-0469-3
- Betts, M. G., Illán, J. G., Yang, Z., Shirley, S. M., & Thomas, C. D. (2019). Synergistic effects of climate and land-cover change on long-term bird population trends of the Western USA: A test of modeled predictions. *Frontiers in Ecology and Evolution*, 7(May). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066814822&doi=10.3389%2ffevo.2019.186&partn erID=40&md5=6266167b3befc8b3178653514ea88f5c. doi:10.3389/fevo.2019.186

- Bhatkoti, R., Triantis, K., Moglen, G. E., & Sabounchi, N. S. (2018). Performance assessment of a water supply system under the impact of climate change and droughts: Case study of the Washington Metropolitan Area. Journal of Infrastructure Systems, 24(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049649166&doi=10.1061%2f%28ASCE%29I5.1943-555X.0000435&partnerID=40&md5=7fe18f938916b4a2ad5f5d22852b537f. doi:10.10611/(ASCE)IS.1943-555X.0000435
- Bian, H., Lü, H., Sadeghi, A. M., Zhu, Y., Yu, Z., Ouyang, F., . . . Chen, R. (2017). Assessment on the effect of climate change on streamflow in the source region of the Yangtze River, China. Water (Switzerland), 9(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011292087&doi=10.3390%2fw9010070&partnerlD =40&md5=ac34d80a1fd8ae9b4200cbd63b559c07. doi:10.3390/w9010070

Biederman, L., Mortensen, B., Fay, P., Hagenah, N., Knops, J., La Pierre, K., . . . Tognetti, P. (2017). Nutrient addition shifts plant community composition towards earlier flowering species in some prairie ecoregions in the U.S. Central Plains. *PLoS ONE*, *12*(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019683807&doi=10.1371%2fjournal.pone.0178440 &partnerID=40&md5=2b9145c14382d40452e17ad72ad79d1b. doi:10.1371/journal.pone.0178440

Bielecki, C. D., & Wingenbach, G. (2019). Using a livelihoods framework to analyze farmer identity and decision making during the Central American coffee leaf rust outbreak: implications for addressing climate change and crop diversification. Agroecology and Sustainable Food Systems, 43(4), 457-480. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060249791&doi=10.1080%2f21683565.2019.15661 91&partnerID=40&md5=f08245b6b1993581043a53141362b540. doi:10.1080/21683565.2019.1566191

Bigelow, D. P., & Zhang, H. (2018). Supplemental irrigation water rights and climate change adaptation. *Ecological Economics*, 154, 156-167. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051410643&doi=10.1016%2fj.ecolecon.2018.07.01

S&partnerID=40&md5=db0437d5b29fe6f191f1a0bf8d10cb06. doi:10.1016/j.ecolecon.2018.07.015 Birdsey, R., Duffy, P., Smyth, C., Kurz, W. A., Dugan, A. J., & Houghton, R. (2018). Climate, economic, and environmental

bitsbyle, ballyne, singer, schulz, terr, begarry, e., et al. (a. 1997), and the construction of the con

Biskaborn, B. K., Smith, S. L., Noetzli, J., Matthes, H., Vieira, G., Streletskiy, D. A., . . . Lantuit, H. (2019). Permafrost is warming at a global scale. *Nature Communications*, 10(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850601590998doi=10.1038%2fs41467-018-08240-4 &portnerID=408md5=c06ce3e733a88201e60bdaac0d6e7dc8. doi:10.1038/s41467-018-08240-4

Bista, D. R., Heckathorn, S. A., Jayawardena, D. M., Mishra, S., & Boldt, J. K. (2018). Effects of drought on nutrient uptake and the levels of nutrient-uptake proteins in roots of drought-sensitive and -tolerant grasses. *Plants*, 7(2). Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047394181\&doi=10.3390\%2fplants7020028\&partnerdD=40\&md5=d59f56db80f9f71757858d6992d249d7. doi:10.3390/plants7020028$ 

Bjorkman, A. D., Myers-Smith, I. H., Elmendorf, S. C., Normand, S., Rüger, N., Beck, P. S. A., . . . Weiher, E. (2018). Plant functional trait change across a warming tundra biome. *Nature*, 562(7725), 57-62. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054332128&doi=10.1038%2fs41586-018-0563-7& partnerID=40&md5=7253ae03855ba0d82a94aeae654b167c. doi:10.1038/s41586-018-0563-7

Black, B. A., van der Sleen, P., Di Lorenzo, E., Griffin, D., Sydeman, W. J., Dunham, J. B., . . . Bograd, S. J. (2018). Rising synchrony controls western North American ecosystems. *Global Change Biology*, 24(6), 2305-2314. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044954558&doi=10.1111%2fgcb.14128&partnerlD =40&md5=68eece83dbb3d6b92cbbf60026e4d482. doi:10.1111/gcb.14128

Black, C. K., Davis, S. C., Hudiburg, T. W., Bernacchi, C. J., & DeLucia, E. H. (2017). Elevated CO<inf>2</inf> and temperature increase soil C losses from a soybean-maize ecosystem. *Global Change Biology*, 23(1), 435-445. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84978101099&doi=10.1111%2fgcb.13378&partnerlD=40&md5=8e5ca7a4aa050dab427e00b4c16730a5. doi:10.1111/gcb.13378

Blanco-Canqui, H., Wienhold, B. J., Jin, V. L., Schmer, M. R., & Kibet, L. C. (2017). Long-term tillage impact on soil hydraulic properties. Soil and Tillage Research, 170, 38-42. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850148478278:doi=10.1016%2fj.still.2017.03.0018:partnerID=408:md5=f6617985c91f1ced725ededee72db882. doi:10.1016/j.still.2017.03.001

Blankinship, J. C., Berhe, A. A., Crow, S. E., Druhan, J. L., Heckman, K. A., Keiluweit, M., . . . Wieder, W. R. (2018). Improving understanding of soil organic matter dynamics by triangulating theories, measurements, and models. *Biogeochemistry*, 140(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050994810&doi=10.1007%2fs10533-018-0478-2& partnerID=40&md5=7993d1855d941d2e53877e5ed1265d23. doi:10.1007/s10533-018-0478-2

Block, A., Vaughan, M. M., Christensen, S. A., Alborn, H. T., & Tumlinson, J. H. (2017). Elevated carbon dioxide reduces

emission of herbivore-induced volatiles in Zea mays. Plant Cell and Environment, 40(9), 1725-1734. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021336728&doi=10.1111%2fpce.12976&partnerID =40&md5=4b5c123edb3f01224e49e0705f789b5d. doi:10.1111/pce.12976

- Blumenthal, D. M., Mueller, K. E., Kray, J. A., LeCain, D. R., Pendall, E., Duke, S., . . . Morgan, J. A. (2018). Warming and Elevated CO <inf>2</inf> Interact to Alter Seasonality and Reduce Variability of Soil Water in a Semiarid Grassland. Ecosystems, 21(8), 1533-1544. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043392486&doi=10.1007%2fs10021-018-0237-1&
- partnerID=40&md5=b834f93533da439e023b28760f40a9a7. doi:10.1007/s10021-018-0237-1 Board, D. I., Chambers, J. C., Miller, R. F., & Weisberg, P. J. (2018). Fire patterns in piñon and juniper land cover types in
- the semiarid western united states from 1984 through 2013. USDA Forest Service General Technical Report RMRS-GTR. 2018(372). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065720816&partnerID=40&md5=c01c7d87ef2409 1648bf32f5db9ae4bf.

- Boehm, R., Ver Ploeg, M., Wilde, P. E., & Cash, S. B. (2019). Greenhouse gas emissions, total food spending and diet quality by share of household food spending on red meat: results from a nationally representative sample of US households. Public Health Nutrition, 22(10), 1794-1806. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063614654&doi=10.1017%2fS136898001800407X &partnerID=40&md5=e1004710ceb950479db922bc3574fd0f. doi:10.1017/S136898001800407X
- Boehm, R., Wilde, P. E., Ver Ploeg, M., Costello, C., & Cash, S. B. (2018). A Comprehensive Life Cycle Assessment of Greenhouse Gas Emissions from U.S. Household Food Choices. Food Policy, 79, 67-76. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047787975&doi=10.1016%2fj.foodpol.2018.05.004 &partneriD=40&md5=d65976d371e4c4619a661fc4bc754d91. doi:10.1016/j.foodpol.2018.05.004
- Bonnot, T. W., Cox, W. A., Thompson, F. R., & Millspaugh, J. J. (2018). Threat of climate change on a songbird population through its impacts on breeding. Nature Climate Change, 8(8), 718-722. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050516012&doi=10.1038%2fs41558-018-0232-8& partneriD=40&md5=71b679dac1f4bbf1337a826848e8d289. doi:10.1038/s41558-018-0232-8
- Bonnot, T. W., Thompson, F. R., & Millspaugh, J. J. (2017). Dynamic-landscape metapopulation models predict complex response of wildlife populations to climate and landscape change. Ecosphere, 8(7). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026895690&doi=10.1002%2fecs2.1890&partnerID =40&md5=070fc7f795d2a6aab4e1e31c7286c0fe. doi:10.1002/ecs2.1890
- Boote, K. J., Prasad, V., Allen, L. H., Singh, P., & Jones, J. W. (2018). Modeling sensitivity of grain yield to elevated temperature in the DSSAT crop models for peanut, soybean, dry bean, chickpea, sorghum, and millet. European Journal of Agronomy, 100, 99-109. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035063034&doi=10.1016%2fj.eja.2017.09.002&par
- tnerID=40&md5=19c2446b55f24647a0f2c1cfe20db1f6. doi:10.1016/j.eja.2017.09.002 Borchard, N., Schirrmann, M., Cayuela, M. L., Kammann, C., Wrage-Mönnig, N., Estavillo, J. M., . . . Novak, J. (2019). Biochar, soil and land-use interactions that reduce nitrate leaching and N<inf>2</inf>O emissions: A meta-analysis. Science of the Total Environment, 651, 2354-2364. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054859188&doi=10.1016%2fj.scitotenv.2018.10.06 0&partnerID=40&md5=c4e4fb6dee5d59d6fee8e663dd1317cd. doi:10.1016/j.scitotenv.2018.10.060
- Bothwell, H. M., Cushman, S. A., Woolbright, S. A., Hersch-Green, E. I., Evans, L. M., Whitham, T. G., & Allan, G. J. (2017). Conserving threatened riparian ecosystems in the American West: Precipitation gradients and river networks drive genetic connectivity and diversity in a foundation riparian tree (Populus angustifolia). Molecular Ecology, 26(19), 5114-5132. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028743689&doi=10.1111%2fmec.14281&partnerl

D=40&md5=ce81972f60adf4ed1abb4155726cf3f7. doi:10.1111/mec.14281 Bottero, A., D'Amato, A. W., Palik, B. J., Kern, C. C., Bradford, J. B., & Scherer, S. S. (2017). Influence of repeated prescribed fire on tree growth and mortality in pinus resinosa forests, northern minnesota. Forest Science, 63(1), 94-100, Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032346661&doi=10.5849%2fforsci.16-035&partner ID=40&md5=0e42762414d87b14f0ce8274fafaad22, doi:10.5849/forsci.16-035

Bottero, A., D'Amato, A. W., Palik, B. J., Bradford, J. B., Fraver, S., Battaglia, M. A., & Asherin, L. A. (2017).

190

Density-dependent vulnerability of forest ecosystems to drought. *Journal of Applied Ecology*, 54(6), 1605-1614. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019404982&doi=10.1111%2f1365-2664.12847&partnerlD=40&md5=cd6478f5e49854d0543093f506108035. doi:10.1111/1365-2664.12847

Bouchard, J. R., Fernando, D. D., Bailey, S. W., Weber-Townsend, J., & Leopold, D. J. (2017). Contrasting patterns of genetic variation in central and peripheral populations of dryopteris fragrans (Fragrant wood fern) and implications for colonization dynamics and conservation. *International Journal of Plant Sciences*, 178(8), 607-617. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030116287&doi=10.1086%2f693109&partnerlD=4 0&md5=f8c2570216beb00d2bab8528cd31afa5. doi:10.1086/693109

Boussios, D., Preckel, P. V., Yigezu, Y. A., Dixit, P. N., Akroush, S., M'Hamed, H. C., . . . Ayad, J. (2019). Modeling producer responses with dynamic programming: a case for adaptive crop management. Agricultural Economics (United Kingdom), 50(1), 101-111. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055682233&doi=10.1111%2fagec.12469&partnerl D=40&md5=8af00a38f9f687acba34155e1aed76c0. doi:10.1111/agec.12469

Bovey, R. W. (2017). Weed management systems for rangeland. In Handbook of Weed Management Systems (pp. 519-552).

Brabec, M. M., Germino, M. J., & Richardson, B. A. (2017). Climate adaption and post-fire restoration of a foundational perennial in cold desert: insights from intraspecific variation in response to weather. *Journal of Applied Ecology*, 54(1), 293-302. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84971231430&doi=10.1111%2f1365-2664.12679&pa rtnerlD=40&md5=b0cc6b342802699873b679064d04e7bb. doi:10.1111/1365-2664.12679

- Bradford, J. B., & Bell, D. M. (2017). A window of opportunity for climate-change adaptation: easing tree mortality by reducing forest basal area. *Frontiers in Ecology and the Environment*, *15*(1), 11-17. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007405645&doi=10.1002%2ffee.1445&partnerID= 40&md5=b7361f8ab39f76385685e6259295a4d2. doi:10.1002/fee.1445
- Brandt, L. A., Butler, P. R., Handler, S. D., Janowiak, M. K., Shannon, P. D., & Swanston, C. W. (2017). Integrating science and management to assess forest ecosystem vulnerability to climate change. *Journal of Forestry*, 115(3), 212-221. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019410528&doi=10.5849%2fjof.15-147&partnerID =40&md5=7003669f9d8b3691c3e64e13199e7cdd. doi:10.5849/jof.15-147

Branham, S. E., Stansell, Z. J., Couillard, D. M., & Farnham, M. W. (2017). Quantitative trait loci mapping of heat tolerance in broccoli (Brassica oleracea var. italica) using genotyping-by-sequencing. *Theoretical and Applied Genetics*, 130(3), 529-538. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85000402102&doi=10.1007%2fs00122-016-2832-x&

partner(D=40&mdS=b4ee37bc6e58cc6b13597d8958bb91b1. doi:10.1007/s0122-016-2832-x Branson, D. H. (2017). Effects of altered seasonality of precipitation on grass production and grasshopper performance

in a northern mixed prairie. Environmental Entomology, 46(3), 589-594. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020868618&doi=10.1093%2fee%2fnvx053&partne rlD=40&md5=4758edfded6b04b70a0172ee8ec58cf9. doi:10.1093/ee/nvx053

Brantley, S. L., McDowell, W. H., Dietrich, W. E., White, T. S., Kumar, P., Anderson, S. P., . . . Gaillardet, J. (2017). Designing a network of critical zone observatories to explore the living skin of the terrestrial Earth. *Earth Surface Dynamics*, 5(4), 841-860. Retrieved from https://www.scopus.com/inward/record.uir?eid=2-s2.0-85034602972&doi=10.5194%2fesurf-5-841-2017&pa rtner1D=40&rd5=4657d18b51f9d5a47d79540709b90d5c. doi:10.5194/esurf-5-841-2017

Brantley, S. T., Vose, J. M., Wear, D. N., & Band, L. (2017). Planning for an uncertain future: Restoration to mitigate water scarcity and sustain carbon sequestration. In *Ecological Restoration and Management of Longleaf Pine Forests* (pp. 291-310).

Breed, M. F., Harrison, P. A., Bischoff, A., Durruty, P., Gellie, N. J. C., Gonzales, E. K., . . . Bucharova, A. (2018). Priority actions to improve provenance decision-making. *BioScience*, *68*(7), 510-516. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050921707&doi=10.1093%2fbiosci%2fbiy050&par tnerID=40&md5=283576fbd587f9fe3944fa4ff3547e08. doi:10.1093/biosci/biy050

Bremer, L. L., Mandle, L., Trauernicht, C., Pascua, P., McMillen, H. L., Burnett, K., . . . Ticktin, T. (2018). Bringing multiple 11 values to the table: Assessing future land-use and climate change in North Kona, Hawai'i. *Ecology and Society, 23*(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044938836&doi=10.5751%2fES-09936-230133&partnerID=40&md5=c974f9dde3331a39409f990f8cbf656f. doi:10.5751/ES-09936-230133

Brennan, E. B. (2017). Can we grow organic or conventional vegetables sustainably without cover crops? HortTechnology, 27(2), 151-161. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014116771&doi=10.21273%2fHORTTECH03358-16 &partnerlD=40&md5=21e89dde8d71983e7a80da4eff977e30. doi:10.21273/HORTTECH03358-16

Briones-Herrera, C. I., Vega-Nieva, D. J., Monjarás-Vega, N. A., Flores-Medina, F., Lopez-Serrano, P. M., Corral-Rivas, J. J., . . . Jolly, W. M. (2019). Modeling and mapping forest fire occurrence from aboveground carbon density in Mexico. *Forests*, 10(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066851953&doi=10.3390%2ff10050402&partnerID=40&md5=e7a72392848590ba790be224ff9b7184. doi:10.3390/f10050402

- Bronson, K. F., Hunsaker, D. J., Williams, C. F., Thorp, K. R., Rockholt, S. M., Del Grosso, S. J., . . . Barnes, E. M. (2018). Nitrogen management affects nitrous oxide emissions under varying cotton irrigation systems in the Desert Southwest, USA. Journal of Environmental Quality, 47(1), 70-78. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850404537898ddoi=10.2134%2fjeq2017.10.03898par
- therD=40&md5=ad913374ae311339204b85699e4504b9. doi:10.2134/jeq2017.10.0389 Brooks, B. G. J., Lee, D. C., Pomara, L. Y., Hargrove, W. W., & Desai, A. R. (2017). *Quantifying Seasonal Patterns in*
- Disparate Environmental Variables Using the PolarMetrics R Package. Paper presented at the IEEE International Conference on Data Mining Workshops, ICDMW.
- Broughton, K. J., Bange, M. P., Duursma, R. A., Payton, P., Smith, R. A., Tan, D. K. Y., & Tissue, D. T. (2017). The effect of elevated atmospheric [CO sinf>2 </inf>] and increased temperatures on an older and modern cotton cultivar. *Functional Plant Biology*, *44*(12), 1207-1218. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034059783&doi=10.1071%2fFP17165&partnerlD= 40&md5=8753416b36165159ddd3b5c409f57bfd. doi:10.1071/FP17165
- Broughton, K. J., Smith, R. A., Duursma, R. A., Tan, D. K. Y., Payton, P., Bange, M. P., & Tissue, D. T. (2017). Warming alters the positive impact of elevated CO<inf>2</inf> concentration on cotton growth and physiology during soil water deficit. *Functional Plant Biology*, 44(2), 267-278. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009228894&doi=10.1071%2fFP16189&partnerID= 40&md5=09a442f32ad255e69b2fbdcc0e085536. doi:10.1071/FP16189
- Brown, J., Alvarez, P., Byrd, K., Deswood, H., Elias, E., & Spiegal, S. (2017). Coping With Historic Drought in California Rangelands: Developing a More Effective Institutional Response. *Rangelands*, 39(2), 73-78. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013856662&doi=10.1016%2fj.rala.2017.01.002&pa rtnerlD=40&md5=3b826c3bfb5065e614eca29a544f972f. doi:10.1016/j.rala.2017.01.002
- Brown, P. M., Gannon, B., Battaglia, M. A., Fornwalt, P. J., Huckaby, L. S., Cheng, A. S., & Baggett, L. S. (2019). Identifying old trees to inform ecological restoration in montane forests of the central rocky mountains, USA. *Tree-Ring Research*, 75(1), 34-48. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062414734&doi=10.3959%2f1536-1098-75.1.34&p artnerlD=40&md5=d975983c979b8ef5372398c995a32cc1. doi:10.3959/1536-1098-75.1.34
- Brown, S., & Lugo, A. E. (2017). Trailblazing the carbon cycle of tropical forests from puerto rico. *Forests, 8*(4). Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017356725&doi=10.3390%2ff8040101&partnerlD =40&md5=833aa363834ffea1cab2fd6f44663443. doi:10.3390/f8040101
- Brown, T. C., & Kroll, S. (2017). Avoiding an uncertain catastrophe: climate change mitigation under risk and wealth heterogeneity. *Climatic Change*, 141(2), 155-166. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008217230&doi=10.1007%2fs10584-016-1889-5&
- https://www.scopus.com/inward/record.un?eid=2-s2.0-8500821/2308doi=10.1007%2ts10584-016-1889-5& partnerID=40&md5=a4c346aaa02356e8835f4ec7bdf2fdf5. doi:10.1007/s10584-016-1889-5 Brown, T. C., Mahat, V., & Ramirez, J. A. (2019). Adaptation to Future Water Shortages in the United States Caused by

Population Growth and Climate Change. Earth's Future, 7(3), 219-234. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062344910&doi=10.1029%2f2018EF001091&partn erfD=40&md5=3432494d30a1a381de951b20ba85f7d6. doi:10.1029/2018EF001091

Brown, T. T., Lee, C. M., Kruger, C. E., Reganold, J. P., & Huggins, D. R. (2017). Comparison of greenhouse gas offset 12 quantification protocols for nitrogen management in dryland wheat cropping systems of the Pacific Northwest. *Frontiers in Environmental Science, 5* (NOV). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034842695&doi=10.3389%2ffenvs.2017.00072&partnerID=40&md5=9d51e224aed5eeec527ad6bdfa4d0979. doi:10.3389/fenvs.2017.00072

Browning, D. M., Crimmins, T. M., James, D. K., Spiegal, S., Levi, M. R., Anderson, J. P., & Peters, D. P. C. (2018). Synchronous species responses reveal phenological guilds: implications for management. *Ecosphere*, 9(9). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054881303&doi=10.1002%2fecs2.2395&partnerID=40&md5=909b5c76db2ee0c817b2293286a4b839. doi:10.1002/ecs2.2395

Browning, D. M., Maynard, J. J., Karl, J. W., & Peters, D. C. (2017). Breaks in MODIS time series portend vegetation change: Verification using long-term data in an arid grassland ecosystem: Verification. *Ecological Applications*, 27(5), 1677-1693. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019623969&doi=10.1002%2feap.1561&partnerID= 40&md5=276ed8f983f7cbb13026a6514f9d9ff0. doi:10.1002/eap.1561

Bugmann, H., Seidl, R., Hartig, F., Bohn, F., Brůna, J., Cailleret, M., . . . Reyer, C. P. O. (2019). Tree mortality submodels drive simulated long-term forest dynamics: assessing 15 models from the stand to global scale. *Ecosphere*, 10(2). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062691972&doi=10.1002%2fecs2.2616&partnerID=40&md5=6796b3442f0fd4c96b21cea4048a8b15. doi:10.1002/ecs2.2616

Bulla, M., Reneerkens, J., Weiser, E. L., Sokolov, A., Taylor, A. R., Sittler, B., . . . Kempenaers, B. (2019). Comment on "Global pattern of nest predation is disrupted by climate change in shorebirds". Science, 364(6445). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067619129&doi=10.1126%2fscience.aaw8529&par tnerID=40&md5=57bf97851fccc3f6e52a2551416664db. doi:10.1126/science.aaw8529

- Buma, B., Batllori, E., Bisbing, S., Holz, A., Saunders, S. C., Bidlack, A. L., . . . Zaret, K. (2019). Emergent freeze and fire disturbance dynamics in temperate rainforests. *Austral Ecology*, *44*(5), 812-826. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063642556&doi=10.1111%2faec.12751&partnerID =40&md5=c17db013210a139ce2afaef3ddea08bb. doi:10.1111/aec.12751
- Burna, B., Hennon, P. E., Harrington, C. A., Popkin, J. R., Krapek, J., Lamb, M. S., . . . Zeglen, S. (2017). Emerging climate-driven disturbance processes: widespread mortality associated with snow-to-rain transitions across 10° of latitude and half the range of a climate-threatened conifer. *Global Change Biology*, 23(7), 2903-2914. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85005870364&doi=10.1111%2fgcb.13555&partnerlD =40&md5=d6b69281e97bdee78301c9c40eab84bc. doi:10.1111/gcb.13555

Bunce, J. A. (2017). Variation in yield responses to elevated CO<inf>2</inf> and a brief high temperature treatment in quinoa. *Plants*, 6(3), 442-453. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022001089&doi=10.3390%2fplants6030026&partn

erID=40&md5=668b0c15198fdc9b84698cb1ea767f51. doi:10.3390/plants6030026 apartin erID=40&md5=668b0c15198fdc9b84698cb1ea767f51. doi:10.3390/plants6030026 Buntgen, U., Greuter, L., Bollmann, K., Jenny, H., Liebhold, A., Galván, J. D., . . . Mysterud, A. (2017). Elevational range

burgeri, U., Greuter, L., Boinmann, K., Jeimy, H., Lebnold, A., Galvari, J. D., ... Mysterdd, A. (2017). Elevatorial range shifts in four mountain ungulate species from the Swiss Alps. *Ecosphere*, 8(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850189496858vdoi=10.1002%2fecs2.1761&partnerID =40&md5=d43388f6dec544c9cbaf31bbc3675369. doi:10.1002/ecs2.1761

Buotte, P. C., Hicke, J. A., Preisler, H. K., Abatzoglou, J. T., Raffa, K. F., & Logan, J. A. (2017). Recent and future climate suitability for whitebark pine mortality from mountain pine beetles varies across the western US. *Forest Ecology and Management*, 399, 132-142. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019700094&doi=10.1016%2fj.foreco.2017.05.032&

partnerlD=40&md5=b1615efe1bcf82c368c34f5c74ded9ba. doi:10.1016/j.foreco.2017.05.032 Burke, J., & Ulloa, M. (2019). Assessment of cotton leaf and yield responses to water-deficit stress during flowering and boll development. *Journal of Cotton Science*, *23*(1), 109-117. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070227676&partnerlD=40&md5=46532ed8e0742 d134b5e20a4f249f924.

13

Burkle, L. A., & Runyon, J. B. (2017). The Smell of Environmental Change: Using Floral Scent to Explain Shifts in Pollinator Attraction. Applications in Plant Sciences, 5(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020292466&doi=10.3732%2fapps.1600123&partnerD=40&md5=5cff8a068581c07b3547d63b0ca6c539. doi:10.3732/apps.1600123

- Burt, D. M., Roloff, G. J., & Etter, D. R. (2017). Climate factors related to localized changes in snowshoe hare (Lepus Americanus) occupancy. *Canadian Journal of Zoology*, 95(1), 15-22. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009804782&doi=10.1139%2fcjz-2016-0180&partn
- erID=40&md5=d256def50ce368d8e326b5df7ab5375. doi:10.1139/cjz-2016-0180 Burt, T. P., Ford Miniat, C., Laseter, S. H., & Swank, W. T. (2018). Changing patterns of daily precipitation totals at the
- Coweeta Hydrologic Laboratory, North Carolina, USA. International Journal of Climatology, 38(1), 94-104. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021255468&doi=10.1002%2fjoc.5163&partnerlD=40&md5=6d77db7824e2b87bb26eabe07c775b3d. doi:10.1002/joc.5163

- Butnor, J. R., Samuelson, L. J., Johnsen, K. H., Anderson, P. H., González Benecke, C. A., Boot, C. M., . . . Zarnoch, S. J. (2017). Vertical distribution and persistence of soil organic carbon in fire-adapted longleaf pine forests. *Forest Ecology and Management*, 390, 15-26. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85010403104&doi=10.1016%2fj.foreco.2017.01.014& partnerlD=40&md5=1daf04a68a718b9151adeb0d5bf483da. doi:10.1016/j.foreco.2017.01.014 Byrnes, R., Eviner, V., Kebreab, E., Horwath, W. R., Jackson, L., Jenkins, B. M., . . . Wheeler, S. (2017). Review of research
- by thes, K., Eviner, V., Rebread, E., Horwahl, W. K., Jackson, E., Jenkins, S. M., . . . Where, S. (2017). Review of research to inform California's climate scoping plan: Agriculture and working lands. *California Agriculture*, 71(3), 160-168. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029490885&doi=10.3733%2fca.2017a0031&partne

https://www.scopus.com/inward/record.un/eid=2-s2.0-85029490885&doi=10.3733%2tca.2017a0031&partne rID=40&md5=b1deae502e2b9083bbb51419e9bdd915. doi:10.3733/ca.2017a0031

- Bystriakova, N., Griswold, T., Ascher, J. S., & Kuhlmann, M. (2018). Key environmental determinants of global and regional richness and endemism patterns for a wild bee subfamily. *Biodiversity and Conservation*, 27(2), 287-309. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029543316&doi=10.1007%2fs10531-017-1432-7& partnerID=40&md5=24bafef1d71c9cd897a313b990faab27. doi:10.1007/s10531-017-1432-7
- Cade, B. S., Noon, B. R., Scherer, R. D., & Keane, J. J. (2017). Logistic quantile regression provides improved estimates for bounded avian counts: A case study of California Spotted Owl fledgling production. Auk, 134(4), 783-801. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85024104402&doi=10.1642%2fAUK-16-195.1&partnerlD=40&md5=29955bd7e0714d9776b03b4868d17cd3. doi:10.1642/AUK-16-195.1

Cahoon, S. M. P., Sullivan, P. F., Brownlee, A. H., Pattison, R. R., Andersen, H. E., Legner, K., & Hollingsworth, T. N. (2018). Contrasting drivers and trends of coniferous and deciduous tree growth in interior Alaska. *Ecology*, 99(6), 1284-1295. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046159710&doi=10.1002%2fecy.2223&partnerlD=40&md5=b3e6aba3db716a76fcc85d550e13afe2. doi:10.1002/ecy.2223

Cai, X., Pan, M., Chaney, N. W., Colliander, A., Misra, S., Cosh, M. H., . . . Wood, E. F. (2017). Validation of SMAP soil moisture for the SMAPVEX15 field campaign using a hyper-resolution model. *Water Resources Research*, 53(4), 3013-3028. Retrieved from https://www.conur.com/uside/uside/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/active/a

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017562860&doi=10.1002%2f2016WR019967&part nerID=40&md5=5256279446e1571ed065ce372cb67ab. doi:10.1002/2016WR019967

Cailleret, M., Dakos, V., Jansen, S., Robert, E. M. R., Aakala, T., Amoroso, M. M., . . . Martínez-Vilalta, J. (2019). Early-warning signals of individual tree mortality based on annual radial growth. *Frontiers in Plant Science*, 9. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062726358&doi=10.3389%2ffpls.2018.01964&part nerID=40&md5=29c960a0fcb733c6b96947d9dc0d8347. doi:10.3389/fpls.2018.01964

Caldwell, P. V., Jackson, C. R., Miniat, C. F., Younger, S. E., Vining, J. A., McDonnell, J. J., & Aubrey, D. P. (2018). Woody bioenergy crop selection can have large effects on water yield: A southeastern United States case study. *Biomass and Bioenergy*, 117, 180-189. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050970700&doi=10.1016%2fj.biombioe.2018.07.021\\ 1&partnerID=40&md5=cf31521f1e94e35a5444f75c75d4a802. doi:10.1016/j.biombioe.2018.07.021\\ 1&partnerID=40&md5=cf31521f1e94e35a544f75c75d4a802. doi:10.1016/j.biombioe.2018.07.021\\ 1&partnerID=40&md5=cf31521f1e94e35a54f1e94e35a54f1e94e35a54f1e94e36a54f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94e36f1e94$ 

Cambaliza, M. O. L., Bogner, J. E., Green, R. B., Shepson, P. B., Harvey, T. A., Spokas, K. A., . . . Corcoran, M. (2017). Field measurements and modeling to resolve m 2 to km 2 CH <inf>4</inf> emissions for a complex urban source: An Indiana landfill study. Elementa, 5. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061838269&doi=10.1525%2felementa.145&partne rID=40&md5=d2fd39910833bbae84baa494147336cd. doi:10.1525/elementa.145

Campbell, J. L., Green, M. B., Yanai, R. D., Woodall, C. W., Fraver, S., Harmon, M. E., . . . Domke, G. M. (2019). Estimating uncertainty in the volume and carbon storage of downed coarse woody debris. *Ecological Applications, 29*(2). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062283863&doi=10.1002%2feap.1844&partnerID= 40&md5=fa6bf0e12f0d683ef53fbad762fc9c4a. doi:10.1002/eap.1844

- Campbell, J. L., Sessions, J., Smith, D., & Trippe, K. (2018). Potential carbon storage in biochar made from logging residue: Basic principles and Southern Oregon case studies. *PLoS ONE*, *13*(9). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053242513&doi=10.1371%2fjournal.pone.0203475 &partnerID=40&md5=5b49362fe9630bbc5652ede45d3caba4. doi:10.1371/journal.pone.0203475
- Campos-Cerqueira, M., Arendt, W. J., Wunderle, J. M., & Aide, T. M. (2017). Have bird distributions shifted along an elevational gradient on a tropical mountain? *Ecology and Evolution*, 7(23), 9914-9924. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031674122&doi=10.1002%2fece3.3520&partnerID =40&md5=a1a26150a51bc8ffd45cd2ece11dcadc. doi:10.1002/ece3.3520
- Canham, C. D., Murphy, L., Riemann, R., McCullough, R., & Burrill, E. (2018). Local differentiation in tree growth responses to climate. *Ecosphere*, 9(8). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054061877&doi=10.1002%2fecs2.2368&partnerID

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850540618//&doi=10.1002%2fecs2.2368&partnerID =40&md5=5836a234d927add1bfbebe4abc1afb29. doi:10.1002/ecs2.2368

Cano, A., Núñez, A., Acosta-Martinez, V., Schipanski, M., Ghimire, R., Rice, C., & West, C. (2018). Current knowledge and future research directions to link soil health and water conservation in the Ogallala Aquifer region. *Geoderma, 328*, 109-118. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047056122&doi=10.1016%2fj.geoderma.2018.04.0

https://www.scopus.com/inward/record.un/eid=2-s2.0-8504/0561228/doi=10.1016%2fj.geoderma.2018.04.0 278/partner/ID=408/md5=f8acb76cc3a3cddac844(c00b89ff8f2a.doi:10.1016/j.geoderma.2018.04.027

Cao, B., Domke, G. M., Russell, M. B., & Walters, B. F. (2019). Spatial modeling of litter and soil carbon stocks on forest land in the conterminous United States. *Science of the Total Environment*, 654, 94-106. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056446361&doi=10.1016%2fj.scitotenv.2018.10.35 9&partnerID=40&md5=571e1c9a7184c2a9bb94983b6196c791. doi:10.1016/j.scitotenv.2018.10.359

Carnwath, G., & Nelson, C. (2017). Effects of biotic and abiotic factors on resistance versus resilience of Douglas fir to drought. *PLoS ONE*, *12*(10). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030463034&doi=10.1371%2fjournal.pone.0185604 &partnerID=40&md5=0224ebad80acc0668247f596d49043de. doi:10.1371/journal.pone.0185604

Carrasco, D., Desurmont, G. A., Laplanche, D., Proffit, M., Gols, R., Becher, P. G., . . . Anderson, P. (2018). With or without you: Effects of the concurrent range expansion of an herbivore and its natural enemy on native species interactions. *Global Change Biology*, 24(2), 631-643. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028593502&doi=10.1111%2fgcb.13836&partnerID =40&md5=fa6a465e85f210c747819a9838f88170. doi:10.1111/gcb.13836

Carrillo, Y., Dijkstra, F., LeCain, D., Blumenthal, D., & Pendall, E. (2018). Elevated CO <inf>2</inf> and warming cause interactive effects on soil carbon and shifts in carbon use by bacteria. *Ecology Letters*, 21(11), 1639-1648. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053235043&doi=10.1111%2fele.13140&partnerlD=40&md5=c7be0ed3d0a937ab6476c36bf4f8e1b5.doi:10.1111/ele.13140\\$ 

Carroll, C., Parks, S. A., Dobrowski, S. Z., & Roberts, D. R. (2018). Climatic, topographic, and anthropogenic factors determine connectivity between current and future climate analogs in North America. *Global Change Biology*, 24(11), 5318-5331. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052458003&doi=10.1111%2fgcb.14373&partnerlD =40&md5=625f26f534615c2c7f6d73cef076e6eb. doi:10.1111/gcb.14373

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85005980993&doi=10.1002%2feco.1792&partnerlD=40&md5=8cd13f526678d6e22750de1a7bd942cb.doi:10.1002/eco.1792

15

- Carrollo, E. M., Johnson, H. E., Fischer, J. W., Hammond, M., Dorsey, P. D., Anderson, C., . . . Walter, W. D. (2017). Influence of precipitation and crop germination on resource selection by mule deer (odocoileus hemionus) in Southwest Colorado. *Scientific Reports*, 7(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033676223&doi=10.1038%2fs41598-017-15482-7
- &partnerlD=40&md5=1ab4424ae9c2a5b04334163f4e3c2079. doi:10.1038/s41598-017-15482-7 Carter, A. H., Jones, S. S., Balow, K. A., Shelton, G. B., Burke, A. B., Lyon, S., . . . Morris, C. F. (2017). Registration of 'Jasper' soft white winter wheat. *Journal of Plant Registrations, 11*(3), 263-268. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028988296&doi=10.3198%2fjpr2016.09.0051crc&p artnerlD=40&md5=e70c9af5defffca2d41942ff7ca318e0. doi:10.3198/jpr2016.09.0051crc
- Carter, E., Hain, C., Anderson, M., & Steinschneider, S. (2018). A water balance-based, spatiotemporal evaluation of terrestrial evapotranspiration products across the contiguous United States. *Journal of Hydrometeorology*, 19(5), 891-905. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047954522&doi=10.1175%2fJHM-D-17-0186.1&p artnerID=40&md5=8fc921277427b0b44bc2f6702fa9ab47. doi:10.1175/JHM-D-17-0186.1
- Carter, S. K., Saenz, D., & Rudolf, V. H. W. (2018). Shifts in phenological distributions reshape interaction potential in natural communities. *Ecology Letters*, 21(8), 1143-1151. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049852692&doi=10.1111%2fele.13081&partnerID
- =40&md5=5e1601cc0c6feea9945cbf10a88d5b14. doi:10.1111/ele.13081 Carter, V. A., Brunelle, A., Minckley, T. A., Shaw, J. D., DeRose, R. J., & Brewer, S. (2017). Climate variability and fire effects on quaking aspen in the central Rocky Mountains, USA. *Journal of Biogeography*, 44(6), 1280-1293. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007613550&doi=10.1111%2fjbi.12932&partnerID=
  - https://www.scopus.com/inward/record.uri/eid=2-s2.0-8500/613550&doi=10.1111%2fjbi.12932&partnerID= 40&md5=e0e7006c8789ad5cdc34a2c5c4a5c7fe. doi:10.1111/jbi.12932
- Carter, Z. W., Sullivan, B. W., Qualls, R. G., Blank, R. R., Schmidt, C. A., & Verburg, P. S. J. (2018). Charcoal increases microbial activity in eastern sierra nevada forest soils. *Forests,* 9(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042187169&doi=10.3390%2ff9020093&partnerID =40&md5=9e6008f8a098d94403b0b824aae11b01. doi:10.3390/f9020093
- Carver, A. R., Ross, J. D., Augustine, D. J., Skagen, S. K., Dwyer, A. M., Tomback, D. F., & Wunder, M. B. (2017). Weather radar data correlate to hail-induced mortality in grassland birds. *Remote Sensing in Ecology and Conservation*, 3(2), 90-101. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021383951&doi=10.1002%2frse2.41&partnerlD=4 0&md5=ce1b503edcad5c45ff2db1c8c89ada2b. doi:10.1002/rse2.41

Cary, G. J., Davies, I. D., Bradstock, R. A., Keane, R. E., & Flannigan, M. D. (2017). Importance of fuel treatment for limiting moderate-to-high intensity fire: findings from comparative fire modelling. *Landscape Ecology*, *32*(7), 1473-1483. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84982951909&doi=10.1007%2fs10980-016-0420-8&

partner/D=40&md5=1adf817a39b38ee4ee9848ee81ff57dc. doi:10.1007/s10980-016-0420-8 Castellanos-Acuña, D., Vance-Borland, K. W., St. Clair, J. B., Hamann, A., López-Upton, J., Gómez-Pineda, E., . . .

- Stellarlos Actina, D., valce obtainto, K. W., St. Clair, J. B., Hannam, A., Edez-Yollon, J., Contez-Firleda, E., . . . Sáenz-Romero, C. (2018). Climate-based seed zones for Mexico: guiding reforestation under observed and projected climate change. *New Forests*, *49*(3), 297-309. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035783363&doi=10.1007%2fs11056-017-9620-6& partnerID=40&md5=3ddbb3cf1781eb8f28f612b8e3e29066. doi:10.1007/s11056-017-9620-6
- Castillo, A. C., Goldfarb, B., Johnsen, K. H., Roberds, J. H., & Nelson, C. D. (2018). Genetic variation in water-use efficiency (WUE) and growth in mature longleaf pine. *Forests*, 9(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057000326&doi=10.3390%2ff9110727&partnerID =40&md5=a34a028ce11b4a2bbb9cf2cc8d1be207. doi:10.3390/f9110727
- Castillo, J. M., Gallego-Tévar, B., Figueroa, E., Grewell, B. J., Vallet, D., Rousseau, H., . . . Aïnouche, M. (2018). Low genetic diversity contrasts with high phenotypic variability in heptaploid Spartina densiflora populations invading the Pacific coast of North America. *Ecology and Evolution*, 8(10), 4992-5007. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047859349&doi=10.1002%2fece3.4063&partnerID =40&md5=9481137bc013aa1474e639abe436d49b. doi:10.1002/ece3.4063
- Cavigelli, M. A., Nash, P. R., Gollany, H. T., Rasmann, C., Polumsky, R. W., Le, A. N., & Conklin, A. E. (2018). Simulated soil organic carbon changes in Maryland are affected by tillage, climate change, and crop yield. *Journal of* 16

Environmental Quality, 47(4), 588-595. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049469367&doi=10.2134%2fjeq2017.07.0291&par

- tnerID=40&md5=09c3178bd769b52dd6cdd12ea863fbd7. doi:10.2134/jeq2017.07.0291 Certano, A. K., Fernandez, C. W., Heckman, K. A., & Kennedy, P. G. (2018). The afterlife effects of fungal morphology: Contrasting decomposition rates between diffuse and rhizomorphic necromass. *Soil Biology and Biochemistry, 126*, 76-81. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054059298&doi=10.1016%2fj.soilbio.2018.08.002& partnerID=40&md5=db285d2cd88c908dbb7bccc88ece65ef. doi:10.1016/j.soilbio.2018.08.002
- Chambers, J. C., Beck, J. L., Bradford, J. B., Bybee, J., Campbell, S., Carlson, J., . . . Wuenschel, A. (2017). Science framework for conservation and restoration of the sagebrush biome: Linking the department of the interior's integrated rangeland fire management strategy to long-term strategic conservation actions. USDA Forest Service - General Technical Report RMRS-GTR, 2017(360), 1-217. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019017434&partnerlD=40&md5=9d89c132faa658 81f45b1f1f888d29a6.
- Chao, X., Yasarer, L., Bingner, R., & Jia, Y. (2018). Numerical Modeling of the Lake Water Quality and Upland Watershed Loads. Paper presented at the World Environmental and Water Resources Congress 2018: Watershed Management, Irrigation and Drainage, and Water Resources Planning and Management - Selected Papers from the World Environmental and Water Resources Congress 2018.
- Chappell, A., Lee, J. A., Baddock, M., Gill, T. E., Herrick, J. E., Leys, J. F., . . . Webb, N. P. (2018). A clarion call for aeolian research to engage with global land degradation and climate change. *Aeolian Research, 32*, A1-A3. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043526784&doi=10.1016%2fj.aeolia.2018.02.007&partnerID=40&md5=8cb21dd0510196eb4bd481f10d09b4fb. doi:10.1016/j.aeolia.2018.02.007

- Chappell, A., Webb, N. P., Leys, J. F., Waters, C. M., Orgill, S., & Eyres, M. J. (2019). Minimising soil organic carbon erosion by wind is critical for land degradation neutrality. *Environmental Science and Policy*, 93, 43-52. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058804510&doi=10.1016%2fj.envsci.2018.12.020& partnerID=40&md5=d63bb10c781b541aadafe117457a9ce3. doi:10.1016/j.envsci.2018.12.020
- Chater, J. M., Santiago, L. S., Merhaut, D. J., Jia, Z., Mauk, P. A., & Preece, J. E. (2018). Orchard establishment, precocity, and eco-physiological traits of several pomegranate cultivars. *Scientia Horticulturae*, 235, 221-227. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043374406&doi=10.1016&2fj.scienta.2018.02.032\\ \& partnerlD=40&md5=f43b5205a2fd24339&eaddee53c309b2. doi:10.1016/j.scienta.2018.02.032\\ \& partnerlD=40&md5=f43b5205a2fd2439&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadde53c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd653c30&eadd6$ 

Chen, D., Yu, M., González, G., Zou, X., & Gao, Q. (2017). Climate impacts on soil carbon processes along an elevation gradient in the tropical luquillo experimental forest. *Forests*, 8(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015622077&doi=10.3390%2ff8030090&partnerID

=40&md5=0faa8be1fbbce2c959d4ca84be56cad5. doi:10.3390/f8030090

Chen, G., Kolb, L., Cavigelli, M. A., Weil, R. R., & Hooks, C. R. R. (2018). Can conservation tillage reduce N <inf>2 </inf>0 emissions on cropland transitioning to organic vegetable production? *Science of the Total Environment, 618*, 927-940. Retrieved from

- Chen, J., Brissette, F. P., Zhang, X. J., Chen, H., Guo, S., & Zhao, Y. (2019). Bias correcting climate model multi-member ensembles to assess climate change impacts on hydrology. *Climatic Change*, *153*(3), 361-377. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062153907&doi=10.1007%2fs10584-019-02393-x &partnerlD=40&md5=17615a2c4db45e4b64eb47bd0db549fc. doi:10.1007/s10584-019-02393-x
- Chen, J., Chopra, R., Hayes, C., Morris, G., Marla, S., Burke, J., . . . Burow, G. (2017). Genome-wide association study of developing leaves' heat tolerance during vegetative growth stages in a sorghum association panel. *Plant Genome*, *10*(2). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85024495931&doi=10.3835%2fplantgenome2016.09. 0091&partnerID=40&md5=8c92e5b74c171bbd870205db0ae41cd1. doi:10.3835/plantgenome2016.09.0091 Chen, J., John, R., Sun, G., Fan, P., Henebry, G. M., Fernández-Giménez, M. E., . . . Qi, J. (2018). Prospects for the

sustainability of social-ecological systems (SES) on the Mongolian plateau: Five critical issues. *Environmental* 17 Research Letters, 13(12). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060137733&doi=10.1088%2f1748-9326%2faaf27b &partnerID=40&md5=aeb1e76d66fc87ffb591651ab4e44124. doi:10.1088/1748-9326/aaf27b

Chen, J., Zhang, X. J., & Li, X. (2018). A weather generator-based statistical downscaling tool for site-specific assessment of climate change impacts. *Transactions of the ASABE, 61*(3), 977-993. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049782072&doi=10.13031%2ftrans.12601&partner ID=40&md5=57a698b5a664392c20b3daeeb9652b5a. doi:10.13031/trans.12601

Chen, M., Griffis, T. J., Baker, J. M., Wood, J. D., Meyers, T., & Suyker, A. (2018). Comparing crop growth and carbon budgets simulated across AmeriFlux agricultural sites using the Community Land Model (CLM). Agricultural and Forest Meteorology, 256-257, 315-333. Retrieved from https://www.scopus.com/inward/record.ui?eid=2-s2.0-85044952270&doi=10.1016%2fj.agrformet.2018.03.0

https://www.scopus.com/inward/record.un/eid=2-s2.0-850449522708doi=10.1016%2tj.agrformet.2018.03.0 12&partnerID=40&md5=dd8504c9f21cbf3a92944bae049883d3. doi:10.1016/j.agrformet.2018.03.012 Chen, R., Qin, Z., Han, J., Wang, M., Taheripour, F., Tyner, W., . . . Duffield, J. (2018). Life cycle energy and greenhouse

Chen, X., Qi, Z., Gui, D., Gu, Z., Ma, L., Zeng, F., & Li, L. (2019). Simulating impacts of climate change on cotton yield and water requirement using RZWQM2. *Agricultural Water Management, 222*, 231-241. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067182352&doi=10.1016%2fj.agwat.2019.05.030& partnerID=40&md5=d0e152307e293d87201c84f80b3507d9. doi:10.1016/j.agwat.2019.05.030

Chen, Y., Marek, G. W., Marek, T. H., Moorhead, J. E., Heflin, K. R., Brauer, D. K., . . . Srinivasan, R. (2019). Simulating the impacts of climate change on hydrology and crop production in the Northern High Plains of Texas using an improved SWAT model. Agricultural Water Management, 221, 13-24. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064909717&doi=10.1016%2fj.agwat.2019.04.021& partnerlD=40&md5=baac4d916d46113037fda1bf707c6503. doi:10.1016/j.agwat.2019.04.021

Cheng, Q., Zhou, C., Jiang, W., Zhao, X., Via, B. K., & Wan, H. (2018). Mechanical and physical properties of oriented strand board exposed to high temperature and relative humidity and coupled with near-infrared reflectance modeling. *Forest Products Journal, 68*(1), 78-85. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055505895&doi=10.13073%2fFPJ-D-16-00069&pa rtnerID=40&md5=ce46f544dc5870955b54a62f8ba558e6. doi:10.13073/FPJ-D-16-00069

Chhin, S., Zalesny, R. S., Parker, W. C., & Brissette, J. (2018). Dendroclimatic analysis of white pine (Pinus strobus L) using long-term provenance test sites across eastern North America. *Forest Ecosystems*, 5(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050395073&doi=10.1186%2fs40663-018-0136-0& partnerID=40&md5=e259301aef0e19a6e3731cbf0b58299f. doi:10.1186/s40663-018-0136-0

Chi, J., Waldo, S., Pressley, S. N., Russell, E. S., O'Keeffe, P. T., Pan, W. L., . . . Lamb, B. K. (2017). Effects of Climatic Conditions and Management Practices on Agricultural Carbon and Water Budgets in the Inland Pacific Northwest USA. *Journal of Geophysical Research: Biogeosciences*, *122*(12), 3142-3160. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037973656&doi=10.1002%2f2017JG004148&partn erID=408md5=d3950aae655702ff537083bf7404f3a. doi:10.1002/2017JG004148

Chiodi, A. M., Larkin, N. S., & Varner, J. M. (2018). An analysis of Southeastern US prescribed burn weather windows: Seasonal variability and El Niño associations. *International Journal of Wildland Fire*, 27(3), 176-189. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045152332&doi=10.1071%2fWF17132&partnerlD=40&md5=251bf596858950326b2d3d82a3047fbb. doi:10.1071/WF17132

Chirici, G., Bottalico, F., Giannetti, F., Del Perugia, B., Travaglini, D., Nocentini, S., . . . Gozzini, B. (2018). Assessing forest windthrow damage using single-date, post-event airborne laser scanning data. *Forestry*, 91(1), 27-37. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041181051\&doi=10.1093\%2 fforestry\%2 fcpx029\&partnerlD=40\&md5=7ab43ca0633 f1086b3a2 fd7694e83741. doi:10.1093/forestry/cpx029$ 

Chirinda, N., Arenas, L., Loaiza, S., Trujillo, C., Katto, M., Chaparro, P., . . . Barahona, R. (2017). Novel technological and management options for accelerating transformational changes in rice and livestock systems. Sustainability (Switzerland), 9(11). Retrieved from

198

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032335100&doi=10.3390%2fsu9111891&partnerl D=40&md5=d1f437e212cd346942994e62a6013198. doi:10.3390/su9111891

- Chopra, R., Burow, G., Burke, J. J., Gladman, N., & Xin, Z. (2017). Genome-wide association analysis of seedling traits in diverse Sorghum germplasm under thermal stress. *BMC Plant Biology*, *17*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009347613&doi=10.1186%2fs12870-016-0966-2&
  - nttps://www.scopus.com/inward/record.un/eid=2-52.0-85009347613&doi=10.1186%21512870-016-0966-2& partnerlD=40&md5=fb3eaf555b13be236d7b4ce3b0e8f14f. doi:10.1186/s12870-016-0966-2
- Chouaib, W., Alila, Y., & Caldwell, P. V. (2018). Parameter transferability within homogeneous regions and comparisons with predictions from a priori parameters in the eastern United States. *Journal of Hydrology*, 560, 24-38. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045796076&doi=10.1016%2fj.jhydrol.2018.03.018 &partnerID=40&md5=074a5c174f6f0c2c8848876a2ca8a871. doi:10.1016/j.jhydrol.2018.03.018

- Christenson, L., Clark, H., Livingston, L., Heffernan, E., Campbell, J., Driscoll, C., . . . Templer, P. H. (2017). Winter climate change influences on soil faunal distribution and abundance: Implications for decomposition in the Northern Forest. Northeastern Naturalist, 24, B209-B234. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037042404&doi=10.1656%2f045.024.s721&partne rlD=40&md5=ae04101174cae3c4be416be7a612da4d. doi:10.1656/045.024.s721
- Cisneros, R., Schweizer, D., Tarnay, L., Navarro, K., Veloz, D., & Procter, C. T. (2018) Climate Change, Forest Fires, and Health in California. In. *Springer Climate* (pp. 99-130).
- Claassen, R., Langpap, C., & Wu, J. (2017). Impacts of federal crop insurance on land use and environmental quality. *American Journal of Agricultural Economics*, 99(3), 592-613. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019928375&doi=10.1093%2fajae%2faaw075&part
  - nrtps://www.scopus.com/inward/record.un/red=z-sz.0-85019926375&d0i=10.1095%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%21ajae%2
- Clark, D. A., Asao, S., Fisher, R., Reed, S., Reich, P. B., Ryan, M. G., . . . Yang, X. (2017). Reviews and syntheses: Field data to benchmark the carbon cycle models for tropical forests. *Biogeosciences*, *14*(20), 4663-4690. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032291986&doi=10.5194%2fbg-14-4663-2017&pa rtnerlD=40&md5=be5c92c9f7136156857333cb0316ce1c. doi:10.5194/bg-14-4663-2017
- Clark, J. A., Loehman, R. A., & Keane, R. E. (2017). Climate changes and wildfire alter vegetation of Yellowstone National Park, but forest cover persists. *Ecosphere*, 8(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015186203&doi=10.1002%2fecs2.1636&partnerID =40&md5=686cc04371f3ee9a9fdccf33481ae9bd. doi:10.1002/ecs2.1636
- Clifton, C. F., Day, K. T., Luce, C. H., Grant, G. E., Safeeq, M., Halofsky, J. E., & Staab, B. P. (2018). Effects of climate change on hydrology and water resources in the Blue Mountains, Oregon, USA. 10, 9-19. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044531774&doi=10.1016%2fj.cliser.2018.03.001&p artnerlD=40&md5=181326cc0f9ba17e3fdcade564754dcc. doi:10.1016/j.cliser.2018.03.001
- Cline, S., & Dissanayake, S. T. M. (2018). Special Issue on Climate Change and Land Conservation and Restoration: Advances in Economics Methods and Policies for Adaptation and Mitigation. *Agricultural and Resource Economics Review*, 47(2), 195-200. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054863754&doi=10.1017%2fage.2018.16&partnerl
- D=40&md5=0df6ef6e05a814d0c2ac947f55c927a7. doi:10.1017/age.2018.16 Clough, B. J., Curzon, M. T., Domke, G. M., Russell, M. B., & Woodall, C. W. (2017). Climate-driven trends in stem wood density of tree species in the eastern United States: Ecological impact and implications for national forest carbon assessments. *Global Ecology and Biogeography*, *26*(10), 1153-1164. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-8502987364&doi=10.1111%2fgeb.12625&partnerID =40&md5=ebc24bd50b9ddeb19d8d074d4e8743fb. doi:10.1111/geb.12625
- Clyatt, K. A., Keyes, C. R., & Hood, S. M. (2017). Long-term effects of fuel treatments on aboveground biomass accumulation in ponderosa pine forests of the northern Rocky Mountains. *Forest Ecology and Management*, 400, 587-599. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021396928&doi=10.1016%2fj.foreco.2017.06.021&

https://www.scopus.com/inwarg/record.un/eia=2-sc./bssoi/3509288doi=10.1016%zfj.foreco.2017.06.0218 partnerID=40&md5=d3e4722bee8ba5a8f4d23115a605342e. doi:10.1016/j.foreco.2017.06.021 Cochran, V. L, Schlentner, S. F., & Mosier, A. R. (2018). CH <inf>4

- agricultural soils. In Soil Management and Greenhouse Effect (pp. 179-186).
- Coen, J. L., Stavros, E. N., & Fites-Kaufman, J. A. (2018). Deconstructing the King megafire. *Ecological Applications*, 28(6), 1565-1580. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052726099&doi=10.1002%2feap.1752&partnerlD= 40&md5=d8fcc18defb7d5f4e989c1dfd0991973. doi:10.1002/eap.1752

- Coiner, H. A., Hayhoe, K., Ziska, L. H., Van Dorn, J., & Sage, R. F. (2018). Tolerance of subzero winter cold in kudzu (Pueraria montana var. lobata). *Oecologia*, 187(3), 839-849. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047164287&doi=10.1007%2fs00442-018-4157-8&partnerlD=40&md5=9d0badef610920550f8ae0256cc194d0.doi:10.1007/s00442-018-4157-8
- Coleman, D. C., Callaham, M. A., & Crossley, D. A. (2017). *Fundamentals of Soil Ecology: Third Edition.* Coleman, K., Murdoch, J., Rayback, S., Seidl, A., & Wallin, K. (2017). Students' understanding of sustainability and
- climate change across linked service-learning courses. *Journal of Geoscience Education, 65*(2), 158-167. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020168558&doi=10.5408%2f16-168.1&partnerlD= 40&md5=6b4158d58f5ccf315e281d2d5eff2492. doi:10.5408/16-168.1
- Collins, H. P., Fa, P. A., Kimura, E., Fransen, S., & Himes, A. (2017). Intercropping with switchgrass improves net greenhouse gas balance in hybrid poplar plantations on a sand soil. *Soil Science Society of America Journal*, 81(4), 781-795. Retrieved from https://www.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.convergem.con
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028705545&doi=10.2136%2fsssaj2016.09.0294&partnerID=40&md5=41ff45de45c8885d547e08d20c0ac7c9. doi:10.2136/sssaj2016.09.0294
- Comas, X., Terry, N., Hribijan, J. A., Lilleskov, E. A., Suarez, E., Chimner, R. A., & Kolka, R. K. (2017). Estimating belowground carbon stocks in peatlands of the Ecuadorian páramo using ground-penetrating radar (GPR). *Journal of Geophysical Research: Biogeosciences, 122*(2), 370-386. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013471770&doi=10.1002%2f2016JG003550&partn erID=40&md5=ad8d2693b4e15aa347bbd709d2fd159c. doi:10.1002/2016JG003550
- Condés, S., & McRoberts, R. E. (2017). Updating national forest inventory estimates of growing stock volume using hybrid inference. *Forest Ecology and Management*, 400, 48-57. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020460721&doi=10.1016%2fj.foreco.2017.04.046&
- https://www.scopus.com/inward/record.un/eid=2-s2./0-85020460/218doi=10.1018%2fj.foreco.2017.04.046& partnerlD=40&md5=f91bc43c166af18bbcb050ac00cd2229. doi:10.1016/j.foreco.2017.04.046 Conkling, T. J., Belant, J. L., DeVault, T. L., & Martin, J. A. (2017). Effects of crop type and harvest on nest survival and
- productivity of dickcissels in semi-natural grasslands. Agriculture, Ecosystems and Environment, 240, 224-232. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014409697&doi=10.1016%2fj.agee.2017.01.028&partnerID=40&md5=2066771d940f2e04bb0d5bfc66fe6e96. doi:10.1016/j.agee.2017.01.028

- Conkling, T. J., Belant, J. L., DeVault, T. L., & Martin, J. A. (2018). Impacts of biomass production at civil airports on grassland bird conservation and aviation strike risk. *Ecological Applications*, 28(5), 1168-1181. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049299038&doi=10.1002%2feap.1716&partnerID= 40&md5=76a9f93a73c7280076af456d9386ba60. doi:10.1002/eap.1716
- Conner, M. M., Stephenson, T. R., German, D. W., Monteith, K. L., Few, A. P., & Bair, E. H. (2018). Survival analysis: Informing recovery of Sierra Nevada bighorn sheep. *Journal of Wildlife Management, 82*(7), 1442-1458. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047471700&doi=10.1002%2fjwmg.21490&partnerl D=40&md5=936842a334929ba1620d43d0e67e5933. doi:10.1002/jwmg.21490
- Cook, D., Gardner, D. R., Pfister, J. A., Lee, S. T., Welch, K. D., & Welsh, S. L. (2017). A Screen for Swainsonine in Select North American Astragalus Species. *Chemistry and Biodiversity*, *14*(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017100618&doi=10.1002%2fcbdv.201600364&par tnerID=40&md5=d5aba82c82fec3d79fea7fb82f9102dd. doi:10.1002/cbdv.201600364
- Cook, D., Gardner, D. R., Pfister, J. A., Stonecipher, C. A., Robins, J. G., & Morgan, J. A. (2017). Effects of Elevated CO <inf>2-finf> on the Swainsonine Chemotypes of Astragalus lentiginosus and Astragalus mollissimus. Journal of Chemical Ecology, 43(3), 307-316. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85012131927&doi=10.1007%2fs10886-017-0820-5& partnerlD=40&md5=a250bec60472f5f8154c47ea39429443. doi:10.1007/s10886-017-0820-5
- Cooper, J., Tran, A. N., & Wallander, S. (2017). Testing for specification bias with a flexible fourier transform model for crop yields. *American Journal of Agricultural Economics*, 99(3), 800-817. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019947765&doi=10.1093%2fajae%2faaw084&part nerlD=40&md5=b07984cef19611d858282e79404b146d. doi:10.1093/ajae/aaw084

Cooper, L. A., Ballantyne, A. P., Holden, Z. A., & Landguth, E. L. (2017). Disturbance impacts on land surface temperature and gross primary productivity in the western United States. *Journal of Geophysical Research: Biogeosciences*, 122(4), 930-946. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018252369&doi=10.1002%2f2016JG003622&partn

nttps://www.scopus.com/inward/record.un/eid=2-s2.0-850182525698doi=10.1002%212016JG003622&partn erID=40&md5=ff9f3a15e93f2368c4704a8d0ad83ece. doi:10.1002/2016JG003622

Cordeiro, M. R. C., Rotz, A., Kroebel, R., Beauchemin, K. A., Hunt, D., Bittman, S., . . . McKenzie, D. B. (2019). Prospects of forage production in northern regions under climate and land-use changes: A case-study of a dairy farm in Newfoundland, Canada. Agronomy, 9(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059944474&doi=10.3390%2fagronomy9010031&p artnerID=40&md5=2169b335abcd2331e1ffe7ff5cbc2826. doi:10.3390/agronomy9010031

- Corman, J. R., Bertolet, B. L., Casson, N. J., Sebestyen, S. D., Kolka, R. K., & Stanley, E. H. (2018). Nitrogen and Phosphorus Loads to Temperate Seepage Lakes Associated With Allochthonous Dissolved Organic Carbon Loads. *Geophysical Research Letters*, *45*(11), 5481-5490. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850489454948ddoi=10.1029%2f2018GL077219&partn erID=408md5=b9dcaccb3cd4ef06191c3ad7ca9a5cc5. doi:10.1029/2018GL077219
- Costanza, J. K., Coulston, J. W., & Wear, D. N. (2017). An empirical, hierarchical typology of tree species assemblages for assessing forest dynamics under global change scenarios. *PLoS ONE*, *12*(9). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028984877&doi=10.1371%2fjournal.pone.0184062 &partnerID=40&md5=11201cc1e6c39820d16a343513d25450. doi:10.1371/journal.pone.0184062

Costanza, J. K., Faber-Langendoen, D., Coulston, J. W., & Wear, D. N. (2018). Classifying forest inventory data into species-based forest community types at broad extents: exploring tradeoffs among supervised and unsupervised approaches. *Forest Ecosystems*, 5(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050377311&doi=10.1186%2fs40663-017-0123-x& partnerlD=40&md5=0146e426500a2e6d95bf06ad4f94158d. doi:10.1186/s40663-017-0123-x

- Coyle, D. R., Nagendra, U. J., Taylor, M. K., Campbell, J. H., Cunard, C. E., Joslin, A. H., . . . Callaham, M. A. (2017). Soil fauna responses to natural disturbances, invasive species, and global climate change: Current state of the science and a call to action. Soil Biology and Biochemistry, 170, 116-1133. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016148807&doi=10.1016%2fj.soilbio.2017.03.008& partnerlD=40&md5=1e969b2a3ca902efd2b0ff66e008ce37. doi:10.1016/j.soilbio.2017.03.008
- Cragin, J., Serpe, M., Keller, M., & Shellie, K. (2017). Dormancy and cold hardiness transitions in winegrape cultivars chardonnay and cabernet sauvignon. *American Journal of Enology and Viticulture, 68*(2), 195-202. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016759906&doi=10.5344%2fajev.2016.16078&partnerID=40&md5=7a9ff551d036fe5b1852981589749dc1. doi:10.5344/ajev.2016.16078

Crain, B. J., & Tremblay, R. L. (2017). Hot and bothered: Changes in microclimate alter chlorophyll fluorescence measures and increase stress levels in tropical epiphytic orchids. *International Journal of Plant Sciences*, 178(7), 503-511. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029498074&doi=10.1086%2f692767&partnerID=4\_0&md5=f515324e263d53d36d64ff2145b2c1a6. doi:10.1086/692767

Crane-Droesch, A. (2018). Machine learning methods for crop yield prediction and climate change impact assessment in agriculture. *Environmental Research Letters*, 13(11). Retrieved from

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056865972&doi=10.1088%2f1748-9326%2faae159 &partnerID=40&md5=48a4be477e1ad82bfd4537a60ac69397. doi:10.1088/1748-9326/aae159 Cristóbal, J., Prakash, A., Anderson, M. C., Kustas, W. P., Euskirchen, E. S., & Kane, D. L. (2017). Estimation of surface
- energy fluxes in the Arctic tundra using the remote sensing thermal-based Two-Source Energy Balance model. *Hydrology and Earth System Sciences*, 21(3), 1339-1358. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014918264&doi=10.5194%2fhess-21-1339-2017& partnerID=40&md5=9c55aa59d3f5b1efb50a8e96ce977a0d. doi:10.5194/hess-21-1339-2017

Cruz, J. L., LeCain, D. R., Alves, A. A. C., Coelho Filho, M. A., & Coelho, E. F. (2018). Elevated CO<inf>2</inf> reduces whole transpiration and substantially improves root production of cassava grown under water deficit. *Archives of Agronomy and Soil Science*, 64(12), 1623-1634. Retrieved from https://www.scopus.com/inward/record.uir?eid=2-s2.0-850429145728doi=10.1080%2f03650340.2018.14465 23&partnerID=40&md5=dc5e866eee2c46057b7fa34547203f5a. doi:10.1080/03650340.2018.1446523

- Cui, H., Kaufman, A. J., Peng, Y., Liu, X. M., Plummer, R. E., & Lee, E. I. (2018). The Neoproterozoic Hüttenberg δ13C anomaly: Genesis and global implications. *Precambrian Research*, *313*, 242-262. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047638622&doi=10.1016%2fj.precamres.2018.05.0 24&partnerID=40&md5=1d966f37bec99b58e3f94d0e6d6f1469. doi:10.1016/j.precamres.2018.05.024
- Cuperlovic-Culf, M., Vaughan, M. M., Vermillion, K., Surendra, A., Teresi, J., & McCormick, S. P. (2019). Effects of Atmospheric CO cinf>2</inf> Level on the Metabolic Response of Resistant and Susceptible Wheat to Fusarium graminearum Infection. *Molecular Plant-Microbe Interactions, 32*(4), 379-391. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064722049&doi=10.1094%2fMPMI-06-18-0161-R &partnerlD=40&md5=19a8d2795e47f6ef191f937f37ccdd3d. doi:10.1094/MPMI-06-18-0161-R
- Curzon, M. T., D'Amato, A. W., Fraver, S., Huff, E. S., & Palik, B. J. (2017). Succession, climate and neighbourhood dynamics influence tree growth over time: an 87-year record of change in a Pinus resinosa-dominated forest, Minnesota, USA. Journal of Vegetation Science, 28(1), 82-92. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84996560111&doi=10.1111%2fjvs.12471&partnerID =408/md5=bebca747efd9c27f42d7802b4cec02b8. doi:10.1111/jvs.12471
- Dai, Z., Trettin, C. C., Frolking, S., & Birdsey, R. A. (2018). Mangrove carbon assessment tool: Model development and sensitivity analysis. *Estuarine, Coastal and Shelf Science, 208*, 23-35. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046618839&doi=10.1016%2fj.ecss.2018.04.035&pa rtnerlD=40&md5=15befca4ba14ffffdc41f4bc26eed7a0. doi:10.1016/j.ecss.2018.04.035
- Dai, Z., Trettin, C. C., Frolking, S., & Birdsey, R. A. (2018). Mangrove carbon assessment tool: Model validation and assessment of mangroves in southern USA and Mexico. *Estuarine, Coastal and Shelf Science, 208*, 107-117. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046744061&doi=10.1016%2fj.ecss.2018.04.036&pa
- https://www.scopus.com/inward/record.un/edia=2-s2.0-85046/440b1kdoi=10.1016%21,ecss.2018.04.0368/pa rtnerID=40&md5=c427443a693c85a94861c5e2de7083d5. doi:10.1016/j.ecss.2018.04.036 Dalin, C., Taniguchi, M., & Green, T. R. (2019). Unsustainable groundwater use for global food production and related
- international trade. Global Sustainability, 2. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069789201&doi=10.1017%2fsus.2019.7&partnerID =40&md5=360f7f16c7d0197d9805e06fc45f18b1. doi:10.1017/sus.2019.7
- Danner, A. G., Safeeq, M., Grant, G. E., Wickham, C., Tullos, D., & Santelmann, M. V. (2017). Scenario-Based and Scenario-Neutral Assessment of Climate Change Impacts on Operational Performance of a Multipurpose Reservoir. Journal of the American Water Resources Association, 53(6), 1467-1482. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035750528&doi=10.1111%2f1752-1688.12589&pa rtnerID=40&md5=bf5eef51dac948ff0f3ae4973C2ada73. doi:10.1111/1752-1688.12589
- Dante-Wood, S. K., Peterson, D. L., & Halofsky, J. E. (2018) Assessing Climate Change Effects in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 1-15).
- D'Avello, T. P., Waltman, W. J., Waltman, S. W., Thompson, J. A., & Brennan, J. (2019). Revisiting the Pedocal/Pedalfer boundary and Soil Moisture Regimes using the javaNewhall simulation model and PRISM data. *Geoderma*, 353, 125–132. Retrieved from http://www.commence.com/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/piced/action/

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068393889&doi=10.1016%2fj.geoderma.2019.06.04 42&partnerID=40&md5=42&e64ecf16d9b8738db28bc663e110.doi:10.1016/j.geoderma.2019.06.042

- David, A. S., Jones, I. M., & Lake, E. C. (2019). Wind speed predicts population dynamics of the eriophyid mite Floracarus perrepae on invasive Old World climbing fern (Lygodium microphyllum) in a shade house colony. *Experimental and Applied Acarology*, 78(2), 263-272. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067233643&doi=10.1007%2fs10493-019-00391-3 &partnerID=40&md5=e52e19470c92bc407230433d9e9fe06b. doi:10.1007/s10493-019-00391-3
- Davis, C. M. (2018) Effects of Climate Change on Cultural Resources in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 209–219).
- Davis, K. T., Dobrowski, S. Z., Higuera, P. E., Holden, Z. A., Veblen, T. T., Rother, M. T., . . . Maneta, M. P. (2019). Wildfires and climate change push low-elevation forests across a critical climate threshold for tree regeneration. *Proceedings of the National Academy of Sciences of the United States of America*, 116(13), 6193-6198. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063940155&doi=10.1073%2fpnas.1815107116&partnerlD=40&md5=0f720ebd9ffe52820b34839f5451e5a8.doi:10.1073/pnas.1815107116

Davis, K. T., Dobrowski, S. Z., Holden, Z. A., Higuera, P. E., & Abatzoglou, J. T. (2019). Microclimatic buffering in forests 22 of the future: the role of local water balance. *Ecography, 42*(1), 1-11. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052524379&doi=10.1111%2fecog.03836&partnerl D=40&md5=b72f0b0681772ef95758ddde09ae6416. doi:10.1111/ecog.03836

- Davis, M. P., Martin, E. A., Moorman, T. B., Isenhart, T. M., & Soupir, M. L. (2019). Nitrous oxide and methane production from denitrifying woodchip bioreactors at three hydraulic residence times. *Journal of Environmental Management, 242*, 290-297. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065475905&doi=10.1016%2fj.jenvman.2019.04.055
- https://www.scopus.com/inwara/recora.uri/ed=2-s2.0-s00547/59058d01=10.1016%2fJjenvman.2019.04.055 &partnerlD=40&md5=a974242f68d4a82b74011c28760888ae. doi:10.1016/j.jenvman.2019.04.055 Davis, R., Yang, Z., Yost, A., Belongie, C., & Cohen, W. (2017). The normal fire environment—Modeling environmental
- suitability for large forest wildfires using past, present, and future climate normals. Forest Ecology and Management, 390, 173-186. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011994913&doi=10.1016%2fj.foreco.2017.01.027&
- partner/D=40&md5=a386733c9598e82979fb41abcf133631. doi:10.1016/j.foreco.2017.01.027 Davis, R. J., Gray, A. N., Kim, J. B., & Cohen, W. B. (2017). Patterns of change across the forested landscape. In *People*,
- Forests, and Change: Lessons from the Pacific Northwest (pp. 91-101).
- Davis, T. W., Prentice, I. C., Stocker, B. D., Thomas, R. T., Whitley, R. J., Wang, H., . . . Cramer, W. (2017). Simple process-led algorithms for simulating habitats (SPLASH v.1.0): Robust indices of radiation, evapotranspiration and plant-available moisture. *Geoscientific Model Development*, *10*(2), 689-708. Retrieved from https://www.scopus.com/inward/record.ui?eid=2-s2.0-850129394128/doi=10.5194%2fgmd-10-689-2017&p artnerID=40&md5=2719c3c8853d1a14bb3ad217fe16ac92. doi:10.5194/gmd-10-669-2017
- De Jesús Sánchez González, J., Corral, J. A. R., García, G. M., Ojeda, G. R., De La Cruz Larios, L., Holland, J. B., . . . Romero, G. E. G. (2018). Ecogeography of teosinte. *PLoS ONE, 13*(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042214920&doi=10.1371%2fjournal.pone.0192676 &partnerID=40&md5=5df30145bd6657b2cbbe57cfef2fc59a. doi:10.1371/journal.pone.0192676
- De Kauwe, M. G., Medlyn, B. E., Walker, A. P., Zaehle, S., Asao, S., Guenet, B., . . . Norby, R. J. (2017). Challenging terrestrial biosphere models with data from the long-term multifactor Prairie Heating and CO<inf>2</inf> Enrichment experiment. *Global Change Biology, 23*(9), 3623-3645. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014453179&doi=10.1111%2fgcb.13643&partnerID =40&md5=392de578a191f8c5454f363b45402773. doi:10.1111/gcb.13643
- De La Mata, R., Hood, S., & Sala, A. (2017). Insect outbreak shifts the direction of selection from fast to slow growth rates in the long-lived conifer Pinus ponderosa. *Proceedings of the National Academy of Sciences of the United States of America*, 114(28), 7392-7396. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85023184233&doi=10.1073%2fpnas.1700032114&pa
- rtnerID=40&md5=ced4246fa680eaa11c6ce59165fe89c6. doi:10.1073/pnas.1700032114 Deal, R. L., Hennon, P. E., D'amore, D. V., Davis, R. J., Smith, J. E., & Lowell, E. C. (2017). Ecosystem services with diverse forest landowners. In *People, Forests, and Change: Lessons from the Pacific Northwest* (pp. 79-90).
- Dell, C. J., Gollany, H. T., Adler, P. R., Skinner, R. H., & Polumsky, R. W. (2018). Implications of observed and simulated soil carbon sequestration for management options in corn-based rotations. *Journal of Environmental Quality*, 47(4), 617-624. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049422423&doi=10.2134%2fjeq2017.07.0298&par

https://www.scopus.com/inward/record.un/eid=2-s2.0-85049422423&doi=10.2134%2tjeq2017.07.0298&par tnerID=40&md5=ec1d67fc3667ecf5668c894d2056e811. doi:10.2134/jeq2017.07.0298

- DeLuca, W. V., & King, D. I. (2017). Montane birds shift downslope despite recent warming in the northern Appalachian Mountains. *Journal of Ornithology*, 158(2), 493-505. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015744329&doi=10.1007%2fs10336-016-1414-7& partnerID=40&md5=ab786d9c3ccc7d65bc46f9a891ff4d66. doi:10.1007/s10336-016-1414-7
- Demaria, E. M. C., Hazenberg, P., Scott, R. L., Meles, M. B., Nichols, M., & Goodrich, D. (2019). Intensification of the North American Monsoon Rainfall as Observed From a Long-Term High-Density Gauge Network. *Geophysical Research Letters*, 46(12), 6839-6847. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850678958588doi=10.1029%2f2019GL082461&partn erID=408md5=4dc116733724293013724847af490de0. doi:10.1029/2019GI.082461
- Denton, E. M., Dietrich, J. D., Smith, M. D., & Knapp, A. K. (2017). Drought timing differentially affects above- and belowground productivity in a mesic grassland. *Plant Ecology*, 218(3), 317-328. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007227816&doi=10.1007%2fs11258-016-0690-x&

partnerID=40&md5=bd761e393ec2424c0f4423d225a64c39. doi:10.1007/s11258-016-0690-x

Derner, J., Briske, D., Reeves, M., Brown-Brandl, T., Meehan, M., Blumenthal, D., . . . Peck, D. (2018). Vulnerability of grazing and confined livestock in the Northern Great Plains to projected mid- and late-twenty-first century climate. *Climatic Change*, 146(1-2), 19-32. Retrieved from

204

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025646887&doi=10.1007%2fs10584-017-2029-6& partnerlD=40&md5=c5b99fde478c9fc10c7830c20182a95a. doi:10.1007/s10584-017-2029-6
- Derner, J. D., Augustine, D. J., & Frank, D. A. (2018). Does Grazing Matter for Soil Organic Carbon Sequestration in the Western North American Great Plains? *Ecosystems*. Retrieved from https://doi.org/10.1016/j.j.com/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plains/plai
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058380011&doi=10.1007%2fs10021-018-0324-3& partnerID=40&md5=7072316eef00da48ba24dabc0e1acacf. doi:10.1007/s10021-018-0324-3
- Dey, D. C., Knapp, B. O., Battaglia, M. A., Deal, R. L., Hart, J. L., O'Hara, K. L., ... Schuler, T. M. (2019). Barriers to natural regeneration in temperate forests across the USA. *New Forests*, 50(1), 11-40. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059065396&doi=10.1007%2fs11056-018-09694-6 &partnerID=40&md5=78066abd1d10c067185557d885f13730. doi:10.1007/s11056-018-09694-6
- Dhungel, R., Aiken, R., Colaizzi, P. D., Lin, X., O'Brien, D., Baumhardt, R. L., . . . Marek, G. W. (2019). Evaluation of uncalibrated energy balance model (BAITSSS) for estimating evapotranspiration in a semiarid, advective climate. *Hydrological Processes*, 33(15), 2110-2130. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067075071&doi=10.1002%2fhyp.13458&partnerID
- =40&md5=96060d098605025fab00c67e829a153f. doi:10.1002/hyp.13458
   Dijak, W. D., Hanberry, B. B., Fraser, J. S., He, H. S., Wang, W. J., & Thompson, F. R. (2017). Revision and application of the LINKAGES model to simulate forest growth in central hardwood landscapes in response to climate change. *Landscape Ecology*, *32*(7), 1365-1384. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007190231&doi=10.1007%2fs10980-016-0473-8& partnerlD=40&md5=6148396604eacd499aa2dcf99dd68a47. doi:10.1007/s10980-016-0473-8
- Dijkstra, F. A., Carrillo, Y., Blumenthal, D. M., Mueller, K. E., LeCain, D. R., Morgan, J. A., ... Pendall, E. (2018). Elevated CO <inf>2 </inf> and water addition enhance nitrogen turnover in grassland plants with implications for temporal stability. *Ecology Letters*, 27(5), 674-682. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043316184&doi=10.1111%2fele.12935&partnerID =40&rnd5=bd3d939f2abacbd2d6e102905d2e135d. doi:10.1111/ele.12935
- Djonko-Moore, C. M., Leonard, J., Holifield, Q., Bailey, E. B., & Almughyirah, S. M. (2018). Using culturally relevant experiential education to enhance urban children's knowledge and engagement in science. *Journal of Experiential Education*, 41(2), 137-153. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046039608&doi=10.1177%2f1053825917742164& partnerlD=40&md5=6b23fb29a096dd82c75133651a2633d8. doi:10.1177/1053825917742164
- Djukic, I., Kepfer-Rojas, S., Schmidt, I. K., Larsen, K. S., Beier, C., Berg, B., ... Tóth, Z. (2018). Early stage litter decomposition across biomes. *Science of the Total Environment*, 628-629, 1369-1394. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042424360&doi=10.1016%2fj.scitotenv.2018.01.01 2&partnerlD=40&md5=598ece9ffdd870b96aa382dbc4b6ee0e. doi:10.1016/j.scitotenv.2018.01.012
- Dold, C., Büyükcangaz, H., Rondinelli, W., Prueger, J. H., Sauer, T. J., & Hatfield, J. L. (2017). Long-term carbon uptake of agro-ecosystems in the Midwest. *Agricultural and Forest Meteorology*, *322*, 128-140. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84983087209&doi=10.1016%2fj.agrformet.2016.07.01 12&partnerID=40&md5=c0da0e68e029489cbc1c2a48c0dad377. doi:10.1016/j.agrformet.2016.07.012
- Dold, C., Thomas, A. L., Ashworth, A. J., Philipp, D., Brauer, D. K., & Sauer, T. J. (2019). Carbon sequestration and nitrogen uptake in a temperate silvopasture system. *Nutrient Cycling in Agroecosystems*, 114(1), 85-98. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064541316&doi=10.1007%2fs10705-019-09987-y &partnerID=40&md5=f37bdb1fd60ebd1d51d6608336a0d624. doi:10.1007/s10705-019-09987-y

- Dold, C., Thomas, A. L., Ashworth, A. J., Philipp, D., Brauer, D. K., & Sauer, T. J. (2019). Carbon sequestration and nitrogen uptake in a temperate silvopasture system. *Nutrient Cycling in Agroecosystems*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064335226&doi=10.1007%2fs10705-019-09987-y &partnerlD=40&md5=ad0db56cf1d00f470dda9e2ac46b42e6. doi:10.1007/s10705-019-09987-y
- Domke, G. M., Perry, C. H., Walters, B. F., Nave, L. E., Woodall, C. W., & Swanston, C. W. (2017). Toward inventory-based estimates of soil organic carbon in forests of the United States. *Ecological Applications*, 27(4), 1223-1235.

Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020162497&doi=10.1002%2feap.1516&partnerlD=40&md5=11a2e680994b06c6e6a3fac063c0a01f. doi:10.1002/eap.1516

- Dong, J., & Crow, W. T. (2017). An Improved Triple Collocation Analysis Algorithm for Decomposing Autocorrelated and White Soil Moisture Retrieval Errors. *Journal of Geophysical Research: Atmospheres, 122*(24), 13,081-"013,094". Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038238425&doi=10.1002%2f2017JD027387&partnerlD=40&md5=4ec08b1b96067a6c41cf5d72116beaf2.doi:10.1002/2017JD027387

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052962050&doi=10.1029%2f2018WR022619&partnerlD=40&md5=5ab9565efeebe29b6c45e362a7f88e10.doi:10.1029/2018WR022619

Dong, J., & Crow, W. T. (2018). Use of Satellite Soil Moisture to Diagnose Climate Model Representations of European Soil Moisture-Air Temperature Coupling Strength. *Geophysical Research Letters*, 45(23), 12,884-"812,891". Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058038005&doi=10.1029%2f2018GL080547&partnerlD=40&md5=5a8aac98f4509f8cf81c909c56de72e6.doi:10.1029/2018GL080547

- Dong, Z., Driscoll, C. T., Johnson, S. L., Campbell, J. L., Pourmokhtarian, A., Stoner, A. M. K., & Hayhoe, K. (2019). Projections of water, carbon, and nitrogen dynamics under future climate change in an old-growth Douglas-fir forest in the western Cascade Range using a biogeochemical model. *Science of the Total Environment*, 656, 608-624. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057853532&doi=10.1016%2fj.scitotenv.2018.11.37
- 7&partnerlD=40&md5=b2904dd2d6415fd4f15035bbf94ace5c. doi:10.1016/j.scitotenv.2018.11.377 Donner, D. M., Brown, D. J., Ribic, C. A., Nelson, M., & Greco, T. (2018). Managing forest habitat for
- conservation-reliant species in a changing climate: The case of the endangered Kirtland's Warbler. Forest Ecology and Management, 430, 265-279. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051653244&doi=10.1016%2fj.foreco.2018.08.026& partnerlD=40&md5=8cfbbc6013f57t0537d01cba8f57c896. doi:10.1016/j.foreco.2018.08.026dos Santos, E. A., de Almeida, A. A. F., da Silva Branco, M. C., dos Santos, I. C., Ahnert, D., Baligar, V. C., & Valle, R. R.
- (2018). Path analysis of phenotypic traits in young cacao plants under drought conditions. PLoS ONE, 13(2). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041657922&doi=10.1371%2fjournal.pone.0191847 &partnerlD=40&md5=c683b545102d8ce4283f27c1a38ce233. doi:10.1371/journal.pone.0191847 Doughty, R., Xiao, X., Wu, X., Zhang, Y., Bajgain, R., Zhou, Y., . . . Steiner, J. (2018). Responses of gross primary

- production of grasslands and croplands under drought, pluvial, and irrigation conditions during 2010–2016, Oklahoma, USA. Agricultural Water Management, 204, 47-59. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044938286&doi=10.1016%2fj.agwat.2018.04.001& partnerlD=40&md5=73b43c410577ccd824ff2029a7d29b47. doi:10.1016/j.agwat.2018.04.001
- Dowd, P. F., & Johnson, E. T. (2018). Insect damage influences heat and water stress resistance gene expression in field-grown popcorn: implications in developing crop varieties adapted to climate change. *Mitigation and Adaptation Strategies for Global Change*, 23(7), 1063-1081. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037123993&doi=10.1007%2fs11027-017-9772-x& partner/D=40&md5=4d68c4291c3f359ee984cac5b900e7be. doi:10.1007/s11027-017-9772-x
- Duan, J. J., Schmude, J. M., Wang, X. Y., Watt, T. J., & Bauer, L. S. (2018). Host utilization, reproductive biology, and development of the larval parasitoid Tetrastichus planipennisi as influenced by temperature: Implications for biological control of the emerald ash borer in North America. *Biological Control*, *125*, 50-56. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049336260&doi=10.1016%2fj.biocontrol.2018.06.00 09&partnerID=40&md5=0519d790c4eea60dfd18d1ed288774ee. doi:10.1016/j.biocontrol.2018.06.009
- Duan, K., Caldwell, P. V., Sun, G., McNulty, S. G., Zhang, Y., Shuster, E., . . . Bolstad, P. V. (2019). Data on projections of surface water withdrawal, consumption, and availability in the conterminous United States through the 21st century. *Data in Brief, 23*. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062708876&doi=10.1016%2fj.dib.2019.103786&pa

rtnerID=40&md5=d30c643769200496b969cbf710f46947. doi:10.1016/j.dib.2019.103786

- Duan, K., Caldwell, P. V., Sun, G., McNulty, S. G., Zhang, Y., Shuster, E., . . . Bolstad, P. V. (2019). Understanding the role of regional water connectivity in mitigating climate change impacts on surface water supply stress in the United States. *Journal of Hydrology*, 570, 80-95. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060095901&doi=10.1016%2fj.jhydrol.2019.01.011 &partnerID=40&md5=3afc00c2e2157ece898b29816495201e. doi:10.1016/j.jhydrol.2019.01.011
- Duan, K., Sun, G., Caldwell, P. V., McNulty, S. G., & Zhang, Y. (2018). Implications of Upstream Flow Availability for Watershed Surface Water Supply across the Conterminous United States. *Journal of the American Water Resources Association*, 54(3), 694-707. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044351211&doi=10.1111%2f1752-1688.12644&pa rtnerlD=40&md5=2f777c81a40da9f9b32324889a1b5c1d. doi:10.1111/1752-1688.12644
- Duan, K., Sun, G., McNulty, S. G., Caldwell, P. V., Cohen, E. C., Sun, S., . . . Zhang, Y. (2017). Future shift of the relative roles of precipitation and temperature in controlling annual runoff in the conterminous United States. *Hydrology and Earth System Sciences, 21*(11), 5517-5529. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034030752&doi=10.5194%2fhess-21-5517-2017&
- partnerlD=40&md5=29c886e7cb32040589fbd28eed4d73a5. doi:10.5194/hess-21-5517-2017 Duan, K., Sun, G., Zhang, Y., Yahya, K., Wang, K., Madden, J. M., . . . McNulty, S. G. (2017). Impact of air pollution induced climate change on water availability and ecosystem productivity in the conterminous United States. *Climatic Change*, *140*(2), 259-272. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994447128&doi=10.1007%2fs10584-016-1850-7&
- partner(D=40&md5=7a2be2ec6a532e615dc7a981351b05df. doi:10.1007/s10584-016-1850-7 Duarte, H. F., Raczka, B. M., Ricciuto, D. M., Lin, J. C., Koven, C. D., Thornton, P. E., . . . Ehleringer, J. R. (2017). Evaluating
- balate, H. F., Kacka, B. M., Kettub, D. M., Elly S. C., Kover, C. D., Holmon, F. J., T. Enlemger, J. K. (2017). Evaluating the Community Land Model (CLM4.5) at a coniferous forest site in northwestern United States using flux and carbon-isotope measurements. *Biogeosciences*, 14(18), 4315–4340. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030527867&doi=10.5194%2fbg-14-4315-2017&pa
- rtnerlD=40&md5=8289d5deee9c782e44a116109d0f853c. doi:10.5194/bg-14-4315-2017 Ducey, M. J., Woodall, C. W., & Bravo-Oviedo, A. (2017). Climate and species functional traits influence maximum live
- tree stocking in the Lake States, USA. Forest Ecology and Management, 386, 51-61. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007071256&doi=10.1016%2fj.foreco.2016.12.007& partnerID=40&md5=7da266ff26970631488fd26ec39315b8. doi:10.1016/j.foreco.2016.12.007
- Duff, T. J., Keane, R. E., Penman, T. D., & Tolhurst, K. G. (2017). Revisiting wildland fire fuel quantification methods: The challenge of understanding a dynamic, biotic entity. *Forests*, 8(9). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029741564&doi=10.3390%2ff8090351&partnerID =40&md5=c88c17ff1ad99306485ec215c7081669. doi:10.3390/f8090351
- Dugan, A. J., Birdsey, R., Healey, S. P., Pan, Y., Zhang, F., Mo, G., . . . Dante-Wood, K. (2017). Forest sector carbon analyses support land management planning and projects: assessing the influence of anthropogenic and natural factors. *Climatic Change*, 144(2), 207-220. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026918281&doi=10.1007%2fs10584-017-2038-5& partnerlD=40&md5=0cffa0b63769af18b62e2d64694932d3. doi:10.1007/s10584-017-2038-5
- Dugan, A. J., Birdsey, R., Mascorro, V. S., Magnan, M., Smyth, C. E., Olguin, M., & Kurz, W. A. (2018). A systems approach to assess climate change mitigation options in landscapes of the United States forest sector. *Carbon Balance and Management*, 13(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053132876&doi=10.1186%2fs13021-018-0100-x&
- partnerlD=40&md5=cae7c98797a6c04eecbdf9cdbfc5f1c2. doi:10.1186/s13021-018-0100-x Dumroese, R. K., Balloffet, N., Crockett, J. W., Stanturf, J. A., & Nave, L. E. (2019). A national approach to leverage the benefits of tree planting on public lands. *New Forests, 50*(1). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060538148&doi=10.1007%2fs11056-019-09703-2 &partnerID=40&md5=cbc610fee88d4de0887c267cbb99829b. doi:10.1007/s11056-019-09703-2 Duncanson, L., Huang, W., Johnson, K., Swatantran, A., McRoberts, R. E., & Dubayah, R. (2017). Implications of
  - allometric model selection for county-level biomass mapping. Carbon Balance and Management, 12(1). Retrieved from
    - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031670035&doi=10.1186%2fs13021-017-0086-9&partnerlD=40&md5=72327d8d12ff1c112a29452e6136607c. doi:10.1186/s13021-017-0086-9

- Dunn, C. J., Thompson, M. P., & Calkin, D. E. (2017). A framework for developing safe and effective large-fire response in a new fire management paradigm. *Forest Ecology and Management*, 404, 184-196. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028701451&doi=10.1016%2fj.foreco.2017.08.039& partnerID=40&md5=27760faec4f6cbe56aad6e4ffefedbbe. doi:10.1016/j.foreco.2017.08.039
- Durán, J., Morse, J. L., Rodríguez, A., Campbell, J. L., Christenson, L. M., Driscoll, C. T., . . . Groffman, P. M. (2017). Differential sensitivity to climate change of C and N cycling processes across soil horizons in a northern hardwood forest. *Soil Biology and Biochemistry*, *107*, 77-84. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008395045&doi=10.1016%2fj.soilbio.2016.12.028& partnerlD=40&md5=7b4d7b01740256b75ee0ccea8299d2f5. doi:10.1016/j.soilbio.2016.12.028
- Duveneck, M. J., Thompson, J. R., Gustafson, E. J., Liang, Y., & de Bruijn, A. M. G. (2017). Recovery dynamics and climate change effects to future New England forests. *Landscape Ecology*, 32(7), 1385-1397. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84978087254&doi=10.1007%2fs10980-016-0415-5& partneriD=40&md5=a1dcc7ac0eb379a4cd76e8eb4c0c9c51. doi:10.1007/s10980-016-0415-5
- Dwire, K. A., Mellmann-Brown, S., & Gurrieri, J. T. (2018). Potential effects of climate change on riparian areas, wetlands, and groundwater-dependent ecosystems in the Blue Mountains, Oregon, USA. 10, 44-52. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033552347&doi=10.1016%2fj.cliser.2017.10.002&p artnerID=40&md5=29e0b724eb185d361e2ce0e6e7968812. doi:10.1016/j.cliser.2017.10.002
- Dwyer, J. T., & Drewnowski, A. (2017). Overview: Food and nutrition security. In Sustainable Nutrition in a Changing World (pp. 3-24).
- Dymond, S. F., Bradford, J. B., Bolstad, P. V., Kolka, R. K., Sebestyen, S. D., & DeSutter, T. M. (2017). Topographic, edaphic, and vegetative controls on plant-available water. *Ecohydrology*, *10*(8). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037157730&doi=10.1002%2feco.1897&partneriD= 40&md5=cc50889668fa8429d67ef5eac352432d. doi:10.1002/eco.1897
- Earles, J. M., Stevens, J. T., Sperling, O., Orozco, J., North, M. P., & Zwieniecki, M. A. (2018). Extreme mid-winter drought weakens tree hydraulic-carbohydrate systems and slows growth. *New Phytologist*, 219(1), 89-97. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045727028&doi=10.1111%2fnph.15136&partnerID=40&md5=0a0a8d881f84b8b6d1d251f5652dcd43. doi:10.1111/nph.15136

Easton, Z. M., Kleinman, P. J. A., Buda, A. R., Goering, D., Emberston, N., Reed, S., . . . Sharpley, A. (2017). Short-term forecasting tools for agricultural nutrient management. *Journal of Environmental Quality, 46*(6), 1257-1269. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027570406&doi=10.2134%2fjeq2016.09.0377&par tnerlD=40&md5=b44ea85370aeb3e5191bd884f1f65080. doi:10.2134/jeq2016.09.0377

- Ebi, K. L., & Ziska, L. H. (2018). Increases in atmospheric carbon dioxide: Anticipated negative effects on food quality. *PLoS Medicine*, *15*(7). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051105011&doi=10.1371%2fjournal.pmed.100260
- 0&partnerID=40&md5=8498c067cf6a9124eb51eeef59f8dc4. doi:10.1371/journal.pmed.100260 0&partnerID=40&md5=8498c067cf6a9124eb51eeef59f8dc4. doi:10.1371/journal.pmed.1002600 Edwards, B. L, Allen, S. T, Braud, D. H., & Keim, R. F. (2019). Stand density and carbon storage in cypress-tupelo
- wetland forests of the Mississippi River delta. *Forest Ecology and Management, 447*, 106-114. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063295341&doi=10.1016%2fj.foreco.2019.03.046& partnerID=40&md5=83c0b22582dd6d7cb47ccb4b783dc4d6. doi:10.1016/j.foreco.2019.03.046
- Edwards, B. L., Webb, N. P., Brown, D. P., Elias, E., Peck, D. E., Pierson, F. B., . . . Herrick, J. E. (2019). Climate change impacts on wind and water erosion on US rangelands. *Journal of Soil and Water Conservation*, 74(4), 405-418. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068734862&doi=10.2489%2fjswc.74.4.405&partne

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068734862&doi=10.2489%2fjswc.74.4.405&partne rID=40&md5=45f12b5737bf06a16fd00fc0f15cdcc8. doi:10.2489/jswc.74.4.405

Ehrhardt, F., Soussana, J. F., Bellocchi, G., Grace, P., McAuliffe, R., Recous, S., . . . Zhang, Q. (2018). Assessing uncertainties in crop and pasture ensemble model simulations of productivity and N<inf>2</inf>O emissions. *Global Change Biology, 24*(2), e603-e616. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041341242&doi=10.1111%2fgcb.13965&partnerID =40&md5=347b22604cb55b1a27ce8b2eca770967. doi:10.1111/gcb.13965

Eidson, E. L., Mock, K. E., & Bentz, B. J. (2018). Low offspring survival in mountain pine beetle infesting the resistant 27

Great Basin bristlecone pine supports the preference-performance hypothesis. PLoS ONE, 13(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046364462&doi=10.1371%2fjournal.pone.0196732 &partnerID=40&md5=a3bd2fd125a95f0ab073f5ec0f2af68c. doi:10.1371/journal.pone.0196732

Eigenbrode, S. D., Patrick Binns, W., & Huggins, D. R. (2018). Confronting climate change challenges to dryland cereal production: A call for collaborative, transdisciplinary research, and producer engagement. Frontiers in Ecology and Evolution, 5(JAN). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040521591&doi=10.3389%2ffevo.2017.00164&par tnerlD=40&md5=20d363dbd37465858bf8f6ab22b55f46. doi:10.3389/fevo.2017.00164

Elhakeem, M., Papanicolaou, A. N. T., Wilson, C. G., Chang, Y. J., Burras, L., Abban, B., . . . Wills, S. (2018). Understanding saturated hydraulic conductivity under seasonal changes in climate and land use. *Geoderma*, 315, 75-87. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037539432&doi=10.1016%2fj.geoderma.2017.11.0 11&partnerID=40&md5=eef72bede52dff5e3b8bff26cb83be89. doi:10.1016/j.geoderma.2017.11.011

Elias, E., Reyes, J., Steele, C., & Rango, A. (2018). Diverse landscapes, diverse risks: synthesis of the special issue on climate change and adaptive capacity in a hotter, drier Southwestern United States. *Climatic Change*, 148(3), 339-353. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047663533&doi=10.1007%2fs10584-018-2219-x&partnerID=40&md5=e443498d1e8ff140590e203ea9328860. doi:10.1007/s10584-018-2219-x

- Elias, E., Schrader, T. S., Abatzoglou, J. T., James, D., Crimmins, M., Weiss, J., & Rango, A. (2018). County-level climate change information to support decision-making on working lands. *Climatic Change*, 148(3), 355-369. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028543516&doi=10.1007%2fs10584-017-2040-y& partnerlD=40&md5=da0fd74f0f470adafe4955c182ce5acb. doi:10.1007/s10584-017-2040-y
- Elliott, J., Glotter, M., Ruane, A. C., Boote, K. J., Hatfield, J. L., Jones, J. W., . . . Foster, I. (2018). Characterizing agricultural impacts of recent large-scale US droughts and changing technology and management. *Agricultural Systems*, 159, 275-281. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025440335&doi=10.1016%2fj.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028. doi:10.1016/j.agsy.2017.07.012&partnerID=40&md5=131db816c577df2ad84c0c5e5fa24028&partnerID=40&md5=131db816c57df2ad84c0c5e5fa24028&partnerID=40&md5=131db816c57df2ad84c0c5e5fa24028&partnerID=40&md5=131db816c57df2ad84c0c5e5fa24028&partnerID=40&md5=131db816c57df2ad84c0c5e5fa24028&partnerID=40&md5=131db816c57df2ad84c0c5e5fa24028&partnerID=40&md5=130&md5=10%0%

Elsen, P. R., Monahan, W. B., & Merenlender, A. M. (2018). Global patterns of protection of elevational gradients in mountain ranges. *Proceedings of the National Academy of Sciences of the United States of America*, 115(23), 6004-6009. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047977804&doi=10.1073%2fpnas.1720141115&pa

https://www.scopus.com/inward/record.uri?eid=2-s2.0-8504/9//804&doi=10.10/3%21pnas.1/20141115&partnerID=40&md5=66214b1610a745acc78043c79610296a. doi:10.1073/pnas.1720141115

- Emel, S. L., Olson, D. H., Knowles, L. L., & Storfer, A. (2019). Comparative landscape genetics of two endemic torrent salamander species, Rhyacotriton kezeri and R. variegatus: implications for forest management and species conservation. *Conservation Genetics*, 20(4), 801-815. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064343134&doi=10.1007%2fs10592-019-01172-6 &partnerlD=40&md5=90a48d623a5742a66ea34e5f566559ebf. doi:10.1007/s10592-019-01172-6
- Emmett, K. D., Renwick, K. M., & Poulter, B. (2018). Disentangling Climate and Disturbance Effects on Regional Vegetation Greening Trends. *Ecosystems*. Retrieved from https://www.conv.com/inward/scoord/uri2aid-2\_c20\_850552525758/doi=10.10078/2/c10031\_018\_02
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056359575&doi=10.1007%2fs10021-018-0309-2& partnerID=40&md5=a3015d22e4ce0d408cecf5c0598b3fbb, doi:10.1007/s10021-018-0309-2 Endale, D. M., Potter, T. L., Strickland, T. C., & Bosch, D. D. (2017). Sediment-bound total organic carbon and total
- ndale, D. M., Potter, I. L., Strickland, I. C., & Bosch, D. D. (2017). Sediment-bound total organic carbon and total organic nitrogen losses from conventional and strip tillage cropping systems. Soil and Tillage Research, 171, 25-34. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018356084&doi=10.1016%2fj.still.2017.04.004&par tnerlD=40&md5=a79295d1621e65ead119bbfe1fed08fe. doi:10.1016/j.still.2017.04.004

Engeman, R. M., Laine, E., Allen, J., Preston, J., Pizzolato, W., Williams, B., . . . Teague, D. (2019). Invasive feral swine damage to globally imperiled steephead ravine habitats and influences from changes in population control effort, climate, and land use. *Biodiversity and Conservation*, 28(5), 1109-1127. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061714099&doi=10.1007%2fs10531-019-01713-y &partnerID=40&md5=6948745933fe95c08b6666e7749b7659. doi:10.1007/s10531-019-01713-y Ergüner, Y., Kumar, J., Hoffman, F. M., Dalfes, H. N., & Hargrove, W. W. (2019). Mapping ecoregions under climate change: a case study from the biological 'crossroads' of three continents, Turkey. *Landscape Ecology*, 34(1), 35-50. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059347038&doi=10.1007%2fs10980-018-0743-8& partnerID=40&md5=66cbdb83d7c50f385c2b0db5bacb56ea. doi:10.1007/s10980-018-0743-8

Espeland, E. K., & Kettenring, K. M. (2018). Strategic plant choices can alleviate climate change impacts: A review. *Journal of Environmental Management, 222*, 316-324. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047838038&doi=10.1016%2fj.jenvman.2018.05.042

&partneriD=40&md5=452c8e2369050551bb2d29debab0cdb6. doi:10.1016/j.jenvman.2018.05.042 Evans, M., Kholod, N., Kuklinski, T., Denysenko, A., Smith, S. J., Staniszewski, A., . . . Bond, T. C. (2017). Black carbon emissions in Russia: A critical review. *Atmospheric Environment, 163*, 9-21. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019559946&doi=10.1016%2fj.atmosenv.2017.05.0

26&partnerlD=40&md5=14264da299314ec6219caee31a52094c. doi:10.1016/j.atmosenv.2017.05.026 Evans, M. E. K., Gugger, P. F., Lynch, A. M., Guiterman, C. H., Fowler, J. C., Klesse, S., & Riordan, E. C. (2018).

Dendroecology meets genomics in the common garden: new insights into climate adaptation. *New Phytologist, 218*(2), 401-403. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044275612&doi=10.1111%2fnph.15094&partnerlD =40&md5=e5134cbf8126294db0513cfea084f5ca. doi:10.1111/nph.15094

Fabio, E. S., Volk, T. A., Miller, R. O., Serapiglia, M. J., Gauch, H. G., Van Rees, K. C. J., . . . Smart, L. B. (2017). Genotype × environment interaction analysis of North American shrub willow yield trials confirms superior performance of triploid hybrids. *GCB Bioenergy*, *9*(2), 445–459. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-849603935478doi=10.1111%2fgcbb.12344&partnerl D=40&md5=a28c8e6bcee3e898aaf093119bb28b5e. doi:10.1111/qcbb.12344

Faburay, B., LaBeaud, A. D., McVey, D. S., Wilson, W. C., & Richt, J. A. (2017). Current status of rift valley fever vaccine development. Vaccines, 5(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031101525&doi=10.3390%2fvaccines5030029&par

tnerlD=40&md5=0b9656a50412df9b3780c896621313e4. doi:10.3390/vaccines5030029 Falk, D. A., & Millar, C. I. (2017). The influence of climate variability and change on the science and practice of

restoration ecology. In *Foundations of Restoration Ecology: Second Edition* (pp. 484-513). Falkowski, M. J., Evans, J. S., Naugle, D. E., Hagen, C. A., Carleton, S. A., Maestas, J. D., . . . Lawrence, A. J. (2017).

Mapping tree canopy cover in support of proactive prairie grouse conservation in western North America. Rangeland Ecology and Management, 70(1), 15-24. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009111961&doi=10.1016%2fj.rama.2016.08.002&p artnerlD=40&md5=62836fe59f094b6b7fe29070d858f044. doi:10.1016/j.rama.2016.08.002

Fan, Y., Clark, M., Lawrence, D. M., Swenson, S., Band, L. E., Brantley, S. L., ... Yamazaki, D. (2019). Hillslope Hydrology in Global Change Research and Earth System Modeling. *Water Resources Research*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062323142&doi=10.1029%2f2018WR023903&part nerlD=40&md5=4d8f0706a2329e677bd9cb9287bffbf8. doi:10.1029/2018WR023903

Fan, Y., Keith Moser, W., & Cheng, Y. (2019). Growth and needle properties of young Pinus koraiensis Sieb. et Zucc. trees across an elevational gradient. *Forests*, *10*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060043409&doi=10.3390%2ff10010054&partnerID =40&md5=80d4402af19dee2bb76929d1a7b74984. doi:10.3390/f10010054

Fargione, J. E., Bassett, S., Boucher, T., Bridgham, S. D., Conant, R. T., Cook-Patton, S. C., . . . Griscom, B. W. (2018). Natural climate solutions for the United States. *Science Advances*, 4(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056560283&doi=10.1126%2fsciadv.aat1869&partn erID=40&md5=3a885cef2f86958b0a447b59c2934d56. doi:10.1126/sciadv.aat1869

Fatoyinbo, T., Feliciano, E. A., Lagomasino, D., Lee, S. K., & Trettin, C. (2018). Estimating mangrove aboveground biomass from airborne LiDAR data: A case study from the Zambezi River delta. *Environmental Research Letters*, 13(2). Retrieved from the study of a protocological to a protocological to a protocological to appropriate approximation of the study of t

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046001044&doi=10.1088%2f1748-9326%2faa9f03 &partnerID=40&md5=f642499932f00a7ebd26fef3637eb12f. doi:10.1088/1748-9326/aa9f03

Faust, D. R., Kröger, R., Moore, M. T., & Rush, S. A. (2018). Management Practices Used in Agricultural Drainage Ditches to Reduce Gulf of Mexico Hypoxia. Bulletin of environmental contamination and toxicology, 100(1),

29

32-40. Retrieved from

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037977179&doi=10.1007%2fs00128-017-2231-2& partnerlD=40&md5=0f0a9b3da457fd54819eaf0be7cb3357. doi:10.1007/s00128-017-2231-2
- Faust, D. R., Kumar, S., Archer, D. W., Hendrickson, J. R., Kronberg, S. L., & Liebig, M. A. (2018). Integrated crop-livestock systems and water quality in the Northern Great plains: Review of current practices and future research needs. *Journal of Environmental Quality*, 47(1), 1–15. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850404540408doi=10.2134%2fjeq2017.08.0306&par tnerID=408md5=2150d38ebd22b0a48f424e4509d9a1aa. doi:10.2134/jeq2017.08.0306
- Fei, S., Desprez, J. M., Potter, K. M., Jo, I., Knott, J. A., & Oswalt, C. M. (2017). Divergence of species responses to climate change. Science Advances, 3(5). Retrieved from
  - https://www.coopus.com/inward/record.uri?eid=2-s2.0-85029571353&doi=10.1126%2fsciadv.1603055&part nerlD=40&md5=f536d0b70e84c4d6ea0ea964ce12eb53. doi:10.1126/sciadv.1603055
- Fei, S., Jo, I., Guo, Q., Wardle, D. A., Fang, J., Chen, A., . . . Brockerhoff, E. G. (2018). Impacts of climate on the biodiversity-productivity relationship in natural forests. *Nature Communications*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058920768&doi=10.1038%2fs41467-018-07880-w &partnerID=40&md5=40b0e8687b2d9375378df9024df6c129. doi:10.1038/s41467-018-07880-w
- Feifarek, D. J., Shappell, N. W., & Schoenfuss, H. L. (2018). Do environmental factors affect male fathead minnow (Pimephales promelas) response to estrone? Part 1. Dissolved oxygen and sodium chloride. Science of the Total Environment, 610-611, 1262-1270. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028318853&doi=10.1016%2fj.scitotenv.2017.07.25 18xpartnerID=40&md5=a8901198d86f94dbaeac170e384fca56. doi:10.1016/j.scitotenv.2017.07.251
- Fellman, J. B., D'Amore, D. V., Hood, E., & Cunningham, P. (2017). Vulnerability of wetland soil carbon stocks to climate warming in the perhumid coastal temperate rainforest. *Biogeochemistry*, 133(2), 165-179. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016131187&doi=10.1007%2fs10533-017-0324-y& partnerID=40&md5=19856cb241b01e66358d13d5d095d0bf. doi:10.1007/s10533-017-0324-y
- Fellows, A. W., Flerchinger, G. N., Lohse, K. A., & Seyfried, M. S. (2018). Rapid Recovery of Gross Production and Respiration in a Mesic Mountain Big Sagebrush Ecosystem Following Prescribed Fire. *Ecosystems*, 21(7), 1283-1294. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040684810&doi=10.1007%2fs10021-017-0218-9& partnerID=40&md5=542387e4bba73d4058b9d4761f8cfc71. doi:10.1007/s10021-017-0218-9 Fellows, A. W., Flerchinger, G. N., Seyfried, M. S., Lohse, K. A., & Patton, N. R. (2019). Controls on gross production in
- Periows, A. W., Pierchinger, S. N., Seymed, M. S., Lonse, K. A., & Patton, N. K. (2019). Controls on gross production in an aspen-sagebrush vegetation mosaic. *Ecohydrology*, 12(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054925822&doi=10.1002%2feco.2046&partnerID= 40&md5=8a27064b59dd43c1c71f5520057e8581. doi:10.1002/eco.2046
- Fellows, A. W., & Goulden, M. L. (2017). Mapping and understanding dry season soil water drawdown by California montane vegetation. *Ecohydrology*, 10(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84988382999&doi=10.1002%2feco.1772&partnerID=
- 40&md5=03c8681cd320ba9b42117800d88572a6. doi:10.1002/eco.1772
   Felsmann, K., Baudis, M., Kayler, Z. E., Puhlmann, H., Ulrich, A., & Gessler, A. (2018). Responses of the structure and function of the understory plant communities to precipitation reduction across forest ecosystems in Germany. *Annals of Forest Science, 75*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039076119&doi=10.1007%2fs13595-017-0681-7& partnerlD=40&md5=b7e124b76084b08ca5c5f0bd6d234699. doi:10.1007/s13595-017-0681-7
- Feng, X., Uriarte, M., González, G., Reed, S., Thompson, J., Zimmerman, J. K., & Murphy, L. (2018). Improving predictions of tropical forest response to climate change through integration of field studies and ecosystem modeling. *Global Change Biology*, 24(1), e213-e232. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030153161&doi=10.1111%2fgcb.13863&partnerID =40&md5=ac740393be30b058321c428eb4b63ef1. doi:10.1111/gcb.13863
- Fernandez, C. W., Heckman, K., Kolka, R., & Kennedy, P. G. (2019). Melanin mitigates the accelerated decay of mycorrhizal necromass with peatland warming. *Ecology Letters*, 22(3), 498-505. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059523618&doi=10.1111%2fele.13209&partnerID =40&md5=6bb76c2cf059f47c7723c0434f7b28b6. doi:10.1111/ele.13209
- Ferrero, R., Lima, M., Davis, A. S., & Gonzalez-Andujar, J. L. (2017). Weed diversity affects soybean and maize yield in a 30

long term experiment in Michigan, USA. Frontiers in Plant Science, 8. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014810646&doi=10.3389%2ffpls.2017.00236&part nerlD=40&md5=d185e0a1f2eb2ad5fab5db0886f9e923. doi:10.3389/fpls.2017.00236

- Fettig, C. J., Mortenson, L. A., Bulaon, B. M., & Foulk, P. B. (2019). Tree mortality following drought in the central and southern Sierra Nevada, California, U.S. Forest Ecology and Management, 432, 164-178. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053451938&doi=10.1016%2fj.foreco.2018.09.006& partnerID=40&md5=866e2a3c867c2616bb552a16c974bda4. doi:10.1016/j.foreco.2018.09.006
- Fidel, R. B., Laird, D. A., & Parkin, T. B. (2017). Impact of six lignocellulosic biochars on C and N dynamics of two contrasting soils. *GCB Bioenergy*, 9(7), 1279-1291. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019855780&doi=10.1111%2fgcbb.12414&partnerl D=40&md5=35f32b38218c431f9754cba1280575fa. doi:10.1111/gcbb.12414
- Finley, J. W., Dimick, D., Marshal, E., Nelson, G. C., Mein, J. R., & Gustafson, D. I. (2017). Nutritional sustainability: Aligning priorities in nutrition and public health with agricultural production. Advances in Nutrition, 8(5), 780-788. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029513390&doi=10.3945%2fan.116.013995&partn erlD=40&md5=151e0f99dafd626dbe9ae28cc7631306. doi:10.3945/an.116.013995
- Finley, K., & Zhang, J. (2019). Climate effect on ponderosa pine radial growth varies with tree density and shrub removal. *Forests*, 10(6). Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068834767&doi=10.3390%2ff10060477&partnerlD =40&md5=5b1428d213b325769ce23b9c9cf46cdc. doi:10.3390/f10060477
- Fisher, B., Herrera, D., Adams, D., Fox, H. E., Gallagher, L., Gerkey, D., . . . Ricketts, T. (2019). Can nature deliver on the sustainable development goals? *The Lancet Planetary Health*, *3*(3), e112-e113. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063077641&doi=10.1016%2fS2542-5196%2818%2 930281-X&partnerID=40&md5=e647fe4e07b3d783711885dd3b4e7c33. doi:10.1016/S2542-5196(18)30281-X
- Fisher, J. B., Melton, F., Middleton, E., Hain, C., Anderson, M., Allen, R., . . . Wood, E. F. (2017). The future of evapotranspiration: Global requirements for ecosystem functioning, carbon and climate feedbacks, agricultural management, and water resources. *Water Resources Research*, 53(4), 2618-2626. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017522729&doi=10.1002%2f2016WR020175& nerlD=40&md5=1142c59b7e3993502462edd7b8e3dfd5. doi:10.1002/2016WR020175
- Flanagan, D. C., Srivastava, A., & Frankenberger, J. R. (2018). *Evaluation of WEPP model performance with various climate inputs.* Paper presented at the ASABE 2018 Annual International Meeting.
- Flanagan, D. C., Srivastava, A., Frankenberger, J. R., Poore, J. K., & Widman, N. L. (2017). Updated soil Conservation practice simulation with the WEPP model. Paper presented at the 2017 ASABE Annual International Meeting.
- Flaounas, E., Kotroni, V., Lagouvardos, K., Klose, M., Flamant, C., & Giannaros, T. M. (2017). Sensitivity of the WRF-Chem (V3.6.1) model to different dust emission parametrisation: Assessment in the broader Mediterranean region. *Geoscientific Model Development*, *10*(8), 2925-2945. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027249442&doi=10.5194%2fgmd-10-2925-2017& partnerID=40&md5=7427d779a65d582c5ebee0b2d93ca28b. doi:10.5194/gmd-10-2925-2017
- Fleisher, D. H., Condori, B., Quiroz, R., Alva, A., Asseng, S., Barreda, C., . . . Woli, P. (2017). A potato model intercomparison across varying climates and productivity levels. *Global Change Biology*, 23(3), 1258-1281. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-84991777004&doi=10.1111%2fgcb.13411&partnerlD =40&md5=fb05c86d145cc4ec61ad0c4eaa27841c. doi:10.1111/gcb.13411
- Flint, C. G., Dai, X., Jackson-Smith, D., Endter-Wada, J., Yeo, S. K., Hale, R., & Dolan, M. K. (2017). Social and Geographic Contexts of Water Concerns in Utah. *Society and Natural Resources*, 30(8), 885-902. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009960719&doi=10.1080%2f08941920.2016.12646 53&partnerID=40&md5=9204dd938c6e2e8566005c81e365fb6e. doi:10.1080/08941920.2016.1264653
- Flitcroft, R., Clinton, P., & Christiansen, K. (2018). Adding to the toolbox for tidal-inundation mapping in estuarine areas. *Journal of Coastal Conservation, 22*(4), 745-753. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043686593&doi=10.1007%2fs11852-018-0605-1& partnerlD=40&md5=e8787d5c6cdbe85939441bcbb92751ae. doi:10.1007/s11852-018-0605-1
- Flitcroft, R., Lewis, S., Arismendi, I., Davis, C., Giannico, G., Penaluna, B., . . . Snyder, J. (2019). Using expressed behaviour

of coho salmon (Oncorhynchus kisutch) to evaluate the vulnerability of upriver migrants under future hydrological regimes: Management implications and conservation planning. *Aquatic Conservation: Marine and Freshwater Ecosystems*, *29*(7), 1083-1094. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061183225&doi=10.1002%2faqc.3014&partnerID=40&md5=dbb45ac492a117592b8b9a8f25ce2b24. doi:10.1002/aqc.3014

Flitcroft, R. L., Arismendi, I., & Santelmann, M. V. (2019). A Review of Habitat Connectivity Research for Pacific Salmon in Marine, Estuary, and Freshwater Environments. *Journal of the American Water Resources Association*, 55(2), 430-441. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058168629&doi=10.1111%2f1752-1688.12708&pa rtnerlD=40&md5=233455ee1e003b59befdd4c9da1457d8. doi:10.1111/1752-1688.12708

Flower, C. E., Dalton, J. E., Whelan, C. J., Brown, J. S., & Gonzalez-Meler, M. A. (2019). Patch use in the arctic ground squirrel: effects of micro-topography and shrub encroachment in the Arctic Circle. *Oecologia*, 190(1), 243-254. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064847975&doi=10.1007%2fs00442-019-04400-5 &partnerID=40&md5=070a736f5484feafe71382b78a50ddd1. doi:10.1007/s00442-019-04400-5

Follstad Shah, J. J., Kominoski, J. S., Ardón, M., Dodds, W. K., Gessner, M. O., Griffiths, N. A., . . . Zeglin, L. H. (2017). Global synthesis of the temperature sensitivity of leaf litter breakdown in streams and rivers. *Global Change Biology*, 23(8), 3064-3075. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013945742&doi=10.1111%2fgcb.13609&partnerID

nttps://www.scopus.com/inward/record.unreid=z-52.0-85013945/42&doi=10.1111%2fgcb.15609&partnenD =40&md5=5e665d74eed5c52bb6072078f2fdfc0c. doi:10.1111/gcb.13609

Ford, K. R., Breckheimer, I. K., Franklin, J. F., Freund, J. A., Kroiss, S. J., Larson, A. J., . . . HilleRisLambers, J. (2017). Competition alters tree growth responses to climate at individual and stand scales. *Canadian Journal of Forest Research*, 47(1), 53-62. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031110918&doi=10.1139%2fcjfr-2016-0188&partn

erlD=40&md5=f1190b4db01ab562aeed041d0162ee94. doi:10.1139/cjfr-2016-0188 Ford, K. R., Harrington, C. A., & St. Clair, J. B. (2017). Photoperiod cues and patterns of genetic variation limit phenological responses to climate change in warm parts of species' range: Modeling diameter-growth cessation in coast Douglas-fir. *Global Change Biology, 23*(8), 3348-3362. Retrieved from https://www.scopus.com/inward/record.ui?eid=2-s2.0-85017657826&doi=10.1111%2fgcb.13690&partnerlD =40&md5=ec9a790902b75fb0441db34eb3900045. doi:10.1111/gcb.13690

Ford, P. L., Reeves, M. C., & Frid, L. (2019). A Tool for Projecting Rangeland Vegetation Response to Management and Climate. Rangelands, 41(1), 49-60. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059195995&doi=10.1016%2fj.rala.2018.10.010&pa rtnerlD=40&md5=bd467c9d3ecb8d91ec2d988532096382. doi:10.1016/j.rala.2018.10.010

Formby, J. P., Rodgers, J. C., Koch, F. H., Krishnan, N., Duerr, D. A., & Riggins, J. J. (2018). Cold tolerance and invasive potential of the redbay ambrosia beetle (Xyleborus glabratus) in the eastern United States. *Biological Invasions, 20*(4), 995-1007. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032344256&doi=10.1007%2fs10530-017-1606-y&

partnerlD=40&md5=88ef4e66fefd15a2c6dc29f59f3ef96c. doi:10.1007/s10530-017-1606-y Foster, A. C., Shuman, J. K., Shugart, H. H., Dwire, K. A., Fornwalt, P. J., Sibold, J., & Negron, J. (2017). Validation and application of a forest gap model to the southern Rocky Mountains. *Ecological Modelling*, *351*, 109-128. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015032197&doi=10.1016%2fj.ecolmodel.2017.02.0 19&partnerID=40&md5=147509191b5072578aaddc33458aa642. doi:10.1016/j.ecolmodel.2017.02.019 Foster, A. C., Shuman, J. K., Shugart, H. H., & Negron, J. (2018). Modeling the interactive effects of spruce beetle

Fosta, A. C., Shuhari, Y. C. Jingari, H. H., & Regroti, Y. (2010). Modeling the interactive interac

Fowler, J. F., Overby, S., & Smith, B. (2018). La Sal Daisy, Erigeron mancus, Density and Associated Species from Treeline Ecotone and Alpine Habitats. *Western North American Naturalist*, 78(2), 184-194. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052551385&doi=10.3398%2f064.078.0209&partne rlD=40&md5=392c60b1ef27f55f6a3c28e98cb8a291. doi:10.3398/064.078.0209

Frank, A., Howe, G. T., Sperisen, C., Brang, P., Clair, J. B. S., Schmatz, D. R., & Heiri, C. (2017). Risk of genetic

maladaptation due to climate change in three major European tree species. Global Change Biology, 23(12), 5358-5371. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034099917&doi=10.1111%2fgcb.13802&partnerID =40&md5=2e77ae9c3800b2e0275e10bfdd7b4a5b. doi:10.1111/gcb.13802

Frank, A., Sperisen, C., Howe, G. T., Brang, P., Walthert, L., Clair, J. B. S., & Heiri, C. (2017). Distinct genecological patterns in seedlings of Norway spruce and silver fir from a mountainous landscape. Ecology, 98(1), 211-227. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008180735&doi=10.1002%2fecy.1632&partnerID= 40&md5=42ea4bc5f4de1c688269d32c862feb6b. doi:10.1002/ecy.1632

Franklin, J., Andrade, R., Daniels, M. L., Fairbairn, P., Fandino, M. C., Gillespie, T. W., . . . Vennetier, M. (2018). Geographical ecology of dry forest tree communities in the West Indies. Journal of Biogeography, 45(5), 1168-1181. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043369635&doi=10.1111%2fjbi.13198&partnerID= 40&md5=983f82fb51507703b7120cfaec5afee6. doi:10.1111/jbi.13198

- Franzluebbers, A. J., Chappell, J. C., Shi, W., & Cubbage, F. W. (2017). Greenhouse gas emissions in an agroforestry system of the southeastern USA. Nutrient Cycling in Agroecosystems, 108(1), 85-100. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994453224&doi=10.1007%2fs10705-016-9809-7& partnerID=40&md5=9c550b4efbd38d9751cc0551561fdbff. doi:10.1007/s10705-016-9809-7
- Fraterrigo, J. M., Ream, K., & Knoepp, J. D. (2018). Tree Mortality From Insect Infestation Enhances Carbon Stabilization in Southern Appalachian Forest Soils. Journal of Geophysical Research: Biogeosciences, 123(7), 2121-2134. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050629180&doi=10.1029%2f2018JG004431&partn erID=408/md5=e686940d0a9884cbfe1e2bead3215d4c, doi:10.1029/2018JG004431

- Frauendorf, T. C., MacKenzie, R. A., Tingley, R. W., Frazier, A. G., Riney, M. H., & El-Sabaawi, R. W. (2019). Evaluating ecosystem effects of climate change on tropical island streams using high spatial and temporal resolution sampling regimes. Global Change Biology, 25(4), 1344-1357. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061998000&doi=10.1111%2fgcb.14584&partnerID
- =40&md5=83ccc59f23be7fce0ec15ba65682793b. doi:10.1111/gcb.14584 Frazier, A. G., Elison Timm, O., Giambelluca, T. W., & Diaz, H. F. (2018). The influence of ENSO, PDO and PNA on secular rainfall variations in Hawai'i. Climate Dynamics, 51(5-6), 2127-2140. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034223641&doi=10.1007%2fs00382-017-4003-4& partnerID=40&md5=c543ced9c8862502702452eae624485e. doi:10.1007/s00382-017-4003-4
- Frelich, L. E., Reich, P. B., & Peterson, D. W. (2017). The changing role of fire in mediating the relationships among oaks, grasslands, mesic temperate forests, and boreal forests in the Lake States. Journal of Sustainable Forestry, 36(5), 421-432, Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014676105&doi=10.1080%2f10549811.2017.12967

77&partnerID=40&md5=16815bbf0acead354dc3d536433f5f57, doi:10.1080/10549811.2017.1296777 Freschet, G. T., Valverde-Barrantes, O. J., Tucker, C. M., Craine, J. M., McCormack, M. L., Violle, C., . . . Roumet, C. (2017).

Climate, soil and plant functional types as drivers of global fine-root trait variation. Journal of Ecology, 105(5), 1182-1196. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017479036&doi=10.1111%2f1365-2745.12769&pa rtnerID=40&md5=dbf607419f46d16eee2cf9cbc29c3f71. doi:10.1111/1365-2745.12769 Fricker, G. A., Synes, N. W., Serra-Diaz, J. M., North, M. P., Davis, F. W., & Franklin, J. (2019). More than climate?

Predictors of tree canopy height vary with scale in complex terrain, Sierra Nevada, CA (USA). Forest Ecology and Management, 434, 142-153. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058465266&doi=10.1016%2fj.foreco.2018.12.006&

partnerID=40&md5=867e211fe6a1f5c56becd2e07084b831. doi:10.1016/j.foreco.2018.12.006

Frongillo, E. A., Nguyen, H. T., Smith, M. D., & Coleman-Jensen, A. (2019). Food Insecurity Is More Strongly Associated with Poor Subjective Well-Being in More-Developed Countries than in Less-Developed Countries. Journal of Nutrition, 149(2), 330-335. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062273582&doi=10.1093%2fjn%2fnxy261&partner ID=40&md5=6a53e3b26bb1d1c0b3086562d0150ed6. doi:10.1093/jn/nxy261

Fu, C., Wang, G., Bible, K., Goulden, M. L., Saleska, S. R., Scott, R. L., & Cardon, Z. G. (2018). Hydraulic redistribution 33

affects modeled carbon cycling via soil microbial activity and suppressed fire. *Global Change Biology, 24*(8), 3472-3485. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047468918&doi=10.1111%2fgcb.14164&partnerlD =40&md5=9d3dcb19b277953cfbc7c4ce326126ae. doi:10.1111/gcb.14164

Fu, X., & Meinzer, F. C. (2018). Metrics and proxies for stringency of regulation of plant water status (iso/anisohydry): A global data set reveals coordination and trade-offs among water transport traits. *Tree Physiology*, 39(1), 122-134. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060381660&doi=10.1093%2ftreephys%2ftpy087& partnerID=40&md5=ebaa91225b53b01294542cbcc0d7a859. doi:10.1093/treephys/tpy087

Fullerton, A. H., Torgersen, C. E., Lawler, J. J., Steel, E. A., Ebersole, J. L., & Lee, S. Y. (2018). Longitudinal thermal heterogeneity in rivers and refugia for coldwater species: effects of scale and climate change. Aquatic Sciences, 80(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035143901&doi=10.1007%2fs00027-017-0557-9&partnerID=40&md5=4cd41d31e0e6370c1cbdddef4a6a116e. doi:10.1007/s00027-017-0557-9

Galko, J., Dzurenko, M., Ranger, C. M., Kulfan, J., Kula, E., Nikolov, C., . . . Zach, P. (2018). Distribution, habitat preference, and management of the invasive ambrosia beetle xylosandrus germanus (Coleoptera: Curculionidae, Scolytinae) in European forests with an emphasis on the West Carpathians. *Forests*, 10(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059432005&doi=10.3390%2ff10010010&partnerlD =40&md5=2b7897b09e4c4df18d807f365bfd28aa. doi:10.3390/f10010010

- Gallego-Tévar, B., Infante-Izquierdo, M. D., Figueroa, E., Nieva, F. J. J., Muñoz-Rodríguez, A. F., Grewell, B. J., & Castillo, J. M. (2019). Some like it hot: Maternal-switching with climate change modifies formation of invasive spartina hybrids. *Frontiers in Plant Science*, *10*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067369606&doi=10.3389%2ffpls.2019.00484&part
- nerID=40&md5=eacb38d5054e24a022cafbd2db973470. doi:10.3389/fpls.2019.00484 Galliart, M., Bello, N., Knapp, M., Poland, J., St Amand, P., Baer, S., . . . Johnson, L. (2019). Local adaptation, genetic divergence, and experimental selection in a foundation grass across the US Great Plains' climate gradient. *Global Change Biology, 25*(3), 850-868. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059576498&doi=10.1111%2fgcb.14534&partnerID

=40&md5=bd9a4e5311a95dfa5d41e978b8bda006. doi:10.1111/gcb.14534 Galloza, M. S., López-Santos, A., & Martínez-Santiago, S. (2017). Predicting land at risk from wind erosion using an

index-based framework under a climate change scenario in Durango, Mexico. Environmental Earth Sciences, 76(16). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027698365&doi=10.1007%2fs12665-017-6751-1& partnerID=40&md5=66a78927785ed032f8ad5011229d577d. doi:10.1007/s12665-017-6751-1

Gamble, J. D., Feyereisen, G. W., Papiernik, S. K., Wente, C., & Baker, J. (2017). Regression-kriged soil organic carbon stock changes in manured corn silage-alfalfa production systems. Soil Science Society of America Journal, 87(6), 1557-1566. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040599326&doi=10.2136%2fsssaj2017.04.0138&p artnerlD=40&md5=3b3eed2324bba89ca7879351e6c5fb2b. doi:10.2136/sssaj2017.04.0138

Gamm, C. M., Sullivan, P. F., Buchwal, A., Dial, R. J., Young, A. B., Watts, D. A., ... Post, E. (2018). Declining growth of deciduous shrubs in the warming climate of continental western Greenland. *Journal of Ecology, 106*(2), 640-654. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041956310&doi=10.1111%2f1365-2745.12882&pa

rtnertD=40&md5=e25d2106c403b6bbb7752b78e67cd132. doi:10.1111/1365-2745.12882 Ganey, J. L., Iniguez, J. M., Sanderlin, J. S., & Block, W. M. (2017). Developing a monitoring program for bird

populations in the chiricahua mountains, Arizona, using citizen observers: Initial stages. USDA Forest Service -General Technical Report RMRS-GTR, 2017(368). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026995369&partnerID=40&md5=bf5ea84ed2efed dc44067f1299f3d3fa.

Ganey, J. L., & Vojta, S. C. (2017). Comparative Trends in Log Populations in Northern Arizona Mixed-Conifer and Ponderosa Pine Forests Following Severe Drought. Western North American Naturalist, 77(3), 281-292. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034640812&doi=10.3398&2f064.077.0302&partnerlD=40&md5=2f44626a80967a3d91d9f4a5fc7485f5. doi:10.3398/064.077.0302

Ganey, J. L., & Witt, C. (2017). Changes in snag populations on national forest system lands in Arizona, 1990s to 2000s. Journal of Forestry, 115(2), 103-111. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014640139&doi=10.5849%2fjof.2016-062&partner ID=40&md5=dfde6206c48877fb015e2bea76c02050. doi:10.5849/jof.2016-062

- Gangurde, S. S., Kumar, R., Pandey, A. K., Burow, M., Laza, H. E., Nayak, S. N., . . . Pandey, M. K. (2019). Climate-smart groundnuts for achieving high productivity and improved quality: Current status, challenges, and opportunities. In *Genomic Designing of Climate-Smart Oilseed Crops* (pp. 133-172).
- Gao, J., Cahill, C. M., Huang, X., Roffman, J. L., Lamon-Fava, S., Fava, M., . . . Rogers, J. T. (2018). S-Adenosyl Methionine and Transmethylation Pathways in Neuropsychiatric Diseases Throughout Life. *Neurotherapeutics*, 15(1), 156-175. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040538891&doi=10.1007%2fs13311-017-0593-0& partnerlD=40&md5=02af7c167f37d6ed754af4b0ed704cc7. doi:10.1007/s13311-017-0593-0

Gao, J., Sheshukov, A. Y., Yen, H., Douglas-Mankin, K. R., White, M. J., & Arnold, J. G. (2019). Uncertainty of hydrologic processes caused by bias-corrected CMIP5 climate change projections with alternative historical data sources. *Journal of Hydrology*, 568, 551-561. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056846208&doi=10.1016%2fj.jhydrol.2018.10.041 &partnerID=40&md5=6f362b304982150c2b492a0870b8a513. doi:10.1016/j.jhydrol.2018.10.041 Gao, J., Sheshukov, A. Y., Yen, H., & White, M. J. (2017). Impacts of alternative climate information on hydrologic

processes with SWAT: A comparison of NCDC, PRISM and NEXRAD datasets. *Catena, 156,* 353-364. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018991829&doi=10.1016%2fj.catena.2017.04.010& partnerlD=40&md5=0466046699333365d457e1891a261029. doi:10.1016/j.catena.2017.04.010

Gao, L., Lee, J. S., Hübner, S., Hulke, B. S., Qu, Y., & Rieseberg, L. H. (2019). Genetic and phenotypic analyses indicate that resistance to flooding stress is uncoupled from performance in cultivated sunflower. *New Phytologist*, 223(3), 1657-1670. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068060713&doi=10.1111%2fnph.15894&partner/D

https://www.scopus.com/inward/record.un/eid=2-s2.0-85068060713&doi=10.1111%2tnph.15894&partnerL =40&md5=f752db96def44ecca94243e1944285d4. doi:10.1111/nph.15894

Gao, S., Gurian, P. L., Adler, P. R., Spatari, S., Gurung, R., Kar, S., . . . Del Grosso, S. J. (2018). Framework for improved confidence in modeled nitrous oxide estimates for biofuel regulatory standards. *Mitigation and Adaptation Strategies for Global Change*, 23(8), 1281-1301. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042126944&doi=10.1007%2fs11027-018-9784-1&

partnerID=40&md5=06165fa7e361842d4703ef3c745c337c. doi:10.1007/s11027-018-9784-1 Garcia, A. G., Ferreira, C. P., Godoy, W. A. C., & Meagher, R. L. (2019). A computational model to predict the population

dynamics of Spodoptera frugiperda. *Journal of Pest Science*, *92*(2), 429-441. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055340751&doi=10.1007%2fs10340-018-1051-4& partnerID=40&md5=1f560cc524f1d80f0635ea77e5ef5fa8. doi:10.1007/s10340-018-1051-4

Garcia, A. G., Godoy, W. A. C., Thomas, J. M. G., Nagoshi, R. N., & Meagher, R. L. (2018). Delimiting strategic zones for the development of fall armyworm (Lepidoptera: Noctuidae) on corn in the State of Florida. *Journal of Economic Entomology*, 111(1), 120-126. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045945663&doi=10.1093%2fjee%2ftox329&partne

rID=40&md5=69b8d795f5d929489e387ef12167a8d0. doi:10.1093/jee/tox329
Garcia, M., Saatchi, S., Casas, A., Koltunov, A., Ustin, S., Ramirez, C., ... Balzter, H. (2017). Quantifying biomass consumption and carbon release from the California Rim fire by integrating airborne LiDAR and Landsat OLI data. *Journal of Geophysical Research: Biogeosciences*, *122*(2), 340-353. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013421242&doi=10.1002%2f2015JG003315&partn erID=40&md5=4b234ab02e1296720861cfe50f05da78. doi:10.1002/2015JG003315

Garcia, M., Saatchi, S., Ferraz, A., Silva, C. A., Ustin, S., Koltunov, A., & Balzter, H. (2017). Impact of data model and point density on aboveground forest biomass estimation from airborne LiDAR. *Carbon Balance and Management*, 12(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013354732&doi=10.1186%2fs13021-017-0073-1&

partnerID=40&md5=de374c6488f4a2c5b2b7655ae678f834. doi:10.1186/s13021-017-0073-1

- Garza, S. J., Tabak, M. A., Miller, R. S., Farnsworth, M. L., & Burdett, C. L. (2018). Abiotic and biotic influences on home-range size of wild pigs (Sus scrofa). *Journal of Mammalogy*, 99(1), 97-107. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041551550&doi=10.1093%2fjmammal%2fgyx154& partnerID=40&md5=3b6856996bbfd2aab21873a44117166f. doi:10.1093/jmammal/gyx154
- Gateau-Rey, L., Tanner, E. V. J., Rapidel, B., Marelli, J. P., & Royaert, S. (2018). Climate change could threaten cocoa production: Effects of 2015-16 El Niño-related drought on cocoa agroforests in Bahia, Brazil. *PLoS ONE*, *13*(7). Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049645673\&doi=10.1371\%2fjournal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&md5=b1451be3dad7b4d0b63a59312e697c0c.\ doi:10.1371/journal.pone.0200454\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\$ 

Gautam, S., Costello, C., Baffaut, C., Thompson, A., Svoma, B. M., Phung, Q. A., & Sadler, E. J. (2018). Assessing long-term hydrological impact of climate change using an ensemble approach and comparison with global gridded model-A case study on Goodwater Creek Experimental Watershed. *Water (Switzerland)*, 10(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046645120&doi=10.3390%2fw10050564&partnerl D=40&md5=23dd0f80de705fd98e23a6355863e636. doi:10.3390/w10050564

- Geiser, L. H., Nelson, P. R., Jovan, S. E., Root, H. T., & Clark, C. M. (2019). Assessing ecological risks from atmospheric deposition of nitrogen and sulfur to US forests using epiphytic macrolichens. *Diversity*, *11*(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067252941&doi=10.3390%2fd11060087&partnerl D=40&md5=7b18c639557b1fde24d8e23be312903d. doi:10.3390/d11060087
- Genet, H., He, Y., Lyu, Z., McGuire, A. D., Zhuang, Q., Clein, J., . . . Zhu, Z. (2018). The role of driving factors in historical and projected carbon dynamics of upland ecosystems in Alaska. *Ecological Applications, 28*(1), 5-27. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040240096&doi=10.1002%2feap.1641&partnerID= 40&md5=15d095f81fe6591badec77761d8482e3. doi:10.1002/eap.1641

Gessler, A., Roy, J., Kayler, Z., Ferrio, J. P., Alday, J. G., Bahn, M., . . . Resco de Dios, V. (2017). Night and day – Circadian regulation of night-time dark respiration and light-enhanced dark respiration in plant leaves and canopies. *Environmental and Experimental Botany*, 137, 14-25. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011601735&doi=10.1016%2fj.envexpbot.2017.01.0 14&partnerID=40&md5=f81fcee3d0a430310259df86eca1 dae1. doi:10.1016/j.envexpbot.2017.01.014

Ghaley, B. B., Rusu, T., Sandén, T., Spiegel, H., Menta, C., Visioli, G., . . . Henriksen, C. B. (2018). Assessment of benefits of conservation agriculture on soil functions in arable production systems in Europe. Sustainability (Switzerland), 10(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043704845&doi=10.3390%2fsu10030794&partnerl D=40&md5=b521ef2399830ac740961b8941ac6864. doi:10.3390/su10030794

Ghimire, R, Lamichhane, S., Acharya, B. S., Bista, P., & Sainju, U. M. (2017). Tillage, crop residue, and nutrient management effects on soil organic carbon in rice-based cropping systems: A review. *Journal of Integrative Agriculture*, 16(1), 1-15. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009080422&doi=10.1016%2fS2095-3119%2816%2

961337-0&partnerlD=40&md5=72af352b4b235211d50b5bc29245b9fa. doi:10.1016/S2095-3119(16)61337-0 Gilbert, M. K., Medina, A., Mack, B. M., Lebar, M. D., Rodríguez, A., Bhatnagar, D., . . . Payne, G. (2018). Carbon dioxide mediates the response to temperature and water activity levels in Aspergillus flavus during infection of Maize

Kernels. Toxins, 10(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038934743&doi=10.3390%2ftoxins10010005&part nerID=40&md5=e0a19a102cd1bcaf686bdade94d4bef4. doi:10.3390/toxins10010005

- Gillard, M., Grewell, B. J., Deleu, C., & Thiébaut, G. (2017). Climate warming and water primroses: Germination responses of populations from two invaded ranges. *Aquatic Botany*, *136*, 155-163. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84993917475&doi=10.1016%2fj.aquabot.2016.10.001 &partnerID=40&md5=f47d9590e4c3754a0165e4fd6ac41120. doi:10.1016/j.aquabot.2016.10.001
- Gillard, M., Grewell, B. J., Futrell, C. J., Deleu, C., & Thiébaut, G. (2017). Germination and seedling growth of water primroses: A cross experiment between two invaded ranges with contrasting climates. *Frontiers in Plant Science*, 8. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030835520&doi=10.3389%2ffpls.2017.01677&partnerlD=40&md5=f1934e55b005d22467f0d5652d9a61af.doi:10.3389/fpls.2017.01677

Gillette, K., Malone, R. W., Kaspar, T. C., Ma, L., Parkin, T. B., Jaynes, D. B., . . . Kersebaum, K. C. (2018). N loss to drain flow and N<inf>2</inf>O emissions from a corn-soybean rotation with winter rye. Science of the Total Environment, 618, 982-997. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032186336&doi=10.1016%2fj.scitotenv.2017.09.05 4&partnerID=40&md5=a2cbee2196ede4c7933c81fe0df397bc. doi:10.1016/j.scitotenv.2017.09.054

Gilmanov, T. G., Morgan, J. A., Hanan, N. P., Wylie, B. K., Rajan, N., Smith, D. P., & Howard, D. M. (2017). Productivity and CO2 Exchange of Great Plains Ecoregions. I. Shortgrass Steppe: Flux Tower Estimates. *Rangeland Ecology* and Management, 70(6), 700-717. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032870707&doi=10.1016%2fj.rama.2017.06.007&p

https://www.scopus.com/inward/record.urr/eid=2-s2.0-85032870/078doi=10.1016%2lj.rama.2017.06.007&p artnerID=40&md5=84bd7eeffb1bf246025e8f020ea360c1. doi:10.1016/j.rama.2017.06.007
Giri. A., Heckathorn, S., Mishra, S., & Krause, C. (2017). Heat stress decreases levels of nutrient-uptake and

- Gin, A., Heckathorn, S., Mishra, S., & Krause, C. (2017). Heat stress decreases levels of nutrient-uptake and -assimilation proteins in tomato roots. *Plants, 6*(1), 443-448. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85010773993&doi=10.3390%2fplants6010006&partn erID=40&md5=7bcc19a959c795124c9e70acb243c509. doi:10.3390/plants6010006
- Glenn, E. M., Lesmeister, D. B., Davis, R. J., Hollen, B., & Poopatanapong, A. (2017). Estimating density of a territorial species in a dynamic landscape. *Landscape Ecology*, *32*(3), 563-579. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84997712895&doi=10.1007%2fs10980-016-0467-6&
- partnerlD=40&md5=2c3ef0b1992961e8949d90669af67fd7. doi:10.1007/s10980-016-0467-6 Glenny, W. R., Runyon, J. B., & Burkle, L. A. (2018). Drought and increased CO<inf>2</inf> alter floral visual and olfactory traits with context-dependent effects on pollinator visitation. *New Phytologist, 220*(3), 785-798. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044379271&doi=10.1111%2fnph.15081&partnerID=40&md5=e895cde4c43ac5eaa2177d65b8b9dc29. doi:10.1111/nph.15081

- Godsey, S. E., Marks, D., Kormos, P. R., Seyfried, M. S., Enslin, C. L., Winstral, A. H., . . . Link, T. E. (2018). Eleven years of mountain weather, snow, soil moisture and streamflow data from the rain-snow transition zone - The Johnston Draw catchment, Reynolds Creek Experimental Watershed and Critical Zone Observatory, USA. *Earth System Science Data*, 10(3), 1207-1216. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049409723&doi=10.5194%2fessd-10-1207-2018& partnerlD=40&md5=d7646cr20da6dc21390284352a59220d. doi:10.5194/essd-10-1207-2018
- Goeking, S. A., Izlar, D. K., & Edwards, T. C. (2019). A Landscape-Level Assessment of Whitebark Pine Regeneration in the Rocky Mountains, USA. Forest Science, 65(1), 87-99. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062176150&doi=10.1093%2fforsci%2ffxy029&part
- nerID=40&md5=91008f0e2babd571ab1b4f98ec32bdda. doi:10.1093/forsci/fxy029 Gollany, H. T., & Elnaggar, A. A. (2017). Simulating soil organic carbon changes across toposequences under dryland agriculture using CQESTR. *Ecological Modelling, 355*, 97-104. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018560462&doi=10.1016%2fj.ecolmodel.2017.03.0
- 24&partnerID=40&md5=eeb99b315d89c193c473a6ef04d06a26. doi:10.1016/j.ecolmodel.2017.03.024 Gollany, H. T., & Polumsky, R. W. (2018). Simulating soil organic carbon responses to cropping intensity, tillage, and climate change in Pacific Northwest Dryland. *Journal of Environmental Quality, 47*(4), 625-634. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049459328&doi=10.2134%2fjeq2017.09.0374&partnerID=40&md5=3bac5c8440170f23daf2f43fc6334932. doi:10.2134/jeq2017.09.0374

- Gollany, H. T., & Venterea, R. T. (2018). Measurements and models to identify agroecosystem practices that Enhance soil organic carbon under changing climate. *Journal of Environmental Quality*, 47(4), 579-587. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049482732&doi=10.2134%2fjeq2018.05.0213&par tnerlD=40&md5=a15371a375a1af65aeb50ed2c2f533e8. doi:10.2134/jeq2018.05.0213
- Gomez-Casanovas, N., Delucia, N. J., Bernacchi, C. J., Boughton, E. H., Sparks, J. P., Chamberlain, S. D., & Delucia, E. H. (2018). Grazing alters net ecosystem C fluxes and the global warming potential of a subtropical pasture. *Ecological Applications*, 28(2), 557-572. Retrieved from http://www.commons.com/applications/28(2), 557-572. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042700630&doi=10.1002%2feap.1670&partnerID=40&md5=8c4ac11459d25876b31a5091b4428b28. doi:10.1002/eap.1670

Gomez-Casanovas, N., DeLucia, N. J., Hudiburg, T. W., Bernacchi, C. J., & DeLucia, E. H. (2018). Conversion of grazed pastures to energy cane as a biofuel feedstock alters the emission of GHGs from soils in Southeastern United

States. Biomass and Bioenergy, 108, 312-322. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037644923&doi=10.1016%2fj.biombioe.2017.11.02 0&partnerID=40&md5=173f3b56a877084001a643d318c9df9b. doi:10.1016/j.biombioe.2017.11.020 Gonzalez-Andujar, J. L., Aguilera, M. J., Davis, A. S., & Navarrete, L. (2019). Disentangling weed diversity and weather

impacts on long-term crop productivity in a wheat-legume rotation. *Field Crops Research, 232*, 24-29. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058799462&doi=10.1016%2fj.fcr.2018.12.005&part nerID=40&md5=9ebbccbb9aa61d1e6bc490b093f34a3e. doi:10.1016/j.fcr.2018.12.005

- Gonzalez-Benecke, C. A., Zhao, D., Samuelson, L. J., Martin, T. A., Leduc, D. J., & Jack, S. B. (2018). Local and general above-ground biomass functions for pinus palustris trees. *Forests*, 9(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047833488&doi=10.3390%2ff9060310&partnerID
- =40&md5=58d43445a01ac59760f78a05f01524d6. doi:10.3390/f9060310 Goodrich, B. A. & Waring, K. M. (2017). Pinus strobiformis seedling growth in southwestern US mixed conifer forests
- Goodrich, B. A., & Warnig, K. W. (2017). Philos strobiornils seeding growth in souriwestern OS mixed conter forests in managed and non-managed stands. *Forestry*, 90(3), 393-403. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020693950&doi=10.1093%2fforestry%2fcpw057& partnerID=40&md5=fe54d96f13aae4aeb774e530b35ad223. doi:10.1093/forestry/cpw057
- Goodwell, A. E., Kumar, P., Fellows, A. W., & Flerchinger, G. N. (2018). Dynamic process connectivity explains ecohydrologic responses to rainfall pulses and drought. *Proceedings of the National Academy of Sciences of the United States of America*, 115(37), E8604-E8613. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850529928178doi=10.1073%2fpnas.1800236115& rtnerID=40&md5=cdf5eb97a7793a58044b95ce977f8ea3. doi:10.1073/pnas.1800236115
- Gosejohan, M. C., Weisberg, P. J., & Merriam, K. E. (2017). Hydrologic Influences on Plant Community Structure in Vernal Pools of Northeastern California. Wetlands, 37(2), 257-268. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006354891&doi=10.1007%2fs13157-016-0863-3& partnerID=40&md5=ba9d2506d9be4a6c6606ec87e18f3894. doi:10.1007/s13157-016-0863-3
- Goslee, S. C., Gonet, J. M., & Skinner, R. H. (2017). Freeze tolerance of perennial ryegrass and implications for future species distribution. *Crop Science*, 57(5), 2875-2880. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029606537&doi=10.2135%2fcropsci2017.02.0135
- &partnerID=40&md5=8320bdfe0f3c6287936792babc512882. doi:10.2135/cropsci2017.02.0135 Graham, R. C., Schoeneberger, P. J., & Breiner, J. M. (2017). Genesis and physical behavior of soils on sandstone and shale in Southern California. *Soil Science*, *182*(6), 216-226. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044046928&doi=10.1097%2fS5.000000000000021 2&partnerID=40&md5=b11343&a35d8ba12fcfe3204d725cbd9. doi:10.1097/S5.000000000000212
- Green, T. R., & Anapalli, S. S. (2018). Irrigation variability and climate change affect derived distributions of simulated water recharge and nitrate leaching. *Water International*, 43(6), 829-845. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055082392&doi=10.1080%2f02508060.2018.15155 68&partnerID=40&md5=28af534c23de5fda9702f89255c5c74d. doi:10.1080/02508060.2018.1515568
- Greenberg, C. H., Zarnoch, S. J., & Austin, J. D. (2017). Weather, hydroregime, and breeding effort influence juvenile recruitment of anurans: Implications for climate change. *Ecosphere*, 8(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019889074&doi=10.1002%2fecs2.1789&partnerID =40&md5=defaf34a5c22f1e1c32c1b88ac92acc5. doi:10.1002/ecs2.1789
- Greer, B. T., Still, C., Cullinan, G. L., Brooks, J. R., & Meinzer, F. C. (2018). Polyploidy influences plant–environment interactions in quaking aspen (Populus tremuloides Michx.). *Tree Physiology*, *38*(4), 630-640. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050581499&doi=10.1093%2ftreephys%2ftpx120& partnerID=40&md5=b866e7de747a94e778ee7a2ae655365c. doi:10.1093/treephys/tpx120

Griffin-Nolan, R. J., Carroll, C. J. W., Denton, E. M., Johnston, M. K., Collins, S. L., Smith, M. D., & Knapp, A. K. (2018). Legacy effects of a regional drought on aboveground net primary production in six central US grasslands. *Plant Ecology*, 219(5), 505-515. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045017225&doi=10.1007%2fs11258-018-0813-7&

partnerlD=40&md5=e0949b7f17e898226b614c9f6053a4a6. doi:10.1007/s11258-018-0813-7 Griffin-Nolan, R. J., Ocheltree, T. W., Mueller, K. E., Blumenthal, D. M., Kray, J. A., & Knapp, A. K. (2019). Extending the

osmometer method for assessing drought tolerance in herbaceous species. *Decologia, 189*(2), 353-363. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059839667&doi=10.1007%2fs00442-019-04336-w &partnerID=40&md5=aa625c71aeaffe21e06c92b5308f8103. doi:10.1007/s00442-019-04336-w

- Griffis, T. J., Chen, Z., Baker, J. M., Wood, J. D., Millet, D. B., Lee, X., . . . Turner, P. A. (2017). Nitrous oxide emissions are enhanced in a warmer and wetter world. Proceedings of the National Academy of Sciences of the United States of America, 114(45), 12081-12085. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033794225&doi=10.1073%2fpnas.1704552114&pa rtnerID=40&md5=5a97676a3c522aa5fa275dde5dc36c42. doi:10.1073/pnas.1704552114
- Griffiths, N. A., Hanson, P. J., Ricciuto, D. M., Iversen, C. M., Jensen, A. M., Malhotra, A., . . . Weston, D. J. (2017). Temporal and spatial variation in peatland carbon cycling and implications for interpreting responses of an ecosystem-scale warming experiment. Soil Science Society of America Journal, 81(6), 1668-1688. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040638144&doi=10.2136%2fsssaj2016.12.0422&p artnerID=408md5=d17acee8e8a4b817036003e80db96eda. doi:10.2136/sssai2016.12.0422

Grinde, A. R., Niemi, G. J., Sturtevant, B. R., Panci, H., Thogmartin, W., & Wolter, P. (2017). Importance of scale, land cover, and weather on the abundance of bird species in a managed forest. Forest Ecology and Management, 405, 295-308. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030181534&doi=10.1016%2fj.foreco.2017.09.057& partnerID=40&md5=15b8c455aa0fa737703cb58e1a6df4be. doi:10.1016/j.foreco.2017.09.057

- Groffman, P. M., Driscoll, C. T., Durán, J., Campbell, J. L., Christenson, L. M., Fahey, T. J., . . . Templer, P. H. (2018). Nitrogen oligotrophication in northern hardwood forests. Biogeochemistry, 141(3), 523-539. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046808039&doi=10.1007%2fs10533-018-0445-y& partnerID=40&md5=df47995b83bdab2b66bd211390bc5310. doi:10.1007/s10533-018-0445-y
- Grove, J. M., & Pickett, S. T. (2019). From transdisciplinary projects to platforms: expanding capacity and impact of land systems knowledge and decision making. Current Opinion in Environmental Sustainability, 38, 7-13. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065056407&doi=10.1016%2fj.cosust.2019.04.001& partnerID=40&md5=ac4c89e1f79ca2bd3ed7be8623eea4dd. doi:10.1016/j.cosust.2019.04.001

- Gruber, A., Dorigo, W. A., Crow, W., & Wagner, W. (2017). Triple Collocation-Based Merging of Satellite Soil Moisture Retrievals. IEEE Transactions on Geoscience and Remote Sensing, 55(12), 6780-6792. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030651801&doi=10.1109%2fTGRS.2017.2734070& partnerID=40&md5=17fb62f85c5e39ea7b0c8e964bfc0389. doi:10.1109/TGRS.2017.2734070
- Gu, H., & Bergman, R. (2017). Cradle-to-grave life cycle assessment of syngas electricity from woody biomass residues. Wood and Fiber Science, 49(2), 177-192. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029541184&partnerID=40&md5=dee7a198d3b2c

e2107f5a7cde29e02a9. Gu, X., Zhou, X., Bu, X., Xue, M., Jiang, L., Wang, S., . . . Clinton, P. W. (2019). Soil extractable organic C and N contents, methanotrophic activity under warming and degradation in a Tibetan alpine meadow. Agriculture, Ecosystems and Environment, 278, 6-14. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063385535&doi=10.1016%2fj.agee.2019.03.020&p

artnerID=40&md5=dca7259ec43c2aa4b79f07edd110e040. doi:10.1016/j.agee.2019.03.020

Guan, K., Wu, J., Kimball, J. S., Anderson, M. C., Frolking, S., Li, B., . . . Lobell, D. B. (2017). The shared and unique values of optical, fluorescence, thermal and microwave satellite data for estimating large-scale crop yields. Remote Sensing of Environment, 199, 333-349. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026512271&doi=10.1016%2fj.rse.2017.06.043&par

tnerID=40&md5=b63d47696ac08b4f0f0b00ade5b8736d. doi:10.1016/j.rse.2017.06.043 Guan, Y., Zheng, F., Zhang, X., & Wang, B. (2017). Trends and variability of daily precipitation and extremes during 1960-2012 in the Yangtze River Basin, China. International Journal of Climatology, 37(3), 1282-1298.

Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84971301653&doi=10.1002%2fjoc.4776&partnerID= 40&md5=6884c4abbb4a3fadc929bf82e218848e. doi:10.1002/joc.4776

Guarin, J. R., Kassie, B., Mashaheet, A. M., Burkey, K., & Asseng, S. (2019). Modeling the effects of tropospheric ozone on wheat growth and yield. European Journal of Agronomy, 105, 13-23. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061384050&doi=10.1016%2fj.eja.2019.02.004&par 39

tnerID=40&md5=ef81b6b8fbc321288cf6a343eadc7e3f. doi:10.1016/j.eja.2019.02.004

- Guarinello de Oliveira Portes, M. C., Safford, H., & Behling, H. (2018). Humans and climate as designers of the landscape in Serra da Bocaina National Park, southeastern Brazil, over the last seven centuries. *Anthropocene*, 24, 61-71. Retrieved from
  - $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056953940&doi=10.1016%2fj.ancene.2018.11.004\\ & \mbox{where} ID=40&\mbox{where} ID=40&\mbox{where}$
- Gugger, P. F., Liang, C. T., Sork, V. L., Hodgskiss, P., & Wright, J. W. (2018). Applying landscape genomic tools to forest management and restoration of Hawaiian koa (Acacia koa) in a changing environment. *Evolutionary Applications*, 11(2), 231-242. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028937731&doi=10.1111%2feva.12534&partnerlD =40&md5=56b193d9bfa0be1210e0c9294ac41a43. doi:10.1111/eva.12534 Guldin, J. M. (2019). Silvicultural options in forests of the southern United States under changing climatic conditions.
- New Forests, 50(1), 71-87. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049579333&doi=10.1007%2fs11056-018-9656-2&
- partnerlD=40&md5=b56af3c7cfe718ba73656a9c8dda0271. doi:10.1007/s11056-018-9656-2 Gunn, K. M., Baule, W. J., Frankenberger, J. R., Gamble, D. L., Allred, B. J., Andresen, J. A., & Brown, L. C. (2018). Modeled climate change impacts on subirrigated maize relative yield in northwest Ohio. *Agricultural Water Management, 206*, 56-66. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046665140&doi=10.1016%2fj.agwat.2018.04.034&
- partnerID=40&md5=93d512f8ec95ce3fc2a1594db2e1f266. doi:10.1016/j.agwat.2018.04.034 Gunn, K. M., Holly, M. A., Veith, T. L., Buda, A. R., Prasad, R., Alan Rotz, C., . . . Stoner, A. M. K. (2019). Projected heat
- stress challenges and abatement opportunities for U.S. Milk production. *PLoS ONE, 14*(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063618673&doi=10.1371%2fjournal.pone.0214665 &partnerID=40&md5=423997cf51941fda3f32cc372629701e. doi:10.1371/journal.pone.0214665
- Gunter, S. A., & Beck, M. R. (2018). Measuring the respiratory gas exchange by grazing cattle using an automated, open-circuit gas quantification system. *Translational Animal Science*, 2(1), 11-18. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050906689&doi=10.1093%2ftas%2ftxx009&partne rlD=40&md5=cdc70901f9e11f6f7ff11ad32ab8e928. doi:10.1093/tas/txx009
- Gunter, S. A., Bradford, J. A., & Moffet, C. A. (2017). Effects of mass airflow rate through an open-circuit gas quantification system when measuring carbon emissions. *Journal of Animal Science*, 95(1), 475-484. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017496822&doi=10.2527%2fJAS.2016.0933&partnerID=40&md5=a5e30fceb961b50577310381e12ccada. doi:10.2527/JAS.2016.0933

- Guo, Q., Brockway, D. G., & Chen, X. (2017). Temperature-related sex allocation shifts in a recovering keystone species, Pinus palustris. *Plant Ecology and Diversity*, 10(4), 303-310. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038107206&doi=10.1080%2f17550874.2017.14029 68&partnerID=40&md5=bbd38202207a6c860f6c2654c754b0c3. doi:10.1080/17550874.2017.1402968
- Guo, Q., Brockway, D. G., Larson, D. L., Wang, D., & Ren, H. (2018). Improving Ecological Restoration to Curb Biotic Invasion - A Practical Guide. *Invasive Plant Science and Management*, *11*(4), 163-174. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059631366&doi=10.1017%2finp.2018.29&partnerl D=40&md5=f12af5b5a0e39a6db91562ae8978ae10. doi:10.1017/inp.2018.29
- Guo, Q., Chen, J., Zhang, X., Shen, M., Chen, H., & Guo, S. (2019). A new two-stage multivariate quantile mapping method for bias correcting climate model outputs. *Climate Dynamics*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064058016&doi=10.1007%2fs00382-019-04729-w &partnerID=40&md5=2dd1643198b40725e2a3ffcedd50c21f. doi:10.1007/s00382-019-04729-w
- Guo, Q., Potter, K. M., Koch, F. H., & Riitters, K. H. (2019). Impacts of nonnative species on the Health of Natural and Planted Forests. *Forests*, 10(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066819882&doi=10.3390%2ff10050366&partnerID =40&md5=23b851928d80370e24696c90acae4c76. doi:10.3390/f10050366
- Guo, T., Mehan, S., Gitau, M. W., Wang, Q., Kuczek, T., & Flanagan, D. C. (2018). Impact of number of realizations on the suitability of simulated weather data for hydrologic and environmental applications. *Stochastic Environmental Research and Risk Assessment*, 32(8), 2405-2421. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037167004&doi=10.1007%2fs00477-017-1498-5&

partnerID=40&md5=65ab58b34724c01a7f4bdb42bc4c7310. doi:10.1007/s00477-017-1498-5

- Guo, X., Zhou, X., Hale, L., Yuan, M., Ning, D., Feng, J., . . . Zhou, J. (2019). Climate warming accelerates temporal scaling of grassland soil microbial biodiversity. *Nature Ecology and Evolution*, 3(4), 612-619. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063490102&doi=10.1038%2fs41559-019-0848-8& partnerlD=40&md5=698d7716c2af9ddb7ea4040756b1a21f. doi:10.1038/s41559-019-0848-8
- Gustafson, E. J., De Bruijn, A., Lichti, N., Jacobs, D. F., Sturtevant, B. R., Foster, J., . . . Dalgleish, H. J. (2017). The implications of American chestnut reintroduction on landscape dynamics and carbon storage. *Ecosphere*, 8(4). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018945254&doi=10.1002%2fecs2.1773&partnerlD =40&md5=98d3ae2dd92dd3bcb17d4e99ea0161cc. doi:10.1002/ecs2.1773

Gustafson, E. J., Kubiske, M. E., Miranda, B. R., Hoshika, Y., & Paoletti, E. (2018). Extrapolating plot-scale CO<inf>2</inf> and ozone enrichment experimental results to novel conditions and scales using mechanistic modeling. *Ecological Processes*, 7(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052800828&doi=10.1186%2fs13717-018-0142-8&

partnerID=40&md5=d5fedbf36d3ed862f85329e72c12fe91. doi:10.1186/s13717-018-0142-82 Gustafson, E. J., Miranda, B. R., De Bruijn, A. M. G., Sturtevant, B. R., & Kubiske, M. E. (2017). Do rising temperatures

Gustaison, E. J., Miranda, B. K., De Brujn, A. M. G., Sturtevant, B. K., & Kubiske, M. E. (2017). Do nsing temperatures always increase forest productivity? Interacting effects of temperature, precipitation, cloudiness and soil texture on tree species growth and competition. *Environmental Modelling and Software*, 97, 171-183. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027977430&doi=10.1016%2fj.envsoft.2017.08.001 &partnerID=40&md5=ab6610d1bbdff93c45d2bc721729416a. doi:10.1016/j.envsoft.2017.08.001

Gustafson, E. J., Miranda, B. R., & Sturtevant, B. R. (2018). Can future CO<inf>2</inf> concentrations mitigate the negative effects of high temperature and longer droughts on forest growth? *Forests*, 9(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055730171&doi=10.3390%2ff9110664&partnerID =40&md5=2b1c3ac83922a5759276348ef5d359fa. doi:10.3390/f9110664

Gustafson, E. J., Sturtevant, B. R., de Bruijn, A. M. G., Lichti, N., Jacobs, D. F., Kashian, D. M., . . . Townsend, P. A. (2018). Forecasting effects of tree species reintroduction strategies on carbon stocks in a future without historical analog. *Global Change Biology*, 24(11), 5500-5517. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052368036&doi=10.1111%2fgcb.14397&partnerID =40&md5=7ffe555eecf21f94216b3479c&10507. doi:10.1111/gcb.14397

- Gutierrez, A. P., Ponti, L., Cristofaro, M., Smith, L., & Pitcairn, M. J. (2017). Assessing the biological control of yellow starthistle (Centaurea solstitialis L): prospective analysis of the impact of the rosette weevil (Ceratapion basicorne (Illiger). Agricultural and Forest Entomology, 19(3), 257–273. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850091775258doi=10.1111%2fafe.12205&partnerID =40&md5=e0f55694a56be8463038a57a5&c78fd. doi:10.11111/afe.12205
- Guyer, A., Hibbard, B. E., Holzkämper, A., Erb, M., & Robert, C. A. M. (2018). Influence of drought on plant performance through changes in belowground tritrophic interactions. *Ecology and Evolution*, 8(13), 6756-6765. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050189898&doi=10.1002%2fece3.4183&partnerlD =40&md5=465298676878316c5df44db06dc88d04. doi:10.1002/ece3.4183

- Guyette, R., Stambaugh, M. C., Dey, D., & Muzika, R. M. (2017). The theory, direction, and magnitude of ecosystem fire probability as constrained by precipitation and temperature. *PLoS ONE*, *12*(7). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85024399596&doi=10.1371%2fjournal.pone.0180956 &partnerlD=40&md5=6c599905b58ac63090d23c06c385fe56. doi:10.1371/journal.pone.0180956
- Hain, E. F., Kennen, J. G., Caldwell, P. V., Nelson, S. A. C., Sun, G., & McNulty, S. G. (2018). Using regional scale flow–ecology modeling to identify catchments where fish assemblages are most vulnerable to changes in water availability. *Freshwater Biology*, 63(8), 928-945. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034116620&doi=10.1111%2ffwb.13048&partnerID =40&md5=36f7455b06eb3ab1abe5208303802574. doi:10.1111/fwb.13048

Hakamada, R., Hubbard, R. M., Ferraz, S., Stape, J. L., & Lemos, C. (2017). Biomass production and potential water stress increase with planting density in four highly productive clonal Eucalyptus genotypes§. Southern Forests, 79(3), 251-257. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85012873027&doi=10.2989%2f20702620.2016.12560 41 41&partneriD=40&md5=72099fff7f6f2ef2bf87edfefbb81a82. doi:10.2989/20702620.2016.1256041 Hale, L, Feng, W., Yin, H., Guo, X., Zhou, X., Bracho, R., . . . Zhou, J. (2019). Tundra microbial community taxa and traits

- predict decomposition parameters of stable, old soil organic carbon. ISME Journal. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070230491&doi=10.1038%2fs41396-019-0485-x& partnerlD=40&md5=ca9622c2bb7ef03fc046c8fb1720a37a. doi:10.1038/s41396-019-0485-x
- Hales, K. E., & Cole, N. A. (2017). Hourly methane production in finishing steers fed at different levels of dry matter intake. *Journal of Animal Science*, 95(5), 2089-2096. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019467328&doi=10.2527%2fjas2016.1023&partne
- rlD=40&md5=6bb9b15d5a94d8679a905e1b8562a3cc. doi:10.2527/jas2016.1023 Hallema, D. W., Robinne, F. N., & Bladon, K. D. (2018). Reframing the Challenge of Global Wildfire Threats to Water Supplies. *Earth's Future, 6*(6), 772-776. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049563925&doi=10.1029%2f2018EF000867&partn erID=40&md5=ce5271e8f838af3bc4a3a5985eb7fb7f. doi:10.1029/2018EF000867
- Hallema, D. W., Sun, G., Bladon, K. D., Norman, S. P., Caldwell, P. V., Liu, Y., & McNulty, S. G. (2017). Regional patterns of postwildfire streamflow response in the Western United States: The importance of scale-specific connectivity. *Hydrological Processes*, *31*(14), 2582-2598. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020110873&doi=10.1002%2fhyp.11208&partnerID
- =40&md5=bbeda2e39aa4cb8ece6ed2fb86006e57. doi:10.1002/hyp.11208 Hallema, D. W., Sun, G., Caldwell, P. V., Norman, S. P., Cohen, E. C., Liu, Y., . . . McNulty, S. G. (2018). Burned forests impact water supplies. *Nature Communications*, 9(1). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045268847&doi=10.1038%2fs41467-018-03735-6 &partnerID=40&md5=9553b05c72df409f11cb30e11cd2a355. doi:10.1038/s41467-018-03735-6
- Hallema, D. W., Sun, G., Caldwell, P. V., Norman, S. P., Cohen, E. C., Liu, Y., . . . McNulty, S. G. (2017). Assessment of wildland fire impacts on watershed annual water yield: Analytical framework and case studies in the United States. *Ecohydrology*, 10(2). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006272099&doi=10.1002%2feco.1794&partnerID=40&md5=3db149b7b6eb4eb11881bf5e80fe9089. doi:10.1002/eco.1794

- Halofsky, J. E., Andrews-Key, S. A., Edwards, J. E., Johnston, M. H., Nelson, H. W., Peterson, D. L., . . . Williamson, T. B. (2018). Adapting forest management to climate change: The state of science and applications in Canada and the United States. *Forest Ecology and Management*, 421, 84-97. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044103981&doi=10.1016%2fj.foreco.2018.02.037&
- partnerID=40&md5=b3d495f32a597d597306511cfb2e31fb. doi:10.1016/j.foreco.2018.02.037 Halofsky, J. E., Hoglund-Wyatt, K., Dello, K., Peterson, D. L., & Stevenson, J. (2018). Assessing and adapting to climate change in the Blue Mountains, Oregon (USA): Overview, biogeography, and climate. 70, 1-8. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045831875&doi=10.1016%2fi.cliser.2018.03.002&p
- artnerD=40&md5=d89fceddf537483d8ea12cfa658464f3. doi:10.1016/j.cliser.2018.03.002 Halofsky, J. E., Peterson, D. L., Karen Dante-Wood, S., & Hoang, L. (2018) Toward Climate-Smart Resource
- Management in the Northern Rockies. In: *Vol. 63. Advances in Global Change Research* (pp. 221-228). Halofsky, J. E., Peterson, D. L., & Prendeville, H. R. (2018). Assessing vulnerabilities and adapting to climate change in
- northwestern U.S. forests. *Climatic Change, 14*6(1-2), 89-102. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018796474&doi=10.1007%2fs10584-017-1972-6& partnerlD=40&md5=4166a89a6d44d7099cfb11b2a8f6ab74. doi:10.1007/s10584-017-1972-6
- Halofsky, J. E., Warziniack, T. W., Peterson, D. L., & Ho, J. J. (2017). Understanding and Managing the Effects of Climate Change on Ecosystem Services in the Rocky Mountains. *Mountain Research and Development*, 37(3), 340-352. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030090621&doi=10.1659%2fMRD-JOURNAL-D-16 -00087.1&partnerlD=40&md5=fb2f4baece092930b3537286f9ac2712.

doi:10.1659/MRD-JOURNAL-D-16-00087.1

Halofsky, J. S., Conklin, D. R., Donato, D. C., Halofsky, J. E., & Kim, J. B. (2018). Climate change, wildfire, and vegetation shifts in a high-inertia forest landscape: Western Washington, U.S.A. *PLoS ONE*, *13*(12). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058791416&doi=10.1371%2fjournal.pone.0209490 &partnerlD=40&md5=abef954f59349f3d97fba2174c50dc36. doi:10.1371/journal.pone.0209490

Halofsky, J. S., Donato, D. C., Franklin, J. F., Halofsky, J. E., Peterson, D. L., & Harvey, B. J. (2018). The nature of the beast: 42 Examining climate adaptation options in forests with stand-replacing fire regimes. *Ecosphere*, 9(3). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044180314&doi=10.1002%2fecs2.2140&partnerID =40&md5=1de9ac5faf0affda446deb2318f62425. doi:10.1002/ecs2.2140

Halofsky, J. S., Halofsky, J. E., Hemstrom, M. A., Morzillo, A. T., Zhou, X., & Donato, D. C. (2017). Divergent trends in ecosystem services under different climate-management futures in a fire-prone forest landscape. *Climatic Change*, 142(1-2), 83-95. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014058165&doi=10.1007%2fs10584-017-1925-0&partnerID=40&md5=94b308184ed33e489536aeed9c5fd24e. doi:10.1007/s10584-017-1925-0

Hamilton, J. A., Royauté, R., Wright, J. W., Hodgskiss, P., & Ledig, F. T. (2017). Genetic conservation and management of the California endemic, Torrey pine (Pinus torreyana Parry): Implications of genetic rescue in a genetically depauperate species. *Ecology and Evolution*, 7(18), 7370-7381. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021733976&doi=10.1002%2fece3.3306&partnerID

=40&md5=cb3cc07/cdb794b3431b96f86380895b. doi:10.1002/ece3.3306 Han, M., Zhang, H., Chávez, J. L., Ma, L., Trout, T. J., & DeJonge, K. C. (2018). Improved soil water deficit estimation

Inf, M., Zhang, A., Chavez, J. L., Ma, E., Hou, F. J., & Debrige, K. C. (2016). Improved softwater deficit estimation through the integration of canopy temperature measurements into a soil water balance model. *Irrigation Science*, 36(3), 187-201. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044938284&doi=10.1007%2fs00271-018-0574-z&partnerID=40&md5=1774b41631b789a5e170fd9cb1a5255d. doi:10.1007/s00271-018-0574-z

Hanberry, B. B., & Fraser, J. S. (2019). Visualizing current and future climate boundariesof the conterminous United States: Implications for forests. *Forests*, 10(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063865739&doi=10.3390%2ff10030280&partnerID

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063865739&doi=10.3390%2ff10030280&partnerlD =40&md5=0572ac91b918058c86f4b0a62332c872. doi:10.3390/f10030280

Hand, M. S., Eichman, H., Jack Triepke, F., & Jaworski, D. (2018). Socioeconomic vulnerability to ecological changes to national forests and grasslands in the Southwest. USDA Forest Service - General Technical Report RMRS-GTR, 2018(383). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065796713&partnerID=40&md5=fc2588ee528443 b4ae2355be9768c5cc.

Hand, M. S., & Lawson, M. (2018) Effects of Climate Change on Recreation in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 169-188).

Hao, L., Huang, X., Qin, M., Liu, Y., Li, W., & Sun, G. (2018). Ecohydrological Processes Explain Urban Dry Island Effects in a Wet Region, Southern China. *Water Resources Research*, 54(9), 6757-6771. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053675889&doi=10.1029%2f2018WR023002&part nerID=40&md5=49464acfd917f4cc20d5d9ef0158dbf7. doi:10.1029/2018WR023002

Hao, L., Pan, C., Fang, D., Zhang, X., Zhou, D., Liu, P., . . . Sun, G. (2018). Quantifying the effects of overgrazing on mountainous watershed vegetation dynamics under a changing climate. *Science of the Total Environment*, 639, 1408-1420. Retrieved from https://doi.org/10.1016/j.j.com/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action/pacific/action

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047494225&doi=10.1016\%2fj.scitotenv.2018.05.224\\ \end{tabular} 40\&md5=18f8a2696f410ad0f6a985ca647dadf6. doi:10.1016/j.scitotenv.2018.05.224\\ \end{tabular}$ 

Hao, Y., Zhang, H., Biederman, J. A., Li, L., Cui, X., Xue, K., . . . Wang, Y. (2018). Seasonal timing regulates extreme drought impacts on CO<inf>2</inf> and H<inf>2</inf>O exchanges over semiarid steppes in Inner Mongolia, China. Agriculture, Ecosystems and Environment, 266, 153-166. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850515034678doi=10.1016%2fj.agee.2018.06.010&p artherID=40&md5=4cbec4771fd393ef5fbdd0dabeb3dc2a. doi:10.1016/j.aqee.2018.06.010

Hardegree, S. P., Abatzoglou, J. T., Brunson, M. W., Germino, M. J., Hegewisch, K. C., Moffet, C. A., . . . Meredith, G. R. (2018). Weather-Centric Rangeland Revegetation Planning. *Rangeland Ecology and Management*, 71(1), 1-11. Retrieved from the second se

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037825925&doi=10.1016%2fj.rama.2017.07.003&partnerlD=40&md5=bc963ace2cc8fb7df1d190ff47a2ee31. doi:10.1016/j.rama.2017.07.003

Harden, J. W., Hugelius, G., Ahlström, A., Blankinship, J. C., Bond-Lamberty, B., Lawrence, C. R., . . . Nave, L. E. (2018). Networking our science to characterize the state, vulnerabilities, and management opportunities of soil organic matter. *Global Change Biology*, 24(2), e705-e718. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030627756&doi=10.1111%2fgcb.13896&partnerID 224

=40&md5=f8ffa7a2779de4db6b2379417f1b586c. doi:10.1111/gcb.13896

- Harris, L. B., Scholl, A. E., Young, A. B., Estes, B. L., & Taylor, A. H. (2019). Spatial and temporal dynamics of 20th century carbon storage and emissions after wildfire in an old-growth forest landscape. *Forest Ecology and Management, 449*. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069660744&doi=10.1016%2fj.foreco.2019.117461 &partnerlD=40&md5=8f758218514546ec2b51cded0183c412. doi:10.1016/j.foreco.2019.117461
- Hasegawa, T., Li, T., Yin, X., Zhu, Y., Boote, K., Baker, J., . . . Zhu, J. (2017). Causes of variation among rice models in yield response to CO<inf>2</inf> examined with Free-Air CO<inf>2</inf> Enrichment and growth chamber experiments. Scientific Reports, 7(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032788274&doi=10.1038%2fs41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c18083b8295374eca006e3f01197.doi:10.1038/s41598-017-13582-ywspartnertD=40&md5=6d99c180&md5=6d99c180&md5=6d99c180&md5=6d99c180&md5=6d99c180&md5=6d99bartnertD=40&md5=6d96&md5=6d96&md5=00&

- Hastings, J. M., Potter, K. M., Koch, F. H., Megalos, M., & Jetton, R. M. (2017). Prioritizing conservation seed banking locations for imperiled hemlock species using multi-attribute frontier mapping. *New Forests*, 48(2), 301-316. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014104554&doi=10.1007%2fs11056-017-9575-7& partnerID=40&md5=9bbfa69469bd673bec6ce9d395ca069f. doi:10.1007/s11056-017-9575-7 Hatfield, J. (2017). Turfgrass and climate change. *Agronomy Journal, 109*(4), 1708-1718. Retrieved from
- https://www.scopus.com/inward/record.ur?eid=2-sc.0-85023773082&doi=10.2134/s2fagronj2016.10.0626& partnerID=40&md5=947bf78d76660a4879bef796b2e07104. doi:10.2134/agronj2016.10.0626
- Hatfield, J. L., Antle, J., Garrett, K. A., Izaurralde, R. C., Mader, T., Marshall, E., . . . Ziska, L. (2018). Indicators of climate change in agricultural systems. *Climatic Change*, 1-14. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048032842&doi=10.1007%2fs10584-018-2222-2&
- partnerID=40&md5=b53922981c690dc1fd4febc04a36304d. doi:10.1007/s10584-018-2222-2 Hatfield, J. L., & Dold, C. (2018). Agroclimatology and wheat production: Coping with climate change. *Frontiers in Plant Science*. 9. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043302218&doi=10.3389%2ffpls.2018.00224&part nerID=40&md5=20126abfbd1cf1df2695883922735ebe. doi:10.3389/fpls.2018.00224
- Hatfield, J. L., & Dold, C. (2019). Water-use efficiency: Advances and challenges in a changing climate. *Frontiers in Plant Science*, 10. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064209235&doi=10.3389%2ffpls.2019.00103&partnerlD=40&md5=231c14939d07159689e220c97e7f8b51.doi:10.3389/fpls.2019.00103

- Hatfield, J. L., Sauer, T. J., & Cruse, R. M. (2017) Soil: The Forgotten Piece of the Water, Food, Energy Nexus. In: Vol. 143. Advances in Agronomy (pp. 1-46).
- Haugo, R. D., Kellogg, B. S., Cansler, C. A., Kolden, C. A., Kemp, K. B., Robertson, J. C., ... Restaino, C. M. (2019). The missing fire: quantifying human exclusion of wildfire in Pacific Northwest forests, USA. *Ecosphere*, 10(4). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065045317&doi=10.1002%2fecs2.2702&partnerID =40&md5=dc51840c97b660f942a92b9bd514b6f5. doi:10.1002/ecs2.2702

- Havens, S., Marks, D., FitzGerald, K., Masarik, M., Flores, A. N., Kormos, P., & Hedrick, A. (2019). Approximating input data to a snowmelt model using weather research and forecasting model outputs in lieu of meteorological measurements. *Journal of Hydrometeorology, 20*(5), 847-862. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066256222&doi=10.1175%2fJHM-D-18-0146.1&p
- artner/D=40&md5=985d9b02a95c9fd4db945deb8398bc.doi:10.1175/JHM-D-18-0146.1 Havens, S., Marks, D., Kormos, P., & Hedrick, A. (2017). Spatial Modeling for Resources Framework (SMRF): A modular
- framework for developing spatial forcing data for snow modeling in mountain basins. Computers and Geosciences, 109, 295-304. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032664951&doi=10.1016%2fj.cageo.2017.08.016&
- partnerID=40&md5=5a5dcdd90866ef28cda3bf4dee027797. doi:10.1016/j.cageo.2017.08.016& partnerID=40&md5=5a5dcdd90866ef28cda3bf4dee027797. doi:10.1016/j.cageo.2017.08.016 Havstad, K. M., Brown, J. R., Estell, R., Elias, E., Rango, A., & Steele, C. (2018). Vulnerabilities of Southwestern U.S.

Havstad, K. M., Brown, J. R., Estell, K., Ellas, E., Karlgo, A., & Steele, C. (2016). Vulnerabilities of Southwestern 0.5. Rangeland-based animal agriculture to climate change. *Climatic Change*, *148*(3), 371-386. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-849944774008doi=10.1007%2fs10584-016-1834-78 partnerlD=408md5=5496e8c36f94c13ff8a2fde44dd17729. doi:10.1007/s10584-016-1834-7

Hayes, M. A., & Piaggio, A. J. (2018). Assessing the potential impacts of a changing climate on the distribution of a

rabies virus vector. *PLoS ONE, 13*(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042299828&doi=10.1371%2fjournal.pone.0192887 &partnerID=40&md5=aa1e6ba1ce543036fcca599a6a088422. doi:10.1371/journal.pone.0192887

Haynes, K. M., Kane, E. S., Potvin, L., Lilleskov, E. A., Kolka, R. K., & Mitchell, C. P. J. (2017). Gaseous mercury fluxes in peatlands and the potential influence of climate change. *Atmospheric Environment*, 154, 247-259. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011880130&doi=10.1016%2fj.atmosenv.2017.01.0 49&partnerID=40&md5=d284c9003dbc03d4a91cad8be32e8cb9. doi:10.1016/j.atmosenv.2017.01.049

- Haynes, K. M., Kane, E. S., Potvin, L., Lilleskov, E. A., Kolka, R. K., & Mitchell, C. P. J. (2017). Mobility and transport of mercury and methylmercury in peat as a function of changes in water table regime and plant functional groups. *Global Biogeochemical Cycles*, *31*(2), 233-244. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011634524&doi=10.1002%2f2016GB005471& nerlD=40&md5=f8aed094649ce51649fcc4077cbc84b3. doi:10.1002/2016GB005471
- Haynes, K. M., Kane, E. S., Potvin, L., Lilleskov, E. A., Kolka, R. K., & Mitchell, C. P. J. (2019). Impacts of experimental alteration of water table regime and vascular plant community composition on peat mercury profiles and methylmercury production. *Science of the Total Environment*, *682*, 611-622. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065913322&doi=10.1016%2fj.scitotenv.2019.05.07 2&partnerlD=40&md5=e8e70e7e9f9bff3c589db6551897b7f1. doi:10.1016/j.scitotenv.2019.05.072
- He, H. S., Gustafson, E. J., & Lischke, H. (2017). Modeling forest landscapes in a changing climate: theory and application. *Landscape Ecology*, 32(7), 1299-1305. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019660907&doi=10.1007%2fs10980-017-0529-4& partnerID=40&md5=610e2e90f3c992210babb91004c25ebc. doi:10.1007/s10980-017-0529-4
- He, T., Liang, S., Wang, D., Cao, Y., Gao, F., Yu, Y., & Feng, M. (2018). Evaluating land surface albedo estimation from Landsat MSS, TM, ETM +, and OLI data based on the unified direct estimation approach. *Remote Sensing of Environment, 204*, 181-196. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032730160&doi=10.1016%2fj.rse.2017.10.031&par
- therD=408md5=27c5bceaeb4dd57d4b27590fb6be2597. doi:10.1016/j.rse.2017.10.031 Hedges, S. B., Cohen, W. B., Timyan, J., & Yang, Z. (2018). Haiti's biodiversity threatened by nearly complete loss of
- primary forest. Proceedings of the National Academy of Sciences of the United States of America, 115(46), 11850-11855. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056535558&doi=10.1073%2fpnas.1809753115&pa rtnerID=40&md5=69862ce26e14f51a9505b09326a3a4c1. doi:10.1073/pnas.1809753115

- Heinemeyer, K., Squires, J., Hebblewhite, M., O'Keefe, J. J., Holbrook, J. D., & Copeland, J. (2019). Wolverines in winter: indirect habitat loss and functional responses to backcountry recreation. *Ecosphere*, *10*(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062696840&doi=10.1002%2fecs2.2611&partnerID =40&md5=5d328f58ba6e9f6768edf9aa64a2122f. doi:10.1002/ecs2.2611
- Helmer, E. H., Gerson, E. A., Scott Baggett, L., Bird, B. J., Ruzycki, T. S., & Voggesser, S. M. (2019). Neotropical cloud forests and páramo to contract and dry from declines in cloud immersion and frost. *PLoS ONE*, *14*(4). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064432518&doi=10.1371%2fjournal.pone.0213155 &partnerID=40&md5=33378ef66f2fd4847c959bedc89dd1f4. doi:10.1371/journal.pone.0213155

Herbst, D. B., Cooper, S. D., Medhurst, R. B., Wiseman, S. W., & Hunsaker, C. T. (2019). Drought ecohydrology alters the structure and function of benthic invertebrate communities in mountain streams. *Freshwater Biology*, 64(5), 886-902. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062799916&doi=10.1111%2ffwb.13270&partnerlD =40&md5=5d04c156ce9f263925e1324d8999f088. doi:10.1111/fwb.13270

Herman, M. R., Nejadhashemi, A. P., Abouali, M., Hernandez-Suarez, J. S., Daneshvar, F., Zhang, Z., . . . Sharifi, A. (2018). Evaluating the role of evapotranspiration remote sensing data in improving hydrological modeling predictability. *Journal of Hydrology*, 556, 39-49. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034060918&doi=10.1016%2fj.jhydrol.2017.11.009 &partnerID=40&md5=dec38c9dfcc90bf28be56ba49b3f6817. doi:10.1016/j.jhydrol.2017.11.009 Hernandez, A. J., Healey, S. P., Huang, H., & Ramsey, R. D. (2018). Improved prediction of stream flow based on

updating land cover maps with remotely sensed forest change detection. *Forests, 9*(6). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048203311&doi=10.3390%2ff9060317&partnerID =40&md5=56b18ed93d1859ffedb8f24a9fb0153a. doi:10.3390/f9060317

Herndon, E. M., Kinsman-Costello, L., Duroe, K. A., Mills, J., Kane, E. S., Sebestyen, S. D., . . . Wullschleger, S. D. (2019). Iron (Oxyhydr)Oxides Serve as Phosphate Traps in Tundra and Boreal Peat Soils. *Journal of Geophysical Research: Biogeosciences*, 124(2), 227-246. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061253288&doi=10.1029%2f2018JG004776&partnerlD=40&md5=f879407276b98e3081fb77acd4ed1e49. doi:10.1029/2018JG004776

- Herold, M., Carter, S., Avitabile, V., Espejo, A. B., Jonckheere, I., Lucas, R., . . . De Sy, V. (2019). The Role and Need for Space-Based Forest Biomass-Related Measurements in Environmental Management and Policy. *Surveys in Geophysics*, 40(4), 757-778. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061374917&doi=10.1007%2fs10712-019-09510-6 &partnerID=40&md5=04cb405621e5c6468ee95d498f09fd1c. doi:10.1007/s10712-019-09510-6
- Herrick, J. E., Shaver, P., Pyke, D. A., Pellant, M., Toledo, D., & Lepak, N. (2019). A strategy for defining the reference for land health and degradation assessments. *Ecological indicators*, 97, 225-230. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054922678&doi=10.1016%2fj.ecolind.2018.06.065 &partnerID=40&md5=c253da921b210fe11cac97790079eb6a. doi:10.1016/j.ecolind.2018.06.065
- Higuera, P. E., Metcalf, A. L., Miller, C., Buma, B., McWethy, D. B., Metcalf, E. C., . . . Virapongse, A. (2019). Integrating subjective and objective dimensions of resilience in fire-prone landscapes. *BioScience*, 69(5), 379-388. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067650312&doi=10.1093%2fbiosci%2fbiz030&part nerlD=40&md5=27e8cbc9f63801dd8495d66e115ca21b. doi:10.1093/biosci/biz030

- Hines, J., Pabst, S., Mueller, K. E., Blumenthal, D. M., Cesarz, S., & Eisenhauer, N. (2017). Soil-mediated effects of global change on plant communities depend on plant growth form. *Ecosphere*, 8(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035310914&doi=10.1002%2fecs2.1996&partnerID =40&md5=98603491655ab961fa30d55767c761da. doi:10.1002/ecs2.1996
- Hitaj, C., Rehkamp, S., Canning, P., & Peters, C. J. (2019). Greenhouse Gas Emissions in the United States Food System: Current and Healthy Diet Scenarios. *Environmental Science and Technology*, 53(9), 5493-5503. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065586038&doi=10.1021%2facs.est.8b06828&part nerID=40&md5=5e20d1a05f710e4ac27d2f9498c88134. doi:10.1021/acs.est.8b06828
- Hobbie, J. E., Shaver, G. R., Rastetter, E. B., Cherry, J. E., Goetz, S. J., Guay, K. C., . . . Kling, G. W. (2017). Ecosystem responses to climate change at a Low Arctic and a High Arctic long-term research site. *Ambio*, 46, 160-173. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85010408606&doi=10.1007%2fs13280-016-0870-x& partnerlD=40&md5=7097c3b07ca736f2fdf8bf9dbf309168. doi:10.1007/s13280-016-0870-x Hoberg, E. P., Cook, J. A., Agosta, S. J., Boeger, W., Galbreath, K. E., Laaksonen, S., . . . Brooks, D. R. (2017). Arctic

- systems in the Quaternary: Ecological collision, faunal mosaics and the consequences of a wobbling climate. Journal of Helminthology, 91(4), 409-421. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017449987&doi=10.1017%2fS0022149X17000347 &partnerlD=40&md5=464e8f531956ec09c2b92024e3a5dd7b. doi:10.1017/S0022149X17000347
- Holden, Z. A., Swanson, A., Luce, C. H., Jolly, W. M., Maneta, M., Oyler, J. W., . . . Affleck, D. (2018). Decreasing fire season precipitation increased recent western US forest wildfire activity. *Proceedings of the National Academy* of Sciences of the United States of America, 115(36), E8349-E8357. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052741731&doi=10.1073%2fpnas.1802316115&pa
- rtnerlD=40&md5=f910e30383b5d91ea60b837bb2e46868. doi:10.1073/pnas.1802316115 Holder, A. L., Gullett, B. K., Urbanski, S. P., Elleman, R., O'Neill, S., Tabor, D., . . . Baker, K. R. (2017). Emissions from prescribed burning of agricultural fields in the Pacific Northwest. *Atmospheric Environment, 166*, 22-33. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022320401&doi=10.1016%2fj.atmosenv.2017.06.0 43&partnerID=40&md5=5c2a432d38c5a3042eecbdc280bf4d06. doi:10.1016/j.atmosenv.2017.06.043

- Holtz, B., Browne, G. T., Doll, D., Culumber, M., Yaghmour, M. A., Jahanzad, E., . . . Gaudin, A. (2018) Whole almond orchard recycling and the effect on second generation tree growth, yield, light interception, and soil fertility. In: Vol. 1219. Acta horticulturae (pp. 265-271).
- Holtz, C. T., & Schoettle, A. W. (2018). Is resistance to mountain pine beetle associated with genetic resistance to white 46

pine blister rust in Limber Pine? Forests, 9(10). Retrieved from

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053846754&doi=10.3390%2ff9100595&partnerlD =40&md5=3a3283fa68b6a46b694461320911c4a4. doi:10.3390/f9100595
- Holzworth, D. P., Snow, V., Janssen, S., Athanasiadis, I. N., Donatelli, M., Hoogenboom, G., . . . Thorburn, P. (2017). Agricultural production systems modelling and software: Current status and future prospects. *Environmental Modelling and Software*, 72. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-84912065139&doi=10.1016%2fj.envsoft.2014.12.013 &partnerID=40&md5=f672a0a6076a342d9f0fd8ff77534e6d. doi:10.1016/j.envsoft.2014.12.013
- Hoover, C. M., & Smith, J. E. (2017). Equivalence among three alternative approaches to estimating live tree carbon stocks in the eastern United States. *Forest Ecology and Management*, 400, 100-109. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020288055&doi=10.1016%2fj.foreco.2017.05.052& partnerlD=40&md5=f4662082e9651cb40a63a77224296544. doi:10.1016/j.foreco.2017.05.052
- Hoover, C. M., & Smith, J. E. (2017). Equivalence of live tree carbon stocks produced by three estimation approaches for forests of the western United States. *Forest Ecology and Management*, 385, 236-253. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85003945019&doi=10.1016%2fj.foreco.2016.11.041& partnerlD=40&md5=3b1ccec69e4670f6da83340f359c0645. doi:10.1016/j.foreco.2016.11.041
- Hoover, D. L., Wilcox, K. R., & Young, K. E. (2018). Experimental droughts with rainout shelters: A methodological review. *Ecosphere*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041196187&doi=10.1002%2fecs2.2088&partnerID
  - nttps://www.scopus.com/inward/record.un/eid=2-52/0-850411961878doi=10.1002%2tecs2.2088&partneriL =40&md5=09821a5b0d4fb352078a1584e4c5bffd. doi:10.1002/ecs2.2088
- Hou, C., Chu, M. L., Guzman, J. A., Acero Triana, J. S., Moriasi, D. N., & Steiner, J. L. (2019). Field scale nitrogen load in surface runoff: Impacts of management practices and changing climate. *Journal of Environmental Management, 249*. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070222107&doi=10.1016%2fj.jenvman.2019.10932 7&partnerID=40&md5=5dbd9b12e32c3934e4d4f6ab7d81e757. doi:10.1016/j.jenvman.2019.109327
- Hou, R., Ouyang, Z., Han, D., & Wilson, G. V. (2018). Effects of field experimental warming on wheat root distribution under conventional tillage and no-tillage systems. *Ecology and Evolution*, 8(5), 2418-2427. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041111532&doi=10.1002%2fece3.3864&partnerID =40&md5=acec2b46aca89507c5c7f97e235b2483. doi:10.1002/ece3.3864
- Houle, G. P., Kane, E. S., Kasischke, E. S., Gibson, C. M., & Turetsky, M. R. (2018). Recovery of carbon pools a decade after wildfire in black spruce forests of interior Alaska: Effects of soil texture and landscape position. *Canadian Journal of Forest Research*, 48(1), 1-10. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850400131998doi=10.1139%2fcjfr-2017-0236&partn erID=40&md5=1f82e33616eeabea1b59cb374292f680. doi:10.1139/cjfr-2017-0236
- Howell, P. J. (2018). Changes in native bull trout and non-native brook trout distributions in the upper Powder River basin after 20 years, relationships to water temperature and implications of climate change. *Ecology of Freshwater Fish*, 27(3), 710-719. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039158946&doi=10.1111%2feff.12386&partnerID
- =40&md5=7d2493c4cdfd3a490e29c7fd44a8c552. doi:10.1111/eff.12386 Hoylman, Z. H., Jencso, K. G., Hu, J., Martin, J. T., Holden, Z. A., Seielstad, C. A., & Rowell, E. M. (2018). Hillslope Topography Mediates Spatial Patterns of Ecosystem Sensitivity to Climate. *Journal of Geophysical Research: Biogeosciences*, *123*(2), 353-371. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042135763&doi=10.1002%2f2017JG004108&partn erlD=40&md5=3e25f2c9c8d95e857340996b74b6e9e7. doi:10.1002/2017JG004108
- Hristov, A. N., Degaetano, A. T., Rotz, C. A., Hoberg, E., Skinner, R. H., Felix, T., . . . Hollinger, D. Y. (2018). Climate change effects on livestock in the Northeast US and strategies for adaptation. *Climatic Change*, 146(1-2), 33-45. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85024495887&doi=10.1007%2fs10584-017-2023-z&
- partnerID=40&md5=9b3f7186e0aa8a6c4affaaaca78d95f2. doi:10.1007/s10584-017-2023-z
  Hu, T., Sun, L, Hu, H., Weise, D. R., & Guo, F. (2017). Soil Respiration of the Dahurian Larch (Larix gmelini) Forest and the Response to Fire Disturbance in Da Xing'an Mountains, China. Scientific Reports, 7(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020469315&doi=10.1038%2fs41598-017-03325-4
  - nttps://www.scopus.com/inward/record.un/eid=2-s2.0-85020409315&dd0=10.1038%2f841598-017-03325 &partnerID=40&md5=56d6d40cc03490da3c0cb496d5699cd6. doi:10.1038/s41598-017-03325-4 **47**

- Huang, M., Mheni, N., Brown-Guedira, G., McKendry, A., Griffey, C., Van Sanford, D., . . . Sneller, C. (2018). Genetic analysis of heading date in winter and spring wheat. *Euphytica*, 214(8). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049570710&doi=10.1007%2fs10681-018-2199-y& partnerID=40&md5=1fe53412b1a68fc2114923c35aaa7501. doi:10.1007/s10681-018-2199-y
- Huang, W., Swatantran, A., Duncanson, L., Johnson, K., Watkinson, D., Dolan, K., . . . Dubayah, R. (2017). County-scale biomass map comparison: a case study for Sonoma, California. *Carbon Management*, 8(5-6), 417-434. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035102630&doi=10.1080%2f17583004.2017.13968 40&partnerID=40&md5=356f326f1763f8869c3804f11c72dc3b. doi:10.1080/17583004.2017.1396840 Huggins, D. R., Clapp, C. E., Allmaras, R. R., & Lamb, J. A. (2018). Carbon sequestration in corn-sovbean

- agroecosystems. In Soil Management and Greenhouse Effect (pp. 61-68).
- Hulke, B. S., Markell, S. G., Kane, N. C., & Mathew, F. M. (2019). Phomopsis stem canker of sunflower in North America: Correlation with climate and solutions through breeding and management. OCL - Oilseeds and fats, Crops and Lipids, 26. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063944164&doi=10.1051%2focl%2f2019011&part nerlD=40&md5=92882b8b15f70890fa5c3ec2989ebc30. doi:10.1051/ocl/2019011

Hurteau, M. D., North, M. P., Koch, G. W., & Hungate, B. A. (2019). Managing for disturbance stabilizes forest carbon. Proceedings of the National Academy of Sciences of the United States of America, 116(21), 10193-10195. Retrieved from

Hurtt, G., Zhao, M., Sahajpal, R., Armstrong, A., Birdsey, R., Campbell, E., . . . Tang, H. (2019). Beyond MRV: High-resolution forest carbon modeling for climate mitigation planning over Maryland, USA. *Environmental Research Letters*, 14(4). Retrieved from the second se

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068855417&doi=10.1088%2f1748-9326%2fab0bb e&partnerID=40&md5=119392875b9a087d75bbd6430943d54d. doi:10.1088/1748-9326/ab0bbe

Hwang, E. Y., Wei, H., Schroeder, S. G., Fickus, E. W., Quigley, C. V., Elia, P., . . . Song, Q. (2019). Genetic Diversity and Phylogenetic Relationships of Annual and Perennial Glycine Species. G3 (Bethesda, Md.), 9(7), 2325-2336. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069627308&doi=10.1534%2fg3.119.400220&partnerlD=40&md5=88524710a6e9bc7d7118c7d238f04afd. doi:10.1534/g3.119.400220

Hwang, T., Martin, K. L., Vose, J. M., Wear, D., Miles, B., Kim, Y., & Band, L. E. (2018). Nonstationary Hydrologic Behavior in Forested Watersheds Is Mediated by Climate-Induced Changes in Growing Season Length and Subsequent Vegetation Growth. Water Resources Research, 54(8), 5359-5375. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049843688&doi=10.1029%2f2017WR0222798xpart nerlD=40&md5=1511efc75d18842a93488a4d93e97e36. doi:10.1029/2017WR022279

Hyde, J. C., Yedinak, K. M., Talhelm, A. F., Smith, A. M. S., Bowman, D. M. J. S., Johnston, F. H., . . . Tinkham, W. T. (2017). Air quality policy and fire management responses addressing smoke from wildland fires in the United States and Australia. *International Journal of Wildland Fire*, 26(5), 347-363. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019083972&doi=10.1071%2fWF16154&partnerID =40&md5=adfcd5569649062718a706c78e57cea2. doi:10.1071/WF16154

Ibanez, T., Keppel, G., Baider, C., Birkinshaw, C., Culmsee, H., Cordell, S., . . . Birnbaum, P. (2018). Regional forcing explains local species diversity and turnover on tropical islands. *Global Ecology and Biogeography*, 27(4), 474-486. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040240475&doi=10.1111%2fgeb.12712&partnerlD =40&md5=f4f4a20fb674c589a07d62659fb1dbd5. doi:10.1111/geb.12712

Ireland, K. B., Hansen, A. J., Keane, R. E., Legg, K., & Gump, R. L. (2018). Putting Climate Adaptation on the Map: Developing Spatial Management Strategies for Whitebark Pine in the Greater Yellowstone Ecosystem. *Environmental Management*, 67(6), 981-1001. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044520175&doi=10.1007%2fs00267-018-1029-2&

partnerlD=40&md5=c992887d4229317d4115d125eaf0119d. doi:10.1007/s00267-018-1029-2 Irisarri, J. G., Derner, J. D., Ritten, J. P., & Peck, D. E. (2019). Beef production and net revenue variability from grazing systems on semiarid grasslands of North America. *Livestock Science, 220*, 93-99. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058645281&doi=10.1016%2fj.livsci.2018.12.009&p artnerID=40&md5=1d0b00116d02f93c49647bb23a59dd93. doi:10.1016/j.livsci.2018.12.009

Isaak, D. J., Luce, C. H., Horan, D. L., Chandler, G. L., Wollrab, S. P., & Nagel, D. E. (2018). Global Warming of Salmon and Trout Rivers in the Northwestern U.S.: Road to Ruin or Path Through Purgatory? Transactions of the American Fisheries Society, 147(3), 566-587. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046338149&doi=10.1002%2ftafs.10059&partnerID =40&md5=1b0a73bf21246b8211eed185909b0e01. doi:10.1002/tafs.10059

- Isaak, D. J., Wenger, S. J., Peterson, E. E., Ver Hoef, J. M., Nagel, D. E., Luce, C. H., . . . Parkes-Payne, S. (2017). The NorWeST Summer Stream Temperature Model and Scenarios for the Western U.S.: A Crowd-Sourced Database and New Geospatial Tools Foster a User Community and Predict Broad Climate Warming of Rivers and Streams. Water Resources Research, 53(11), 9181-9205. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033780438&doi=10.1002%2f2017WR020969&part neriD=40&md5=9c4c04e0d601969428d5e0083fa3d448. doi:10.1002/2017WR020969
- Isaak, D. J., Wenger, S. J., & Young, M. K. (2017). Big biology meets microclimatology: Defining thermal niches of ectotherms at landscape scales for conservation planning. Ecological Applications, 27(3), 977-990. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017173736&doi=10.1002%2feap.1501&partnerID= 40&md5=ea1803d9ddbb1ba5f94de3a02c0efa4b. doi:10.1002/eap.1501

Iseyemi, O., Farris, J. L., Moore, M. T., Green, V. S., Locke, M. A., & Choi, S. E. (2019). Characterizing organic carbon storage in experimental agricultural ditch systems in northeast Arkansas. Soil Science Society of America Journal, 83(3), 751-760. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069177338&doi=10.2136%2fsssaj2018.10.0370&p artnerID=40&md5=fa16e87cb2b83a7d0c387898fd15ade6. doi:10.2136/sssai2018.10.0370

- Ivan, J. S., Seglund, A. E., Truex, R. L., & Newkirk, E. S. (2018). Mammalian responses to changed forest conditions resulting from bark beetle outbreaks in the southern Rocky Mountains, Ecosphere, 9(8), Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054075280&doi=10.1002%2fecs2.2369&partnerID =40&md5=4d9bd59cd4e59019efffb487b085b86a. doi:10.1002/ecs2.2369
- Iverson, L. R., Peters, M. P., Bartig, J. L., Rebbeck, J., Hutchinson, T. F., Matthews, S. N., & Stout, S. (2018). Spatial modeling and inventories for prioritizing investment into oak-hickory restoration. Forest Ecology and Management, 424, 355-366. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047078167&doi=10.1016%2fj.foreco.2018.05.018& partnerID=40&md5=1c95b5508fc8207e35fab512586e89e6. doi:10.1016/j.foreco.2018.05.018 Iverson, L. R., Peters, M. P., Prasad, A. M., & Matthews, S. N. (2019). Analysis of climate change impacts on tree species
- of the eastern US: Results of DISTRIB-II modeling. Forests, 10(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065884872&doi=10.3390%2ff10040302&partnerID =40&md5=20110e5478f6e8298dae882e9b410938. doi:10.3390/f10040302
- Iverson, L. R., Thompson, F. R., Matthews, S., Peters, M., Prasad, A., Dijak, W. D., . . . Swanston, C. (2017). Multi-model comparison on the effects of climate change on tree species in the eastern U.S.: results from an enhanced niche model and process-based ecosystem and landscape models. Landscape Ecology, 32(7), 1327-1346. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84975253325&doi=10.1007%2fs10980-016-0404-8& partnerID=40&md5=6490606b173fd5b33a3203f4e1b9ecda. doi:10.1007/s10980-016-0404-8

Jackson, J. M., Pimsler, M. L., Oyen, K. J., Koch-Uhuad, J. B., Herndon, J. D., Strange, J. P., . . . Lozier, J. D. (2018). Distance, elevation and environment as drivers of diversity and divergence in bumble bees across latitude and altitude. Molecular Ecology, 27(14), 2926-2942. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049781197&doi=10.1111%2fmec.14735&partnerl D=40&md5=a7a017ee5d6181fc0f6e229ff6c6af2a. doi:10.1111/mec.14735

Jacobs, K. R. (2017). Teams at their core: Implementing an "All Lands Approach to Conservation" requires focusing on relationships, teamwork process, and communications. Forests, 8(7). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026265453&doi=10.3390%2ff8070246&partnerID

=40&md5=85b81a6251bbf59392e3566611cfad65. doi:10.3390/f8070246

Jaeger, W. K., Amos, A., Bigelow, D. P., Chang, H., Conklin, D. R., Haggerty, R., . . . Turner, D. P. (2017). Finding water scarcity amid abundance using human-natural system models. Proceedings of the National Academy of

229

*Sciences of the United States of America,* 114(45), 11884-11889. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033782969&doi=10.1073%2fpnas.1706847114&pa rtnerID=40&md5=e280bf3cf74378b72b9bef4464c86df3. doi:10.1073/pnas.1706847114

- Jahn, A. E., Lerman, S. B., Phillips, L. M., Ryder, T. B., & Williams, E. J. (2019). First tracking of individual American Robins (Turdus migratorius) across seasons. *Wilson Journal of Ornithology, 131*(2), 356-359. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067882678&doi=10.1676%2f18-124&partnerID=4 0&md5=467c5cefecb35bcaf803dd9c8c1cba7f. doi:10.1676/18-124
- Jamieson, M. A., Burkle, L. A., Manson, J. S., Runyon, J. B., Trowbridge, A. M., & Zientek, J. (2017). Global change effects on plant–insect interactions: the role of phytochemistry. *Current Opinion in Insect Science, 23*, 70-80. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027585577&doi=10.1016%2fj.cois.2017.07.009&pa rtnerlD=40&md5=f12f3062bd39203e41d1db86be8d231e. doi:10.1016/j.cois.2017.07.009

Janowiak, M. K., Iverson, L. R., Fosgitt, J., Handler, S. D., Dallman, M., Thomasma, S., . . . Swanston, C. W. (2017). Assessing stand-level climate change risk using forest inventory data and species distribution models. *Journal of Forestry*, 115(3), 222-229. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019498134&doi=10.5849%2fjof.2016-023R1&part

nerID=40&md5=1b2e443b283ee156eeca3a0e5e1b5eeb. doi:10.5849/jof.2016-023R1 Jaradat, A. A. (2017). Agriculture in the Fertile Crescent: Continuity and change under climate change. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 12. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035198504&doi=10.1079/&2fPAVSNNR201712034 &partnerID=40&md5=b612a97a7d44d5ab1a501f85793e4ba0. doi:10.1079/PAVSNNR201712034

Jaradat, A. A. (2018). Simulated climate change deferentially impacts phenotypic plasticity and stoichiometric homeostasis in major food crops. *Emirates Journal of Food and Agriculture*, 30(6), 429-442. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052131941&doi=10.9755%2fejfa.2018.v30.i6.1705 &partnerID=40&md5=3474a0677d0ece40708f5f1f96cccf32. doi:10.9755/eifa.2018.v30.i6.1705

Jaradat, A. A. (2018). Statistical modeling of phenotypic plasticity under abiotic stress in triticum durum I. And triticum aestivum I. Genotypes. *Agronomy, 8*(8). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051867094&doi=10.3390%2fagronomy8080139&p artnerID=40&md5=c73cf64d54f1671f509f06a14a0ff7b6. doi:10.3390/agronomy8080139 Jayawardena, D. M., Heckathorn, S. A., Bista, D. R., & Boldt, J. K. (2019). Elevated carbon dioxide plus chronic warming

ayawardena, D. M., Heckathorn, S. A., Bista, D. R., & Bold, J. K. (2019). Elevated carbon dioxide plus chronic warming causes dramatic increases in leaf angle in tomato, which correlates with reduced plant growth. *Plant Cell and Environment*, 42(4), 1247-1256. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060185829&doi=10.1111%2fpce.13489&partnerID =40&md5=7d96321203fb84aecdde87ddb2e9924e. doi:10.1111/pce.13489

Jayawardena, D. M., Heckathorn, S. A., Bista, D. R., Mishra, S., Boldt, J. K., & Krause, C. R. (2017). Elevated CO cinf>2</inf> plus chronic warming reduce nitrogen uptake and levels or activities of nitrogen-uptake and -assimilatory proteins in tomato roots. *Physiologia Plantarum*, *159*(3), 354-365. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013057119&doi=10.1111%2fppl.12532&partnerID =40&md5=21b4e7f43e2b32fdc56ddd46fded3f4a. doi:10.1111/ppl.12532

Jennings, M. D., & Harris, G. M. (2017). Climate change and ecosystem composition across large landscapes. Landscape Ecology, 32(1), 195-207. Retrieved from https://doi.org/10.1016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10.0016/j.com/10016/j.com/10016/j.com/10.0016/j.com/10.0016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.com/10016/j.co

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84983490399&doi=10.1007%2fs10980-016-0435-1& partnerID=40&md5=a0cb653070ddb8167add888796d9f42c. doi:10.1007/s10980-016-0435-1 Jennings, M. D., & Harris, G. M. (2018). Correction to: Climate change and ecosystem composition across large

Iandscapes (Landscape Ecology, (2017), 32, 1, (195-207), 10.1007/s10980-016-0435-1). Landscape Ecology, 33(5), 845. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044089781&doi=10.1007%2fs10980-018-0633-0&partnerID=40&md5=c16f720301726fe7f522a90152c23105. doi:10.1007/s10980-018-0633-0

Jensen, D., Reager, J. T., Zajic, B., Rousseau, N., Rodell, M., & Hinkley, E. (2018). The sensitivity of US wildfire occurrence to pre-season soil moisture conditions across ecosystems. *Environmental Research Letters*, 13(1). Retrieved from

- Jeon, D. J., Ligaray, M., Kim, M., Kim, G., Lee, G., Pachepsky, Y. A., . . . Cho, K. H. (2019). Evaluating the influence of climate change on the fate and transport of fecal coliform bacteria using the modified SWAT model. *Science* of the Total Environment, 658, 753-762. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058818803&doi=10.1016%2fj.scitotenv.2018.12.21
- 3&partnerID=40&md5=cfec83ee8a9190ef4fe405d26d5ab64a. doi:10.1016/j.scitotenv.2018.12.213 Jiang, Y., Kim, J. B., Still, C. J., Kerns, B. K., Kline, J. D., & Cunningham, P. G. (2018). Inter-comparison of multiple statistically downscaled climate datasets for the Pacific Northwest, USA. *Scientific Data, 5*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042221968&doi=10.1038%2fsdata.2018.16&partn erID=40&md5=99722f31d360c321e822e29916bbc3bd. doi:10.1038/sdata.2018.16
- Jiang, Y., Kim, J. B., Trugman, A. T., Kim, Y., & Still, C. J. (2019). Linking tree physiological constraints with predictions of carbon and water fluxes at an old-growth coniferous forest. *Ecosphere*, *10*(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065020917&doi=10.1002%2fecs2.2692&partnerID =40&md5=ae2a32816a876157b66a80975f3349cd. doi:10.1002/ecs2.2692
- Jiao, T., Williams, C. A., Ghimire, B., Masek, J., Gao, F., & Schaaf, C. (2017). Global climate forcing from albedo change caused by large-scale deforestation and reforestation: Quantification and attribution of geographic variation. *Climatic Change*, 142(3-4), 463-476. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018524044&doi=10.1007%2fs10584-017-1962-8&
- partnerlD=40&md5=5bcbc177390ddec201cf36a15dbbca14. doi:10.1007/s10584-017-1962-8 Jin, V. L., Schmer, M. R., Stewart, C. E., Sindelar, A. J., Varvel, G. E., & Wienhold, B. J. (2017). Long-term no-till and stover retention each decrease the global warming potential of irrigated continuous corn. *Global Change Biology*,

23(7), 2848-2862. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013928072&doi=10.1111%2fgcb.13637&partnerID =40&md5=740e62c1c8500849d7a1d65e68c83dfa. doi:10.1111/gcb.13637

Jin, W., He, H. S., Thompson, F. R., Wang, W. J., Fraser, J. S., Shifley, S. R., . . . Dijak, W. D. (2017). Future forest aboveground carbon dynamics in the central United States: The importance of forest demographic processes. *Scientific Reports*, 7. Retrieved from https://www.cenur.com/united/actional.com/18/20068/idej. 10.10299/26cond18/218/part.

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011878986&doi=10.1038%2fsrep41821&partnerlD =40&md5=c151fac46d706d7208df46b2ba4c676d. doi:10.1038/srep41821

Jin, Z., Ainsworth, E. A., Leakey, A. D. B., & Lobell, D. B. (2018). Increasing drought and diminishing benefits of elevated carbon dioxide for soybean yields across the US Midwest. *Global Change Biology*, 24(2), e522-e533. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041296423&doi=10.1111%2fgcb.13946&partnerID=40&md5=6cc8d8d3ef6b16280472b8c1ac02ecb4. doi:10.1111/gcb.13946

Jo, I., Fei, S., Oswalt, C. M., Domke, G. M., & Phillips, R. P. (2019). Shifts in dominant tree mycorrhizal associations in response to anthropogenic impacts. *Science Advances*, 5(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850647552368/doi=10.1126%2fsciady.aav63588/part

nerD=40&md5=8b8f7e38c440a14158d368b452df68db. doi:10.1126/sciadv.aav6358

Johnson, A. C., Noel, J., Gregovich, D. P., Kruger, L. E., & Buma, B. (2019). Impacts of submerging and emerging shorelines on various biota and indigenous alaskan harvesting patterns. *Journal of Coastal Research*, 35(4), 765-775. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068481319&doi=10.2112%2fJCOASTRES-D-18-001 19.1&partnerlD=40&md5=e3ec78dc8310bcc236565fd626d75b62. doi:10.2112/JCOASTRES-D-18-00119.1

Johnson, D. J., Needham, J., Xu, C., Massoud, E. C., Davies, S. J., Anderson-Teixeira, K. J., . . . McMahon, S. M. (2018). Climate sensitive size-dependent survival in tropical trees. *Nature Ecology and Evolution*, 2(9), 1436-1442. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850521543558/doi=10.1038%2fs41559-018-0626-z& partnerID=40&md5=6262feb47e0577c1e82b478017253ea2. doi:10.1038/s41559-018-0626-z

Johnson, D. M., Domec, J. C., Carter Berry, Z., Schwantes, A. M., McCulloh, K. A., Woodruff, D. R., . . . Jackson, R. B. (2018). Co-occurring woody species have diverse hydraulic strategies and mortality rates during an extreme drought. *Plant Cell and Environment*, 41(3), 576-588. Retrieved from 100 June 100 June

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041061525&doi=10.1111%2fpce.13121&partnerlD =40&md5=35be82f652905018b5b7bcaf671b6074. doi:10.1111/pce.13121

Johnson, H. E., Lewis, D. L., Verzuh, T. L., Wallace, C. F., Much, R. M., Willmarth, L. K., & Breck, S. W. (2018). Human 51 development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts. Journal of Applied Ecology, 55(2), 663-672. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041533893&doi=10.1111%2f1365-2664.13021&pa rtnerID=40&md5=1b1619dce4ef4b3e411532b16b3587c8. doi:10.1111/1365-2664.13021

Johnson, J. M. F., & Barbour, N. W. (2019). Stover harvest did not change nitrous oxide emissions in two Minnesota fields. Agronomy Journal, 111(1), 143-155. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060239534&doi=10.2134%2fagronj2018.09.0591& partnerID=40&md5=0380edf79e9f77a61439faa727f6ddb8. doi:10.2134/agronj2018.09.0591

- Johnson, J. M. F., Jin, V. L., Colnenne-David, C., Stewart, C. E., Jantalia, C. P., & Xiong, Z. (2017). Row-Crop Production Practices Effects on Greenhouse Gas Emissions. In Soil Health and Intensification of Agroecosystems (pp. 257-275).
- Johnson, K. D., Domke, G. M., Russell, M. B., Walters, B., Hom, J., Peduzzi, A., . . . Huang, W. (2017). Estimating aboveground live understory vegetation carbon in the United States. Environmental Research Letters, 12(12). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038890794&doi=10.1088%2f1748-9326%2faa8fdb &partnerID=40&md5=33ac82e615585975765c04900ec2513a. doi:10.1088/1748-9326/aa8fdb

Johnson, R. C., Leger, E. A., & Vance-Borland, K. (2017). Genecology of Thurber's Needlegrass (Achnatherum thurberianum [Piper] Barkworth) in the Western United States. Rangeland Ecology and Management, 70(4), 509-517. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028463509&doi=10.1016%2fj.rama.2017.01.004&p

artnerID=40&md5=4be71b6c232b3b3fca2af22240a6807f. doi:10.1016/j.rama.2017.01.004

- Joiner, J., Yoshida, Y., Anderson, M., Holmes, T., Hain, C., Reichle, R., . . . Zeng, F. W. (2018). Global relationships among traditional reflectance vegetation indices (NDVI and NDII), evapotranspiration (ET), and soil moisture variability on weekly timescales. Remote Sensing of Environment, 219, 339-352. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055355804&doi=10.1016%2fj.rse.2018.10.020&par tnerID=40&md5=ce4020fefdc42a30bc9e835c5835b1b7. doi:10.1016/j.rse.2018.10.020
- Jones, I. M., & Koptur, S. (2017). Dead land walking: the value of continued conservation efforts in South Florida's imperiled pine rocklands. Biodiversity and Conservation, 26(14), 3241-3253. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029512836&doi=10.1007%2fs10531-017-1433-6& partnerID=40&md5=86e5dade66bf8a2188a3cdd91e2f86aa. doi:10.1007/s10531-017-1433-6
- Jones, L. A., Kimball, J. S., Reichle, R. H., Madani, N., Glassy, J., Ardizzone, J. V., . . . Scott, R. L. (2017). The SMAP Level 4 Carbon Product for Monitoring Ecosystem Land-Atmosphere CO<inf>2</inf> Exchange. IEEE Transactions on Geoscience and Remote Sensing, 55(11), 6517-6532. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029006058&doi=10.1109%2fTGRS.2017.2729343& partnerID=40&md5=6c498f30da3a4283ef2fb6dd2186cf3c. doi:10.1109/TGR5.2017.2729343
- Jones, M. I., Gould, J. R., & Fierke, M. K. (2017). Mortality of overwintering emerald ash borer (Coleoptera: Buprestidae) associated with an extreme cold event in New York. United States of America, Canadian Entomoloaist, 149(4). 482-486 Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019565647&doi=10.4039%2ftce.2017.17&partnerl D=40&md5=4e81cbe1af8f10da514864619664dffe, doi:10.4039/tce.2017.17

- Jones, M. O., Allred, B. W., Naugle, D. E., Maestas, J. D., Donnelly, P., Metz, L. J., . . . McIver, J. D. (2018). Innovation in rangeland monitoring: annual, 30 m, plant functional type percent cover maps for U.S. rangelands, 1984-2017. Ecosphere, 9(9). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054833588&doi=10.1002%2fecs2.2430&partnerID
- =40&md5=de119c9c5d884c6ac53fbbda435ddbe0. doi:10.1002/ecs2.2430 Jorgenson, A. K., Fiske, S., Hubacek, K., Li, J., McGovern, T., Rick, T., ... Zycherman, A. (2019). Social science perspectives on drivers of and responses to global climate change. Wiley Interdisciplinary Reviews: Climate Change, 10(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052918802&doi=10.1002%2fwcc.554&partnerID=4 0&md5=900f4881b510c65d6445317a7a94f956, doi:10.1002/wcc.554

Joshi, S., Garbrecht, J., & Brown, D. (2019). Observed spatiotemporal trends in intense precipitation events across United States: Applications for stochastic weather generation. Climate, 7(3), Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063768001&doi=10.3390%2fcli7030036&partnerID 52

233

=40&md5=126745a7c24c2b0a8c4e7321eb49eee8. doi:10.3390/cli7030036

- Joyce, L. A., Bentrup, G., Cheng, A. S., Kolb, P., Schoeneberger, M., & Derner, J. (2018). Native and agricultural forests at risk to a changing climate in the Northern Plains. *Climatic Change*, *146*(1-2), 59-74. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029416059&doi=10.1007%2fs10584-017-2070-5& partnerID=40&md5=04c54ab713893018442519b625f8caef. doi:10.1007/s10584-017-2070-5
- Joyce, L. A., Talbert, M., Sharp, D., & Stevenson, J. (2018) Historical and Projected Climate in the Northern Rockies Region. In: Vol. 63. Advances in Global Change Research (pp. 17-23).
- Junker, L. V., Kleiber, A., Jansen, K., Wildhagen, H., Hess, M., Kayler, Z., . . . Ensminger, I. (2017). Variation in short-term and long-term responses of photosynthesis and isoprenoid-mediated photoprotection to soil water availability in four Douglas-fir provenances. *Scientific Reports*, 7. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009183690&doi=10.1038%2fsrep40145&partnerID =408/md5=f0e44bba5b146b6196e0aa81b0b48e10. doi:10.1038/srep40145
- Jurgensen, M. F., Page-Dumroese, D. S., Brown, R. E., Tirocke, J. M., Miller, C. A., Pickens, J. B., & Wang, M. (2017). Estimating carbon and nitrogen pools in a forest soil: Influence of soil bulk density methods and rock content. Soil Science Society of America Journal, 81(6), 1689-1696. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040597545&doi=10.2136%2fssaj2017.02.0069&p artnerlD=40&md5=209d7114846b3e873529834a07ee7241. doi:10.2136/sssaj2017.02.0069
- Kabrick, J. M., Clark, K. L., D'Amato, A. W., Dey, D. C., Kenefic, L. S., Kern, C. C., . . . Waskiewicz, J. D. (2017). Managing hardwood-softwood mixtures for future forests in eastern North America: Assessing suitability to projected climate change. *Journal of Forestry*, 115(3), 190-201. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019399769&doi=10.5849%2fjof.2016-024&partner ID=40&md5=9b55555c2871352bc0016ec67d7bc2cd. doi:10.5849/jof.2016-024
- Kakumanu, M. L., Ma, L., & Williams, M. A. (2019). Drought-induced soil microbial amino acid and polysaccharide change and their implications for C-N cycles in a climate change world. *Scientific Reports*, 9(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069896376 &doi=10.1038%2fs41598-019-46984-1 & partner1D=40& md5=08a0632b71d33e68bd5cd5944cdbd249. doi:10.1038/s41598-019-46984-1 & partner1D=40& partn

- Kallenbach, C. M., Conant, R. T., Calderón, F., & Wallenstein, M. D. (2019). A novel soil amendment for enhancing soil moisture retention and soil carbon in drought-prone soils. *Geoderma*, 337, 256-265. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053757531&doi=10.1016%2fj.geoderma.2018.09.02 27&partnerID=40&md5=dd649f2627ca49539ecb24791399df03. doi:10.1016/j.geoderma.2018.09.027
- Kane, J. M., Varner, J. M., Metz, M. R., & van Mantgem, P. J. (2017). Characterizing interactions between fire and other disturbances and their impacts on tree mortality in western U.S. Forests. Forest Ecology and Management, 405, 188-199. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029591025&doi=10.1016%2fj.foreco.2017.09.037&partnerlD=40&md5=93c8ec84df862e871af71859215abebf. doi:10.1016/j.foreco.2017.09.037

- Karlen, D. L., Schmer, M. R., Kaffka, S., Clay, D. E., Wang, M. Q., Horwath, W. R., . . . Chute, A. G. (2019). Unraveling crop residue harvest effects on soil organic carbon. *Agronomy Journal*, *111*(1), 93-98. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060129636&doi=10.2134%2fagronj2018.03.0207& partnerID=40&md5=2a7b4552d1f0cc9a4294975f1c00ce9c. doi:10.2134/agronj2018.03.0207
- Kaur, H., Huggins, D. R., Rupp, R. A., Abatzoglou, J. T., Stöckle, C. O., & Reganold, J. P. (2017). Agro-ecological class stability decreases in response to climate change projections for the Pacific Northwest, USA. Frontiers in Ecology and Evolution, 5(JUL). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029633872&doi=10.3389%2ffevo.2017.00074&par
- tnerID=40&md5=3eee471295b7a6b46f85584126a86a8d. doi:10.3389/fevo.2017.00074 Kavetskiy, A., Yakubova, G., Sargsyan, N., Wikle, C., Prior, S. A., Torbert, H. A., & Chin, B. A. (2019). Scanning Mode Application of Neutron-Gamma Analysis for Soil Carbon Mapping. *Pedosphere, 29*(3), 334-343. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065667677&doi=10.1016%2f51002-0160%2819%2 960806-4&partnerID=40&md5=e10b137ed8a8c794119f889e468c43e1. doi:10.1016/S1002-0160(19)60806-4

Kay, S. L., Fischer, J. W., Monaghan, A. J., Beasley, J. C., Boughton, R., Campbell, T. A., . . . Pepin, K. M. (2017). Quantifying drivers of wild pig movement across multiple spatial and temporal scales. *Movement Ecology*, 5(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020734367&doi=10.1186%2fs40462-017-0105-1& partnerID=40&md5=054722a1c6a07006f2e173124d7f2b41. doi:10.1186/s40462-017-0105-1

Keane, R. E., Holsinger, L. M., Mahalovich, M. F., & Tomback, D. F. (2017). Evaluating future success of whitebark pine ecosystem restoration under climate change using simulation modeling. *Restoration Ecology*, 25(2), 220-233. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84981717764&doi=10.1111%2frec.12419&partnerID =40&md5=e06cbf825548f4bcd7b789dbebb3d6eb. doi:10.1111/rec.12419

Keane, R. E., Holsinger, L. M., Mahalovich, M. F., & Tomback, D. F. (2017). Restoring whitebark pine ecosystems in the face of climate change. USDA Forest Service - General Technical Report RMRS-GTR, 2017(361), 1-123. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032329902&partnerID=40&md5=5cf2865e9a6c2e 46e316eee88a1ede28.

Keane, R. E., Loehman, R. A., Holsinger, L. M., Falk, D. A., Higuera, P., Hood, S. M., & Hessburg, P. F. (2018). Use of landscape simulation modeling to quantify resilience for ecological applications. *Ecosphere*, 9(9). Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054863553&doi=10.1002&2fecs2.2414&partnerlD=40&md5=0011b9d7023b1d4d55265339eb332c7d.doi:10.1002/ecs2.2414\\$ 

- Keane, R. E., Mahalovich, M. F., Bollenbacher, B. L., Manning, M. E., Loehman, R. A., Jain, T. B., . . . Larson, A. J. (2018) Effects of Climate Change on Forest Vegetation in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 59-95).
- Keena, M. A., & Sánchez, V. (2018). Reproductive Behaviors of Anoplophora glabripennis (Coleoptera: Cerambycidae) in the Laboratory. *Journal of Economic Entomology*, 111(2), 620-628. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045146267&doi=10.1093%2fjee%2ftox355&partne rlD=40&md5=6fb4f9608b205d471db042dfe7fba47d. doi:10.1093/jee/tox355
- Kelley, C. J., Keller, C. K., Brooks, E. S., Smith, J. L., Huyck Orr, C., & Evans, R. D. (2017). Water and nitrogen movement through a semiarid dryland agricultural catchment: Seasonal and decadal trends. *Hydrological Processes*, 37(10), 1889-1899. Retrieved from https://www.conus.com/inward/ecord/wi2eid=2-c2.0.850165631438/doi=10.1002%2fbyn.111528/martnell

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016563143&doi=10.1002%2fhyp.11152&partnerID =40&md5=34361b12c07a94833ce882e99ebc76d8. doi:10.1002/hyp.11152

Kennedy, M. C., McKenzie, D., Tague, C., & Dugger, A. L. (2017). Balancing uncertainty and complexity to incorporate fire spread in an eco-hydrological model. *International Journal of Wildland Fire*, 26(8), 706-718. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027270885&doi=10.1071%2fWF16169&partnerlD =40&md5=34e44de8b505b318b6c6ea2d1706ea52. doi:10.1071/WF16169

- Kerns, B. K., Powell, D. C., Mellmann-Brown, S., Carnwath, G., & Kim, J. B. (2018). Effects of projected climate change on vegetation in the Blue Mountains ecoregion, USA. 10, 33-43. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85024125536&doi=10.1016%2fj.cliser.2017.07.002&p artnerID=40&md5=1127190b507d727fcecaa998c90ef4f4. doi:10.1016/j.cliser.2017.07.002
- Kerr, A., Dialesandro, J., Steenwerth, K., Lopez-Brody, N., & Elias, E. (2018). Vulnerability of California specialty crops to projected mid-century temperature changes. *Climatic Change*, 148(3), 419-436. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028976740&doi=10.1007%2fs10584-017-2011-3& partnerlD=40&md5=2bde519e15c4038bde1b45c72d2d1332. doi:10.1007/s10584-017-2011-3
- Khaleel, A. A., Sauer, T. J., & Tyndall, J. C. (2019). Changes in deep soil organic carbon and soil properties beneath tree windbreak plantings in the U.S. Great Plains. *Agroforestry Systems*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070074207&doi=10.1007%2fs10457-019-00425-0 &partnerID=40&md5=ed2c578c13cfdf16e52fcfc2d227ed38. doi:10.1007/s10457-019-00425-0
- Khan, I. M. P., Moglen, G. E., Hubacek, K., & Brubaker, K. L. (2019). Future Storm Frequency and Runoff in Small US Mid-Atlantic Watersheds Evaluated Using Capture Depth. *Journal of Sustainable Water in the Built Environment*, 5(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065228421&doi=10.1061%2fJSWBAY.0000879&pa

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850652284218doi=10.1061%2tJSWBAY.0000879&pa rtnerID=40&md5=fcca23f03pc0b3923b835d6a5a51e4ef. doi:10.1061/JSWBAY.0000879

Kim, B., Cho, I. S., Kim, I. H., Choi, G. W., Ju, H. K., Hu, W. X., . . . Lim, H. S. (2019). Length of poly(A) tail affects transcript infectivity of three ZYMV symptom variants differing at only five amino acid positions. *Journal of Plant* 

Pathology. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066903907&doi=10.1007%2fs42161-019-00316-4 &partnerlD=40&md5=7886efd1bdf39d74a7b04418fc4c774b. doi:10.1007/s42161-019-00316-4

- Kim, D., Oren, R., Clark, J. S., Palmroth, S., Oishi, A. C., McCarthy, H. R., . . . Johnsen, K. (2017). Dynamics of soil CO<inf>2</inf> efflux under varying atmospheric CO<inf>2</inf> concentrations reveal dominance of slow processes. *Global Change Biology*, 23(9), 3501-3512. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019074899&doi=10.1111%2fgcb.13713&partnerID
- =40&md5=1fb1c435b797dd261f2c008d534e828a. doi:10.1111/gcb.13713 Kim, D., Stoddart, N., Rotz, C. A., Veltman, K., Chase, L., Cooper, J., . . . Thoma, G. J. (2019). Analysis of beneficial management practices to mitigate environmental impacts in dairy production systems around the Great Lakes. *Agricultural Systems*, 176. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069674195&doi=10.1016%2fj.agsy.2019.102660&p
- artnerID=40&md5=dceda17a4c0905f6c2d3ac8a3b9998a5. doi:10.1016/j.agsy.2019.1026600 Kim, J. B., Kerns, B. K., Drapek, R. J., Pitts, G. S., & Halofsky, J. E. (2018). Simulating vegetation response to climate
- change in the Blue Mountains with MC2 dynamic global vegetation model. *10*, 20-32. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045835466&doi=10.1016%2fj.cliser.2018.04.001&p artnerID=40&md5=f0a&cfa1c07a2e3bd367b91b0e940f91. doi:10.1016/j.cliser.2018.04.001
- Kim, J. B., Marcot, B. G., Olson, D. H., Van Horne, B., Vano, J. A., Hand, M. S., ... D<sup>7</sup>amore, D. V. (2017). Climate-smart approaches to managing forests. In *People, Forests, and Change: Lessons from the Pacific Northwest* (pp. 225-242).
- Kim, J. B., Monier, E., Sohngen, B., Pitts, G. S., Drapek, R., McFarland, J., . . . Cole, J. (2017). Assessing climate change impacts, benefits of mitigation, and uncertainties on major global forest regions under multiple socioeconomic and emissions scenarios. *Environmental Research Letters*, *12*(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850185134278.doi=10.1088/21748-9326%2faa63fc &partnerD=40&rnd5=ec4a82084266d8cdfe1a446c35b9aa07. doi:10.1088/1748-9326/aa63fc
- Kim, J. H., Hwang, T., Yang, Y., Schaaf, C. L., Boose, E., & Munger, J. W. (2018). Warming-Induced Earlier Greenup Leads to Reduced Stream Discharge in a Temperate Mixed Forest Catchment. *Journal of Geophysical Research: Biogeosciences*, 123(6), 1960-1975. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049846561&doi=10.1029%2f2018JG004438&partn
- erID=40&md5=576fe64268b5fbfa3b61602eb66aabf9. doi:10.1029/2018JG004438 Kim, M., Boithias, L., Cho, K. H., Silvera, N., Thammahacksa, C., Latsachack, K., . . . Ribolzi, O. (2017). Hydrological modeling of Fecal Indicator Bacteria in a tropical mountain catchment. *Water Research*, *119*, 102-113. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018516545&doi=10.1016%2fj.watres.2017.04.038&

https://www.scopus.com/inward/record.uir?eid=2-s2.0-85018516545&doi=10.1016%2fj.watres.2017.04.038& partnerID=40&md5=882c3b59a5f864ba7c6d0406a6443999. doi:10.1016/j.watres.2017.04.038

- Kim, M. S., Fonseca, N. R., Hauff, R. D., Cannon, P. G., Hanna, J. W., & Klopfenstein, N. B. (2017). First report of the root-rot pathogen, Armillaria gallica, on koa (Acacia koa) and 'Ohi'a lehua (Metrosideros polymorpha) on the Island of Kaua'i, Hawai'i. *Plant Disease, 101*(1), 255. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85012933593&doi=10.1094%2fPDIS-07-16-1043-PD
- N&partnerlD=40&md5=e8f221fcfd1ab9f935724d9669665f73. doi:10.1094/PDIS-07-16-1043-PDN Kim, S., Kiniry, J. R., Williams, A. S., Meki, N., Gaston, L., Brakie, M., . . . Wu, Y. (2017). Adaptation of C<inf>4</inf> bioenergy crop species to various environments within the Southern Great Plains of USA. *Sustainability* (*Switzerland*), 9(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011019520&doi=10.3390%2fsu9010089&partnerl D=40&md5=86772b02904fba3dfd873854faee7c6e. doi:10.3390/su9010089

Kimball, B. A., Alonso-Rodríguez, A. M., Cavaleri, M. A., Reed, S. C., González, G., & Wood, T. E. (2018). Infrared heater system for warming tropical forest understory plants and soils. *Ecology and Evolution*, 8(4), 1932-1944. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040701512&doi=10.1002%2fece3.3780&partnerID =40&md5=8249ce7359f8252c7ce3f7855b10b0d4. doi:10.1002/ece3.3780

Kimball, H. L., Selmants, P. C., Moreno, A., Running, S. W., & Giardina, C. P. (2017). Evaluating the role of land cover and climate uncertainties in computing gross primary production in Hawaiian Island ecosystems. *PLoS ONE*, 12(9). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029349510&doi=10.1371%2fjournal.pone.0184466 &partnerID=40&md5=f6d013997e13cb65a0dc2caa31e9b1c5. doi:10.1371/journal.pone.0184466

- King, D. T., Wang, G., Yang, Z., & Fischer, J. W. (2017). Advances and environmental conditions of spring migration phenology of American white pelicans. *Scientific Reports*, 7. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009874227&doi=10.1038%2fsrep40339&partnerID =40&md5=c6fb4b9c8b3c67a0efb31d9e4f7d0b7. doi:10.1038/srep40339
- Kirker, G., Zelinka, S., Gleber, S. C., Vine, D., Finney, L., Chen, S., ... Jakes, J. E. (2017). Synchrotron-based X-ray fluorescence microscopy enables multiscale spatial visualization of ions involved in fungal lignocellulose deconstruction. *Scientific Reports*, 7. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011266017&doi=10.1038%2fsrep41798&partnerID
- =40&md5=d8c8b9f1ea7bb2e33d4e683ed4fdf4e0. doi:10.1038/srep41798 Kisekka, I., DeJonge, K. C., Ma, L., Paz, J., & Douglas-Mankin, K. (2017). Crop modeling applications in agricultural water management. *Transactions of the ASABE, 60*(6), 1959-1964. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040049228&partnerID=40&md5=2173db49f47d11 162afad37c0c1a14b2.
- Kistner, E., Kellner, O., Andresen, J., Todey, D., & Morton, L. W. (2018). Vulnerability of specialty crops to short-term climatic variability and adaptation strategies in the Midwestern USA. *Climatic Change*, 146(1-2), 145-158. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029761181&doi=10.1007%2fs10584-017-2066-1& partnerID=40&md5=4d9f8de044436398209e647df37e07d3. doi:10.1007/s10584-017-2066-1

Kistner, E. J. (2017). Climate Change Impacts on the Potential Distribution and Abundance of the Brown Marmorated Stink Bug (Hemiptera: Pentatomidae) with Special Reference to North America and Europe. Environmental Entomology, 46(6), 1212-1224. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040106492&doi=10.1093%2fee%2fnvx157&partne

https://www.scopus.com/inward/record.uri?eld=2-52.0-85040106492840i=10.1093%2fee%2fitxx157&partne rID=40&md5=02a77d146f180fc76a53323bff913197. doi:10.1093/ee/nvx157

Kistner-Thomas, E. J. (2019). The Potential Global Distribution and Voltinism of the Japanese Beetle (Coleoptera: Scarabaeidae) Under Current and Future Climates. *Journal of insect science (Online)*, *19*(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063658785&doi=10.1093%2fjisesa%2fiez023&part nerlD=40&md5=74cfcc4b37ac3bd6b6b8bbf3f6d514bd. doi:10.1093/jisesa/iez023

Kitchen, S. G., Behrens, P. N., Goodrich, S. K., Green, A., Guyon, J., O'Brien, M., & Tart, D. (2019). Guidelines for aspen restoration in utah with applicability to the intermountain west. USDA Forest Service - General Technical Report RMRS-GTR, 2019(390), 1-55. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070493924&partnerID=40&md5=4ea1bf39d7304c 7c1316e93fd28e2b5

- Klasson, K. T. (2017). Biochar characterization and a method for estimating biochar quality from proximate analysis results. *Biomass and Bioenergy*, *96*, 50-58. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006750961&doi=10.1016%2fj.biombioe.2016.10.01 1&partnerID=40&md5=9eb3d5502ab8f31098cec6cb0983f3d4. doi:10.1016/j.biombioe.2016.10.011
- Klein, L. L., Miller, A. J., Ciotir, C., Hyma, K., Uribe-Convers, S., & Londo, J. (2018). High-throughput sequencing data clarify evolutionary relationships among North American Vitis species and improve identification in USDA Vitis germplasm collections. *American Journal of Botany*, *105*(2), 215-226. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043696098&doi=10.1002%2fajb2.1033&partnerID =40&md5-cfc24a3a873dbc7ebb11fb3c136d59b9. doi:10.1002/aib2.1033
- Klesse, S., DeRose, R. J., Guiterman, C. H., Lynch, A. M., O'Connor, C. D., Shaw, J. D., & Evans, M. E. K. (2018). Sampling bias overestimates climate change impacts on forest growth in the southwestern United States. *Nature Communications*, 9(1). Retrieved from the southwestern climate in the southwestern of the south

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058730188&doi=10.1038%2fs41467-018-07800-y &partnerID=40&md5=127c2b896deaa643b1afcaf53cac8737. doi:10.1038/s41467-018-07800-y

Kline, H. N., Fulbright, T. E., Grahmann, E. D., Hernández, F., Wester, D. B., Brennan, L. A., & Hehman, M. W. (2019). Temperature influences resource use by chestnut-bellied scaled quail. *Ecosphere*, 10(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062703116&doi=10.1002%2fecs2.2599&partnerID =40&md5=dd98ad11ff696c99a2543203017d41e9. doi:10.1002/ecs2.2599

Knoepp, J. D., See, C. R., Vose, J. M., Miniat, C. F., & Clark, J. S. (2018). Total C and N Pools and Fluxes Vary with Time, 56 Soil Temperature, and Moisture Along an Elevation, Precipitation, and Vegetation Gradient in Southern Appalachian Forests. *Ecosystems*, 21(8), 1623-1638. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045125489&doi=10.1007%2fs10021-018-0244-2&partnerlD=40&md5=d2dda9e080f4ed78d37231779f0dacaa. doi:10.1007/s10021-018-0244-2

Knott, J. A., Desprez, J. M., Oswalt, C. M., & Fei, S. (2019). Shifts in forest composition in the eastern United States. Forest Ecology and Management, 433, 176-183. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056238120&doi=10.1016%2fj.foreco.2018.10.061& partnerlD=40&md5=c62eacb27194ee1dc79786afb1f84c1d. doi:10.1016/j.foreco.2018.10.061 Knowlton, J. L., Flaspohler, D. J., Paxton, E. H., Fukami, T., Giardina, C. P., Gruner, D. S., & Rankin, E. E. W. (2017).

Mowiton, J. L., Flasponier, D. J., Paxion, E. H., Fukami, T., Glardina, C. P., Gruner, D. S., & Kankin, E. E. W. (2017). Movements of four native Hawaiian birds across a naturally fragmented landscape. *Journal of Avian Biology*, 48(7), 921-931. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018360903&doi=10.1111%2fjav.00924&partnerlD=40&md5=3a48c443b72752ba96f0cc0314a61d56. doi:10.1111/jav.00924\\$ 

Koch, J. B., Looney, C., Sheppard, W. S., & Strange, J. P. (2017). Patterns of population genetic structure and diversity across bumble bee communities in the Pacific Northwest. *Conservation Genetics*, 18(3), 507-520. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013674311&doi=10.1007%2fs10592-017-0944-8& partnerlD=40&md5=8e9895b5be0eff6707c35a3fcebf483c. doi:10.1007/s10592-017-0944-8

Kodandapani, N., & Parks, S. A. (2019). Effects of drought on wildfires in forest landscapes of the Western Ghats, India. International Journal of Wildland Fire, 28(6), 431-444. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064490738&doi=10.1071%2fWF18188&partnerID

https://www.scopus.com/inward/record.uri/eid=2-s2.0-85064490/388doi=10.10/1%2fWF18188&partnerlD =40&md5=a9b0c41092a6c584b844f0bd49ef172c. doi:10.1071/WF18188

Köhler, I. H., Huber, S. C., Bernacchi, C. J., & Baxter, I. R. (2019). Increased temperatures may safeguard the nutritional quality of crops under future elevated CO<inf>2</inf> concentrations. *Plant Journal*, 97(5), 872-886. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060234067&doi=10.1111%2ftpj.14166&partnerID=40&md5=a2f075f87dcde4da7b5008816b9f0060. doi:10.1111/tpj.14166

- Köhler, I. H., Ruiz-Vera, U. M., VanLoocke, A., Thomey, M. L., Clemente, T., Long, S. P., . . . Bernacchi, C. J. (2017). Expression of cyanobacterial FBP/SBPase in soybean prevents yield depression under future climate conditions. *Journal of Experimental Botany*, *68*(3), 715-726. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016217589&doi=10.1093%2fjxb%2ferw435&partn erID=40&md5=c5f6a6127c4fb3d47426b847f5b829b7. doi:10.1093/jxb/erw435
- Kolka, R. K., Riggs, C. E., Nater, E. A., Wickman, T. R., Witt, E. L., & Butcher, J. T. (2019). Temporal fluctuations in young-of-the-year yellow perch mercury bioaccumulation in lakes of northeastern Minnesota. *Science of the Total Environment*, 656, 475-481. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057574529&doi=10.1016%2fj.scitotenv.2018.11.28 0&partner10=40&md5=387fc587f439a3da080a707401de71ea7. doi:10.1016/j.scitotenv.2018.11.280
- Kolka, R. K., Sturtevant, B. R., Miesel, J. R., Singh, A., Wolter, P. T., Fraver, S., . . . Townsend, P. A. (2017). Emissions of forest floor and mineral soil carbon, nitrogen and mercury pools and relationships with fire severity for the Pagami Creek Fire in the Boreal Forest of northern Minnesota. *International Journal of Wildland Fire*, 26(4), 296-305. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017311784&doi=10.1071%2fWF16128&partnerID =40&md5=52cb06d6f029888d8a86527d054e651d. doi:10.1071/WF16128

Kosiba, A. M., Meigs, G. W., Duncan, J. A., Pontius, J. A., Keeton, W. S., & Tait, E. R. (2018). Spatiotemporal patterns of forest damage and disturbance in the northeastern United States: 2000–2016. *Forest Ecology and Management*, 430, 94-104. Retrieved from Management, 430, 94-104. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051400878&doi=10.1016%2fj.foreco.2018.07.047&partnerID=40&md5=45d6c143c56cc3afa2354cf8e1bfc5dc.doi:10.1016/j.foreco.2018.07.047

Kosiba, A. M., Schaberg, P. G., Rayback, S. A., & Hawley, G. J. (2018). The surprising recovery of red spruce growth shows links to decreased acid deposition and elevated temperature. *Science of the Total Environment*, 637-638, 1480-1491. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047180205&doi=10.1016%2fj.scitotenv.2018.05.01 0&partnerID=40&md5=518c675a570a9651ed9c132b26893f41. doi:10.1016/j.scitotenv.2018.05.010

Kothari, K., Ale, S., Bordovsky, J. P., Thorp, K. R., Porter, D. O., & Munster, C. L. (2019). Simulation of efficient irrigation management strategies for grain sorghum production over different climate variability classes. Agricultural Systems, 170, 49-62. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059346959&doi=10.1016%2fj.agsy.2018.12.011&partnerlD=40&md5=e4cfc93ec68ec882e2c51481937cc861. doi:10.1016/j.agsy.2018.12.011

Kovaleski, A. P., & Baseggio, M. (2019). Is increased corn yield really the silver lining of climate change? Proceedings of the National Academy of Sciences of the United States of America, 116(21), 10206-10208. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066128040&doi=10.1073%2fpnas.1904487116&pa rtnerID=40&md5=0ac03a81890bffd5c3af3c8abfb0a458. doi:10.1073/pnas.1904487116

Kovaleski, A. P., & Londo, J. P. (2019). Tempo of gene regulation in wild and cultivated Vitis species shows coordination between cold deacclimation and budbreak. *Plant Science*, 287. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068138594&doi=10.1016%2fj.plantsci.2019.110178 &partnerlD=40&md5=60ff8f0653a51adca480ea10b4de6a35. doi:10.1016/j.plantsci.2019.110178

Kovaleski, A. P., Reisch, B. I., & Londo, J. P. (2018). Deacclimation kinetics as a quantitative phenotype for delineating the dormancy transition and thermal efficiency for budbreak in Vitis species. *AoB PLANTS*, *10*(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057247391&doi=10.1093%2faobpla%2fply066&pa rtnerlD=40&md5=9937a7f1460015a4bcaa58af4cff1b3f. doi:10.1093/aobpla/ply066

Kraatz, S., Jacobs, J. M., Schröder, R., Cho, E., Cosh, M., Seyfried, M., . . . Livingston, S. (2018). Evaluation of SMAP freeze/thaw retrieval accuracy at core validation sites in the contiguous United States. *Remote Sensing*, 10(9). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053639427&doi=10.3390%2frs10091483&partnerl

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053639427&doi=10.3390%2frs10091483&partnerl D=40&md5=c5cd297946e250af14f702e421e85617. doi:10.3390/rs10091483

Krapek, J., Hennon, P. E., D'Amore, D. V., & Buma, B. (2017). Despite available habitat at range edge, yellow-cedar migration is punctuated with a past pulse tied to colder conditions. *Diversity and Distributions*, 23(12), 1381-1392. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029225780&doi=10.1111%2fddi.12630&partnerlD =40&md5=c3d6153bd32015e7f84b5519a14e4294. doi:10.1111/ddi.12630

Krebs, J., Pontius, J., & Schaberg, P. G. (2017). Modeling the impacts of hemlock woolly adelgid infestation and presalvage harvesting on carbon stocks in northern hemlock forests. *Canadian Journal of Forest Research*, 47(6), 727-734. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020061427&doi=10.1139%2fcjfr-2016-0291&partn

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850200614278ddi=10.1139%2fcjfr-2016-0291&partn erID=40&md5=fa3350e6c51b0c0f44d8a81f127ced1b. doi:10.1139/cjfr-2016-0291

Krehbiel, B. C., Thomas, M. G., Wilson, C. S., Speidel, S. E., Enns, R. M., Paiva, S. R., & Blackburn, H. D. (2019). Evaluation of genetic structure across U.S. climate zones using prominent AI sires of Red Angus cattle. *Livestock Science*, 225, 26-31. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065464165&doi=10.1016%2fj.livsci.2019.04.012&partnerID=40&md5=ad83fa0926addc8d9b44dfadf172016d. doi:10.1016/j.livsci.2019.04.012

Krichels, A., DeLucia, E. H., Sanford, R., Chee-Sanford, J., & Yang, W. H. (2019). Historical soil drainage mediates the response of soil greenhouse gas emissions to intense precipitation events. *Biogeochemistry*, 142(3), 425-442. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060974642&doi=10.1007\%2fs10533-019-00544-x \\ \&partnerlD=40&md5=e9966e1530eea00ddf39d8bb3ca3e3f1. doi:10.1007/s10533-019-00544-x \\ \&partnerlD=40&md5=e986e16&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md5=e986&md$ 

Krinner, G., Derksen, C., Essery, R., Flanner, M., Hagemann, S., Clark, M., . . . Zhu, D. (2018). ESM-SnowMIP: Assessing snow models and quantifying snow-related climate feedbacks. *Geoscientific Model Development*, 11(12), 5027-5049. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058438078&doi=10.5194%2fgmd-11-5027-2018& partnerID=40&md5=e4fa9f3be608649b7d7c94e527abe973. doi:10.5194/gmd-11-5027-2018

Krofcheck, D. J., Hurteau, M. D., Scheller, R. M., & Loudermilk, E. L. (2017). Restoring surface fire stabilizes forest carbon under extreme fire weather in the Sierra Nevada. *Ecosphere*, 8(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85010006278&doi=10.1002%2fecs2.1663&partnerID =40&md5=0b2cea391effaae7eb3eb2a80cd1ae0b. doi:10.1002/ecs2.1663

Krofcheck, D. J., Hurteau, M. D., Scheller, R. M., & Loudermilk, E. L. (2018). Prioritizing forest fuels treatments based on

the probability of high-severity fire restores adaptive capacity in Sierran forests. *Global Change Biology*, 24(2), 729-737. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041283434&doi=10.1111%2fgcb.13913&partnerlD =40&md5=084dc602d37e175af234bb0f8310525d. doi:10.1111/gcb.13913

Kumar, S., Moglen, G. E., Godrej, A. N., Grizzard, T. J., & Post, H. E. (2018). Trends in water yield under climate change and urbanization in the US Mid-Atlantic region. *Journal of Water Resources Planning and Management*, 144(8). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047250023&doi=10.1061%2f%28ASCE%29WR.194 3-5452.0000937&partnerID=40&md5=cc00ca7cc70351492cfec0147ffad8e6. doi:10.1061/(ASCE)WR.1943-5452.0000937

Lafta, A., Turini, T., Sandoya, G. V., & Mou, B. (2017). Field evaluation of green and red leaf lettuce genotypes in the imperial, San Joaquin, and Salinas Valleys of california for heat tolerance and extension of the growing seasons. *Hortscience*, 52(1), 40-48. Retrieved from https://touro.com/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/usion/

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019066891&doi=10.21273%2fHORTSCI10835-16&partnerlD=40&md5=d7f61ae3dc604742aec5aaa2cc2ea80e. doi:10.21273/HORTSCI10835-16

- Lagomasino, D., Fatoyinbo, T., Lee, S., Feliciano, E., Trettin, C., Shapiro, A., & Mangora, M. M. (2019). Measuring mangrove carbon loss and gain in deltas. *Environmental Research Letters*, 14(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063984532&doi=10.1088%2f1748-9326%2faaf0de &partnerID=40&md5=469a53b231a6826d9e9413842ac098fa. doi:10.1088/1748-9326/aaf0de
- Lai, R., Kimble, J., & Follett, R. F. (2018). Pedospheric processes and the carbon cycle. In Soil Processes and the Carbon Cycle (pp. 1-8).

Laird, D. A., Novak, J. M., Collins, H. P., Ippolito, J. A., Karlen, D. L., Lentz, R. D., ... Van Pelt, R. S. (2017). Multi-year and multi-location soil quality and crop biomass yield responses to hardwood fast pyrolysis biochar. *Geoderma*, 289, 46-53. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84998655258&doi=10.1016%2fj.geoderma.2016.11.0 25&partnerID=40&md5=a07c994a3449b39db4eaa9d9fac065cd. doi:10.1016/j.geoderma.2016.11.025 Lal, R., Kimble, J. M., Follett, R. F., & Stewart, B. A. (2018). Soil processes and the carbon cycle.

- Lal, R., & Stewart, B. A. (2017). Urban soils.
- Lamb, M. C., Sorensen, R. B., & Butts, C. L. (2018). Crop response to biochar under differing irrigation levels in the southeastern USA. *Journal of Crop Improvement*, 32(3), 305-317. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041095272&doi=10.1080%2f15427528.2018.14257
- 91&partnerID=40&md5=aa2f1b0422ba07d5a62bffb77e3b9b1e. doi:10.1080/15427528.2018.1425791 Landguth, E. L., Holden, Z. A., Mahalovich, M. F., & Cushman, S. A. (2017). Using landscape genetics simulations for planting blister rust resistant whitebark pine in the US Northern Rocky Mountains. *Frontiers in Genetics*,

8(FEB). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014684143&doi=10.3389%2ffgene.2017.00009&pa rtnerID=40&md5=561c5ad06a03be9460f8b5b6e8e30b11. doi:10.3389/fgene.2017.00009

Langley, J. A., Chapman, S. K., La Pierre, K. J., Avolio, M., Bowman, W. D., Johnson, D. S., . . . Tilman, D. (2018). Ambient changes exceed treatment effects on plant species abundance in global change experiments. *Global Change Biology*, 24(12), 5668-5679. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055695631&doi=10.1111%2fgcb.14442&partnerID =40&md5=a44e353c5addd8615b4d1e26efc90359. doi:10.1111/gcb.14442

Lanier, A. L., Drabik, J. R., Heikkila, T., Bolson, J., Sukop, M. C., Watkins, D. W., . . . Letson, D. (2018). Facilitating Integration in Interdisciplinary Research: Lessons from a South Florida Water, Sustainability, and Climate Project. Environmental Management, 62(6), 1025-1037. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053383673&doi=10.1007%2fs00267-018-1099-1& partnerlD=40&md5=9765f43ac&effbd7c2c78086e1361633. doi:10.1007/s00267-018-1099-1

Lantschner, M. V., Atkinson, T. H., Corley, J. C., & Liebhold, A. M. (2017). Predicting North American Scolytinae invasions in the Southern Hemisphere. *Ecological Applications*, 27(1), 66-77. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008385972&doi=10.1002%2feap.1451&partnerlD=

40&md5=2a4efb398421a1bc6921c0859c894909. doi:10.1002/eap.1451 Lark, T. J., Mueller, R. M., Johnson, D. M., & Gibbs, H. K. (2017). Measuring land-use and land-cover change using the U.S. department of agriculture's cropland data layer: Cautions and recommendations. *International Journal of*  Applied Earth Observation and Geoinformation, 62, 224-235. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032229600&doi=10.1016%2fj.jag.2017.06.007&par

- tnerID=40&md5=668e0740ea86fca8ea28f95bc2969d3b. doi:10.1016/j.jag.2017.06.007 Laufenberg, J. S., Johnson, H. E., Doherty, P. F., & Breck, S. W. (2018). Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface. *Biological Conservation, 224*, 188-198. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048589325&doi=10.1016%2fj.biocon.2018.05.004 &partnerID=40&md5=bfb90cb9d23901dbc09d6833bea78510. doi:10.1016/j.biocon.2018.05.004
- Lazarus, B. E., Germino, M. J., & Richardson, B. A. (2019). Freezing resistance, safety margins, and survival vary among big sagebrush populations across the western United States. *American Journal of Botany*, 106(7), 922-934. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068766286&doi=10.1002%2fajb2.1320&partnerID =40&md5=1d8bf1f389f6bc55e82310628d54e18b. doi:10.1002/ajb2.1320

- Le, P. V. V., Kumar, P., Ruiz, M. O., Mbogo, C., & Muturi, E. J. (2019). Predicting the direct and indirect impacts of climate change on malaria in coastal Kenya. *PLoS ONE*, *14*(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061135046&doi=10.1371%2fjournal.pone.0211258 &partnerID=40&md5=4e825e50c2d7dab5c43480ce816c6a24. doi:10.1371/journal.pone.0211258
- Leach, J. A., Olson, D. H., Anderson, P. D., & Eskelson, B. N. I. (2017). Spatial and seasonal variability of forested headwater stream temperatures in western Oregon, USA. *Aquatic Sciences*, 79(2), 291-307. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84978880756&doi=10.1007%2fs00027-016-0497-9& partnerID=40&md5=30ec0ac01a2d5ecdf969e5ca0fe05bba. doi:10.1007/s00027-016-0497-9
- LeBrun, J. J., Schneiderman, J. E., Thompson, F. R., Dijak, W. D., Fraser, J. S., He, H. S., & Millspaugh, J. J. (2017). Bird response to future climate and forest management focused on mitigating climate change. *Landscape Ecology*, 32(7), 1433-1446. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-84995752855&doi=10.1007%2fs10980-016-0463-x& partnerlD=40&md5=c1a82af6de4099c81c6d6bf5ae58a78d. doi:10.1007/s10980-016-0463-x Ledo, A., Hillier, J., Smith, P., Aguilera, E., Blagodatskiy, S., Brearley, F. Q., . . . Zerihun, A. (2019). A global, empirical,
- Ledo, A., Hiller, J., Smith, P., Aguilera, E., Biagodatskiy, S., Breaney, F. Q., ... Zennun, A. (2019). A global, empirical, harmonised dataset of soil organic carbon changes under perennial crops. *Scientific Data*, 6(1), 57. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066270415&doi=10.1038%2fs41597-019-0062-1&partnerID=40&md5=9e5e1cb945ff46c54a277b601cb03a34. doi:10.1038/s41597-019-0062-1

- Lee, M. S., Hollinger, D. Y., Keenan, T. F., Ouimette, A. P., Ollinger, S. V., & Richardson, A. D. (2018). Model-based analysis of the impact of diffuse radiation on CO<inf>2</inf> exchange in a temperate deciduous forest. *Agricultural and Forest Meteorology*, 249, 377-389. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034823314&doi=10.1016%2fj.agrformet.2017.11.0
- https://www.scopus.com/inwarg/record.uri?etd=2-s2.0-850348233 148d01=10.1018%21j.agrformet.2017.11.0 16&partnerID=40&md5=19560c1921a11da25918b8a9a040593c. doi:10.1016/j.agrformet.2017.11.016 Lee, S., Sadeghi, A. M., Yeo, I. Y., McCarty, G. W., & Hively, W. D. (2017). Assessing the impacts of future climate
- conditions on the effectiveness of winter cover crops in reducing nitrate loads into the chesapeake bay watersheds using the swat model. *Transactions of the ASABE, 60*(6), 1939-1955. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040031428&partnerID=40&md5=007dc7b83f2009 3cab890c3648166425.
- Lee, S., Sadeghi, A. M., Yeo, I. Y., McCarty, G. W., Hively, W. D., Lang, M. W., & Sharifi, A. (2017). Assessing climate change impacts on winter cover crop nitrate uptake efficiency on the coastal plain of the Chesapeake Bay Watershed using SWAT model. Paper presented at the 2017 ASABE Annual International Meeting.
- Lee, S., Wallace, C. W., Sadeghi, A. M., McCarty, G. W., Zhong, H., & Yeo, I. Y. (2018). Impacts of Global Circulation Model (GCM) bias and WXGEN on modeling hydrologic variables. *Water (Switzerland)*, *10*(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048416920&doi=10.3390%2fw10060764&partnerl D=40&md5=f9b583db702f0c58f938e2a71a13f0ab. doi:10.3390/w10060764
- Lee, S., Yeo, I. Y., Sadeghi, A. M., McCarty, G. W., Hively, W. D., Lang, M. W., & Sharifi, A. (2018). Comparative analyses of hydrological responses of two adjacent watersheds to climate variability and change using the SWAT model. *Hydrology and Earth System Sciences, 22*(1), 689-708. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041210992&doi=10.5194%2fhess-22-689-2018&p artnerD=40&md5=ad1f9101b28399c86ddddd349671df5d. doi:10.5194/hess-22-689-2018

Lefohn, A. S., Malley, C. S., Smith, L., Wells, B., Hazucha, M., Simon, H., . . . Gerosa, G. (2018). Tropospheric ozone assessment report: Global ozone metrics for climate change, human health, and crop/ecosystem research. *Elementa*, 6. Retrieved from

Lei, F., Crow, W. T., Holmes, T. R. H., Hain, C., & Anderson, M. C. (2018). Global Investigation of Soil Moisture and Latent Heat Flux Coupling Strength. Water Resources Research, 54(10), 8196-8215. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055484925&doi=10.1029%2f2018WR023469&part nerID=40&md5=5033b82778b481a80171271577b53b6a. doi:10.1029/2018WR023469

Lembrechts, J. J., Alexander, J. M., Cavieres, L. A., Haider, S., Lenoir, J., Kueffer, C., . . . Milbau, A. (2017). Mountain roads shift native and non-native plant species' ranges. *Ecography*, 40(3), 353-364. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84961821137&doi=10.1111%2fecog.02200&partner/ D=40&md5=b8787787d4e99f9795418c25057a2912. doi:10.1111/ecog.02200

Lenhart, C., & Smiley, P. C. (2018). Ecological restoration in the Midwest: Past, present, and future.

Lerman, S. B., & Contosta, A. R. (2019). Lawn mowing frequency and its effects on biogenic and anthropogenic carbon dioxide emissions. Landscape and Urban Planning, 182, 114-123. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056181236&doi=10.1016%2fj.landurbplan.2018.10.

016&partnerID=40&md5=9f45d2069e2aa5663a3a269d9747a08d. doi:10.1016/j.landurbplan.2018.10.10 Lesk, C., Coffel, E., D'Amato, A. W., Dodds, K., & Horton, R. (2017). Threats to North American forests from southern

pine beetle with warming winters. *Nature Climate Change, 7*(10), 713-717. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032579130&doi=10.1038%2fnclimate3375&partne rlD=40&md5=828f793a40f2baec34dbaa50b74044a8. doi:10.1038/nclimate3375

Lesmeister, D. B., Sovern, S. G., Davis, R. J., Bell, D. M., Gregory, M. J., & Vogeler, J. C. (2019). Mixed-severity wildfire and habitat of an old-forest obligate. *Ecosphere*, *10*(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065015988&doi=10.1002%2fecs2.2696&partnerID

https://www.scopus.com/inward/record.uri/eid=2-s2.0-85065015988&dol=10.1002%2fecs2.2696&partneriL =40&md5=2e45bc2cf1cc30b017c2725c0204a078. doi:10.1002/ecs2.2696

Levy-Booth, D. J., Giesbrecht, I. J. W., Kellogg, C. T. E., Heger, T. J., D'Amore, D. V., Keeling, P. J., . . . Mohn, W. W. (2019). Seasonal and ecohydrological regulation of active microbial populations involved in DOC, CO <inf>2 </inf> , and CH <inf>4</inf> fluxes in temperate rainforest soil. *ISME Journal*, *13*(4), 950-963. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058240932&doi=10.1038%2fs41396-018-0334-3& partnerID=40&md5=99a6afdcf0a06aa99ed6ce0108255902. doi:10.1038/s41396-018-0334-3

Lewin, H. A., Robinson, G. E., Kress, W. J., Baker, W. J., Coddington, J., Crandall, K. A., . . . Zhang, G. (2018). Earth BioGenome Project: Sequencing life for the future of life. *Proceedings of the National Academy of Sciences of the United States of America*, 175(17), 4325-4333. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046353202&doi=10.1073%2fpnas.1720115115&pa

rtnerlD=40&md5=7ba870627a2d744f08674ba5cc94a519. doi:10.1073/pnas.1720115115 Leytem, A. B., Dungan, R. S., & Bjorneberg, D. L. (2017). Spatial and temporal variation in physicochemical properties of dairy lagoons in south-central Idaho. *Transactions of the ASABE, 60*(2), 439-447. Retrieved from https://www.scopus.com/inward/record.uii?eid=2-s2.0-85019990854&doi=10.13031%2ftrans.11991&partner ID=40&md5=94635f4d700d533b07a1d5dd0ff0852e. doi:10.13031/trans.11991

Leytem, A. B., Moore, A. D., & Dungan, R. S. (2019). Greenhouse gas emissions from an irrigated crop rotation utilizing dairy manure. Soil Science Society of America Journal, 83(1), 137-152. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850621745398doi=10.2136%2fsssaj2018.06.0216&p artnerID=40&md5=968bb8f437fd64d33b80bc678245392e. doi:10.2136/sssaj2018.06.0216

 Li, C., Fultz, L. M., Moore-Kucera, J., Acosta-Martínez, V., Horita, J., Strauss, R., ... Weindorf, D. (2017). Corrigendum to "Soil carbon sequestration potential in semi-arid grasslands in the Conservation Reserve Program" [Geoderma 297 (2017) 80–90] (S0016706117301465) (10.1016/j.geoderma.2017.01.032). Geoderma, 301, 81. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850187245598.doi=10.1016%2fj.geoderma.2017.04.0 148.partnerID=40&md5=2582e82955e8224923206e09b7b5d1b3. doi:10.1016/j.geoderma.2017.04.014

Li, C., Fultz, L. M., Moore-Kucera, J., Acosta-Martínez, V., Horita, J., Strauss, R., . . . Weindorf, D. (2017). Soil carbon sequestration potential in semi-arid grasslands in the Conservation Reserve Program. Geoderma, 294, 80-90. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013177525&doi=10.1016%2fj.geoderma.2017.01.0 32&partnerID=40&md5=a78921af91129e7deefe82e46071d074. doi:10.1016/j.geoderma.2017.01.032

Li, D., Monahan, W. B., & Baiser, B. (2018). Species richness and phylogenetic diversity of native and non-native species respond differently to area and environmental factors. *Diversity and Distributions*, 24(6), 853-864. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042522101&doi=10.1111%2fddi.12731&partnerID=40&md5=8022995a9&ba9cdde6014&c22e92&5c6. doi:10.1111/ddi.12731

Li, G., Zhang, F., Jing, Y., Liu, Y., & Sun, G. (2017). Response of evapotranspiration to changes in land use and land cover and climate in China during 2001–2013. Science of the Total Environment, 596-597, 256-265. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018465111&doi=10.1016%2fj.scitotenv.2017.04.08 0&partnerID=40&md5=775d73133699261292d59ab4963f37e1. doi:10.1016/j.scitotenv.2017.04.080

- Li, J., Ren, L., Bai, Y., Lecain, D., Blumenthal, D., & Morgan, J. (2018). Seed traits and germination of native grasses and invasive forbs are largely insensitive to parental temperature and CO<inf>2</inf> concentration. Seed Science Research, 28(4), 303-311. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052696667&doi=10.1017%2f50960258518000314 &partnerlD=40&md5=84575bc8fe575c2340820eee00a7eae7. doi:10.1017/S0960258518000314
- Li, L., Zheng, Z., Biederman, J. A., Xu, C., Xu, Z., Che, R., . . . Hao, Y. (2019). Ecological responses to heavy rainfall depend on seasonal timing and multi-year recurrence. *New Phytologist, 223*(2), 647-660. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065396958&doi=10.1111%2fnph.15832&partnerID =40&md5=8b909eddad99a59161196772b2243826. doi:10.1111/nph.15832
- Li, S., Gitau, M., Engel, B. A., Zhang, L., Du, Y., Wallace, C., & Flanagan, D. C. (2017). Development of a distributed hydrological model to facilitate watershed management. *Hydrological Sciences Journal*, 62(11), 1755-1771. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025120596&doi=10.1080%2f02626667.2017.13510 29&partnerID=40&md5=fc35a416ad32cda3fe1d22867fb3b57f. doi:10.1080/02626667.2017.1351029 Li, W., Ciais, P., Peng, S., Yue, C., Wang, Y., Thurner, M., . . . Zaehle, S. (2017). Land-use and land-cover change carbon

emissions between 1901 and 2012 constrained by biomass observations. *Biogeosciences*, 14(22), 5053-5067. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034055468&doi=10.5194%2fbg-14-5053-2017&partnerID=40&md5=2c1570087902ded73088c5f7a451a467. doi:10.5194/bg-14-5053-2017

Li, X., Xiao, J., He, B., Altaf Arain, M., Beringer, J., Desai, A. R., . . . Varlagin, A. (2018). Solar-induced chlorophyll fluorescence is strongly correlated with terrestrial photosynthesis for a wide variety of biomes: First global analysis based on OCO-2 and flux tower observations. *Global Change Biology*, 24(9), 3990-4008. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051463887&doi=10.1111%2fgcb.14297&partnerlD =40&md5=e1f8509b0c3c72d006e40de7ea17e536. doi:10.1111/gcb.14297

- Liang, S., Gu, H., & Bergman, R. D. (2017). Life cycle assessment of cellulosic ethanol and biomethane production from forest residues. *BioResources*, *12*(4), 7873-7883. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032662406&doi=10.15376%2fbiores.12.4.7873-788 3&partnerID=40&md5=fdf5e7d1ed0d1ec31aeada38a5e96996. doi:10.15376/biores.12.4.7873-7883
- Liang, X. Z., Wu, Y., Chambers, R. G., Schmoldt, D. L., Gao, W., Liu, C., . . . Kennedy, J. A. (2017). Determining climate effects on US total agricultural productivity. *Proceedings of the National Academy of Sciences of the United States of America*, 114(12), E2285-E2292. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016097981&doi=10.1073%2fpnas.1615922114&pa rtnertD=40&rnd5=27b487af332c567553f075c82c5958b5. doi:10.1073/pnas.1615922114
- Liang, Y., Duveneck, M. J., Gustafson, E. J., Serra-Diaz, J. M., & Thompson, J. R. (2018). How disturbance, competition, and dispersal interact to prevent tree range boundaries from keeping pace with climate change. *Global Change Biology*, 24(1), e335-e351. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031408957&doi=10.1111%2fgcb.13847&partnerlD

https://www.scopus.com/inward/record.un/eid=2-52.0-850314089578doi=10.1111%2tgcb.13847&partneriD =40&md5=1644814428cfd74a018336043c30339f. doi:10.1111/gcb.13847

Liebhold, A. M., Yamanaka, T., Roques, A., Augustin, S., Chown, S. L., Brockerhoff, E. G., & Pyšek, P. (2018). Plant diversity drives global patterns of insect invasions. *Scientific Reports*, 8(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053405980&doi=10.1038%2fs41598-018-30605-4 &partnerID=40&md5=2a3a1b789d05edb3d07352f4bfc6b66c. doi:10.1038/s41598-018-30605-4

Liebig, M. A., & Toledo, D. (2019). Hold Your Ground: Threats to Soil Function in Northern Great Plains Grazing Lands. Rangelands, 41(1), 17-22. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058793302&doi=10.1016%2fj.rala.2018.11.003&partnerlD=40&md5=0a798f421924c51bcb6095dd70e1dc4d. doi:10.1016/j.rala.2018.11.003

- Liles, G. C., Maxwell, T. M., Silva, L. C. R., Zhang, J. W., & Horwath, W. R. (2019). Two Decades of Experimental Manipulation Reveal Potential for Enhanced Biomass Accumulation and Water Use Efficiency in Ponderosa Pine Plantations Across Climate Gradients. *Journal of Geophysical Research: Biogeosciences*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070253105&doi=10.1029%2f2019JG005183&partn erID=40&md5=b55166f086c4bcf83e883033e4e08fee. doi:10.1029/2019JG005183
- Lillie, K. M., Gese, E. M., Atwood, T. C., & Sonsthagen, S. A. (2018). Development of on-shore behavior among polar bears (Ursus maritimus) in the southern Beaufort Sea: Inherited or learned? *International Journal of Business Innovation and Research*, *17*(3), 7790-7799. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054812266&doi=10.1002%2fece3.4233&partnerlD
- =40&md5=3db8ad0f2b9f4caba2614779dcbbffe6. doi:10.1002/ece3.4233 Lin, L., Di, L., Yu, E. G., Tang, J., Shrestha, R., Rahman, M. S., . . . Yang, Z. (2017). *Extract flood duration from Dartmouth Flood Observatory flood product*. Paper presented at the 2017 6th International Conference on
- Agro-Geoinformatics, Agro-Geoinformatics 2017. Lin, W., Li, Y., Yang, Z., Giardina, C. P., Xie, J., Chen, S., . . . Yang, Y. (2018). Warming exerts greater impacts on subsoil
- than topsoil CO<inf>2</inf> efflux in a subtropical forest. Agricultural and Forest Meteorology, 263, 137-146. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052304418&doi=10.1016%2fj.agrformet.2018.08.0 14&partnerID=40&md5=f56d07436c02b8b618c41f48ea5ea2a9. doi:10.1016/j.agrformet.2018.08.014

Lind, B. M., North, M. P., Maloney, P. E., & Eckert, A. J. (2019). Effect of fire and thinning on fine-scale genetic structure and gene flow in fire-suppressed populations of sugar pine (Pinus lambertiana Dougl.). Forest Ecology and Management, 447, 115-129. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066270923&doi=10.1016%2fj.foreco.2019.04.033&

partnerID=40&md5=540bc63655bc57aedc3c98bd9a0e7beb. doi:10.1016/j.foreco.2019.04.033 Linquist, B. A. Marcos, M., Arlene Adviento-Borbe, M., Anders, M., Harrell, D., Linscombe, S., . . . Thomson, A. (2018).

- Greenhouse gas emissions and management practices that affect emissions in US rice systems. *Journal of Environmental Quality, 47*(3), 395-409. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046758409&doi=10.2134%2fjeq2017.11.0445&par
- tnerlD=40&md5=3b2a984745a5a7797dbc7fde83564f07. doi:10.2134/jeq2017.11.0445
  Littell, J. S., McAfee, S. A., & Hayward, G. D. (2018). Alaska snowpack response to climate change: Statewide snowfall equivalent and snowpack vater scenarios. *Water (Switzerland), 10*(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850472505518.doi=10.3390%2fw10050668&partnerl D=40&md5=6267f3f2602ef49d5d136206da9832dc. doi:10.3390/w10050668
- Littell, J. S., McKenzie, D., Wan, H. Y., & Cushman, S. A. (2018). Climate Change and Future Wildfire in the Western United States: An Ecological Approach to Nonstationarity. *Earth's Future*, 6(8), 1097-1111. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052653866&doi=10.1029%2f2018EF000878&partn erlD=40&md5=0288110542ec827b423a46281f221cfa. doi:10.1029/2018EF000878
- Liu, B., Wagner, L. E., Ning, D., & Qu, J. (2017). Estimation of wind erosion from construction of a railway in arid Northwest China. International Soil and Water Conservation Research, 5(2), 102-108. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020694409&doi=10.1016%2fj.iswcr.2017.04.005&p artnerID=40&md5=945886a5826d9bfcb0be53bad9428f01. doi:10.1016/j.iswcr.2017.04.005
- Liu, C., Sun, G., McNulty, S. G., Noormets, A., & Fang, Y. (2017). Environmental controls on seasonal ecosystem evapotranspiration/potential evapotranspiration ratio as determined by the global eddy flux measurements. *Hydrology and Earth System Sciences*, 21(1), 311-322. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009966199&doi=10.5194%2fhess-21-311-2017&p artnerID=40&md5=62decb4e54f9912035d3ce58ea752da5. doi:10.5194/hess-21-311-2017
- Liu, J., Baulch, H. M., Macrae, M. L., Wilson, H. F., Elliott, J. A., Bergström, L., . . . Vadas, P. A. (2019). Agricultural water quality in cold climates: Processes, drivers, management options, and research needs. *Journal of* 63

Environmental Quality, 48(4), 792-802. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069508868&doi=10.2134%2fjeq2019.05.0220&par tnerID=40&md5=d721f72388eeec78b539a4df4693c9b8. doi:10.2134/jeq2019.05.0220

Liu, J. J., Schoettle, A. W., Sniezko, R. A., Yao, F., Zamany, A., Williams, H., & Rancourt, B. (2019). Limber pine (Pinus flexilis James) genetic map constructed by exome-seq provides insight into the evolution of disease resistance and a genomic resource for genomics-based breeding. *Plant Journal*, 98(4), 745-758. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062541296&doi=10.1111%2ftpj.14270&partnerID=40&md5=dab4b2b1ddbed9d2aa0915b22c5628f6. doi:10.1111/tpj.14270

- Liu, N., Shaikh, M. A., Kala, J., Harper, R. J., Dell, B., Liu, S., & Sun, G. (2018). Parallelization of a distributed ecohydrological model. *Environmental Modelling and Software*, 101, 51-63. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039148795&doi=10.1016%2fj.envsoft.2017.11.033 &partnerlD=40&md5=96032834b398fa0ed976df5b52a6c4bf. doi:10.1016/j.envsoft.2017.11.033
- Liu, P., Hao, L., Pan, C., Zhou, D., Liu, Y., & Sun, G. (2017). Combined effects of climate and land management on watershed vegetation dynamics in an arid environment. *Science of the Total Environment, 589*, 73-88. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014408227&doi=10.1016%2fj.scitotenv.2017.02.21 0&partnerID=40&md5=206eb43309799aa2d796d17e6d41301e. doi:10.1016/j.scitotenv.2017.02.210 Liu, S., Bond-Lamberty, B., Boysen, L. R., Ford, J. D., Fox, A., Gallo, K., . . . Zhao, S. (2017). Grand challenges in
- Lu, S., Bond-Lamberty, B., Boysen, E. R., Ford, J. D., Fox, A., Gailo, K., ... 21do, S. (2017). Grand challenges in understanding the interplay of climate and land changes. *Earth Interactions*, 21(2). Retrieved from https://www.scopus.com/inward/record.un?eid=2-s2.0-85019067005&doi=10.1175%2fEI-D-16-0012.1&part nerID=40&md5=a9c9f86fda54f8ac94fa0cdf6b7db760. doi:10.1175/EI-D-16-0012.1
- Liu, W. J., Li, L. F., Biederman, J. A., Hao, Y. B., Zhang, H., Kang, X. M., . . . Xu, C. Y. (2017). Repackaging precipitation into fewer, larger storms reduces ecosystem exchanges of CO <inf>2</inf> and H <inf>2</inf> O in a semiarid steppe. Agricultural and Forest Meteorology, 247, 356-364. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028370830&doi=10.1016%2fj.agrformet.2017.08.029 29&partnerID=40&md5=d46ea564cd39690b1b68e23950f1b29b. doi:10.1016/j.agrformet.2017.08.029
- Liu, X., Sun, G., Mitra, B., Noormets, A., Gavazzi, M. J., Domec, J. C., . . . McNulty, S. G. (2018). Drought and thinning have limited impacts on evapotranspiration in a managed pine plantation on the southeastern United States coastal plain. Agricultural and Forest Meteorology, 262, 14-23. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049354873&doi=10.1016%2fj.agrformet.2018.06.0 25&partnerID=40&md5=a1142ab015666df0522ecc3d591258ef. doi:10.1016/j.agrformet.2018.06.025
- Liu, X., Yang, Z., Lin, C., Giardina, C. P., Xiong, D., Lin, W., . . . Yang, Y. (2017). Will nitrogen deposition mitigate warming-increased soil respiration in a young subtropical plantation? *Agricultural and Forest Meteorology*, 246, 78-85. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020879355&doi=10.1016%2fi.agrformet.2017.06.0

10&partneriD=40&md5=9db04247b4a1817227abbbd4ab938dad. doi:10.1016/j.agrformet.2017.06.010 Liu, X., Zeng, X., Zou, X., Lodge, D. J., Stankavich, S., González, G., & Cantrell, S. A. (2018). Responses of soil labile organic carbon to a simulated hurricane disturbance in a tropical wet forest. *Forests*, 9(7). Retrieved from

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050192415&doi=10.3390%2ff9070420&partnerID =40&md5=e3738c7fb31c045bf854dc9b7a995381. doi:10.3390/f9070420 Liu, Y. (2017). Responses of dead forest fuel moisture to climate change. *Ecohydrology*, *10*(2). Retrieved from
- https://www.scopus.com/inward/record.ur?eid=2-s2.0=849836285268doi=10.1002%2feco.1760&partnerlD= 40&md5=0d147ba6418322244b1b9e90240dd4ce. doi:10.1002/eco.1760

Liu, Y. (2018). New development and application needs for Earth system modeling of fire-climate-ecosystem interactions. Environmental Research Letters, 13(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850437925258doi=10.1088%2f1748-9326%2faaa347 &voartherID=40&md5=24c3505b9050031a3abc19333a8ed6f6. doi:10.1088/1748-9326/aaa347

Loehman, R., Flatley, W., Holsinger, L., & Thode, A. (2018). Can land management buffer impacts of climate changes and altered fire regimes on ecosystems of the Southwestern United States? *Forests*, 9(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045108617&doi=10.3390%2ff9040192&partnerID =40&md5=c94b98400f4bc02a2779aa03668c65e1. doi:10.3390/f9040192

Loehman, R. A., Bentz, B. J., DeNitto, G. A., Keane, R. E., Manning, M. E., Duncan, J. P., . . . Zambino, P. J. (2018) Effects of

Climate Change on Ecological Disturbance in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 115-141).

- Loehman, R. A., Keane, R. E., Holsinger, L. M., & Wu, Z. (2017). Interactions of landscape disturbances and climate change dictate ecological pattern and process: spatial modeling of wildfire, insect, and disease dynamics under future climates. *Landscape Ecology*, *32*(7), 1447-1459. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-849780968518dtoi=10.1007%2fs10980-016-0414-68 partnerlD=408/md5=f3178ee63cc8167cc382a72fddb0bf88. doi:10.1007/s10980-016-0414-6
- - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069868798&doi=10.1002%2fmnfr.201801047&par tnerID=40&md5=b8a2556f93975955bb3b62882d4ecc11. doi:10.1002/mnfr.201801047
- Lombardo, J. A., Weed, A. S., Aoki, C. F., Sullivan, B. T., & Ayres, M. P. (2018). Temperature affects phenological synchrony in a tree-killing bark beetle. *Oecologia*, 188(1), 117-127. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051698932&doi=10.1007%2fs00442-018-4164-9&
- partnerID=40&md5=c6c2a5c19515fb0aeb3201939c271fec. doi:10.1007/s00442-018-4164-9 Londo, J. P., & Kovaleski, A. P. (2019). Deconstructing cold hardiness: variation in supercooling ability and chilling
- requirements in the wild grapevine Vitis riparia. Australian Journal of Grape and Wine Research, 25(3), 276-285. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063080471&doi=10.1111%2fajgw.12389&partnerl D=40&md5=6b039fee147fd9d6e925f2fad0fd29d8. doi:10.1111/ajgw.12389

- Long, R. W., Bush, S. E., Grady, K. C., Smith, D. S., Potts, D. L., D'Antonio, C. M., ... Hultine, K. R. (2017). Can local adaptation explain varying patterns of herbivory tolerance in a recently introduced woody plant in North America? Conservation Physiology, 5(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017263440&doi=10.1093%2fconphys%2fcox016&
- https://www.scopus.com/inward/record.uir/eid=2-s2.0-850172634402d0i=10.1093%2fConpnys%2fCox016& partnerID=40&md5=1c087577758790d093efcb2842e1f544. doi:10.1093/conphys/cox016 Longman, R. J., Giambelluca, T. W., Nullet, M. A., Frazier, A. G., Kodama, K., Crausbay, S. D., . . . Arnold, J. R. (2018). Data
- Descriptor: Compilation of climate data from heterogeneous networks across the Hawaiian Islands. Scientific Data, 5. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042046788&doi=10.1038%2fsdata.2018.12&partnerlD=40&md5=4bdd1c181002fc62b98b4d543b0d4296. doi:10.1038/sdata.2018.12

- Looney, C. E., D'Amato, A. W., Palik, B. J., & Slesak, R. A. (2017). Canopy treatment influences growth of replacement tree species in Fraxinus nigra forests threatened by the emerald ash borer in Minnesota, USA. Canadian Journal of Forest Research, 47(2), 183-192. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011115956&doi=10.1139%2fcjfr-2016-0369&partn erlD=40&md5=179db9e409eec0255db47bfc59b93fec. doi:10.1139/cjfr-2016-0369
- López-Ballesteros, A., Serrano-Ortiz, P., Kowalski, A. S., Sánchez-Cañete, E. P., Scott, R. L., & Domingo, F. (2017). Subterranean ventilation of allochthonous CO<inf>2</inf> governs net CO<inf>2</inf> exchange in a semiarid Mediterranean grassland. *Agricultural and Forest Meteorology, 234-235*, 115-126. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007530417&doi=10.1016%2fj.agrformet.2016.12.0 21&partnerID=40&md5=843be032a9147bf17f770874b5f5d9ab. doi:10.1016/j.agrformet.2016.12.021
- Loudermilk, E. L., Scheller, R. M., Weisberg, P. J., & Kretchun, A. (2017). Bending the carbon curve: fire management for carbon resilience under climate change. *Landscape Ecology*, *32*(7), 1461-1472. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84989956098&doi=10.1007%2fs10980-016-0447-x& partnerID=40&md5=a40f9ea381161776e5c11d2b53b43d81. doi:10.1007/s10980-016-0447-x
- Lozano, O. M., Salis, M., Ager, A. A., Arca, B., Alcasena, F. J., Monteiro, A. T., . . . Spano, D. (2017). Assessing Climate Change Impacts on Wildfire Exposure in Mediterranean Areas. *Risk Analysis*, 37(10), 1898-1916. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007083639&doi=10.1111%2frisa.12739&partnerID =40&md5=2de65847c2a2a5bf1c4b818bf066693c. doi:10.1111/risa.12739

Lu, C., Yu, Z., Tian, H., Hennessy, D. A., Feng, H., Al-Kaisi, M., . . . Arritt, R. (2018). Increasing carbon footprint of grain crop production in the US Western Corn Belt. *Environmental Research Letters*, *13*(12). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060134082&doi=10.1088%2f1748-9326%2faae9fe &partnerID=40&md5=fa0f7462a030b79294603d370b20f213. doi:10.1088/1748-9326/aae9fe

- Lu, H., Wu, Y., Li, Y., & Liu, Y. (2017). Effects of meteorological droughts on agricultural water resources in southern China. *Journal of Hydrology, 548*, 419-435. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015392501&doi=10.1016%2fj.jhydrol.2017.03.021 &partnerID=40&md5=7ee079ff85a7aa9e3f4eb2c3bdda9326. doi:10.1016/j.jhydrol.2017.03.021
- Lucash, M. S., Scheller, R. M., J. Gustafson, E., & R. Sturtevant, B. (2017). Spatial resilience of forested landscapes under climate change and management. *Landscape Ecology*, 32(5), 953-969. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015775844&doi=10.1007%2fs10980-017-0501-3& partnerID=40&md5=0858504c43526539483556b159250162. doi:10.1007/s10980-017-0501-3
- Lucash, M. S., Scheller, R. M., Sturtevant, B. R., Gustafson, E. J., Kretchun, A. M., & Foster, J. R. (2018). More than the sum of its parts: how disturbance interactions shape forest dynamics under climate change. *Ecosphere*, 9(6). Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050733204&doi=10.1002%2fecs2.2293&partnerlD =40&md5=17050dd661e6ca6b54b3b5a530d3e10e. doi:10.1002/ecs2.2293
- Luce, C. H. (2018) Effects of Climate Change on Snowpack, Glaciers, and Water Resources in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 25-36).
- Lucero, S. A., & Tamez, S. (2017). Working together to implement the tribal forest protection act of 2004: Partnerships for today and tomorrow. *Journal of Forestry*, *115*(5), 468-472. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029142447&doi=10.5849%2fjof.2016-096R2&part
- nerlD=40&md5=578aa3ef7f7d6df515f9caf8fa613dbc. doi:10.5849/jof.2016-096R2 Ludwig, J. A., Wondzell, S. M., Muldavin, E. H., Blanche, K. R., & Chauvin, Y. (2017). Native desert grassland plant
  - species declines and accelerated erosion in the Paint Gap Hills of southwest Texas. Southwestern Naturalist, 62(1), 53-61. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019603069&doi=10.1894%2f0038-4909-62.1.53&partnerID=40&md5=17d7d29f3796fa60fb579a42a1ce0e25. doi:10.1894/0038-4909-62.1.53

- Luo, T., Liu, X., Zhang, L., Li, X., Pan, Y., & Wright, I. J. (2018). Summer solstice marks a seasonal shift in temperature sensitivity of stem growth and nitrogen-use efficiency in cold-limited forests. Agricultural and Forest Meteorology, 248, 469-478. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032726549&doi=10.1016%2fj.agrformet.2017.10.0
- nttps://www.scopus.com/inward/record.un/ede=2-s2.0-s0032725948dol=10.1018%21,agrormet22017.10.0 29&partnerID=40&md5=c9174c6b63574656a0736e7a301becfd. doi:10.1016/j.agrformet.2017.10.029 Lute, A. C., & Luce, C. H. (2017). Are Model Transferability And Complexity Antithetical? Insights From Validation of a
- Variable-Complexity Empirical Snow Model in Space and Time. *Water Resources Research, 53*(11), 8825-8850. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038946839&doi=10.1002%2f2017WR020752&part nerID=40&md5=99f83f4ff5b24580ec65322ceb0bcd14. doi:10.1002/2017WR020752

- Lutz, J. A., Furniss, T. J., Johnson, D. J., Davies, S. J., Allen, D., Alonso, A., . . . Zimmerman, J. K. (2018). Global importance of large-diameter trees. *Global Ecology and Biogeography*, 27(7), 849-864. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046535962&doi=10.1111%2fgeb.12747&partnerID =40&md5=0c90988e066261cd24cca7e8530f58a2. doi:10.1111/geb.12747
- Lutz, J. A., Matchett, J. R., Tarnay, L. W., Smith, D. F., Becker, K. M. L., Furniss, T. J., & Brooks, M. L. (2017). Fire and the distribution and uncertainty of carbon sequestered as aboveground tree biomass in Yosemite and Sequoia & Kings Canyon National Parks. Land, 6(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019221494&doi=10.3390%2fland6010010&partner
- ID=40&md5=ea48987e7658cc94308d103fa6a18a7b. doi:10.3390/land6010010
   Ly, D., Huet, S., Gauffreteau, A., Rincent, R., Touzy, G., Mini, A., . . . Charmet, G. (2018). Whole-genome prediction of reaction norms to environmental stress in bread wheat (Triticum aestivum L) by genomic random regression. *Field Crops Research*, *216*, 32-41. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033469128&doi=10.1016%2fj.fcr.2017.08.020&part nerID=40&md5=293ed1bfc256ce55ed07f6f7d9defd8f. doi:10.1016/j.fcr.2017.08.020

Lydersen, J. M., Collins, B. M., Brooks, M. L., Matchett, J. R., Shive, K. L., Povak, N. A., . . . Smith, D. F. (2017). Evidence of fuels management and fire weather influencing fire severity in an extreme fire event. *Ecological Applications*, 27(7), 2013-2030. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030152934&doi=10.1002%2feap.1586&partnerID= 66 40&md5=861be2edd9a9b24808e0d2a6250ae5ec. doi:10.1002/eap.1586

- Lydersen, J. M., Collins, B. M., & Hunsaker, C. T. (2019). Implementation constraints limit benefits of restoration treatments in mixed-conifer forests. *International Journal of Wildland Fire*, 28(7), 495-511. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065984109&doi=10.1071%2fWF18141&partnerID =40&md5=6cba5ed94be5023c77177291c2d35c70. doi:10.1071/WF18141
- Lytle, D. A., Merritt, D. M., Tonkin, J. D., Olden, J. D., & Reynolds, L. V. (2017). Linking river flow regimes to riparian plant guilds: A community-wide modeling approach. *Ecological Applications*, 27(4), 1338-1350. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020237036&doi=10.1002%2feap.1528&partnerlD=40&md5=3a07e1c565fb6d07fc778c1bd0c06fc5. doi:10.1002/eap.1528

Lyu, M., Xie, J., Giardina, C. P., Vadeboncoeur, M. A., Feng, X., Wang, M., . . . Yang, Y. (2019). Understory ferns alter soil carbon chemistry and increase carbon storage during reforestation with native pine on previously degraded sites. Soil Biology and Biochemistry, 132, 80-92. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061667072&doi=10.1016%2fj.soilbio.2019.02.004&

https://www.scopus.com/inward/record.un/eid=2-s2.0-8500166/0/28doi=10.1016%2fj.soilbio.2019.02.004& partnerID=40&md5=f8013673c15818f0fd69a7154ea22c15. doi:10.1016/j.soilbio.2019.02.004

Lyu, Z., Genet, H., He, Y., Zhuang, Q., McGuire, A. D., Bennett, A., . . . Zhu, Z. (2018). The role of environmental driving factors in historical and projected carbon dynamics of wetland ecosystems in Alaska. *Ecological Applications*, 28(6), 1377-1395. Retrieved from http://www.newson.com/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actional/actionactional/actionactional/actional/actional/actional/actional/ac

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052750201&doi=10.1002%2feap.1755&partnerlD=40&md5=02903aa8c9c4d9e9ee1f3bd4dc6d6388. doi:10.1002/eap.1755

Ma, H., Zeng, J., Chen, N., Zhang, X., Cosh, M. H., & Wang, W. (2019). Satellite surface soil moisture from SMAP, SMOS, AMSR2 and ESA CCI: A comprehensive assessment using global ground-based observations. *Remote Sensing* of Environment, 231. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066605651&doi=10.1016%2fj.rse.2019.111215&pa

rtnerlD=40&md5=d1da72ce525f1c1a44425090c91eeaa1. doi:10.1016/j.rse.2019.111215 Ma, L., Ahuja, L. R., Islam, A., Trout, T. J., Saseendran, S. A., & Malone, R. W. (2017). Modeling yield and biomass

- responses of maize cultivars to climate change under full and deficit irrigation. *Agricultural Water Management, 180*, 88-98. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994613906&doi=10.1016%2fj.agwat.2016.11.007& partnerID=40&md5=701933212f854baad1a62f04ddaf3512. doi:10.1016/j.agwat.2016.11.007
- Ma, L., Derner, J. D., Harmel, R. D., Tatarko, J., Moore, A. D., Rotz, C. A. ... Wilmer, H. (2019) Application of grazing land models in ecosystem management: Current status and next frontiers. In. Advances in Agronomy.
- Ma, L., Xia, H., Sun, J., Wang, H., Feng, G., & Qin, F. (2018). Spatial-temporal variability of hydrothermal climate conditions in the Yellow River Basin from 1957 to 2015. *Atmosphere*, 9(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056142285&doi=10.3390%2fatmos9110433&partn erlD=40&md5=122eb3d7d75b8bh4d63013f512f342c. doi:10.3390/atmos9110433
- Ma, L., Zhong, M., Zhu, Y., Yang, H., Johnson, D. A., & Rong, Y. (2018). Annual methane budgets of sheep grazing systems were regulated by grazing intensities in the temperate continental steppe: A two-year case study. *Atmospheric Environment*, 174, 66–75. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035747357&doi=10.1016%2fj.atmosenv.2017.11.0 24&partnerID=40&md5=2b82e7624cfb93b21d052a90060e6771. doi:10.1016/j.atmosenv.2017.11.024
- Ma, S., Jiang, J., Huang, Y., Shi, Z., Wilson, R. M., Ricciuto, D., . . . Luo, Y. (2017). Data-Constrained Projections of Methane Fluxes in a Northern Minnesota Peatland in Response to Elevated CO<inf>2</inf> and Warming. Journal of Geophysical Research: Biogeosciences, 122(11), 2841-2861. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038002503&doi=10.1002%2f2017JG003932&partn erID=40&md5=7431eccc85804ba493d1c31866ac7e70. doi:10.1002/2017JG003932
- Ma, W., Domke, G. M., D'Amato, A. W., Woodall, C. W., Walters, B. F., & Deo, R. K. (2018). Using matrix models to estimate aboveground forest biomass dynamics in the eastern USA through various combinations of LiDAR, Landsat, and forest inventory data. *Environmental Research Letters*, *13*(12). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060183194&doi=10.1088%2f1748-9326%2faaeaa3 &partnerlD=40&md5=56d6e746bd0dd17761d85449f4568eb4. doi:10.1088/1748-9326/aaeaa3
- Ma, W., Woodall, C. W., Domke, G. M., D'amato, A. W., & Walters, B. F. (2018). Stand age versus tree diameter as a driver of forest carbon inventory simulations in the northeastern U.S. Canadian Journal of Forest Research,

48(10), 1135-1147. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053940793&doi=10.1139%2fcjfr-2018-0019&partn erID=40&md5=099ca5f9b10959238c7ae4552ec5bb92. doi:10.1139/cjfr-2018-0019

- Ma, W., Zhou, X., Liang, J., & Zhou, M. (2019). Coastal Alaska forests under climate change: What to expect? Forest Ecology and Management, 448, 432-444. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068512712&doi=10.1016%2fj.foreco.2019.06.030&
- https://www.scopus.com/inward/record.un?eid=2-s2.0-85086512/128doi=10.1016%2fj.foreco.2019.06.0308/ partnerlD=40&md5=579f71b2f5f0cbc8654a670e687a9469. doi:10.1016/j.foreco.2019.06.030 Maaz, T., Wulfhorst, J. D., McCracken, V., Kirkegaard, J., Huggins, D. R., Roth, I., . . . Pan, W. (2018). Economic, policy,
- Maaz, L., Wulthorst, J. D., McCracken, V., Kirkegaard, J., Huggins, D. R., Roth, L., . . . Pan, W. (2018). Economic, policy, and social trends and challenges of introducing oilseed and pulse crops into dryland wheat cropping systems. Agriculture, Ecosystems and Environment, 253, 177-194. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850174324658/doi=10.1016%2fj.agee.2017.03.018&p artnerID=40&md5=da2dbcf76cf0f309f3611a6ee2fc11f9. doi:10.1016/j.agee.2017.03.018
- Maaz, T. M., Schillinger, W. F., Machado, S., Brooks, E., Johnson-Maynard, J. L., Young, L. E., . . . Pan, W. L. (2017). Impact of climate change adaptation strategies on winter wheat and cropping system performance across precipitation gradients in the Inland Pacific Northwest, USA. *Frontiers in Environmental Science*, 5(MAY). Retrieved from http://www.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun.commun
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026801524&doi=10.3389%2ffenvs.2017.00023&partnerD=40&md5=f51856968f95b6b936f4d6722b9e870c. doi:10.3389/fenvs.2017.00023
- Macdonald, D. W., Bothwell, H. M., Kaszta, Ż., Ash, E., Bolongon, G., Burnham, D., . . . Cushman, S. A. (2019). Multi-scale habitat modelling identifies spatial conservation priorities for mainland clouded leopards (Neofelis nebulosa). *Diversity and Distributions*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069858913&doi=10.1111%2fddi.12967&partnerID

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069858913&doi=10.1111%2fddi.12967&partnerlD =40&md5=5f7adca6d8faa85af2ec88a1a408fbb8. doi:10.1111/ddi.12967

- Macintosh, K. A., Doody, D. G., Withers, P. J. A., McDowell, R. W., Smith, D. R., Johnson, L. T., . . . McGrath, J. W. (2019). Transforming soil phosphorus fertility management strategies to support the delivery of multiple ecosystem services from agricultural systems. *Science of the Total Environment*, 649, 90-98. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052483409&doi=10.1016%2fj.scitotenv.2018.08.27 2&partnerID=40&md5=a40c806513f14dff99afb478131dd39c. doi:10.1016/j.scitotenv.2018.08.272
- Maclachlan, N. J., Zientara, S., Wilson, W. C., Richt, J. A., & Savini, G. (2019). Bluetongue and epizootic hemorrhagic disease viruses: recent developments with these globally re-emerging arboviral infections of ruminants. *Current Opinion in Virology*, 34, 56-62. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059863871&doi=10.1016%2fj.coviro.2018.12.005& partnerlD=40&md5=7fc2515d63ac9675d6abce7f95d357c0. doi:10.1016/j.coviro.2018.12.005
- Magarey, R., Newton, L., Hong, S. C., Takeuchi, Y., Christie, D., Jarnevich, C. S., ... Koop, A. L. (2018). Comparison of four modeling tools for the prediction of potential distribution for non-indigenous weeds in the United States. *Biological Invasions, 20*(3), 679-694. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029595135&doi=10.1007%2fs10530-017-1567-1& partnerID=40&md5=4f72d13b35dce413dbc17f9db97cf510. doi:10.1007/s10530-017-1567-1
- Magee, M. R., Hein, C. L., Walsh, J. R., Shannon, P. D., Vander Zanden, M. J., Campbell, T. B., . . . Janowiak, M. K. (2019). Scientific advances and adaptation strategies for Wisconsin lakes facing climate change. *Lake and Reservoir Management*. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067891014&doi=10.1080%2f10402381.2019.16226128partnerID=40&md5=09bcb24d27cd796f7e03fcc8e2e3bcda. doi:10.1080/10402381.2019.1622612

- Maguire, K. C., Shinneman, D. J., Potter, K. M., & Hipkins, V. D. (2018). Intraspecific niche models for ponderosa pine (Pinus ponderosa) suggest potential variability in population-level response to climate change. Systematic Biology, 67(6), 958-978. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055080448&doi=10.1093%2fsysbio%2fsyy017&par tnerlD=40&md5=6cc7cdcebedab40c0c6874fd30b485bb. doi:10.1093/sysbio/syy017

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850213718868/doi=10.1016%2fj.jcs.2017.06.007&part nerlD=40&md5=e85abb901a98716cb1b8d064f46fed0e. doi:10.1016/j.jcs.2017.06.007

Mahalingam, R., & Bregitzer, P. (2019). Impact on physiology and malting quality of barley exposed to heat, drought 68 and their combination during different growth stages under controlled environment. *Physiologia Plantarum*, 165(2), 277-289. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055046202&doi=10.1111%2fppl.12841&partnerlD =40&md5=ba7dbcd90c5c2a87648f45e1fc70fe1c. doi:10.1111/ppl.12841

Mahat, V., Ramírez, J. A., & Brown, T. C. (2017). Twenty-First-Century climate in CMIP5 simulations: Implications for snow and water yield across the contiguous United States. *Journal of Hydrometeorology*, 18(8), 2079-2099. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027984265&doi=10.1175%2fJHM-D-16-0098.1&partnerlD=40&md5=9f4a5cbe9a7df532aef0f672f432ccbe. doi:10.1175/JHM-D-16-0098.1

- Maietta, C. E., Bernstein, Z. A., Gaimaro, J. R., Buyer, J. S., Rabenhorst, M. C., Monsaint-Queeney, V. L., . . . Yarwood, S. A. (2019). Aggregation but not organo-metal complexes contributed to C storage in tidal freshwater wetland soils. *Soil Science Society of America Journal*, 83(1), 252–265. Retrieved from with the control of the storage from the control of the storage from the control of the storage from the storage f
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062167602&doi=10.2136%2fsssaj2018.05.0199&p artnerID=40&md5=840400e49fafc7ee8c303b717939bab. doi:10.2136/sssaj2018.05.0199
- Maiorano, A., Martre, P., Asseng, S., Ewert, F., Müller, C., Rötter, R. P., . . . Zhu, Y. (2017). Crop model improvement reduces the uncertainty of the response to temperature of multi-model ensembles. *Field Crops Research*, 202, 5-20. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84971612306&doi=10.1016%2fj.fcr.2016.05.001&partnerID=40&md5=f3fff39364f2bb5798e69d68ecf12e5e. doi:10.1016/j.fcr.2016.05.001

Maleski, J. J., Bosch, D. D., Anderson, R. G., Coffin, A. W., Anderson, W. F., & Strickland, T. C. (2019). Evaluation of miscanthus productivity and water use efficiency in southeastern United States. *Science of the Total Environment*, 692, 1125-1134. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069750668&doi=10.1016%2fi.scitoteny.2019.07.12

8&partnerID=40&md5=4e12517429ae80b02ad8&ca92edd8a4. doi:10.1016/j.scitotenv.2019.07.128 Malone, S. L., Schoettle, A. W., & Coop, J. D. (2018). The future of subalpine forests in the Southern rocky mountains:

- Trajectories for Pinus aristata genetic lineages. *PLoS ONE, 13*(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044226562&doi=10.1371%2fjournal.pone.0193481 &partnerID=40&md5=9d2b5c945a7937ebaa2278ca5dac59e2. doi:10.1371/journal.pone.0193481
- Manter, D. K., Delgado, J. A., Blackburn, H. D., Harmel, D., De León, A. A. P., & Honeycutt, C. W. (2017). Why we need a national living soil repository. *Proceedings of the National Academy of Sciences of the United States of America*, 114(52), 13587-13590. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039712244&doi=10.1073%2fpnas.1720262115&pa rtnerID=40&md5=222695758f10624cf541e4b371621a1d. doi:10.1073/pnas.1720262115
- Marcos-Martinez, R., Bryan, B. A., Schwabe, K. A., Connor, J. D., Law, E. A., Nolan, M., & Sánchez, J. J. (2019). Projected social costs of CO <inf>2 </inf> emissions from forest losses far exceed the sequestration benefits of forest gains under global change. *Ecosystem Services*, 37. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065539757&doi=10.1016%2fj.ecoser.2019.100935
- &partnerlD=40&md5=3940ec02573fce7dc227dee0b3199033. doi:10.1016/j.ecoser.2019.100935
  Mariano, D. A., Santos, C. A. C. D., Wardlow, B. D., Anderson, M. C., Schiltmeyer, A. V., Tadesse, T., & Svoboda, M. D. (2018). Use of remote sensing indicators to assess effects of drought and human-induced land degradation on ecosystem health in Northeastern Brazil. *Remote Sensing of Environment*, 213, 129-143. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047087437&doi=10.1016%2fj.rse.2018.04.048&par tnerlD=40&md5=d6162e853a14be7319da742adec240d2. doi:10.1016/j.rse.2018.04.048
- Marias, D. E., Meinzer, F. C., & Still, C. (2017). Leaf age and methodology impact assessments of thermotolerance of Coffea arabica. *Trees - Structure and Function*, 31(3), 1091-1099. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84991753345&doi=10.1007%2fs00468-016-1476-4& partnerID=40&md5=cea35debcf5753de76059b354c1642b1. doi:10.1007/s00468-016-1476-4
- Marini, L, Økland, B., Jönsson, A. M., Bentz, B., Carroll, A., Forster, B., . . . Schroeder, M. (2017). Climate drivers of bark beetle outbreak dynamics in Norway spruce forests. *Ecography*, 40(12), 1426-1435. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85012078092&doi=10.1111%2fecog.02769&partnerl D=40&md5=4945830e1fe24c924a1afbc0a6d1a533. doi:10.1111/ecog.02769
- Markland, S. M., Ingram, D., Kniel, K. E., & Sharma, M. (2017). Water for agriculture: The convergence of sustainability and safety. *Microbiology Spectrum*, 5(3). Retrieved from 69

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020238691&doi=10.1128%2fmicrobiolspec.PFS-00 14-2016&partnerID=40&md5=9b6b2d68c0da4124030087ff788f6c47. doi:10.1128/microbiolspec.PFS-0014-2016

Marsberg, A., Kemler, M., Jami, F., Nagel, J. H., Postma-Smidt, A., Naidoo, S., . . . Slippers, B. (2017). Botryosphaeria dothidea: a latent pathogen of global importance to woody plant health. *Molecular Plant Pathology, 18*(4), 477-488. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006788866&doi=10.1111%2fmpp.12495&partnerl D=40&md5=8e44f04c7c9f04163bd4624c34059756. doi:10.1111/mpp.12495

- Marshall, A. M., Link, T. E., Abatzoglou, J. T., Flerchinger, G. N., Marks, D. G., & Tedrow, L. (2019). Warming Alters Hydrologic Heterogeneity: Simulated Climate Sensitivity of Hydrology-Based Microrefugia in the Snow-to-Rain Transition Zone. Water Resources Research, 55(3), 2122-2141. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064434088&doi=10.1029%2f2018WR023063&part nerD=40&md5=e962db874a218112bd349deed4549c8f. doi:10.1029/2018WR023063
- Marshall-Colon, A., Long, S. P., Allen, D. K., Allen, G., Beard, D. A., Benes, B., . . . Zhu, X. G. (2017). Crops in silico: Generating virtual crops using an integrative and multi-scale modeling platform. *Frontiers in Plant Science, 8.* Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021119584&doi=10.3389%2ffpls.2017.00786&part nerID=40&md5=7df67f95588eae65401e58c876dea613. doi:10.3389/fpls.2017.00786

Martin, E. A., Davis, M. P., Moorman, T. B., Isenhart, T. M., & Soupir, M. L. (2019). Impact of hydraulic residence time on nitrate removal in pilot-scale woodchip bioreactors. *Journal of Environmental Management*, 237, 424-432. Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062717886\&doi=10.1016\%2fj.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44737579d4fd64e3d7116fa18d359cda.\ doi:10.1016/j.jenvman.2019.01.025\&partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\&md5=44\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerlD=40\%partnerl$ 

Martin, K. L., Hwang, T., Vose, J. M., Coulston, J. W., Wear, D. N., Miles, B., & Band, L. E. (2017). Watershed impacts of climate and land use changes depend on magnitude and land use context. *Ecohydrology*, 10(7). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85024122142&doi=10.1002%2feco.1870&partnerID=40&md5=b39cdb8460cbc8f7689922f440cedbd0. doi:10.1002/eco.1870

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030545662&doi=10.3168%2fjds.2017-13080&part nerID=40&md5=4ecbdd3742f373c2de5b01f17f78ca6e. doi:10.3168/jds.2017-13080

Martinez, A. J., Meddens, A. J. H., Kolden, C. A., Strand, E. K., & Hudak, A. T. (2019). Characterizing persistent unburned islands within the Inland Northwest USA. *Fire Ecology*, 15(1). Retrieved from https://www.sconus.com/inward/record.uri?eid=2-s20-850680660068/doi=10.1186%2fs42408-019-0036-x8/

partner(D=408md5=cf6f1a966ebf63299f272f83137b07cf. doi:10.1186/s42408-019-0036-x Martínez-Berdeja, A., Hamilton, J. A., Bontemps, A., Schmitt, J., & Wright, J. W. (2019). Evidence for population

Variate 2-berueja, A., Harmiton, J. A., Bornemps, A., Schmitt, J., & Winght, J. W. (2019). Evidence for population differentiation among Jeffrey and Ponderosa pines in survival, growth and phenology. Forest Ecology and Management, 434, 40-48. Retrieved from https://www.com/source/fice.org/invarid/record/uri2oid=2, c2.0, 850581451088/doi=10.10168/36/fice.oc.2018.12.00

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058145108&doi=10.1016%2fj.foreco.2018.12.009& partnerlD=40&md5=b28e87f60b8f0d8f8641a277f08402da. doi:10.1016/j.foreco.2018.12.009 Martins, C. S. C., Nazaries, L., Delgado-Baguerizo, M., Macdonald, C. A., Anderson, I. C., Hobbie, S. E., . . . Singh, B. K.

Viartins, C. S. C., Nazaries, L., Deigado-Baquenzo, M., Macdonald, C. A., Anderson, I. C., Hobble, S. E., . . . Singh, B. K. (2017). Identifying environmental drivers of greenhouse gas emissions under warming and reduced rainfall in boreal–temperate forests. *Functional Ecology*, *31*(12), 2356-2368. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026731666&doi=10.1111%2f1365-2435.12928&pa rtnerID=40&md5=01127001e750a57eea9f913707f94e86. doi:10.1111/1365-2435.12928

Martinuzzi, S., Allstadt, A. J., Pidgeon, A. M., Flather, C. H., Jolly, W. M., & Radeloff, V. C. (2019). Future changes in fire weather, spring droughts, and false springs across U.S. National Forests and Grasslands. *Ecological Applications*, 29(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068220688&doi=10.1002%2feap.1904&partnerlD= 40&md5=e54229e98456ccaa082cd5b8a0043ae3. doi:10.1002/eap.1904

Mason, S. A., Hamlington, P. E., Hamlington, B. D., Matt Jolly, W., & Hoffman, C. M. (2017). Effects of climate

oscillations on wildland fire potential in the continental United States. Geophysical Research Letters, 44(13), 7002-7010. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85023206170&doi=10.1002%2f2017GL074111&partnerID=40&md5=868b9b550f3d624862c596181ca4cbce. doi:10.1002/2017GL074111

Matamala, R., Jastrow, J. D., Calderón, F. J., Liang, C., Fan, Z., Michaelson, G. J., & Ping, C. L. (2019). Predicting the decomposability of arctic tundra soil organic matter with mid infrared spectroscopy. *Soil Biology and Biochemistry*, 129, 1-12. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057245577&doi=10.1016%2fj.soilbio.2018.10.014& partnerID=40&md5=fb7dde9b949220283143ee90bfcc457f. doi:10.1016/j.soilbio.2018.10.014

Matos, P., Geiser, L., Hardman, A., Glavich, D., Pinho, P., Nunes, A., . . . Branquinho, C. (2017). Tracking global change using lichen diversity: towards a global-scale ecological indicator. *Methods in Ecology and Evolution*, 8(7), 788-798. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022072267&doi=10.1111%2f2041-210X.12712&partnerlD=40&md5=2d31ff516347d408d7687771f427f760. doi:10.1111/2041-210X.12712

Matosziuk, L. M., Alleau, Y., Kerns, B. K., Bailey, J., Johnson, M. G., & Hatten, J. A. (2019). Effects of season and interval of prescribed burns on pyrogenic carbon in ponderosa pine stands in the southern Blue Mountains, Oregon, USA. *Geoderma*, 348, 1-11. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064327027&doi=10.1016%2fj.geoderma.2019.04.0 09&partnerID=40&md5=1ad40e6845d6ad48c49279f0892ce6df. doi:10.1016/j.geoderma.2019.04.009 Matthews, S. N., & Iverson, L. R. (2017). Managing for delicious ecosystem service under climate change: Can United

Matthews, S. N., & Verson, E. N. (2017). Managing in deficitous ecosystem service under climate change. Can Onited States sugar maple (acer saccharum) syrup production be maintained in a warming climate? International Journal of Biodiversity Science, Ecosystem Services and Management, 13(2), 40-52. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034604376&doi=10.1080%2f21513732.2017.12858 15&partnerID=40&md5=1ca8c38ab432985a3f3d623e77173bd9. doi:10.1080/21513732.2017.1285815

- Matthews, T. J., Sadler, J. P., Kubota, Y., Woodall, C. W., & Pugh, T. A. M. (2019). Systematic variation in North American tree species abundance distributions along macroecological climatic gradients. *Global Ecology and Biogeography*, 28(5), 601-611. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060730446&doi=10.1111%2fgeb.12879&partnerID =40&md5=008c82c78f3dd4414f2308a2f31cf92f. doi:10.1111/geb.12879
- Mattia, F., Balenzano, A., Satalino, G., Lovergine, F., Peng, J., Wegmuller, U., . . . Jackson, T. (2018). Sentinel-1 & amp; Sentinel-2 for soil moisture retrieval at field scale. Paper presented at the International Geoscience and Remote Sensing Symposium (IGARSS).
- Mau, A. C., Reed, S. C., Wood, T. E., & Cavaleri, M. A. (2018). Temperate and tropical forest canopies are already functioning beyond their thermal thresholds for photosynthesis. *Forests*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050926621&doi=10.3390%2fF9010047&partnerID =40&md5=5c87c9dd6d45af12501500244a40f3a9. doi:10.3390/F9010047

Mauget, S. A. (2018). Optimal ranking regime analysis of U.S. summer temperature and degree-days: 1895-2015. Journal of Applied Meteorology and Climatology, 57(9), 2141-2159. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053461287&doi=10.1175%2fJAMC-D-18-0063.1& partnerlD=40&md5=52a26f3af9ce0c873e5e6360bc97f91c. doi:10.1175/JAMC-D-18-0063.1

- Mauget, S. A. (2018). Reconstructed and projected U.S. residential natural gas consumption during 1896-2043. Journal of Applied Meteorology and Climatology, 57(3), 607-625. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043975243&doi=10.1175%2fJAMC-D-17-0155.1& partnerlD=40&md5=da14f247b8d045a08fe47bde3660bcda. doi:10.1175/JAMC-D-17-0155.1
- Mauget, S. A., Leiker, G. L., Schroeder, J., Hirth, B., Burgett, W., & Haynie, K. B. (2017). A web application for managing regional crop production: The West Texas Mesonet agro-climate monitor. *Agronomy Journal*, 109(4), 1602-1611. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85023754427&doi=10.2134%2fagronj2016.07.0424&

partnerlD=40&md5=cdbee0c8d1eb8ac24beeda9857def474. doi:10.2134/agronj2016.07.0424 Maurer, D. L, Koziel, J. A., Bruning, K., & Parker, D. B. (2017). Farm-scale testing of soybean peroxidase and calcium peroxide for surficial swine manure treatment and mitigation of odrous VOCs, ammonia and hydrogen sulfide emissions. *Atmospheric Environment*, *166*, 467-478. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026733187&doi=10.1016%2fj.atmosenv.2017.07.0

48&partnerID=40&md5=38b00ae8bd4f58ae497518a2309ed2d9. doi:10.1016/j.atmosenv.2017.07.048 Maurer, D. L., Koziel, J. A., Bruning, K., & Parker, D. B. (2017). Pilot-scale testing of renewable biocatalyst for swine manure treatment and mitigation of odorous VOCs, ammonia and hydrogen sulfide emissions. *Atmospheric Environment*, 150, 313-321. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006000164&doi=10.1016%2fj.atmosenv.2016.11.0 21&partnerID=40&md5=429c3e5d37c2e831f99e53b59fa4fce2. doi:10.1016/j.atmosenv.2016.11.021

Maynard, J. J., & Karl, J. W. (2017). A hyper-temporal remote sensing protocol for high-resolution mapping of ecological sites. *PLoS ONE*, 12(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017585791&doi=10.1371%2fjournal.pone.0175201

https://www.scopus.com/inward/record.un/eid=2-s2.0-8501786791ddoi=10.1371%2fjournal.pone.0175201 &partnerlD=40&md5=7539fdcc1edd8d5b2ae34fdd736c4e70. doi:10.1371/journal.pone.0175201 Maynard, J. J., & Levi, M. R. (2017). Hyper-temporal remote sensing for digital soil mapping: Characterizing

Mayhard, J. J., & Levi, N. R. (2017). Hyper-temporal remote sensing for digital soli mapping. Characterizing soil-vegetation response to climatic variability. *Geoderma*, 285, 94-109. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2\_0-84988978335&doi=10.1016%2fj.geoderma.2016.09.0 24&partnerID=40&md5=890cb87ba1eb9a27d5c8d9991cbb5d3d. doi:10.1016/j.geoderma.2016.09.024

Maynard, J. J., Nauman, T. W., Salley, S. W., Bestelmeyer, B. T., Duniway, M. C., Talbot, C. J., & Brown, J. R. (2019). Digital mapping of ecological land units using a nationally scalable modeling framework. *Soil Science Society of America Journal*, 83(3), 666-686. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068650549&doi=10.2136%2fsssaj2018.09.0346&p

artherD=49&mat5=f5852a7cf0b79c2e0b39fbafa3db4c93. doi:10.2136/sssaj2018.09.0346 McAvoy, T. J., Régnière, J., St-Amant, R., Schneeberger, N. F., & Salom, S. M. (2017). Mortality and recovery of

hemolockwoolly adelgid (Adelgid (source and the source adelgid), no. 1, or salori, or no. (2017). Morearly and recovery of hemolockwoolly adelgid (Adelgid (source adelgid), no. 1, or salori, or no. (2017). Morearly and recovery of hemolockwoolly adelgid (source adelgid), no. (2017). Morearly and recovery of hemolockwoolly adelgid (source adelgid), no. (2017). Morearly and recovery of hemolockwoolly adelgid (source adelgid), no. (2017). Morearly and recovery of hemolockwoolly adelgid (source adelgid), no. (2017). Morearly and recovery of hemolockwoolly adelgid (source adelgid), no. (2017). Morearly adelgid (source adelgid), no. (2017). Morearly and recovery of hemolockwoolly adelgid (source adelgid), no. (2017). Morearly adelgid), no. (2017). Morearly adelgid (source adelgid), no. (2017). Morearly adelg

nttps://www.scopus.com/inward/record.un/eid=2-s2.0-85038213906&doi=10.3390%2ff8120497&partneriD =40&md5=17d4c7e6f9750bd3d1a53884f522a753. doi:10.3390/f8120497

McCaffrey, S., Wilson, R., & Konar, A. (2018). Should I Stay or Should I Go Now? Or Should I Wait and See? Influences on Wildfire Evacuation Decisions. *Risk Analysis, 38*(7), 1390-1404. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034848272&doi=10.1111%2frisa.12944&partnerID =40&md5=c88763481ef98285dc420af59328c8a4. doi:10.1111/risa.12944

McCollum, D. W., Tanaka, J. A., Morgan, J. A., Mitchell, J. E., Fox, W. E., Maczko, K. A., . . . Kreuter, U. P. (2017). Climate change effects on rangelands and rangeland management: affirming the need for monitoring. *Ecosystem Health and Sustainability*, 3(3). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051394676&doi=10.1002%2fehs2.1264&partnerID =40&md5=0d90f47dd454ef8fe7e3bd1dde63d8ab. doi:10.1002/ehs2.1264

McDonald, J. M., Srock, A. F., & Charney, J. J. (2018). Development and application of a Hot-Dry-Windy Index (HDW) climatology. Atmosphere, 9(7). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050457378&doi=10.3390%2fatmos9070285&partn erID=40&md5=089f89b1e66387770abfa5a36aceed8e. doi:10.3390/atmos9070285

- McDowell, N., Allen, C. D., Anderson-Teixeira, K., Brando, P., Brienen, R., Chambers, J., . . . Xu, X. (2018). Drivers and mechanisms of tree mortality in moist tropical forests. *New Phytologist, 219*(3), 851-869. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042113356&doi=10.1111%2fnph.15027&partnerID =40&md5=1d7deb0c0769e7b438bb54286987b758. doi:10.1111/nph.15027
- McDowell, R. W., Elkin, K. R., & Kleinman, P. J. A. (2017). Temperature and nitrogen effects on phosphorus uptake by agricultural stream-bed sediments. *Journal of Environmental Quality, 46*(2), 295-301. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015922473&doi=10.2134%2fjeq2016.09.0352&par tnerID=40&md5=54fa625e528563dec5912a5a845c60a8. doi:10.2134/jeq2016.09.0352
- McFadden, J. R., & Miranowski, J. A. (2017). Extreme weather, biotechnology, and corn productivity. Paper presented at the Springer Proceedings in Mathematics and Statistics.

McGuire, A. D., Genet, H., Lyu, Z., Pastick, N., Stackpoole, S., Birdsey, R., . . . Zhu, Z. (2018). Assessing historical and projected carbon balance of Alaska: A synthesis of results and policy/management implications. *Ecological Applications*, 28(6), 1396-1412. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051591224&doi=10.1002%2feap.1768&partnerID=40&md5=15cdfb625e169716ebbb2759c5b6151f.doi:10.1002/eap.1768

McGuire, A. D., Zhu, Z., Birdsey, R., Pan, Y., & Schimel, D. S. (2018). Introduction to the Alaska Carbon Cycle Invited

Feature. Ecological Applications, 28(8), 1938-1939. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057869376&doi=10.1002%2feap.1808&partnerID= 40&md5=53910ad7b7f82be3ca1a807eeaa161db. doi:10.1002/eap.1808

McGwire, K. C., Weltz, M. A., Snyder, K. A., Huntington, J. L., Morton, C. G., & McEvoy, D. J. (2017). Satellite Assessment of Early-Season Forecasts for Vegetation Conditions of Grazing Allotments in Nevada, United States. Rangeland Ecology and Management, 70(6), 730-739. Retrieved from

253

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032862719&doi=10.1016%2fj.rama.2017.06.005&p artnerID=40&md5=32808063e94507e51fdeb4878a2d3ce7. doi:10.1016/j.rama.2017.06.005
- McIntosh, M. M., Holechek, J. L., Spiegal, S. A., Cibils, A. F., & Estell, R. E. (2019). Long-Term Declining Trends in Chihuahuan Desert Forage Production in Relation to Precipitation and Ambient Temperature. Rangeland Ecology and Management, Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070311389&doi=10.1016%2fj.rama.2019.06.002&p

artnerID=40&md5=4ad33fcd4e50fb3cefdbf36d62863940. doi:10.1016/j.rama.2019.06.002

McKelvey, K. S., & Buotte, P. C. (2018) Effects of Climate Change on Wildlife in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 143-167).

- McManis, A. E., Powell, J. A., & Bentz, B. J. (2019). Developmental parameters of a southern mountain pine beetle (Coleoptera: Curculionidae) population reveal potential source of latitudinal differences in generation time. Canadian Entomologist, 151(1), 1-15. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056811554&doi=10.4039%2ftce.2018.51&partnerl
- D=40&md5=ec880a4197be2712f46988a885cd1719. doi:10.4039/tce.2018.51 McManis, A. E., Powell, J. A., & Bentz, B. J. (2019). Modeling mountain pine beetle (Dendroctonus ponderosae) oviposition, Entomologia Experimentalis et Applicata, 167(5), 457-466, Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063798296&doi=10.1111%2feea.12783&partnerID =40&md5=2506323804a7822f9e3f95e39c7a2a84. doi:10.1111/eea.12783
- McNicol, G., Bulmer, C., D'Amore, D., Sanborn, P., Saunders, S., Giesbrecht, I., . . . Buma, B. (2019). Large, climate-sensitive soil carbon stocks mapped with pedology-informed machine learning in the North Pacific coastal temperate rainforest. Environmental Research Letters, 14(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064121852&doi=10.1088%2f1748-9326%2faaed52 &partnerID=40&md5=7e1edaf70a60a7548e2b71bc9940676a. doi:10.1088/1748-9326/aaed52
- McNulty, S., Du, E., & Paoletti, E. (2017). Virtual Special Issue Preface: Forest Response to Environmental Stress: Impacts and Adaptation. Science of the Total Environment, 607-608, 647-648. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022180785&doi=10.1016%2fj.scitotenv.2017.06.20 4&partnerID=40&md5=69fba6ab1668a5040dca95fd471b2a19. doi:10.1016/j.scitotenv.2017.06.204
- McNulty, S. G., Boggs, J. L., Aber, J. D., & Rustad, L. E. (2017). Spruce-fir forest changes during a 30-year nitrogen saturation experiment, Science of the Total Environment, 605-606, 376-390, Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021428825&doi=10.1016%2fi.scitotenv.2017.06.14 7&partnerID=40&md5=9de88ec73368c67a22b029966027e67f. doi:10.1016/j.scitotenv.2017.06.147
- McPartland, M. Y., Kane, E. S., Falkowski, M. J., Kolka, R., Turetsky, M. R., Palik, B., & Montgomery, R. A. (2019). The response of boreal peatland community composition and NDVI to hydrologic change, warming, and elevated carbon dioxide. Global Change Biology, 25(1), 93-107. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055526693&doi=10.1111%2fgcb.14465&partnerID =40&md5=a2627d3fe768f86624350567983d532d. doi:10.1111/gcb.14465

McPherson, E. G., Berry, A. M., & van Doorn, N. S. (2018). Performance testing to identify climate-ready trees. Urban Forestry and Urban Greening, 29, 28-39. Retrieved from

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033409596&doi=10.1016%2fj.ufug.2017.09.003&p artnerID=40&md5=4180d58133fbb702db76e18abbe2beaf. doi:10.1016/j.ufug.2017.09.003
- McPherson, E. G., Xiao, Q., van Doorn, N. S., de Goede, J., Bjorkman, J., Hollander, A., . . . Thorne, J. H. (2017). The structure, function and value of urban forests in California communities. Urban Forestry and Urban Greening, 28, 43-53. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031507941&doi=10.1016%2fj.ufug.2017.09.013&p artnerID=40&md5=ea97432264a82649c45b30082a9dabca. doi:10.1016/j.ufug.2017.09.013

McRoberts, R. E., Næsset, E., & Gobakken, T. (2018). Comparing the stock-change and gain-loss approaches for estimating forest carbon emissions for the aboveground biomass pool. Canadian Journal of Forest Research, 73

48(12), 1535-1542. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057773463&doi=10.1139%2fcjfr-2018-0295&partn

- erlD=40&md5=832519a8f69beafd42b8e26bd7f49142. doi:10.1139/cjfr-2018-0295 Mech, A. M., Tobin, P. C., Teskey, R. O., Rhea, J. R., & Gandhi, K. J. K. (2018). Increases in summer temperatures decrease the survival of an invasive forest insect. *Biological Invasions, 20*(2), 365-374. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027505905&doi=10.1007%2fs10530-017-1537-7& partnerlD=40&md5=363939f00c9d8d924717c613af7644e0. doi:10.1007/s10530-017-1537-7
- Mehan, S., Aggarwal, R., Gitau, M. W., Flanagan, D. C., Wallace, C. W., & Frankenberger, J. R. (2019). Assessment of hydrology and nutrient losses in a changing climate in a subsurface-drained watershed. *Science of the Total Environment, 688*, 1236-1251. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068168488&doi=10.1016%2fj.scitotenv.2019.06.31
- https://www.scopus.com/inward/record.un/reid=z-s2.0-850681684888a0i=10.1016%zfj.scitotenv.2019.06.3 4&partnerlD=40&md5=b6ebb110ee5ad61c0018d17913dabb5. doi:10.1016/j.scitotenv.2019.06.314 Mehan, S., Gitau, M. W. & Flanagan, D. C. (2019). Reliable future climatic projections for sustainable
- hydro-meteorological assessments in the Western Lake Erie Basin. *Water (Switzerland), 11*(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065013336&doi=10.3390%2fw11030581&partnerl D=40&md5=008703f0c46950d898f5e2a4b3863e76. doi:10.3390/w11030581
- Mehan, S., Guo, T., Gitau, M. W., & Flanagan, D. C. (2017). Comparative study of different stochasticweather generators for long-term climate data simulation. *Climate*, 5(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027383062&doi=10.3390%2fcli5020026&partnerID =40&md5=ec5c3784ca2eaf3bfe36fa7da6d0262a. doi:10.3390/cli5020026
- Mehmood, K., Chávez Garcia, E., Schirrmann, M., Ladd, B., Kammann, C., Wrage-Mönnig, N., . . . Borchard, N. (2017). Biochar research activities and their relation to development and environmental quality. A meta-analysis. Agronomy for Sustainable Development, 37(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020537248&doi=10.1007%2fs13593-017-0430-1& partnerlD=40&md5=cc7771f75b67af009a714e16d9e00b92. doi:10.1007/s13593-017-0430-1
- Mehra, P., Baker, J., Sojka, R. E., Bolan, N., Desbiolles, J., Kirkham, M. B., . . . Gupta, R. (2018) A Review of Tillage Practices and Their Potential to Impact the Soil Carbon Dynamics. In: *Vol. 150. Advances in Agronomy* (pp. 185-230).
- Meiners, J. M., Griswold, T. L., & Carril, O. M. (2019). Decades of native bee biodiversity surveys at Pinnacles National Park highlight the importance of monitoring natural areas over time. *PLoS ONE, 14*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060183144&doi=10.1371%2fjournal.pone.0207566 &partnerID=40&md5=245fc000651adf81d2a7fac3b07fa0d5. doi:10.1371/journal.pone.0207566
- Meiners, J. M., Griswold, T. L., Harris, D. J., & Ernest, S. K. M. (2017). Bees without flowers: Before peak bloom, diverse native bees find insect-produced honeydew sugars. *American Naturalist*, 190(2), 281-291. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026287971&doi=10.1086%2f692437&partnerID=4 0&md5=ce286af793d93b5a6f6fae7fa0c4e634. doi:10.1086/692437
- Mejia, F. H., Fremier, A. K., Benjamin, J. R., Bellmore, J. R., Grimm, A. Z., Watson, G. A., & Newsom, M. (2019). Stream metabolism increases with drainage area and peaks asynchronously across a stream network. Aquatic Sciences, 81(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057991093&doi=10.1007%2fs00027-018-0606-z&
- partnerID=40&md5=0632409d5347bfbfe7d7ef9af1febaed. doi:10.1007/s00027-018-0606-z
  Meng, R., Dennison, P. E., Zhao, F., Shendryk, I., Rickert, A., Hanavan, R. P., . . . Serbin, S. P. (2018). Mapping canopy defoliation by herbivorous insects at the individual tree level using bit-temporal airborne imaging spectroscopy and LiDAR measurements. *Remote Sensing of Environment*, *215*, 170-183. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048265825&doi=10.1016%2fj.rse.2018.06.008&par tnerD=40&md5=e9664c0f9ac7fcce251fd3bc3278f9aa8. doi:10.1016/j.rse.2018.06.008
- Meng, R., Wu, J., Zhao, F., Cook, B. D., Hanavan, R. P., & Serbin, S. P. (2018). Measuring short-term post-fire forest recovery across a burn severity gradient in a mixed pine-oak forest using multi-sensor remote sensing techniques. *Remote Sensing of Environment*, 210, 282-296. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044455257&doi=10.1016%2fj.rse.2018.03.019&par tnerID=40&rnd5=0a840ae848da242b518501ae264ee43e. doi:10.1016/j.rse.2018.03.019
- Metlen, K. L., Skinner, C. N., Olson, D. R., Nichols, C., & Borgias, D. (2018). Regional and local controls on historical fire regimes of dry forests and woodlands in the Rogue River Basin, Oregon, USA. *Forest Ecology and*

Management, 430, 43-58. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051117129&doi=10.1016%2fj.foreco.2018.07.010& partnerID=40&md5=a34eca0da5b63a512d1d4e7475461d4e. doi:10.1016/j.foreco.2018.07.010

- Meurisse, N., Rassati, D., Hurley, B. P., Brockerhoff, E. G., & Haack, R. A. (2019). Common pathways by which non-native forest insects move internationally and domestically. *Journal of Pest Science*, 92(1), 13-27. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047821550&doi=10.1007%2fs10340-018-0990-0& partnerID=40&md5=25b3e3eb19fe27aeb9436ab9ccf79d8b. doi:10.1007/s10340-018-0990-0
- Meyer, V., Saatchi, S., Clark, D. B., Keller, M., Vincent, G., Ferraz, A., . . . Chave, J. (2018). Canopy area of large trees explains aboveground biomass variations across neotropical forest landscapes. *Biogeosciences*, 15(11), 3377-3390. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048321096&doi=10.5194%2fbg-15-3377-2018&pa rtnerlD=40&md5=14dd881d7931c7e55166bd3a3bff0c0f. doi:10.5194/bg-15-3377-2018
- Miao, G., Noormets, A., Domec, J. C., Fuentes, M., Trettin, C. C., Sun, G., . . . King, J. S. (2017). Hydrology and microtopography control carbon dynamics in wetlands: Implications in partitioning ecosystem respiration in a coastal plain forested wetland. *Agricultural and Forest Meteorology*, 247, 343-355. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028394022&doi=10.1016%2fj.agrformet.2017.08.02 22&partnerID=40&md5=918f8c589b56717a4d7ab9a701a73ec5. doi:10.1016/j.agrformet.2017.08.022
- Michaelides, K., Hollings, R., Singer, M. B., Nichols, M. H., & Nearing, M. A. (2018). Spatial and temporal analysis of hillslope–channel coupling and implications for the longitudinal profile in a dryland basin. *Earth Surface Processes and Landforms*, 43(8), 1608-1621. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042066498&doi=10.1002%2fesp.4340&partnerID=
  - nttps://www.scopus.com/inward/record.un/eid=2-32.0-850420664988doi=10.1002%2fesp.43408partneriD= 40&md5=5d51046ed63500718dceed26ee3c9e23. doi:10.1002/esp.4340
- Miesel, J., Reiner, A., Ewell, C., Maestrini, B., & Dickinson, M. (2018). Quantifying changes in total and pyrogenic carbon stocks across fire severity gradients using active wildfire incidents. *Frontiers in Earth Science, 6.* Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049534754&doi=10.3389%2ffeart.2018.00041&partnerlD=40&md5=b77e21f15142419b84b04aa95042bfb4. doi:10.3389/feart.2018.00041

Mildrexler, D. J., Shaw, D. C., & Cohen, W. B. (2019). Short-term climate trends and the Swiss needle cast epidemic in Oregon's public and private coastal forestlands. *Forest Ecology and Management*, 432, 501-513. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054185668&doi=10.1016%2fj.foreco.2018.09.025& partnerID=40&md5=4d7541acd978fadd0294dfbd87fea0ee. doi:10.1016/j.foreco.2018.09.025

Mildrexler, D. J., Zhao, M., Cohen, W. B., Running, S. W., Song, X. P., & Jones, M. O. (2018). Thermal anomalies detect critical global land surface changes. *Journal of Applied Meteorology and Climatology*, 57(2), 391-411. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042423107&doi=10.1175%2fJAMC-D-17-0093.1&

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042423107&doi=10.1175%2tJAMC-D-17-0093.1& partnerID=40&md5=0f53cbe800ece6e6145356226b973352. doi:10.1175/JAMC-D-17-0093.1

Millar, C. I., Charlet, D. A., Delany, D. L., King, J. C., & Westfall, R. D. (2019). Shifts of demography and growth in limber pine forests of the Great Basin, USA, across 4000 yr of climate variability. *Quaternary Research (United States)*, 91(2), 679-690. Retrieved from

Millar, C. I., Charlet, D. A., Westfall, R. D., King, J. C., Delany, D. L., Flint, A. L., & Flint, L. E. (2018). Do low-elevation ravines provide climate refugia for subalpine limber pine (Pinus flexilis) in the Great Basin, USA? *Canadian Journal of Forest Research*, 48(6), 663-671. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047764232&doi=10.1139%2fcjfr-2017-0374&partn

erlD=40&md5=1fd341a53acba102e8233e20f09f7e71. doi:10.1139/cjfr-2017-0374 Millar, C. I., Delany, D. L., Hersey, K. A., Jeffress, M. R., Smith, A. T., Van Gunst, K. J., & Westfall, R. D. (2018). Distribution, climatic relationships, and status of American pikas (Ochotona princeps) in the Great Basin, USA. Arctic, Antarctic, and Alpine Research, 50(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055246600&doi=10.1080%2f15230430.2018.14362 96&partnerID=40&md5=fac0f0af774ae360becdd80ea0ac1b26. doi:10.1080/15230430.2018.1436296 Millar, D. J., Cooper, D. J., Dwire, K. A., Hubbard, R. M., & von Fischer, J. (2017). Mountain Peatlands Range from CO<inf>2</inf> Sinks at High Elevations to Sources at Low Elevations: Implications for a Changing Climate. *Ecosystems*, 20(2), 416-432. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84988660471&doi=10.1007%2fs10021-016-0034-7& partnerlD=40&md5=e821e9598c0a1471339abe001b4c4c70. doi:10.1007/s10021-016-0034-7

- Miller, D. A. W., Grant, E. H. C., Muths, E., Amburgey, S. M., Adams, M. J., Joseph, M. B., . . . Sigafus, B. H. (2018). Quantifying climate sensitivity and climate-driven change in North American amphibian communities. *Nature Communications*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053920761&doi=10.1038%2fs41467-018-06157-6
- ApartneriD=40&md5=8f2a8e8bc320fce02f78ff9a8e974es. doi:10.1038/s41467-018-06157-6 Miller, J. E. D., Root, H. T., & Safford, H. D. (2018). Altered fire regimes cause long-term lichen diversity losses. *Global*

Change Biology, 24(10), 4909-4918. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052398601&doi=10.1111%2fgcb.14393&partnerID =40&md5=e9bc1ebbb769db17073710c6c5acfb51. doi:10.1111/qcb.14393

- Miller, J. O., Ducey, T. F., Brigman, P. W., Ogg, C. O., & Hunt, P. G. (2017). Greenhouse Gas Emissions and Denitrification within Depressional Wetlands of the Southeastern US Coastal Plain in an Agricultural Landscape. Wetlands, 37(1), 33-43. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84991608373&doi=10.1007%2fs13157-016-0837-5& partnerD=40&md5=d19c21de7a6b9b9f1a13300ab9e202e5. doi:10.1007/s13157-016-0837-5
- Mills, G., Sharps, K., Simpson, D., Pleijel, H., Frei, M., Burkey, K., . . . Agrawal, M. (2018). Closing the global ozone yield gap: Quantification and cobenefits for multistress tolerance. *Global Change Biology*, 24(10), 4869-4893. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052436143&doi=10.1111%2fgcb.14381&partnerlD=40&md5=9cae2706f85e0f443025ab5af9c69f55. doi:10.1111/gcb.14381

- Mills, R. T., Sripathi, V., Kumar, J., Sreepathi, S., Hoffman, F., & Hargrove, W. (2019). Parallel k-means clustering of geospatial data sets using manycore CPU architectures. Paper presented at the IEEE International Conference on Data Mining Workshops, ICDMW.
- Mirns, M. C., Olson, D. H., Pilliod, D. S., & Dunham, J. B. (2018). Functional and geographic components of risk for climate sensitive vertebrates in the Pacific Northwest, USA. *Biological Conservation*, 228, 183-194. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055676917&doi=10.1016%2fj.biocon.2018.10.012 &partnerID=40&md5=ece2d01072ca8f6fcc73b84d713d3b0d. doi:10.1016/j.biocon.2018.10.012

Minasny, B., Berglund, Ö., Connolly, J., Hedley, C., de Vries, F., Gimona, A., ... Widyatmanti, W. (2019). Digital mapping of peatlands – A critical review. *Earth-Science Reviews, 196*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067246460&doi=10.1016%2fj.earscirev.2019.05.01

4&partnerlD=40&md5=088ef671f1ff5bfbab1d932e4a6863a6. doi:10.1016/j.earscirev.2019.05.014 Minasny, B., Malone, B. P., McBratney, A. B., Angers, D. A., Arrouays, D., Chambers, A., . . . Winowiecki, L. (2017). Soil

carbon 4 per mille. *Geoderma, 292*, 59-86. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009919368&doi=10.1016%2fj.geoderma.2017.01.0 02&partnerID=40&md5=8ea1baf4f6daef2d4bc9e2b0d7c6b27b. doi:10.1016/j.geoderma.2017.01.002

Minucci, J. M., Miniat, C. F., Teskey, R. O., & Wurzburger, N. (2017). Tolerance or avoidance: drought frequency determines the response of an N<inf>2</inf>-fixing tree. New Phytologist, 215(1), 434-442. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017429704&doi=10.1111%2fnph.14558&partnerID =40&md5=e162bc7f2359670a7068a2d129ba506c. doi:10.1111/nph.14558

Mirchi, A., Watkins, D. W., Engel, V., Sukop, M. C., Czajkowski, J., Bhat, M., ... Weisskoff, R. (2018). A hydro-economic model of South Florida water resources system. *Science of the Total Environment, 628-629*, 1531-1541. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041541301&doi=10.1016%2fj.scitotenv.2018.02.11 1&partnerID=40&md5=0e1caacd95bdf8d1a111abb1b645d3dd. doi:10.1016/j.scitotenv.2018.02.111 Mishra, V., Cruise, J. F., Hain, C. R., Mecikalski, J. R., & Anderson, M. C. (2018). Development of soil moisture profiles

Isina, V., Cruse, J. P., Han, C. K., McCkalsky J. K., & Anderson, M. C. (2016). Development of soli molscure promes through coupled microwave-thermal infrared observations in the southeastern United States. *Hydrology and Earth System Sciences*, 22(9), 4935-4957. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054104346&doi=10.5194%2fhess-22-4935-2018&

https://www.scopus.com/inward/record.uri/eid=2-s2.0-850541043468doi=10.5194%/thess-22-4935-2018& partnerID=40&md5=99da42cdeeb9963c3e669a66bbfd0dcc. doi:10.5194/hess-22-4935-2018 Mitra, B., Miao, G., Minick, K., McNulty, S. G., Sun, G., Gavazzi, M., . . . Noormets, A. (2019). Disentangling the Effects of Temperature, Moisture, and Substrate Availability on Soil CO<inf>2</inf> Efflux. Journal of Geophysical Research: Biogeosciences. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069923143&doi=10.1029%2f2019JG005148&partnerlD=40&md5=c68d908a9fd5e486221ecdbb021723c5.doi:10.1029/2019JG005148

- Mock, C. J., Carter, K. C., & Birkeland, K. W. (2017). Some Perspectives on Avalanche Climatology. Annals of the American Association of Geographers, 107(2), 299-308. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84987887232&doi=10.1080%2f24694452.2016.12032
- 85&partnerID=40&md5=01ea2fb01b4b03f467e831180a029234. doi:10.1080/24694452.2016.12032 80 Moffet, C. A., Hardegree, S. P., Abatzoglou, J. T., Hegewisch, K. C., Reuter, R. R., Sheley, R. L., ... Boehm, A. R. (2019).
- Weather Tools for Retrospective Assessment of Restoration Outcomes. *Rangeland Ecology and Management*, 72(2), 225-229. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058409003&doi=10.1016%2fj.rama.2018.10.011&p artnerID=40&md5=3a5b44a3bf9e4b45003d7c2af2987d3b. doi:10.1016/j.rama.2018.10.011

Mohammed, A. A., Schincariol, R. A., Quinton, W. L., Nagare, R. M., & Flerchinger, G. N. (2017). On the use of mulching to mitigate permafrost thaw due to linear disturbances in sub-arctic peatlands. *Ecological Engineering*, 102, 207-223. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013774482&doi=10.1016\%2fj.ecoleng.2017.02.020\\ \&partnerlD=40&md5=e1c364593ae24845f3ece9abf891b364. doi:10.1016/j.ecoleng.2017.02.020\\ \&partnerlD=40&md5=e1c36456&md5=e1c36456&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c3645&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c365&md5=e1c36&md5=e1c36&md5=e1c365&md5=e1c36&md5=e1c36&md5=e1c36&md5=e1c36&md5=e1c36&md5=e1c36&md$ 

Mohanty, B. P., Cosh, M. H., Lakshmi, V., & Montzka, C. (2017). Soil moisture remote sensing: State-of-the-science. Vadose Zone Journal, 16(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011345102&doi=10.2136%2fvzj2016.10.0105&part

https://www.scopus.com/inward/record.un/eid=2-s2.0-85011345102&dol=10.2136%2tvzj2016.10.0105&part nerlD=40&md5=c8297d386d5974ee2b7842fccb0461ce. doi:10.2136/vzj2016.10.0105 Molina, J. R., González-Cabán, A., & y Silva, F. R. (2019). Potential effects of climate change on fire behavior, economic

susceptibility and suppression costs in Mediterranean ecosystems: Córdoba Province, Spain. Forests, 10(8). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070564915&doi=10.3390%2ff10080679&partnerlD =40&md5=18cade8b5bc78e19c75105d140b80810. doi:10.3390/f10080679

Möller, M., Gerstmann, H., Gao, F., Dahms, T. C., & Förster, M. (2017). Coupling of phenological information and simulated vegetation index time series: Limitations and potentials for the assessment and monitoring of soil erosion risk. *Catena*, 150, 192-205. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84998717652&doi=10.1016%2fj.catena.2016.11.016& partnerlD=40&md5=e520c1a8000af416fd4bcf09d516c539. doi:10.1016/j.catena.2016.11.016

Monahan, W. B., & Theobald, D. M. (2018). Climate change adaptation benefits of potential conservation partnerships. *PLoS ONE*, *13*(2). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042749263&doi=10.1371%2fjournal.pone.0191468 &partnerID=40&md5=f18449460341dd811640d0600d915a66. doi:10.1371/journal.pone.0191468

Moni, C., Silvennoinen, H., Kimball, B. A., Fjelldal, E., Brenden, M., Burud, I., . . Rasse, D. P. (2019). Controlled infrared heating of an artic meadow: Challenge in the vegetation establishment stage. *Plant Methods*, 15(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060188447&doi=10.1186%2fs13007-019-0387-y&partnerID=40&md5=8563bedd2a107a35ef043a08e76718f9. doi:10.1186/s13007-019-0387-y

Montagnoli, A., Dumroese, R. K., Terzaghi, M., Pinto, J. R., Fulgaro, N., Scippa, G. S., & Chiatante, D. (2018). Tree seedling response to LED spectra: implications for forest restoration. *Plant Biosystems*, 152(3), 515-523. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041926216&doi=10.1080%2f11263504.2018.14355 83&partnerID=40&md5=a58ab0377baeb39ae78853469502db18. doi:10.1080/11263504.2018.1435583

Montpellier, E. E., Soulé, P. T., Knapp, P. A., & Shelly, J. S. (2018). Divergent growth rates of alpine larch trees (Larix lyallii Parl.) in response to microenvironmental variability. Arctic, Antarctic, and Alpine Research, 50(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055273727&doi=10.1080%2f15230430.2017.14156 26&partnerID=40&md5=0f7b45aa7db081c1dc82cf9a85740930. doi:10.1080/15230430.2017.1415626 Montrone, A., Saito, L., Weisberg, P. J., Gosejohan, M., Merriam, K., & Mejia, J. F. (2019). Climate change impacts on

vernal pool hydrology and vegetation in northern California. Journal of Hydrology, 574, 1003-1013. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065839427&doi=10.1016%2fj.jhydrol.2019.04.076 &partnerID=40&md5=1ee768d1734a7e9a119b4bed4807f1bb. doi:10.1016/j.jhydrol.2019.04.076

Mora, C., Spirandelli, D., Franklin, E. C., Lynham, J., Kantar, M. B., Miles, W., ... Hunter, C. L. (2018). Broad threat to humanity from cumulative climate hazards intensified by greenhouse gas emissions. *Nature Climate Change*, 8(12), 1062-1071. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057020893&doi=10.1038%2fs41558-018-0315-6& partnerID=40&md5=c71d9d87a673d75c72e278000bfecc67. doi:10.1038/s41558-018-0315-6

- Moreno-de las Heras, M., Bochet, E., Monleón, V., Espigares, T., Nicolau, J. M., Molina, M. J., & García-Fayos, P. (2018). Aridity Induces Nonlinear Effects of Human Disturbance on Precipitation-Use Efficiency of Iberian Woodlands. *Ecosystems*, 21(7), 1295-1305. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040565212&doi=10.1007%2fs10021-017-0219-8&
- partnerID=40&md5=a66719c4057d89dd7c685e37a8dd2bf9. doi:10.1007/s10021-017-0219-8 Moriasi, D. N., Steiner, J. L., Duke, S. E., Starks, P. J., & Verser, A. J. (2018). Reservoir Sedimentation Rates in the Little Washita River Experimental Watershed, Oklahoma: Measurement and Controlling Factors. *Journal of the American Water Resources Association*, 54(5), 1011-1023. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054183275&ddoi=10.1111%2f1752-1688.12658&pa rtnerID=40&md5=6c8da5c3980fd777798915f236af8fac. doi:10.1111/7752-1688.12658
- - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026822385&doi=10.3389%2ffevo.2017.00010&par tnerID=40&md5=8e9c6736a228ab1b38f1be96599ac013. doi:10.3389/fevo.2017.00010
- Morton, L. W., Roesch-McNally, G., & Wilke, A. K. (2017). Upper midwest farmer perceptions: Too much uncertainty about impacts of climate change to justify changing current agricultural practices. *Journal of Soil and Water Conservation*, 72(3), 215-225. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019925485&doi=10.2489%2fjswc.72.3.215&partne
- rID=40&md5=2ea07d2f019dee53b86630883093e2f8. doi:10.2489/jswc.72.3.215
  Mosier, S. L., Kane, E. S., Richter, D. L., Lilleskov, E. A., Jurgensen, M. F., Burton, A. J., & Resh, S. C. (2017). Interactive effects of climate change and fungal communities on wood-derived carbon in forest soils. *Soil Biology and Biochemistry*, *115*, 297-309. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028918075&doi=10.1016%2fj.soilbio.2017.08.028&
- partnerID=40&md5=96fd4196742979c1289c730ada5f7158. doi:10.1016/j.soilbio.2017.08.028 Moss, R. H., Avery, S., Baja, K., Burkett, M., Chischilly, A. M., Dell, J., . . . Zimmerman, R. (2019). A framework for sustained climate assessment in the United States. *Bulletin of the American Meteorological Society, 100*(5), 897-907. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067863046&doi=10.1175%2fBAMS-D-19-0130&pa

https://www.scopus.com/inward/record.uri?eid=2-s2.0-8506/863046&doi=10.11/5%2IBAMS-D-19-0130&pa rtnerlD=40&md5=593d5744e30ba9876be8b752932d2053. doi:10.1175/BAMS-D-19-0130

- Moss, R. H., Avery, S., Baja, K., Burkett, M., Chischilly, A. M., Dell, J., . . . Zimmerman, R. (2019). Evaluating knowledge to support climate action: A framework for sustained assessment. Report of an independent advisory committee on applied climate assessment. Weather, Climate, and Society, 11(3), 465-487. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067844306&doi=10.1175%2fWCAS-D-18-0134.1& partner/D=40&md5=8d048cc2050f1114afe4d0ebda3b062c. doi:10.1175/WCAS-D-18-0134.1
- Motew, M., Chen, X., Booth, E. G., Carpenter, S. R., Pinkas, P., Zipper, S. C., . . . Kucharik, C. J. (2017). The Influence of Legacy P on Lake Water Quality in a Midwestern Agricultural Watershed. *Ecosystems, 20*(8), 1468-1482. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850147873598doi=10.1007%2fs10021-017-0125-08.

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014787359&doi=10.1007%2fs10021-017-0125-0& partnerID=40&md5=d40425ffb57d125ffcb418c60fc78ad0. doi:10.1007/s10021-017-0125-0

Motew, M., Chen, X., Carpenter, S. R., Booth, E. G., Seifert, J., Qiu, J., . . . Kucharik, C. J. (2019). Comparing the effects of climate and land use on surface water quality using future watershed scenarios. *Science of the Total Environment*, 693. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069835235&doi=10.1016%2fj.scitotenv.2019.07.29 78 0&partnerID=40&md5=1da24c53ac5be432320ef43d6896fa92. doi:10.1016/j.scitotenv.2019.07.290 Mueller, K. E., LeCain, D. R., McCormack, M. L., Pendall, E., Carlson, M., & Blumenthal, D. M. (2018). Root responses to

- elevated CO<inf>2</inf>, warming and irrigation in a semi-arid grassland: Integrating biomass, length and life span in a 5-year field experiment. *Journal of Ecology*, *106*(6), 2176-2189. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046614219&doi=10.1111%2f1365-2745.12993&partnerlD=40&md5=65d28a175e29c42f3e9eeec1a1693975. doi:10.1111/1365-2745.12993
- Muhammad, I., Sainju, U. M., Zhao, F., Khan, A., Ghimire, R., Fu, X., & Wang, J. (2019). Regulation of soil CO<inf>2</inf> and N<inf>2</inf> O emissions by cover crops: A meta-analysis. *Soil and Tillage Research*, *192*, 103-112. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065550774&doi=10.1016%2fj.still.2019.04.020&partnerID=40&md5=8be0e087b26d82c337b510ba33a2c808. doi:10.1016/j.still.2019.04.020
- Munson, S. M., & Long, A. L. (2017). Climate drives shifts in grass reproductive phenology across the western USA. New Phytologist, 213(4), 1945-1955. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006036378&doi=10.1111%2fnph.14327&partnerlD
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006036378&doi=10.1111%2fnph.14327&partnerID =40&md5=9007a0b92c97083f14fecf3663fb074a. doi:10.1111/nph.14327
- Murdiyarso, D., Lilleskov, E., & Kolka, R. (2019). Tropical peatlands under siege: the need for evidence-based policies and strategies. *Mitigation and Adaptation Strategies for Global Change*, 24(4), 493-505. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061192812&doi=10.1007%2fs11027-019-9844-1& partnerID=40&md5=f82bc15ec2b7c87f511c54baf2f66e81. doi:10.1007/s11027-019-9844-1
- Murphy, D. J., Yung, L., Wyborn, C., & Williams, D. R. (2017). Rethinking climate change adaptation and place through a situated pathways framework: A case study from the Big Hole Valley, USA. *Landscape and Urban Planning*, 167, 441-450. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027571313&doi=10.1016%2fj.landurbplan.2017.07. 016&partnerID=40&md5=7de90b34683b6b39e99d8016947c3942. doi:10.1016/j.landurbplan.2017.07.016
- Mushinski, R. M., Boutton, T. W., & Scott, D. A. (2017). Decadal-scale changes in forest soil carbon and nitrogen storage are influenced by organic matter removal during timber harvest. *Journal of Geophysical Research: Biogeosciences, 122*(4), 846-862. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018535752&doi=10.1002%2f2016JG003738&partn
- erID=40&md5=210844964a92fa5c6b8d2838673fc98a. doi:10.1002/2016JG003738 Mutiibwa, D., Fleisher, D. H., Resop, J. P., Timlin, D., & Reddy, V. R. (2018). Regional food production and land redistribution as adaptation to climate change in the U.S. Northeast Seaboard. *Computers and Electronics in Agriculture*, *154*, 54-70. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052992739&doi=10.1016%2fj.compag.2018.08.026
- &partnerID=40&md5=91145def86e5fd3512617ffa7bb852f3. doi:10.1016/j.compag.2018.08.026 Næsset, E., Gobakken, T., & McRoberts, R. E. (2019). A model-dependent method for monitoring subtle changes in vegetation height in the boreal-alpine ecotone using bi-temporal, three dimensional point data from
- airborne laser scanning. *Remote Sensing, 11*(15). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070445839&doi=10.3390%2frs11151804&partnerl D=40&md5=963db1cf7f7f481fe78f9744432e240d. doi:10.3390/rs11151804
- Nagel, L. M., Palik, B. J., Battaglia, M. A., D'Amato, A. W., Guldin, J. M., Swanston, C. W., . . . Roske, M. R. (2017). Adaptive silviculture for climate change: A national experiment in manager-scientist partnerships to apply an adaptation framework. *Journal of Forestry*, 115(3), 167-178. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019423917&doi=10.5849%2fjof.16-039&partnerID =40&md5=d798563550d76c0402803179a49a521f. doi:10.5849/jof.16-039
- Nagy, L. G., Riley, R., Bergmann, P. J., Krizsan, K., Martin, F. M., Grigoriev, I. V., . . . Hibbett, D. S. (2017). Genetic bases of fungal white rot wood decay predicted by phylogenomic analysis of correlated gene-phenotype evolution. *Molecular Biology and Evolution*, *34*(1), 35–44. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850148827068doi=10.1093%2fmolbev%2fmsw2388/ partnerlD=408/md5=21414db572fa9bdf47c3e40c20ebe4bd. doi:10.1093/molbev/msw238
- Nakamura, F., Seo, J. I., Akasaka, T., & Swanson, F. J. (2017). Large wood, sediment, and flow regimes: Their interactions and temporal changes caused by human impacts in Japan. *Geomorphology*, 279, 176-187. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994741635&doi=10.1016%2fj.geomorph.2016.09.00 01&partnerID=40&md5=4425cfd489c255eb83902161e27a45e3. doi:10.1016/j.geomorph.2016.09.001

- Nam, W. H., Kim, T., Hong, E. M., & Choi, J. Y. (2017). Regional climate change impacts on irrigation vulnerable season shifts in agricultural water availability for South Korea. *Water (Switzerland)*, 9(10). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030161408&doi=10.3390%2fw9100735&partnerlD =40&md5=ba809a9d14d32e2d844e5a487b04ec86. doi:10.3390/w9100735
- Nash, P. R., Gollany, H. T., Liebig, M. A., Halvorson, J. J., Archer, D. W., & Tanaka, D. L. (2018). Simulated soil organic carbon responses to crop rotation, tillage, and climate change in North Dakota. *Journal of Environmental Quality*, 47(4), 654–662. Retrieved from http://www.communicarativer.com/uri2211.2010/27461081411 10.01210/261-2017.01.01518100

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049474619&doi=10.2134%2fjeq2017.04.0161&par tnerID=40&md5=f1f048f1392a2cefe935e7d61445254e. doi:10.2134/jeq2017.04.0161

Nash, P. R., Gollany, H. T., Novak, J. M., Bauer, P. J., Hunt, P. G., & Karlen, D. L. (2018). Simulated soil organic carbon response to tillage, yield, and climate change in the southeastern Coastal Plains. *Journal of Environmental Quality*, 47(4), 663-673. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049448188&doi=10.2134%2fjeq2017.05.0190&par tnerID=40&md5=1bd1f85aaeae9f0a41e5cf01bf2d5134. doi:10.2134/jeq2017.05.0190 Nash, P. R., Gollany, H. T., & Sainju, U. M. (2018). CQESTR-simulated response of soil organic carbon to management,

yield, and climate change in the Northern Great Plains Region. *Journal of Environmental Quality, 47*(4), 674-683. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049486150&doi=10.2134%2fjeq2017.07.0273&partnerID=40&md5=c0dffe53bb5286f4f82cfc8fa87a7ed9. doi:10.2134/jeq2017.07.0273

- Naujokaitis-Lewis, I., Pomara, L. Y., & Zuckerberg, B. (2018). Delaying conservation actions matters for species vulnerable to climate change. *Journal of Applied Ecology*, *55*(6), 2843-2853. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052487196&doi=10.1111%2f1365-2664.13241&partnerlD=40&md5=0c8c30db5252fa373f9fdcf78a458854. doi:10.1111/1365-2664.13241
- Nave, L. E., Domke, G. M., Hofmeister, K. L., Mishra, U., Perry, C. H., Walters, B. F., & Swanston, C. W. (2018). Reforestation can sequester two petagrams of carbon in US topsoils in a century. *Proceedings of the National Academy of Sciences of the United States of America*, 115(11), 2776-2781. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850437864818&doi=10.1073%2fpnas.1719685115&pa rtnerID=40&md5=fb0c8223b66bd35bcb695da16b62aa9. doi:10.1073/pnas.1719685115
- Nave, L. E., Drevnick, P. E., Heckman, K. A., Hofmeister, K. L., Veverica, T. J., & Swanston, C. W. (2017). Soil hydrology, physical and chemical properties and the distribution of carbon and mercury in a postglacial lake-plain wetland. *Geoderma*, 305, 40-52. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019653385&doi=10.1016%2fj.geoderma.2017.05.0 35&partnerID=40&md5=39621b44e1fdc8d26a7b2122e8b1d8fb. doi:10.1016/j.geoderma.2017.05.035
- Nave, L. E., Gough, C. M., Perry, C. H., Hofmeister, K. L., Le Moine, J. M., Domke, G. M., . . . Nadelhoffer, K. J. (2017). Physiographic factors underlie rates of biomass production during succession in Great Lakes forest landscapes. Forest Ecology and Management, 397, 157-173. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018768995&doi=10.1016%2fj.foreco.2017.04.040& partnerlD=40&md5=2ab2d81f0d8bd44d1f31714d58addcf. doi:10.1016/j.foreco.2017.04.040
- Nave, L. É., Walters, B. F., Hofmeister, K. L., Perry, C. H., Mishra, U., Domke, G. M., & Swanston, C. W. (2019). The role of reforestation in carbon sequestration. *New Forests*, 50(1), 115-137. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049655732&doi=10.1007%2fs11056-018-9655-3& partnerID=40&md5=46687c7ea1d63873084281cc6a0e3ed4. doi:10.1007/s11056-018-9655-3
- Neaves, C. M., Aust, W. M., Bolding, M. C., Barrett, S. M., Trettin, C. C., & Vance, E. (2017). Soil properties in site prepared loblolly pine (Pinus taeda L.) stands 25 years after wet weather harvesting in the lower Atlantic coastal plain. Forest Ecology and Management, 404, 344-353. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029306355&doi=10.1016%2fj.foreco.2017.08.015& partnerlD=40&md5=1b900b1fecccc386c18ebe620a0a36da. doi:10.1016/j.foreco.2017.08.015
- Negm, A., Jabro, J., & Provenzano, G. (2017). Assessing the suitability of American National Aeronautics and Space Administration (NASA) agro-climatology archive to predict daily meteorological variables and reference evapotranspiration in Sicily, Italy. *Agricultural and Forest Meteorology, 244-245*, 111-121. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020422909&doi=10.1016%2fj.agrformet.2017.05.0 22&partnerID=40&md5=7f5055ce6177828eba013da5de58d6de. doi:10.1016/j.agrformet.2017.05.022Negro, F., & Bergman, R. (2019). Carbon stored by furnishing wood-based products: An Italian case study. *Maderas:* 
  - 80

Ciencia v Tecnologia, 21(1), 65-76. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061453521&doi=10.4067%2fS0718-221X20190050 00106&partnerID=40&md5=c132777fe3183d2fd47b74984b0648eb.

doi:10.4067/S0718-221X2019005000106

- Negrón, J. F. (2018). Biological aspects of mountain pine beetle in lodgepole pine stands of different densities in Colorado, USA. *Forests*, *10*(1). Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059375965&doi=10.3390%2ff10010018&partnerID =40&md5=349e3ae61da96309c9394c398f6bae56. doi:10.3390/f10010018
- Nelson, L., Blumenthal, D. M., Williams, D. G., & Pendall, E. (2017). Digging into the roots of belowground carbon cycling following seven years of Prairie Heating and CO<inf>2</inf> Enrichment (PHACE), Wyoming USA. *Soil Biology and Biochemistry*, 115, 169-177. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028726006&doi=10.1016%2fj.soilbio.2017.08.022&
- partner(D=40kmd5=253a5f2ddf16d56668c515ed11a0a6a. doi:10.1016/j.solibio.2017.08.022 Nepal, P., Korhonen, J., Prestemon, J. P., & Cubbage, F. W. (2019). Projecting global and regional forest area under the
- shared socioeconomic pathways using an updated Environmental Kuznets Curve model. Forests, 10(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066820921&doi=10.3390%2ff10050387&partnerlD =40&md5=3e8886a3d289f4ff4c878bddbd3648d4. doi:10.3390/f10050387

Nepal, P., Korhonen, J., Prestemon, J. P., & Cubbage, F. W. (2019). Projecting global planted forest area developments and the associated impacts on global forest product markets. *Journal of Environmental Management, 240*, 421-430. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064169571&doi=10.1016%2fj.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&md5=5a95b5d50129e2a1a0ded89d39416fac. doi:10.1016/j.jenvman.2019.03.126&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40@partnerlD=40@partnerlD=40@partnerlD=40@partnerlD=40@partnerlD

Nesmith, J. C. B., Wright, M., Jules, E. S., & McKinney, S. T. (2019). Whitebark and foxtail pine in Yosemite, Sequoia, and Kings Canyon national parks: Initial assessment of stand structure and condition. *Forests*, *10*(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059647277&doi=10.3390%2ff10010035&partnerID =40&md5=295e6f60393ed350e383be1785d8e283. doi:10.3390/f10010035

Neven, L. G., Kumar, S., Yee, W. L., & Wakie, T. (2018). Current and future potential risk of establishment of grapholita molesta (Lepidoptera: Tortricidae) in Washington State. *Environmental Entomology*, 47(2), 448-456. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052150656&doi=10.1093%2fee%2fnvx203&partnerlD=40&md5=6a86fd18ad0efc577b0414ebf70a0bf9. doi:10.1093/ee/nvx203

- Neven, L. G., & Yee, W. L. (2017). Impact of prolonged absence of low temperature on adult eclosion patterns of western cherry fruit fly (diptera: Tephritidae). *Environmental Entomology*, *46*(3), 708-713. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020883280&doi=10.1093%2fee%2fnvx064&partne rlD=40&md5=aef24b31b0ae49323406a0585fc967cc. doi:10.1093/ee/nvx064
- Ngo, H., Latona, R., Sarker, M. I., Yee, W., Hums, M., & Moreau, R. A. (2019). A process to convert sunflower oil into a value added branched chain oil with unique properties. *Industrial crops and products*, 139. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067671252&doi=10.1016%2fj.indcrop.2019.06.020 &partnerID=40&md5=a6eb1b58cd96e5b14da6c01958b3d971. doi:10.1016/j.indcrop.2019.06.020
- Nikolic, J., Zhong, S., Pei, L., Bian, X., Heilman, W. E., & Charney, J. J. (2019). Sensitivity of low-level jets to land-use and land- cover change over the continental U.S. *Atmosphere*, *10*(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064076123&doi=10.3390%2fatmos10040174&part nerlD=40&md5=657df43b58ea40b2d081fbebf6e20dbe. doi:10.3390/atmos10040174
- Niles, M. T., Wiener, S., Schattman, R. E., Roesch-Mcnally, G., & Reyes, J. (2019). Seeing is not always believing: Crop loss and climate change perceptions among farm advisors. *Environmental Research Letters*, 14(4). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069688550&doi=10.1088%2f1748-9326%2faafbb6 &partnerID=40&md5=5b31176be3871e4f4944893a6aeeace5. doi:10.1088/1748-9326/aafbb6

North, M. P., Stevens, J. T., Greene, D. F., Coppoletta, M., Knapp, E. E., Latimer, A. M., . . . Wyrsch, P. (2019). Tamm Review: Reforestation for resilience in dry western U.S. forests. *Forest Ecology and Management*, 432, 209-224. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053769929&doi=10.1016%2fj.foreco.2018.09.007& partnerlD=40&md5=d976c72bdd28a4fc795bb5d9ad8cfecf. doi:10.1016/j.foreco.2018.09.007

- Northrup, J. M., Rivers, J. W., Yang, Z., & Betts, M. G. (2019). Synergistic effects of climate and land-use change influence broad-scale avian population declines. *Global Change Biology*, 25(5), 1561-1575. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062340906&doi=10.1111%2fgcb.14571&partnerID =40&md5=d58e853b03add395fba09ab4e6036c09. doi:10.1111/gcb.14571
- Norton, S. L., Khoury, C. K., Sosa, C. C., Castañeda-Álvarez, N. P., Achicanoy, H. A., & Sotelo, S. (2017). Priorities for enhancing the ex situ conservation and use of Australian crop wild relatives. *Australian Journal of Botany*, 65(8), 638-645. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042123998&doi=10.1071%2fBT16236&partnerID=40&md5=5ed8e774348353596effc52f21f9316b.doi:10.1071/BT16236

Nourani, V., Fard, A. F., Gupta, H. V., Goodrich, D. C., & Niazi, F. (2017). Hydrological model parameterization using NDVI values to account for the effects of land cover change on the rainfall-runoff response. *Hydrology Research*, 48(6), 1455-1473. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031997901&doi=10.2166%2fnh.2017.249&partnerl D=40&md5=8a0976747f9b15278ddc30fab922420a. doi:10.2166/nh.2017.249

- Novick, K. A., Biederman, J. A., Desai, A. R., Litvak, M. E., Moore, D. J. P., Scott, R. L., & Torn, M. S. (2018). The AmeriFlux network: A coalition of the willing. *Agricultural and Forest Meteorology, 249*, 444-456. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031912398&doi=10.1016%2fj.agrformet.2017.10.009 09&partnerID=40&md5=07be0712f476b4790968044426db82c0. doi:10.1016/j.agrformet.2017.10.009
- Nowak, D. J., & Greenfield, E. J. (2018). US urban forest statistics, values, and projections. *Journal of Forestry*, 116(2), 164-177. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049137409&doi=10.1093%2fiofore%2ffvx004&par
- tncps://www.scopus.com/mward/record.unread=2-sc./o-sou4315/409addie=10/95%atjoine%210x004&partnerID=40&md5=a1227050719071b327ff374eafa36430. doi:10.1093/joine/fxx004
  Nowak, D. J., Hirabayashi, S., Doyle, M., McGovern, M., & Pasher, J. (2018). Air pollution removal by urban forests in
- Nowak, D. J., Hirabayashi, S., Döyle, M., McGovern, M., & Pasher, J. (2018). Air pollution removal by tirban forests in Canada and its effect on air quality and human health. Urban Forestry and Urban Greening, 29, 40-48. Retrieved from https://www.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.capur.c

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033404278&doi=10.1016%2fj.ufug.2017.10.019&partnerlD=40&md5=8bfd5b89ebed5d281294ebbc229e1017. doi:10.1016/j.ufug.2017.10.019

- Nyelele, C., Kroll, C. N., & Nowak, D. J. (2019). Present and future ecosystem services of trees in the Bronx, NY. Urban Forestry and Urban Greening, 42, 10-20. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065791697&doi=10.1016%2fj.ufug.2019.04.018&p artnerID=40&md5=bd1c7d083cc18541213c82cf1b534446. doi:10.1016/j.ufug.2019.04.018
- O'Geen, A. T., Safeeq, M., Wagenbrenner, J., Stacy, E., Hartsough, P., Devine, S., . . . Bales, R. (2018). Southern sierra critical zone observatory and kings river experimental watersheds: A synthesis of measurements, new insights, and future directions. *Vadose Zone Journal*, *17*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058448026&doi=10.2136%2fvzj2018.04.0081&part nerlD=40&md5=93b3c6f487b8702ff3628ab15aa3423d. doi:10.2136/vzj2018.04.0081

O'Connor, C. D., Falk, D. A., Lynch, A. M., Swetnam, T. W., & Wilcox, C. P. (2017). Disturbance and productivity interactions mediate stability of forest composition and structure. *Ecological Applications*, 27(3), 900-915. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017180144&doi=10.1002%2feap.1492&partnerID=

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017180144&doi=10.1002%2feap.1492&partnerlD= 40&md5=8f677d61dfbac782adb86d4fc2a6526b. doi:10.1002/eap.1492

Ogle, S. M., Domke, G., Kurz, W. A., Rocha, M. T., Huffman, T., Swan, A., . . . Krug, T. (2018). Delineating managed land for reporting national greenhouse gas emissions and removals to the United Nations framework convention on climate change. *Carbon Balance and Management*, 13(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047845030&doi=10.1186%2fs13021-018-0095-3 partnerlD=40&md5=3e249bbdc891a69eec3e61fe307fbb09. doi:10.1186/s13021-018-0095-3

Ohno, T., Heckman, K. A., Plante, A. F., Fernandez, I. J., & Parr, T. B. (2017). 14C mean residence time and its relationship with thermal stability and molecular composition of soil organic matter: A case study of deciduous and coniferous forest types. *Geoderma*, 308, 1-8. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027563233&doi=10.1016%2fj.geoderma.2017.08.0 23&partnerID=40&md5=b4a6d18b57efcdc02e96d7919e004c10. doi:10.1016/j.geoderma.2017.08.023

Oishi, A. C., Miniat, C. F., Novick, K. A., Brantley, S. T., Vose, J. M., & Walker, J. T. (2018). Warmer temperatures reduce net carbon uptake, but do not affect water use, in a mature southern Appalachian forest. Agricultural and Forest Meteorology, 252, 269-282. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041472796&doi=10.1016%2fj.agrformet.2018.01.0 11&partnerID=40&md5=cc941f7f4a6d6940ccdc4010eacefc2a. doi:10.1016/j.agrformet.2018.01.011

Olefeldt, D., Euskirchen, E. S., Harden, J., Kane, E., McGuire, A. D., Waldrop, M. P., & Turetsky, M. R. (2017). A decade of boreal rich fen greenhouse gas fluxes in response to natural and experimental water table variability. Global Change Biology, 23(6), 2428-2440. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011275746&doi=10.1111%2fgcb.13612&partnerID =40&md5=b3dad6170473ccc1fca8d83a0af196a1. doi:10.1111/gcb.13612

- Oles, K. M., Weixelman, D. A., Lile, D. F., Tate, K. W., Snell, L. K., & Roche, L. M. (2017). Riparian Meadow Response to Modern Conservation Grazing Management. Environmental Management, 60(3), 383-395. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020137033&doi=10.1007%2fs00267-017-0897-1& partnerID=40&md5=4ad837bee1357c61e9824398d598bf37. doi:10.1007/s00267-017-0897-1
- Olguin, M., Wayson, C., Fellows, M., Birdsey, R., Smyth, C. E., Magnan, M., . . . Kurz, W. A. (2018). Applying a systems approach to assess carbon emission reductions from climate change mitigation in Mexico's forest sector. Environmental Research Letters, 13(3), Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048284791&doi=10.1088%2f1748-9326%2faaaa03

&partnerID=40&md5=9b98fb8f62646a7d4b5d3f1f3eea5cf6. doi:10.1088/1748-9326/aaaa03 Olk, D. C., Dinnes, D. L., Rene Scoresby, J., Callaway, C. R., & Darlington, J. W. (2018). Humic products in agriculture:

- potential benefits and research challenges-a review. Journal of Soils and Sediments, 18(8), 2881-2891. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040932066&doi=10.1007%2fs11368-018-1916-4&
- partnerID=40&md5=e2f1ef33b5f0b9d2518fc15b6792209a. doi:10.1007/s11368-018-1916-4 Olson, D. H., & Van Horne, B. (2017). People, forests, and change: Lessons from the pacific northwest.
- Olson, L. E., Squires, J. R., Oakleaf, R. J., Wallace, Z. P., & Kennedy, P. L. (2017). Predicting above-ground density and distribution of small mammal prey species at large spatial scales. PLoS ONE, 12(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019833559&doi=10.1371%2fjournal.pone.0177165 &partnerID=40&md5=cb113dde2fee4b3f3a4786ce80bbde6e. doi:10.1371/journal.pone.0177165
- Olson, M. G., Knapp, B. O., & Kabrick, J. M. (2017). Dynamics of a temperate deciduous forest under landscape-scale management: Implications for adaptability to climate change. Forest Ecology and Management, 387, 73-85. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84979747669&doi=10.1016%2fi.foreco.2016.07.033& partnerID=40&md5=6f20c01af77e27ea18aa25b75764f34c. doi:10.1016/j.foreco.2016.07.033

Ontl, T. A., Swanston, C., Brandt, L. A., Butler, P. R., D'Amato, A. W., Handler, S. D., . . . Shannon, P. D. (2018). Adaptation pathways: ecoregion and land ownership influences on climate adaptation decision-making in forest management. Climatic Change, 146(1-2), 75-88. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041310760&doi=10.1007%2fs10584-017-1983-3&

partnerID=40&md5=427224f66fc92f88199e9bd433be5ff5. doi:10.1007/s10584-017-1983-3 Orlemann, A., Flinders, S. H., & Allphin, L. (2017). The Discovery of Great Basin Bristlecone Pine, Pinus Longaeva, in the

Tushar Mountains of the Fishlake National Forest in Central Utah, USA. Western North American Naturalist, 77(1), 111-117. Retrieved from

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018873830&doi=10.3398%2f064.077.0112&partne rlD=40&md5=22d0ad4ccacd0dcbe2ea8e21a5e08c0c. doi:10.3398/064.077.0112
- Ortiz-Colón, G., Fain, S. J., Parés, I. K., Curbelo-Rodríguez, J., Jiménez-Cabán, E., Pagán-Morales, M., & Gould, W. A (2018). Assessing climate vulnerabilities and adaptive strategies for resilient beef and dairy operations in the tropics. Climatic Change, 146(1-2), 47-58. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040934968&doi=10.1007%2fs10584-017-2110-1& partnerID=40&md5=c74fccf5526671ceade03d22bb8a7c23. doi:10.1007/s10584-017-2110-1
- Oswald, E. M., Pontius, J., Rayback, S. A., Schaberg, P. G., Wilmot, S. H., & Dupigny-Giroux, L. A. (2018). The complex relationship between climate and sugar maple health: Climate change implications in Vermont for a key northern hardwood species. Forest Ecology and Management, 422, 303-312. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046337220&doi=10.1016%2fj.foreco.2018.04.014&

partnerID=40&md5=69ef8e06f75bf435464db2ba3dbde515. doi:10.1016/j.foreco.2018.04.014

Ouimette, A. P., Ollinger, S. V., Richardson, A. D., Hollinger, D. Y., Keenan, T. F., Lepine, L. C., & Vadeboncoeur, M. A. (2018). Carbon fluxes and interannual drivers in a temperate forest ecosystem assessed through comparison of top-down and bottom-up approaches. *Agricultural and Forest Meteorology*, 256-257, 420-430. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045074540&doi=10.1016%2fj.agrformet.2018.03.0 17&partnerID=40&md5=045ce9bf8cddb09f89a780a044db02df. doi:10.1016/j.agrformet.2018.03.017

- Ouyang, Y., Parajuli, P. B., Feng, G., Leininger, T. D., Wan, Y., & Dash, P. (2018). Application of Climate Assessment Tool (CAT) to estimate climate variability impacts on nutrient loading from local watersheds. *Journal of Hydrology*, 563, 363-371. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048328491&doi=10.1016%2fj.jhydrol.2018.06.017 &partnerID=40&md5=bf4612a5a6435f145a79efffb4f5a895. doi:10.1016/j.jhydrol.2018.06.017
- Ouyang, Y., Parajuli, P. B., Li, Y., Leininger, T. D., & Feng, G. (2017). Identify temporal trend of air temperature and its impact on forest stream flow in Lower Mississippi River Alluvial Valley using wavelet analysis. *Journal of Environmental Management, 198,* 21-31. Retrieved from https://www.scopus.com/inward/record.ui?eid=2-s2.0-85018929739&doi=10.1016%2fj.jenvman.2017.05.014 &partnerlD=40&md5=3de63b00556d746a9b99d1f8ed2d14aa. doi:10.1016/j.jenvman.2017.05.014
- Owen, S. M., Sieg, C. H., Sánchez Meador, A. J., Fulé, P. Z., Iniguez, J. M., Baggett, L. S., . . . Battaglia, M. A. (2017). Spatial patterns of ponderosa pine regeneration in high-severity burn patches. *Forest Ecology and Management*, 405, 134-149. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029575989&doi=10.1016%2fj.foreco.2017.09.005& partnerID=40&md5=228fcadb0bcdb015ebb1a289cc1e1961. doi:10.1016/j.foreco.2017.09.005
- Page-Dumroese, D. S., Busse, M. D., Archuleta, J. G., McAvoy, D., & Roussel, E. (2017). Methods to Reduce Forest Residue Volume after Timber Harvesting and Produce Black Carbon. *Scientifica, 2017*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019143603&doi=10.1155%2f2017%2f2745764&pa rtnerlD=40&md5=20baf8412f250697bd568053647429f9. doi:10.1155/2017/2745764
- Pagès, N., & Cohnstaedt, L. W. (2018) Mosquito-borne diseases in the livestock industry. In: Vol. 5. Ecology and Control of Vector-Borne Diseases (pp. 195-220).
- Palik, B. J., & D'Amato, A. W. (2019). Variable retention harvesting in Great Lakes mixed-pine forests: emulating a natural model in managed ecosystems. *Ecological Processes*, 8(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066279183&doi=10.1186%2fs13717-019-0171-y& partnerID=40&md5=b84dcf53341d53b190dcb411bcfef05b. doi:10.1186/s13717-019-0171-y
- Paliyath, G., Mattoo, A. K., Handa, A. K., Shetty, K., & Wilson, C. L. (2018). Enhancing food security through postharvest technology: Current and future perspectives. In *Postharvest Biology and Nanotechnology of Fruits, Vegetables* and Flowers (pp. 1-13).
- Palmquist, E. C., Ralston, B. E., Merritt, D. M., & Shafroth, P. B. (2018). Landscape-scale processes influence riparian plant composition along a regulated river. *Journal of Arid Environments, 148*, 54-64. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031817577&doi=10.1016%2fj.jaridenv.2017.10.001 &partnerID=40&md5=5a8868368cdcd5e90a124ae328a0dac6. doi:10.1016/j.jaridenv.2017.10.001
- - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018863643&doi=10.3398%2f064.077.0104&partne rlD=40&md5=145b06b62a862c84e476c63ac47c2268. doi:10.3398/064.077.0104
- Palus, J. D., Goebel, P. C., Hix, D. M., & Matthews, S. N. (2018). Structural and compositional shifts in forests undergoing mesophication in the Wayne National Forest, southeastern Ohio. *Forest Ecology and Management*, 430, 413-420. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052195978&doi=10.1016%2fj.foreco.2018.08.030& partnerlD=40&md5=29bdeeadc22036f0e8379efac&f1eb1f. doi:10.1016/i.foreco.2018.08.030
- Pan, C., Yang, D., Zhao, X., Jiao, C., Yan, Y., Lamin-Samu, A. T., . . . Lu, G. (2019). Tomato stigma exsertion induced by high temperature is associated with the jasmonate signalling pathway. *Plant Cell and Environment, 42*(4), 1205-1221. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053873917&doi=10.1111%2fpce.13444&partnerID 84

=40&md5=183f090611a96ec882bd483d9fb4c8cd. doi:10.1111/pce.13444

Pan, W. L., Schillinger, W. F., Young, F. L., Kirby, E. M., Yorgey, G. G., Borrelli, K. A., . . . Eigenbrode, S. D. (2017). Integrating historic agronomic and policy lessons with new technologies to drive farmer decisions for farm and climate: The case of Inland Pacific Northwestern U.S. *Frontiers in Environmental Science*, 5. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040530119&doi=10.3389% 2 ffenvs.2017.00076&partnerlD=40&md5=2e8e1f3e5dbd5683fb5ecb74ea90acb8. doi:10.3389/fenvs.2017.00076

- Pan, Y., McCullough, K., & Hollinger, D. Y. (2018). Forest biodiversity, relationships to structural and functional attributes, and stability in New England forests. *Forest Ecosystems*, 5(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050384647&doi=10.1186%2fs40663-018-0132-4& partnerID=40&md5=1e1786d1e3dd3c3f3d003e7a8b124e7f. doi:10.1186/s40663-018-0132-4
- Panthi, S., Sapkota, A. R., Raspanti, G., Allard, S. M., Bui, A., Craddock, H. A., . . . Sapkota, A. (2019). Pharmaceuticals, herbicides, and disinfectants in agricultural water sources. *Environmental Research*, 1-8. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064461839&doi=10.1016%2fj.envres.2019.04.011& partnerID=40&md5=517df58d34dabf7691f6582b9b68fd7c. doi:10.1016/j.envres.2019.04.011
- Panyushkina, I. P., Mukhamadiev, N. S., Lynch, A. M., Ashikbaev, N. A., Arizpe, A. H., O'Connor, C. D., . . . Sagitov, A. O. (2017). Wild apple growth and climate Change in southeast Kazakhstan. *Forests, 8*(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033464512&doi=10.3390%2ff8110406&partnerlD =40&md5=f48830f5899b3d61282c76e2afb57058. doi:10.3390/f8110406

Park, I. W., Hooper, J., Flegal, J. M., & Jenerette, G. D. (2018). Impacts of climate, disturbance and topography on distribution of herbaceous cover in Southern California chaparral: Insights from a remote-sensing method. *Diversity and Distributions*, 24(4), 497-508. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043692831&doi=10.1111%2fddi.12693&partnerlD

=40&md5=0415ddc5d541cfc3148ef7a68b68d5a3.doi:10.1111/ddi.12093

- Parker, D. B., Cortus, E. L., Casey, K. D., Marek, G. W., Heflin, K. R., & Waldrip, H. M. (2018). Empirical model of annual nitrous oxide emissions from open-lot beef cattle feedyard pens in the Southern high plains. Paper presented at the ASABE 2018 Annual International Meeting.
- Parker, D. B., Meyer, B., Jennings, T., Jennings, J., Dougherty, H., Cole, N. A., & Casey, K. (2018). Enteric nitrous oxide emissions from beef cattle. *Professional Animal Scientist*, 34(6), 594-607. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057127553&doi=10.15232%2fpas.2018-01769&pa rtnerlD=40&md5=68978ecdccae3eac67c8499b69126437. doi:10.15232/pas.2018-01769

Parks, S. A., Dobrowski, S. Z., & Panunto, M. H. (2018). What drives low-severity fire in the southwestern USA? Forests, 9(4). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044422468&doi=10.3390%2ff9040165&partnerlD =40&md5=be931dbc3d0a52994a269977cf60cbc3. doi:10.3390/f9040165

Parks, S. A., Holsinger, L. M., Miller, C., & Parisien, M. A. (2018). Analog-based fire regime and vegetation shifts in mountainous regions of the western US. *Ecography*, *41*(6), 910-921. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029362261&doi=10.1111%2fecog.03378&partnerl D=40&md5=106130cbe0bc8bd43a8e6b8758f0e443. doi:10.1111/ecog.03378

Parks, S. A., Holsinger, L. M., Panunto, M. H., Jolly, W. M., Dobrowski, S. Z., & Dillon, G. K. (2018). High-severity fire: Evaluating its key drivers and mapping its probability across western US forests. *Environmental Research Letters*, 13(4). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044416347&doi=10.1088%2f1748-9326%2faab791 &partneriD=40&md5=2fb7c91a4dfcd89ec2ff5a3c6a166883. doi:10.1088/1748-9326/aab791

Parks, S. A., Parisien, M. A., Miller, C., Holsinger, L. M., & Baggett, L. S. (2018). Fine-scale spatial climate variation and drought mediate the likelihood of reburning. *Ecological Applications*, 28(2), 573-586. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042727894&doi=10.1002%2feap.1671&partnerID= 40&md5=21c23215fa6cbb9c63431c7358c7398b. doi:10.1002/eap.1671

Pastick, N. J., Duffy, P., Genet, H., Rupp, T. S., Wylie, B. K., Johnson, K. D., . . . Knight, J. F. (2017). Historical and projected trends in landscape drivers affecting carbon dynamics in Alaska. *Ecological Applications*, 27(5), 1383-1402. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021787691&doi=10.1002%2feap.1538&partnerlD=40&md5=e9a0fd77fb57cfd6b935342eb43143ee.doi:10.1002/eap.1538

Pawlowski, M., Meki, M. N., Kiniry, J. R., & Crow, S. E. (2018). Carbon budgets of potential tropical perennial grass cropping scenarios for bioenergy feedstock production 05 Environmental Sciences 0503 Soil Sciences. *Carbon Balance and Management*, 13(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053849727&doi=10.1186%2fs13021-018-0102-8&partnerlD=40&md5=3a8a6620de404424944db7d29401f538. doi:10.1186/s13021-018-0102-8

Pawlowski, M. N., Crow, S. E., Meki, M. N., Kiniry, J. R., Taylor, A. D., Ogoshi, R., . . . Nakahata, M. (2017). Field-based estimates of global warming potential in bioenergy systems of Hawaii: Crop choice and deficit irrigation. *PLoS ONE*, 12(1). Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008319095\&doi=10.1371\%2fjournal.pone.0168510\\ \& partnerlD=40\& md5=9b47e4bd3a0afd471481f52826204bfb. doi:10.1371/journal.pone.0168510\\ \& partnerlD=40\& md5=9b47e4bd3a0afd4714Bff5284bfb. doi:10.1371/journal.pone.0168510\\ \& partnerlD=40\& md5=9b47e4bd3a0afd4714Bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff5284bff55284bff55284bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff5584bff55$ 

- Pearson, D. E., Ortega, Y. K., & Maron, J. L. (2017). The tortoise and the hare: reducing resource availability shifts competitive balance between plant species. *Journal of Ecology*, *105*(4), 999-1009. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013498008&doi=10.1111%2f1365-2745.12736&pa rtnerlD=40&md5=da513c35fb8307fcea627c84bbf0c0da. doi:10.1111/1365-2745.12736
- Pease, L. A., Fausey, N. R., Martin, J. F., & Brown, L. C. (2017). Projected climate change effects on subsurface drainage and the performance of controlled drainage in the Western Lake Erie Basin. *Journal of Soil and Water Conservation*, 72(3), 240-250. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019854509&doi=10.2489%2fjswc.72.3.240&partne

rlD=40&md5=c8c263a8188fa4db566966b8e615813e. doi:10.2489/jswc.72.3.240 Peng, D., Zhang, B., Wu, C., Huete, A. R., Gonsamo, A., Lei, L., . . . Wu, Y. (2017). Country-level net primary production

- distribution and response to drought and land cover change. *Science of the Total Environment, 574*, 65-77. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-84986575608&doi=10.1016%2fj.scitotenv.2016.09.03 3&partnerlD=40&md5=79f9666359fef5116d86ff787971f1a4. doi:10.1016/j.scitotenv.2016.09.033
- Pereira, C. H., Patino, H. O., Hoshide, A. K., Abreu, D. C., Alan Rotz, C., & Nabinger, C. (2018). Grazing supplementation and crop diversification benefits for southern Brazil beef: A case study. *Agricultural Systems, 162*, 1-9. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043312238&doi=10.1016%2fj.agsy.2018.01.009&partnerlD=40&md5=b0bc2627a1a8660cc5734ec941dc6e5b.doi:10.1016/j.agsy.2018.01.009

Perry, R. W. (2018). Migration and recent range expansion of Seminole bats (Lasiurus seminolus) in the United States. *Journal of Mammalogy*, 99(6), 1478-1485. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058777016&doi=10.1093%2fjmammal%2fgyy135

https://www.scopus.com/inward/record.un/eid=2-52.0-8006777018001=10.1093/jimammal/gy135 &partnerlD=40&md5=634990142b081e2510edaa9681884b82. doi:10.1093/jimammal/gy135

Peters, M. P., Iverson, L. R., Prasad, A. M., & Matthews, S. N. (2019). Utilizing the density of inventory samples to define a hybrid lattice for species distribution models: DISTRIB-II for 135 eastern U.S. trees. *Ecology and Evolution*, 9(15), 8876-8899. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070358585&doi=10.1002%2fece3.5445&partnerlD =40&md5=588fea442045de4b2c7f895128d2f896. doi:10.1002/ece3.5445

Peterson, D. L., & Halofsky, J. E. (2018). Adapting to the effects of climate change on natural resources in the Blue Mountains, USA. 10, 63-71. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020781503&doi=10.1016%2fj.cliser.2017.06.005&p

- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020781503&doi=10.1016%21j.cliser.2017.06.005&p artnerID=40&md5=3618fc437e53d1433d75a481f59d7a54. doi:10.1016/j.cliser.2017.06.005
  Peterson, S. C., & Joshee, N. (2018). Co-milled silica and coupliced wood biochars improve elonaation and toughness
- in styrene-butadiene elastomeric composites while replacing carbon black. *Journal of Elastomers and Plastics,* 50(8), 667-676. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056598325&doi=10.1177%2f0095244317753653&partnerID=40&md5=a1d6b890505ca802dffc8757f76c4ffe. doi:10.1177/0095244317753653

Petrie, M. D., Bradford, J. B., Hubbard, R. M., Lauenroth, W. K., Andrews, C. M., & Schlaepfer, D. R. (2017). Climate change may restrict dryland forest regeneration in the 21st century. *Ecology*, 98(6), 1548-1559. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019761156&doi=10.1002%2fecy.1791&partnerID=40&md5=00b7bc3a4ddbec7046ef855b30590269. doi:10.1002/ecy.1791

Petrie, M. D., Peters, D. P. C., Burruss, N. D., Ji, W., & Savoy, H. M. (2019). Differing climate and landscape effects on 86 regional dryland vegetation responses during wet periods allude to future patterns. Global Change Biology. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069908152&doi=10.1111%2fgcb.14724&partnerID =40&md5=7b3041bd45504f8aced566cf0e2d7a1a. doi:10.1111/gcb.14724

Petrie, M. D., Peters, D. P. C., Yao, J., Blair, J. M., Burruss, N. D., Collins, S. L., . . . Steiner, J. L. (2018). Regional grassland productivity responses to precipitation during multiyear above- and below-average rainfall periods. *Global Change Biology*, 24(5), 1935-1951. Retrieved from http://www.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.colling.co

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044753557&doi=10.1111%2fgcb.14024&partnerlD =40&md5=307d1791f2c01ca775c3d2d1072f6ac0. doi:10.1111/gcb.14024

- Pettit, J. L., Justin Derose, R., & Long, J. N. (2018). Climatic Drivers of Ponderosa Pine Growth in Central Idaho. Tree-Ring Research, 74(2), 172-184. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051200504&doi=10.3959%2f1536-1098-74.2.172&
  - nttps://www.scopus.com/inward/record.uri/eid=2-s2.0-85051200504&ddi=10.3959%211536-1098-74.2.1728 partnerID=40&md5=d08420c482ebbd7284c0d2650315bfec. doi:10.3959/1366-1098-74.2.172
- Phillips, R. P., Brandt, L., Polly, P. D., Zollner, P., Saunders, M. R., Clay, K., . . . Fei, S. (2019). An integrated assessment of the potential impacts of climate change on Indiana forests. *Climatic Change*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059635741&doi=10.1007%2fs10584-018-2326-8& partnerID=40&md5=3c3178fa4ce2e6649d7c5a3aa656d8a3. doi:10.1007/s10584-018-2326-8
- Philpott, T. J., Barker, J. S., Prescott, C. E., & Grayston, S. J. (2018). Limited effects of variable-retention harvesting on fungal communities decomposing fine roots in coastal temperate rainforests. *Applied and Environmental Microbiology*, 84(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040643644&doi=10.1128%2fAEM.02061-17&partn

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040643644&doi=10.1128%2fAEM.02061-17&partn erlD=40&md5=6f85a5497589dc7eb7988ac2d507e6c4. doi:10.1128/AEM.02061-17

Philpott, T. J., Barker, J. S., Prescott, C. E., & Grayston, S. J. (2018). Retention trees slow post-harvest fine-root decomposition in a coastal temperate rainforest. *Forest Ecology and Management*, 430, 431-444. Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052296732\&doi=10.1016\%2fj.foreco.2018.08.036\&partnerID=40\&md5=8c10fd220d57b2c611402112a08fa960.\ doi:10.1016/j.foreco.2018.08.036$ 

Phung, Q. A., Thompson, A. L., Baffaut, C., Costello, C., Sadler, E. J., Svoma, B. M., . . . Gautam, S. (2019). Climate and Land Use Effects on Hydrologic Processes in a Primarily Rain-Fed, Agricultural Watershed. *Journal of the American Water Resources Association*. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068499790&doi=10.1111%2f1752-1688.12764&pa rtnerlD=40&md5=917378ef65285ec0b611b54b081346ae. doi:10.1111/1752-1688.12764

Piaggio, A. J., Russell, A. L., Osorio, I. A., Jiménez Ramírez, A., Fischer, J. W., Neuwald, J. L., . . . McCracken, G. F. (2017). Genetic demography at the leading edge of the distribution of a rabies virus vector. *Ecology and Evolution*, 7(14), 5343-5351. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020429503&doi=10.1002%2fece3.3087&partnerID =40&md5=4f9a8999b4704bf83abcae9ca4341e45. doi:10.1002/cce3.3087

- Picasso, V. D., Casler, M. D., & Undersander, D. (2019). Resilience, stability, and productivity of Alfalfa cultivars in rainfed regions of North America. *Crop Science*, 59(2), 800-810. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063662640&doi=10.2135%2fcropsci2018.06.0372 &partnerlD=40&md5=a25e89295474a34cce9e0c9c49a0bb13. doi:10.2135/cropsci2018.06.0372
- Pierre, S., Hewson, I., Sparks, J. P., Litton, C. M., Giardina, C., Groffman, P. M., & Fahey, T. J. (2017). Ammonia oxidizer populations vary with nitrogen cycling across a tropical montane mean annual temperature gradient. *Ecology*, 98(7), 1896-1907. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021437631&doi=10.1002%2fecy.1863&partnerID=

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021437631&doi=10.1002%2fecy.1863&partnerID= 40&md5=1fa660c03dfdb140bcc80a0e7d306ea3. doi:10.1002/ecy.1863

- Pighinelli, A. L. M. T., Schaffer, M. A., & Boateng, A. A. (2018). Utilization of eucalyptus for electricity production in Brazil via fast pyrolysis: A techno-economic analysis. *Renewable Energy*, *119*, 590-597. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038879456&doi=10.1016%2fj.renene.2017.12.036 &partnerID=40&md5=63bc5a951078a8a4a598b7f25990b89a. doi:10.1016/j.renene.2017.12.036
- Pike, C. C., Warren, J. C., & Montgomery, R. A. (2017). Effects of artificial warming during quiescence on budbreak and growth of white spruce, Picea glauca. *Canadian Journal of Forest Research*, 47(11), 1538-1545. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032661540&doi=10.1139%2fcjfr-2017-0102&partn

erlD=40&md5=79a6377cc92847c9fbf5bab7f6d49cef. doi:10.1139/cjfr-2017-0102

Polley, H. W., Johnson, D. M., & Jackson, R. B. (2018). Projected drought effects on the demography of Ashe juniper populations inferred from remote measurements of tree canopies. *Plant Ecology*, 219(10), 1259-1267. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053053161&doi=10.1007%2fs11258-018-0876-5& partnerID=40&md5=a56342793dc2b498ae2f975a8cc2552d. doi:10.1007/s11258-018-0876-5

- Polley, H. W., Johnson, D. M., & Jackson, R. B. (2018). Projected drought effects on the demography of Ashe juniper populations inferred from remote measurements of tree canopies. *Plant Ecology*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053057856&doi=10.1007%2fs11258-018-0876-5& partnerID=40&md5=e06c9d42bd9fe7c93d8b5f68136de8f4. doi:10.1007/s11258-018-0876-5
- Potter, B. E., & Hernandez, J. R. (2017). Downdraft outflows: Climatological potential to influence fire behaviour. *International Journal of Wildland Fire, 26*(8), 685-692. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027256033&doi=10.1071%2fWF17035&partnerID
- =40&md5=37d9a7d185dce8524a0912512d6423e2. doi:10.1071/WF17035 Potter, K. M., Crane, B. S., & Hargrove, W. W. (2017). A United States national prioritization framework for tree species vulnerability to climate change. *New Forests, 48*(2), 275-300. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009865510&doi=10.1007%2fs11056-017-9569-5& partnerID=40&md5=70aced1aad42b12&4edb8c69be7c54c9. doi:10.1007/s11056-017-9569-5
- Potter, K. M., Jetton, R. M., Bower, A., Jacobs, D. F., Man, G., Hipkins, V. D., & Westwood, M. (2017). Banking on the future: progress, challenges and opportunities for the genetic conservation of forest trees. *New Forests, 48*(2), 153-180. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017116476&doi=10.1007%2fs11056-017-9582-8&

partnerID=40&md5=3c42c75886c6d6c02a2412609646e9fc. doi:10.1007/s11056-017-9582-8 Potvin, L. R., & Lilleskov, E. A. (2017). Introduced earthworm species exhibited unique patterns of seasonal activity and

- vertical distribution, and Lumbricus terrestris burrows remained usable for at least 7 years in hardwood and pine stands. *Biology and Fertility of Soils*, 53(2), 187-198. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006971681&doi=10.1007%2fs00374-016-1173-x&
- partnerID=40&md5=63cf59ec5c26be694f638c1ca2589475. doi:10.1007/s00374-016-1173-x Poudel, H. P., Sanciangco, M. D., Kaeppler, S. M., Robin Buell, C., & Casler, M. D. (2019). Genomic prediction for winter survival of lowland switchgrass in the northern USA. *G3: Genes, Genomes, Genetics*, *9*(6), 1921-1931. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067113152&doi=10.1534%2fg3.119.400094&partnerlD=40&md5=fea4a4063e6d865c3e98c02a499b99cc. doi:10.1534/g3.119.400094

Pourmokhtarian, A., Driscoll, C. T., Campbell, J. L., Hayhoe, K., Stoner, A. M. K., Adams, M. B., . . . Shanley, J. B. (2017). Modeled ecohydrological responses to climate change at seven small watersheds in the northeastern United States. *Global Change Biology*, 23(2), 840-856. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84983426678&doi=10.1111%2facb.13444&partnerlD

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84983426678&doi=10.1111%2tgcb.13444&partnerID =40&md5=225366e9e54d40f0a3a9476b1c17e841. doi:10.1111/gcb.13444

Povak, N. A., Hessburg, P. F., Giardina, C. P., Reynolds, K. M., Heider, C., Salminen, E., . . . MacKenzie, R. A. (2017). A watershed decision support tool for managing invasive species on Hawai'i Island, USA. Forest Ecology and Management, 400, 300-320. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020873895&doi=10.1016%2fj.foreco.2017.05.046&

- partnerID=40&md5=23714dacaf228f5f53aab604487c8378. doi:10.1016/j.foreco.2017.05.046 Powell, R. A., Facka, A. N., Gilbert, J. H., Higley, J. M., LaPoint, S. D., McCann, N. P., . . . Thompson, C. M. (2018). The
- fisher as a model organism. In *Biology and Conservation of Musteloids* (pp. 278-291). Powers, M., Kolka, R., Bradford, J., Palik, B., & Jurgensen, M. (2017). Forest floor and mineral soil respiration rates in a

Forest, M., Korka, K., Dradiold, J., Faik, D., & Juligerser, M. (e07). Forest for and "Inneral soft respiration rates in a northern Minnesota red pine chronosequence. *Forests*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039777973&doi=10.3390%2ff9010016&partnerID =40&md5=bc509c941177e471bc3e05722a40f798. doi:10.3390/f9010016

Prasad, A. M., & Potter, K. M. (2017). Macro-scale assessment of demographic and environmental variation within genetically derived evolutionary lineages of eastern hemlock (Tsuga canadensis), an imperiled conifer of the eastern United States. *Biodiversity and Conservation*, 26(9), 2223-2249. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018673165&doi=10.1007%2fs10531-017-1354-4&

partnerlD=40&md5=def8cacb0114ca8d4115b935046be098. doi:10.1007/s10531-017-1354-4 Prasad, R., Gunn, S. K., Rotz, C. A., Karsten, H., Roth, G., Buda, A., & Stoner, A. M. K. (2018). Projected climate and agronomic implications for corn production in the Northeastern United States. *PLoS ONE, 13*(6). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048895786&doi=10.1371%2fjournal.pone.0198623&partnerlD=40&md5=fb7757aadf8133ca27dece0807883fc9.doi:10.1371/journal.pone.0198623

Prather, C., Strickland, M. S., Laws, A., & Branson, D. (2017). Herbivore species identity and composition affect soil enzymatic activity through altered plant composition in a coastal tallgrass prairie. Soil Biology and Biochemistry, 112, 277-280. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020054631&doi=10.1016%2fj.soilbio.2017.05.013& partnerlD=40&md5=b7bab7fbd45c9e3aa6c4f9631b9e1cae. doi:10.1016/j.soilbio.2017.05.013

- Pravia, M. V., Kemanian, A. R., Terra, J. A., Shi, Y., Macedo, I., & Goslee, S. (2019). Soil carbon saturation, productivity, and carbon and nitrogen cycling in crop-pasture rotations. *Agricultural Systems*, *171*, 13-22. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059823687&doi=10.1016%2fj.agsy.2018.11.001&p artnerID=40&md5=7ae059e9194027c332c2b561850d0506. doi:10.1016/j.agsy.2018.11.001
- Pregler, K. C., Kanno, Y., Rankin, D., Coombs, J. A., & Whiteley, A. R. (2018). Characterizing genetic integrity of rear-edge trout populations in the southern Appalachians. *Conservation Genetics*, 19(6), 1487-1503. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055968301&doi=10.1007%2fs10592-018-1116-1& partnerID=40&md5=163246595f46525382a4e57d69df2307. doi:10.1007/s10592-018-1116-1

Prevéy, J., Vellend, M., Rüger, N., Hollister, R. D., Bjorkman, A. D., Myers-Smith, I. H., . . . Rixen, C. (2017). Greater temperature sensitivity of plant phenology at colder sites: implications for convergence across northern latitudes. *Global Change Biology*, *23*(7), 2660-2671. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85012068022&doi=10.1111%2fgcb.13619&partnerID =40&md5=e7d31167ff3248d15f69456c1e1207C2. doi:10.1111/qcb.13619

- Prevéy, J. S., & Harrington, C. A. (2018). Effectiveness of winter temperatures for satisfying chilling requirements for reproductive budburst of red alder (Alnus rubra). *PeerJ, 2018*(9). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054678838&doi=10.7717%2fpeerj.5221&partnerID =40&md5=bbe2b69b2350695cf82d14fa913af47a. doi:10.7717/peerj.5221
- Prevéy, J. S., Harrington, C. A., & St. Clair, J. B. (2018). The timing of flowering in Douglas-fir is determined by cool-season temperatures and genetic variation. *Forest Ecology and Management*, 409, 729-739. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037982344&doi=10.1016%2fj.foreco.2017.11.062&partnerID=40&md5=5de6ffb0e4c17cc7b2835bec4f93e9cb. doi:10.1016/j.foreco.2017.11.062

Prevéy, J. S., Rixen, C., Rüger, N., Høye, T. T., Bjorkman, A. D., Myers-Smith, I. H., . . . Wipf, S. (2019). Warming shortens flowering seasons of tundra plant communities. *Nature Ecology and Evolution*, 3(1), 45-52. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058178081&doi=10.1038%2fs41559-018-0745-6& partnerID=40&md5=43ee51714bcb4e6d5c7a420ba5e2bbf8. doi:10.1038/s41559-018-0745-6

Prichard, S. J., Stevens-Rumann, C. S., & Hessburg, P. F. (2017). Tamm Review: Shifting global fire regimes: Lessons from reburns and research needs. *Forest Ecology and Management*, 396, 217-233. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018958216&doi=10.1016%2fj.foreco.2017.03.035& partnerID=40&md5=890e762fd2a5b40263c6a491434865d6. doi:10.1016/j.foreco.2017.03.035

Provenza, F. D., Kronberg, S. L., & Gregorini, P. (2019). Is grassfed meat and dairy better for human and environmental health? *Frontiers in Nutrition*, 6. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067812090&doi=10.3389%2ffnut.2019.00026&part

nerD=40&md5=f0ec85c0150b63419ed5a6b3ae1ec8a8. doi:10.3389/fnut.2019.00026
Puhlick, J., Woodall, C., & Weiskittel, A. (2017). Implications of land-use change on forest carbon stocks in the eastern

United States. Environmental Research Letters, 12(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015770025&doi=10.1088%2f1748-9326%2faa597f

&partnerID=40&md5=fff4439e5c4111fd96c7a171c349c31c. doi:10.1088/1748-9326/aa597f Purcell, K. L., McGregor, E. L., & Calderala, K. (2017). Effects of drought on western pond turtle survival and movement patterns. *Journal of Fish and Wildlife Management*, 8(1), 15-27. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020418324&doi=10.3996%2f012016-JFWM-005& 89 partnerlD=40&md5=828c1c04837b0690ac9387081859ada0. doi:10.3996/012016-JFWM-005 Qin, M., Hao, L., Sun, L., Liu, Y., & Sun, G. (2019). Climatic Controls on Watershed Reference Evapotranspiration Varied

during 1961–2012 in Southern China. Journal of the American Water Resources Association, 55(1), 189-208. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058951496&doi=10.1111%2f1752-1688.12714&partnerlD=40&md5=f0390ff91570f78b0562e34702478383. doi:10.1111/1752-1688.12714

Qiu, Y., Jiang, Y., Guo, L., Burkey, K. O., Zobel, R. W., Shew, H. D., & Hu, S. (2018). Contrasting Warming and Ozone Effects on Denitrifiers Dominate Soil N <inf>2</inf> O Emissions. *Environmental Science and Technology*, 52(19), 10956-10966. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053514273&doi=10.1021%2facs.est.8b01093&part nerID=40&md5=95f9ce8cf46d182d5ee538205a2d978c. doi:10.1021/acs.est.8b01093

- Quesada, T., Lucas, S., Smith, K., & Smith, J. (2019). Response to temperature and virulence assessment of Fusarium circinatum isolates in the context of climate change. *Forests*, *10*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059738737&doi=10.3390%2ff10010040&partnerID =40&md5=093b550369ae2c9d40eb4c8b3afeae31. doi:10.3390/f10010040
- Quiroz, R., Ramírez, D. A., Kroschel, J., Andrade-Piedra, J., Barreda, C., Condori, B., . . . Perez, W. (2018). Impact of climate change on the potato crop and biodiversity in its center of origin. *Open Agriculture*, 3(1), 273-283. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053178072&doi=10.1515%2fopag-2018-0029&par tnerID=40&md5=81296edd481409b8c38a7e2cd582da8f. doi:10.1515/opag-2018-0029
- Radtke, P., Walker, D., Frank, J., Weiskittel, A., DeYoung, C., MacFarlane, D., . . . Westfall, J. (2017). Improved accuracy of aboveground biomass and carbon estimates for live trees in forests of the eastern United States. *Forestry*, 90(1), 32-46. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016087553&doi=10.1093%2fforestry%2fcpw047&partnerlD=40&md5=c39436ac5efe29513d5680b1661bb3ce. doi:10.1093/forestry/cpw047

- Rains, M. T. (2017). A forest service vision during the anthropocene. *Forests, 8*(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85016072534&doi=10.3390%2ff8030094&partnerID =40&md5=02ff5a55d717df76e876fb48ed713f49. doi:10.3390/f8030094
- Ralston, J., DeLuca, W. V., Feldman, R. E., & King, D. I. (2017). Population trends influence species ability to track climate change. *Global Change Biology*, 23(4), 1390-1399. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014740173&doi=10.1111%2fgcb.13478&partnerID =40&md5=91f1cb7b375aec23d611456b03146a42. doi:10.1111/gcb.13478
- Ramírez, P. B., Calderón, F. J., Fonte, S. J., & Bonilla, C. A. (2019). Environmental controls and long-term changes on carbon stocks under agricultural lands. *Soil and Tillage Research*, 186, 310-321. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056650448&doi=10.1016%2fj.still.2018.10.018&par tnerID=40&md5=de4274d933dd626c24d4ad1661984d34. doi:10.1016/j.still.2018.10.018
- Ramlow, M., Foster, E. J., Del Grosso, S. J., & Cotrufo, M. F. (2019). Broadcast woody biochar provides limited benefits to deficit irrigation maize in Colorado. *Agriculture, Ecosystems and Environment, 269,* 71-81. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054030809&doi=10.1016%2fj.agee.2018.09.017&p artnerID=40&md5=4ea1afdaeab1515918d20e85af7a0d0d. doi:10.1016/j.agee.2018.09.017
- Ramlow, M., Rhoades, C. C., & Cotrufo, M. F. (2018). Promoting revegetation and soil carbon sequestration on decommissioned forest roads in Colorado, USA: A comparative assessment of organic soil amendments. *Forest Ecology and Management*, 427, 230-241. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048527843&doi=10.1016%2fj.foreco.2018.05.059& partnerID=40&md5=24fe475463bccef7c21fb9ff70a78aa0. doi:10.1016/j.foreco.2018.05.059
- Ramsey, M. M., Muñoz-Erickson, T. A., Mélendez-Ackerman, E., Nytch, C. J., Branoff, B. L., & Carrasquillo-Medrano, D. (2019). Overcoming barriers to knowledge integration for urban resilience: A knowledge systems analysis of two-flood prone communities in San Juan, Puerto Rico. *Environmental Science and Policy, 99*, 48-57. Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066267807\&doi=10.1016\%2fj.envsci.2019.04.013\&partnerID=40\&md5=5d49496e11bc6af659c26bd8fb4b80d4.\ doi:10.1016/j.envsci.2019.04.013$ 

Randolph, P., Bansode, R. R., Hassan, O. A., Rehrah, D., Ravella, R., Reddy, M. R., . . . Ahmedna, M. (2017). Effect of biochars produced from solid organic municipal waste on soil quality parameters. *Journal of Environmental*  Management, 192, 271-280. Retrieved from https://www.scopus.com/ipward/record.uri?eid=2-s2.0-

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011660582&doi=10.1016%2fj.jenvman.2017.01.061 &partnerID=40&md5=c31eda6ad88e9f12c9b323f851dd7c32. doi:10.1016/j.jenvman.2017.01.061

- Rappaport, D. I., Morton, D. C., Longo, M., Keller, M., Dubayah, R., & Dos-Santos, M. N. (2018). Quantifying long-term changes in carbon stocks and forest structure from Amazon forest degradation. *Environmental Research Letters*, 13(6). Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047826863&doi=10.1088%2f1748-9326%2faac331 &partnerID=40&md5=d29824be79ba522ec909a7a5bf2a239c. doi:10.1088/1748-9326/aac331
- Rastogi, B., Berkelhammer, M., Wharton, S., Whelan, M. E., Meinzer, F. C., Noone, D., & Still, C. J. (2018). Ecosystem fluxes of carbonyl sulfide in an old-growth forest: Temporal dynamics and responses to diffuse radiation and heat waves. *Biogeosciences*, 15(23), 7127-7139. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057586913&doi=10.5194%2fbg-15-7127-2018&pa
- rtnertD=40&md5=5e43bd36be1316f61a01808d42b3cba. doi:10.5194/bg-15-7127-2018 rtnerlD=40&md5=5e43bd36be1316f61a01808d422b3cba. doi:10.5194/bg-15-7127-2018 Rathburn, S. L., Bennett, G. L., Wohl, E. E., Briles, C., McElroy, B., & Sutfin, N. (2017). The fate of sediment, wood, and
- organic carbon eroded during an extreme flood, Colorado Front Range, USA. *Geology*, 45(6), 499-502. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019230076&doi=10.1130%2fG38935.1&partnerlD =40&md5=ffa9dcb1fb9c16754f0d819ffb707d0e. doi:10.1130/G38935.1

Ravelombola, W., Shi, A., Weng, Y., Mou, B., Motes, D., Clark, J., . . . Sugihara, Y. (2018). Association analysis of salt tolerance in cowpea (Vigna unguiculata (L) Walp) at germination and seedling stages. *Theoretical and Applied Genetics*, 131(1), 79–91. Retrieved from https://www.newsurg.com/article/10.2007/06/00106208/doi: 10.10076/06/00122.017.2007

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029819630&doi=10.1007%2fs00122-017-2987-0& partnerID=40&md5=90907364b89954ba76a5af2a00e63915. doi:10.1007/s00122-017-2987-0

Ray, C., Cluck, D. R., Wilkerson, R. L., Siegel, R. B., White, A. M., Tarbill, G. L., ... Howell, C. A. (2019). Patterns of woodboring beetle activity following fires and bark beetle outbreaks in montane forests of California, USA. *Fire Ecology*, 15(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068805632&doi=10.1186%2fs42408-019-0040-1& partnerID=40&md5=b43a42135f3f7d63e82b29af51211cd5. doi:10.1186/s42408-019-0040-1

Raymundo, R., Asseng, S., Prassad, R., Kleinwechter, U., Concha, J., Condori, B., . . . Porter, C. (2017). Performance of the SUBSTOR-potato model across contrasting growing conditions. *Field Crops Research*, 202, 57-76. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84964643216&doi=10.1016%2fj.fcr.2016.04.012&part nerID=40&md5=8dd31c4bb6e5cf9f12cb4e1497eb4488. doi:10.1016/j.fcr.2016.04.012

Reeves, M. C., Bagne, K. E., & Tanaka, J. (2017). Potential Climate Change Impacts on Four Biophysical Indicators of Cattle Production from Western US Rangelands. *Rangeland Ecology and Management*, 70(5), 529-539. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028412500&doi=10.1016%2fj.rama.2017.02.005&partnerID=40&md5=6f7b8930fadb4ca58c1a1ac2861235b5. doi:10.1016/j.rama.2017.02.005

- Reeves, M. C., Manning, M. E., DiBenedetto, J. P., Palmquist, K. A., Lauenroth, W. K., Bradford, J. B., & Schlaepfer, D. R. (2018) Effects of Climate Change on Rangeland Vegetation in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 97-114).
- Refatti, J. P., de Avila, L. A., Camargo, E. R., Ziska, L. H., Oliveira, C., Salas-Perez, R., ... Roma-Burgos, N. (2019). High [CO<inf>2</inf>] and temperature increase resistance to cyhalofop-butyl in multiple-resistant echinochloa colona. Frontiers in Plant Science, 10. Retrieved from http://www.colore.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.colona.c

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067353636&doi=10.3389%2ffpls.2019.00529&part nerID=40&md5=5a79ca3e7a08003776f4a6b1e9dc257b. doi:10.3389/fpls.2019.00529

- Rehkamp, S., & Canning, P. (2018). Measuring Embodied Blue Water in American Diets: An EIO Supply Chain Approach. *Ecological Economics, 147*, 179-188. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044465629&doi=10.1016%2fj.ecolecon.2017.12.02
- 80 Apartner10=408md5=1728452bf764856c98fb592edf30198. doi:10.1016/j.ecolecon.2017.12.028 Reichle, R. H., de Lannoy, G. J. M., Liu, Q., Koster, R. D., Kimball, J. S., Crow, W. T., . . . Smith, E. B. (2017). Global
  - assessment of the SMAP Level-4 surface and root-zone soil moisture product using assimilation diagnostics. Journal of Hydrometeorology, 18(12), 3217-3237. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034763018&doi=10.1175%2fJHM-D-17-0130.1&p artnerID=40&md5=c74c00d96e53aec5a7b8425a47772cdf. doi:10.1175/JHM-D-17-0130.1

- Reichmann, L. G., Collins, H. P., Jin, V. L., Johnson, M. V. V., Kiniry, J. R., Mitchell, R. B., . . . Fay, P. A. (2018). Inter-Annual Precipitation Variability Decreases Switchgrass Productivity from Arid to Mesic Environments. *Bioenergy Research*, 11(3), 614-622. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048659921&doi=10.1007%2fs12155-018-9922-3& partnerlD=40&md5=85c72096427d43ff94216fb077e73157. doi:10.1007/s12155-018-9922-3
- Reinmann, A. B., Susser, J. R., Demaria, E. M. C., & Templer, P. H. (2019). Declines in northern forest tree growth following snowpack decline and soil freezing. *Global Change Biology*, *25*(2), 420-430. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057772879&doi=10.1111%2fgcb.14420&partnerID =40&md5=7e40468220fef5e4c49a324369bba528. doi:10.1111/gcb.14420
- Renkenberger, J., Montas, H., Leisnham, P. T., Chanse, V., Shirmohammadi, A., Sadeghi, A., . . . Lansing, D. (2017). Effectiveness of best management practices with changing climate in a Maryland watershed. *Transactions of the ASABE, 60*(3), 769-782. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022331200&doi=10.13031%2ftrans.11691&partner
  - nttps://www.scopus.com/inward/record.un?eid=2-s2.0-85022331200&dol=10.13031%2ftrans.11691&partner ID=40&md5=1f90abff4aa48c9d40eac6a592bd1f01. doi:10.13031/trans.11691
- Rens, H., Bera, T., & Alva, A. K. (2018). Effects of Biochar and Biosolid on Adsorption of Nitrogen, Phosphorus, and Potassium in Two Soils. Water, Air, and Soil Pollution, 229(8). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051676533&doi=10.1007%2fs11270-018-3925-8&
- https://www.scopus.com/inward/record.un/ede=2-s2.0-850516/65338doi=10.100/%zf5112/0-018-3925-8& partnerlD=40&md5=1f96464c4ba9f13c343cea7287356ecc. doi:10.1007/s11270-018-3925-8
  Renwick, K. M., Fellows, A., Flerchinger, G. N., Lohse, K. A., Clark, P. E., Smith, W. K., ... Poulter, B. (2019). Modeling
- phenological controls on carbon dynamics in dryland sagebrush ecosystems. Agricultural and Forest Meteorology, 274, 85-94. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064906404&doi=10.1016%2fj.agrformet.2019.04.0
- 03&partnerD=40&md5=e32115e38e660c02c2d8035d73e199e7. doi:10.1016/j.agrformet.2019.04.0 03&partnerD=40&md5=e32115e38e660c02c2d8035d73e199e7. doi:10.1016/j.agrformet.2019.04.003 Restaino, C., Young, D. J. N., Estes, B., Gross, S., Wuenschel, A., Meyer, M., & Safford, H. (2019). Forest structure and
- climate mediate drought-induced tree mortality in forests of the Sierra Nevada, USA. *Ecological Applications*, 29(4). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066613116&doi=10.1002%2feap.1902&partnerID= 40&md5=4bef48afa9ec822080093f186a43d9e4. doi:10.1002/eap.1902

Reyes, J. J., Tague, C. L., Evans, R. D., & Adam, J. C. (2017). Assessing the Impact of Parameter Uncertainty on Modeling Grass Biomass Using a Hybrid Carbon Allocation Strategy. *Journal of Advances in Modeling Earth Systems*, 9(8), 2968-2992. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040719783&doi=10.1002%2f2017MS001022&part

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040719783&doi=10.1002%2f2017MS001022&part nerID=40&md5=0a45606e7470ddf0e27d7bb9a2310509. doi:10.1002/2017MS001022

- Reyes, J. J., Wiener, J. D., Doan-Crider, D., & Novak, R. (2018). Building collaborative capacity: Supporting tribal agriculture and natural resources in a changing climate. *Renewable Agriculture and Food Systems*, 33(3), 222-224. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041584468&doi=10.1017%2fS1742170517000801 &partnerlD=40&md5=bbf04ca3c0fdf7a16a07325efdb0f998. doi:10.1017/S1742170517000801
- Rice, J., Bardsley, T., Gomben, P., Bambrough, D., Weems, S., Leahy, S., . . . Joyce, L. A. (2017). Assessment of watershed vulnerability to climate change for the Uinta-Wasatch-Cache and Ashley National Forests, Utah. USDA Forest Service - General Technical Report RMRS-GTR, 2017(362). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022188614&partnerID=40&md5=89fd33b5b049c9
- bd9132877b34158014. Richard, R. P., Potvin, L. R., Kane, E. S., Handler, S. D., Smith, P. J., & Peterson, D. (2018). Biochar and wood ash amendments for forestry in the Lake States: Field report and initial results. *Journal of Forestry, 116*(3), 222-227. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046995549&doi=10.5849%2fjofJOF-2016-060R2& partnerID=40&md5=4c322550f4c6f68f5fce9267a6384068. doi:10.5849/jofJOF-2016-060R2

Richardson, A. D., Hollinger, D. Y., Shoemaker, J. K., Hughes, H., Savage, K., & Davidson, E. A. (2019). Six years of ecosystem-atmosphere greenhouse gas fluxes measured in a sub-boreal forest. *Scientific Data*, 6(1), 117. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069269093&doi=10.1038%2fs41597-019-0119-1& partnerID=40&md5=80406de08f4fc610332629657e861b2d. doi:10.1038/s41597-019-0119-1

Richardson, B. A., & Chaney, L. (2018). Climate-based seed transfer of a widespread shrub: population shifts, restoration strategies, and the trailing edge. Ecological Applications, 28(8), 2165-2174. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057814099&doi=10.1002%2feap.1804&partnerID= 40&md5=2eb2529f5a0f15f5630542d0ea2aab1f. doi:10.1002/eap.1804

Richardson, B. A., Chaney, L., Shaw, N. L., & Still, S. M. (2017). Will phenotypic plasticity affecting flowering phenology keep pace with climate change? Global Change Biology, 23(6), 2499-2508. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84999622155&doi=10.1111%2fgcb.13532&partnerID =40&md5=b267e5db7a1fa15e7a5069237f9aceed. doi:10.1111/gcb.13532

Riginos, C., Porensky, L. M., Veblen, K. E., & Young, T. P. (2018). Herbivory and drought generate short-term stochasticity and long-term stability in a savanna understory community. Ecological Applications, 28(2), 323-335. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042718941&doi=10.1002%2feap.1649&partnerlD= 40&md5=43c5ff95a118de0ad485ab7c267f9bc5. doi:10.1002/eap.1649

Riley, K. L., Thompson, M. P., Scott, J. H., & Gilbertson-Day, J. W. (2018). A model-based framework to evaluate alternative wildfire suppression strategies. Resources, 7(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044137343&doi=10.3390%2fresources7010004&p artnerID=40&md5=eab19e984044c34b791561e34349c8ea. doi:10.3390/resources7010004

Riley, K. L., Williams, A. P., Urbanski, S. P., Calkin, D. E., Short, K. C., & O'Connor, C. D. (2019). Will Landscape Fire Increase in the Future? A Systems Approach to Climate, Fire, Fuel, and Human Drivers. Current Pollution Reports, 5(2), 9-24, Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061298326&doi=10.1007%2fs40726-019-0103-6& partnerID=40&md5=3db60a210bbc2697b2c19100a2f83a44. doi:10.1007/s40726-019-0103-6

Ringo, C., Bennett, K., Noller, J., Jiang, D., & Moore, D. (2018). Modeling droughty soils at regional scales in Pacific Northwest Forests, USA. Forest Ecology and Management, 424, 121-135. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046713931&doi=10.1016%2fj.foreco.2018.04.019&

partnerID=40&md5=ab857a59a0be0a6d83ac295a987abe75. doi:10.1016/j.foreco.2018.04.019 Rivero, R. M., Oliver, M. J., & Mittler, R. (2019). Editorial. Physiologia Plantarum, 165(2), 125-127. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060546896&doi=10.1111%2fppl.12884&partnerID =40&md5=0a3818a05ff4035c92c703ec94048626. doi:10.1111/ppl.12884

Robertson, A. D., Zhang, Y., Sherrod, L. A., Rosenzweig, S. T., Ma, L., Ahuia, L., & Schipanski, M. E. (2018). Climate change impacts on yields and soil carbon in row crop dryland agriculture. Journal of Environmental Quality, 47(4), 684-694. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049433114&doi=10.2134%2fjeq2017.08.0309&par tnerID=40&md5=1865f532a11aac29f58015dc5704e4b3. doi:10.2134/jeq2017.08.0309

Roche, J. W., Bales, R. C., Rice, R., & Marks, D. G. (2018). Management Implications of Snowpack Sensitivity to Temperature and Atmospheric Moisture Changes in Yosemite National Park, CA. Journal of the American Water Resources Association, 54(3), 724-741. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045414100&doi=10.1111%2f1752-1688.12647&pa rtnerlD=40&md5=7cdbe8f1e18070154008ce1519baa564. doi:10.1111/1752-1688.12647

Rockweit, J. T., Franklin, A. B., & Carlson, P. C. (2017). Differential impacts of wildfire on the population dynamics of an old-forest species. Ecology, 98(6), 1574-1582. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018997707&doi=10.1002%2fecy.1805&partnerID= 40&md5=57f2c6720c63285e297ce19e2bdea74b. doi:10.1002/ecy.1805

Rockwell, S. M., Wunderle, J. M., Sillett, T. S., Bocetti, C. I., Ewert, D. N., Currie, D., . . , Marra, P. P. (2017), Seasonal survival estimation for a long-distance migratory bird and the influence of winter precipitation. Oecologia, 183(3), 715-726. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85003874716&doi=10.1007%2fs00442-016-3788-x& partnerID=40&md5=1f2b0220841079c01b84113ceb529faa. doi:10.1007/s00442-016-3788-x

Rodhouse, T. J., Jeffress, M. R., Sherrill, K. R., Mohren, S. R., Nordensten, N. J., Magnuson, M. L., . . . Epps, C. W. (2018). Geographical variation in the influence of habitat and climate on site occupancy turnover in American pika (Ochotona princeps). Diversity and Distributions, 24(11), 1506-1520. Retrieved from

273

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055294277&doi=10.1111%2fddi.12791&partnerID =40&md5=42ad1c658a41b6d4ef7a5a065789d267. doi:10.1111/ddi.12791

Roesch-McNally, G. E., Arbuckle, J. G., & Tyndall, J. C. (2018). Barriers to implementing climate resilient agricultural strategies: The case of crop diversification in the U.S. Corn Belt. *Global Environmental Change*, 48, 206-215. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038923139&doi=10.1016%2fj.gloenvcha.2017.12.0 02&partnerID=40&md5=4ff454087a399a0d56064eaf4c02cafa. doi:10.1016/j.gloenvcha.2017.12.002

Roesch-Mchally, G. E., Basche, A., & Schewe, R. (2018). Climate change challenges require collaborative research to drive agrifood system transformation. *Renewable Agriculture and Food Systems*, 33(3), 195-196. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044772857&doi=10.1017%2fS1742170518000157 &partnerID=40&md5=b53c1e869cc02eb8c67616fe419c837e. doi:10.1017/S1742170518000157

- Roesch-McNally, G. E., Gordon Arbuckle, J., & Tyndall, J. C. (2017). What would farmers do? Adaptation intentions under a Corn Belt climate change scenario. *Agriculture and Human Values, 34*(2), 333-346. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84981554806&doi=10.1007%2fs10460-016-9719-y& partnerID=40&md5=cc084f5615c9cc7c5abad55106c2346c. doi:10.1007/s10460-016-9719-y
- Rogosch, J. S., Tonkin, J. D., Lytle, D. A., Merritt, D. M., Reynolds, L. V., & Olden, J. D. (2019). Increasing drought favors nonnative fishes in a dryland river: evidence from a multispecies demographic model. *Ecosphere*, 10(4). Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065020928\&doi=10.1002\%2fecs2.2681\&partnerlD=40\&md5=44eec6dd58154b11b7792d8c20306f51.doi:10.1002/ecs2.2681$ 

- Roitman, I., Bustamante, M. M. C., Haidar, R. F., Shimbo, J. Z., Abdala, G. C., Eiten, G., . . . Sampaio, J. M. (2018). Optimizing biomass estimates of savanna woodland at different spatial scales in the Brazilian Cerrado: Re-evaluating allometric equations and environmental influences. *PLoS ONE*, *13*(8). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-s6050957733&ddoi=10.1371%2fjournal.pone.0196742 &partnerlD=40&md5=d11a865244c4a44d4f3637762173abf2. doi:10.1371/journal.pone.0196742
- Roman, L. A., Pearsall, H., Eisenman, T. S., Conway, T. M., Fahey, R. T., Landry, S., . . . Staudhammer, C. (2018). Human and biophysical legacies shape contemporary urban forests: A literature synthesis. Urban Forestry and Urban Greening, 31, 157-168. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043465847&doi=10.1016%2fj.ufug.2018.03.004&p

artneriD=40&md5=24eb140c947b343c66d29e83475ae270. doi:10.1016/j.ufug.2018.03.004 Rong, Y., Johnson, D. A., Wang, Z., & Zhu, L. (2017). Grazing effects on ecosystem CO <inf>2</inf> fluxes regulated by

interannual climate fluctuation in a temperate grassland steppe in northern China. Agriculture, Ecosystems and Environment, 237, 194-202. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007560865&doi=10.1016%2fj.agee.2016.12.036&p artnerID=40&md5=ceb562508a15519a94855ee2c687ac9c. doi:10.1016/j.agee.2016.12.036

Roper, B. B., Capurso, J. M., Paroz, Y., & Young, M. K. (2018). Conservation of Aquatic Biodiversity in the Context of Multiple-Use Management on National Forest System Lands. *Fisheries*, *43*(9), 396-405. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054363218&doi=10.1002%2ffsh.10168&partnerID =40&md5=fb58a93059657c30be6104a6db6da620. doi:10.1002/fsh.10168

Rosenberger, D. W., Venette, R. C., Maddox, M. P., & Aukema, B. H. (2017). Colonization behaviors of mountain pine beetle on novel hosts: Implications for range expansion into Northeastern North America. *PLoS ONE, 12*(5). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018328476&doi=10.1371%2fjournal.pone.0176269& partnerlD=40&md5=5214fd39570f012d290cfaadff37b7dd. doi:10.1371/journal.pone.0176269

Rosenzweig, C., Ruane, A. C., Antle, J., Elliott, J., Ashfaq, M., Chatta, A. A., . . . Wiebe, K. (2018). Coordinating AgMIP data and models across global and regional scales for 1.5°C and 2.0°C assessments. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 376*(2119). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045541816&doi=10.1098%2frsta.2016.0455&partnerlD=40&md5=71b6daafb8c571fa559dc27402448089. doi:10.1098/rsta.2016.0455

Rottler, C. M., Burke, I. C., Palmquist, K. A., Bradford, J. B., & Lauenroth, W. K. (2018). Current reclamation practices after oil and gas development do not speed up succession or plant community recovery in big sagebrush

ecosystems in Wyoming. Restoration Ecology, 26(1), 114-123. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85024910977&doi=10.1111%2frec.12543&partnerID

=40&md5=465d5fb8b01ce2d6ad999f1f5e7ea7f3. doi:10.1111/rec.12543 Rotz, C. A. (2018). Modeling greenhouse gas emissions from dairy farms. *Journal of Dairy Science, 101*(7), 6675-6690. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033771832&doi=10.3168%2fjds.2017-13272&part nerlD=40&md5=dfb887931b38cb1c26b1fecfb9ba3853. doi:10.3168/jds.2017-13272

- Rotz, C. A., Asem-Hiablie, S., Place, S., & Thoma, G. (2019). Environmental footprints of beef cattle production in the United States. *Agricultural Systems*, *169*, 1-13. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057142776&doi=10.1016%2fj.agsy.2018.11.005&p
- artner/D=40&md5=11e652ed7435511d7d1c7e93d18a9b04. doi:10.1016/j.agsy.2018.11.005 Roundy, B. A., Chambers, J. C., Pyke, D. A., Miller, R. F., Tausch, R. J., Schupp, E. W., . . . Gruell, T. (2018). Resilience and resistance in sagebrush ecosystems are associated with seasonal soil temperature and water availability.

Ecosphere, 9(9). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054795951&doi=10.1002%2fecs2.2417&partnerID =40&md5=ece2e0d0e506be6930736cae6c99d6a8. doi:10.1002/ecs2.2417

Roy, T., Valdés, J. B., Lyon, B., Demaria, E. M. C., Serrat-Capdevila, A., Gupta, H. V., . . . Durcik, M. (2018). Assessing hydrological impacts of short-term climate change in the Mara River basin of East Africa. *Journal of Hydrology*, 566, 818-829. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054314743&doi=10.1016%2fj.jhydrol.2018.08.051 &partnerID=40&md5=6edd8658dc3cdeab33d5b8c4e8a13344. doi:10.1016/j.jhydrol.2018.08.051

Ruane, A. C., Antle, J., Elliott, J., Folberth, C., Hoogenboom, G., Mason-D'Croz, D., . . . Rosenzweig, C. (2018). Biophysical and economic implications for agriculture of +1.5° and +2.0°C global warming using AgMIP Coordinated Global and Regional Assessments. *Climate Research*, 76(1), 17-39. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047785356&doi=10.3354%2fcr01520&partnerID= 40&md5=ac600835ce747683929686c1c545ddf3. doi:10.3354/cr01520

Ruiz-Vera, U. M., De Souza, A. P., Long, S. P., & Ort, D. R. (2017). The role of sink strength and nitrogen availability in the down-regulation of photosynthetic capacity in field-grown Nicotiana tabacum L. at elevated CO<inf>2</inf> concentration. Frontiers in Plant Science, 8. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021058500&doi=10.3389%2ffpls.2017.00998&part nerlD=40&md5=b6e2e23a25fe1462693e73ae338e0a7b. doi:10.3389/fpls.2017.00998

Ruiz-Vera, U. M., Siebers, M. H., Jaiswal, D., Ort, D. R., & Bernacchi, C. J. (2018). Canopy warming accelerates development in soybean and maize, offsetting the delay in soybean reproductive development by elevated CO sinf > 2</inf > concentrations. *Plant Cell and Environment*, *41*(12), 2806-2820. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052403908&doi=10.1111%2fpce.13410&partnerID =40&md5=ec1224f48C0817613990af8c45f1e8a2. doi:10.1111/pce.13410

Russell, M. B., & Woodall, C. W. (2017). Development of a downed woody debris forecasting tool using strategic-scale multiresource forest inventories. *Journal of Forestry*, *115*(4), 276-282. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022230880&doi=10.5849%2fjof.15-113&partnerID =40&md5=d86e25d13b2a72b1427b4d166d4c27f5. doi:10.5849/jof.15-113

Ryan, S. F., Valella, P., Thivierge, G., Aardema, M. L., & Scriber, J. M. (2018). The role of latitudinal, genetic and temperature variation in the induction of diapause of Papilio glaucus (Lepidoptera: Papilionidae). *Insect Science, 25*(2), 328-336. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013477688&doi=10.1111%2f1744-7917.12423&pa

rtnerlD=40&md5=108434d0995a594adf0425312da911a9. doi:10.1111/1744-7917.12423 Saia, S. M., Suttles, K. M., Cutts, B. B., Emanuel, R. E., Martin, K. L., Wear, D. N., . . . Vose, J. M. (2019). Applying Climate Change Risk Management Tools to Integrate Streamflow Projections and Social Vulnerability. *Ecosystems*. Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066040162\&doi=10.1007\%2fs10021-019-00387-5\&partnerlD=40\&md5=fce143eb961b636190104965b426cdf2.\ doi:10.1007/s10021-019-00387-5\&partnerlD=40\&md5=fce143eb961b636190104965b426cdf2.\ doi:10.1007/s10021-019-00387-5\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partner$ 

Sainju, U. M., Allen, B. L., Lenssen, A. W., & Mikha, M. (2017). Root and soil total carbon and nitrogen under bioenergy perennial grasses with various nitrogen rates. *Biomass and Bioenergy*, 107, 326-334. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032721802&doi=10.1016%2fj.biombioe.2017.10.02

1&partnerID=40&md5=81fc0ad096dbd0c5fadd9de9830e7c29. doi:10.1016/j.biombioe.2017.10.021 Sainju, U. M., Singh, H. P., & Singh, B. P. (2017). Soil Carbon and Nitrogen in Response to Perennial Bioenergy Grass,

- Cover Crop and Nitrogen Fertilization. *Pedosphere*, 27(2), 223-235. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014387872&doi=10.1016%2fS1002-0160%2817%2 960312-6&partnerID=40&md5=a51cf39e7d825c03c69fbcdf5f6fa883. doi:10.1016/S1002-0160(17)60312-6
- Saksa, P., Safeeq, M., & Dymond, S. (2017). Recent patterns in climate, vegetation, and forest water use in California montane watersheds. *Forests*, 8(8). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027464346&doi=10.3390%2ff8080278&partnerID
- https://www.scopus.com/inward/record.un/eid=2-52/0-8502/464348480i1=10.3390%2ff80802/882partnerL
   =408cmd5=447a2481722bd3321e7904bee66dd40a. doi:10.3390/f8080278
   Salas-Leiva, D. E., Meerow, A. W., Calonie, M., Francisco-Ortega, J., Patrick Griffith, M., Nakamura, K., . . . Knowles, D.
- Salas-Leiva, D. E., Mieerow, A. W., Calonje, M., Francisco-Ortega, J., Patrick Grinfith, M., Nakamura, K., . . . Knowles, D. (2017). Shifting Quaternary migration patterns in the Bahamian archipelago: Evidence from the Zamia pumila complex at the northern limits of the Caribbean island biodiversity hotspot. *American Journal of Botany*, 104(5), 757-771. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019713440&doi=10.3732&2fajb.1700054&partnerlD=40&md5=d157d9628f0cc2a84b7d022b74642920.doi:10.3732/ajb.1700054&partnerlD=40&md5=d157d9628f0cc2a84b7d022b74642920.doi:10.3732/ajb.1700054&partnerlD=40&md5=d157d9628f0cc2a84b7d022b74642920.doi:10.3732/ajb.1700054&partnerlD=40&md5=d157d9628f0cc2a84b7d022b74642920.doi:10.3732/ajb.1700054&partnerlD=40&md5=d157d9628f0cc2a84b7d022b74642920.doi:10.3732/ajb.1700054&partnerlD=40&md5=d157d9628f0cc2a84b7d022b74642920.doi:10.3732/ajb.1700054&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&pa

Saleh, A., Niraula, R., Marek, G. W., Gowda, P. H., Brauer, D. K., & Howell, T. A. (2018). Lysimetric evaluation of the apex model to simulate daily et for irrigated crops in the Texas high plains. *Transactions of the ASABE, 61*(1), 65-74. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042223256&doi=10.13031%2ftrans.11938&partner ID=40&md5=1f9052c1a3d1c51025b9caf02b1d956f. doi:10.13031/trans.11938

- Samtani, J. B., Rom, C. R., Friedrich, H., Fennimore, S. A., Finn, C. E., Petran, A., . . . Bergefurd, B. (2019). The status and future of the strawberry industry in the United States. *HortTechnology*, 29(1), 11-24. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065226730&doi=10.21273%2fhorttech04135-18& partnerlD=40&md5=2f38988aaf50acc0435e971283201c33. doi:10.21273/horttech04135-18
- Samuelson, L., Johnsen, K., Stokes, T., Anderson, P., & Nelson, C. D. (2018). Provenance variation in pinus palustris foliar δ13C. *Forests*, 9(8). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054935636&doi=10.3390%2ff9080466&partnerlD =40&md5=320cfe66583d92100fe3ab1415e73887. doi:10.3390/f9080466
- Samuelson, L. J., Stokes, T. A., Butnor, J. R., Johnsen, K. H., Gonzalez-Benecke, C. A., Martin, T. A., . . . Lewis, J. C. (2017). Ecosystem carbon density and allocation across a chronosequence of longleaf pine forests. *Ecological Applications*, 27(1), 244–259. Retrieved from https://www.scopus.com/inward/record.uir?eid=2-s2.0-85008350892&doi=10.1002%2feap.1439&partnerID= 40&md5=2a67b17e46d650df5eb0b927b3ecedc9. doi:10.1002/eap.1439
- Sanad, M. N. M. E., Smertenko, A., & Garland-Campbell, K. A. (2019). Differential dynamic changes of reduced trait model for analyzing the plastic response to drought phases: A case study in spring wheat. Frontiers in Plant Science, 10. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067365730&doi=10.3389%2ffpls.2019.00504&part nerlD=40&md5=266ac826fd05a40ff2265ba75709134c. doi:10.3389/fpls.2019.00504

Sanchez, G. M., Smith, J. W., Terando, A., Sun, G., & Meentemeyer, R. K. (2018). Spatial Patterns of Development Drive Water Use. Water Resources Research, 54(3), 1633-1649. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043376343&doi=10.1002%2f2017WR021730&part nerID=40&md5=8700cccc9cff41c1102b92c20bc6c00. doi:10.1002/2017WR021730

- Sánchez, M. E., Chimner, R. A., Hribljan, J. A., Lilleskov, E. A., & Suárez, E. (2017). Carbon dioxide and methane fluxes in grazed and undisturbed mountain peatlands in the ecuadorian Andes. *Mires and Peat*, *1*9. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042228527&doi=10.19189%2fMaP.2017.OMB.277 &partnerID=40&md5=9ac26064850587fe7b748d816429d576. doi:10.19189/MaP.2017.OMB.277
- Sánchez-Cañete, E. P., Scott, R. L., van Haren, J., & Barron-Gafford, G. A. (2017). Improving the accuracy of the gradient method for determining soil carbon dioxide efflux. *Journal of Geophysical Research: Biogeosciences*, 122(1), 50-64. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008471568&doi=10.1002%2f2016JG003530&partnerlD=40&md5=c2186106a50d314964769c0e1d6832e0. doi:10.1002/2016JG003530

SanClements, M. D., Fernandez, I. J., Lee, R. H., Roberti, J. A., Adams, M. B., Rue, G. A., & McKnight, D. M. (2018). Long-Term Experimental Acidification Drives Watershed Scale Shift in Dissolved Organic Matter Composition

and Flux. Environmental Science and Technology, 52(5), 2649-2657. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043270345&doi=10.1021%2facs.est.7b04499&part nerID=40&md5=2a28bb564bbc0907ba1f0ce3a2dad506. doi:10.1021/acs.est.7b04499

Sándor, R., Ehrhardt, F., Brilli, L., Carozzi, M., Recous, S., Smith, P., . . . Bellocchi, G. (2018). The use of biogeochemical models to evaluate mitigation of greenhouse gas emissions from managed grasslands. *Science of the Total Environment, 642,* 292-306. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048721429&doi=10.1016%2fj.scitotenv.2018.06.02 0&partnerID=40&md5=89526bfbbf64168e558d20c725ec1e16. doi:10.1016/j.scitotenv.2018.06.020

- Sands, R. D. (2018). U.S. CARBON TAX SCENARIOS and BIOENERGY. *Climate Change Economics*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044264430&doi=10.1142%2f52010007818400109 &partnerlD=40&md5=571bf1d1c8b50485844318e2d5fffcc6. doi:10.1142/S2010007818400109
- Sankey, J. B., Kreitler, J., Hawbaker, T. J., McVay, J. L., Miller, M. E., Mueller, E. R., . . . Sankey, T. T. (2017). Climate, wildfire, and erosion ensemble foretells more sediment in western USA watersheds. *Geophysical Research Letters*, 44(17), 8884-8892. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029055258&doi=10.1002%2f2017GL073979&partn

erlD=40&md5=9bee6224558fd75f3cb3f769d0b568b6. doi:10.1002/2017GL073979

Sapkota, A., Murtugudde, R., Curriero, F. C., Upperman, C. R., Ziska, L., & Jiang, C. (2019). Associations between alteration in plant phenology and hay fever prevalence among US adults: Implication for changing climate. *PLoS ONE*, 14(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063659529&doi=10.1371%2fjournal.pone.0212010

https://www.scopus.com/inward/record.un/eid=2-s2.0-85065655298d0i=10.1371%zfjournal.pone.0212010 &partnerID=40&md5=4763ae6ca92cc6d88edf9adb99f68fb5. doi:10.1371/journal.pone.0212010

Sarauer, J. L., Page-Dumroese, D. S., & Coleman, M. D. (2019). Soil greenhouse gas, carbon content, and tree growth response to biochar amendment in western United States forests. GCB Bioenergy, 11(5), 660-671. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061077123&doi=10.1111%2fgcbb.12595&partnerl D=40&md5=23879986927b76934c1475c4a6dc5995. doi:10.1111/gcbb.12595

- Savage, S. L., Lawrence, R. L., & Squires, J. R. (2017). Mapping post-disturbance forest landscape composition with Landsat satellite imagery. *Forest Ecology and Management, 399*, 9-23. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019904440&doi=10.1016%2fj.foreco.2017.05.017& partnerID=40&md5=124c1df8fbbf37043aad09b493a4d070. doi:10.1016/j.foreco.2017.05.017
- Savage, S. L., Lawrence, R. L., Squires, J. R., Holbrook, J. D., Olson, L. E., Braaten, J. D., & Cohen, W. B. (2018). Shifts in forest structure in northwest Montana from 1972 to 2015 using the landsat archive from multispectral scanner to operational land imager. *Forests*, 9(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044403364&doi=10.3390%2ff9040157&partnerID =40&md5=488311825ee6adc43459bc20fdedd745. doi:10.3390/f9040157
- Sawaya, M. A., Clevenger, A. P., & Schwartz, M. K. (2019). Demographic fragmentation of a protected wolverine population bisected by a major transportation corridor. *Biological Conservation*, 236, 616-625. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069809543&doi=10.1016%2fj.biocon.2019.06.030 &partnerID=40&md5=c40e7f0702ba46bf3adb12bb201c6ef1. doi:10.1016/j.biocon.2019.06.030
- Schaedel, M. S., Larson, A. J., Affleck, D. L. R., Belote, R. T., Goodburn, J. M., & Page-Dumroese, D. S. (2017). Early forest thinning changes aboveground carbon distribution among pools, but not total amount. *Forest Ecology and Management*, 389, 187-198. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008873185&doi=10.1016%2fj.foreco.2016.12.018& partnerID=40&md5=0d515d305cdd6606ab7d17cc3eba462a. doi:10.1016/j.foreco.2016.12.018

Schantz, M., Sheley, R., & Hardegree, S. (2019). Restoring Perennial Grasses in Medusahead Habitat: Role of Tilling, Fire, Herbicides, and Seeding Rate. *Rangeland Ecology and Management*, 72(2), 249-259. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059105374&doi=10.1016%2fj.rama.2018.10.012&p artnerID=40&md5=646545d604ab2f736e60fa3037aa56ba. doi:10.1016/j.rama.2018.10.012

Schattman, R. E., Hurley, S., & Caswell, M. (2019). Now I See: Photovisualization to Support Agricultural Climate Adaptation. Society and Natural Resources, 32(2), 222-228. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059942651&doi=10.1080%2f08941920.2018.15308 19&partnerID=40&md5=709daa83b88d44ca46c43310824f29af. doi:10.1080/08941920.2018.1530819 Schattman, R. E., Kaplan, M., Aitken, H. M., & Helminski, J. (2019). Climate change curricula for adult audiences in agriculture and forestry: A review. Journal of Adult and Continuing Education, 25(1), 131-151. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065666052&doi=10.1177%2f1477971419840670& partnerlD=40&md5=b9f80d8cb4fa86bdb4c1cc67f8864380. doi:10.1177/1477971419840670

- Schattman, R. E., Méndez, V. E., Merrill, S. C., & Zia, A. (2018). Mixed methods approach to understanding farmer and agricultural advisor perceptions of climate change and adaptation in Vermont, United States. Agroecology and Sustainable Food Systems, 42(2), 121-148. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029894567&doi=10.1080%2f21683565.2017.13576 67&partnerID=40&md5=77ce4a7a181236c849ce81e719561106. doi:10.1080/21683565.2017.1357667
- Schattman, R. E., Roesch-Mcnally, G., Wiener, S., Niles, M. T., & Hollinger, D. Y. (2018). Farm service agency employee intentions to use weather and climate data in professional services. *Renewable Agriculture and Food Systems*, 33(3), 212-221. Retrieved from

Schebeck, M., Hansen, E. M., Schopf, A., Ragland, G. J., Stauffer, C., & Bentz, B. J. (2017). Diapause and overwintering of two spruce bark beetle species. *Physiological Entomology*, 42(3), 200-210. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022010130&doi=10.1111%2fphen.12200&partnerl D=40&md5=443113&c2fcbb839bdd2ee5090b9dd3d8. doi:10.1111/phen.12200

- Scheller, R. M., Kretchun, A. M., Loudermilk, E. L., Hurteau, M. D., Weisberg, P. J., & Skinner, C. (2018). Interactions Among Fuel Management, Species Composition, Bark Beetles, and Climate Change and the Potential Effects on Forests of the Lake Tahoe Basin. *Ecosystems*, 21(4), 643-656. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026898611&doi=10.1007%2fs10021-017-0175-3&
- partnerlD=40&md5=a35b15ac8765d656c18b4ba2ab51fe68. doi:10.1007/s10021-017-0175-3 Schmer, M. R., Stewart, C. E., & Jin, V. L. (2017). Empirical evidence of soil carbon changes in bioenergy cropping
- systems. In Bioenergy and Land Use Change: Impact on Natural Capital and Ecosystem Services (pp. 99-114). Schoettle, A. W., Burns, K. S., Cleaver, C. M., & Connor, J. J. (2019). Proactive limber pine conservation strategy for the
- Greater Rocky Mountain National Park Area. USDA Forest Service General Technical Report RMRS-GTR, 2019(379), 1-81. Retrieved from https://www.service.com/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/ar

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069661776&partnerID=40&md5=03b49e01d092e 17dff2e86d0f54f8fc2.

Schoettle, A. W., & Coop, J. D. (2017). Range-wide conservation of Pinus aristata: a genetic collection with ecological context for proactive management today and resources for tomorrow. *New Forests*, 48(2), 181-199. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85012241723&doi=10.1007%2fs11056-017-9570-z&partnerID=40&md5=e659576a8962f6dcf95f564d728f7917. doi:10.1007/s11056-017-9570-z

Schooley, R. L., Bestelmeyer, B. T., & Campanella, A. (2018). Shrub encroachment, productivity pulses, and core-transient dynamics of Chihuahuan Desert rodents. *Ecosphere*, 9(7). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052597534&doi=10.1002%2fecs2.2330&partnerID =40&md5=1142f90f4391c05bbef1aed6ddc48440. doi:10.1002/ecs2.2330

Schroeder, T. A., Schleeweis, K. G., Moisen, G. G., Toney, C., Cohen, W. B., Freeman, E. A., . . . Huang, C. (2017). Testing a Landsat-based approach for mapping disturbance causality in U.S. forests. *Remote Sensing of Environment*, 195, 230-243. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018260615&doi=10.1016%2fj.rse.2017.03.033&partnerID=40&md5=9de1026ece529ece65b8a96a7f153b53. doi:10.1016/j.rse.2017.03.033

Schultze-Kraft, R., Rao, I. M., Peters, M., Clements, R. J., Bai, C., & Liu, G. (2018). Tropical forage legumes for environmental benefits: An overview. *Tropical Grasslands-Forrajes Tropicales*, 6(1), 1-14. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041345242&doi=10.17138%2fTGFT%286%291-14 &partnerlD=40&md5=2d6ae8db6cd9e056baafc5def1475583. doi:10.17138/TGFT(6)1-14

Schwalm, C. R., Anderegg, W. R. L., Michalak, A. M., Fisher, J. B., Biondi, F., Koch, G., . . . Tian, H. (2017). Global patterns of drought recovery. *Nature*, 548(7666), 202-205. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027349887&doi=10.1038%2fnature23021&partner ID=40&md5=298f2876da07d6693c865b117abaab59. doi:10.1038/nature23021

Scudiero, E., Corwin, D. L., Anderson, R. G., Yemoto, K., Clary, W., Wang, Z., & Skaggs, T. H. (2017). Remote sensing is a viable tool for mapping soil salinity in agricultural lands. *California Agriculture*, 71(4), 231-238. Retrieved 98 from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034823433&doi=10.3733%2fca.2017a0009&partnerlD=40&md5=8df83ab85c8db27a4071e22c6ff930c6. doi:10.3733/ca.2017a0009

Scudiero, E., Corwin, D. L., Anderson, R. G., Yemoto, K., Clary, W., Wang, Z., & Skaggs, T. H. (2017). Remote sensing is a viable tool for mapping soil salinity in agricultural lands. *California Agriculture*, 71(2), 1-8. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018637545&doi=10.3733%2fca.2017a0009&partne rID=40&md5=43fb7e0c9dd09bb36b111a2346d04b7f. doi:10.3733/ca.2017a0009

- Sebastián-González, E., Barbosa, J. M., Pérez-García, J. M., Morales-Reyes, Z., Botella, F., Olea, P. P., . . . Sánchez-Zapata, J. A. (2019). Scavenging in the Anthropocene: Human impact drives vertebrate scavenger species richness at a global scale. *Global Change Biology*, 25(9), 3005-3017. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068029527&doi=10.1111%2fgcb.14708&partnerlD =40&md5=a18568cb8f52fe27ff26fc0ea939ff7b. doi:10.1111/gcb.14708
- Sergeant, C. J., Bellmore, J. R., McConnell, C., & Moore, J. W. (2017). High salmon density and low discharge create periodic hypoxia in coastal rivers. *Ecosphere*, 8(6). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021209845&doi=10.1002%2fecs2.1846&partnerID =40&md5=bed82e649c6d95b654c7ce6795cd14e8. doi:10.1002/ecs2.1846
- Seybold, S. J., Bentz, B. J., Fettig, C. J., Lundquist, J. E., Progar, R. A., & Gillette, N. E. (2018) Management of Western North American Bark Beetles with Semiochemicals. In: Vol. 63. Annual Review of Entomology (pp. 407-432).
- Seyfried, M., Lohse, K., Marks, D., Flerchinger, G., Pierson, F., & Holbrook, W. S. (2018). Reynolds creek experimental watershed and critical zone observatory. *Vadose Zone Journal*, *17*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058799139&doi=10.2136%2fvzj2018.07.0129&part nerID=40&md5=925069dc23fa69a5be5511d9c09f0676. doi:10.2136/vzj2018.07.0129
- Shah, R., Yueh, S., Xu, X., Elder, K., & Baldi, C. (2017). *Remote sensing of terrestrial snow using signals of opportunity.* Paper presented at the International Geoscience and Remote Sensing Symposium (IGARSS).
- Shankar, U., Prestemon, J. P., McKenzie, D., Talgo, K., Xiu, A., Mohammad, O., ... Vizuete, W. (2018). Projecting wildfire emissions over the south-eastern United States to mid-century. *International Journal of Wildland Fire*, 27(5), 313-328. Retrieved from https://www.cenue.com/figuread/searchuri2eid=2, 22,0,850478102258/doi=10.10710/200/F171168/nottee10.
  - $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047819225\&doi=10.1071\%2fWF17116\&partnerID=40\&md5=3e6a3de214064a0e8853f01e4328b99b.\ doi:10.1071/WF17116$
- Shannon, P. D., Swanston, C. W., Janowiak, M. K., Handler, S. D., Schmitt, K. M., Brandt, L. A., ... Ontl, T. (2019). Adaptation strategies and approaches for forested watersheds. *Climate Services*, 13, 51-64. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061089305&doi=10.1016%2fj.cliser.2019.01.005&p artnerID=40&md5=af48cc27a8b32b7a7a524360510a17ce. doi:10.1016/j.cliser.2019.01.005
- Shappell, N. W., Feifarek, D. J., Rearick, D. C., Bartell, S. E., & Schoenfuss, H. L. (2018). Do environmental factors affect male fathead minnow (Pimephales promelas) response to estrone? Part 2. Temperature and food availability. *Science of the Total Environment, 610-611,* 32-43. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026899621&doi=10.1016%2fj.scitotenv.2017.08.02 18xpartner10=40&md5=2dae5d6d8d69a919a38947249590852c. doi:10.1016/j.scitotenv.2017.08.021
- Sharda, V., Gowda, P. H., Marek, G., Kisekka, I., Ray, C., & Adhikari, P. (2019). Simulating the Impacts of Irrigation Levels on Soybean Production in Texas High Plains to Manage Diminishing Groundwater Levels. *Journal of the American Water Resources Association*, 55(1), 56-69. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059869369&doi=10.1111%2f1752-1688.12720&pa rtnerID=40&md5=6d63ae0e93489f74d8a83f7e3222eb86. doi:10.1111/1752-1688.12720
- Sharifi, A., Kalin, L., Hantush, M. M., Dahlgren, R. A., O'Geen, A. T., & Maynard, J. J. (2017). Capturing spatial variability of biogeochemical mass exchanges and reaction rates in wetland water and soil through model compartmentalization. *Journal of Hydrologic Engineering*, 22(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009343361&doi=10.1061%2f%28ASCE%29HE.1943 -5584.0001196&partnerID=40&mdS=a40df7ca6b40c30f038c6b5b189bdc92. doi:10.1061/(ASCE)HE.1943-5584.0001196
- Sharma, S., Nadaoka, K., Nakaoka, M., Uy, W. H., MacKenzie, R. A., Friess, D. A., & Fortes, M. D. (2017). Growth performance and structure of a mangrove afforestation project on a former seagrass bed, Mindanao Island, Philippines. *Hydrobiologia*, 803(1), 359-371. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020234627&doi=10.1007%2fs10750-017-3252-x&

partnerlD=40&md5=5c2ec3da3b691e1685415af3851f45b7. doi:10.1007/s10750-017-3252-x Shellie, K., Kovaleski, A. P., & Londo, J. P. (2018). Water deficit severity during berry development alters timing of

- dormancy transitions in wine grape cultivar Malbec. *Scientia Horticulturae, 232*, 226-230. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044351905&doi=10.1016%2fj.scienta.2018.01.014 &partnerID=40&md5=3a1fa544ffc2b644a741f68ed8f674af. doi:10.1016/j.scienta.2018.01.014 Sherrod, L. A., McMaster, G. S., Delgado, J. A., Schipanski, M. E., Fonte, S. J., Montenieri, R. L., & Larson, K. (2018). Soil
- carbon pools in dryland agroecosystems as affected by several years of drought. *Journal of Environmental Quality*, 47(4), 766-773. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049439710&doi=10.2134%2fjeq2017.09.0371&partnerlD=40&md5=57bab53875cde1358b91816e9bf03b32. doi:10.2134/jeq2017.09.0371

Shetty, N. J., Pandey, A., Baker, S., Hao, W. M., & Chakrabarty, R. K. (2019). Measuring light absorption by freshly emitted organic aerosols: Optical artifacts in traditional solvent-extraction-based methods. *Atmospheric Chemistry and Physics*, *19*(13), 8817-8830. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069042606&doi=10.5194%2facp-19-8817-2019&p

nttps://www.scopus.com/inward/record.un/eid=2-52.0-850990426068doi=10.5194%zfacp-19-8817-2019&p artnerID=40&md5=29c3fe0379beb7ba2e9abbb97e437620. doi:10.5194/acp-19-8817-2019

- Shi, R., Ukaew, S., Archer, D. W., Lee, J. H., Pearlson, M. N., Lewis, K. C., & Shonnard, D. R. (2017). Life Cycle Water Footprint Analysis for Rapeseed Derived Jet Fuel in North Dakota. ACS Sustainable Chemistry and Engineering, 5(5), 3845-3854. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018401465&doi=10.1021%2facssuschemeng.6b02
- 956&partnerlD=40&md5=a3b0ff1ad5e6a5e1792c41d2eeab9719. doi:10.1021/acssuschemeng.6b02956
   Shirk, A. J., Cushman, S. A., Waring, K. M., Wehenkel, C. A., Leal-Sáenz, A., Toney, C., & Lopez-Sanchez, C. A. (2018). Southwestern white pine (Pinus strobiformis) species distribution models project a large range shift and contraction due to regional climatic changes. *Forest Ecology and Management*, *411*, 176-186. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041453232&doi=10.1016%2fj.foreco.2018.01.025& partnerlD=40&md5=bd5c4806751f725f2afaab7f6704f063. doi:10.1016/j.foreco.2018.01.025
- Shirk, A. J., Landguth, E. L., & Cushman, S. A. (2018). A comparison of regression methods for model selection in individual-based landscape genetic analysis. *Molecular Ecology Resources*, *18*(1), 55-67. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041343127&doi=10.1111%2f1755-0998.12709&pa rtnerlD=40&md5=03b4b9ba1d0d1ab88ed178f9b17e607b. doi:10.1111/1755-0998.12709
- Shirk, A. J., Schroeder, M. A., Robb, L. A., & Cushman, S. A. (2017). Persistence of greater sage-grouse in agricultural landscapes. *Journal of Wildlife Management*, *81*(5), 905-918. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017457776&doi=10.1002%2fjwrng.21268&partnerl D=40&md5=30e20c68049fe7578e7be6b9acb9a222. doi:10.1002/jwrng.21268

Shive, K. L., Preisler, H. K., Welch, K. R., Safford, H. D., Butz, R. J., O'Hara, K., & Stephens, S. L. (2018). From the stand scale to the landscape scale: predicting the spatial patterns of forest regeneration after disturbance. *Ecological Applications, 28*(6), 1626-1639. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052746976&doi=10.1002%2feap.1756&partnerID= 408kmd5=eacad0b5965bd8f97d160ca5ea44c268. doi:10.1002/eap.1756

- Siebers, M. H., Slattery, R. A., Yendrek, C. R., Locke, A. M., Drag, D., Ainsworth, E. A., ... Ort, D. R. (2017). Simulated heat waves during maize reproductive stages alter reproductive growth but have no lasting effect when applied during vegetative stages. *Agriculture, Ecosystems and Environment, 240*, 162-170. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850138066118:ddoi=10.1016%2fj.agee.2016.11.008&p artnerID=40&md5=c54a6de86ae7c571f00366231651cca6. doi:10.1016/j.agee.2016.11.008
- Sihi, D., Davidson, E. A., Chen, M., Savage, K. E., Richardson, A. D., Keenan, T. F., & Hollinger, D. Y. (2018). Merging a mechanistic enzymatic model of soil heterotrophic respiration into an ecosystem model in two AmeriFlux sites of northeastern USA. Agricultural and Forest Meteorology, 252, 155-166. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041471015&doi=10.1016%2fj.agrformet.2018.01.0 26&partnerID=40&md5=5ddc0a3de41b36a4e3884a013e1e8388. doi:10.1016/j.agrformet.2018.01.026
- Sikkink, P. G., Jain, T. B., Reardon, J., Heinsch, F. A., Keane, R. E., Butler, B., & Baggett, L. S. (2017). Effect of particle aging on chemical characteristics, smoldering, and fire behavior in mixed-conifer masticated fuel. *Forest Ecology and Management*, 405, 150-165. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029603161&doi=10.1016%2fj.foreco.2017.09.008& partnerID=40&md5=d0cbd4ab6a43a7ba8cae19adb77989d8. doi:10.1016/j.foreco.2017.09.008

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069527105&doi=10.13031%2ftrans.13045&partner ID=40&md5=855f15afbe5ea0fa11f680c0ee3264fb. doi:10.13031/trans.13045

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068462584&doi=10.3390%2fagronomy9060304&partnerID=40&md5=44a29a584603f6077a0819b5f188fc9c. doi:10.3390/agronomy9060304

- Singh, I., Dominguez, F., Demaria, E., & Walter, J. (2018). Extreme Landfalling Atmospheric River Events in Arizona: Possible Future Changes. *Journal of Geophysical Research: Atmospheres, 123*(14), 7076-7097. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050490579&doi=10.1029%2f2017JD027866&partn erlD=40&md5=cadeeea228e63830931f5229e8fe56d2. doi:10.1029/2017JD027866
- Singh, S., Dash, P., Silwal, S., Feng, G., Adeli, A., & Moorhead, R. J. (2017). Influence of land use and land cover on the spatial variability of dissolved organic matter in multiple aquatic environments. *Environmental Science and Pollution Research*, 24(16), 14124-14141. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017507140&doi=10.1007%2fs11356-017-8917-5& partnerlD=40&md5=eef8146ed5f758b22ebd38a35d59d01c. doi:10.1007/s11356-017-8917-5

Singleton, M. P., Thode, A. E., Sánchez Meador, A. J., & Iniguez, J. M. (2019). Increasing trends in high-severity fire in the southwestern USA from 1984 to 2015. Forest Ecology and Management, 433, 709-719. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057891250&doi=10.1016%2fj.foreco.2018.11.039& partnerlD=40&md5=6f89ee0dc6b3b03abc6853feb0affee0. doi:10.1016/j.foreco.2018.11.039

- Siry, J. P., Cubbage, F. W., Potter, K. M., & McGinley, K. (2018). Current Perspectives on Sustainable Forest Management: North America. Current Forestry Reports, 4(3), 138-149. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051529685&doi=10.1007%2fs40725-018-0079-2& partnerlD=40&md5=26ed8c45448fdaa13d75906a58597c8e. doi:10.1007/s40725-018-0079-2
- Skidmore, E. L., Hagen, L. J., Armbrust, D. V., Durar, A. A., Fryrear, D. W., Potter, K. N., . . . Zobeck, T. M. (2017). Methods for investigating basic processes and conditions affecting wind erosion. In Soil Erosion Research Methods (pp. 295-330).
- Slack, A. W., Kane, J. M., Knapp, E. E., & Sherriff, R. L. (2017). Contrasting impacts of climate and competition on large sugar pine growth and defense in a fire-excluded forest of the central Sierra Nevada. *Forests*, 8(7). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026193484&doi=10.3390%2ff8070244&partnerID =40&md5=8463b223677a842af67f5008af6f9aa6. doi:10.3390/f8070244

Slaughter, L. C., Nelson, J. A., Carlisle, E., Bourguignon, M., Dinkins, R. D., Phillips, T. D., & McCulley, R. L. (2018). Climate change and Epichloë coenophiala association modify belowground fungal symbioses of tall fescue host. *Fungal Ecology*, 31, 37-46. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034668761&doi=10.1016%2fj.funeco.2017.10.002 &partnerID=40&md5=d03f789e1595d2089cc9d04e59b42283. doi:10.1016/j.funeco.2017.10.002

Sloat, M. R., Reeves, G. H., & Christiansen, K. R. (2017). Stream network geomorphology mediates predicted vulnerability of anadromous fish habitat to hydrologic change in southeast Alaska. *Global Change Biology*, 23(2), 604-620. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84987678298&doi=10.1111%2fgcb.13466&partnerID

https://www.scopus.com/inward/record.uri/eid=2-s2.0-8498/678298&doi=10.1111%2tgcb.13466&partnerlL =40&md5=c7c4b6bdd15452b6b003f51c83248485. doi:10.1111/gcb.13466

Smart, M. D., Cornman, R. S., Iwanowicz, D. D., McDermott-Kubeczko, M., Pettis, J. S., Spivak, M. S., & Otto, C. R. V. (2017). A comparison of honey bee-collected pollen from working agricultural lands using light microscopy and its metabarcoding. *Environmental Entomology*, 46(1), 38-49. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015813504&doi=10.1093%2fee%2fnvw159&partn erID=40&md5=d028ab81d0cdbd&8b330b07b0aa143a9. doi:10.1093/ee/nvw159

Smith, A. T., & Millar, C. I. (2018). American Pika (Ochotona princeps) Population Survival in Winters with Low or No Snowpack. Western North American Naturalist, 78(2), 126-132. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052592020&doi=10.3398%2f064.078.0203&partne 101 282

rlD=40&md5=5b80bb5579da4db0c4ff9775563195da. doi:10.3398/064.078.0203

- Smith, D. M., & Finch, D. M. (2017). Climate change and wildfire effects in aridland riparian ecosystems: An examination of current and future conditions. USDA Forest Service - General Technical Report RMRS-GTR, 2017(364). Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022190734&partneriD=40&md5=2aacaec33d168a a19c1503fb3c673516.
- Smith, J. L., & Fratamico, P. M. (2018). Emerging and Re-Emerging Foodborne Pathogens. Foodborne Pathogens and Disease, 15(12), 737-757. Retrieved from https://www.com/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/article/art

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058779489&doi=10.1089%2ffpd.2018.2493&partnerlD=40&md5=16e3e89c853a0a6b6233e03659e90e06. doi:10.1089/fpd.2018.2493

- Smith, R. J., Jovan, S., Gray, A. N., & McCune, B. (2017). Sensitivity of carbon stores in boreal forest moss mats effects of vegetation, topography and climate. *Plant and Soil, 421*(1-2), 31-42. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029901935&doi=10.1007%2fs11104-017-3411-x&
- partnerlD=40&md5=49393b61e0b0d8bc08576976f4634ea4. doi:10.1007/s11104-017-3411-x Smith, R. J., Nelson, P. R., Jovan, S., Hanson, P. J., & McCune, B. (2018). Novel climates reverse carbon uptake of atmospherically dependent epiphytes: Climatic constraints on the iconic boreal forest lichen Evernia mesomorpha. *American Journal of Botany*, *105*(2), 266-274. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850425101218doi=10.1002%2fajb2.1022&partnerlD =40&md5=f417a49bc816d0ba60fa86052c9dad50. doi:10.1002/ajb2.1022
- Smithers, B. V., North, M. P., Millar, C. I., & Latimer, A. M. (2018). Leap frog in slow motion: Divergent responses of tree species and life stages to climatic warming in Great Basin subalpine forests. *Global Change Biology, 24*(2), e442-e457. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041292184&doi=10.1111%2fgcb.13881&partnerlD =40&md5=b6f94d7abb78ee6bd47326883a85f3c8. doi:10.1111/gcb.13881
- Smýkal, P., Hradilová, I., Trněný, O., Brus, J., Rathore, A., Bariotakis, M., . . . Pirintsos, S. (2017). Genomic diversity and macroecology of the crop wild relatives of domesticated pea. *Scientific Reports*, 7(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85037733806&doi=10.1038%2fs41598-017-17623-4 &partnerlD=40&md5=c15c982ffac78625bb5f9e7c1065ebd8. doi:10.1038/s41598-017-17623-4
- Smyth, C. E., Smiley, B. P., Magnan, M., Birdsey, R., Dugan, A. J., Olguin, M., . . . Kurz, W. A. (2018). Climate change mitigation in Canada's forest sector: A spatially explicit case study for two regions. *Carbon Balance and Management*, 13(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053164335&doi=10.1186%2fs13021-018-0099-z&
- partnerID=40&md5=5d970b734c846ae0c75e82865f7a3c00. doi:10.1186/s13021-018-0099-z Sniezko, R. A., Kegley, A., & Savin, D. P. (2017). Ex situ genetic conservation potential of seeds of two high elevation white pines. *New Forests*, *48*(2), 245-261. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014572979&doi=10.1007%2fs11056-017-9579-3&
- partnerID=40&md5=8928512d4af4f5911a1d9f054673cdbc. doi:10.1007/s11056-017-9579-3 Snow, N. P., Jarzyna, M. A., & VerCauteren, K. C. (2017). Interpreting and predicting the spread of invasive wild pigs. *Journal of Applied Ecology*, 54(6), 2022-2032. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011035339&doi=10.1111%2f1365-2664.12866&pa rtnerID=40&md5=2b6a0058b43b7b9=8e4ac5fca3e4af62. doi:10.1111/1365-2664.12866
- Snyder, K. A., Evers, L., Chambers, J. C., Dunham, J., Bradford, J. B., & Loik, M. E. (2019). Effects of Changing Climate on the Hydrological Cycle in Cold Desert Ecosystems of the Great Basin and Columbia Plateau. *Rangeland Ecology and Management*, 72(1), 1-12. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051973688&doi=10.1016%2fj.rama.2018.07.007&p
- artnerID=40&md5=a9ff61a76fc81ca0a0a7dfea3ee51e65. doi:10.1016/j.rama.2018.07.007 Snyder, S. A., Kilgore, M. A., Emery, M. R., & Schmitz, M. (2019). Maple Syrup Producers of the Lake States, USA: Attitudes Towards and Adaptation to Social, Ecological, and Climate Conditions. *Environmental Management*, 63(2), 185-199. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060783758&doi=10.1007%2fs00267-018-1121-7& partnerID=40&md5=048830f3470ab69833dc7edbbb43ccdc. doi:10.1007/s00267-018-1121-7

Sofaer, H. R., Jarnevich, C. S., & Flather, C. H. (2018). Misleading prioritizations from modelling range shifts under climate change. Global Ecology and Biogeography, 27(6), 658-666. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043400024&doi=10.1111%2fgeb.12726&partnerlD =40&md5=c1fd6fcacd4793b30052d599c94c7d7c. doi:10.1111/geb.12726

Sohoulande Djebou, D. C. (2018). Toward an integrated watershed zoning framework based on the spatio-temporal variability of land-cover and climate: Application in the Volta river basin. *Environmental Development*, 28, 55-66. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054098673&doi=10.1016%2fj.envdev.2018.09.006 &partnerID=40&md5=a797f28251889767116db25ff16e851f. doi:10.1016/j.envdev.2018.09.006

- Sohrabi, M. M., Benjankar, R., Tonina, D., Wenger, S. J., & Isaak, D. J. (2017). Estimation of daily stream water temperatures with a Bayesian regression approach. *Hydrological Processes*, *31*(9), 1719-1733. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014764025&doi=10.1002%2fhyp.11139&partnerID =40&md5=d7797ae0cce67159f5bf28f807db09c4. doi:10.1002/hyp.11139
- Sohrabi, M. M., Tonina, D., Benjankar, R., Kumar, M., Kormos, P., & Marks, D. (2018). Role of temporal resolution of meteorological inputs for process-based snow modelling. *Hydrological Processes*, 32(19), 2976-2989. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052376570&doi=10.1002%2fhyp.13242&partnerlD =40&md5=11bbb441f08a627e9eff6d4ae484f8a5. doi:10.1002/hyp.13242

Sorokin, Y., Zelikova, T. J., Blumenthal, D., Williams, D. G., & Pendall, E. (2017). Seasonally contrasting responses of evapotranspiration to warming and elevated CO<inf>2</inf> in a semiarid grassland. *Ecohydrology*, 10(7). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030467423&doi=10.1002%2feco.1880&partnerlD=40&md5=ccf73a104977de4cfc7bcfbb794cf64b. doi:10.1002/eco.1880

Sorunmu, Y. E., Billen, P., Elkasabi, Y., Mullen, C. A., Macken, N. A., Boateng, A. A., & Spatari, S. (2017). Fuels and Chemicals from Equine-Waste-Derived Tail Gas Reactive Pyrolysis Oil: Technoeconomic Analysis, Environmental and Exergetic Life Cycle Assessment. ACS Sustainable Chemistry and Engineering, 5(10), 8804-8814. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030483674&doi=10.1021%2facssuschemeng.7b01 609&partnerlD=40&md5=e4e1664fc13cf6183764d57069a5fb6c. doi:10.1021/acssuschemeng.7b01609 Sparrow, E. B., & Cochran, V. L. (2018). Effect of soil depth and temperature on CH <inf>4</inf> consumption in

subarctic agricultural soils. In Soil Management and Greenhouse Effect (pp. 197-204).

Srock, A. F., Charney, J. J., Potter, B. E., & Goodrick, S. L. (2018). The Hot-Dry-Windy Index: A new fireweather index. Atmosphere, 9(7). Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050486880\&doi=10.3390\%2fatmos9070279\&partnerlD=40\&md5=b77630467fa8f8466b4f0ea608e5ccab.doi:10.3390/atmos9070279$ 

Stagge, J. H., & Moglen, G. E. (2017). Water resources adaptation to climate and demand change in the potomac river. *Journal of Hydrologic Engineering*, 22(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029534120&doi=10.1061%2f%28ASCE%29HE.1943

https://www.scopus.com/inward/record.uri/eid=2-s2.0-85029534120&doi=10.1061%2f%28ASCE%29HE.1943 -5584.0001579&partnerID=40&md5=7cOcfd61c469f6639a98b5a67791840b. doi:10.1061/(ASCE)HE.1943-5584.0001579

- Stagge, J. H., Rosenberg, D. E., DeRose, R. J., & Rittenour, T. M. (2018). Monthly paleostreamflow reconstruction from annual tree-ring chronologies. *Journal of Hydrology*, 557, 791-804. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040030382&doi=10.1016%2fj.jhydrol.2017.12.057 &partnerID=40&md5=00410a8deb7a811f544e97f48046965e. doi:10.1016/j.jhydrol.2017.12.057
- Stanturf, J. A., Perdue, J. H., Young, T. M., Huang, X., Guo, Z., Dougherty, D., & Pigott, M. (2019). A spatially explicit approach to modeling biological productivity and economic attractiveness of short-rotation woody crops in the eastern USA. *Energy, Sustainability and Society*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850697692128dtoi=10.1186%2fs13705-019-0211-68 partnerlD=40&md5=47b1b213c97960e22135288ae8c64ae5. doi:10.1186/s13705-019-0211-6

Steel, Z. L, Koontz, M. J., & Safford, H. D. (2018). The changing landscape of wildfire: burn pattern trends and implications for California's yellow pine and mixed conifer forests. *Landscape Ecology*, 33(7), 1159-1176. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048083090&doi=10.1007%2fs10980-018-0665-5& partnerID=40&md5=48613f91bd9c18b161453e3c0681e52e. doi:10.1007/s10980-018-0665-5

Steele, C., Reyes, J., Elias, E., Aney, S., & Rango, A. (2018). Cascading impacts of climate change on southwestern US 103 cropland agriculture. Climatic Change, 148(3), 437-450. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047913417&doi=10.1007%2fs10584-018-2220-4& partnerID=40&md5=00181a2bdfebae7c58862ba6900877ce. doi:10.1007/s10584-018-2220-4

Steele, R., & Hatfield, J. L. (2018). Navigating climate-related challenges on working lands: a special issue by the USDA Climate Hubs and their partners. *Climatic Change*, 146(1-2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041321018&doi=10.1007%2fs10584-017-2129-3&

partnerlD=40&md5=9e9329cdde5db5250fe3950652afcf32. doi:10.1007/s10584-017-2129-3 Steidinger, B. S., Crowther, T. W., Liang, J., Van Nuland, M. E., Werner, G. D. A., Reich, P. B., . . . Zo-Bi, I. C. (2019). Climatic controls of decomposition drive the global biogeography of forest-tree symbioses. *Nature*, 569(7756), 404-408. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065790614&doi=10.1038%2fs41586-019-1128-0& partnerlD=40&md5=416cf3480d062ff4a1f78b6ccd7cf1c3. doi:10.1038/s41586-019-1128-0

- Steiner, J. L., Briske, D. D., Brown, D. P., & Rottler, C. M. (2018). Vulnerability of Southern Plains agriculture to climate change. *Climatic Change*, 146(1-2), 201-218. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017407703&doi=10.1007%2fs10584-017-1965-5& partnerID=40&md5=9a5ef46bec7b0f311f5344e89e7599b3. doi:10.1007/s10584-017-1965-5
- Stephens, S. L., Collins, B. M., Fettig, C. J., Finney, M. A., Hoffman, C. M., Knapp, E. E., . . . Wayman, R. B. (2018). Drought, Tree Mortality, and Wildfire in Forests Adapted to Frequent Fire. *BioScience*, *68*(2), 77-88. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850422765278doi=10.1093%2fbiosci%2fbix146&part nerlD=40&md5=add7a6a1ad07b38752bebf0bc06794aa. doi:10.1093/biosci/bix146

Stewart, C. E., Halvorson, A. D., & Delgado, J. A. (2017). Long-term N fertilization and conservation tillage practices conserve surface but not profile SOC stocks under semi-arid irrigated corn. Soil and Tillage Research, 171, 9-18. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018610282&doi=10.1016%2fj.still.2017.04.003&par

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018610282&doi=10.1016%2fj.still.2017.04.003&pa tnerID=40&md5=b340f5fe1ebad50771c668d271f1cec2. doi:10.1016/j.still.2017.04.003

- Stewart, C. E., Roosendaal, D., Denef, K., Pruessner, E., Comas, L. H., Sarath, G., . . . Soundararajan, M. (2017). Seasonal switchgrass ecotype contributions to soil organic carbon, deep soil microbial community composition and rhizodeposit uptake during an extreme drought. *Soil Biology and Biochemistry*, *112*, 191-203. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019963601&doi=10.1016%2fj.soilbio.2017.04.021& partner/D=40&md5=dfbd6306f024526d51db22b62c404dac. doi:10.1016/j.soilbio.2017.04.021
- Stewart, J. A. E., Wright, D. H., & Heckman, K. A. (2017). Apparent climate-mediated loss and fragmentation of core habitat of the American pika in the Northern Sierra Nevada, California, USA. *PLoS ONE, 12*(8). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029029075&doi=10.1371%2fjournal.pone.0181834 &partnerID=40&md5=bd3c0d98d79077a71e4d136534a06274. doi:10.1371/journal.pone.0181834

Stewart, J. F., Will, R., Crane, B. S., & Nelson, C. D. (2017). Occurrence of shortleaf × loblolly pine hybrids in shortleaf pine orchards: Implications for ecosystem restoration. *Forest Science*, 63(2), 225-231. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020245172&doi=10.5849%2fforsci.15-167&partner ID=40&md5=106b1c53dd152d2226187b2a0abb908c. doi:10.5849/forsci.15-167

Stöckle, C. O., Higgins, S., Nelson, R., Abatzoglou, J., Huggins, D., Pan, W., . . . Brooks, E. (2018). Evaluating opportunities for an increased role of winter crops as adaptation to climate change in dryland cropping systems of the U.S. Inland Pacific Northwest. *Climatic Change*, *146*(1-2), 247-261. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017241843&doi=10.1007%2fs10584-017-1950-z& partnerlD=40&md5=00ecb0fbf2fa0c3fcabaab74d14b33f1. doi:10.1007/s10584-017-1950-z

Stockton, D., Wallingford, A., Rendon, D., Fanning, P., Green, C. K., Diepenbrock, L., . . . Loeb, G. M. (2019). Interactions between biotic and abiotic factors affect survival in overwintering drosophila suzukii (Diptera: Drosophilidae). *Environmental Entomology*, 48(2), 454-464. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064139300&doi=10.1093%2fee%2fnvy192&partne

rtD=40&md5=0762db51c62d666779fb9217e93fb76. doi:10.1093/ee/nvy192

Stockton, D. G., Wallingford, A. K., & Loeb, G. M. (2018). Phenotypic plasticity promotes overwintering survival in a globally invasive crop pest, drosophila suzukii. *Insects*, 9(3). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055574080&doi=10.3390%2finsects9030105&part nerID=40&md5=1d4c2e40c484008440336f64dc7e68b5. doi:10.3390/insects9030105

Strand, E. K., Satterberg, K. L., Hudak, A. T., Byrne, J., Khalyani, A. H., & Smith, A. M. S. (2019). Does burn severity affect 104 plant community diversity and composition in mixed conifer forests of the United States Intermountain West one decade post fire? *Fire Ecology*, *15*(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069720775&doi=10.1186%2fs42408-019-0038-8& partnerlD=40&md5=404ccf98297c6ba05b39f4d625d36da0. doi:10.1186/s42408-019-0038-8

Strauch, A. M., Giardina, C. P., MacKenzie, R. A., Heider, C., Giambelluca, T. W., Salminen, E., & Bruland, G. L. (2017). Erratum to: Modeled Effects of Climate Change and Plant Invasion on Watershed Function Across a Steep Tropical Rainfall Gradient (Ecosystems, (2017), 20, 3, (583-600), 10.1007/s10021-016-0038-3). *Ecosystems*, 20(5), 1072. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025119564&doi=10.1007%2fs10021-017-0167-3& partnerID=40&md5=bac963dda611348f26954d9091891508. doi:10.1007/s10021-017-0167-3

Strauch, A. M., Giardina, C. P., MacKenzie, R. A., Heider, C., Giambelluca, T. W., Salminen, E., & Bruland, G. L. (2017). Modeled Effects of Climate Change and Plant Invasion on Watershed Function Across a Steep Tropical Rainfall Gradient. *Ecosystems*, 20(3), 583-600. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84988733898&doi=10.1007%2fs10021-016-0038-3&

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84988/338988doi=10.1007%2fs10021-016-0038-38 partnerID=408md5=fb6069742abb51dd090567b85fc7cda1.doi:10.1007/s10021-016-0038-3

Strauch, A. M., MacKenzie, R. A., Giardina, C. P., & Bruland, G. L. (2018). Influence of declining mean annual rainfall on the behavior and yield of sediment and particulate organic carbon from tropical watersheds. *Geomorphology*, 306, 28-39. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042691168&doi=10.1016%2fj.geomorph.2017.12.0 30&partnerID=40&md5=575f5b626f4361522f00b04238c03a43. doi:10.1016/j.geomorph.2017.12.030

- Strauch, A. M., MacKenzie, R. A., & Tingley, R. W. (2017). Base flow-driven shifts in tropical stream temperature regimes across a mean annual rainfall gradient. *Hydrological Processes*, 31(9), 1678-1689. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85011308944&doi=10.1002%2fhyp.11084&partnerID =40&md5=2f94f025b589732518a34fac5ef1c271. doi:10.1002/hyp.11084
- Su, Z., Richardson, B. A., Zhuo, L., & Jiang, X. (2017). Divergent population genetic structure of the endangered Helianthemum (cistaceae) and its implication to conservation in Northwestern China. *Frontiers in Plant Science, 7.* Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85009749041&doi=10.3389%2ffpls.2016.02010&part

https://www.scopus.com/inward/record.un/end=2-s2.0-85009/49041&doi=10.3389%2ttpis.2016.02010&par nerID=40&md5=8ca38f38ad31d216f4e2dd02b0864da7. doi:10.3389/fpls.2016.02010

Suarez, C. E., Alzan, H. F., Silva, M. G., Rathinasamy, V., Poole, W. A., & Cooke, B. M. (2019). Unravelling the cellular and molecular pathogenesis of bovine babesiosis: is the sky the limit? *International Journal for Parasitology*, 49(2), 183-197. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060945801&doi=10.1016%2fj.ijpara.2018.11.002&partnerlD=40&md5=b7a5d73cc4f3eccd27111ae7230dbde4. doi:10.1016/j.ijpara.2018.11.002

Sullivan, P. F., Pattison, R. R., Brownlee, A. H., Cahoon, S. M. P., & Hollingsworth, T. N. (2017). Limited evidence of declining growth among moisture-limited black and white spruce in interior Alaska. *Scientific Reports*, 7(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033584170&doi=10.1038%2fs41598-017-15644-7 &partnerID=40&md5=f27e06ac86cf74e03e2d393b289f567e. doi:10.1038/s41598-017-15644-7

- Sumlin, B. J., Heinson, Y. W., Shetty, N., Pandey, A., Pattison, R. S., Baker, S., . . . Chakrabarty, R. K. (2018). UV–Vis–IR spectral complex refractive indices and optical properties of brown carbon aerosol from biomass burning. *Journal of Quantitative Spectroscopy and Radiative Transfer, 206,* 392-398. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038626189&doi=10.1016%2fj.jgsrt.2017.12.009&p artnerID=40&md5=f93a3a1921593fea5cca613f4eb397c. doi:10.1016/j.jgsrt.2017.12.009
- Sumlin, B. J., Oxford, C. R., Seo, B., Pattison, R. R., Williams, B. J., & Chakrabarty, R. K. (2018). Density and Homogeneous Internal Composition of Primary Brown Carbon Aerosol. *Environmental Science and Technology, 52*(7), 3982-3989. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045011990&doi=10.1021%2facs.est.8b00093&part nerlD=40&md5=3844f6bf72c20cf773fd1164ff99d219. doi:10.1021/acs.est.8b00093

Sumlin, B. J., Pandey, A., Walker, M. J., Pattison, R. S., Williams, B. J., & Chakrabarty, R. K. (2017). Atmospheric Photooxidation Diminishes Light Absorption by Primary Brown Carbon Aerosol from Biomass Burning. *Environmental Science and Technology Letters*, 4(12), 540-545. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038206834&doi=10.1021%2facs.estlett.7b00393& partnerlD=40&md5=4ba5eaafa0c5717d30213a08a4bbc4e3. doi:10.1021/acs.estlett.7b00393 Sun, G., Hallema, D., & Asbjornsen, H. (2017). Ecohydrological processes and ecosystem services in the Anthropocene:

- a review. *Ecological Processes*, 6(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032342239&doi=10.1186%2fs13717-017-0104-6& partnerlD=40&md5=ed3c38225938bd9149349e8e7711039b. doi:10.1186/s13717-017-0104-6
- Sun, S., Chen, H., Ju, W., Wang, G., Sun, G., Huang, J., ... Yan, G. (2017). On the coupling between precipitation and potential evapotranspiration: contributions to decadal drought anomalies in the Southwest China. *Climate Dynamics*, 48(11-12), 3779-3797. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84983000135&doi=10.1007%2fs00382-016-3302-5&

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84983000135&doi=10.1007%2fs00382-016-3302-5& partnerID=40&md5=3c53b45315a623bcd46707dbf6def3bb. doi:10.1007/s00382-016-3302-5

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014075228&doi=10.1175%2fJHM-D-16-0118.1&p artnerID=40&md5=9c8b5e252404e45b3417695befbb49bb. doi:10.1175/JHM-D-16-0118.1

Sun, X., Tang, Z., Ryan, M. G., You, Y., & Sun, O. J. (2019). Changes in soil organic carbon contents and fractionations of forests along a climatic gradient in China. *Forest Ecosystems*, 6(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060946658&doi=10.1186%2fs40663-019-0161-7& partnerID=40&md5=a757a8a1111929d345d7983733f1a4c5. doi:10.1186/s40663-019-0161-7

Sun, Y., Bekker, M. F., DeRose, R. J., Kjelgren, R., & Wang, S. Y. S. (2017). Statistical treatment for the wet bias in tree-ring chronologies: a case study from the Interior West, USA. *Environmental and Ecological Statistics*, 24(1), 131-150. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85003845853&doi=10.1007%2fs10651-016-0363-x& partnerID=40&md5=5ed5d1f4f357827489bf2ddc6a5e4200. doi:10.1007/s10651-016-0363-x Sunoj, S., Igathinathane, C., & Hendrickson, J. (2017). *Phenocam color image calibration using image analysis*. Paper

presented at the 2017 ASABE Annual International Meeting.

Suttles, K. M., Singh, N. K., Vose, J. M., Martin, K. L., Emanuel, R. E., Coulston, J. W., ... Crump, M. T. (2018). Assessment of hydrologic vulnerability to urbanization and climate change in a rapidly changing watershed in the Southeast U.S. Science of the Total Environment, 645, 806-816. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850501021168/doi=10.1016%2fj.scitotenv.2018.06.28 7&partnerID=40&md5=83d9aa4fa79ae30b127aa28cb420ca1f. doi:10.1016/j.scitotenv.2018.06.287

Svejcar, L. N., Peinetti, H. R., & Bestelmeyer, B. T. (2018). Effect of Climoedaphic Heterogeneity on Woody Plant Dominance in the Argentine Caldenal Region. *Rangeland Ecology and Management*, 71(4), 409-416. Retrieved from https://www.scaru.com/inword/record/wi2id=2, c2.0, 050440264458/doi=10.10169/26/wmm2.2018.02.0018/n

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044926445&doi=10.1016%2fj.rama.2018.03.001&p artnerID=40&md5=570236e8137dbcfd6b2e6239cd11377a. doi:10.1016/j.rama.2018.03.001

Swails, E., Yang, X., Asefi, S., Hergoualc'h, K., Verchot, L., McRoberts, R. E., & Lawrence, D. (2019). Linking soil respiration and water table depth in tropical peatlands with remotely sensed changes in water storage from the gravity recovery and climate experiment. *Mitigation and Adaptation Strategies for Global Change*, 24(4), 575-590. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049149946&doi=10.1007%2fs11027-018-9822-z& partnerlD=40&md5=5a19a4ad1e7f8b9747609086414b51f2. doi:10.1007/s11027-018-9822-z

Swanston, C., Brandt, L. A., Janowiak, M. K., Handler, S. D., Butler-Leopold, P., Iverson, L. . . . Shannon, P. D. (2018). Vulnerability of forests of the Midwest and Northeast United States to climate change. *Climatic Change*, 146(1-2), 103-116. Retrieved from

 $https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028825585\&doi=10.1007\%2fs10584-017-2065-2\&partnerlD=40\&md5=c4acd347c3ac9ebfbe61215aad660aa0.\ doi:10.1007/s10584-017-2065-2\&partnerlD=40\&md5=c4acd347c3ac9ebfbe61215aad660aa0.\ doi:10.1007/s10584-017-2065-2\&partnerlD=40\&md5=c4acd347c3ac9ebfbe61215aad660aa0.\ doi:10.1007/s10584-017-2065-2\&partnerlD=40\&md5=c4acd347c3ac9ebfbe61215aad660aa0.\ doi:10.1007/s10584-017-2065-2\&partnerlD=40\&md5=c4acd347c3ac9ebfbe61215aad660aa0.\ doi:10.1007/s10584-017-2065-2\&partnerlD=40\&md5=c4acd347c3ac9ebfbe61215aad660aa0.\ doi:10.1007/s10584-017-2065-2\&partnerlD=40\&md5=c4acd347c3ac9ebfbe61215aad660aa0.\ doi:10.1007/s10584-017-2065-2\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40\&partnerlD=40@partnerlD=40@partnerlD=40@partnerlD=40@partnerlD=40@partnerlD$ 

Swanston, C. W., Wei lein, T. L., Veverica, T. J., Strahm, B. D., Gallo, A., Hatten, J. A., . . . Sanclements, M. (2019). Carbon-mercury interactions in Spodosols assessed through density fractionation, radiocarbon analysis, and soil survey information. *Soil Science Society of America Journal*, 83(1), 190-202. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062173563&doi=10.2136%2fsssaj2018.06.0227&p artnerID=40&md5=11fc3501fd5d31b5be71e36bde7917e2. doi:10.2136/sssaj2018.06.0227

Switanek, B. M., Troch, A. P., Castro, L. C., Leuprecht, A., Chang, H. I., Mukherjee, R., & Demaria, M. C. E. (2017). Scaled 106 distribution mapping: A bias correction method that preserves raw climate model projected changes. Hydrology and Earth System Sciences, 21(6), 2649-2666. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020436712&doi=10.5194%2fhess-21-2649-2017& partnerID=40&md5=c48f7b6f9cdc0b38eef983b9e2682023. doi:10.5194/hess-21-2649-2017

- Talebizadeh, M., Moriasi, D., Gowda, P., Steiner, J. L., Tadesse, H. K., Nelson, A. M., & Starks, P. (2018). Simultaneous calibration of evapotranspiration and crop yield in agronomic system modeling using the APEX model Agricultural Water Management, 208, 299-306. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049312885&doi=10.1016%2fj.agwat.2018.06.043&
- partnerID=40&md5=42bb709dd33914a5a8497d4ef77a6796. doi:10.1016/j.agwat.2018.06.043 Tan, M. L., Gassman, P. W., Srinivasan, R., Arnold, J. G., & Yang, X. (2019). A review of SWAT studies in Southeast Asia: Applications, challenges and future directions. Water (Switzerland), 11(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066325106&doi=10.3390%2fw11050914&partnerl
- D=40&md5=056992bae881bf0ce4aaecb59227bffe. doi:10.3390/w11050914 Tang, Y., Winkler, J., Zhong, S., Bian, X., Doubler, D., Yu, L., & Walters, C. (2017). Future changes in the climatology of the Great Plains low-level jet derived from fine resolution multi-model simulations. Scientific Reports, 7(1). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022344771&doi=10.1038%2fs41598-017-05135-0 &partnerID=40&md5=13dca4f199013d7c0c85a7eb6f8a34a6. doi:10.1038/s41598-017-05135-0 Taylor, R. A., Ryan, S. J., Lippi, C. A., Hall, D. G., Narouei-Khandan, H. A., Rohr, J. R., & Johnson, L. R. (2019). Predicting
- the fundamental thermal niche of crop pests and diseases in a changing world: A case study on citrus greening. Journal of Applied Ecology, 56(8), 2057-2068. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068532771&doi=10.1111%2f1365-2664.13455&pa rtnerID=40&md5=27f256ce58280cbae9aaec19a0e37ca6. doi:10.1111/1365-2664.13455
- Teets, A., Fraver, S., Hollinger, D. Y., Weiskittel, A. R., Seymour, R. S., & Richardson, A. D. (2018). Linking annual tree growth with eddy-flux measures of net ecosystem productivity across twenty years of observation in a mixed conifer forest. Agricultural and Forest Meteorology, 249, 479-487. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027455838&doi=10.1016%2fj.agrformet.2017.08.0 07&partnerID=40&md5=8a11380f2a5d7c7d965135a484750aa0. doi:10.1016/j.agrformet.2017.08.007
- Teets, A., Fraver, S., Weiskittel, A. R., & Hollinger, D. Y. (2018). Quantifying climate-growth relationships at the stand level in a mature mixed-species conifer forest. Global Change Biology, 24(8), 3587-3602. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044977032&doi=10.1111%2fgcb.14120&partnerID =40&md5=b6dd4bd60170ca2b55773ccda7516dbc. doi:10.1111/gcb.14120
- Telugu, B. P., Park, K. E., & Park, C. H. (2017). Genome editing and genetic engineering in livestock for advancing agricultural and biomedical applications. Mammalian Genome, 28(7-8), 338-347. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85023760400&doi=10.1007%2fs00335-017-9709-4& partnerID=40&md5=ca1638999132bd6379153c76b4dbf61f. doi:10.1007/s00335-017-9709-4
- Tegja, Z., Kopali, A., Libohova, Z., & Owens, P. R. (2017). A study of the impacts of climate change scenarios on the plant hardiness zones of Albania. Journal of Applied Meteorology and Climatology, 56(3), 615-631. Retrieved

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015184604&doi=10.1175%2fJAMC-D-16-0108.1& partnerID=40&md5=8eddef7345059b1112fc66a7f02455d8. doi:10.1175/JAMC-D-16-0108.1

- Thapa, R., Mirsky, S. B., & Tully, K. L. (2018). Cover crops reduce nitrate leaching in agroecosystems: A global meta-analysis. Journal of Environmental Quality, 47(6), 1400-1411. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056716497&doi=10.2134%2fjeq2018.03.0107&par tnerID=40&md5=4e2626ce1793a044c045896c7575f456. doi:10.2134/jeq2018.03.0107
- Thistlewood, H. M. A., Gill, P., Beers, E. H., Shearer, P. W., Walsh, D. B., Rozema, B. M., . . . Whitener, A. B. (2018). Spatial analysis of seasonal dynamics and overwintering of Drosophila suzukii (Diptera: Drosophilidae) in the Okanagan-Columbia Basin, 2010-2014. Environmental Entomology, 47(2), 221-232. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052053457&doi=10.1093%2fee%2fnvx178&partne rID=40&md5=3d4b7c2d478097dd0af6b5a335e300cd. doi:10.1093/ee/nvx178
- Thivierge, M. N., Jégo, G., Bélanger, G., Chantigny, M. H., Rotz, C. A., Charbonneau, É., . . . Qian, B. (2017). Projected impact of future climate conditions on the agronomic and environmental performance of Canadian dairy farms. Agricultural Systems, 157, 241-257. Retrieved from

107

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027520901&doi=10.1016%2fj.agsy.2017.07.003&partnerID=40&md5=901b6619855eb1218744bf0c5791af0a. doi:10.1016/j.agsy.2017.07.003

- Thomason, M. J. S., & Rice, K. J. (2017). Spatial pattern and scale influence invader demographic response to simulated precipitation change in an annual grassland community. *PLoS ONE*, 12(1). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008517779&doi=10.1371%2fjournal.pone.0169328 &partnerID=40&md5=0a26917db0a67a815acbdb6000f6b6d0. doi:10.1371/journal.pone.0169328 Thompson, W., Johansson, R., Meyer, S., & Whistance, J. (2018). The US biofuel mandate as a substitute for carbon
  - cap-and-trade. *Energy Policy*, 113, 368-375. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850342386118doi=10.1016%2fj.enpol.2017.10.041&
- https://www.scopus.com/inward/record.uri/eid=2-s2.0-850342386118doi=10.1016%21j.enpol.2017.10.0418 partnerlD=40&md5=d24fdfc53af532b9665ffef5057402c8. doi:10.1016/j.enpol.2017.10.041 Thormann, I., Reeves, P., Thumm, S., Reilley, A., Engels, J. M. M., Biradar, C. M., . . . Richards, C. M. (2017). Genotypic and
- From and F., Reedes, F., Hummi, S., Reiney, A., Enders, J. M. M., Binada, C. M., ... Nichards, C. M. (2017). Genotypic and phenotypic changes in wild barley (Hordeum vulgare subsp. spontaneum) during a period of climate change in Jordan. *Genetic Resources and Crop Evolution, 64*(6), 1295-1312. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-849862969518doi=10.1007%2fs10722-016-0437-58 partnerID=40&md5=74a0a68868473b454f25e8b24976b8b7. doi:10.1007/s10722-016-0437-5
- Thormann, I., Reeves, P., Thumm, S., Reilley, A., Engels, J. M. M., Biradar, C. M., ... Richards, C. M. (2018). Changes in barley (Hordeum vulgare L. subsp. vulgare) genetic diversity and structure in Jordan over a period of 31 years. *Plant Genetic Resources: Characterisation and Utilisation*, *16*(2), 112-126. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019243085&doi=10.1017%2fS1479262117000028 &partnerlD=40&md5=a04827d805e31805f16b99d48d2380a7. doi:10.1017/S1479262117000028
- Thorne, J. H., Choe, H., Stine, P. A., Chambers, J. C., Holguin, A., Kerr, A. C., & Schwartz, M. W. (2018). Climate change vulnerability assessment of forests in the Southwest USA. *Climatic Change*, 148(3), 387-402. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021820948&doi=10.1007%2fs10584-017-2010-4& partnerID=40&md5=087035dd8198876ac9f83c08953eb948. doi:10.1007/s10584-017-2010-4
- Thornton, D. H., Wirsing, A. J., Lopez-Gonzalez, C., Squires, J. R., Fisher, S., Larsen, K. W., . . . Murray, D. L. (2018). Asymmetric cross-border protection of peripheral transboundary species. *Conservation Letters*, *11*(3). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038073173&doi=10.1111%2fconl.12430&partnerl D=40&md5=1e0142bf220418e92c54967a31fa0b9c. doi:10.1111/conl.12430

- Timberlake, T., Joyce, L. A., Schultz, C., & Lampman, G. (2018). Design of a workshop process to support consideration of natural range of variation and climate change for land management planning under the 2012 planning rule. USDA Forest Service - Research Note RMRS-RN, 2018(RMRS-RN-82). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069512618&partnerlD=40&md5=16349e655593b 1a40f0219ab407b2ede.
- Tinkham, W. T., Mahoney, P. R., Hudak, A. T., Domke, G. M., Falkowski, M. J., Woodall, C. W., & Smith, A. M. S. (2018). Applications of the United States forest inventory and analysis dataset: A review and future directions. *Canadian Journal of Forest Research*, 48(11), 1251-1268. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056090984&ddoi=10.1139%2fcjfr-2018-0196&partn erID=408md5=3d858c21860d36b0d2028b1b8eb1272c. doi:10.1139/cjfr-2018-0196
- Tobin, J. K., Torres, R., Crow, T. W., & Bennett, E. M. (2017). Multi-decadal analysis of root-zone soil moisture applying the exponential filter across CONUS. *Hydrology and Earth System Sciences*, 21(9), 4403-4417. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029030797&doi=10.5194%2fhess-21-4403-2017& partnerID=40&md5=fc5c23f8686f15bc7b60a77f3b09db78. doi:10.5194/hess-21-4403-2017
- Tomasek, B. J., Williams, M. M., & Davis, A. S. (2017). Changes in field workability and drought risk from projected climate change drive spatially variable risks in Illinois cropping systems. *PLoS ONE, 12*(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013936878&doi=10.1371%2fjournal.pone.0172301 &partnerlD=40&md5=cd455d169c3d3945d3239ea8590f13e0. doi:10.1371/journal.pone.0172301
- Tomer, M. D., Schilling, K. E., & Cole, K. J. (2019). Nitrate on a slow decline: Watershed water quality response during two decades of tallgrass prairie ecosystem reconstruction in Iowa. *Journal of Environmental Quality*, 48(3), 579-585. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066940615&doi=10.2134%2fjeq2018.07.0258&par tnerlD=40&md5=402e9916d1fbf4ad36378ed966d27495. doi:10.2134/jeq2018.07.0258

Tor-Ngern, P., Oren, R., Oishi, A. C., Uebelherr, J. M., Palmroth, S., Tarvainen, L., . . . Näsholm, T. (2017).

Ecophysiological variation of transpiration of pine forests: Synthesis of new and published results: Synthesis. *Ecological Applications*, 27(1), 118-133. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85008336814&doi=10.1002%2feap.1423&partnerlD= 40&md5=1cf55513ccc01aa5c28bdf540201da85. doi:10.1002/eap.1423

Tor-ngern, P., Oren, R., Palmroth, S., Novick, K., Oishi, A., Linder, S., . . . Näsholm, T. (2018). Water balance of pine forests: Synthesis of new and published results. *Agricultural and Forest Meteorology*, 259, 107-117. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046714400&doi=10.1016\%2fj.agrformet.2018.04.021\\ 21&partnerID=40&md5=96fcaf5156ed422fad519357feaf1ed6. doi:10.1016/j.agrformet.2018.04.021\\ 21&partnerID=40&md5=96fcaf5156ed422fad519457feaf1ed6. doi:10.1016/j.agrformet.2018.04.021\\ 21&partnerID=40&md5=96fcaf5156ed42fad519457feaf1ed6. doi:10.1016/j.agrformet.2018&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fcaf516&md5=96fc$ 

Trabue, S. L., Kerr, B. J., & Scoggin, K. D. (2019). Swine diets impact manure characteristics and gas emissions: Part I sulfur level. Science of the Total Environment, 687, 800-807. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067316033&doi=10.1016%2fj.scitotenv.2019.06.13 0& arthrerID=40& md5=04348149181962d93a09f2da965eea3b. doi:10.1016/i.scitotenv.2019.06.130

Tracy, B. F., Foster, J. L., Butler, T. J., Islam, M. A., Toledo, D., & Vendramini, J. M. B. (2018). Resilience in forage and grazinglands. *Crop Science*, 58(1), 31-42. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040708459&doi=10.2135%2fcropsci2017.05.0317

&partnerlD=40&md5=638d1eb21e743fcd6c8b86c76f6e2f17. doi:10.2135/cropsci2017.05.0317 Trammell, T. L. E., Pouyat, R. V., Carreiro, M. M., & Yesilonis, I. (2017). Drivers of soil and tree carbon dynamics in urban residential lawns: A modeling approach. *Ecological Applications,* 27(3), 991-1000. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017190050&doi=10.1002%2feap.1502&partnerlD= 40&md5=ee4af57ec888ca927378e931a18fb18b. doi:10.1002/eap.1502

Tran, Y. L., Siry, J. P., Bowker, J. M., & Poudyal, N. C. (2018). The role of the U.S. mayors and urban forests in addressing climate change mitigation and adaptation. *Mathematical and Computational Forestry and Natural-Resource Sciences*, 10(2), 33-45. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056820195&partnerID=40&md5=ca75013bcb624f a2e9a66664b723766b.

Tranmer, A. W., Marti, C. L., Tonina, D., Benjankar, R., Weigel, D., Vilhena, L., . . . Imberger, J. (2018). A hierarchical modelling framework for assessing physical and biochemical characteristics of a regulated river. *Ecological Modelling*, 368, 78-93. Retrieved from https://www.commun.com/science/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing/physical/assessing

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034819260&doi=10.1016%2fj.ecolmodel.2017.11.0 10&partnerID=40&md5=1062f0c2b73116f4909b3d1b9b3cb177. doi:10.1016/j.ecolmodel.2017.11.010

Tredennick, A. T., Kleinhesselink, A. R., Bret Taylor, J., & Adler, P. B. (2018). Ecosystem functional response across precipitation extremes in a sagebrush steppe. *Peerl, 2018*(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043517879&doi=10.7717%2fpeeri.4485&partnerlD

https://www.scopus.com/inward/record.uri?eid=2-s2.0-850435178798ddoi=10.7717%2tpeerj.4485&partnerID =40&md5=cf626fd47372e0c8337c30749d0581f5. doi:10.7717/peerj.4485

Truettner, C., Anderegg, W. R. L., Biondi, F., Koch, G. W., Ogle, K., Schwaim, C., . . . Ziaco, E. (2018). Conifer radial growth response to recent seasonal warming and drought from the southwestern USA. *Forest Ecology and Management*, 418, 55-62. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041896552&doi=10.1016%2fj.foreco.2018.01.044& partnerID=40&md5=134da001fa73d0b2a2cd722fe3cea979. doi:10.1016/j.foreco.2018.01.044

Turner, S. B., Turner, D. P., Gray, A. N., & Fellers, W. (2019). An approach to estimating forest biomass change over a coniferous forest landscape based on tree-level analysis from repeated lidar surveys. *International Journal of Remote Sensing*, 40(7), 2558-2575. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055107210&doi=10.1080%2f01431161.2018.15284

01&partnerlD=40&md5=2f04d3ee82585198aaae65c1903ea9b6. doi:10.1080/01431161.2018.1528401 Turschwell, M. P., Balcombe, S. R., Steel, E. A., Sheldon, F., & Peterson, E. E. (2017). Thermal habitat restricts patterns of occurrence in multiple life-stages of a headwater fish. *Freshwater Science*, *36*(2), 402-414. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020134319&doi=10.1086%2f691553&partnerlD=4

0&md5=e5813f98b54ed6d43c91a7d43a1e152a. doi:10.1086/691553 Underwood, E. C., Hollander, A. D., Flint, L. E., Flint, A. L., & Safford, H. D. (2018). Climate change impacts on

hydrological services in southern California. Environmental Research Letters, 13(12). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85060142117&doi=10.1088%2f1748-9326%2faaeb59 &partnerlD=40&md5=737745dba5b671d4779cfde605451e13. doi:10.1088/1748-9326/aaeb59 Upperman, C. R., Parker, J. D., Akinbami, L. J., Jiang, C., He, X., Murtugudde, R., . . . Sapkota, A. (2017). Exposure to Extreme Heat Events Is Associated with Increased Hay Fever Prevalence among Nationally Representative Sample of US Adults: 1997-2013. *Journal of Allergy and Clinical Immunology: In Practice, 5*(2), 435-441.e432. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006255907&doi=10.1016%2fj.jaip.2016.09.016&partnerlD=40&md5=5151dc0446c2a0652ca4fd170f19468b. doi:10.1016/j.jaip.2016.09.016

Vadeboncoeur, M. A., Green, M. B., Asbjornsen, H., Campbell, J. L., Adams, M. B., Boyer, E. W., . . . Shanley, J. B. (2018). Systematic variation in evapotranspiration trends and drivers across the Northeastern United States. *Hydrological Processes, 32*(23), 3547-3560. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053756907&doi=10.1002%2fhyp.13278&partnerlD =40&md5=73247511153f1bc7a9f40927cf4af864. doi:10.1002/hyp.13278

Valdes-Abellan, J., Pachepsky, Y., & Martinez, G. (2018). Obtaining soil hydraulic parameters from soil water content data assimilation under different climatic/soil conditions. *Catena*, *163*, 311-320. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039809215&doi=10.1016%2fj.catena.2017.12.022& partnerID=40&md5=ac2e345b583fe9ef7f0ae47fe3b722a8. doi:10.1016/j.catena.2017.12.022

Van Beusekom, A. E., Gould, W. A., Monmany, A. C., Khalyani, A. H., Quiñones, M., Fain, S. J., . . . González, G. (2018). Fire weather and likelihood: characterizing climate space for fire occurrence and extent in Puerto Rico. *Climatic Change*, 146(1-2), 117-131. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85027685024&doi=10.1007%2fs10584-017-2045-6&

partnerID=40&md5=3b9d2f6abfaa477429a69f9278b16df5. doi:10.1007/s10584-017-2045-6 Van Beusekom, A. E., & Viger, R. J. (2018). A Physically Based Daily Simulation of the Glacier-Dominated Hydrology of

the Copper River Basin, Alaska. Water Resources Research, 54(7), 4983-5000. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051223056&doi=10.1029%2f2018WR022625&part nerID=40&md5=73cdbdeecfbf7bfa282bf183eeed9c2b. doi:10.1029/2018WR022625

Van Beusekom, E. A., González, G., & Scholl, A. M. (2017). Analyzing cloud base at local and regional scales to understand tropical montane cloud forest vulnerability to climate change. *Atmospheric Chemistry and Physics*, 17(11), 7245-7259. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020897714&doi=10.5194%2facp-17-7245-2017&p

https://www.scopus.com/inward/record.un/eld=z-sz.0-8502089/714&dol=10.5194%ztacp=17-7245-2017& artnerID=40&md5=662f302c3e2594bdba8f9b60cdb70884. doi:10.5194/acp=17-7245-2017

van Doorn, N. S., & McPherson, E. G. (2018). Demographic trends in Claremont California's street tree population. Urban Forestry and Urban Greening, 29, 200-211. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038009326&doi=10.1016%2fj.ufug.2017.11.018&p

https://www.scopus.com/inward/record.ur/eid=2-s2.0-85038009326&doi=10.1016%ztj.ufug.2017.11.018&p artnerlD=40&md5=6840237b61c3ebcd1f50a9f26438bb03. doi:10.1016/j.ufug.2017.11.018

Van Etten, M. L., & Brunet, J. (2017) Using population matrix models to reduce the spread of wild carrot. In: Vol. 1153. Acta horticulturae (pp. 273-278).

van Lingen, H. J., Niu, M., Kebreab, E., Valadares Filho, S. C., Rooke, J. A., Duthie, C. A., . . . Hristov, A. N. (2019). Prediction of enteric methane production, yield and intensity of beef cattle using an intercontinental database. Agriculture, Ecosystems and Environment, 283. Retrieved from https://www.ecosystems.com/uri2014-2-20.955676526481doi:10.10156/35.ecos.2010.1055

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067265264&doi=10.1016%2fj.agee.2019.106575& partnerlD=40&md5=ef62b0307770a7e6a5d664577f29da35. doi:10.1016/j.agee.2019.106575

van Oppen, M. J. H., Gates, R. D., Blackall, L. L., Cantin, N., Chakravarti, L. J., Chan, W. Y., . . . Putnam, H. M. (2017). Shifting paradigms in restoration of the world's coral reefs. *Global Change Biology*, 23(9), 3437-3448. Retrieved from https://www.conv.gov.com/inward/record/uri2cide2\_c0\_0.950140004078/doi=10.11119/21acb.126478/page

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014009497&doi=10.1111%2fgcb.13647&partnerlD=40&md5=21fb5bf7814c5e88c2cf6e12206531ed.doi:10.1111/gcb.13647

Vangestel, C., Eckert, A. J., Wegrzyn, J. L., St. Clair, J. B., & Neale, D. B. (2018). Linking phenotype, genotype and environment to unravel genetic components underlying cold hardiness in coastal Douglas-fir (Pseudotsuga menziesii var. menziesii). *Tree Genetics and Genomes*, *14*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85040443656&doi=10.1007%2fs11295-017-1225-x& partnerlD=40&md5=21cf3b30a05ec88c86916621c9dd8&48. doi:10.1007/s11295-017-1225-x

Vaughan, D., Auty, D., Kolb, T. E., Sánchez Meador, A. J., Mackes, K. H., Dahlen, J., & Moser, W. K. (2019). Climate has a larger effect than stand basal area on wood density in Pinus ponderosa var. scopulorum in the southwestern USA. Annals of Forest Science, 76(3). Retrieved from 110

290

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070371004&doi=10.1007%2fs13595-019-0869-0& partnerlD=40&md5=92e5c02b9eef8ff24fcf559bf120b164. doi:10.1007/s13595-019-0869-0

Vaughan, M. M., Block, A., Christensen, S. A., Allen, L. H., & Schmelz, E. A. (2018). The effects of climate change associated abiotic stresses on maize phytochemical defenses. *Phytochemistry Reviews*, 17(1), 37-49. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018350590&doi=10.1007%2fs11101-017-9508-2&partnerID=40&md5=4ce78be2fba2a7cd0a2695363089d4ec.doi:10.1007/s11101-017-9508-2

- Vaughn, S. F., Kenar, J. A., Tisserat, B., Jackson, M. A., Joshee, N., Vaidya, B. N., & Peterson, S. C. (2017). Chemical and physical properties of Paulownia elongata biochar modified with oxidants for horticultural applications. *Industrial crops and products*, 97, 260-267. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007302063&doi=10.1016%2fj.indcrop.2016.12.017 &partnerlD=40&md5=aee786e9bb65a3fc36894469ccd717a3. doi:10.1016/j.indcrop.2016.12.017
- Vega-Nieva, D. J., Briseño-Reyes, J., Nava-Miranda, M. G., Calleros-Flores, E., López-Serrano, P. M., Corral-Rivas, J. J., . . . Preisler, H. K. (2018). Developing models to predict the number of fire hotspots from an accumulated fuel dryness index by vegetation type and region in Mexico. *Forests*, 9(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045121748&doi=10.3390%2ff9040190&partnerID =40&md5=866e304a2e758344422f524089ce3880. doi:10.3390/f9040190
- Vega-Nieva, D. J., Nava-Miranda, M. G., Calleros-Flores, E., López-Serrano, P. M., Briseño-Reyes, J., López-Sánchez, C., . . . Ruiz-González, A. D. (2019). Temporal patterns of active fire density and its relationship with a satellite fuel greenness index by vegetation type and region in Mexico during 2003–2014. *Fire Ecology, 15*(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070405465&doi=10.1186%2fs42408-019-0042-z& partnerID=40&md5=0bd9036e8135b9eba7d2cb73b6ccbfa2. doi:10.1186/s42408-019-0042-z

- Veltman, K., Jones, C. D., Gaillard, R., Cela, S., Chase, L., Duval, B. D., . . . Jolliet, O. (2017). Comparison of process-based models to quantify nutrient flows and greenhouse gas emissions associated with milk production. *Agriculture, Ecosystems and Environment, 237*, 31-44. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007206577&doi=10.1016%2fj.agee.2016.12.018&p
- artnerID=40&md5=4ba8094dafb3eadfa654ebbf6df79960. doi:10.1016/j.agee.2016.12.018 Veltman, K., Rotz, C. A., Chase, L., Cooper, J., Ingraham, P., Izaurralde, R. C., . . . Jolliet, O. (2018). A quantitative assessment of Beneficial Management Practices to reduce carbon and reactive nitrogen footprints and

phosphorus losses on dairy farms in the US Great Lakes region. *Agricultural Systems, 166*, 10-25. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050100163&doi=10.1016%2fj.aqsy.2018.07.005&p

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050100163&doi=10.1016%2fj.agsy.2018.07.005&p artnerID=40&md5=0584be3ec128cda20bcfa3260b97e406. doi:10.1016/j.agsy.2018.07.005 Venette, R. C. (2017). Climate Analyses to Assess Risks from Invasive Forest Insects: Simple Matching to Advanced

Models. *Current Forestry Reports*, 3(3), 255-268. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850503943438doi=10.1007%2fs40725-017-0061-4& partnerID=40&md5=8e4272151ca4adfc19edef88af1568b8. doi:10.1007/s40725-017-0061-4

Vicca, S., Stocker, B. D., Reed, S., Wieder, W. R., Bahn, M., Fay, P. A., . . . Ciais, P. (2018). Using research networks to create the comprehensive datasets needed to assess nutrient availability as a key determinant of terrestrial carbon cycling. *Environmental Research Letters*, *13*(12). Retrieved from https://www.scopus.com/inward/record.ui?eid=2-s2.0-85060140999&doi=10.1088%2f1748-9326%2faaeae7 &partnerID=40&md5=86372ff7606bb7f3bfb721a1a7194d8c. doi:10.1088/1748-9326/aaeae7

Vitharana, U. W. A., Mishra, U., Jastrow, J. D., Matamala, R., & Fan, Z. (2017). Observational needs for estimating Alaskan soil carbon stocks under current and future climate. *Journal of Geophysical Research: Biogeosciences*, 122(2), 415-429. Retrieved from http://www.commun.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.com/article.c

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013477439&doi=10.1002%2f2016JG003421&partn erID=40&md5=809e3d3bf402c4ce0d78b5550e1ce73a. doi:10.1002/2016JG003421

Voelker, S. L., DeRose, R. J., Bekker, M. F., Sriladda, C., Leksungnoen, N., & Kjelgren, R. K. (2018). Anisohydric water use behavior links growing season evaporative demand to ring-width increment in conifers from summer-dry environments. *Trees - Structure and Function*, *32*(3), 735-749. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041891758&doi=10.1007%2fs00468-018-1668-18. partnerlD=40&md5=88945f3688eb7f3389321a35d9164fe3. doi:10.1007/s00468-018-1668-1 Voelker, S. L., Stambaugh, M. C., Renée Brooks, J., Meinzer, F. C., Lachenbruch, B., & Guyette, R. P. (2017). Evidence that higher [CO<inf>2</inf>] increases tree growth sensitivity to temperature: a comparison of modern and paleo oaks. *Oecologia*, 183(4), 1183-1195. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013149507&doi=10.1007%2fs00442-017-3831-6&partnerID=40&md5=8681b1b04771c3fde52c0443abcbdec5. doi:10.1007/s00442-017-3831-6

Volk, G., Samarina, L., Kulyan, R., Gorshkov, V., Malyarovskaya, V., Ryndin, A., . . . Stover, E. (2018). Citrus genebank collections: international collaboration opportunities between the US and Russia. *Genetic Resources and Crop Evolution*, 65(2), 433-447. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026434235&doi=10.1007%2fs10722-017-0543-z&

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026434235&doi=10.1007%2ts10722-017-0543-z& partnerID=40&md5=cd415f09901050e035343ac940549425. doi:10.1007/s10722-017-0543-z

Volta, C., Ho, D. T., Friederich, G., Engel, V. C., & Bhat, M. (2018). Influence of water management and natural variability on dissolved inorganic carbon dynamics in a mangrove-dominated estuary. *Science of the Total Environment*, 635, 479-486. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045582132&doi=10.1016%2fj.scitotenv.2018.04.08 8&partnerlD=40&md5=e5392d5d742941b4bbba1bb7885f2783. doi:10.1016/j.scitotenv.2018.04.088

Von Buttlar, J., Zscheischler, J., Rammig, A., Sippel, S., Reichstein, M., Knohl, A., . . . Mahecha, M. D. (2018). Impacts of droughts and extreme-temperature events on gross primary production and ecosystem respiration: A systematic assessment across ecosystems and climate zones. *Biogeosciences*, 15(5), 1293-1318. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042916984&doi=10.5194%2fbg-15-1293-2018&partnerlD=40&md5=03c9c5cf0c6769b9fcb908ea31b8f0f5. doi:10.5194/bg-15-1293-2018

Wagena, M. B., Collick, A. S., Ross, A. C., Najjar, R. G., Rau, B., Sommerlot, A. R., ... Easton, Z. M. (2018). Impact of climate change and climate anomalies on hydrologic and biogeochemical processes in an agricultural catchment of the Chesapeake Bay watershed, USA. *Science of the Total Environment, 637-638*, 1443-1454. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047096785&doi=10.1016%2fj.scitotenv.2018.05.11 6&partnerID=40&md5=8c9f14833e1e6555753756a4c444ca8d. doi:10.1016/j.scitotenv.2018.05.116

- Wagle, P., Gowda, P. H., Moorhead, J. E., Marek, G. W., & Brauer, D. K. (2018). Net ecosystem exchange of CO<inf>2</inf> and H<inf>2</inf>O fluxes from irrigated grain sorghum and maize in the Texas High Plains. *Science of the Total Environment*, 637-638, 163-173. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046657653&doi=10.1016%2fj.scitotenv.2018.05.01
- 8&partnerID=40&md5=17be9e4a36083b57fab59648b10aac96. doi:10.1016/j.scitotenv.2018.05.018
  Wagle, P., Gowda, P. H., & Northup, B. K. (2019). Annual dynamics of carbon dioxide fluxes over a rainfed alfalfa field in the U.S. Southern Great Plains. *Agricultural and Forest Meteorology*, *265*, 208-217. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057099533&doi=10.1016%2fj.agrformet.2018.11.0 22&partnerID=40&md5=a1421d4fe0875cfc5802b85ca62f70f3. doi:10.1016/j.agrformet.2018.11.022

Wagle, P., Gowda, P. H., & Northup, B. K. (2019). Dynamics of evapotranspiration over a non-irrigated alfalfa field in the Southern Great Plains of the United States. *Agricultural Water Management, 223*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069901075&doi=10.1016%2fj.agwat.2019.105727 &partnerID=40&md5=eb4a9468a8dc10693d79cc9324ce71a2. doi:10.1016/j.agwat.2019.105727

Wagle, P., Xiao, X., Gowda, P., Basara, J., Brunsell, N., Steiner, J., & Anup, K. C. (2017). Analysis and estimation of tallgrass prairie evapotranspiration in the central United States. *Agricultural and Forest Meteorology*, 232, 35-47. Retrieved from http://www.forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forena.com/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/forest/f

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84989840472&doi=10.1016%2fj.agrformet.2016.08.00 05&partnerID=40&md5=230d34507b5beffdb7528f20efc57cb5.doi:10.1016/j.agrformet.2016.08.005

Wagner, M., Wang, M., Miguez-Macho, G., Miller, J., VanLoocke, A., Bagley, J. E., . . . Georgescu, M. (2017). A realistic meteorological assessment of perennial biofuel crop deployment: a Southern Great Plains perspective. GCB Bioenergy, 9(6), 1024-1041. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84990831224&doi=10.1111%2fgcbb.12403&partnerl

nttps://www.scopus.com/inward/record.ur/eid=z=sz.0=84990831224&doi=10.1111%ztgcbb.12403&partneri D=40&md5=ce3c599e75f8a3f623dd2056dc9d0a03. doi:10.1111/gcbb.12403

Waldo, S., Russell, E. S., Kostyanovsky, K., Pressley, S. N., O'Keeffe, P. T., Huggins, D. R., . . . Lamb, B. K. (2019). N <inf>2 </inf>O Emissions From Two Agroecosystems: High Spatial Variability and Long Pulses Observed Using Static Chambers and the Flux-Gradient Technique. *Journal of Geophysical Research: Biogeosciences*. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068604508&doi=10.1029%2f2019JG005032&partnerlD=40&md5=7aa8b6d77c7bd8a511c8e348a99e8074. doi:10.1029/2019JG005032

- Walker, A. P., Carter, K. R., Gu, L., Hanson, P. J., Malhotra, A., Norby, R. J., . . . Weston, D. J. (2017). Biophysical drivers of seasonal variability in Sphagnum gross primary production in a northern temperate bog. *Journal of Geophysical Research: Biogeosciences, 122*(5), 1078-1097. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018407537&doi=10.1002%2f2016JG003711&partn erlD=40&md5=bde05071486c3fe8febe1891e5d4e71c. doi:10.1002/2016JG003711
- Walker, R. B., Coop, J. D., Parks, S. A., & Trader, L. (2018). Fire regimes approaching historic norms reduce wildfire-facilitated conversion from forest to non-forest. *Ecosphere*, 9(4). Retrieved from https://www.scom/inward/record.uri?eid=2-s2.0-850443999418doi=10.1002%2fecs2.2182&partnerID =40&md5=ddfdfea1f434f4d4f18b2b0efabc46f5. doi:10.1002/ecs2.2182
- Wallace, C. W., Flanagan, D. C., & Engel, B. A. (2017). Quantifying the effects of conservation practice implementation on predicted runoff and chemical losses under climate change. *Agricultural Water Management, 186*, 51-65. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014418950&doi=10.1016%2fj.agwat.2017.02.014&

https://www.scopus.com/inward/record.uri/eid=2-s2.0-85014418950&doi=10.1016%2tj.agwat.2017.02.014& partnerlD=40&md5=bdd3f60e1b8a42d8c1cc8621b7f78f13. doi:10.1016/j.agwat.2017.02.014 Wallace, C. W., Flanagan, D. C., & Engel, B. A. (2017). Quantifying the effects of future climate conditions on runoff,

Wallace, C. W., Hanagan, D. C., & Enger, B. A. (2017). Quantifying the effects of future climate conditions on runoir, sediment, and chemical losses at different watershed sizes. *Transactions of the ASABE*, 60(3), 915-929. Retrieved from https://www.uce.com/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comm comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/comment/com

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85022321356&doi=10.13031%2ftrans.12094&partner ID=40&md5=645913fa052863d5a7261647e31b4c23. doi:10.13031/trans.12094

- Walters, W. A., Jin, Z., Youngblut, N., Wallace, J. G., Sutter, J., Zhang, W., . . . Ley, R. E. (2018). Large-scale replicated field study of maize rhizosphere identifies heritable microbes. *Proceedings of the National Academy of Sciences of the United States of America*, 115(28), 7368-7373. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049610439&doi=10.1073%2fpnas.1800918115&pa
- rtnerID=40&rnd5=c84fbb0a3fea910291e1102678d03da4. doi:10.1073/pnas.1800918115 Wan, H. Y., Cushman, S. A., & Ganey, J. L. (2019). Recent and projected future wildfire trends across the ranges of three spotted owl subspecies under climate change. *Frontiers in Ecology and Evolution, 7*(MAR). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065424219&doi=10.3389/£ffevo.2019.00037&par tnerID=40&rd5=861226aee7790e341db6ad640fc18bd. doi:10.3389/fevo.2019.00037
- Wan, H. Y., Ganey, J. L., Vojta, C. D., & Cushman, S. A. (2018). Managing emerging threats to spotted owls. Journal of Wildlife Management, 82(4), 682-697. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041226257&doi=10.1002%2fjwmg.21423&partnerl

D=40&md5=a7df0460ac58325f7f3342b6c8233e36. doi:10.1002/jwmg.21423 Wan, H. Y., McGarigal, K., Ganey, J. L., Lauret, V., Timm, B. C., & Cushman, S. A. (2017). Meta-replication reveals nonstationarity in multi-scale habitat selection of Mexican spotted owl. *Condor, 119*(4), 641-658. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031319798&doi=10.1650%2fCONDOR-17-32.1&partnerlD=40&md5=84c8ee986fae0e1fe786560bb5507439. doi:10.1650/CONDOR-17-32.1

Wang, A., Goslee, S. C., Miller, D. A., Sanderson, M. A., & Gonet, J. M. (2017). Topographic variables improve climatic models of forage species abundance in the northeastern United States. *Applied Vegetation Science*, 20(1), 84-93. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85007500051&doi=10.1111%2favsc.12284&partnerl

D=40&md5=f2e8e4018d90fee3f1b74e53be38f932. doi:10.1111/avsc.12284
Wang, E., Martre, P., Zhao, Z., Ewert, F., Maiorano, A., Rötter, R. P., . . . Asseng, S. (2017). The uncertainty of crop yield projections is reduced by improved temperature response functions. *Nature Plants, 3*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025114987&doi=10.1038%2fplants.2017.102&partnerD=40&md5=16c1411d43875545912829ec572e5dce. doi:10.1038/nplants.2017.102

Wang, G., Li, J., Ravi, S., Scott Van Pelt, R., Costa, P. J. M., & Dukes, D. (2017). Tracer techniques in aeolian research: Approaches, applications, and challenges. *Earth-Science Reviews*, 170, 1-16. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019398215&doi=10.1016%2fj.earscirev.2017.05.00 1&partnerID=40&md5=d45a2b2a77bd7819da1609c11c00f734. doi:10.1016/j.earscirev.2017.05.001

- Wang, J., Fu, X., Sainju, U. M., & Zhao, F. (2018). Soil carbon fractions in response to straw mulching in the Loess Plateau of China. *Biology and Fertility of Soils, 54*(4), 423-436. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043365751&doi=10.1007%2fs00374-018-1271-z& partnerID=40&md5=bf4e1d3b4dfc2ba3d9cba72749ed4ccc. doi:10.1007/s00374-018-1271-z
- Wang, J., Fu, X., Zhao, F., & Sainju, U. M. (2018). Response of soil carbon fractions and dryland maize yield to mulching. *Soil Science Society of America Journal*, *82*(2), 371-381. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044458263&doi=10.2136%2fsssaj2017.11.0397&p artnerID=40&md5=46850160a8a0416e0182cff3b0bebf0d. doi:10.2136/sssaj2017.11.0397
- Wang, J., Xiao, X., Bajgain, R., Starks, P., Steiner, J., Doughty, R. B., & Chang, Q. (2019). Estimating leaf area index and aboveground biomass of grazing pastures using Sentinel-1, Sentinel-2 and Landsat images. *ISPRS Journal of Photogrammetry and Remote Sensing*, 154, 189-201. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067567474&doi=10.1016%2fj.isprsjprs.2019.06.007 &partnerD=40&md5=c975b09f89def22a5d325310b5337a43. doi:10.1016/i.isprsiprs.2019.06.007

Wang, L., Cherkauer, K. A., & Flanagan, D. C. (2018). Impacts of climate change on soil Erosion in the great Lakes Region. Water (Switzerland), 10(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047566394&doi=10.3390%2fw10060715&partnerl D=40&md5=c4b98419534ef6184a112cb4266fdb65. doi:10.3390/w10060715

- Wang, L., Flanagan, D. C., Wang, Z., & Cherkauer, K. A. (2018). Climate change impacts on nutrient losses of two watersheds in the Great Lakes region. *Water (Switzerland)*, 10(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047520305&doi=10.3390%2fw10040442&partnerl D=40&md5=74e1f838dc020e2529c8595ff1767000. doi:10.3390/w10040442
- Wang, M., Wagner, M., Miguez-Macho, G., Kamarianakis, Y., Mahalov, A., Moustaoui, M., . . . . Georgescu, M. (2017). On the long-term hydroclimatic sustainability of perennial bioenergy crop expansion over the United States. *Journal of Climate*, 30(7), 2535-2557. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015861177&doi=10.1175%2fJCLI-D-16-0610.1&pa rtnerID=40&md5=38cfb7ac4c264a7a3c0f6a93e2e9e7a3. doi:10.1175/JCLI-D-16-0610.1
- Wang, P., Niu, G. Y., Fang, Y. H., Wu, R. J., Yu, J. J., Yuan, G. F., . . . Scott, R. L. (2018). Implementing Dynamic Root Optimization in Noah-MP for Simulating Phreatophytic Root Water Uptake. *Water Resources Research*, 54(3), 1560-1575. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045665210&doi=10.1002%2f2017WR021061&part nerlD=40&md5=87e6fc249ad37ec9375744e6486a7a24. doi:10.1002/2017WR021061
- Wang, Q., Chun, J. A., Fleisher, D., Reddy, V., Timlin, D., & Resop, J. (2017). Parameter estimation of the Farquhar-von Caemmerer-Berry biochemical model from photosynthetic carbon dioxide response curves. Sustainability (Switzerland), 9(7). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85026478224&doi=10.3390%2fsu9071288&partnerl D=40&md5=1dcf1fc7d23e291a54ff80fc4845f95f. doi:10.3390/su9071288

- Wang, R., Chen, J., Anderson, J. A., Zhang, J., Zhao, W., Wheeler, J., . . . Dong, Y. (2017). Genome-wide association mapping of Fusarium head blight resistance in spring wheat lines developed in the Pacific Northwest and CIMMYT. *Phytopathology*, *107*(12), 1486-1495. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85035203119&doi=10.1094%2fPHYTO-02-17-0073-R &partnerID=40&md5=bf5b0e690ecada43f7efc794193e1777. doi:10.1094/PHYTO-02-17-0073-R
- Wang, W., Flanagan, D. C., Yin, S., & Yu, B. (2018). Assessment of CLIGEN precipitation and storm pattern generation in China. Catena, 169, 96-106. Retrieved from the page of pattern of the page of the pag
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047737211&doi=10.1016%2fj.catena.2018.05.024& partnerID=40&md5=26182f7753d5f583509b6766bea4e010. doi:10.1016/j.catena.2018.05.024 Wang, W., Yin, S., Flanagan, D. C., & Yu, B. (2018). Comparing CLIGEN-generated storm patterns with 1-Minute and
- Hourty precipitation data from China. Journal of Applied Meteorology and Climatology, 57(9), 2005-2017. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850534443358doi=10.1175%2fJAMC-D-18-0079.1&

https://www.scopus.com/inward/record.ur/eid=2-sz.0-850534443358doi=10.1175%2tJAMC-D-18-00/9.1& partnerID=40&md5=9e87ef6073212cb427d6a1ae294e6fdb. doi:10.1175/JAMC-D-18-0079.1

Wang, W. J., He, H. S., Thompson, F. R., Fraser, J. S., & Dijak, W. D. (2017). Changes in forest biomass and tree species distribution under climate change in the northeastern United States. *Landscape Ecology*, 32(7), 1399-1413. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84982113138&doi=10.1007%2fs10980-016-0429-z& partnerID=40&md5=06cd5ad38ccb6e199a70f40d8655af4c. doi:10.1007/s10980-016-0429-z

Wang, W. J., He, H. S., Thompson, F. R., Spetich, M. A., & Fraser, J. S. (2018). Effects of species biological traits and environmental heterogeneity on simulated tree species distribution shifts under climate change. *Science of the Total Environment*, 634, 1214-1221. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045250905&doi=10.1016%2fj.scitotenv.2018.03.35 3&partnerlD=40&md5=da11acbdf24b8e0494d01a60b77c716c. doi:10.1016/j.scitotenv.2018.03.353

Wang, W. J., Thompson, F. R., He, H. S., Fraser, J. S., Dijak, W. D., & Jones-Farrand, T. (2019). Climate change and tree harvest interact to affect future tree species distribution changes. *Journal of Ecology*, 107(4), 1901-1917. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061905761&doi=10.1111%2f1365-2745.13144&pa rtnerID=40&md5=273aeaeadddfdc5028732a430425098a. doi:10.1111/1365-2745.13144

- Wang, W. J., Thompson, F. R., He, H. S., Fraser, J. S., Dijak, W. D., & Spetich, M. A. (2018). Population dynamics has greater effects than climate change on tree species distribution in a temperate forest region. *Journal of Biogeography*, 45(12), 2766-2778. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056289681&doi=10.1111%2fjbi.13467&partnerID=
- 408xmd5=7f7b8faae6d71beae584b0155310a627. doi:10.1111/jbi.13467 Wang, Z, Schaaf, C. B., Sun, Q, Kim, J, Erb, A. M., Gao, F., . . . Papuga, S. A. (2017). Monitoring land surface albedo and vegetation dynamics using high spatial and temporal resolution synthetic time series from Landsat and the MODIS BRDF/NBAR/albedo product. *International Journal of Applied Earth Observation and Geoinformation*, 59, 104-117. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028694954&doi=10.1016%2fj.jag.2017.03.008&partnerID=40&md5=0934dfdbff565b1b513274f7aa855d1d. doi:10.1016/j.jag.2017.03.008

- Ward, S. F., Eidson, E. L., Kees, A. M., Venette, R. C., & Aukema, B. H. (2019). Allopatric populations of the invasive larch casebearer differ in cold tolerance and phenology. *Ecological Entomology*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068775078&doi=10.1111%2feen.12773&partnerID =40&md5=e4727cfdd1e69b0acc1c60f6ddc12220. doi:10.1111/een.12773
- Ward, S. F., Venette, R. C., & Aukema, B. H. (2019). Cold tolerance of the invasive larch casebearer and implications for invasion success. *Agricultural and Forest Entomology*, *21*(1), 88-98. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055474915&doi=10.1111%2fafe.12311&partnerID =40&md5=99682956b2af6a39d1401d478f5e2374. doi:10.1111/afe.12311
- Wardlow, B. D., Anderson, M. C., Hain, C., Crow, W. T., Otkin, J., Tadesse, T., & Kouchak, A. A. (2017). Advancements in satellite remote sensing for drought monitoring. In *Drought and Water Crises: Integrating Science, Management, and Policy, Second Edition* (pp. 225-258).
- Warren, M., Frolking, S., Dai, Z., & Kurnianto, S. (2017). Impacts of land use, restoration, and climate change on tropical peat carbon stocks in the twenty-first century: implications for climate mitigation. *Mitigation and Adaptation Strategies for Global Change*, 22(7), 1041-1061. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84968677689&doi=10.1007%2fs11027-016-9712-1&

https://www.scopus.com/inward/record.unreld=2-32.0-84966778892d0f=10.1007%cis11027-016-9712-182 partnerID=40&md5=72a7de3ae8112b572018a758aaaac2bc. doi:10.1007/s11027-016-9712-1

- - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019357660&doi=10.1186%2fs13021-017-0080-2& partnerID=40&md5=0dd71bf738b4dc2e955fcaa7b66a5151. doi:10.1186/s13021-017-0080-2
- Warwell, M. V., & Shaw, R. G. (2017). Climate-related genetic variation in a threatened tree species, pinus albicaulis. American Journal of Botany, 104(8), 1205-1218. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028340581&doi=10.3732%2fajb.1700139&partnerl D=40&md5=063d93ea0a77797a875f00961d3b2863. doi:10.3732/ajb.1700139

Warwell, M. V., & Shaw, R. G. (2018). Phenotypic selection on growth rhythm in whitebark pine under climatic conditions warmer than seed origins. *Journal of Evolutionary Biology*, 31(9), 1284-1299. Retrieved from https://www.scopus.com/inward/record.un?eid=2-s2.0-85052433734&doi=10.1111%2fjeb.13301&partnerID =40&md5=2d96a5f755135ec274f486264702e110. doi:10.1111/jeb.13301

Warwell, M. V., & Shaw, R. G. (2019). Phenotypic selection on ponderosa pine seed and seedling traits in the field

under three experimentally manipulated drought treatments. *Evolutionary Applications, 12*(2), 159-174. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058851982&doi=10.1111%2feva.12685&partnerID=40&md5=626308e939dd7640861dda6bc7ded9f7. doi:10.1111/eva.12685

- Warziniack, T., Lawson, M., & Karen Dante-Wood, S. (2018) Effects of Climate Change on Ecosystem Services in the Northern Rockies. In: Vol. 63. Advances in Global Change Research (pp. 189-208).
- Wear, D. N., & Prestemon, J. P. (2019). Spatiotemporal downscaling of global population and income scenarios for the United States. PLoS ONE, 14(7). Retrieved from

Webb, K. M., Delgrosso, S. J., West, M. S., Freeman, C., & Brenner, T. (2017). Influence of environment, crop age and cultivar on the development and severity of Fusarium yellows in field-grown sugar beet. Canadian Journal of Plant Pathology, 39(1), 37-47. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017542117&doi=10.1080%2f07060661.2017.12954

https://www.scopus.com/inward/record.uri?eid=2-s2.0-8501/54211/&doi=10.1080%2t0/060661.2017.12954 02&partnerID=40&md5=0a3f6dd55c2139089d0793110f5e054e. doi:10.1080/07060661.2017.1295402

Webb, N. P., Marshall, N. A., Stringer, L. C., Reed, M. S., Chappell, A., & Herrick, J. E. (2017). Land degradation and climate change: building climate resilience in agriculture. *Frontiers in Ecology and the Environment*, *15*(8), 450-459. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028767653&doi=10.1002%2ffee.1530&partnerlD= 40&md5=145fd29b0fd50775e98dc409dcefcd1a. doi:10.1002/fee.1530

- Webber, H., White, J. W., Kimball, B. A., Ewert, F., Asseng, S., Eyshi Rezaei, E., . . . Martre, P. (2018). Physical robustness of canopy temperature models for crop heat stress simulation across environments and production conditions. *Field Crops Research*, *216*, 75-88. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033721014&doi=10.1016%2fj.fcr.2017.11.005&part nerlD=40&kmd5=d315&c079afcb3abab28e9a32&ceac4a. doi:10.1016/j.fcr.2017.11.005
- Webster, J. R., Stewart, R. M., Knoepp, J. D., & Jackson, C. R. (2019). Effects of instream processes, discharge, and land cover on nitrogen export from southern Appalachian Mountain catchments. *Hydrological Processes*, 33(2), 283-304. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057498485&doi=10.1002%2fhyp.13325&partnerID =40&md5=f3dbe3a227527181ff01ddf4bc120e16. doi:10.1002/hyp.13325

Wedow, J. M., Yendrek, C. R., Mello, T. R., Creste, S., Martinez, C. A., & Ainsworth, E. A. (2019). Metabolite and transcript profiling of Guinea grass (Panicum maximum Jacq) response to elevated [CO <inf>2</inf>] and temperature. *Metabolomics*, 15(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063500043&doi=10.1007%2fs11306-019-1511-8&

partnerID=40&md5=ce9b14fa56566ce4d8a64e3d010745f7. doi:10.1007/s11306-019-1511-8 Wegner, B. R., Chalise, K. S., Singh, S., Lai, L., Abagandura, G. O., Kumar, S., ... Jagadamma, S. (2018). Response of soil surface greenhouse gas fluxes to crop residue removal and cover crops under a corn-soybean rotation. *Journal of Environmental Quality*, 47(5), 1146-1154. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055450662&doi=10.2134%2fjeq2018.03.0093&par

https://www.scopus.com/inward/record.uri/eid=2-s2.0-85055450662&doi=10.2134%2tjeq2018.03.0093&pa tnerID=40&md5=0b5c21e6e542b270178d6f0320bd81a5. doi:10.2134/jeq2018.03.0093 Wei, X., Winkler, R., & Sun, G. (2017). Forest cover change, climate variability, and hydrological responses.

Kerker, A., Winker, A., & Sun, G. (2017). Forest cover Grange, climate variability, and hydrological responses. Ecohydrology, 10(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015220675&doi=10.1002%2feco.1847&partnerID= 40&md5=bedc8692800d54f92c131b0af9b2c764. doi:10.1002/eco.1847

Weintraub, P. G., Scheffer, S. J., Visser, D., Valladares, G., Correa, A. S., Shepard, B. M., . . . Metzler, H. B. (2017). The invasive liriomyza huidobrensis (Diptera: Agromyzidae): Understanding its pest status and management globally. *Journal of Insect Science*, 17(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029668262&doi=10.1093%2fjisesa%2fiew121&par

tnerID=40&mdS=3720a46ade9f815c5d685ac49fde70a6. doi:10.1093/jisesa/iew121 Weise, D. R., Fletcher, T. H., Cole, W., Mahalingam, S., Zhou, X., Sun, L., & Li, J. (2018). Fire behavior in

chaparral–Evaluating flame models with laboratory data. Combustion and Flame, 191, 500-512. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042876719&doi=10.1016%2fj.combustflame.2018.

116

02.012&partnerID=40&md5=161692dfce81b5ac5d466b7c49f78731. doi:10.1016/i.combustflame.2018.02.012

- Wenninger, A., Hollingsworth, T., & Wagner, D. (2019). Predatory Hymenopteran Assemblages in Boreal Alaska: Associations with Forest Composition and Post-Fire Succession. *Ecoscience*, *26*(3), 205-220. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066743297&doi=10.1080%2f11956860.2018.15644 84&partnerID=40&md5=8db33df2eee9352b97dc5b46a283b45e. doi:10.1080/11956860.2018.1564484
- Westbrook, J. K., & Eyster, R. S. (2018). Atmospheric environment associated with animal flight. In Aeroecology (pp. 13-45).
- Wetherington, M. T., Jennings, D. E., Shrewsbury, P. M., & Duan, J. J. (2017). Climate variation alters the synchrony of host–parasitoid interactions. *Ecology and Evolution*, 7(20), 8578-8587. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85031722006&doi=10.1002%2fece3.3384&partnerID =40&md5=19d24baaf9f5f2cb4d9619f8b4652f75. doi:10.1002/ece3.3384
- White, M. J., Gambone, M., Haney, E., Arnold, J., & Gao, J. (2017). Development of a station based climate database for SWAT and APEX assessments in the US. *Water (Switzerland)*, 9(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020869552&doi=10.3390%2fw9060437&partnerID =40&md5=ab2927b5765109fc4a7159bdb3d9f4fa. doi:10.3390/w9060437
- White, R. R., & Hall, M. B. (2018). Reply to van meerbeek and svenning, emery, and springmann et al.: Clarifying assumptions and objectives in evaluating effects of food system shifts on human diets. Proceedings of the National Academy of Sciences of the United States of America, 115(8), E1706-E1708. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042197862&doi=10.1073%2fpnas.1720895115&pa rtnerlD=40&md5=737eb5d569557fea6d7a&ef0446a92c8. doi:10.1073/pnas.1720895115
- Wi, S., Ray, P., Demaria, E. M. C., Steinschneider, S., & Brown, C. (2017). A user-friendly software package for VIC hydrologic model development. *Environmental Modelling and Software*, 98, 35-53. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030482023&doi=10.1016%2fj.envsoft.2017.09.006 &partnerlD=40&md5=580ba92da68c751308f100346db2b279. doi:10.1016/j.envsoft.2017.09.006
- Wieczorek, K., Bugaj-Nawrocka, A., Kanturski, M., & Miller, G. L. (2017). Geographical variation in morphology of Chaetosiphella stipae stipae Hille Ris Lambers, 1947 (Hemiptera: Aphididae: Chaitophorinae). Scientific Reports, 7. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014928343&doi=10.1038%2fsrep43988&partnerID =40&md5=9d424ee6d6041bea91e287728720294a. doi:10.1038/srep43988

- Wienhold, B. J., Jin, V. L., Schmer, M. R., & Varvel, G. E. (2018). Soil carbon response to projected climate change in the US Western Corn Belt. *Journal of Environmental Quality*, 47(4), 704–709. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049428262&doi=10.2134%2fjeq2017.09.0379&par tnerlD=40&md5=339b3ea9510f9c2d6af7b6c1886758b. doi:10.2134/jeq2017.09.0379
- Wienhold, B. J., Vigil, M. F., Hendrickson, J. R., & Derner, J. D. (2018). Vulnerability of crops and croplands in the US Northern Plains to predicted climate change. *Climatic Change*, 146(1-2), 219-230. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019890848&doi=10.1007%2fs10584-017-1989-x& partnerID=40&md5=d0c2078ad6ddf3682d430d9dbed83663. doi:10.1007/s10584-017-1989-x
- Wigneron, J. P., Jackson, T. J., O'Neill, P., De Lannoy, G., de Rosnay, P., Walker, J. P., ... Kerr, Y. (2017). Modelling the passive microwave signature from land surfaces: A review of recent results and application to the L-band SMOS & amp; SMAP soil moisture retrieval algorithms. *Remote Sensing of Environment, 192*, 238-262. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014435143&doi=10.1016%2fj.rse.2017.01.024&par tnerlD=40&md5=862bf5216223b766912339d6f77db424. doi:10.1016/j.rse.2017.01.024

Wijewardana, C., Reddy, K. R., Shankle, M. W., Meyers, S., & Gao, W. (2018). Low and high-temperature effects on sweetpotato storage root initiation and early transplant establishment. *Scientia Horticulturae*, 240, 38-48. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047929374&doi=10.1016%2fj.scienta.2018.05.052 &partnerID=40&md5=0d9a67595644a91d9ac0828ce3d772cb. doi:10.1016/j.scienta.2018.05.052

Wilcox, K. R., Shi, Z., Gherardi, L. A., Lemoine, N. P., Koerner, S. E., Hoover, D. L., . . . Luo, Y. (2017). Asymmetric responses of primary productivity to precipitation extremes: A synthesis of grassland precipitation manipulation experiments. *Global Change Biology*, 23(10), 4376-4385. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019027127&doi=10.1111%2fgcb.13706&partnerID 298

=40&md5=b967b0ad7e95efbc41d64dade5828068. doi:10.1111/gcb.13706

- Wilcox, T. M., Young, M. K., McKelvey, K. S., Isaak, D. J., Horan, D. L., & Schwartz, M. K. (2018). Fine-scale environmental DNA sampling reveals climate-mediated interactions between native and invasive trout species. *Ecosphere*, 9(11). Retrieved from
  - $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058111585\&doi=10.1002\%2fecs2.2500\&partnerlD=40\&md5=0f5b3c76e4c990deb64ceec5ebdeed2f.doi:10.1002/ecs2.2500$
- Wilhelmi, N. P., Shaw, D. C., Harrington, C. A., Clair, J. B. S., & Ganio, L. M. (2017). Climate of seed source affects susceptibility of coastal Douglas-fir to foliage diseases. *Ecosphere*, 8(12). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039440349&doi=10.1002%2fecs2.2011&partnerID
- =40&md5=8d8de8cc0bdcafec5f375d8d01184b4e. doi:10.1002/ecs2.2011 Wilk, R. J., Lesmeister, D. B., & Forsman, E. D. (2018). Nest trees of northern spotted owls (Strix occidentalis caurina) in
  - Washington and Oregon, USA. *PLoS ONE, 13*(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048019915&doi=10.1371%2fjournal.pone.0197887 &partnerID=40&md5=88b9cdc3edc83b556969ac5c6bc99251. doi:10.1371/journal.pone.0197887
- Wilkinson, J. M., & Muck, R. E. (2019). Ensiling in 2050: Some challenges and opportunities. Grass and Forage Science, 74(2), 178-187. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063686473&doi=10.1111%2fgfs.12418&partnerlD =40&md5=18c05b19cee0a9e951998080a6800003. doi:10.1111/gfs.12418

- Williams, A., Jordan, N. R., Smith, R. G., Hunter, M. C., Kammerer, M., Kane, D. A., . . . Davis, A. S. (2018). A regionally-adapted implementation of conservation agriculture delivers rapid improvements to soil properties associated with crop yield stability. *Scientific Reports*, 8(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048022524&doi=10.1038%2fs41598-018-26896-2 &partnerlD=40&md5=292d04d6d6beb21d76616ef8df0a6e16. doi:10.1038/s41598-018-26896-2
- Williams, C. J., Snyder, K. A., & Pierson, F. B. (2018). Spatial and temporal variability of the impacts of pinyon and juniper reduction on hydrologic and erosion processes across climatic gradients in the western US: A regional synthesis. *Water (Switzerland), 10*(11). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056238221&doi=10.3390%2fw10111607&partnerl D=40&md5=564a3187a9e756ced8e9b469cb551224. doi:10.3390/w10111607
- Will-Wolf, S., Jovan, S., Nelsen, M. P., Trest, M. T., Rolih, K. M., & Reis, A. H. (2018). Lichen indices assess local climate and air quality status in the Mid-Atlantic Region, U.S.A. *Bryologist*, 127(4), 461–479. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056400154&doi=10.1639%2f0007-2745-121.4.461 &partnerlD=40&md5=7eb8b60507910befe88a17dfca0eaa14. doi:10.1639/0007-2745-121.4.461
- Wilson, C. G., Abban, B., Keefer, L. L., Wacha, K., Dermisis, D., Giannopoulos, C., . . . Papanicolaou, A. N. (2018). The intensively managed landscape critical zone observatory: A scientific testbed for understanding critical zone processes in agroecosystems. *Vadose Zone Journal*, *17*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058986988&doi=10.2136%2fvzj2018.04.0088&part nerlD=40&md5=bc4c846172a1795f299311b6350ba700. doi:10.2136/vzj2018.04.0088
- Wilson, G., Green, M., & Mack, K. (2018). Historical climate warming in the white mountains of New Hampshire (USA): Implications for snowmaking water needs at Ski Areas. *Mountain Research and Development*, 38(2), 164-171. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050190236&doi=10.1659%2fMRD-JOURNAL-D-17 -00117&partnerID=40&md5=37cbbb4dd7aaac63a30fedc5d7778aac. doi:10.1659/MRD-JOURNAL-D-17-00117

- Wilson, P. B., Streich, J. C., Murray, K. D., Eichten, S. R., Cheng, R., Aitken, N. C., . . . Mur, L. (2019). Global diversity of the Brachypodium species complex as a resource for genome-wide association studies demonstrated for agronomic traits in response to climate. *Genetics*, 217(1), 317-331. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850597973258doi=10.1534/26genetics.118.301589 &bartherID=408md5=0e9321a94712503224e20ae67735365b. doi:10.1534/2enetics.118.301589
- Winkler, D. E., Backer, D. M., Belnap, J., Bradford, J. B., Butterfield, B. J., Copeland, S. M., . . . Reed, S. C. (2018). Beyond traditional ecological restoration on the Colorado Plateau. *Restoration Ecology*, 26(6), 1055-1060. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053450387&doi=10.1111%2frec.12876&partnerlD=40&md5=a300461d7beff3ce73aa767071bcd568. doi:10.1111/rec.12876$ 

Winkler, D. E., Belnap, J., Hoover, D., Reed, S. C., & Duniway, M. C. (2019). Shrub persistence and increased grass mortality in response to drought in dryland systems. *Global Change Biology*, 25(9), 3121-3135. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066898238&doi=10.1111%2fgcb.14667&partnerlD =40&md5=f69dfd18d0fe5ce4f390081170a12ab3. doi:10.1111/gcb.14667

Winsome, T., Silva, L. C. R., Scow, K. M., Doane, T. A., Powers, R. F., & Horwath, W. R. (2017). Plant-microbe interactions regulate carbon and nitrogen accumulation in forest soils. *Forest Ecology and Management*, 384, 415-423. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84999636313&doi=10.1016%2fj.foreco.2016.10.036&partnerID=40&md5=72645086d2c42799597f0a83a6c6c3c2. doi:10.1016/j.foreco.2016.10.036

Winter, P. L., Padgett, P. E., Milburn, L. A. S., & Li, W. (2019). Neighborhood Parks and Recreationists' Exposure to Ozone: A Comparison of Disadvantaged and Affluent Communities in Los Angeles, California. *Environmental Management*, 63(3), 379-395. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061234700&doi=10.1007%2fs00267-019-01140-3 &partnerID=40&md5=8f8ad62e3fbd55ddb1b86bbaa1487e37. doi:10.1007%30267-019-01140-3 wick Mc Nexuth A. & Karsh R. (2019). Cold hordinace in tensor primit review. For prime in Prime P.

Wisniewski, M., Nassuth, A., & Arora, R. (2018). Cold hardiness in trees: a mini-review. *Frontiers in Plant Science*, 9. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054545565&doi=10.3389%2ffpls.2018.01394&part nerID=40&md5=647b7a75ebf1e5f82b2e827c46497b08. doi:10.3389/fpls.2018.01394

- Wolf, J., Asrar, G. R., & West, T. O. (2017). Revised methane emissions factors and spatially distributed annual carbon fluxes for global livestock. *Carbon Balance and Management*, *12*(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030149421&doi=10.1186%2fs13021-017-0084-y& partnerID=40&md5=61e023c02221a2565801b92243f8210c. doi:10.1186/s13021-017-0084-y
- Wolfe, D. W., DeGaetano, A. T., Peck, G. M., Carey, M., Ziska, L. H., Lea-Cox, J., ... Hollinger, D. Y. (2018). Unique challenges and opportunities for northeastern US crop production in a changing climate. *Climatic Change*, 146(1-2), 231-245. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033589217&doi=10.1007%2fs10584-017-2109-7& partnerID=40&md5=009acb5a1de9043244bf76219b22e4a0. doi:10.1007/s10584-017-2109-7
- Wolfe, J. D., Ralph, C. J., & Wiegardt, A. (2017). Bottom-up processes influence the demography and life-cycle phenology of Hawaiian bird communities. *Ecology*, 98(11), 2885-2894. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85030481549&doi=10.1002%2fecy.1981&partnerID= 40&md5=f89081077eb18d0318c04c05cecbd82f. doi:10.1002/ecy.1981
- Wondzell, S. M., Diabat, M., & Haggerty, R. (2019). What Matters Most: Are Future Stream Temperatures More Sensitive to Changing Air Temperatures, Discharge, or Riparian Vegetation? *Journal of the American Water Resources Association*, *55*(1), 116-132. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058050610&doi=10.1111%2f1752-1688.12707&pa rtnerID=40&rnd5=bf71634dd6f672e718b3786529ab63a2. doi:10.1111/1752-1688.12707
- Wood, J. D., Griffis, T. J., Baker, J. M., Frankenberg, C., Verma, M., & Yuen, K. (2017). Multiscale analyses of solar-induced florescence and gross primary production. *Geophysical Research Letters*, 44(1), 533-541. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85010705171&doi=10.1002%2f2016GL070775&partnerlD=40&md5=b1de629d139d982604fc3e6f63f2a870. doi:10.1002/2016GL070775&partnerlD=40&md5=b1de629d139d982604fc3e6f63f2a870. doi:10.1002/2016GL070775&partnerlD=40&md5=b1de629d139d82604fc3e6f63f2a870&partnerlD=40&md5=b1de629d139d860&partnerlD=40&md5=b1de629d139d8&partnerlD=40&md5=b1de629d139d8&partnerlD=40&md5=b1de629d139d8&partnerlD=40&md5=b1de629d139d8&partnerlD=40&md5=b1de629d139d8&partnerlD=40&md5=b1de629d139d8&partnerlD=40&md5=b1de629d139d8&partnerlD=40&md5=b1de62&partnerlD=40&md5=b1de62&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&md5=b1d6&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD=40&partnerlD

- Wood, T. E., González, G., Silver, W. L., Reed, S. C., & Cavaleri, M. A. (2019). On the shoulders of giants: Continuing the legacy of large-scale ecosystem manipulation experiments in Puerto Rico. *Forests*, *10*(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85063881145&doi=10.3390%2ff10030210&partnerID =40&md5=92aa5ee60124e732a527e9d520807e7a. doi:10.3390/f10030210
- Woodall, C. W., Westfall, J. A., D'Amato, A. W., Foster, J. R., & Walters, B. F. (2018). Decadal changes in tree range stability across forests of the eastern U.S. *Forest Ecology and Management*, 429, 503-510. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050658863&doi=10.1016%2fj.foreco.2018.07.049& partnerlD=40&md5=c559dade14f09a2d9f64ec648f5418bf. doi:10.1016/j.foreco.2018.07.049
- Woodbury, B. L., Gilley, J. E., Parker, D. B., & Stromer, B. S. (2018). Greenhouse gas emissions from beef feedlot surface materials as affected by diet, moisture, temperature, and time. *Transactions of the ASABE*, 61(2), 571-582. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046073784&doi=10.13031%2ftrans.12483&partner ID=40&md5=e92933d589e6f6c2d22861a02f43c885. doi:10.13031/trans.12483

- - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85010441723&doi=10.1016%2fj.catena.2017.01.019& partnerID=40&md5=cc52ec6702475506556b14ef88f0cca. doi:10.1016/j.catena.2017.01.019
- Wu, Z., He, H. S., Fang, L., Liang, Y., & Parsons, R. A. (2018). Wind speed and relative humidity influence spatial patterns of burn severity in boreal forests of northeastern China. *Annals of Forest Science*, 75(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85049143585&doi=10.1007%2fs13595-018-0749-z& partnerID=40&md5=080821d5a461edaeb2351a60e54b9c0c. doi:10.1007/s13595-018-0749-z
- Wulder, M. A., Loveland, T. R., Roy, D. P., Crawford, C. J., Masek, J. G., Woodcock, C. E., ... Zhu, Z. (2019). Current status of Landsat program, science, and applications. *Remote Sensing of Environment, 225*, 127-147. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062046213&doi=10.1016%2fj.rse.2019.02.015&par tnerlD=40&md5=c74de9112add127161456fb22bb2f405. doi:10.1016/j.rse.2019.02.015

Wunderle, J. M., & Arendt, W. J. (2017). The plight of migrant birds wintering in the caribbean: Rainfall effects in the annual cycle. Forests, 8(4). Retrieved from https://www.sco.pus.com/invard/accord.uri2aid=2-c2.0-850173716538/doi=10.3390%2ff80401158/nartner/D

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017371653&doi=10.3390\%2ff8040115&partnerlD=40&md5=04f0f0323eb4930f027a75ecefa42698. doi:10.3390/f8040115\\$ 

- Wyka, S. A., McIntire, C. D., Smith, C., Munck, I. A., Rock, B. N., Asbjornsen, H., & Broders, K. D. (2018). Effect of climatic variables on abundance and dispersal of lecanosticta acicola spores and their impact on defoliation on eastern white pine. *Phytopathology*, *108*(3), 374-383. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850421496598doi=10.1094%2fPHYTO-02-17-0065-R
- &partnerID=40&md5=95dd6f4ee50bd6cdfddd3862fab8139b. doi:10.1094/PHYTO-02-17-0065-R Wyka, S. A., Munck, I. A., Brazee, N. J., & Broders, K. D. (2018). Response of eastern white pine and associated foliar, blister rust, canker and root rot pathogens to climate change. *Forest Ecology and Management, 423*, 18-26. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044282770&doi=10.1016%2fj.foreco.2018.03.011&partnerID=40&md5=fc41310a3ab3a91cae42dd3728a04d2b. doi:10.1016/j.foreco.2018.03.011&partnerID=40&md5=fc41310a3ab3a91cae42dd3728a04d2b. doi:10.1016/j.foreco.2018.03.011&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partnerID=40&partner

- Wyka, S. A., Smith, C., Munck, I. A., Rock, B. N., Ziniti, B. L., & Broders, K. (2017). Emergence of white pine needle damage in the northeastern United States is associated with changes in pathogen pressure in response to climate change. *Global Change Biology*, 23(1), 394-405. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84977487411&doi=10.1111%2fgcb.13359&partnerID =40&md5=b51e17fbad1b20729d2cf73a3a63d993. doi:10.1111/gcb.13359
- Xia, H., Li, A., Feng, G., Li, Y., Qin, Y., Lei, G., & Cui, Y. (2018). The effects of asymmetric diurnal warming on vegetation growth of the tibetan plateau over the past three decades. *Sustainability (Switzerland), 10*(4). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045087634&doi=10.3390%2fsu10041103&partnerl D=40&md5=c105de2918878d8854a136f5015265f9. doi:10.3390/su10041103
- Xia, P. F., Zhang, G. C., Walker, B., Seo, S. O., Kwak, S., Liu, J. J., . . . Jin, Y. S. (2017). Recycling Carbon Dioxide during Xylose Fermentation by Engineered Saccharomyces cerevisiae. ACS Synthetic Biology, 6(2), 276-283. Retrieved from https://www.conu.com/inward/record.uri2aid-2-s2.0-850131575988/doi=10.1021%2facssynbio.6b0016

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013157598&doi=10.1021%2facssynbio.6b00167&partnerID=40&md5=94fbae48a6df5797d8136e0ba2bf71c2. doi:10.1021/acssynbio.6b00167

Xiao, K., Griffis, T. J., Baker, J. M., Bolstad, P. V., Erickson, M. D., Lee, X., ... Nieber, J. L. (2018). Evaporation from a temperate closed-basin lake and its impact on present, past, and future water level. *Journal of Hydrology*, 561, 59-75. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044601579&doi=10.1016%2fj.jhydrol.2018.03.059 &partnerID=40&md5=23294ddabcdfb9cc5cfd5c380d1d9051. doi:10.1016/j.jhydrol.2018.03.059

- Xu, B., Pan, Y., Plante, A. F., McCullough, K., & Birdsey, R. (2017). Modeling forest carbon cycle using long-term carbon stock field measurement in the Delaware River Basin. *Ecosphere*, 8(5). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019898300&doi=10.1002%2fecs2.1802&partnerID =40&md5=f2ce534af90db9a2dc46f6b48782ed02, doi:10.1002/ecs2.1802
- Xu, J., Zhao, B., Li, Z., Chu, W., Mao, J., Olk, D. C., . . . Wei, W. (2019). Demonstration of chemical distinction among soil 120

humic fractions using quantitative solid-state 13C NMR. Journal Of Agricultural And Food Chemistry, 67(29), 8107-8118. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85070485662&doi=10.1021%2facs.jafc.9b02269&partnerlD=40&md5=64d71dc85fc52e61590c86d4d05445f3. doi:10.1021/acs.jafc.9b02269

- Xu, R., Tian, H., Pan, S., Prior, S. A., Feng, Y., Batchelor, W. D., . . . Yang, J. (2019). Global ammonia emissions from synthetic nitrogen fertilizer applications in agricultural systems: Empirical and process-based estimates and uncertainty. *Global Change Biology*, 25(1), 314-326. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056669247&doi=10.1111%2fgcb.14499&partnerID =40&md5=87e570453c55adc2950f4cffdfbd8c8b. doi:10.1111/qcb.14499
- Yan, D., Scott, R. L., Moore, D. J. P., Biederman, J. A., & Smith, W. K. (2019). Understanding the relationship between vegetation greenness and productivity across dryland ecosystems through the integration of PhenoCam, satellite, and eddy covariance data. *Remote Sensing of Environment*, 223, 50-62. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850601759538doi=10.1016%2fj.rse.2018.12.029&par tnerID=408kmd5=6bb3a6d4950b6a8f2c00a1180babda54. doi:10.1016/j.rse.2018.12.029
- Yang, J., Ren, W., Ouyang, Y., Feng, G., Tao, B., Granger, J. J., & Poudel, K. P. (2019). Projection of 21st century irrigation water requirement across the Lower Mississippi Alluvial Valley. *Agricultural Water Management*, 217, 60-72. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062011898&doi=10.1016%2fj.agwat.2019.02.033&

https://www.scopus.com/inward/record.un?eid=2-s2.0-85062011898&doi=10.1016%2fj.agwat.2019.02.033& partnerlD=40&md5=d20b883565141993bdf822d5231dd529. doi:10.1016/j.agwat.2019.02.033 Yang, Q., Zhang, X., Abraha, M., Del grosso, S., Robertson, G. P., & Chen, J. (2017). Enhancing the soil and water

- Yang, Q., Zhang, X., Abraha, M., Del grosso, S., Kobertson, G. P., & Chen, J. (2017). Enhancing the soil and water assessment tool model for simulating N <inf>2</inf>O emissions of three agricultural systems. *Ecosystem Health and Sustainability*, 3(2). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042935684&doi=10.1002%2fehs2.1259&partnerID
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85042935684&doi=10.1002%2fehs2.1259&partnerID =40&md5=0c9dfe5bd2043461a5a52502e36ab238. doi:10.1002/ehs2.1259
- Yang, W., Feng, G., Tewolde, H., & Li, P. F. (2019). CO<inf>2</inf> emission and soil carbon sequestration from spring- and fall-applied poultry litter in corn production as simulated with RZWQM2. *Journal of Cleaner Production, 209,* 1285-1293. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057205363&doi=10.1016%2fj.jclepro.2018.10.251 &partnerID=40&md5=2c4a25416e294bf2f3bcd37587b5c0c5. doi:10.1016/f.jclepro.2018.10.251
- Yang, X., McMaster, G. S., & Yu, Q. (2018). Spatial Patterns of Relationship Between Wheat Yield and Yield Components in China. International Journal of Plant Production, 12(1), 61–71. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044329448&doi=10.1007%2fs42106-017-0007-6& partnerID=40&md5=afbcbe3c80f6b6b116e028f23e5cabe1. doi:10.1007/s42106-017-0007-6
- Yang, Y., Anderson, M. C., Gao, F., Hain, C. R., Semmens, K. A., Kustas, W. P., . . . Sun, G. (2017). Daily Landsat-scale evapotranspiration estimation over a forested landscape in North Carolina, USA, using multi-satellite data fusion. *Hydrology and Earth System Sciences, 21*(2), 1017-1037. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85013082960&doi=10.5194%2fhess-21-1017-2017& partnerlD=40&md5=a1d39bfb35f4737ca16d6dcbf755482d. doi:10.5194/hess-21-1017-2017
- Yang, Y., Saatchi, S. S., Xu, L., Yu, Y., Choi, S., Phillips, N., . . . Myneni, R. B. (2018). Post-drought decline of the Amazon carbon sink. *Nature Communications*, 9(1). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85051552701&doi=10.1038%2fs41467-018-05668-6 &partnerlD=40&md5=577872dba55569d097faa5e9896d2a84. doi:10.1038/s41467-018-05668-6
- Yasarer, L. M. W., Bingner, R. L., Garbrecht, J. D., Locke, M. A., Lizotte, R. E., Momm, H. G., & Busteed, P. R. (2017). Climate change impacts on runoff, sediment, and nutrient loads in an agricultural watershed in the lower Mississispi river basin. *Applied Engineering in Agriculture*, 33(3), 379-392. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85021784987&doi=10.13031%2faea.12047&partnerl D=40&md5=0231ca473fbafa14f2144aed628b15d3. doi:10.13031/aea.12047

Yatskov, M. A., Harmon, M. E., Barrett, T. M., & Dobelbower, K. R. (2019). Carbon pools and biomass stores in the forests of Coastal Alaska: Uncertainty of estimates and impact of disturbance. *Forest Ecology and Management*, 434, 303-317. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85058687161&doi=10.1016%2fj.foreco.2018.12.014&

partnerlD=40&md5=ab1ad2a72e9ff9fe6b494cbaee5be273. doi:10.1016/j.foreco.2018.12.014 Yeager, C. M., Gallegos-Graves, L. V., Dunbar, J., Hesse, C. N., Daligault, H., & Kuske, C. R. (2017). Polysaccharide degradation capability of Actinomycetales soil isolates from a semiarid grassland of the Colorado Plateau. Applied and Environmental Microbiology, 83(6). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014599450&doi=10.1128%2fAEM.03020-16&partnerlD=40&md5=f9a359b610b8228c717947dac688acbe. doi:10.1128/AEM.03020-16

- Yeo, I. Y., Lee, S., Lang, M. W., Yetemen, O., McCarty, G. W., Sadeghi, A. M., & Evenson, G. (2019). Mapping landscape-level hydrological connectivity of headwater wetlands to downstream waters: A catchment modeling approach - Part 2. *Science of the Total Environment, 653*, 1557-1570. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057610082&doi=10.1016%2fj.scitotenv.2018.11.23 78xpartner1D=40&md5=f532e4f12effe0c5968fa7ddb61d09ec. doi:10.1016/j.scitotenv.2018.11.237

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052692558&doi=10.1111%2fnph.15384&partnerlD =40&md5=2508c984ca018e6063fd45ec7409c430. doi:10.1111/nph.15384

Yorgey, G. G., Hall, S. A., Allen, E. R., Whitefield, E. M., Embertson, N. M., Jones, V. P., . . . Kruger, C. E. (2017). Northwest U.S. agriculture in a changing climate: Collaboratively defined research and extension priorities. *Frontiers in Environmental Science*, 5(AUG). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029667515&doi=10.3389%2ffenvs.2017.00052&partnerlD=40&md5=cf25d9bc5ded00a4cfb20c44bcb241ea.doi:10.3389/fenvs.2017.00052

Youkhana, A. H., Ogoshi, R. M., Kiniry, J. R., Meki, M. N., Nakahata, M. H., & Crow, S. E. (2017). Allometric models for predicting aboveground biomass and carbon stock of tropical perennial C<inf>4</inf> grasses in Hawaii. *Frontiers in Plant Science*, 8. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85018915473&doi=10.3389%2ffpls.2017.00650&part nerlD=40&md5=03691e3cdad356f1794e50cbc9b915a9. doi:10.3389/fpls.2017.00650

Young, D. J. N., Stevens, J. T., Earles, J. M., Moore, J., Ellis, A., Jirka, A. L., & Latimer, A. M. (2017). Long-term climate and competition explain forest mortality patterns under extreme drought. *Ecology Letters*, 20(1), 78-86. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85006341254&doi=10.1111%2fele.12711&partnerlD=40&md5=f959e7545e5e1d2f0a77c558cb0d5797. doi:10.1111/ele.12711$ 

Young, D. J. N., Werner, C. M., Welch, K. R., Young, T. P., Safford, H. D., & Latimer, A. M. (2019). Post-fire forest regeneration shows limited climate tracking and potential for drought-induced type conversion. *Ecology*, 100(2). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059957113&doi=10.1002%2fecy.2571&partnerlD=40&md5=28b3370f80df4cf2e9a04182b60543c5. doi:10.1002/ecy.2571

Young, M. K., Isaak, D. J., McKelvey, K. S., Wilcox, T. M., Campbell, M. R., Corsi, M. P., . . . Schwartz, M. K. (2017). Ecological segregation moderates a climactic conclusion to trout hybridization. *Global Change Biology*, 23(12), 5021-5023. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033977222&doi=10.1111%2fgcb.13828&partnerID

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033977222&doi=10.1111%2fgcb.13828&partnerlD =40&md5=2767687e294ea3b800b34c1fde2c8292. doi:10.1111/gcb.13828

- Young, M. K., Isaak, D. J., Spaulding, S., Thomas, C. A., Barndt, S. A., Groce, M. C., ... Nagel, D. E. (2018) Effects of Climate Change on Cold-Water Fish in the Northern Rockies. In: *Vol. 63. Advances in Global Change Research* (pp. 37-58).
- Youssef, M. A., Abdelbaki, A. M., Negm, L. M., Skaggs, R. W., Thorp, K. R., & Jaynes, D. B. (2018). DRAINMOD-simulated performance of controlled drainage across the U.S. Midwest. *Agricultural Water Management*, 197, 54-66. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85034811249&doi=10.1016%2fj.agwat.2017.11.012& partnerID=40&md5=e2d586201f6dd13dbd2963e850b30274. doi:10.1016/j.agwat.2017.11.012

Yu, M., Rivera-Ocasio, E., Heartsill-Scalley, T., Davila-Casanova, D., Rios-López, N., & Gao, Q. (2019). Landscape-Level Consequences of Rising Sea-Level on Coastal Wetlands: Saltwater Intrusion Drives Displacement and Mortality in the Twenty-First Century. Wetlands. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068192689&doi=10.1007%2fs13157-019-01138-x &partnerD=40&md5=419780b2da2f87b43a2f89a3969863e. doi:10.1007/s13157-019-01138-x

Yu, O. T., Greenhut, R. F., O'geen, A. T., Mackey, B., Horwath, W. R., & Steenwerth, K. L. (2019). Precipitation events, soil 122 type, and vineyard management practices influence soil carbon dynamics in a Mediterranean climate (Lodi, California). Soil Science Society of America Journal, 83(3), 772-779. Retrieved from https://www.scapus.com/inward/sccapus/advalation/2002/0828/ddai=10.21369/25rscai2018.00.02458

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068612883&doi=10.2136%2fsssaj2018.09.0345&partnerID=40&md5=f1f2a6c88977a627d468275623a1b2e9. doi:10.2136/sssaj2018.09.0345

- Yu, O. T., Greenhut, R. F., O'Geen, A. T., Mackey, B., Horwath, W. R., & Steenwerth, K. L. (2017). Precipitation events and management practices affect greenhouse gas emissions from vineyards in a mediterranean climate. *Soil Science Society of America Journal*, 81(1), 138-152. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85014562478&doi=10.2136%2fsssaj2016.04.0098&p artnerID=40&md5=3d290c877029bf7b1ce50f4401f1732f. doi:10.2136/sssaj2016.04.0098
- Yu, Z., Sun, G., Cai, T., Hallema, D. W., & Duan, L. (2019). Water yield responses to gradual changes in forest structure and species composition in a subboreal watershed in Northeastern China. *Forests*, *10*(3). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850638654555&doi=10.3390%2ff10030211&partnerID =40&md5=8141a7bba616717ef2cf22c99410ded9. doi:10.3390/f10030211
- Yun, K., Hsiao, J., Jung, M. P., Choi, I. T., Glenn, D. M., Shim, K. M., & Kim, S. H. (2017). Can a multi-model ensemble improve phenology predictions for climate change studies? *Ecological Modelling, 362*, 54-64. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85028499873&doi=10.1016%2fj.ecolmodel.2017.08.0 03&partnerID=40&md5=73612f405abe6791864fe9c28fb854ef. doi:10.1016/j.ecolmodel.2017.08.003
- Zalesny, R. S., Headlee, W. L., Gopalakrishnan, G., Bauer, E. O., Hall, R. B., Hazel, D. W., ... Wiese, A. H. (2019). Ecosystem services of poplar at long-term phytoremediation sites in the Midwest and Southeast, United States. *Wiley Interdisciplinary Reviews: Energy and Environment*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067451278&doi=10.1002%2fwene.349&partnerID =40&md5=b010f23bd7re2ef41c4245d34fd03ce8. doi:10.1002/wene.349
- Zecca, K., Allen, R. J., & Anderson, R. G. (2018). Importance of the El Niño Teleconnection to the 21st Century California Wintertime Extreme Precipitation Increase. *Geophysical Research Letters*, *45*(19), 10,648-"610,655". Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054686192&doi=10.1029%2f2018GL079714&partn

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85054686192&doi=10.1029%2f2018GL079714&partnerlD=40&md5=74dafd9a6b23cddec87a7f83c0e53dcb. doi:10.1029/2018GL079714

- Zettlemoyer, M. A., Prendeville, H. R., & Galloway, L. F. (2017). The effect of a latitudinal temperature gradient on germination patterns. *International Journal of Plant Sciences*, *178*(9), 673-679. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85033580651&doi=10.1086%2f694185&partnerID=4 0&md5=d0c8e3c7d809a1ee3c10d2ea444f92d6. doi:10.1086/694185
- Zhang, B., Feng, G., Ahuja, L. R., Kong, X., Ouyang, Y., Adeli, A., & Jenkins, J. N. (2018). Soybean crop-water production functions in a humid region across years and soils determined with APEX model. *Agricultural Water Management*, 204, 180-191. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85045535285&doi=10.1016%2fi.agwat.2018.03.024&

partnerID=40&md5=795560946df5974807c68063f6ac0ed3. doi:10.1016/j.agwat.2018.03.024 Zhang, F., Pan, Y., Birdsey, R. A., Chen, J. M., & Dugan, A. (2017). Seeking potential contributions to future carbon

hang, F., Pan, Y., Birdsey, K. A., Chen, J. M., & Dugan, A. (2017). Seeking potential contributions to future carbon budget in conterminous US forests considering disturbances. *Theoretical and Applied Climatology*, 130(3-4), 971-978. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-84988329662&doi=10.1007%2fs00704-016-1936-1& partnerID=40&md5=337537f8fc1fb51aa350bba00a113fe6. doi:10.1007/s00704-016-1936-1

Zhang, F., Quan, Q., Ma, F., Tian, D., Hoover, D. L., Zhou, Q., & Niu, S. (2019). When does extreme drought elicit extreme ecological responses? *Journal of Ecology*. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85068531052&doi=10.1111%2f1365-2745.13226&pa

rtnerlD=40&md5=92d24d32b0dd060d92bd7c05d2957710. doi:10.1111/1365-2745.13226 Zhang, G., Feng, G., Li, X., Xie, C., & Pi, X. (2017). Flood effect on groundwater recharge on a typical silt loam soil. *Water (Switzerland)*, 9(7). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85025457165&doi=10.3390%2fw9070523&partnerlD =40&md5=f30d40abdf9a25ef5f6c2899c7248a17. doi:10.3390/w9070523

Zhang, J., Zhang, D., Wei, J., Shi, X., Ding, H., Qiu, S., . . . Xia, Y. (2019). Annual growth cycle observation, hybridization and forcing culture for improving the ornamental application of Paeonia lactiflora Pall.In the low-latitude regions. *PLoS ONE, 14*(6). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85067513830&doi=10.1371%2fjournal.pone.0218164 &partnerID=40&md5=a8aedc0766cdb8b59abf911d125c6755. doi:10.1371/journal.pone.0218164

- Zhang, L., Qiu, Y., Cheng, L., Wang, Y., Liu, L., Tu, C., ... Hu, S. (2018). Atmospheric CO<inf>2</inf> Enrichment and Reactive Nitrogen Inputs Interactively Stimulate Soil Cation Losses and Acidification. *Environmental Science* and Technology, 52(12), 6895-6902. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047390422&doi=10.1021%2facs.est.8b00495&part
  - https://www.scopus.com/inward/record.uri/eid=2-s2.0-8504/390422&doi=10.1021%2tacs.est.8b00495&part nerlD=40&md5=fd7c5dbb56612ebb3b3e44cafba40d1d. doi:10.1021/acs.est.8b00495
- Zhang, T. Q., Zheng, Z. M., Lal, R., Lin, Z. Q., Sharpley, A. N., Shober, A. L., . . . Van Cappellen, P. (2018). Environmental indicator principium with case references to agricultural soil, water, and air quality and model-derived indicators. *Journal of Environmental Quality*, *47*(2), 191-202. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85043310198&doi=10.2134%2fjeq2017.10.0398&par tnerD=408md5=8b8348102717e4b29f3f6b56f7f69ee4. doi:10.2134/jeq2017.10.0398
- Zhang, X. X., Sharratt, B., Lei, J. Q., Wu, C. L., Zhang, J., Zhao, C., . . . Hao, J. Q. (2019). Parameterization schemes on dust deposition in northwest China: Model validation and implications for the global dust cycle. Atmospheric Environment, 1-13. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064249703&doi=10.1016%2fj.atmosenv.2019.04.0 17&partnerID=40&md5=fb3f1e7ba94e1cfa3ec806f8d27f84a1. doi:10.1016/j.atmosenv.2019.04.017 Zhang, X. X., Sharratt, B., Liu, L. Y., Wang, Z. F., Pan, X. L., Lei, J. Q., . . . Lyu, Y. L. (2018). East Asian dust storm in May
- 2017: Observations, modelling, and its influence on the Asia-Pacific region. Atmospheric Chemistry and Physics, 18(11), 8353-8371. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048811266&doi=10.5194%2facp-18-8353-2018&p
- artnerID=40&md5=1509ed71c1345584a80d10fe20ee21e1. doi:10.5194/acp-18-8353-2018 Zhang, Y., Cheng, G., Li, X., Jin, H., Yang, D., Flerchinger, G. N., ... Liang, J. (2017). Influences of Frozen Ground and Climate Change on Hydrological Processes in an Alpine Watershed: A Case Study in the Upstream Area of the Hei'he River, Northwest China. *Permafrost and Periglacial Processes, 28*(2), 420-432. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85002568462&doi=10.1002%2fppp.1928&partnerID
- =40&md5=d8a41e252d7e7e2f20bea19d19b0478d. doi:10.1002/ppp.1928 Zhang, Y., Li, W., Sun, G., & King, J. S. (2019). Coastal wetland resilience to climate variability: A hydrologic perspective. *Journal of Hydrology, 568*, 275-284. Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056271627&doi=10.1016%2fj.jhydrol.2018.10.048 &partnerID=40&md5=d4ba58848a026e19272c8b571698a4d9. doi:10.1016/j.jhydrol.2018.10.048 Zhang, Y., Li, W., Sun, G., Miao, G., Noormets, A., Emanuel, R., & King, J. S. (2018). Understanding coastal wetland
- hundy, Y., E. W., Sur, V., Mido G., Noomhea, A., Emandel, Y., et King, S. S. (2019). Onderstanding ecosidal webland hydrology with a new regional-scale, process-based hydrological model. *Hydrological Processes*, 32(20), 3158-3173. Retrieved from https://www.actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/actional.com/act

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85052844950&doi=10.1002%2fhyp.13247&partnerID=40&md5=002b18f27a808a3af8aacffa4f114708. doi:10.1002/hyp.13247

- Zhang, Y., Song, C., Band, L. E., Sun, G., & Li, J. (2017). Reanalysis of global terrestrial vegetation trends from MODIS products: Browning or greening? *Remote Sensing of Environment, 191*, 145-155. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85010281688&doi=10.1016%2fj.rse.2016.12.018&par tnerID=40&md5=8b406a1dba8ebd252576c01dfc68cb4e. doi:10.1016/j.rse.2016.12.018
- Zhang, Y. L., Li, L. J., Yao, S. H., Mao, J. D., Schmidt-Rohr, K., Olk, D. C., . . . Zhang, B. (2018). Distinct changes in composition of soil organic matter with length of cropping time in subsoils of a Phaeozem and Chernozem. *European Journal of Soil Science*, 69(5), 868–878. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050954174&doi=10.1111%2fejss.12688&partnerID =40&md5=dced07397b61f40b1b8ca16a1a7da31c. doi:10.1111/ejss.12688
- Zhang, Y. L., Yao, S. H., Cao, X. Y., Schmidt-Rohr, K., Olk, D. C., Mao, J. D., & Zhang, B. (2018). Structural evidence for soil organic matter turnover following glucose addition and microbial controls over soil carbon change at different horizons of a Mollisol. *Soil Biology and Biochemistry*, *119*, 63-73. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85041437345&doi=10.1016%2fj.soilbio.2018.01.009& partnerlD=40&md5=9ad1687a1a1cf8937b8716335eb3ffdb. doi:10.1016/j.soilbio.2018.01.009

Zhao, F., Healey, S. P., Huang, C., McCarter, J. B., Garrard, C., Goeking, S. A., & Zhu, Z. (2018). Assessing the Effects of Fire Disturbances and Timber Management on Carbon Storage in the Greater Yellowstone Ecosystem. *Environmental Management, 62*(4), 766-776. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048539852&doi=10.1007%2fs00267-018-1073-y&

124

partnerID=40&md5=b7e9faae748faf5d80010a5a0bf8a798. doi:10.1007/s00267-018-1073-y

Zhao, P., Zhou, H. J., Potter, D., Hu, Y. H., Feng, X. J., Dang, M., ... Woeste, K. (2018). Population genetics, phylogenomics and hybrid speciation of Juglans in China determined from whole chloroplast genomes, transcriptomes, and genotyping-by-sequencing (GBS). *Molecular Phylogenetics and Evolution*, 126, 250-265. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046359418&doi=10.1016%2fj.ympev.2018.04.014&partnerID=40&md5=2ce37e54360da63040782da20210c860. doi:10.1016/j.ympev.2018.04.014

- Zhou, C., Biederman, J. A., Zhang, H., Li, L., Cui, X., Kuzyakov, Y., . . . Wang, Y. (2019). Extreme-duration drought impacts on soil CO<inf>2</inf> efflux are regulated by plant species composition. *Plant and Soil*, 439(1-2), 357-372. Retrieved from
  - https://www.scopus.com/inward/record.uri?eid=2-s2.0-85064251551&doi=10.1007%2fs11104-019-04025-w &partnerlD=40&md5=4b241547a7bee646113a7248eb975391. doi:10.1007/s11104-019-04025-w
- Zhou, Q., Fellows, A., Flerchinger, G. N., & Flores, A. N. (2019). Examining Interactions Between and Among Predictors of Net Ecosystem Exchange: A Machine Learning Approach in a Semi-arid Landscape. Scientific Reports, 9(1). Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061743681&doi=10.1038%2fs41598-019-38639-y &partnerID=40&md5=769ea3853292409cf7e01436efa408f6. doi:10.1038/s41598-019-38639-y

- Zhou, Y., Xiao, X., Wagle, P., Bajgain, R., Mahan, H., Basara, J. B., . . . Steiner, J. L. (2017). Examining the short-term impacts of diverse management practices on plant phenology and carbon fluxes of Old World bluestems pasture. Agricultural and Forest Meteorology, 237-238, 60-70. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85012044122&doi=10.1016%2fj.agrformet.2017.01.0 18&partnerID=40&md5=1aebb542edd1e59509732d06fb3bf9e6. doi:10.1016/j.agrformet.2017.01.018
- Zhou, Z., Ouyang, Y., Li, Y., Qiu, Z., & Moran, M. (2017). Estimating impact of rainfall change on hydrological processes in Jianfengling rainforest watershed, China using BASINS-HSPF-CAT modeling system. *Ecological Engineering*, 105, 87-94. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85019040097&doi=10.1016%2fj.ecoleng.2017.04.051
  - https://www.scopus.com/inward/record.un/eid=2-s2.0-8501904009/8doi=10.1016%2tj.ecoleng.2017.04.051 &partnerID=40&md5=0af0d0d782976ebf6d59064569b06ef1. doi:10.1016/j.ecoleng.2017.04.051
- Zhou, Z., Ouyang, Y., Qiu, Z., Zhou, G., Lin, M., & Li, Y. (2017). Evidence of climate change impact on stream low flow from the tropical mountain rainforest watershed in Hainan Island, China. *Journal of Water and Climate Change*, 8(2), 293-302. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85020056293&doi=10.2166%2fwcc.2016.149&partne rlD=40&md5=c2af2e22aae449b6b992cd72681e5a63. doi:10.2166/wcc.2016.149

- Zhu, J., Sun, G., Li, W., Zhang, Y., Miao, G., Noormets, A., . . . Wang, X. (2017). Modeling the potential impacts of climate change on the water table level of selected forested wetlands in the southeastern United States. *Hydrology* and Earth System Sciences, 21(12), 6289-6305. Retrieved from https://www.scopus.com/inward/record.ui?eid=2-s2.0-85038359020&doi=10.5194%2fhess-21-6289-2017& partnerlD=40&md5=9d1d3e787e5c8fe2513714aad40ee188. doi:10.5194/hess-21-6289-2017
- Zhu, P., Jin, Z., Zhuang, Q., Ciais, P., Bernacchi, C., Wang, X., . . . Lobell, D. (2018). The important but weakening maize yield benefit of grain filling prolongation in the US Midwest. *Global Change Biology, 24*(10), 4718-4730. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85050908362&doi=10.1111%2fgcb.14356&partnerID =40&md5=6bfb55debcb5c1d355389a7d5627c224. doi:10.1111/gcb.14356

Zhu, P., Zhuang, Q., Archontoulis, S. V., Bernacchi, C., & Müller, C. (2019). Dissecting the nonlinear response of maize yield to high temperature stress with model-data integration. *Global Change Biology*, 25(7), 2470-2484. Retrieved from https://www.comm.com/inward/accord/wi2cid=2, a2.0, 8506542085584dai=10,11110/25cdb,145228wasta.com

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85065420855&doi=10.1111%2fgcb.14632&partnerID=40&md5=92de545bb8146532706c6924e6cc3a75. doi:10.1111/gcb.14632

- Zhu, P., Zhuang, Q., Eva, J., & Bernacchi, C. (2017). Importance of biophysical effects on climate warming mitigation potential of biofuel crops over the conterminous United States. GCB Bioenergy, 9(3), 577-590. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84978805823&doi=10.1111%2fgcbb.12370&partnerl D=40&md5=7d8beb685284b23e957a7bebc7c5cd5c. doi:10.1111/gcbb.12370
- Zielinski, W. J., Tucker, J. M., & Rennie, K. M. (2017). Niche overlap of competing carnivores across climatic gradients and the conservation implications of climate change at geographic range margins. *Biological Conservation*, 125

209, 533-545. Retrieved from

https://www.scopus.com/inward/record.uri?eid=2-s2.0-85017193323&doi=10.1016%2fj.biocon.2017.03.016 &partnerlD=40&md5=691a83b168b56e63a0d4b20192817951. doi:10.1016/j.biocon.2017.03.016

- Ziska, L. H., Blumenthal, D. M., & Franks, S. J. (2019). Understanding the nexus of rising CO<inf>2</inf>, climate change, and evolution in weed biology. *Invasive Plant Science and Management*, 12(2), 79-88. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85069296887&doi=10.1017%2finp.2019.12&partnerl D=40&md5=497653945ddf4a8dfd7a0443b842165c. doi:10.1017/inp.2019.12
- Ziska, L. H., Bradley, B. A., Wallace, R. D., Bargeron, C. T., LaForest, J. H., Choudhury, R. A., . . . Vega, F. E. (2018). Climate change, carbon dioxide, and pest biology, managing the future: Coffee as a case study. Agronomy, 8(8). Retrieved from
- https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053069075&doi=10.3390%2fagronomy8080152&p artnerlD=40&md5=ef1ebef74a89ec7148d53eb9caa37d46. doi:10.3390/agronomy8080152
- Ziska, L. H., Fleisher, D. H., & Linscombe, S. (2018). Ratooning as an adaptive management tool for climatic change in rice systems along a north-south transect in the southern Mississippi valley. Agricultural and Forest Meteorology, 263, 409-416. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85053813469&doi=10.1016%2fj.agrformet.2018.09.0 10&partnerID=40&md5=4bda9447121394ac694f0406d6287000. doi:10.1016/j.agrformet.2018.09.010
- Ziska, L. H., Makra, L., Harry, S. K., Bruffaerts, N., Hendrickx, M., Coates, F., . . . Crimmins, A. R. (2019). Temperature-related changes in airborne allergenic pollen abundance and seasonality across the northern hemisphere: a retrospective data analysis. *The Lancet Planetary Health*, 3(3), e124-e131. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85062964154&doi=10.1016%2542-5196(2819%2 930015-4&partnerID=40&md5=f2ddc80ec4dba9a765a8c875ce13ec48. doi:10.1016/S2542-5196(19)30015-4
- Zou, C. B., Twidwell, D., Bielski, C. H., Fogarty, D. T., Mittelstet, A. R., Starks, P. J., . . . Acharya, B. S. (2018). Impact of Eastern redcedar proliferation on water resources in the great plains USA- current state of knowledge. Water (Switzerland), 10(12). Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85057793035&doi=10.3390%2fw10121768&partnerl
  - https://www.scopus.com/inward/record.un/eid=2-s2.0-8505779303580a0i=10.3390%2tw101217688partneri D=40&md5=2bf10a2bb371450cb1a4bf3b2afa23be. doi:10.3390/w10121768
- Zou, Y., Wang, Y., Ke, Z., Tian, H., Yang, J., & Liu, Y. (2019). Development of a REgion-Specific Ecosystem Feedback Fire (RESFire) Model in the Community Earth System Model. *Journal of Advances in Modeling Earth Systems*, *11*(2), 417-445. Retrieved from

 $\label{eq:https://www.scopus.com/inward/record.uri?eid=2-s2.0-85061439418\&doi=10.1029\%2f2018MS001368\&partnerlD=40\&md5=cd52e1adb943eb4e31aeed2fd968eda0. doi:10.1029/2018MS001368$ 

Zurweller, B. A., Rowland, D. L., Mulvaney, M. J., Tillman, B. L., Migliaccio, K., Wright, D., . . . Vellidis, G. (2019). Optimizing cotton irrigation and nitrogen management using a soil water balance model and in-season nitrogen applications. *Agricultural Water Management*, *216*, 306-314. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-850616725098.doi=10.1016%2fj.agwat.2019.01.0118 partnerlD=408md5=2b9c77c76072743d0d19440ec7a956dd. doi:10.1016/j.agwat.2019.01.011

126

 $\bigcirc$