SUPPORTING CAREERS IN CONSERVATION: WORKFORCE TRAINING, EDUCATION, AND JOB OPPORTUNITIES

HEARING

BEFORE THE

SUBCOMMITTEE ON CONSERVATION AND FORESTRY

OF THE

COMMITTEE ON AGRICULTURE

HOUSE OF REPRESENTATIVES

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SUPPORTING CAREERS IN CONSERVATION: WORKFORCE TRAINING, EDUCATION, AND JOB OPPORTUNITIES

WEDNESDAY, MAY 25, 2022

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON CONSERVATION AND FORESTRY,
COMMITTEE ON AGRICULTURE,
Washington, D.C.

The Subcommittee met, pursuant to call, at 1:02 p.m., via Zoom, Hon. Abigail Davis Spanberger [Chair of the Subcommittee] presiding.

Members present: Representatives Spanberger, Pingree, Kuster, O'Halleran, Panetta, Correa, Schrier, LaMalfa, DesJarlais, and Moore.

Staff present: Paul Babbitt, Lyron Blum-Evitts, Prescott Martin III, John Busovsky, Patricia Straughn, Erin Wilson, Faisal Siddiqui, and Dana Sandman.

OPENING STATEMENT OF HON. ABIGAIL DAVIS SPANBERGER, A REPRESENTATIVE IN CONGRESS FROM VIRGINIA

The CHAIR. This hearing of the Subcommittee on Conservation and Forestry entitled, *Supporting Careers in Conservation: Workforce Training, Education, and Job Opportunities,* will come to order.

Welcome, and thank you for joining today's hearing. After brief opening remarks, Members will receive testimony from our witnesses today, and then the hearing will be open to questions.

Good afternoon. I would like to welcome you to today's hearing focused on how this Committee and USDA can work with partners to better build and support a pipeline for careers in the conservation space, including at NRCS. I am looking forward to hearing from our witnesses about the work they are doing, the needs they see, and the opportunities we have to encourage careers in the conservation workforce.

Our robust conservation workforce plays a critical role in helping America's growers, producers, and forest landowners implement conservation practices, practices that not only have improved environmental outcomes but also have improved their operations' bottom lines through increased crop quality, better yields, and other co-benefits. Since the 1930s, NRCS has provided producers with technical support and financial assistance to achieve the benefits of a healthy and productive landscape. In 2019 alone, NRCS and its partners worked with more than 500,000 producers, ½ million pro-

ducers, on more than 43 million acres to build conservation plans and implement practices that increase production, reduce input costs, conserve natural resources, and protect wildlife habitat. Together, these actions not only have a positive impact on farms but also on their neighbors, their watersheds, and the entire U.S. population through well-documented environmental benefits, including improved water quality through the reduction of runoff, increased resilience of the land against drought in dry years, and reduced carbon dioxide emissions in the environment through the sequestration of carbon from healthier soils.

As we continue rebuilding our economy and finding solutions to the climate crisis, voluntary conservation programs can play a critical role in reducing our carbon footprint, making our food supply chains more resilient while growing our economy, especially in rural communities. But it takes a qualified workforce to make that happen. While farmers and producers stand ready to play their part in conservation, attrition in on-the-ground staff has reduced landowners' opportunities to learn from trained technical assistance providers who provide site-specific solutions to implement conservation practices effectively. Consider this: Between 2004 and 2019, staffing levels at NRCS have declined 24 percent. Unlike many other Federal agencies, nearly all NRCS staff or 98 percent are located outside of Washington, D.C. and, as such, attrition in NRCS's ranks is felt disproportionately by those who are seeking to implement conservation practices on their land.

Farmers are the original conservationists and play a critical role in helping to safeguard our environment. In 2018, Congress reaffirmed the importance of voluntary incentive-based conservation in the farm bill by maintaining robust funding in the conservation title. Moving forward, it is critical that Congress adequately fund technical assistance at NRCS to ensure the effective implementation and to maximize accountability of these voluntary programs.

However, while increasing funding can help reduce attrition within the conservation workforce at NRCS, it does not reach the underlying issue of the conservation workforce shortage. Instead, I have heard directly about the fierce competition between state agencies, nonprofit technical service providers, and NRCS for the same small number of specialists in communities across my district and the country. In order to meet the needs of farmers, it is essential that we do more to attract more young Americans into this field and grow the size of this essential workforce.

Today, I am excited to hear from our witnesses who are working to build this pipeline, starting from K through 12 all the way through community colleges and land-grant universities. I am excited to hear how we can do more to retain those working in conservation already. We have seen the challenges of and the innovation sparked by a reduced workforce, and today's witnesses offer unique perspectives regarding these challenges and opportunities that will help us build a pipeline into the conservation workforce. As we look ahead to the 2023 Farm Bill, I am excited to learn more about how we can build this pipeline by meeting people where they are and making sure they have the necessary information to consider and prepare for careers in conservation.

And just yesterday, I was in my district visiting with a career and technical education program where we were honoring students who were graduating and heading off into technical careers. Throughout my district, we have programs that are starting to get set up related to conservation and agricultural-related studies, and so there is this energy on the ground. I am excited to see it in Virginia, and I look forward to learning about what is happening across the country and what we should know as we head into the 2023 Farm Bill.

[The prepared statement of Ms. Spanberger follows:]

PREPARED STATEMENT OF HON. ABIGAIL DAVIS SPANBERGER, A REPRESENTATIVE IN CONGRESS FROM VIRGINIA

Good afternoon, I would like to welcome you to today's hearing focused on how this Committee and USDA can work with partners to better build and support a pipeline for careers in the conservation space, including at NRCS. I'm looking forward to hearing from our witnesses about the work they are doing, the needs they see, and the opportunities we have to encourage careers in the conservation workforce. A robust conservation workforce plays a critical role in helping America's growers, producers, and forest landowners implement conservation practices—practices that not only have improved environmental outcomes, but also improved their operations' bottom lines through increased crop quality, better yields, and other co-benefits.

Since the 1930s, NRCS has provided producers with technical support and financial assistance to achieve the benefits of a healthy and productive landscape. In 2019 alone, NRCS and its partners worked with more than 500,000 producers—½ million—on more than 43 million acres to build conservation plans and implement practices that increase production, reduce input costs, conserve natural resources, and protect wildlife habitat.

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As we continue rebuilding our economy and finding solutions to the climate crisis, voluntary conservation programs can play a critical role in reducing our carbon footprint, making our food supply chains more resilient, while growing our economy, especially in rural communities. But it takes a qualified workforce to make that happen.

While farmers and producers stand ready to play their part in conservation, attrition in on-the-ground staff has reduced landowners' opportunities to learn from trained technical assistance providers who provide site-specific solutions to implement conservation practices effectively. Consider: between 2004 and 2019, staffing levels at NRCS have declined 24 percent. Unlike many other Federal agencies, nearly all NRCS staff, or 98 percent, are located outside Washington, D.C. As such, attrition in NRCS' ranks is felt disproportionately by those seeking to implement conservation practices on their land.

Farmers are the *original* conservationists and can play a critical role in helping to safeguard our environment. In 2018, Congress reaffirmed the importance of voluntary, incentive-based conservation in the farm bill by maintaining robust funding in the conservation title. Moving forward, it is critical that Congress adequately fund technical assistance at NRCS to ensure the effective implementation and maximize accountability of these voluntary programs.

However, while increasing funding can help reduce attrition within the conservation workforce at NRCS, it does not reach the underlying issue of the conservation workforce shortage. Instead, I have heard directly about the fierce competition between state agencies, nonprofit technical service providers, and NRCS for the same small number of specialists in communities across my district and the country. In order to meet the needs of farmers, it is essential that we do more to attract more young Americans into this field and grow the size of this essential workforce.

Today, I am excited to hear more from our witnesses who are working to build this pipeline starting from K–12 all the way through our community colleges and

land-grant universities. I am also excited to hear how we can do more to retain those working in conservation already.

We have seen the challenges of, and innovations sparked by, a reduced workforce. Today's witnesses offer unique perspectives regarding these challenges and opportunities that will help us build a pipeline into the conservation workforce. As we look ahead to the 2023 Farm Bill, I am excited to learn more about how we can build this pipeline by meeting people where they are and making sure they have the necessary information to consider and prepare for careers in conservation.

The CHAIR. So with that, I would now like to welcome the distinguished gentleman, the Ranking Member, Mr. LaMalfa, for any opening remarks that he would like to make.

OPENING STATEMENT OF HON. DOUG LAMALFA, A REPRESENTATIVE IN CONGRESS FROM CALIFORNIA

Mr. LAMALFA. Well, thank you, Madam Chair. I hope you are doing well. We are out here on the West Coast where it is already getting hot, but thanks for this opportunity for having today's hearing and hopefully meet the goals of this issue.

So we are talking about in the farm bill where we are going to have a heavy lift next year getting that done, so I am glad we are getting ahead of it with hearings on many aspects.

Title II of the farm bill provides farmers, ranchers, and landowners with a variety of programs and tools to engage in voluntary incentive-based conservation activities. Some of them work very well in rice country where I live. These management activities stress various natural resources concerns and are really a win-win for both the producer, as well as environmentally, as benefits to both are indeed well-established.

Under the 2018 Farm Bill, the conservation title provides over $6 billion in funding for these programs each year. This funding supports working lands programs such as the EQIP, the CSP, the Regional Conservation Partnership Program. It supports nonworking land such as the CRP program and the Ag Conservation and Easement Program. In my home State of California, we continue to see the value of voluntary conservation and the great need for increased land management. Conservation activities and active management directly improve water and soil quality and encourage wildlife habitat and could help restore forest lands after wildfires, something we desperately need as the fires in this area are in the six-digit range in acres, the Dixie Fire just under 1 million last year, 1 million acres. We are far behind on this, so I hope that these programs, as well as the increased employment, can kick in and really help get us fast-forward on putting these lands back to something that I think the American people would like.

So indeed, wildfires in crisis this year already. We have had several fires in the open space areas just in my district. Thankfully, they are not in the forest yet, but with the north wind and such, it is indeed a threat all the time, and I hold my breath as to what is coming here later this year.

So we need every tool we can in order to help battle this. For example, in one of my counties from north Siskiyou County to Butte Valley south, the Joint Chiefs' Landscape Restoration Partnership project will assist private forest owners in treating acres adjoining public lands. In Modoc County, NRCS has been removing juniper trees in a multiyear project to improve sage grouse habitat and

grazing for local ranchers post-fire. NRCS has worked with ranchers installing new water sources, notably, in Butte County where the Camp Fire, meaning the Paradise area, damaged what is known as the Miocene Canal.

So indeed, on forest restoration, we are getting ahead of the curve so we don't have such devastating fires. As I mentioned with the sage grouse situation up there, the sage grouse at any moment could be listed, which will take a lot of ability away to manage lands and for ranchers to actually do their good work in conjunction with that.

So I have a lot more I could say here, but I think I would like to get started with our witnesses here. So, I look forward to the discussion today and the opportunity for training the next generation of technical assistance providers is a big one. It is important that we meet the objectives of these conservation plans, and we need the people to do that, so it is the importance of indeed bringing more people into place.

So I would like to welcome all of our witnesses here today and say thank you for joining us. I would also like to say thanks specifically to Tracy Schohr, who I will make the introduction for in a little bit, and for her for sharing her story with us.

So, Madam Chair, I will yield back. Thank you.

The CHAIR. Thank you very much, Mr. LaMalfa.

The chair would request that other Members submit their opening statements for the record so witnesses may begin their testimony and to ensure that there is ample time for questions.

I am pleased to welcome our panel of witnesses to the Agriculture Committee today and the Subcommittee on Conservation and Forestry. Our first witness today is Mr. Michael Crowder, who is the President of the National Association of Conservation Districts. Mr. Crowder, I look forward to your first time testifying before our Subcommittee. You have 5 minutes for your opening statements, and there will be a clock that appears on the screen. But in these virtual scenarios, I tend to yield to towards being a bit more generous with time in case you are keeping track of your comments and not the clock. But, Mr. Crowder, I open it up to you, sir. Please go ahead.

STATEMENT OF MICHAEL CROWDER, PRESIDENT, NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS, WASHINGTON, D.C.

Mr. CROWDER. Thank you, Chair Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee. Thank you for the opportunity to join you today to discuss the challenges currently facing the conservation workforce and opportunities to address and overcome these issues. My name is Michael Crowder, and I serve as President of the National Association of Conservation Districts and have been the general manager of the Barker Ranch in eastern Washington State for 22 years and have been a partner of my family's third-generation farm in Indiana since 2002. I have also served as an adjunct professor at Washington State University Tri-Cities where I taught graduate- and undergraduate-level classes in wildlife science, ecology, and wetland restoration. I have spent my entire career working on conservation, agriculture, and wildlife

science issues, and I am very proud of Barker Ranch's summer internship program, which provides real-world experience and college credit for young men and women working in conservation practices. I take a lot of pride in my efforts to prepare the next generation of conservation leaders, and I am particularly proud to serve as NACD's President and work with local conservation districts at the local, state, Tribal, and national levels.

NACD represents America's 3,000 conservation districts across the nation and the 17,000 men and women who serve on their governing boards, as well as their state and Territory associations. Conservation districts are local units of government that coordinate with many partners at all levels to help millions of cooperating landowners and operators implement conservation practices.

Producers are on the frontlines of ensuring global food security, as well as protecting our country's natural resources. Our conservation workforce plays a critical role in achieving this goal by providing producers the resources and assistance necessary to implement effective conservation practices. NRCS works with partners such as conservation districts to implement critical USDA working lands conservation programs. These programs provide resources and support for producers to conserve the environment, protect water quality, and improve soil health. Unfortunately, only about ⅓ of USDA working lands conservation programs applications are approved each year. As demand for conservation grows, resources and staff are often stretched thin, negatively affecting their ability to implement conservation programs and staff morale.

NACD has asked Congress to include at least $1.2 billion for NRCS's conservation operations budget in the Fiscal Year 2023 spending bill. This funding would allow USDA to hire staff, better administer conservation programs, and provide critical technical assistance. However, funding alone will not resolve all the challenges facing our conservation workforce. We are not cultivating the next generation of workers at the scale required to meet our goals and keep pace with attrition. From elementary school to colleges and beyond, we need to inspire, educate, and provide more opportunities for the next generation to enter the conservation workforce.

NACD is proud to be taking action to achieve this goal. Each year, NACD works closely with the National Conservation Foundation to manage Envirothon, an international competition between 25,000 high school students across the United States and Canada to find creative solutions to complex natural resource issues. NACD also partners with Ag Future of America; Minorities in Agricultural, Natural Resources, and Related Sciences; NRCS; and the Forest Service to host the Sustainability Institute. This workshop provides students with important professional development opportunities and pathways to conservation careers.

NACD is working closely with the NRCS to develop an education program to prepare underrepresented high school and college students for conservation careers. We also support NRCS's Pathways Program, which offers internships, fellowships, and other opportunities to inspire and prepare the next generation of conservation leaders.

Although NACD and other conservation advocates have taken steps to address this growing issue, we recognize that there is much more left to do. Providing additional educational opportunities, introducing students to conservation careers, bolstering training programs, and increasing compensation for conservation professionals are just some of the things we need to make progress on if we are going to tackle this challenge. I look forward to working with our partners and Members of this Subcommittee to support those efforts.

Thank you for the opportunity to participate in this hearing, and I look forward to your questions. Thank you.

[The prepared statement of Mr. Crowder follows:]

PREPARED STATEMENT OF MICHAEL CROWDER, PRESIDENT, NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS, WASHINGTON, D.C.

Chair Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee—thank you for the opportunity to join you today to discuss the challenges currently facing the conservation workforce and opportunities to address and overcome these issues.

My name is Michael Crowder and I serve as the President of the National Association of Conservation Districts (NACD). I have been the General Manager of Barker Ranch in eastern Washington State for 22 years, since graduating from Purdue University with a master's degree in wildlife science and a bachelor's degree in natural resources and environmental science. I have been a partner of my third-generation family farm in Indiana since 2002, and I also own farmland and conservation easements in Illinois.

I have spent my entire career working on conservation, agriculture, and wildlife science issues. On Barker Ranch, we work very closely with the Natural Resources Conservation Service (NRCS) on wetland conservation easements and restoring wildlife habitat, as well as other practices such as prescriptive grazing, riparian fencing, irrigation water management, and many more. I served as an Adjunct Professor at Washington State University Tri-Cities for 8 years and taught classes in wildlife science, ecology, and wetland restoration at both graduate and undergraduate levels. On Barker Ranch, I am very proud of our summer internship program that is receiving national attention for training and providing real-world experience for young men and women in wetland and waterfowl habitat management. This year, we have six summer interns from five different colleges from across the nation. I am honored to serve as the President of NACD, and I am especially proud of the many years I have dedicated to working with conservation districts at the local, state, Tribal, and national levels.

NACD represents America's 3,000 conservation districts and the 17,000 men and women who serve on their governing boards, as well as their respective state and territory associations. Conservation districts are local units of government established under state law to carry out natural resource management programs at the local level. Districts work closely with Federal and state conservation agencies to help millions of cooperating landowners and operators protect land and water resources across the United States. NACD's mission is to promote voluntary conservation and the responsible management of natural resources on all lands by supporting locally led conservation districts and their associations through grassroots advocacy, education, and partnerships. We do this in close coordination with our national partners at NRCS, the National Association of State Conservation Agencies (NASCA), the National Conservation District Employees Association (NCDEA), and the National Association of Resource Conservation and Development Councils (NARC&DC).

I sincerely appreciate the Subcommittee's leadership in championing voluntary, locally led conservation to improve our country's soil, forests, air, and water, and to mitigate the increasingly harmful effects of climate change.

Producers across the nation are on the front lines of ensuring global food security and protecting our country's land, water, and other natural resources for future generations. Conservation districts play a critical role in achieving this goal by providing producers with technical assistance, resources, and tools to implement effective conservation practices on their lands. Conservation district professionals are trusted advisors within their local communities and play a key role in educating producers, facilitating the conservation planning process, and working with pro-

ducers to design and implement the most effective conservation systems for their operations. These proven conservation practices—such as cover cropping, nutrient management, and forest stand improvement—can increase production, enhance resilience, and improve biodiversity, land, and water quality in communities across the country.

Conservation districts are relied upon by USDA to administer conservation programs and to help people in their local communities implement conservation practices. Due to the pandemic, the last 2 years have been particularly difficult for many conservation professionals. In response to the challenges presented by COVID–19, our conservation workforce adopted innovative approaches to reach producers and support conservation in their communities.

Our communities and conservation professionals are also experiencing an increasing number of devastating extreme weather events across the country, including hurricanes, tornados, droughts, wildfires, and floods. Conservation districts, in collaboration with Federal and local partners, have played a key role in helping communities respond to these disasters and build resilience against future extreme weather.

The United States Department of Agriculture's (USDA) Natural Resource[s] Conservation [Service] (NRCS) staff, in coordination with partners such as conservation districts, implement critical USDA working lands conservation programs, like the Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP). These programs provide resources that allow farmers, foresters, and ranchers to conserve land and water, protect water quality, and improve soil health. NRCS employees often work hand-in-hand with conservation district staff to inform producers about conservation opportunities, develop conservation plans, and ultimately help landowners implement effective conservation practices.

As producers face growing environmental challenges and uncertain markets, these conservation programs are increasingly utilized to bolster resilience, support the economic viability of family farms, and implement climate-smart conservation practices. Unfortunately, across the United States, only about ⅓ of EQIP and CSP applications are approved each year because of limited funding.

As producer demand for conservation grows, resources and staff for our Federal and local conservation workforces are often stretched thin. Over the past decade, USDA and their conservation partners have struggled to keep staffing levels on pace with attrition. Although NRCS has made progress by adding 3,000 workers over the past 2 years, there remain critical staff shortages at NRCS. This capacity issue has a very real impact on the administration of conservation programs, conservation planning, and producers' access to technical assistance, as well as staff morale.

Conservation staffing concerns also extend beyond [NRCS]. Other state, local, and private conservation professionals, including conservation districts, often struggle to reach and maintain adequate staffing levels. A 2021 Soil and Water Conservation Society poll of 1,715 public and private conservation practitioners found that 90 percent of respondents reported that a lack of conservation practitioners negatively impacts conservation momentum. 78 percent agreed that a lack of field staff reduces an organizations' capacity to get conservation on the ground.

USDA's Fiscal Year (FY) 2023 budget proposal requests a $41 million increase to secure 535 new NRCS staffers. The budget proposal also requests more than $1 billion for NRCS' Conservation Operations, which would allow NRCS to hire additional staff, ensure that staff are adequately trained, and provide conservation technical assistance to more producers across the country. It is critical that Congress passes an FY 2023 spending bill that increases funding for NRCS to hire and onboard additional employees. It is also important that USDA is provided with the direct hire authority needed to maintain adequate staffing levels.

NACD has asked Congress to include at least $1.2 billion for NRCS' Conservation Operations. An increase in funding for NRCS' Conservation Operation will allow USDA to hire additional staff to more effectively administer oversubscribed farm bill conservation programs and provide producers with additional support. This funding also helps key partners, such as conservation districts, get more conservation on the ground. Districts conduct substantial outreach and educate cooperating producers on the benefits of conservation and help them access farm bill programs. They also walk the land with producers to provide the personalized technical assistance needed to develop conservation plans, and design and implement practices.

However, funding alone will not resolve all the challenges facing our conservation workforce. As conservation professionals increasingly retire from or leave their positions, there is growing concern that the United States is not cultivating the next generation of this workforce at the scale required to meet our conservation goals.

We need to inspire, educate, and provide more opportunities for the next generation to enter the conservation workforce. From elementary school to college—we

need young people to understand the importance of conservation and provide them with the requisite tools and pathways to secure conservation careers.

NACD is already taking action to bolster the conservation workforce pipeline.

Each year, more than 25,000 high school students from across the United States, Canada, and China participate in Envirothon, which includes a competition to find creative solutions to complex environmental and natural resource issues. NACD works closely with the National Conservation Foundation to manage the Envirothon program, which provide students with hands-on outdoor field experiences, opportunities to engage with their local communities, education in environmental disciplines, and information to pursue conservation careers. The Envirothon also facilitates direct engagement between students and environmental and natural resource professionals, which helps students understand career opportunities. NACD is excited for the 2022 Envirothon competition in July, which will be hosted by the Ohio Federation of Soil and Water Conservation Districts in Oxford, Ohio.

For the past several years, NACD has partnered with Agriculture Future of America; Minorities in Agriculture, Natural Resources, and Related Sciences; NRCS; and the U.S. Forest Service (USFS) to raise awareness among college students about careers in conservation. Along with our partners, we have hosted career workshops for undergraduate students showcasing careers in conservation, agriculture, and natural resources management. Up to 50 college students are invited to participate in these workshops, which focus on professional development and allow students to engage with professionals from conservation districts, state conservation agencies, private companies, and Federal resource management partners like NRCS and the USFS. NACD was pleased to welcome a new class of 50 students to this year's AFA–NACD Sustainability Institute, which was held February 13 to 15.

NACD strongly supports paid student internship programs—at both NRCS and conservation districts—to supplement relevant coursework. Retirement drives attrition in the conservation workforce, which will require training and hiring a significant number of younger people to address. We cannot recruit and onboard recent graduates quickly enough. While both NRCS and districts provide substantial on-the-job training, we have seen that students with real-world experience better understand producers' needs and are more productive from the start. We must bolster the student recruitment pipeline in order to effectively build capacity and deliver high quality service and technical assistance.

NACD is also working closely with NRCS to develop an education program to prepare underrepresented high school and college students' for NRCS conservation careers. The program will promote NRCS and conservation districts as employers of choice for diverse populations and develop future leaders in agriculture and conservation. We are excited to continue working with NRCS and stakeholders to develop this initiative. NACD also works to support NRCS' Pathways Programs, which offer internships, development opportunities, and fellowships to inspire and prepare the next generation of conservation leaders.

Although NACD has taken steps to address this growing issue, we recognize that there is much more left to do. Inspiring young children to become passionate about conservation, providing additional education opportunities, introducing students to conservation careers, bolstering training programs, and increasing compensation for conservation professionals are just some of the things we need to make progress on if we are going to tackle this challenge.

Many of the other witnesses testifying today are taking big steps to prepare the next generation of conservation workers, and I look forward to working with them and Members of this Subcommittee to support those efforts. The future of our country's land and natural resources are depending on us.

Thank you for the opportunity to participate in this hearing, and I appreciate the opportunity to submit written testimony.

The CHAIR. Thank you very much, Mr. Crowder.

Now, our second witness today is Mr. Shane O'Neill, the Forest Industry Business Development Manager at the School of Forest Resources of the University of Maine, who is testifying on behalf of the Association of Public and Land-grant Universities. And I am excited to learn more about your work regarding workforce resiliency.

Mr. O'Neill, you have 5 minutes.

STATEMENT OF SHANE R.C. O'NEILL, FOREST INDUSTRY BUSINESS DEVELOPMENT MANAGER, UNIVERSITY OF MAINE; MEMBER, ASSOCIATION OF PUBLIC AND LAND-GRANT UNIVERSITIES, ORONO, ME

Mr. O'NEILL. Good afternoon, Chair Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee, especially Maine's Representative Pingree. My name is Shane O'Neill, and I serve as the Forest Industry Business Development Manager at the University of Maine, an R1 research university, the state's land, sea, and space grant, and a proud member of the Association of Public and Land-grant Universities. Thank you for the opportunity to testify today on an issue of great importance to our state.

Currently, Maine's forest products industry directly employs more than 13,000 people, but the nature of our industry and the jobs it supports is rapidly changing, and so too must our strategies for developing our future and incumbent workforce. Public perceptions and attitudes demonstrate a disconnect from the reality of modern forestry. Many people view forest management, harvesting, and products manufactured as ecologically detrimental and requiring low-tech, high-exertion labor. In reality, the engine of the modern forest economy is knowledge and innovation. How we manage our forest resources and extend their product applications will require new practices, techniques, and be technology-driven. Accelerating innovation in forest products and training a skilled workforce which meets the current and emerging needs of these new products and practices is key to meeting the increasing global demand for low-carbon materials, chemicals, and fuels that can come from our forests.

To build from our transitional assets and strengths and strategically transition to an entire forest products sector for local sustainability and global growth, in 2016 a unique cross-sector collaboration called Forest Opportunity Roadmap Maine, known as FOR/Maine, was initiated between industry, communities, government, education, and nonprofits with the support from the U.S. Economic Development Administration and our main Congressional delegation. Not surprising, preparing the workforce for the future forest products economy is one of the primary goals identified by FOR/Maine. As the largest generator of graduates in the state, a university can directly impact the size and skill of the sector's workforce.

To inform how we specifically do this, I joined with university colleagues in developing the first-of-its-kind forest industry workforce development strategy for our state. Our research determined that by 2035, 37 percent of Maine's current workforce in the forest economy, 5,000 people, will be at or beyond retirement age. Furthermore, as we transition to new or emerging technologies, we will require an additional 2,600 positions.

In a separate UMaine study, surveyed forest products firms noted a strong need for employee soft skills, along with communication, database decision-making, and digital skills. Professional development strategies must include both the technical and soft skills.

To meet this need, our report recommends the development of workforce pipelines through six strategic actions, many of which may be relevant to your own districts and states for this and other

traditional industries. These actions are detailed in my written testimony and linked report,* but I would like to highlight a few key points, including implementing a coordinated marketing and branding campaign showcasing career opportunities in the sector to counter public misperceptions, fostering greater education, outreach, and awareness of forest sector opportunities with secondary school students, career changers, and underrepresented populations and working with rural communities on placemaking to support workforce attraction and retention.

To advance these actions and further scale and accelerate the FOR/Maine efforts, UMaine is currently leading our coalition in pursuing EDA Build Back Better Regional Challenge funding to develop a northern forest bioeconomy cluster and recently submitted our phase II proposal.

Our work and the workforce we are developing together has never been more essential to Maine and applicable to our nation's ability to sustainably manage and utilize our forest resources; mitigate forest fire risks and invasives, sequester carbon; improve air, water, and habitat; and protect the economic foundation and identity of many of our rural communities.

In closing, I would like to again thank the Committee and APLU for this opportunity to speak today and for your interest and support of our nation's forests and dependent citizens and communities. I look forward to answering your questions. Thank you.

[The prepared statement of Mr. O'Neill follows:]

PREPARED STATEMENT OF SHANE R.C. O'NEILL, FOREST INDUSTRY BUSINESS DEVELOPMENT MANAGER, UNIVERSITY OF MAINE; MEMBER, ASSOCIATION OF PUBLIC AND LAND-GRANT UNIVERSITIES, ORONO, ME

Good afternoon, Chair Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee. My name is Shane O'Neill, and I serve as the Forest Industry Business Development Manager at the University of Maine: an R1 research university; the state's land, sea, and space grant; and a proud member of the Association of Public & Land-grant Universities (APLU), which helped invite me here.

Thank you for the opportunity to testify on workforce challenges and opportunities in the forestry and conservation sectors, an issue of great importance to our state, which is nearly 90% forested—a number relatively unchanged since European settlement. Since then, Maine's forest has provided an ever-evolving suite of products of the highest quality to the world, as has our nearly 3,500 miles of coastline. The past and future health of Maine's rural communities is highly dependent on our so-called "heritage industries": farming, fishing, and forestry. Leveraging the vast natural resources from our fields, woods, and waters to sustain these special places through these sectors relies entirely upon our ability to innovate and access to skilled human capital.

Currently, Maine's forest products industry employs more than 13,000 people across the state. But the nature of the industry, and the jobs it supports, is rapidly changing—in great part through data-driven modernization, application of AI and increasingly sophisticated technologies—and so too must our education and training practices of our future and incumbent workforce.

Three key factors have converged over the last few decades that created the urgency, and opportunity, to transition to our next phase: a sustainable forest bioeconomy. They are not unique to Maine, nor are our strategies for moving forward. First, the impacts of climate change on forest health are increasingly evident, whether it is through temperature, drought, fire, invasive pests, muddy roads from early thaws that prevent passage of logs and equipment or heavy rain events. How we manage our forest resources and extend their application will require new prac-

*__Editor's note:__ the report is retained in Committee file and is available at *https://formaine.org/wp-content/uploads/2021/07/FORMaine-Workforce-Report-Final_Revised_06.2021.pdf*.

tices, techniques and be technology driven. Second, the transition to a digital information age has drastically reduced the demand for print and graphic paper. Mills that couldn't adapt to these changing markets closed, causing their workers—more than 7,600 over the last 20 years just in Maine—to lose their livelihoods. Third, there is a growing understanding that sustainably managed forests and their products are a pathway to reduce carbon emissions, both in sequestration in a growing forest, and storage in long life cycle forest products. Adapting the management of our forests and advanced products manufacturing has become more technically intensive with increasing processing automation, advanced material science and engineering, remote sensing, machine learning modeling, and growth forecasting using advanced artificial intelligence systems.

From these realizations and changing markets, exciting opportunities are emerging that if we strategically partner, invest, and innovate, will ultimately diversify, strengthen, and sustain the forest economy and the communities dependent upon it. Accelerating innovation in forest products and training a skilled workforce which meets the current and emerging needs of these new products and practices is key to meeting the increasing global demand for low-carbon materials, chemicals, and fuels that can come from forests

Currently, public perceptions and attitudes demonstrate a disconnect from the reality of modern forestry. Many people view forest management, harvesting, and products manufacture as ecologically detrimental, and requiring low-tech, high-exertion labor. Some of these perceptions are informed by images from long ago, where strength and brawn were the tools required to be successful, and sustainability wasn't standard practice. In reality, the engine of the modern forest economy is knowledge: utilizing technology, automation, science and engineering to increase the precision and positive impact of forest management practices and commercialize new forest-based processes and value-added products under the most sustainable and environmentally friendly means possible. For example, the University of Maine is pioneering the development and commercialization of value-added forest bioproducts manufactured from low-value forest residuals, including cellulosic nanofibrils for use in a multitude of products, biofuels such as diesel and jet fuel directly offsetting petrochemical consumption, and advanced materials including large scale 3D-printed bioproducts for use in transportation infrastructure, housing and manufacturing.

To build from our traditional assets and strengths and strategically transition our entire forest products sector through innovation and global assessment, in 2016 a unique cross-sector collaboration called *Forest Opportunity Roadmap/Maine*[1] (FOR/Maine) was initiated between industry, communities, government, education, and nonprofits with support from the U.S. Economic Development Administration and our Maine Congressional Delegation.

As a founding member of FOR/Maine with extensive expertise, broad relationships, statewide reach, and research and development capacity across the forest economy and beyond (including that supported by McIntire-Stennis Cooperative Forestry through USDA National Institute of Food and Agriculture), the University of Maine is critical to this collaboration, providing knowledge-based information and innovations to deliver on FOR/Maine's strategic objectives. And, as the largest generator of graduates in the state, we can most impact the size and skill of the workforce for this sector (and most others in Maine). To facilitate partnership and progress, the university created the position of Forest Industry Business Development Manager—the job I currently hold. By serving as a focused sector advocate with subject matter expertise and access to the full span of scientists and engineers within our system, my work plays an important role in bringing diverse stakeholders together to assess industry and community needs, and collaboratively develop solutions that address needs and include all vested voices, including those historically excluded.

Not surprisingly, preparing the workforce for the future forest products economy is one of the primary goals identified by FOR/Maine, and our high-level strategies toward this include attracting young people into the industry in our oldest-in-the-nation state; ensuring that new, replacement, and incumbent workers have the skills needed for existing jobs, and preparing the workforce for emerging products and technologies in the industry. To inform how we specifically do this, I joined colleagues from UMaine's *Margaret Chase Smith Policy Center*[2] and the University of Southern Maine *Center for Business and Economic Research*[3] to develop *the first-*

[1] *https://formaine.org/*.
[2] *https://mcspolicycenter.umaine.edu/*.
[3] *https://www.mainecber.com/*.

of-its kind forest industry workforce development strategy[4] through analysis of current and projected workforce and population trends, defining skill demands for current and emerging careers, and directed surveys and interviews with forest industry employers in the state.

Our research determined that by 2035, 37% of Maine's current forest economy workforce will be at or beyond retirement age, with the oldest workers currently concentrated in harvesting and logging. This translates to approximately 5,000 positions that will need to be filled in the next 15 years. As the older workforce exits, they take with them decades of learned experience that is not easily replicable, compelling companies to identify new ways to help transfer knowledge and train younger employees. Furthermore, as Maine transitions into newer emerging technologies, it is estimated that an additional 2,600 positions will be added. Many of these will be highly skilled, specialized STEM positions like photogrammetry, industrial engineers, process technicians, and programmers. However, it should be noted that in a recent UMaine study of 177 forest product firms referenced in our report noted a strong need for employee soft skills such as managing uncertainty, flexibility, adaptability, along with communication, data-based decision making and digital skills. Professional development must include both the technical and soft skills to increase employee success.

To meet this need, our report recommends the development of workforce pipelines through six strategic actions, many of which may be relevant in your own districts and states for this and other traditional industries:

(1) Design, prepare, and execute a coordinated marketing and branding campaign that showcases the career opportunities in forest products in Maine, as careers in the sector are often overlooked in part because of the negative publicity in recent years due to mill closures or perceptions about the types of jobs available;

(2) Foster greater education, outreach, and awareness of opportunities in the forest products sector to Maine secondary school students and advisors, leveraging the younger generation's interest in sustainability and stewardship;

(3) Cultivate out-of-state workforce pipelines and integrate with statewide attraction and recruitment efforts, including from labor pools in forest product cluster regions elsewhere, Veterans looking to resettle after their service, and those who enjoy the outdoors;

(4) Leverage existing workforce infrastructure to increase coordination and engagement and expand existing internship, apprenticeship, and training programs including through university research learning experiences and inclusion of justice or substance impacted individuals;

(5) Community placemaking is important in workforce attraction and retention including access to affordable housing and quality health care; and

(6) Maintain systems to continuously monitor and evaluate workforce conditions and requirements across the industry to be responsive in developing and adapting workforce development initiatives.

To advance these actions, and further develop and scale our FOR/Maine efforts, UMaine is currently leading our coalition in pursuing EDA Build Back Better funding to develop a Northern Forest bioeconomy cluster, and recently submitted our Phase II proposal.

Our work, and the workforce we are developing, has never been more essential to Maine and our nation's ability to sustainably manage and utilize our nation's forest resources, mitigate forest fire and invasive risks, sequester carbon, improve clean air, water, and habitat, and protect the economic foundation and identity of many rural communities.

In closing, I would like to again thank the Committee and APLU for the opportunity to speak with you today, and for your interest and support of our nation's forests and the citizens and communities reliant on its rich resources. I look forward to answering your questions.

The CHAIR. Thank you very much.

Our next witness is Mr. Keith Olander, who is the Dean of Agricultural Studies at Central Lakes College in Staples, Minnesota. Mr. Olander, you are an innovator in this space, and I appreciate

[4] *https://formaine.org/wp-content/uploads/2021/07/FORMaine-Workforce-Report-Final_Revised_06.2021.pdf.*

the opportunity to hear from you today. And I now recognize you for 5 minutes.

STATEMENT OF KEITH OLANDER, DEAN OF AGRICULTURAL STUDIES, CENTRAL LAKES COLLEGE, STAPLES, MN

Mr. OLANDER. Chair Spanberger, Ranking Member LaMalfa, and Members of the Committee, thank you for the opportunity to share my passion for agriculture and I am going to share a few of the practices we are employing to support workforce development and employer retention specific to Natural Resources Conservation Service, or NRCS.

For context, I grew up on a farm and continue to farm today. I am an agriculture education educator of 28 years with experience in high school, community college faculty, and now as program administrator. I live my life in and around agriculture and have developed a passion for workforce development to make our youth aware of the opportunities that await them in agriculture, food, and natural resources, or AFNR. Furthermore, the work continues in connecting secondary, postsecondary, and industry partners, and our work focuses around streamlining these career pathways that minimizes barriers for our youth to gain successful careers in AFNR.

Now, specific to the relationship that we had between Central Lakes College and Natural Resources Conservation Service, there are some specific practices I will go over, and I am going to cover three of them and try to break them out a little bit in an organization for you. First of all, we are enhancing college curriculum to better align the natural resource program outcomes with the NRCS employee qualifications. And really this is for on-farm production knowledge. The course work focuses on partnering concepts in natural resource management and agronomic practices on the farm in a way to develop a student's skill set that can assist farmers in problem-solving challenges for farmers who desire to both improve environmental impacts and maintain economic viability.

Second, we are providing an internship program that is a direct-hire approach of community college students directly to NRCS, and that experiences include exposure to a broad array of NRCS employee opportunities collaborating with college faculty to assure a superior college education experience.

And third, the one I want to spend just a few minutes on, is the practice where we provide professional development for early-career NRCS employees that is immersive in design. This supports employee success in connecting with farmers and improving job retention. Early results indicate that we have low confidence level in communicating with farmers about their particular operations simply due to a lack of farm literacy. All of these trainings take place on a 2,000 acre farm complex at Central Lakes College Ag and Energy Research Center.

The employees experience over 30 hours of on-farm experience that include these particular pieces: First, tillage practices, tools, equipment, and technology. The employees are driving tillage machines with current technology to learn a farmer view of things like carbon sequestration as it relates to things like reduced tillage concepts.

Second, planting operations and technology, they are describing, setting, and operating planters that are employed with GIS guidance, precision seed placement, and variable rate technology to better align the farmer profitability with environmental enhancements.

Third, they experience crop harvest operations and data output. Operating harvest equipment to view and understand the yield, mapping technologies that produce yield maps, which supports the NRCS employees' ability to match field production capacity and environmental outcomes to find precision, site-based solutions to enhance the farm's ability in improving soil health and water quality.

And the fourth component of this particular immersive training is soil health, cover crops, and livestock grazing. So this component is the idea that we educate the cover crop varieties through identification and potential adoption species.

Additionally, we have plots in place where we are able to take the employees out to places where they are planted within row crops, variable row width scenarios, and different planting times to ascertain the best outcomes for both the agronomic crop and the cover crop success.

And then finally, we demonstrate raising of cover crops that we have created an initial set of economic data with the outcomes of pairing row crop production with cover crops and livestock grazing into our system. And that was a desired outcome of the state leadership of NRCS.

So as we look to all three of these particular practices, the curriculum changes, the internships, and the professional development have had a positive impact according to our pre- and post-surveys. This includes feedback from the students in the course, the interns, and the employees that participated in the trainings. Our goal is to expand these programs with NRCS, and we hope to see the option for their staff to learn and grow in a professional setting to strengthen the agency overall.

I am also aware that through our partnerships with other community colleges in other states like the C2A3 Alliance (Community College Alliance for Agriculture Advancement), that there is interest in replicating elements of our work in their regions to serve students better and support NRCS and its mission. Currently, this type of partnership across the country is in its infancy.

Madam Chair, I appreciate the opportunity that I have had to share comments, and I look forward to answering questions.

[The prepared statement of Mr. Olander follows:]

PREPARED STATEMENT OF KEITH OLANDER, DEAN OF AGRICULTURAL STUDIES, CENTRAL LAKES COLLEGE, STAPLES, MN

Thank you, [Madam Chair], Member[s] of the Committee, for the opportunity share my passion for agriculture and a few of the practices we are employing to support workforce development and employee retention.

For context, I grew up on a farm and continue to farm to this day. I am an agriculture education educator of 28 years with experience in high school teaching, as a community college faculty, and as a program administrator. I live my life in and around agriculture and have developed a passion of workforce development to make our youth aware of the opportunities that await them in Agriculture, Food, and Natural Resources (AFNR) careers. Furthermore, the work continues in connecting our secondary, post-secondary, and industry partners. Our work focuses around stream-

lining a career pathway that minimizes the barriers for our youth to gain a successful career in AFNR.

Specific practices we are deploying to meet workforce challenges are threefold:

1. We are enhancing community college curriculum to better align natural resources outcomes with NRCS employee employment qualifications, *i.e.,*—farm production knowledge. This coursework focuses on partnering concepts in natural resource management with agronomic practices on the farm in a way to develop students skillset who can assist farmers in problem solving challenges for farmers who desire to improve environmental impacts and maintain economically viability.

1. Second, we provide an internship program that is a direct hire approach of community college students directly into NRCS experiences that include exposure to an array of NRCS employee opportunities collaborating with college faculty to assure a superior educational experience.

3. Our third practice provides professional development for early career NRCS employees that is immersive in design. This supports employees' success in connecting to farmers and job retention. Early results indicate many have a low confidence level in communicating with farmers about their particular operations due to lack of farm literacy. All of these trainings take place on a 2,000 acre complex, the Central Lakes College Ag & Energy Research Center.

    a. Employees experience over 30 hours of on-farm experiences that include:

        i. Tillage practices, tools, equipment, and technology.

            1. Driving tillage machines with current technology to learn farmer view of carbon sequestration/reduced tillage concepts.

        ii. Planting operations and technology.

            1. Describing, setting, and operating planters that are employed with GIS guidance, precision seed placement, and variable rate technology to better align farmer profitability with environmental enhancements.

        iii. Crop Harvest operations and data output.

            1. Operating harvest equipment to view and understand the yield mapping technologies that produce yield maps, which supports the NRCS employee's ability to match field production capacity with environmental outcomes to find precision site-based solutions to enhance the farms profitability and improving soil health and water quality.

        iv. Soil Health, Cover Crops, and Livestock grazing.

            1. A final component to this professional development is the education of cover crop varieties through ID, and potential adoption of species.
            2. Additionally, walking through plots where cover crops have been planted within row crops, variable row width scenarios, and different planting times to ascertain best outcomes for agronomic crop outcomes and cover crop success.
            3. Finally, we demonstrate grazing of cover crops and have created initial data on the economic outcomes of paring row crop production with cover crops and livestock grazing into that system.

All three of these practices: curriculum changes, internships, and professional development have had a positive impact based on pre/post surveys. This includes feedback for students in the course, on internship, and the employees that participate in the trainings.

Our goal is to expand this program with NRCS and we hope to see option for their staff to learn and grow in their professional setting them to strengthen the agency.

I am also aware that through our partnerships with other community colleges in other states that there is interest in replicating elements of our work in their regions to serve students better and support NRCS in its mission. Currently this type of partnership across the country is in its infancy.

[Madam Chair:] I thank you for your time and I am open to any questions that the Members may have.

The CHAIR. Thank you very much.

Our fourth witness today is Dr. Margaret Holzer, who is a member of the K–12 Committee of the Soil Science Society of America. Dr. Holzer, as an experienced educator, you have so much to offer regarding this topic, and I thank you for being here. I now recognize you for 5 minutes.

STATEMENT OF MARGARET A. HOLZER, PH.D., PAST CHAIR, K–12 COMMITTEE, SOIL SCIENCE SOCIETY OF AMERICA; SCIENCE STANDARDS SPECIALIST, GREAT MINDS PBC™, PHD SCIENCE®, MADISON, WI

Dr. HOLZER. Okay. Thank you, Chair Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee. Thank you for inviting me to speak today. My name is Dr. Margaret Holzer, and I serve on the Soil Science Society of America's K–12 Committee.

The Soil Science Society of America is an international scientific society that fosters a transfer of knowledge and practices to sustain global soils. We are based in Madison, Wisconsin, and founded in 1936. We are a professional home to over 6,000 members and over 800 certified professionals dedicated to advancing the field of soil science. Our organization is dedicated to making soils science a dinner table topic in every household.

For more than 16 years, our K–12 Committee has been in the frontline designing instructional resources, providing professional development for teachers, and supporting soil scientists as they provide K–12 outreach. Through my professional affiliations, I was asked to serve on this committee in 2006, excitedly said yes given my passion for soil science, and I have served on it ever since.

The charge of our committee is to increase interest and awareness in soil science as a scientific pursuit and career choice, especially among K–12 teachers and their students and to work to integrate more information on soil science into biology, chemistry, physics, and Earth science areas taught at multiple grade levels. Please see the appendix of my written testimony for detailed description of these activities, many of which the NRCS funding assisted us in developing.

As impressive as our work is, there are challenges to overcome in building awareness of soil science and conservation and the career possibilities in each. I personally love soil science and connecting my students with the role soils play in every aspect of their lives. But how do we engage classrooms located where the landscape includes lawns, asphalt, concrete, and their agricultural products come in little cellophane-covered trays?

There are four challenges and potential solutions to consider when designing solutions for our workforce needs. Earth and space science courses are on equal footing with life science and physical sciences through middle school grades. However, high school students have limited access to full-year, high school-level Earth science courses where soil science and conservation are key topics within those courses. The solution to this challenge is for school districts across the country to reconsider their high school science course sequence. This is key, especially for districts where the local landscape includes lawns, asphalt, and concrete.

For many teachers who would like to include soil science in their curriculums, there is a challenge in accessing outdoor spaces and

laboratory materials needed to run basic soil laboratories in their classrooms. Our K–12 Committee efforts have most certainly played a role in the needed effort for support, but those state and local entities that can share their expertise, provide access to soil samples, basic laboratory supplies, their efforts are welcome, too. County extension offices might consider an awareness campaign to alert schools to the resources they may have to offer.

If high school coursework is limited to soil science and conservation, a workaround is to engage students in events that are extensions of the classroom. A few are already mentioned but I will reiterate. For example, the competitive World Food Prize Global Youth Institute is a phenomenal opportunity for students from around the world and outside our country to discuss solutions for food security issues and learn about extensive opportunities and careers available in agriculture.

Another impactful program is the national competition called Envirothon, which has five topic areas, of which soils and land use is one. Students participating in this competition learn about available careers while working directly with real issues that are meaningful to their lives. In each of these competitions mentors support students and are role models that could influence the career choices of their mentees. Ongoing funding of these programs such as these, as well as Future Farmers of America and 4–H, will ensure that our students are engaged with soils and our environment.

And finally, if students are unaware that they could major in soil science or it is buried in another major, they are going to be unaware of career choices they might have, and they are not going to choose a college that has soil science as a major.

Solutions that may encourage additional majors in soil science from a secondary level are strategic marketing of higher education soil science and conservation programs, connecting soil science professionals with high school students, support for dual-credit programs that provide high school students with college-level soil science and conservation courses and the college credit that goes with them, and provide high school students with internships in conservation fields. The solutions could work for students who live in rural, suburban, and urban regions of our country.

However, the key is that we are going to need a portfolio, identify a portfolio of solutions that is difficult to clearly identify what connects a student to college and career. We on the Soil Science Society K–12 Committee are committed to finding and supporting the items found in a portfolio of solutions that help build that pipeline of our next-generation of soil science and conservation careers and stewards of our natural environment. We love soils and want others to love it, too. Thank you very much.

[The prepared statement of Dr. Holzer follows:]

PREPARED STATEMENT OF MARGARET A. HOLZER, PH.D., PAST CHAIR, K–12 COMMITTEE, SOIL SCIENCE SOCIETY OF AMERICA; SCIENCE STANDARDS SPECIALIST, GREAT MINDS PBC™, PHD SCIENCE®, MADISON, WI

[Chair] Spanberger, Ranking Member LaMalfa and Members of the Subcommittee, thank you for inviting me to speak to you today. My name is Dr. Margaret Holzer, and I serve on the K–12 Committee of the Soil Science Society of America K–12 Committee. For over 30 years, I taught secondary and higher edu-

cation courses in Earth and space science, environmental science, and physical geography. Currently I am a science standards specialist at Great Minds PBC.

The Soil Science Society of America (SSSA) is an international scientific society that fosters the transfer of knowledge and practices to sustain global soils. Based in Madison, WI, and founded in 1936, SSSA is the professional home for 6,000+ members and 800+ certified professionals dedicated to advancing the field of soil science. The Society provides information about soils related to conservation, crop production, environmental quality, forestry, ecosystem sustainability, bioremediation, waste management, urban uses, mining and reclamation, and more. SSSA is dedicated to making soil a dinner table topic in every household. Members share the story of soil through the Soils Matter blog and through outreach to K–12 students and teachers in addition to supporting scientific knowledge exchange through an annual meeting and several scholarly journals.

Soils are more than the material under our feet; as a matter of fact, without soils, we would be "Hungry, Naked, Homeless, and Breathless," as a colleague on our committee stresses during his K–12 outreach programs. By acting out this little skit, students come to the "ah-ha" moment that soils are vital to our survival. We can no longer assume students will learn about the soil beneath their feet through the light touches found in textbooks and local curricula; we need to explicitly integrate soil science across all grade levels taking advantage of a variety of entry points in doing so. For more than 16 years, the Soil Science Society of America (SSSA) K–12 Committee has been on the frontline designing instructional resources, providing professional development for teachers, and supporting soil scientists who provide K–12 outreach. I am excited to share a little about our organization, our committee, our work, and some challenges ahead in encouraging our next generation of soil scientists and conservationists.

In July 2008, *Dig It! The Secrets of Soil* exhibition opened for an 18 month run at the Smithsonian Institution's National Museum of Natural History (of which SSSA was a Founding Sponsor). In preparation for the exhibit, SSSA was eager to build resources for those viewing the exhibit and resources for K–12 teachers. Thus, the SSSA K–12 Committee was formed in 2006 and is made up of a group of SSSA members passionate about telling the story of soils. Through my professional affiliations, I was asked to serve on this committee in 2006, and I have served on it ever since. Soil science has been a part of my life since I was a little girl when my father was a Ph.D. candidate at Rutgers University studying soil science applications for his dissertation. Soil samples and soil sieves were regularly fixtures in our kitchen. Once I became a teacher, soil science was always a central part of my curricula.

The charge to our committee is to increase interest and awareness of soil science as a scientific pursuit and career choice, especially among K–12 teachers and their students and work to integrate more information on soil science into biology, chemistry, physics, and Earth science areas taught at multiple grade levels. In addition, the American Society of Agronomy and Crop Science Society of America have also developed K–12 committees to provide teachers with resources for their classrooms and spark interest in their specific sciences as a pathway to career interest. Since the committee formed, we have developed:

- Three K–12 websites (with over 800,000 visits in 2020)
- Published four K–12 focused books (for use in formal or informal classrooms or at home)
- Developed two train-the-trainer workshops, two webinars, and two teachers guides
- Curated over 200 lessons, activities, and reading resources for K–12 teachers
- Developed state soil booklets for all 50 states and Guam
- Partnered with other organizations to develop and disseminate materials for K–12 teachers
- Produced I "Heart" Soil stickers in 15 languages and have distributed over 500,000 stickers
- And developed twelve 2 minute animated videos on various aspects of soil, as part of the 2015 International Year of Soils.

(Please see the ***Appendix*** *for a detailed description of these activities.)*

As impressive as our work is, there are challenges to overcome in building awareness of soil science and conservation, and the careers possibilities in each. I personally love soil science and connecting my students with the role soils play in every aspect of their lives. But how do we engage classrooms located where the landscape includes lawns, asphalt, and concrete, and agricultural products come in little cellophane covered trays? Fortunately, those who wrote the *A Framework for K12*

Science Education (2012)[1] and the subsequent standards adapted or adopted in 44 states and the District of Columbia (represents 71% of our students), included soil science in the Earth science core ideas for learning. Although Earth and space science is on equal footing with life and physical science in elementary and middle school, at the high school level, it has taken a backseat to biology, chemistry, and physics in many states. The intention is for all students to develop proficiency in all science standards, and therefore our high school biology, chemistry, and physics teachers must integrate teach Earth and space science topics in their courses, while having little to no training in the Earth and space sciences. The domino-effect of this course sequence is that our high school students are not introduced to fields of study such as soil science and conservation. A solution to this career barrier is to rethink our high school science course sequence such as combining physics and chemistry into one course, which will ensure students receive quality instruction in Earth and space science while in high school and build that awareness of career pathways in this field of study.

In my situation, it was easy to get my students outside to dig soil samples, and handle soil with the purpose of figuring out the role soils play in their existence, and to recognize that we need to conserve it through effective strategies in land-use development, forestry, and agriculture. However, for many teachers who would like to include soil science in their curriculums, there is a challenge in accessing outdoor spaces and laboratory materials needed to run basic soil labs in their classrooms. Our K–12 Committee efforts have most certainly played a role in this needed support, but those state and local entities that can share their expertise, provide access to soil samples, and basic laboratory supplies, their efforts are welcome too. Teachers need to know that these resources are available, and county extension offices might consider an awareness campaign to alert schools to the resources they may have to offer.

As much as the career pipeline for soil science and careers is in the forefront of our work on the K–12 Committee, there is a challenge to connect our efforts with the efforts elsewhere. Our instructional materials include careers; however, it is up to the classroom teacher to enact our materials. A workaround for this is to engage students in events that are extensions of the classroom. For example, the World Food Prize Global Youth Institute is a phenomenal opportunity for students from around and outside our country to discuss solutions for food security issues and learn about the extensive opportunities and careers available in agriculture. This awareness is especially impactful for those students who live in areas covered by lawns, asphalt, and concrete. Another impactful program is the national competition called Envirothon which has five topic areas, of which soils and land use is one. The mission of the Envirothon is as follows:

> "The Envirothon mission is accomplished by developing in young people an understanding of the principles and practices of natural resource management and ecology and through practice dealing with complex resource management decisions. The following goals and objectives should be used as a guide to develop effective curricula, educational resources, and testing scenarios."[2]

Students participating in this competition learn about available careers, while working directly with real issues that have meaning to their lives. In each of these competitions, mentors support students and are role models who could influence career choices of their mentees. Ongoing funding of programs such as these will ensure more students are engaging with soils and our environment.

While students are in high school, they are gravitating towards their initial college major and are considering colleges that house those majors. Students do not know what they do not know. For example, if they are unaware that they could major in soil science or are unaware of the myriad of career choices they would have, then they are not going to select a college to major in soil science. Similarly, if soil science is intertwined in an agriculture department in a university, and students are not interested in agriculture as a major, then they will not select that university. Solutions that may encourage additional majors in soils science and careers, are strategic marketing of higher-education soil science and conservation programs, connecting soil science professionals with high school students, build awareness in teachers of soil science and conservation careers, support for dual-credit programs that provide high school students with semester or year-long soil science and conservation courses and the college credit that goes with them, and provide high

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[1] National Research Council. 2012. *A Framework for K–12 Science Education: Practices, Crosscutting Concepts, and Core Ideas.* Washington, D.C.: The National Academies Press. *https://doi.org/10.17226/13165.*

[2] Envirothon webpage: *https://envirothon.org/about-us/missions-goals-and-objectives/.*

school student internships in conservation fields. These solutions could work for students who live in regions of our country where agriculture is prominent, or in regions of our country where urban and suburban landscapes are most prominent. However, the key is that we need to identify a portfolio of solutions since it is difficult to clearly identify what connects a student to a college or a career. For some students it may have been the dynamic teacher, or participating in a competition, or visiting a college soil science laboratory that provided that needed connection. We on the SSSA K–12 Committee are committed to finding and supporting the items found in a portfolio of solutions to help fill the pipeline with our next generation of soil science and conservation careers and stewards of our natural environment. We love soils, and we want others to love it too!

My intention was to provide an outline our committee work and highlight some career challenges and solutions through the lens of the K–12 arena. Our discussions today will bring to the table additional lenses as others share their experiences, and together we can build a robust portfolio of solutions to the soil science and conservation career pipeline issue. Thank you for the opportunity to testify before this panel. I would be glad to address your questions and I look forward to the discussion.

APPENDIX

Soil Science Society of America K–12 Committee Additional Information

History

In July 2008 through December 2009, *Dig It! The Secrets of Soil* exhibition was presented at the Smithsonian Institution's National Museum of Natural History (of which SSSA was a Founding Sponsor). In preparation, the SSSA Board of Directors approved a K–12 Committee in 2006 and a group of SSSA members got to work. The charge to the committee was to increase interest and awareness of soil science as a scientific pursuit and career choice, especially among K–12 teachers and their students and work to integrate more information on soil science into biology, chemistry, physics, and Earth science areas taught at multiple grade levels. The American Society of Agronomy and Crop Science Society of America have also developed K–12 committees to provide teachers with resources for their classrooms and spark interest in their specific sciences as a pathway to career interest.

Activity Centers

Activities center around five areas:

- **Assessment and Standards**—connecting soil to state and national standards
- **Curriculum Development**—developing new curricula for K–12 instruction
- **Website Development**—enhancing the K–12 website resources
- **Books**—publish books relevant to the K–12 audience
- **Develop and Disseminate Soils Information**—for all audiences

Accomplishments

During the 16 years the SSSA K–12 Committee has been active, they have achieved an exceptional amount. Read on to learn more.

Publications and Lesson Plans

Soil! Get the Inside Scoop and supplemental Teachers Guide

The book explores the basics of soil and how soil is part of our life—the food we eat, the air we breathe, the water we drink, the houses we live in, and more. A free online teachers guide is available for each chapter of the book—with accompanying PowerPoints, definitions, activities, quiz questions, and more.

Know Soil, Know Life and supplemental Educators Guide

This 200-page book is targeted at high-school students. Chapters include Physical Properties of Soil and Soil Formation, Soil Ecosystems/Biology, Chemical Properties of Soil and Soil Fertility, Classification/Soil Mapping/Interpretation, Environmental Science/Soil Conservation/Land Use Management, Soils and Biomes, Soil in History and Modern Life, and Career Opportunities. An online educators guide is free for all educators to use, with overviews, PowerPoints, activities, standards integration, and worksheets.

Curated Collection of Resources

We've curated a collection of lessons, hands-on activities, labs, readings, and more—all about soils and topics related to soils—and in a searchable database. Some are posted directly by SSSA others we have reviewed and recommend. Searchable areas include by grade level, topic area, resource type, and NGSS standard.

Over 200 resources are in the database. In addition, the SSSA K–12 committee reviews submissions for the addition of resources to the database.

Soils Unit

Designed for middle-school, this soils-focused unit with lessons that provide students with a basic understanding of the fundamentals of soil science through the integration of disciplinary core ideas, science and engineering practices, and crosscutting concepts in the lessons, investigations, and activities

Coolbean the Soybean (Crop Science Society of America)

Coolbean the Soybean is a super bean! Find out how Coolbean became so special with the help of scientists, how to farm to help the environment, photosynthesis, how agronomists keep Coolbean safe, a soybean's life cycle, and how soybeans feed billions of people and are used for many products. All in alignment with common core standards for reading and science. Aimed at Grades 3–5.

Agronomy Grow with It! (American Society of Agronomy)

Explore the science of agriculture—Agronomy! Agronomy is the science we use to grow the crops that feed us, feed our livestock, and even fuel our cars. It's a science that tackles the big challenge of our future: How can we grow enough food to end world hunger—and, at the same time, adapt to a changing climate and protect our environment? Meet 20 real agronomists who face that challenge every day. Seven sections cover main topics in agronomy and align with basic science topics in the Next Generation Science Standards: Agronomists Feed the World • Crops: Sooo Much More than Food • Problems with Pests • Bringing Crops and Livestock to the Farm . . . Together • Water Matters! Getting Enough . . . Keeping it Safe • Soil: We Gotta Have It, But Will We? • Coping With Climate Change Audience: Aimed at Grades 6–8, of interest to older and younger students alike!

State Soil Booklets

An in-depth, easy to read booklet (4–8 pages each) with information on each state soil. The booklets include a brief history of the origin of the state soil, where the state soil is found, importance and uses, limitations, management, soil formation, ecoregions and land use, a glossary, and additional resources.

Webinars

The K12 committee has produced two webinars for K–12 educators, focused on soil science at different grade levels:

- Soils: Fundamental for Life

  This webinar focused on basics, formation, characteristics, and fertility (the ability of a soil to sustain plant growth by providing plant nutrients and favorable habitats for plant growth).
- Soil Physics, Chemistry, and Biology . . . Oh My!

  Soil is so much more than what food is grown in, we walk on, or move out of the way to build houses or buildings on. It's complex, life-giving, and is critical for a balanced ecosystem. Attendees learned about each area, why each is important, and ideas for classroom activities. In addition, they heard about career opportunities in soil science.

Partnerships

- **National Association of Conservation Districts (NACD)**—Stewardship Week on Soils (2009), review panel on scientific resources
- **National Science Teachers Association (NSTA)**—exhibiting, annual workshop
- **National Earth Science Teachers Association**—webinars, share-a-thons, articles, promotions
- **American Geological Institute (AGI)**—AGI hosts Earth Science Week in cooperation with sponsors as a service to the geoscience community. As an AGI member we develop a soil science activity for the annual calendar and contribute to the Earth Science Week kits which are distributed to 10,000+ teachers. Earth Science Week is held annually in October with each year having a unique theme.

Dig It! Exhibition Activities

Two Train-the-Trainer Workshops were conducted at the Smithsonian Exhibition—with over 60 teachers in the Washington DC area participating, January and June 2009, with Project Learning Tree members as the facilitators of the workshop.

The exhibit has also traveled to the Durham Museum, Omaha, NE, Northwest Museum of Arts and Culture, Spokane, WA and will be heading to the Bell Museum, St. Paul, MN. Staff and Members have participated in educational events (such as "Let's Get Dirty" day) and SSSA has provided educational materials, promotional items and books for giveaways and raffles.

Outreach Activities

Websites

Soils for Teachers: Our teachers website features soils topic areas, lessons/activities collection, free classroom resources, definitions, an Ask a Soil Scientist feature. *www.soils4teachers.org*.

Soils for Kids: Our kids website features areas including all about soil, fun with soil (activities), soil experiments, soil games, career exploration, and soil in your community. *www.soils4kids.org*.

Agronomy for Teachers and Students: Our Agronomy and Crop Science K–12 website features sections on what is agronomy, understanding crops, pests and weeds, livestock, nutrients, water, soil health, climate change and provides lessons and activities—both for teachers and for students at various grade levels. It also features scientists in different careers. *www.agronomy4me.org*.

Member Outreach Activities

- Developed an online Career Profiles format for members to tell their career story and have them upload to the SSSA websites.
- **Ask a Soil Scientist program online**—members volunteer, select regions and topic areas—answer questions from general public, students, and teachers. They may also volunteer to speak in classrooms. 135 Members have registered to date.
- A group of committee members participated in a NGSS standards review via the SSSA Science Policy Office.

International Year of Soils—2015

The Soil Science Society of America played an integral part the success of the 2015 International Year of Soils! We worked on raising awareness of and promoting the sustainability of our limited soil resources. SSSA members, recognizing that we all have a valuable role in communicating vital information on soils, came together to develop new activities and pull together already developed resources to assist everyone interested in learning more about soils. All the resources on our site are available for use. Key components included:

- 12 monthly videos on various aspects of soil and associated activities.
- K–12 Educators kit of resources
- Coloring and Activity Book
- Careers in Soil Science Career Poster

I "Heart" Soil

https://www.soils.org/stickers

Fifteen "I Heart Soil" stickers in different languages—another fun way to get people excited about Soils!

The CHAIR. Thank you so very much.

Our fifth witness today is Ms. Marissa Jensen, the education outreach program manager at Pheasants Forever and Quail Forever. Ms. Jensen, you bring a unique perspective to this hearing, and I recognize you now for 5 minutes.

STATEMENT OF MARISSA JENSEN, MANAGER, EDUCATION & OUTREACH CONSERVATION LEADERSHIP PROGRAM, PHEASANTS FOREVER AND QUAIL FOREVER, SAINT PAUL, MN

Ms. JENSEN. Thank you so much, Chair Spanberger, Ranking Member LaMalfa, and Members of the Conservation and Forestry Subcommittee. I am the Education and Outreach Conservation Leadership Program Manager with Pheasants Forever and Quail Forever based in St. Paul, Minnesota. I am here today representing

750 community-based Pheasants Forever and Quail Forever chapters and 400,000 members, volunteers, and supporters who work every day to promote and implement conservation and outdoor-related programs. Additionally, I am here representing over 400 of my colleagues, many of whom deliver boots-on-the-ground conservation on private and public lands.

As one of the nation's largest employers of conservation professionals, we know firsthand the importance of developing and recruiting the next generation. Our organization's mission goals are made possible through partnerships and funding from our chapters and volunteers, NRCS conservation technical assistance, and farm bill conservation programs. In addition to funding and programs administered the Farm Service Agency, U.S. Fish and Wildlife Service, state wildlife agencies, and many more.

Since the inception of our farm bill biologist program in South Dakota in 2003, we have leveraged funding and impacted over 22 million acres in 40 states. This broad team of partners delivers Federal and state voluntary conservation practices at the community level, much of which comes from Title II farm bill conservation programs. I am thrilled to be here representing our efforts to reach future conservation professionals.

I personally began my education and career in the veterinary field. However, I found my true calling in wildlife biology, and eventually, my journey with Pheasants Forever and Quail Forever 4 years ago. I live in Omaha, Nebraska, with my son and two bird dogs, and although my connection to the outdoors was strong as a child, I did not grow up in a family of hunters and was not interested in hunting for most of my life. Once I learned about a hunter's role in conservation, coupled with my love for the outdoors and the ability to connect all of this to food, I went on my first hunt at the age of 30, and I haven't looked back since.

Today, I would like to share what we are doing for the future of conservation professionals. In 2006, our organization began providing education for high school students through our National Youth Leadership Council. This group of 25 students from across the country have served as leaders within their age group by providing inspiration, education, and advocacy for our organization's mission. Many of these students have since chosen a career in conservation or agriculture and have become leaders among their peers in college and careers.

Through our National Youth Leadership Council and our organization's commitment to developing conservation professionals, we evaluated our efforts to grow this program. Now, building on past success, we are expanding and transitioning our National Youth Leadership Council into a new program that will reach hundreds of students, Journey to Conservation Careers. This exciting new program is currently in its pilot phase and is aimed at reaching a larger, more diverse audience of students who might not be familiar with what conservation career opportunities even exist.

Our organization, like many other sectors, is recognizing a downward trend of résumés and applications for open positions. To address this concern and elevate our efforts, we have partnered with the U.S. Fish and Wildlife Service to recruit the next generation of leaders through this unique and dynamic program. We recognize

the importance of meeting students where they are at, to help break down barriers and participation and work toward building an inclusive community and workforce. To do this, we have developed a self-paced online certificate program with Bellevue University in Nebraska. As part of the course, students will have the opportunity to directly connect with conservation professionals and gain hands-on experience through job shadowing.

Earlier this year, we hosted our first conservation college and virtual career fair. With minimal promotion and effort, the event had over 160 registrations representing participants across 34 states with requests for a repeat event. Journey to Conservation Careers will offer scholarship opportunities to help break down barriers and participation and reach historically underrepresented communities. We'll do this by working with high schools, environmental education associations through marketing efforts and help from our partners.

I need to emphasize that the success of these programs and efforts would not be possible without the numerous partnerships that we have with the governmental and nongovernmental entities. We are stronger together, and these programs and practices emphasize the effectiveness of a partnership model. We also must have sound conservation policies, science, and adequate support to ensure that conservation programs are effectively and efficiently implemented.

Finally, we recognize the importance of providing resources and guidance for the next generation. Journey to Conservation Careers can do just that, by delivering tools to meet students where they are at.

Thank you, and I look forward to answering any questions you may have.

[The prepared statement of Ms. Jensen follows:]

PREPARED STATEMENT OF MARISSA JENSEN, MANAGER, EDUCATION & OUTREACH CONSERVATION LEADERSHIP PROGRAM, PHEASANTS FOREVER AND QUAIL FOREVER, SAINT PAUL, MN

[Chair] Spanberger, Ranking Member LaMalfa, and Members of the Conservation and Forestry Subcommittee, my name is Marissa Jensen and I serve as the Education & Outreach Conservation Leadership Program Manager with Pheasants Forever (PF) and Quail Forever (QF) based out of St. Paul, Minnesota.

I am here today representing our 750 community-based Pheasants Forever and Quail Forever chapters; and 400,000 members, volunteers, and supporters who work every day to promote and implement conservation programs across the country. Additionally, I am here representing over 400 members of my team who work for Pheasants Forever and Quail Forever, many of whom deliver boots-on-the-ground services on private and public lands. This team works one-on-one with state and Federal partners, and landowners to help deliver critical conservation practices. As one of the nation's largest employers of conservation professionals, we know firsthand the importance of developing the next generation who will work with agriculture producers and land managers to implement conservation programs now and into the future.

As "The Habitat Organizations," Pheasants Forever and Quail Forever's mission is to "*conserve pheasants, quail, and other wildlife through habitat improvements, public access, education, and conservation advocacy.*" This is meaningful work, and one we do not and cannot accomplish alone. Beginning in South Dakota in 2003, our Farm Bill Wildlife Biologist program has helped leverage funding with state and Federal agencies and numerous partners, with the Natural Resources Conservation Service (NRCS) being a significant partner in these efforts. These partnerships have worked to develop cooperative biologist positions that provide one-on-one conservation technical assistance to private landowners interested in implementing conservation practices. Supported by funding from NRCS Conservation Technical Assistance

and farm bill conservation programs, as well as the Farm Service Agency, U.S. Fish and Wildlife Service, state wildlife agencies, and others, our staff have directly impacted over 22,000,000 acres, with active partnerships in 40 states. This dedicated team delivers Federal and state voluntary conservation practices and programs at the county and community level, much of which comes from farm bill conservation programs that reduce soil erosion, improve water quality and wildlife habitat, and provide a host of other ecosystem benefits. Thanks to these partnerships over the last nearly 20 years, they have been one of the most successful, and largest boots-on-the-ground implementation efforts in the country.

My Journey to Conservation

I am thrilled to be here today, representing my team of conservation professionals, members, and volunteers. In addition, I would like to share my journey to a career in conservation. I am a biologist by education and worked as an emergency veterinary technician prior to my career shift into wildlife and habitat conservation. Throughout my career, I have learned how to navigate temporary positions through Nebraska Game and Parks Commission in various roles. Four years ago, I began my journey with Pheasants Forever and Quail Forever, and I am excited to help the next generation of conservation leaders find their place in their careers.

I live in Omaha, Nebraska with my son and two bird dogs. Although I have lived a life in the city, my parents were born and raised in the small, rural town of Minden, Nebraska and I continue to stay connected to this community. This town has provided me with a framework of knowledge regarding land management and conservation practices that benefit us all, which I continue to build upon to this day. At an early age, I learned the importance of habitat from my father and grandfather's backyard garden full of milkweed and monarchs, and along with this, the knowledge of the impact one has, even from our own backyards.

Although my connection to the outdoors was strong, I did not grow up in a family of hunters and was not exposed to or interested in hunting for most of my life. With no previous knowledge of how conservation happens or is funded, I never made the connection between the outdoors, wildlife, funding, and conservation. Once I gained this knowledge, coupled with my love for spending time outdoors and the ability to connect this to food, I went on my first hunt at the age of thirty and have not looked back since. In an effort to inspire others, I joined colleagues in the field to share my story as an adult-onset hunter. This video can be viewed, *here.*[1]

National Youth Leadership Council

Today, I want to tell you about what we are doing as an organization to ensure that there are passionate people in the field of conservation into the future. In 2006, PF & QF began a new endeavor to work with and provide education for the next generation of conservation leaders through our National Youth Leadership Council. This group has historically included about twenty-five high school students from across the country who are interested in being leaders within their age group and providing inspiration, education, and advocacy for our organization's mission.

Our group of talented youth have made the trip to Washington, D.C. to see first-hand, how important the legislative and administrative processes are in our great Country. They develop their professionalism and learn how to be leaders for the conservation values we share. Many of these students report back years later, sharing the impact just one trip to Washington, D.C. had on their career path.

Many of these young adults have since chosen a career path in conservation or agriculture, and as such, have become leaders among their peers in college and careers. Additionally, some of our students have shown their leadership skills by serving our country in the military. All of them will be—and have been—future leaders in conservation, either professionally, or in their personal lives as supporters and volunteers in their communities.

Through our National Youth Leadership Council and the organization's growth in conservation leaders, we had the ability to evaluate and refocus our efforts and grow this program to include hundreds of students who want to make a difference in their communities and beyond. We will do this as we transition our National Youth Leadership Council into Journey to Conservation Careers—a program designed for high school students who have an interest in a career in conservation.

Journey to Conservation Careers

This exciting new addition is currently in its pilot phase and is aimed toward reaching a larger, more diverse audience of students. We recognize the importance

[1] *https://projectupland.com/hunting-videos/never-too-late-an-adult-onset-hunter-story-2/.**

* **Editor's note:** the video is retained in Committee file.

of meeting students and participants where they are at, to help break down barriers in participation and work toward building an inclusive community and workforce.

To do this, we have partnered with Bellevue University (Bellevue, NE) to develop a self-paced, online curriculum where students will cover three unique modules: Conservation Past, Present, and Future; Upland Bird Biology and Ecology; and Conservation Responsibility. During the third module, students will have the opportunity to gain hands-on experience and start learning how to network and build their community through a job shadowing opportunity with those in the conservation field within Pheasants Forever, Quail Forever, the U.S. Fish and Wildlife Service, and hopefully other Federal and state agencies, and conservation organizations.

Monthly virtual webinars will take place as part of this program, where students will have the opportunity to "meet" conservation career professionals and leaders from across the country. Through these sessions, students will have the chance to ask questions and learn what tools and resources are available to set them up for success.

Additionally, Journey to Conservation Careers will offer scholarship opportunities for students in our efforts and priority to reach historically underrepresented communities and break down barriers to participation in the program. We will do this by reaching out and working directly with high school teachers and counselors, environmental education associations within each state, marketing and outreach efforts, and with the help from many of our partners.

Pheasants Forever and Quail Forever, like many other sectors, are recognizing a downward trend of resumes and applications for open positions. We know that our partners with Federal and state agencies are experiencing the same phenomenon. To elevate our efforts, the organization partnered with the U.S. Fish and Wildlife Service to host its first Conservation College and Virtual Career Fair, as part of our Journey to Conservation Careers efforts, in February of 2022.

This pilot event focused on ten "virtual" booths which included nine of our partners from Federal to state agencies, universities, and nonprofit organizations. With minimal promotion and effort, the event had over 160 registrations with an 82% attendance rate on the day of the event. Additionally, over 34 states were represented in attendance.

The event was open to the public in an effort to gauge interest in this type of event. The participants' education and experience levels ranged from high school to post-doctorate students and career professions. High school teachers logged on with classrooms to provide an educational experience for their students throughout the day.

Every year, Pheasants Forever and Quail Forever hosts National Pheasant Fest and Quail Classic, which historically brings in over 30,000 attendees, as well as state, Federal, and nonprofit partners. Our vision for the future with Journey to Conservation Careers is to host a Natural Resources Conference for these students on the front end of Pheasant Fest and Quail Classic. With students arriving ahead of the show, they will have an opportunity to meet leaders and inspiring speakers, connect with like-minded students, and start building their own conservation community.

Closing Statement

I want to emphasize that the success of these programs and efforts would not be possible without the numerous partnerships that we have with the governmental and non-governmental entities, including the Natural Resources Conservation Service, U.S. Fish and Wildlife Service, state fish and wildlife agencies, the National Fish and Wildlife Foundation, and other national, state, and local agencies and organizations.

We also need sound conservation policy, science, and adequate support to ensure that conservation programs are effectively implemented. We need to ensure that the next generation of conservation leaders have the education and experience to become champions of our natural resources.

Finally, we all know the importance of inspiring the next generation of conservation leaders and land stewards, and with the partnerships and resources we have developed, we can provide the tools and guidance necessary to help these students begin their journey with the right foot forward. Journey to Conservation Careers can deliver these resources and guidance, to meet students where they are at.

Thank you and I look forward to answering any questions you may have.

The CHAIR. Thank you so very much.

And at this time I will yield to Ranking Member LaMalfa to introduce our sixth and final witness.

Mr. LAMALFA. Well, thank you again, Madam Chair. As I mentioned, Tracy Schohr is someone I have known for many years, her and her family here in the same county I live in here in northern California. She is currently on the University of California Cooperative Extension with the livestock and natural resources as an advisor for Butte, Plumas, and Sierra Counties here in northern California. In this role, she provides conservation technical support to ranchers, land managers, and agencies regarding livestock production and conservation. Tracy conducts research in the region focused on irrigated pasture, invasive species, predators in mountain meadows. Recent catastrophic fires, the Camp Fire, in 2018, the Walker Fire in 2019, the North Complex Fire in 2020, Dixie Fire in 2021 have led her to work with producers on disaster preparedness, livestock shelter management, and the research on fire implications to natural resources. Tracy is also a managing partner in her family's ranch, the Schohr Ranch, a multigenerational family farm which raises rice, walnuts, registered Hereford cattle, and commercial cattle. She has a master's degree in horticulture and agronomy from the University of California at Davis and a bachelor of science from California State University at Chico.

So with that, Tracy, take it away. Thanks for joining us today. I yield back, Madam Chairman.

The CHAIR. Ms. Schohr, you are recognized for 5 minutes.

STATEMENT OF TRACY K. SCHOHR, LIVESTOCK AND NATURAL RESOURCE ADVISOR, AGRICULTURE AND NATURAL RESOURCES, COOPERATIVE EXTENSION, UNIVERSITY OF CALIFORNIA; PARTNER, SCHOHR RANCH, GRIDLEY, CA

Ms. SCHOHR. Perfect, thank you all. And good afternoon, Chair Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee. And thank you for hosting this hearing recognizing the importance of supporting careers in conservation.

My name is Tracy Schohr, and I am excited to be here in three capacities. As Representative LaMalfa said, I am University of California Cooperative Extension Livestock and Natural Resources Advisor serving in three counties, Plumas, Butte, and Sierra, which is within the First Congressional District in California. In this position, I conduct research and bring science-based information into the hands of ranchers, land managers, and community members. Second, I am a managing partner of Schohr Ranch, a fifth-generation family farm that grows rice, walnuts, and raises cattle. And last and most importantly, I am a product of career technical education. I grew up as an active member in the West Gridley 4–H Club and Gridley FFA. Mr. Dillabo and Mr. Risso's high school agricultural classes gave me the foundation for my career.

After attending Chico State, I worked in the policy arena building bridges between the environmental community and ranchers. This inspiring work led me back to UC Davis to earn a master's degree so that I can offer greater help to farmers, ranchers, and land managers to meet contemporary and emerging issues.

Congress needs to support programs that train the workforce for exciting careers and conservation. How can this be accomplished? One is to make investment where it counts. Examples that I am passionate about include 4–H Youth Development that was created

by the Smith-Lever Act of 1914 as part of the Federal-state-local partnership in the land-grant university system. 4–H Youth Development is in both urban and rural areas, bringing hands-on experiential learning in areas such as agriculture, STEM, robotics, computer coding, and natural resources management. 4–H members build confidence and leadership skills and are exposed to a variety of potential careers.

Another is the National FFA Program, federally funded under Carl D. Perkins Vocational and Technical Education Act. FFA programs across the nation are training the future workforce in every spectrum of careers in sustainable agriculture, data science, resource conservation, forest health, while building professional skills such as public speaking, critical thinking, and research. These two programs expose youth of all backgrounds and ethnicities to the breadth of careers and conservation.

And number two, Congress needs to support continued investments in research and extension funding. I am proud to be an extension agent, continuing a 130 year tradition of connecting research and outreach important to local communities at the intersection of long-term agricultural sustainability and public-good benefits such as clean water, healthy soils, working landscapes, and wildlife conservation.

As an extension advisor, I help ranchers overcome challenges they face such as animal health, irrigated pasture, predators, regulatory compliance, applying for Federal farm bill programs, and managing landscapes in the aftermath of the Camp Fire, North Complex Fire, and Dixie Fire. An example is personally leading the first study on water quality post-Camp Fire that informed downstream ranchers that water flowing through their private range lands was safe for cattle to drink. And then the picture behind me here today is on that working ranch where one of those research sites took place.

And for three generations my grandfather, dad, and brother have called on our local extension agents for advice on rice diseases, water management, and invasive weeds to improve our family farm. We even lend our fields to UC for research trials where the results help our entire industry, the environment, and improves the sushi rice you eat. Extension provides critical people power, research talent, and enables states to connect the power of local universities with people on the ground. Together, we must train and educate a workforce that is adapting to our changing environment: weeds, pests, drought, and the aftermath of catastrophic fires. We must train on the evolution of land management, including the need to actively manage our forests, recognizing livestock grazing can be a sustainable land management tool and look at agriculture as a solution, not the problem.

In closing, the demand for future job opportunities and conservation are endless. As the Committee writes the next farm bill, I encourage you to invest in training for more practitioners like myself who work hand-in-hand with farmers, ranchers, and natural resource managers to make conservation happen while supporting healthy landscapes, protecting watersheds, and enhancing profitable agricultural businesses.

Thank you again for the opportunity to testify before the Committee, and I am happy to answer any questions.

[The prepared statement of Ms. Schohr follows:]

PREPARED STATEMENT OF TRACY K. SCHOHR, LIVESTOCK AND NATURAL RESOURCE ADVISOR, AGRICULTURE AND NATURAL RESOURCES, COOPERATIVE EXTENSION, UNIVERSITY OF CALIFORNIA; PARTNER, SCHOHR RANCH, GRIDLEY, CA

Good afternoon, Chair Spanberger, Ranking Member LaMalfa and Members of the Subcommittee. Thank you for hosting this hearing today recognizing the importance of "Supporting Careers in Conservation." I am pleased to be here to offer testimony before the Subcommittee.

My name is Tracy Schohr and I am here today in three capacities—

I am a University of California Cooperative Extension Livestock and Natural Resources Advisor serving three counties in Northern California—Butte, Plumas, and Sierra, which happens to be within Rep. LaMalfa's Congressional district. My role as a cooperative extension advisor is to conduct research and bring science-based information into the hands of ranchers, land managers, and community members.

Second, I am a managing partner of Schohr Ranch, a 5th generation family farm that grows rice, walnuts, and raises cattle.

Last, and most importantly, I am a product of career technical education. I grew up as an active member in the West Gridley 4–H Club and Gridley FFA. Mr. Dillabo's & Mr. Risso's high school agricultural classes exposed to me livestock grazing management, genetics, agricultural business management, and plant identification—giving me the building blocks necessary for my career.

After attending California State University, Chico, I worked in the policy arena where I had the opportunity to build bridges between the environmental community and ranchers. This inspiring work led me to go back to college to earn a Master's in Horticulture and Agronomy at University of California, Davis so that I could become a cooperative extension advisor, also known as an extension agent in other states.

I chose this career path because, farmers and ranchers, along with land management agencies, need a trained workforce that can help them meet contemporary and emerging issues. Climate resiliency, wildfire mitigation, drought, producing a safe, abundant, and affordable food supply, all require a workforce that is highly trained.

Congress needs to support programs that train the next generation for exciting careers in conservation. How can this be accomplished . . .

1. **Make investments where it counts,** examples I am passionate about include:

   4–H Youth Development that was created by the Smith-Lever Act of 1914 as part of a Federal-state-local partnership and the land-grant university system. In California, 4–H Youth Development is in both urban and rural areas—bringing hands-on, experiential learning in areas such as agriculture, STEM, robotics, computer coding, and natural resources management, to name a few. 4–H members build confidence and leadership skills and are exposed to a variety of potential careers.

   Another is the National FFA Program federally funded under Carl D. Perkins Vocational and Technical Education Act. FFA programs across the nation are training the future workforce in every spectrum of careers in sustainable agriculture—data science, natural resources conservation and forest health, while building professional development skills such as public speaking, critical thinking, and research.

   These two programs expose youth of all backgrounds and ethnicities to the breadth of careers in conservation.

2. **Support continued investments in research and extension funding.** I am proud to be part of the [land-grant] partnership that was developed between states and the Federal Government with the 1862 Morrill Act, the 1887 Hatch Act and the previously mentioned 1914 Smith-Lever Act.

   For over 130 years extension agents have conducted research and outreach important to our local communities at the intersection of long-term agricultural sustainability and public good benefits such as clean water, healthy soils, working rangelands, resilient forests and wildlife conservation.

   My colleagues and I work and live in the communities we serve and have formed long-standing and trusted relationships. Cooperative extension is a

boundary spanning organization working with diverse stakeholders such as, Tribal, environmental, agricultural, and all levels of government.

As an extension advisor, I help ranchers overcome challenges they face on topics such as animal health, irrigated pasture, predators, regulatory compliance, applying for Federal farm bill programs and managing landscapes in the aftermath of the 2018 Camp Fire, the 2019 Walker Fire, the 2020 North Complex Fire, and the 2021 Dixie Fire. I personally led research on fire implications including the first study on water quality post Camp Fire that informed downstream ranchers that water flowing through their private landscapes was safe for cattle to drink. Last week I launched a research project, working closely with ranchers and the Plumas National Forest. We are using GPS collars on cows to investigate how catastrophic fires that burn dense forests change landscape vegetation, which impacts livestock grazing. Data collected from the GPS collars will inform future post-fire grazing practices.

When disaster strikes, ranchers and emergency services call on cooperative extension. During the North Complex Fires when the Plumas Sheriff Department and Animal Control needed help evacuating cattle, they knew I had strong relationships in the community and could quickly call on people to bring their personal cattle trailers to help move a large herd out of harm's way. During the Dixie Fire, for weeks, I worked with Incident Command Teams serving as a liaison to ranchers needing to move, care and treat animals behind evacuation lines. I mention this because it is a prime example of how cooperative extension advisors are valued members of the community and that our relationships are grounded in trust. It is what makes us effective in all aspects of our work.

For three generations—my grandfather, dad, and brother—have called on our local extension agents on issues such as rice disease, water management, and invasive weeds. Our family has immense trust with UC's Cooperative Extension services, which provides critical advice that helps us improve our multi-generational family farm. Our family farm also lends our fields to UC for research trials, where the results help our entire industry, the environment, and, in the case of our rice crops, improves the sushi rice you eat!

3. **We must train and educate a workforce that is adapting to our changing environment**—weeds, pests, drought, and the aftermath from catastrophic fires. We must train on the evolution of land management, including the need to actively manage our forests, recognize that grazing can be a sustainable land management tool, and look at agriculture as a solution—not the problem. Last, we must train a workforce skilled in emerging technology that can assist with conservation and farming needs. For example, there is exciting work being done to consider ways to put artificial intelligence tools to work on the farm reducing pesticide use and to help decipher copious amounts of data to minimize nitrogen applications, improving agricultural sustainability while maintaining productivity.

Conclusion

In closing, the demand and future job opportunities are endless . . .

Reflecting back to the family farm, we are working with USDA Natural Resources Conservation Service (NRCS) staff with conservation careers to implement farm bill programs for irrigation efficiency, soil health, pollinators, air quality and wildlife habitat.

There is a need for a skilled workforce to put money on the ground managing our forests to create more fire resilient landscapes. UC Cooperative Extension is actively working to build and train this workforce, but there is a strong need to make sure that USDA programs continue to be funded. This will ensure that there will be resources to train the next generation of conservation professionals who can assist farmers to stay at the cutting edge of research and farm practices.

The Federal investment into the Smith-Lever Act, for example, is one way the Federal Government through the USDA provides critical "people power" and research talent to enable states to connect local issues with the power of university research. This Federal investment in cooperative extension is heavily leveraged by state, county, and local support—a high return on the Federal Government's investment.

There is a strong need for additional funding to be provided to ensure that our nation will have a conservation workforce that can serve agricultural needs into the future. For example, there is a need to hire more researchers like myself, who work hand-in-hand with farmers, ranchers, and natural resource managers, who benefit from cooperative extension—to make conservation happen, while supporting healthy landscapes, protecting watersheds, and enhancing profitable agricultural businesses.

As the Committee writes that next farm bill, I encourage Congress to continue to invest in the programs that support the creation of a strong conservation workforce. Doing so will help to ensure farmers and ranchers and the agriculture sector can continue to thrive and provide food for our nation using sustainable management practices. Thank you again for the opportunity to testify before the Subcommittee. I am happy to answer any questions.

The CHAIR. Thank you so very much for your opening statements. Thank you for your testimony.

So at this time we will go into Member questions. Members will be recognized for questions in the order of seniority, alternating between Majority and Minority Members. You will be recognized for 5 minutes each, in order to allow us to get in as many questions as possible. Please keep your microphones muted until you are recognized in order to minimize background noise.

And I will begin by recognizing myself for 5 minutes. So I just want to say thank you again to our witnesses for being here. I have so many questions I would love to ask. But Dr. Holzer, I would like to begin with you. I have three children in K through 12 who have a real interest and curiosity in natural spaces and in the land around them, and so I found your testimony to be particularly interesting. In the long-range planning, how might partnerships with NRCS or state agencies and public land-grant universities help bolster the curriculum that you discussed in your testimony, especially as we look towards career development later in a child's educational career, and how can we ensure that educators, that they have the tools to ensure that students understand the litany of prospective jobs that are available to them into their future, be it just a few years away, or for some a decade or more?

Dr. HOLZER. Thank you very much for that question, Chair Spanberger, fabulous question. And my initial thought is communication. I think what needs to happen is that the K–12 audience needs to know what is available and what is out there. You don't know what you don't know. And if a teacher has made their way into the classroom without having any kind of experience in any of the fields that we discussed today—and I was just so inspired by all the speakers—if they don't know that, how are they going to introduce that to our children? They might have a curricula that introduces it to them. There might be a module or something, but I am wondering if locally that there can be some forms of communication between entities, between the school districts and the extension offices.

I know we have the Soil Conservation District in our state, and I used to tout them in meetings and get soil conservation books. Before you can get everything online, I would have them come visit my students. They have this beautiful model and these wonderful books where students can identify the soil that is in their backyard. But I knew to do that, and if a teacher doesn't know to do that—so outreach is the key.

One of the things that we are doing right now with the support of NRCS is we are developing a model for soil scientists to use to do outreach. And we are visiting Tennessee first in Memphis, at a location in Memphis, and we are going to give it a dry run. And then over the summer we are going to iterate on the success of that. We have an evaluator that is looking at our program, and we are going to do it again in Chicago, totally different entities in

which we are running it. And then after that, we are going to be coming out with this model of professional development, full day professional development for teachers. Everything is going to be ready for them. We will have slide decks, we will have activities, everything that they would possibly need. That is one small piece, but I know my friends and colleagues that are on this call today, they may have other ways of sneaking into that K–12 pathway. Maybe it is through their kids, maybe it is through just celebrating what they do to the greater audience.

The CHAIR. So, Dr. Holzer, I am going to follow up with you with questions for the record, so written questions. I think you mentioned a variety of different resources in your opening testimony, but just to even be able to provide back to my local community, I would be interested in if there are any other organizations that some of our school districts could be looking to for advice. I am intensely interested in this question, but I am going to try to move onto one more kind of tangentially related. And Mr. Crowder or Ms. Jensen, I will point this one over to you. What more do you think that NRCS could be doing to leverage the work of outside organizations that outside organizations are already doing to create a pipeline?

Mr. CROWDER. Chair Spanberger, one of the important things that I would always come back to is making sure that the conservation operations fund is there. All the conservation technical assistance comes through that. So much of NRCS staff programs come through that. As you know, all of the conservation agricultural programs, all that work is funded through CTA right up until the farm bill programs are there, so all of—not all of NACD's work but a lot of our partnerships with NRCS come from that conservation operations fund, so it is vitally important that we get that.

The CHAIR. Thank you very much. And in my remaining 19 seconds I am going to go to Mr. O'Neill. Would you have any other comments related to K through 12 education?

Mr. O'NEILL. Thank you for the question, Representative Spanberger. One of the big things for K–12 is really targeting kids before they start setting their career pathways. One of the areas that we are really targeting is middle school area, the 6th, 7th, 8th grade where they are mature enough to be thinking about their future but they are still early enough on before they set their pathways going into high school, so really targeting the outreach into the guidance counselors especially because guidance counselors in the middle school area are typically much more hands-on with the kids and much more in that developmental stage, much more engaging as opposed to in high school where it is not the same level of engagement with the student. And so really inspiring young people in that middle school area to be interested in forest-based careers and whether that be in the wood side of it, in the utilization side of it, in the conservation components of it, but just to be interested in it.

The CHAIR. Thank you, Mr. O'Neill. And I am now going to recognize Mr. LaMalfa for 5 minutes.

Mr. LAMALFA. Thank you. I wanted to come back to Tracy Schohr here once again. Let's talk a little bit about the issues of fire emergencies, especially in our forested areas. We have seen

some really devastating effects on one particular cattle ranch right here in Butte County and we know that story extremely well locally here with [inaudible] up in the foothills [inaudible], Tracy. And this year we already have—the National Interagency Fire Center has reported 1.7 million acres having burned in the West already, and so there will be much recovery work involved with that, with the previous fires that we listed a little while ago.

So would you emphasize a little bit more on the fire work that you have done, whether it is during a fire or fire emergency and certainly the post-fire recovery that is so important as we drive around northern California and see mile after mile of blackened, dead trees and what used to be mountainous forest. It will look like high-elevation rolling hills once those trees all either topple by themselves as they tend to on Federal lands or maybe the work can get done.

So would you talk a little bit more, please, about fire emergency and post-fire recovery work and why more people in this field, especially with the challenges we have with numbers of personnel, why would that be important?

Ms. SCHOHR. Yes, Doug, so I think numbers are a big one, number of people, but also the funds and the flexibility. And so during disasters, I have been called on by emergency services personnel specifically in Plumas County by the sheriff's department to help evacuate cattle, having those relationships within my community, being able to get cattle out of the fire's path. During the Dixie Fire, I spent 3 weeks with incident command serving as a liaison to make sure agricultural producers can continue their operations behind fire lines, evacuate cattle, treat them, and also continue business operations, shipping them as part of their marketing and production strategies.

Getting onto the ground side of it on natural resources, during the Camp Fire, Cooperative Extension and myself and some colleagues were able to initiate rapid response. I mentioned the water quality study. We also had a forage study looking at the ash that was falling on the forage. Was it safe for livestock to eat? And we are able to get answers in the hands of producers right away and let them know that we didn't find anything working with the Department of Food and Ag at our laboratory on campus at UC Davis.

During the fires, I have gone out multiple times with colleagues to be on the ground as the flames were still burning around us to work with producers on how to restore their meadow after a dozer line to fix it for re-seeding, to relay the sod, to prevent erosion before the first rains came.

And so I think the key message that I would have, and it really goes back to a seminar we had 2 weeks ago on post-wildfire working with colleagues at community colleges and our local RCDs in the Forest Service. The message that came across is after a fire we must act now. Otherwise, it is going to be too late. For example, replanting success really happens in the first year. We know that meadows have to be fixed right away before the first rains. And we can't wait for funding to come months down the road. And so I think that is important for NRCS to be able to join hand-in-hand with resource conservation districts and Cooperative Extension to get practices on the ground during these disasters to help mitigate

long, ongoing concerns but also for our Farm Service Agency to be able to get funds and relief in producers' hands that have been impacted by the fire to continue business continuity because we know these disasters take not only an ecological toll, a financial toll, but an emotional toll on the ranchers and farmers that are in their path.

Mr. LAMALFA. Tracy, let's talk a little bit about—I imagine, as the ones you just mentioned, they have a pretty good working relationship. Don't they run into a wall with trying to get this work done when we are talking about people that are neighboring Federal lands, for example? How is the relationship with Federal lands on accomplishing things in a landscape format that actually does some good? If people are doing it on their private land but the Forest Service is moving sloth-like on theirs, how does that play out?

Ms. SCHOHR. I think they are moving sloth-like because there is not enough of them, and I think the challenges that they are facing—so we are able to get action done on the ground on private lands really quick, but if we could have more resources and expertise and skilled workforce and more hands or boots on the ground could really help us improve our forests after the catastrophic fires that we faced.

Mr. LAMALFA. Good, okay. And let's get more personnel. And we are certainly working on the pay scale side of things to try and be more attractive there as well. So Tracy Schohr, thank you very much, and, Madam Chair, I will yield back.

The CHAIR. All right. The chair now recognizes Ms. Pingree for 5 minutes.

Ms. PINGREE. Thank you very much, Madam Chair. I am very pleased to have this hearing today, and thank you for holding it. And we are so happy to have our colleague in Maine, Mr. O'Neill, here to talk to us, so thank you for joining us, and thank you for the beautiful picture of the Maine forest behind you. Some people don't know that Maine is a 90 percent forested state, so these issues are critical to us, and you did a really good job of outlining that.

A couple things I would love to hear you talk more about one thing just briefly, the EDA grant that Maine got to start the Forest Opportunity Roadmap I think has been really critical, and you kind of laid that out, for our state being able to project the enormous transition going on in the forest products industry, what the future looks like, and the topic you are talking about today is really how to predict our workforce. And I just say to my colleagues that is not necessarily a topic of this hearing, but just to have that ability in the state or to have Federal support for states that want to do that without these projections, I think it leaves us much more vulnerable.

But if you want to talk a little bit about how you have been doing these productions—it also, by the way, created your position, which is I think particularly good because having you there helps us a lot. But you talked about some of the challenges in workforce recruitment, and one of them you mentioned was placemaking. Again, we don't often talk about that, but because we are often talking about people coming or living in rural communities where I am sure like Maine there are huge housing shortages, sometimes

the local hospital is a long ways away, those seem to be barriers at time to recruitment, particularly for the higher tech jobs you are talking about that are sort of the industries of the future. So I have already talked too much. I will let you go forth.

Mr. O'NEILL. Thank you very much, Representative Pingree. Definitely one of the big challenges about attracting people to work within a sector or within a location is not only just the jobs but the components around that job, the community that you are coming into, the services that are available. People don't necessarily want to just live in a bubble where they just go to work and they come home. There are all the other things like you had mentioned, that housing is affordable, broadband access, just to be in touch with family and friends around the world. The access to healthcare that is good quality healthcare, the ability to move freely, these are all things that people look for in communities. What is the community itself like?

And so one of the things with this EDA funding that we received through 2016, the FOR/Maine construction, was this community building component where we are working directly with municipalities and communities on positioning themselves to be attractive not only for business attraction and development but also for the citizens within their communities to want to retain those workforce, current and future. If you don't have amenities in your community, it is very tough to keep people in that community. And so setting that placemaking aspect of it is critically important. It is not like in the old days where if there is a job, people are going to show up. You need all the other stuff along with it.

Ms. PINGREE. Yes, thank you so much for that answer. And I know we can't fix all of those things with this Committee, but certainly for the Agriculture Committee, broadband has been one of our big considerations moving forward.

I don't have a lot of time but let me do a couple quick things here. So, Mr. Olander, I won't get a chance to ask you a question, but I just want to say I really appreciated your testimony because I think one of the things we hear often about is that people who work in some of the NRCS and other agencies often don't have this background in the future of agriculture, so for you to talk about training young people at a community college in tillage methods and the value of cover crops so they can see it firsthand, I think it is really valuable. And I want you to know this is from Staples, Minnesota. And even though I am a hard-core Mainer, I spent a lot of my summers in Brainerd so not too far away, or near Brainerd, one of those many beautiful lakes in Minnesota.

And, Dr. Holzer, I am not going to get a chance to ask you a question either, but I just also want to say I really appreciated your testimony. I think it was very comprehensive. I am a certified soil geek myself, so I think it is just so critically important we approach this from that perspective. And also, I have a background in environmental sciences, and I think often we don't teach people anything about the soil when we are teaching them about weather patterns and the ocean and all kinds of other things related to the environment, so I really think that is so important that you and others on this panel are promoting that and how we get that into earlier and earlier grades in school, so kids who are desperately in-

terested to learn more about climate change and about the environment understand the really important role of agriculture.

So I will yield back the time I don't have, and thank you very much, Madam Chair, and to all of the panelists. You were all great.

The CHAIR. Thank you, Ms. Pingree. The chair now recognizes Representative Moore for 5 minutes.

Mr. MOORE. Thank you, Madam Chair. I appreciate everyone having this Committee and obviously attendance and our witnesses. So I want to lead out with a question for Ms. Jensen. You mentioned earlier in your testimony the importance of partnerships with both government and nongovernmental entities. What kinds of new partnerships do you envision [inaudible]——

The CHAIR. Mr. Moore, we are losing our ability to hear you.

Mr. MOORE. I apologize, Madam Chair. [inaudible] Can you hear me now okay? [inaudible].

The CHAIR. Mr. Moore, if you want to try and—chair decision here. If you want to try and turn off your camera and hold it your ear, that might help us hear you better. I think that would be acceptable under these circumstances. We have already seen you on camera.

Mr. MOORE. Okay. Is that any better?

The CHAIR. That is better.

Mr. MOORE. Oh, great, great. I am glad to hear it. Sorry about that. We have some bad weather in Alabama today. It is kind of thunderstorms moving through, so we can hear okay sometimes, sometimes we can't.

So, Madam Chair, I have a question for Ms. Jensen. She mentioned earlier in her testimony the importance of partnerships with both government and nongovernmental entities. What kinds of new partnerships do you envision and with who, and how might they help to support careers in conservation?

Ms. JENSEN. Thank you, Representative Moore. That is a wonderful question. Our organization, as I mentioned in my testimony, just knows firsthand the *partner* of partnership. Simply put, we couldn't do what we do without the help from all the incredible partners that we have. And so, we really want to look towards the future, and we are excited for the future to welcome anyone and everyone who wants to be a part of this program because we know that we can make a much larger impact the more help that we get. So anyone that is interested, we would love to hear more from you. And, my contact information is in my written testimony, and I would love to have the opportunity to discuss this further with others.

And, as far as your question as it relates to what that might look like, as we continue to grow this curriculum, we continue to grow resource professionals that we can connect with for job shadowing opportunities and to serve as conservation leaders for these kids, the more individuals that we partner with, the larger reach that we have, so we really are excited for that opportunity in the future.

Mr. MOORE. Okay, thank you. And let me say, Madam Chair also, as a graduate of a land-grant university, we sure appreciate folks working with land-grant universities. And my background is actually science in this part of the world, but we do some environmental remediation projects, so we are always open to anything we

can do to help train the future workforce to come in. And so we are going to continue to do that. And with that, Madam Chair, I am going to yield back just because the weather is something crazy out here. And so thank you all so much for participating. And with that, I will yield back.

The CHAIR. Mr. Moore, please stay safe. Thank you for joining us, and certainly thank you for bringing your perspective to the hearing and the Committee.

Mr. MOORE. Thank you.

The CHAIR. The chair now recognizes Ms. Schrier for 5 minutes.

Ms. SCHRIER. Thank you, Madam Chair. I want to thank you for holding this hearing. This is a really vital issue in my district. I also want to thank all of our witnesses and give an especially warm welcome to my fellow Washingtonian, Mr. Michael Crowder, who I will have some questions for in a minute. Michael is such a smart, trusted leader in our state and in my office on conservation issues and frankly trusted throughout the country, so I am really glad to see him here today.

As mentioned, this is an incredibly important topic. I can't tell you how many conversations I have had with farmers and forest landowners in my district about the need to increase the capacity for on-the-ground technical assistance in order to meet the demand for conservation work. And I just want to highlight that part again and put added emphasis that demand far, far outstrips capacity for conservation programs. Our farm owners and our landowners are responsible stewards of the lands, and they want to participate in Federal and state programs, and they just need help to do it.

I got some great feedback from Pierce County Conservation District in my Congressional district and also Washington State University that I just want to share with the Committee today. Both pointed to expanding the definition of what we define as a *conservation job,* and we have heard some of this today. For example, more conservation is happening in urban areas, and touching on fields like engineering and sociology, urban studies. And agricultural sciences, often led by our wonderful land-grant universities like Washington State University are really changing the way that conservation work is being done.

Another key issue that they mentioned is that we need to expand training opportunities to allow people to transition into the workforce or learn new skills who are already in other jobs and beyond engaging youth and college students, workforce development, and worker retraining needs to include conservation.

Mr. Crowder, I have a question for you. In your testimony, you noted several NACD efforts to bolster the conservation workforce pipeline. And I want to ask you, as this definition of a *conservation worker* is changing and expanding, what is happening on the ground in Washington State to recruit and train a diverse, skilled conservation workforce? And also, how are those efforts incorporating the need for expertise in urban agriculture and engineering and other areas that aren't necessarily thought of as conservation fields?

Mr. CROWDER. Thank you, Representative Schrier. Good to see you again, and it is great to be with self-proclaimed soil geeks and duck folks and nerds like that. I love being around folks like that.

So I am part of an organization just like all my other witnesses. We love what we do. And I have to shout out to my partners in Washington State. Roylene Comes At Night, she is our State Conservationist to Chris Pettit, Executive Director for the Washington State Conservation Commission. You have Tom Salzer, the Executive Director for WACD.

So 20 years ago, conservation districts were primarily for agriculture and farming families. Now, districts are more in suburban and urban areas, so we are transitioning. Our supervisors are transitioning. Our clients are transitioning into these more urban areas. NACD has given 25 urban technical assistance grants to Washington State for $1.1 million to 18 districts, and that includes your districts in Pierce, Thurston, and Snohomish Counties, so a lot of technical assistance is going into that.

Washington State Conservation Commission is bolstering regional engineering teams in the districts. Executive Director Pettit is looking to hire an ag engineer to steer the program. As you know, we have Voluntary Stewardship Program in Washington. The legislature has appropriated $2.7 million a year for engineering, and we are working on the Sustainable Farms and Fields, so so much is going on at the local level to make sure that we have a broad representation and that we bring in those underrepresented, nontraditional supervisors and clients for our districts, and can't be happier with the work that we are doing.

Ms. SCHRIER. Thank you, in my 4 seconds, just for helping farmers manage extreme heat and prepare for those challenges in the future. Thanks for being here today. I yield back.

The CHAIR. Thank you very much, Ms. Schrier. The chair now recognizes Mr. Panetta for 5 minutes.

Mr. PANETTA. Outstanding. Thank you, Madam Chair, and thanks to all of our witnesses for being here. And thank you for being a part of this what I believe, especially coming from the Central Coast here in California, is a very, very important topic, so I appreciate your time and your discussion today.

I think clearly it is obviously very important and it is critical that we continue to talk about workforce development and all of the programs that are taking place, be it at the USDA or other conservation organizations that are out there. There is no doubt that these programs are vital to protecting our farmlands and developing effective conservation practices that have serious implications for Americans on and off the farm. And one of the many things that we are seeing especially here in my district on the Central Coast though is that electronic enrollment platforms are really evolving, and technology is becoming more and more accessible and prevalent, which is a good thing. That is one of the reasons why it is critical for the NRCS to be ready to deliver technical assistance to private landowners working to implement and design conservation programs.

Now, please know and realize that many of my colleagues and I are committed to investing in essential technical experts, especially when it comes to working with the 2023 Farm Bill. It is going to take a wide range of solutions. I think we understand that when it comes to executing our conservation goals and bringing in the Federal dollars to our rural communities, our farmers, and our

ranchers who are working hard to implement conservation programs and programs on their own lands.

But we can also do this as we better manage our forests, too, from the increasing threats of wildfires that we see out here on the Central Coast, and that is why I introduced the Save Our Forest Act (H.R. 5341), the bill that would help deal with the staffing shortages in National Forests and Grasslands and provide for natural resource managers and other conservation experts.

Now, as we look to protect our environment, farmers have a big role to play, but so does our government, and I think we understand that and that is why we are having this important hearing. We have to make sure that we provide the resources and the critical support to our farmers, to our ranchers, to our foresters, and all those impacted by the threats of climate change and environmental degradation.

Now, on another note, it is important that we train the next generation of the conservation workforce. That is why in December I cofounded with another Agriculture Committee Member the bipartisan Congressional FFA Caucus to help fund FFA and other similar organizations through the Carl D. Perkins Vocational and Technical Education Act. Our blue jackets do more than just raise livestock, we know that. FFA is training the future of the conservation workforce across all spectrums of the agricultural industry from hard sciences to STEM career pathways and the natural resource planning and conservation that is so important to us, and then providing obviously those public speaking skills and critical thinking skills and also community engagement, which is important.

So I want to hit on Ms. Schohr if I could. In your testimony you mentioned that the education that you received through your FFA experience and high school agricultural education classes really laid the foundation for your career. Do me a favor and speak more to your experience as a member of FFA and how it impacted your journey to the seat that you are sitting in today and also how can we in Congress ensure that urban and suburban students have more access to these types of programs which can really, to be frank, enlighten them to the work that our farmers and our foresters are doing?

Ms. SCHOHR. Switch that up a little bit. Thank you for that question. So I think the first line, how do we get more urban people involved is one of them is just getting more ag in urban classrooms. And so I think what is really exciting about a lot of the FFA courses now, I have a lot of friends that decided to go back into ag teaching. Most of their classes actually cross-count for college education, and so I think that is really exciting is that there are dual options in enrollment.

And so how did FFA really inspire me? So sitting in Mr. Dillabo's and Mr. Risso's classrooms, that is where I started learning about invasive weeds and plant ID and how do you manage those weeds using the whole toolbox with integrated management, with grazing or herbicide use. I learned about genetics. And one of the research projects I am working on right now with the Forest Service and colleagues at University of Arizona is actually GPS tracking cattle and looking at their DNA to see if they have genetic markers that make them hill climbers so they can do a better job of managing

our forests and the grasslands to reduce the threat of catastrophic fire.

And so those lessons learned a couple years ago in those classes really were an inspiration, and they got me out of Gridley to go experience the state, participate in national FFA conferences and contests around the country. So I am forever indebted to my ag teachers who gave up a lot of their weekends and evenings as amazing teachers to help me get to where I am today.

Mr. PANETTA. Outstanding. And it is nothing too bad with staying in Gridley, but I understand your point, especially being from the Central Coast rather than the Central Valley, but obviously looking forward to working with you and others from the Central Valley and all across our country to make sure that we support our conservation efforts.

Thank you, Madam Chair. I yield back.

The CHAIR. The chair now recognizes Mr. Correa if he is there. I saw him on camera earlier. Mr. Correa, are you there? He is not.

Mr. CORREA. Yes, I am.

The CHAIR. Oh, you are.

Mr. CORREA. I was trying to hit that button there.

Madam Chair, and I want to thank all of you for holding this important hearing, and listening to your comments about constituents that have lawns in my district, we have very few lawns. We have a lot of condominiums. We have probably one of the densest populations in the State of California. And the challenge is, as you have all put it, how do you get these young people to understand the value of agriculture, the outdoors, and I am trying to figure out how can we get that experience, how do we get some of these kids to go out and spend a week or 2 of the summer in Mr. LaMalfa's district to know what it is to be a farmer, to grow some rice, to get an appreciation of good public policy when it comes to agriculture? Because at the end of the day public policy really is dependent on us as individuals knowing what the agriculture industry really needs and the environmental challenges that we have.

So I guess my question, thoughts, comment, elicited a comment from the folks here as our guests is how do we get our kids to go out in the outdoors and spend a few weeks out there, student exchange, summer exchange, get them out there, roll up their sleeves and do some good work? Thank you very much. Comment, question?

Ms. SCHOHR. Well, I will answer that really quick. It just brought to my mind an opportunity that we have in California is actually as a 6th grader in our very rural agricultural community, they sent every 6th grader for a week to an outdoor environmental camp. And so we go camping, learn about forestry and forest health. We are there learning about where our food comes also, but the bugs and the trees and the water system, and so I think that was something also I had great experiences in both 4–H and FFA, but that weeklong of being there I know inspired some of my classmates to choose careers to go back into teaching and education and found inspiration in that week. And that is a program that is still continuing on to this day in our community.

Mr. CORREA. I think I need that program, too. When I was in the state senate with Mr. LaMalfa, I think I spent a week out in Shas-

ta County out in the forest and got a heck of an appreciation for the forestry, the lumber industry, and ag. What I learned, though, I am trying to figure out how we bring back that kind of experience to our inner-city youth, get them out. So any ideas how to multiply those kind of experiences? I would love to hear from you. Thank you very much. And thank you, Madam Chair, for holding this hearing.

Mr. CROWDER. Representative Correa, we all love to brag on what we know, and my local conservation districts, the Benton and Franklin Conservation Districts, we have programs like Salmon in the Classroom, and we reach 4,500 students and 22 schools in our local district. We have Wheat Week that we talk about wheat with the help of the Washington Grain Commission, and we teach them about farming and Drain Rangers. There is so much that we can do, just to get folks outside and then find those ones that are interested and love that and then let's find mentors to do that. We have lots of programs at NACD, but we have to get the kids interested and then mentor them to get them outside and into conservation careers.

Mr. CORREA. Thank you.

Dr. HOLZER. I will pipe in just quickly. Here in New Jersey most sixth-graders are going to go away for a few days into the forest. We do have forested places here in New Jersey, I swear we do, and they spend the 3 days just working with each other in team-building, but they also are there to do water quality testing. They will do all kinds of little conservation activities and enjoy themselves. So that is one small step. But I also think there are a ton of programs out there that it has to be—the message about those programs needs to get to the right people. And so if it is getting to the teacher, getting to a science supervisor in a school district to get the word out to the students, and I think we can get the kids out there, especially for, as you mentioned, Representative Correa, especially our kids that are in the city. They need to know that they can get out and that there are tons of activities out there for them or opportunities out there for them to try.

Mr. CORREA. Thank you. And just one last comment for you. Two weeks ago, my staffers went out to visit an urban garden in my district, 1,200′2. Thank you very much.

With that, Madam Chair, I yield. Thank you.

The CHAIR. Excellent. Well, before we adjourn today, I invite Ranking Member LaMalfa to share any closing comments that he may have.

Mr. LAMALFA. I have to get that technology turned on. Well, Madam Chair, I appreciate again the opportunity to talk about how we do need to stock up our ability to get people to enjoy the outdoors, appreciate my colleague Mr. Correa's comments on the enlightenment he got from being here in northern California and the great efforts our forest industry will do to bring people. And so let's lean on that some more because I think most people love the great outdoors, and what could be better than a job in them helping to manage our resources, whether it is for water, for wildlife, for better forest management so we don't burn a million acres every year with the lousy air quality and all the things that go with it. So I

would like that so we can help move this in this direction and incorporate some of these things into the farm bill.

Tracy's comments on more flexibility, please talk to us and help us put that on paper and put it into action and make these work just a bit better. I think there was a certain willingness to have these various programs that we have talked about for conservation, and we have had great success by and large, and we need to just keep expanding and keep making sure there are no barriers for their success.

So with that, Madam Chair, thank you again, and I will yield back.

The CHAIR. Thank you very much, Mr. LaMalfa. And in closing, I again want to thank all of our witnesses for being here today. Certainly, I think that the whole Committee is in agreement that truly technical assistance is incredibly important, be it at NRCS helping out in our communities but that the pipelines that are utilized to get us to this tremendous resource across our communities is incredibly important.

I truly appreciated Mr. O'Neill's comments related to following up specifically on Dr. Holzer's comments related to middle schoolers and recognizing that at times we do a lot of work perhaps in career and technical programs and community colleges and land-grant universities, but sometimes it is just planting that seed at the middle school age, and we have heard about a couple different states' specific programs where students even recognize that this is an option, that this is a career path being in the outdoors, focusing on conservation, that that is an option they could even pursue.

Certainly, I have been working on trying to ensure [inaudible] more funding for [inaudible], but I want to thank you for the tremendous insight that you all have provided into your work. Your emphasis on how important it is to have a well-trained conservation workforce that works closely with producers and foresters to achieve desired resource conservation on their lands I think is a clear point that you all have made through your answers to our questions today. The thoughts that you have shared will certainly enable us to develop policies that will help improve today's conservation workforce and build a sustainable pipeline of employees.

Certainly, your written testimony is valuable. I am grateful for the questions that you answered today but certainly your written testimony is particularly valuable as we are spending time really thinking towards that 2023 Farm Bill and across the country when we are looking at how is it that we administer and deliver successful and meaningful conservation programs, especially when some of them have grown increasingly complex over the years. Your thoughts have been very helpful to us. Certainly, the forces acting on our soil, our water, our air are becoming more extreme, and we are seeing more frequent and intense impacts as a result of the climate crisis, frequent storms, flooding, extreme weather, hurricanes in the Southeast, extreme weather variations, fluctuations, and of course historic wildfires in the West and notably in Mr. LaMalfa's district and region and state.

Certainly, these changes further underscore the need for greater investment in our conservation workforce and the challenges facing them, but it is not just about the workforce, it is not just about the

conservation. It is truly about creating jobs into the future where people are focused on the health of a community, the agricultural and economic drivers of a community, so I truly appreciate the very different viewpoints, though everyone is in general agreement, but the different perspectives to this conversation today. So hopefully, as we look towards the 2023 Farm Bill, I look forward to all of the Committee Members working together to focus on opportunities to grow our workforce and really ensure that producers have the support that they need to implement on-farm conservation programs and that the future in our schools, elementary, middle, high school and on up, recognize the incredible breadth an opportunity that exists in these fields. So again, I thank you so much for your time.

And under the Rules of the Committee, the record of today's hearing will remain open for 10 calendar days to receive additional material and supplemental written responses from the witnesses to any question posed by a Member.

This hearing of the Subcommittee on Conservation and Forestry is adjourned.

[Whereupon, at 2:33 p.m., the Subcommittee was adjourned.]

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