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Hearing on the High Plains: Combating Drought with Innovation

Hearing of Subcommittee on Conservation, Climate, Forestry, and Natural Resources
United States Senate

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Chairman Bennet, Ranking Member Marshall, and members of the subcommittee thank you for the opportunity to speak with you today about these critical issues.

My name is Alexander Funk, and I am the Director of Water Resources and Senior Counsel with the Theodore Roosevelt Conservation Partnership. Established in 2002, the mission of the Theodore Roosevelt Conservation Partnership (TRCP) is to guarantee all Americans a quality place to hunt and fish. The TRCP is a coalition-building organization that unites and amplifies the voices of hunters and anglers around issues that affect fish and wildlife conservation, habitat, and access. At the TRCP, we are dedicated to ensuring the places where Americans love to hunt and fish are conserved and the species upon which we depend as hunters and anglers are managed sustainably.

We work with 63 diverse partner organizations and countless other allies, grassroots supporters, and businesses on the issues most important to hunters and anglers—including management of America's fish and wildlife species, public lands, forests, river systems, wetlands, and saltwater fisheries, as well as policy and funding for private lands conservation, clean water initiatives, drought solutions, and Gulf Coast restoration. The TRCP is a voice for hunters and anglers in Washington, D.C., and nationwide. The TRCP works to craft common-sense policies benefiting fish and wildlife and works in partnership with agencies and landowners to get work done on the ground.

A major component of my work at the TRCP involves working with the conservation and agricultural communities to advance innovative, workable solutions to addressing drought in western states and watersheds. Specifically, we work to raise awareness of the challenges facing western farmers and ranchers from drought and aridification. We highlight examples of how these same producers are working with conservation partners to increase the pace and scale of voluntary efforts to minimize drought risk while benefiting fish and wildlife. These include practices like upgrading irrigation diversion and delivery systems to use limited water supplies more efficiently, promoting innovative agricultural water conservation approaches such as shifting to water-thrifty crops, building soil health, and restoring riparian and wetland habitats to increase aquifer recharge and attenuation of

flows. And we work to develop and advance policies that support these crucial projects in ways that work for the people most impacted by them.

TRCP encourages Congress to move quickly to pass a bipartisan Farm Bill to ensure funding and technical assistance are available to increase the pace and scale of several innovative drought adaptation and mitigation efforts described above. Failure to pass a Farm Bill in this Congress could jeopardize the availability of certain USDA conservation programs in the next Congress, which would be a significant blow to addressing ongoing drought and water supply challenges in Colorado, Kansas, and other western states. These programs are voluntary, incentive based, and effective, and, if available, can go a long way toward addressing the drought challenges farmers and ranchers face across the West.

The Impacts of Drought to Hunting and Fishing and Our Economy

Hunting and fishing play an important economic role nationally and here in Colorado. The National Survey of Fishing, Hunting and Wildlife-Associated Recreation, released recently by the U.S. Fish and Wildlife Service, shows that hunting and fishing contributes $145 billion annually to the United States economy. Hunting and fishing contribute over $3.25 billion to Colorado's economy annually, benefiting all 64 counties and supporting more than 25,000 full time jobs from small businesses to manufacturers to the tourism industry. According to the National Shooting Sports Foundation, hunting is responsible for nearly 8,000 jobs in Kansas, generating $2.9 million in salaries and wages and $60 million in state and local taxes. Through the purchase of annual hunting licenses and permits, hunters generate more than $20 million and qualify Kansas to receive nearly $10 million in funding derived from excise taxes on hunting and shooting equipment.

Drought and climate change threaten the viability of hunting and fishing and, as such, our economy in many ways. For terrestrial wildlife, drought impacts all aspects of habitat quality. For example, according to the Kansas Department of Wildlife & Parks, intense drought conditions in western Kansas throughout 2022 reduced pheasant populations by limiting the growth of nesting cover as well as valuable food resources such as milo and corn.[1] Drought also reduces wetland availability, contributing to declines in waterfowl populations, lower duck production, and less habitat during the critical migration and wintering periods, thus resulting in fewer hunting opportunities. Furthermore, reduced irrigation supplies during the growing season can affect both managed wetlands and agricultural crops (especially rice) and can contribute to declines in waterfowl as these agricultural practices sustain important habitats. According to Colorado Parks and Wildlife, drought, particularly when followed by severe winter conditions, is a driver of long-term declines in mule deer populations, among other causes, including disease and human impacts to habitats such as roads and fences.[2]

[1] https://ksoutdoors.com/Hunting/Upland-Birds/Upland-Bird-Forecast
[2] https://cpw.state.co.us/Documents/MuleDeer/ColoradosMuleDeerStory.pdf

Of course, drought and climate change also have a direct impact on aquatic ecosystems throughout Colorado, Kansas, and other western states. Drought conditions reduce stream flow, which impacts habitat quality and availability. Reduced flows impact water quality through lower dissolved oxygen concentrations and increased water temperature, which can result in significant stress and mortality to fish and other aquatic species. These flow reductions are happening on a significant scale. For example, United States Geological Survey research from 2020 found that streamflow in the Upper Colorado River Basin is decreasing by about 5 percent per degree Fahrenheit because of atmospheric warming, causing a 20% reduction in flows over the past century.[3] During the last 20 years, the Rio Grande's annual flows in southern Colorado's San Luis Valley have also decreased, placing more pressure on declining groundwater supplies.[4] Across the west, state agencies and local governments are closing rivers to all recreational use, including fishing, due to declining water flows and increased water temperatures. While these closures are necessary management tools to protect fisheries, they impact local economies reliant in part on summer tourism and could occur more frequently absent the development of additional tools to mitigate these reductions in flows.

Western fish and wildlife are well-adapted to drought, and negative impacts, like those described above, are manageable when they occur infrequently and for a short period. But as aridification on the High Plains and the West more broadly continues, these impacts will only become more problematic. Immediate adaptation and mitigation activities are needed to avoid major impacts on fish, wildlife, and our economy.

Increase the Pace and Scale of Innovative Drought Adaptation and Mitigation Efforts

The Kansas Water Plan and Colorado Water Plan recognize that with climate change, fish and wildlife and water users will continue to feel the direct impacts of drought, extreme weather events, and wildfires. These challenges are compounded by projected population growth, contributing to an existing water supply-demand gap. For example, the Colorado Water Plan finds that if no water projects or strategies are implemented, modeling for the driest periods shows Colorado communities could need 230,000-740,000 acre-feet of additional water annually by 2050.[5] To address these challenges, both state water plans recognize the need to dramatically increase the pace and scale of drought and climate change adaptation and mitigation measures as essential for future water security. Fortunately, Colorado and Kansas are pioneering several innovative water management and conservation approaches to address these drought and climate challenges while generating substantial co-benefits for farmers and ranchers, rural communities, and fish and wildlife.

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[3] https://www.usgs.gov/news/colorado-river-flow-dwindles-warming-driven-loss-reflective-snow-energizes-evaporation

[4] https://www.cpr.org/2022/03/08/upper-rio-grande-river-basin-decline-san-luis-valley-water-users-taking-action-state-of-the-basin-symposium/

[5] Id.

Addressing Aging Water Infrastructure

At the request of the Colorado General Assembly, the Colorado River Drought Task Force recently released a report with recommendations to address drought conditions.[6] The Task Force consisted of state and local government representatives, water management agencies, municipal water providers, agricultural interests, conservation organizations, and Tribes. While the report focuses on the Colorado River Basin, the final recommendations apply to all western watersheds. The report found unanimous support for increasing public funding to address water loss associated with aging water infrastructure. Aging infrastructure is extremely costly to replace or upgrade, but doing so provides significant water savings by avoiding losses. This is especially true in agricultural supply systems where lining or piping irrigation canals and laterals can often reduce the need to divert or pump additional water to maintain crop production.

The United States Department of Agriculture and other federal agencies, including the Bureau of Reclamation, have several resources at their disposal to address aging infrastructure. Still, more can be done to enhance water security, benefit agricultural producers, and benefit fish and wildlife. The 2018 Farm Bill included several provisions designed to address western water challenges. The Environmental Quality Incentives Program (EQIP) was modified to allow the Natural Resources Conservation Service (NRCS) to enter contracts with water management entities such as irrigation districts, ditch companies, and groundwater management districts to implement voluntary regional-scale water conservation and efficiency improvements. Despite this authorization, NRCS has not widely utilized this new authority within western states, partly due to limited NRCS guidance on how best to implement these provisions in line with the statute and limited financial and technical resources. The TRCP continues to support the development of additional guidance on implementing these provisions and would be eager to work with USDA leadership to discuss how to support these applications at a much larger scale.

Another emerging opportunity to address aging infrastructure challenges is the NRCS Watershed and Flood Prevention Program (also known as the "PL-566" program). The PL-566 Watershed Program is increasingly being utilized to address several western water challenges, from efforts to modernize water systems to enhance the resilience of aquatic ecosystems. However, as currently structured, the PL-566 Watershed Program struggles to meet increasing demand and to address unique western water challenges. Efforts are underway to modernize the PL-566 Watershed Program to increase the pace and scale of multi-benefit watershed resilience projects in western states, including several provisions of the *Healthy Watersheds, Healthy Communities Act of 2023* (S.2636). That bill introduced by Senator Bennet, Senator Fischer, and Senator Merkley would ensure drought resilience benefits can be realized through projects, simplify planning requirements for nature-based projects, and increase allowable federal contributions to projects.

[6] https://crdroughttaskforce.com/

Scaling Innovative, Voluntary Water Conservation Approaches

Addressing drought and climate change and their associated impacts on western water supplies will also require additional research and demonstration of innovative, voluntary water conservation approaches that reduce overall demand on surface and groundwater supplies while maintaining agricultural productivity, particularly on prime farmland throughout the west, as these lands are the most critical for maintaining food, feed, and fiber production.

Fortunately, several promising water conservation approaches are taking place in Colorado that could serve as models for broader regional efforts. Beginning in 2020, with funding from state and local agencies, the Colorado Master Irrigator Program launched to serve as a comprehensive education course available to Republican River Basin and San Luis Valley irrigators, two regions where irrigated agriculture depends on declining aquifer resources.[7] Colorado Master Irrigator offers farmers and farm managers advanced training on conservation and efficiency-oriented irrigation management practices and tools. Program graduates are also eligible for equipment discounts and favorable EQIP cost-share rates to implement water conservation and efficiency practices discussed during the course. Since the program's launch the program has provided training and resources to over 60 irrigators and crop professionals in the Republican River Basin of eastern Colorado who collectively manage over 75,000 acres. The program has become so popular that it has expanded to include the San Luis Valley, and programs designed for Colorado's Western Slope and Arkansas River Basin are also in development. Expansion of these peer-learning programs in other states struggling with water resource challenges should be considered.

Another innovative approach is testing alternative forage crops to enhance drought resilience. With financial support from the Colorado Water Conservation Board, American Rivers and the Colorado Ag Water Alliance are leading a multi-state research project that is testing more efficient alternatives to grass and alfalfa hay that account for a large share of water use in the West. A group of partners, which includes public universities and conservation groups, are conducting field trials at research stations and private lands at different elevations in Western Colorado to better understand which forage species and varieties are most productive and profitable under dry conditions and whether they can be grown at scale. Three test crops were chosen for their potential to produce high-quality hay and pasture while supporting soil and water conservation. One of the forages being tested, the Kernza® variety of intermediate wheatgrass, also produces grain, which can be used in beer brewing. Partners are currently focusing on identifying best practices for establishing the three crops. This effort will address whether these three crops are economically feasible in the region if they use comparatively less water and whether they can be grown at the scale needed to address water scarcity challenges.

[7] https://www.comasterirrigator.org/page/about

The TRCP supports the utilization of innovative approaches to sustainable groundwater management, including conservation easements to address declining surface and groundwater supplies. Pioneered by Colorado Open Lands to address declining groundwater levels in the San Luis Valley of southern Colorado, these easements include legally enforceable water conservation provisions. By incentivizing voluntary pumping reductions through tailored agreements with landowners, such easements offer a creative alternative to traditional water-saving methods such as fallowing. They can help avoid risks associated with mandatory curtailments of water use, which is becoming much more commonplace in groundwater water-stressed regions, including the Ogallala, Central Valley of California, Snake River Plain in Idaho, and throughout the Rio Grande Basin. These agreements compensate landowners for the value of their pumping reductions through cash payments, tax credits, or a combination of both. Beyond their benefits to the long-term agricultural productivity of the region, these approaches also prevent declining water tables that reduce streamflow and result in the loss of riparian vegetation and wildlife habitat. Congress should consider support for efforts to scale the utilization of groundwater conservation easements and other innovative water conservation approaches, including through the *Voluntary Groundwater Conservation Act* (S.2250), introduced by Senator Bennet and Senator Moran, which would establish a new voluntary groundwater conservation easement program within NRCS.

Finally, the Conservation Reserve Program plays a critical role in drought adaptation. By providing incentives to establish and maintain perennial cover, the CRP protects and restores environmentally sensitive agricultural land while providing a producer with consistent rental income on what are often the riskiest acres on their balance sheet. Perennial cover reduces water loss to evaporation, increases infiltration, prevents erosion and sedimentation, sequesters carbon, and builds soil health. This same cover provides essential wildlife habitat and improves surface and groundwater quality. The CRP has the potential to support the transition from water-intensive annual cropping to grazed livestock systems that are far less water-intensive. Still, there are barriers to this as the program is currently structured. Rental rates under CRP should reflect the program's ecological value and be sufficient to encourage enrollment; that is often not the case. Payment limitations under the CRP have not been updated since 1985 and do not reflect current land values.

Limitations or prohibitions on cost-share for management activities, including mid-contract management, also create disincentives for enrollment or lead to less effective management. For example, in most of the U.S., including Colorado and Kansas, producers who enroll in Grassland CRP cannot access programs like EQIP to address resource concerns on those same acres. A highly successful pilot program in Wyoming has shown the value of allowing those programs to work together for ranchers, and migrating wildlife is the focus of the *Habitat Connectivity on Working Lands Act* (S.4193), introduced by U.S. Representative Vasquez and Representative Zinke and Senator Heinrich. Several provisions of the *CRP Improvement Act of 2023* (S. 174), introduced by Senators Thune and Klobuchar, would also enact helpful changes, including increasing the CRP annual

payment limitation and making CRP grazing more viable by providing cost-share for the establishment of grazing infrastructure including fencing and water infrastructure.

Additionally, despite these barriers, the CRP is effectively at its statutory acreage cap, meaning that farmers and ranchers who could benefit from the CRP will not have access to it in the coming years. Removing these and other barriers would greatly enhance the ability of the CRP to support farms and ranches on the High Plains and across the U.S. while increasing resilience to drought at meaningful scales.

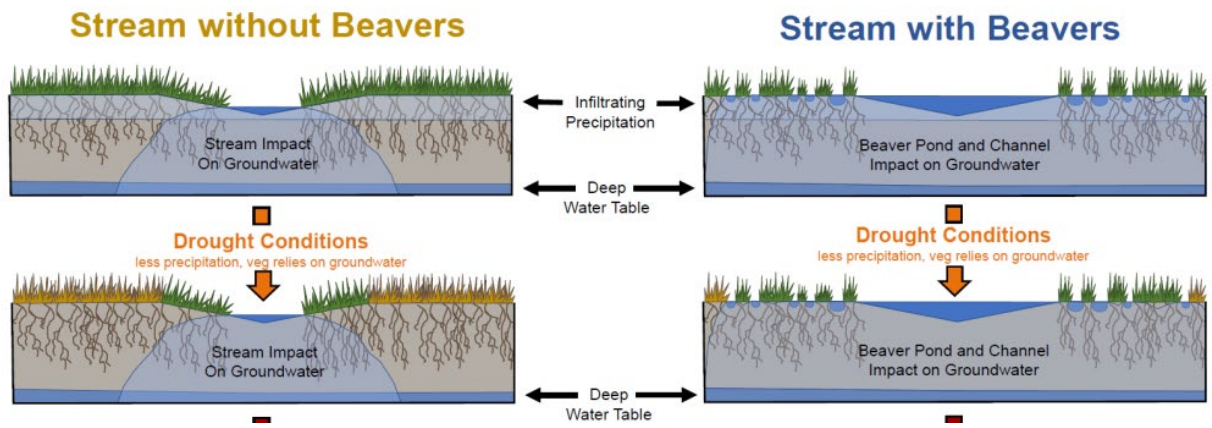
Building Resilience Through Natural Infrastructure Approaches

The TRCP encourages Congress to further recognize the benefits of and increase public investments in scaling natural infrastructure approaches to enhance resilience to drought and other natural disasters such as wildfires. Natural infrastructure projects restore nature's processes to provide key services and ecosystem functions. These projects use existing or restored natural landscapes and features such as forests, floodplains, and wetlands to increase resilience to drought and climate impacts.

Natural infrastructure can strengthen climate resilience by enhancing water security, reducing drought impacts, mitigating floods, and reducing wildfire risk. Investment in natural infrastructure solutions is essential in the face of reductions in streamflow. Snow accounts for two-thirds of the inflow into major storage reservoirs in the Basin, and over the past 60 years, snowpack has declined across 90% of monitoring sites. Proactive forest and wet meadow restoration and management can improve snowpack retention and prolong snowmelt and runoff by helping soils slow runoff so rivers flow longer into the dry season. Additionally, investment in forests, floodplains, agricultural practices, urban green spaces, and urban infrastructure will ensure a climate-resilient future in western watersheds by providing multiple economic, environmental, and social benefits to communities that need functioning infrastructure and a healthy environment.

Specifically, one natural infrastructure approach is gaining recognition to address risks associated with wildfire and drought throughout western states: the utilization of beaver-assisted riverscape restoration efforts. Beavers build dams, dig channels, and change small streams into broad wetland areas. Their ponds and channels, particularly, slow down water and spread it out in the landscape. This gives water more time to soak into the soil, which keeps plants green and lush even during periods of drought. For example, research from Dr. Emily Fairfax, an Associate Professor of Geography at the University of Minnesota, demonstrates that healthy natural stream systems and restored headwater floodplains, including those influenced by beaver activity, enhance natural water storage capacity by more effectively slowing down flashy spring runoff and other flooding events that can be more slowly released to streams during summer months when water is most needed for irrigation and fish and wildlife.[8]

[8] https://repository.library.noaa.gov/view/noaa/48627



Conceptual model created by Dr. Emily Fairfax (2017). CC BY-NC-ND

Beaver-modified riverscapes can enhance drought resilience in arid landscapes. Photo by the Bureau of Land Management.

Beaver-modified riverscapes also help build resistance to wildfire. Photo by Dr. Joe Wheaton, Utah State University.

Overall, scaling these beaver-assisted restoration efforts can provide significant benefits for addressing drought challenges facing both agricultural producers and fish and wildlife. Critical, immediate needs to scale these beaver-assisted restoration efforts include expanding programmatic and capacity-building resources for state and Tribal wildlife management agencies working to support beaver management and restoration efforts and funding for landowner education around the benefits of beaver and funding for non-lethal beaver management efforts that can address concerns around minimizing beaver-related damage to water infrastructure while maximizing their drought resilience benefits.

A Multi-Title Approach to Drought Adaptation and Mitigation Efforts in the Farm Bill

The TRCP encourages Congress and USDA to consider a "multi-title" approach to addressing drought adaptation and mitigation challenges in the West. While the Conservation Title and its associated programs can play a more significant role in addressing drought-related challenges, other sections of the Farm Bill, including the Foresty, Rural Development, and Research titles, can also play a significant role.

<u>Forest and Watershed Management for Drought and Wildfire Security</u>

Forests are home to our natural water infrastructure - the source watershed streams, wetlands, and meadows that capture annual snowmelt and storm events and provide critical drinking water for communities across the West. 65% of the drinking water supply in the Western United States comes from forests. Forests and their natural water

infrastructure also serve as natural reservoirs; enhancing drought resilience through soil moisture storage and groundwater recharge helps sustain river base flows in the summer when crops, livestock, people, and wildlife need water. Well-managed forests and their supporting natural water infrastructure provide numerous additional public benefits, including preventing soil erosion, improving water quality, lowering water treatment costs, capturing carbon, and benefiting wildlife habitat and fisheries.

The Farm Bill provides an opportunity to increase the pace and scale of forest headwater restoration to address drought and other natural disasters. Specifically, strengthening the Water Source Protection Program and Watershed Condition Framework, which provide authority to the U.S. Forest Service to develop and implement watershed restoration activities that build resilience to natural disasters, should be a priority. The *Headwaters Protection Act* (S.1853), introduced by Senator Bennet and Senator Crapo, would make several critical improvements to these programs, including enhancing overall funding, expanding access to include more agricultural water users, reducing the non-federal cost share, providing more flexibility for water users to work with the Forest Service to access these funds, and prioritize investments in natural infrastructure approaches that build resilience to drought and wildfire. Other opportunities include expanding the focus of the Collaborative Forest Landscape Restoration Program and Joint Chiefs Landscape Restoration Partnership Program to give special consideration to proposals that seek to reduce the risk of uncharacteristic wildfire or enhance watershed health and drinking water sources.

<u>Dedicated Financial Resources for Western and Working Lands</u>

A significant challenge to increasing the pace and scale of drought mitigation and adaptation efforts is a lack of dedicated funding. Unlike other geographic regions, such as the Chesapeake Bay and Great Lakes, which have dedicated NRCS funding programs, no targeted funding is available for conservation and restoration efforts in western watersheds. In early 2023, the NRCS released the Western Water and Working Lands Framework for Conservation Action. In the Framework, NRCS identifies water resource challenges and a suite of conservation practices and strategies to address those challenges. While the framework does provide a roadmap for addressing climate change and building drought resilience, it does not come with any dedicated funding.

The TRCP and several conservation and agricultural partners support dedicated funding to implement the Western Water and Working Lands Framework. The existing EQIP WaterSMART Initiative, which provides a process for coordinating financial and technical resources between the Bureau of Reclamation and NRCS, could serve as an existing program for directing additional funding to increase the pace and scale of drought adaptation and mitigation efforts, particularly if additional funds would expand the scope of the EQIP WaterSMART Initiative to include a portfolio of voluntary conservation strategies beyond the current focus of off-farm and on-farm water efficiency enhancement. Expanding this program could also help further support better interagency

coordination in terms of the strategic alignment of federal resources to address drought-related issues in ways that benefit agriculture and the environment.

Addressing Universal Barriers to Accessing Federal Resources

Over the past several years, a significant focus for the TRCP has been addressing universal barriers to accessing federal resources to address drought conditions and benefit fish and wildlife in western waters. Despite the historical availability of federal funding, critical challenges from securing adequate cost-share and lacking local capacity to pursue and administer federal funds are significant barriers facing rural communities and water users in accessing federal resources. The TRCP acknowledges that Congress and USDA have made significant strides in addressing these barriers. Particularly, the TRCP supports ongoing implementation and funding for the Equity in Conservation Outreach Cooperative Agreements Initiative. USDA is investing up to $70 million in cooperative agreements to support outreach to underserved producers and communities about opportunities to participate in NRCS conservation programs. We also support dedicated funding for the Rural Partners Network, which provides resources to rural and underserved communities to access federal resources for critical needs, including water infrastructure. We also support current efforts to evaluate changes to the Regional Conservation Partnership Program and Technical Service Provider program to enhance the delivery of technical assistance to producers and other partner organizations. As such, we thank Senator Bennet and Senator Marshall for addressing the technical assistance shortages, including through the *Increased TSP Access Act* (H.R. 3036), which would streamline the process for TSP certification.

Despite these efforts, we encourage Congress to support efforts in the next Farm Bill that address these universal barriers. For example, the *Rural Partnership and Prosperity Act of 2023* (S. 3309), introduced by Senators Casey and Senator Fischer, would address critical barriers such as a lack of funding and staffing capacity in rural and Tribal communities to navigate the complex system of federal grants. Specifically, the legislation would create a new Rural Prosperity Technical Assistance Grant Program with USDA Rural Development that would provide financial assistance to rural and Tribal communities to increase capacity to assist them in navigating and applying for federal funding opportunities to address local priorities. The TRCP also encourages Congress to support other opportunities in the Farm Bill to expand workforce development and job creation programs in rural areas that could help establish the trained workforce necessary to increase the pace and scale of drought adaptation and mitigation strategies. For example, reauthorizing and expanding the Rural Innovation Stronger Economy Grant Program to include workforce development opportunities for forestry and conservation practices would help address critical workforce bottlenecks in rural and underserved communities such as eastern Colorado and the San Luis Valley and ensure there is an adequate workforce ready to address long-term drought challenges in the western United States.

Conclusion

In closing, thank you again, Chairman Bennet, Ranking Member Marshall, and other members of the Subcommittee, for the opportunity today to speak about the drought and climate change impacts facing western agriculture and watersheds. The TRCP appreciates the efforts of Congress to work through difficult negotiations around the future of food and farming in the United States. Drought and climate change continue to impact western agriculture's long-term viability, food and water security, economies, and iconic fish and wildlife habitat. As such, we encourage Congress to move swiftly in passing a bipartisan Farm Bill that recognizes the unique challenges facing western watersheds, includes additional resources necessary to increase the pace and scale of drought adaption and mitigation efforts through both structural and natural infrastructure approaches, and enhances the long-term viability and resilience of rural and underserved communities in the face of drought. Failure to pass a Farm Bill in this Congress could jeopardize the availability of certain USDA conservation programs in the next Congress, which would be a significant blow to addressing ongoing drought and water supply challenges in Colorado, Kansas, and other western states. The TRCP and our partners in the hunting and fishing community are ready to work with you to craft a Farm Bill beneficial for agriculture, fish, and wildlife.