AN

INDIGENOUS PERSPECTIVE OF FIRE IN THE UPPER SNAKE RIVER BASIN

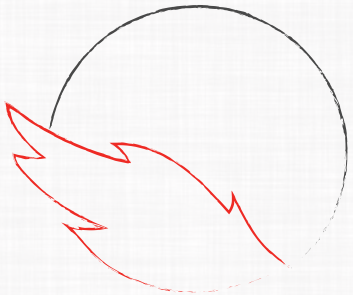
Prepared by the Upper Snake River Tribes (USRT) Foundation and the Great Basin Fire Science Exchange (GBFSE), 2024.

Primary author: Daniel Stone, Environmental Program Director, USRT (Shoshone-Bannock Tribal Member). Editorial support provided by Corey Gucker, Eugénie MontBlanc, Mark Brunson, and Alexander "Sascha" Petersen.

Design and illustrations by Adaptation International and Atalie Pestalozzi.

For more information on the Great Basin Fire Science Exchange and their project work please visit their website and explore the various resources that are available for your community or agency, including a GIS story map.

Recommended Citation: Stone, D. 2024. An Indigenous perspective of fire in the Upper Snake River Basin. Reno, NV: Great Basin Fire Science Exchange and Upper Snake River Tribes Foundation. 56 p.



AN INDIGENOUS PERSPECTIVE OF FIRE IN THE UPPER SNAKE RIVER BASIN

ACKNOWLEDGEMENTS

Fire has been used as a management tool by the Indigenous peoples of the Great Basin from time immemorial. This document is authored by a Shoshone-Bannock Tribal member with over 15 years of natural resource management experience on the Fort Hall Reservation. This publication is intended to help resource professionals understand the use of fire by the Tribes in a cultural setting and in their contemporary management actions. It is also intended to describe actions being taken by Tribes and highlight a paradigm shift in holistic fire management.

The Great Basin Fire Science Exchange and author would like to acknowledge the contributions of the Shoshone-Bannock Tribes and the Upper Snake River Tribes Foundation to this publication. Graphic design and layout support provided by Adaptation International and Mizuna Creative.

CONTENTS

HOW COYOTE STOLE FIRE

The birds and animals were men. At one time there was no fire in this country.

Lizard was lying in the sun to keep warm.

As he lay there he noticed something falling slowly from the sky. When it came to the earth, all the people ran over and looked at it.

They said, "What, is this?"

Coyote said, "Don't you know what this is?"

They said, "No."

Coyote said, "This is an ash from a fire in another country. What are we going to do about it? Somebody must go far up in the sky to find out from where it came. Who can go?"

Hummingbird said, "I can go."

Hummingbird started up in the sky, while everybody watched him. Coyote tipped his head and squinted one eye, watching him with the other.

When Hummingbird was far up in the sky, Coyote saw him look toward the north, then turn and look toward the east. Then he looked toward the south, and, finally, turned toward the west. He continued to look a long time toward the west. Soon he came down. When he was on the earth again, everybody gathered around him.

Coyote said, "What about it? What did you see?"

Hummingbird said that he had seen a big body of water in the west. There were many people on the shore, dancing around a huge fire.

Coyote said,"We must go over and get the fire."

They started toward the west. On the way Coyote stationed the people at intervals. When they got near the fire, Coyote made himself false hair out of string. There were many people dancing around the fire. Coyote joined them and began to dance, but they did not recognize him. All night as he danced, Coyote tried to catch the fire in his false hair. When it was nearly morning, he caught the fire and fled. The people had now lost their fire, and began to chase him.

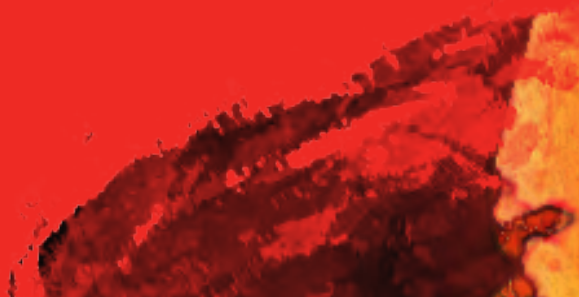
Coyote ran to the first man he had posted and passed the fire on to him. This man ran with it to the next man, and in this way it was relayed from one to another until it was passed to Jackrabbit. Jackrabbit put it on his tail, making his tail black.

Rat had a house on the top of a tall rock with a smooth, vertical face. He sat in his house, while Jackrabbit was coming with the fire. The pursuers made hail fall. This hurt Jackrabbit so that he squealed as he ran. Rat heard this and came down to meet him. He took the fire from Jackrabbit, dodged his pursuers, and scrambled up to his house. The fire burned a red place on his breast.

The people below said, "Catch him, but do not kill him. We want the fire." Rat remained in his house and put the fire into a large pile of brush. The people below pleaded with him to give them some fire. Rat threw the brush in all directions. "The brush now has the fire in it. You can get it out by making a fire drill of the brush."

1 TRADITIONAL ECOLOGICAL KNOWLEDGE

WESTERN SCIENCE AND MANAGEMENT SYSTEMS




A CONNECTED
ECOSYSTEM

Reciprocity is a critical component of most Indigenous knowledge systems across the Tribes in the Columbia River Plateau, Intermountain West, and Great Basin and is one of the tenets of process-based restoration. Traditional knowledge systems convey principles of conduct for community members, pass down observations recorded through stories and songs, and describe the obligation to care for ecological systems as perpetual stewards. The commitment to act as a steward of their homelands ensured that the environment sustained their social structure and their families thrived in a balanced environment. Perhaps the most common example from our contemporary setting comes from Chief Seattle (Duwamish), popularized by many environmental organizations over the past several decades:

> *"Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect."*
>
> – Chief Seattle

< **Marsh Creek Fire Sunrise (2018).** © Daniel Stone, Shoshone-Bannock Tribes.

The reciprocal nature of our human interactions with our natural environment can be viewed through the lens of fire management in the West by federal, state, and private land managers. A wildfire's impact is not affected by the presence of a geopolitical boundary, it is still inherently a natural process fueled by relatively well-understood dynamics. Yet, changing climate conditions such as extended heat waves, droughts, shifts in rainfall patterns or types of precipitation are changing how fire behaves in the West. From a Tribal member's perspective, these climatic conditions, social development, and ecological degradation are all connected events with relatively predictable consequences. Because there is a reciprocal relationship with our environment, we are collectively accountable for the consequences of our choices in a modern context through a changing climate.

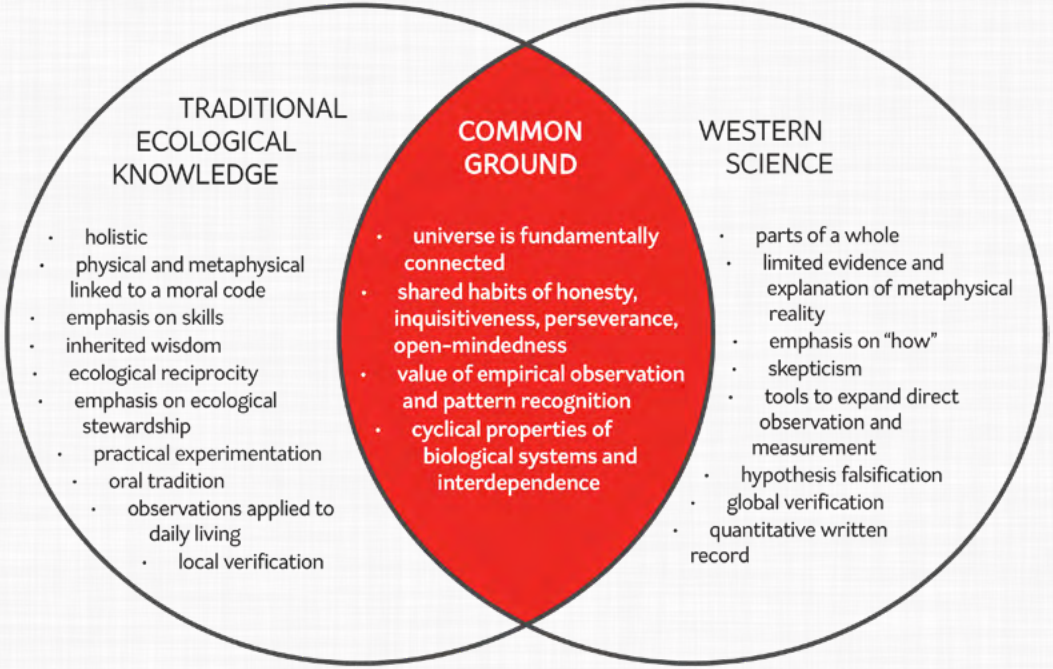
Marsh Creek Fire Sunrise (2018).

TRADITIONAL ECOLOGICAL KNOWLEDGE

IN MANAGEMENT SYSTEMS

Indigenous natural resource management often describes Tribes in a historical context, relying on the first written accounts of Tribal management actions as evidence of its social prevalence at the time observed. This approach can help establish a connection through direct observation of Tribal practices by authors with a common linguistic background. The primary issue with developing Traditional Ecological Knowledge (TEK) principles from historical accounts is that it assumes Tribal people are 'frozen in time' at contact.

Tribal communities are vibrant and dynamic, evolving over the past several centuries by adopting new technologies, contextualizing new educational systems, and managing smaller parcels of land that now represent their 'permanent homes'. As a component of this evolution, Tribes have adopted a number of techniques from contemporary land management systems and have helped inform those same actions through collaborative partnerships.



^ ***Figure 1.*** Shared Characteristics of Western Science and Traditional Ecological Knowledge. Adapted from Sydney Stephens, Handbook for Culturally Responsive Science Curriculum (Fairbanks, AK; Alaska Science Consortium and Alaska Rural System Initiative, (2000).

From the diagram above we can start to see one possible interpretation of characteristics that are shared between contemporary 'western' scientific approaches and 'TEK' approaches in Tribal land management systems. There are unifying features of both aspects of natural resource management and conservation science that have allowed for those same systems to evolve over time, particularly on Tribal lands. Approaching difficult management scenarios with honesty, replicable observations in natural settings, and a deep understanding of ecological systems over generations are shared characteristics between our knowledge systems.

SHIFTS IN FIRE

MANAGEMENT

SYSTEMS

In 1911 the US Forest Service established the "10 AM Policy" that called for immediate suppression by 10:00 AM the morning after a fire was spotted. In the 1960's the National Park Service began recognizing the importance of fire in an ecosystem and in the 1970's the US Forest Service shifted from a strict policy of suppression and began to allow some fires to burn naturally.

The Departments of Interior and Agriculture have collaborated to allow fire to be present on the landscape and to coordinate critical resources for catastrophic wildfires. It is clear that prescribed fire can be a component of effective land management strategies and that some suppression activities will always be necessary, but the two are not mutually exclusive. In an appropriate setting both suppression and prescribed fire can be utilized to promote healthy ecological processes, protect against catastrophic wildfires, and develop a more normative fire regime in a changing climate.

In the forests of northern California, the Yurok Tribe, CalFire, and US Geological Survey (USGS) are partnering to bring culturally prescribed fire back to the landscape in an effort to reduce the effects of catastrophic wildfire and provide ecological resilience to the landscape. The partnership is an example of how federal partners and Tribal managers can collaborate to enhance resources both on and off the reservation through the use of fire.

< **Fire fighting, Oregon (September, 1908).** Special agent J.T. Jardine fighting fire with a wet saddle blanket on the Wallowa National Forest, Oregon. View shows the fire entering the Yellow Pine timber near the Billy Meadow Ranger Station. © Forest History Society, Durham, NC.

“Our primary objective transcends merely contributing to the body of western science. Yurok people know the benefits of prescribed fire and have known since time immemorial. They know that if you burn, there is going to be more water. Our main aim is to address Yurok inquiries, rooted in tribal community interests, such as securing a brighter future for the flourishing of traditional foods, fibers, and medicines, as well as preserving traditional lifeways in the face of climate change.”

– Christine Cosby, Environmental Coordinator, Yurok Tribe

At the heart of the project is the use of Tribal knowledge to maintain consistent use of fire in their local forests that maintain tree species diversity, reduce localized demand for water resources from trees, and maintain an understory free of ladder fuels. The use of soil moisture data loggers and remote sensing technology allows the partners to use the data and local observations to assess results from each project area. By bringing western scientific methods together with Tribal knowledge, communities can develop systems of fire management that are culturally and ecologically appropriate. Tribes across the nation are participating in this new management paradigm as the need to increase resilience in plant communities grows with each passing year.

The interaction between the Bureau of Indian Affairs (BIA) and regional Tribes, including those in the Upper Snake River Basin, has led to a greater understanding of the role fire should be playing on the landscape and the risk of unmitigated fuels on Tribal lands. Funding for fuels management, climate resilience, and burned area recovery are all critical resources in the Tribal land management toolkit; along with prescribed fire. The Shoshone–Bannock Tribal example highlighted in this publication is representative of the countless hours of work performed by regional Tribes to manage their own Tribal lands each year.

< Aspen restoration project, FASMEE, Fishlake National Forest, Utah (2023). © David Grove/Graylight Media

2 WILDFIRE

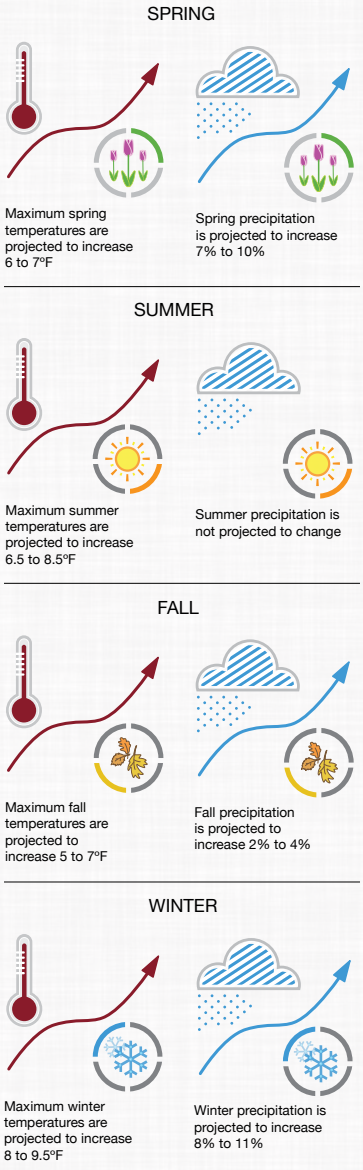
IN A CHANGING CLIMATE

CLIMATE PLANNING

IN THE UPPER SNAKE RIVER BASIN

^ Snake River near Massacre Rocks, Idaho (2014). © Scott Hauser, USRT.

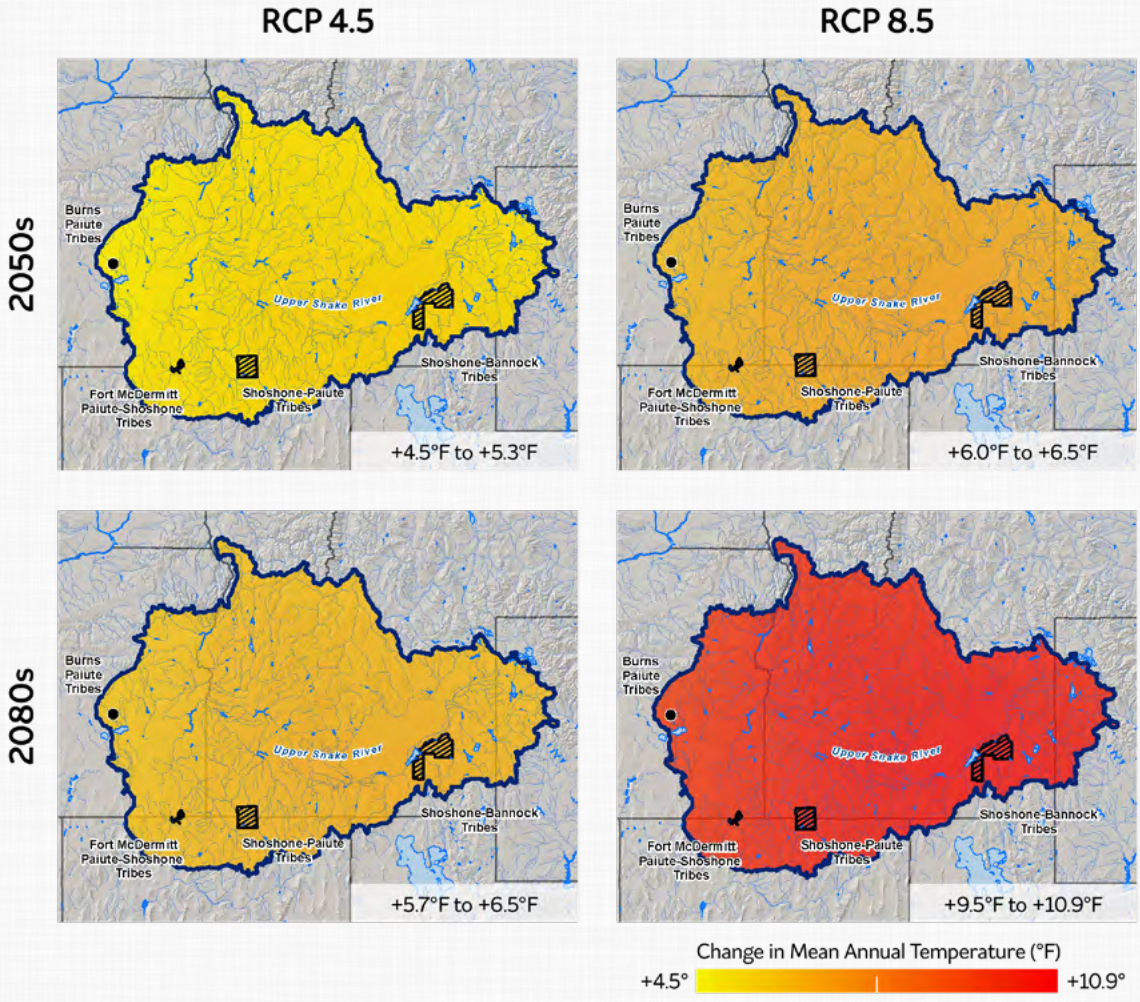
Upper Snake River Tribes (USRT) and the Shoshone–Bannock Tribes collaborated with Adaptation International and used funding from the Bureau of Indian Affairs Tribal Resilience Program to develop vulnerability assessments and adaptation planning documents for the Upper Snake River Basin and central Idaho. Under the analyzed climate change and emissions scenarios, temperatures are projected to increase, while snowpack is projected to decrease.



> *What we are seeing on the Owyhee is probably due to less water, but, what else? Hot Days. It has gotten very hot. Let's not leave it there...What do we DO about it."*
>
> – Beverly Crum, Shoshone-Paiute elder (USRT Climate Vulnerability Assessment)

These changes and associated extended heat waves have the potential to dramatically increase the risk of droughts, expand direct and indirect human health impacts, and exacerbate wildfire risks to Tribal resources. While fire is a natural ecological process in the Snake River Basin, the amplification of fire risk factors could have significant effects on fire behavior and post-fire recovery. More information is available in USRT's Climate Change Vulnerability Assessment, 2017.

< ***Figure 2.*** Seasonal temperature and precipitation projections for the 2050s (2040–2069) in the south subdomain of the Upper Snake River Watershed. Temperature increases and percent precipitation change are relative to modeled historical averages from 1950–2005. The range of values represent the average of the lower climate scenario model projections (RCP 4.5) and the average of the higher climate scenario model projections (RCP 8.5) across all models.



^ *Figure 3.* Seasonal temperature and precipitation projections for the 2050s (2040–2069) in the southern portion of the Upper Snake River Watershed used by USRT to inform their climate change planning processes. Changes are relative to modeled historical averages from 1950–2005. The range of values represent the average of the lower climate scenario model projections (RCP 4.5) and the average of the higher climate scenario model projections (RCP 8.5) across all models. More information is available from USRT.

WILDFIRE RISKS

TO TRIBAL COMMUNITIES

Wildfire is a critical part of many functional ecosystems, with benefits for multiple species that encourages ecosystem diversity in some scenarios. However, a frequent fire interval is a risk in shrub-steppe and aspen/conifer habitats due to the stress on soils, likelihood of invasive species proliferation, and immediate loss of unique or culturally important habitats.

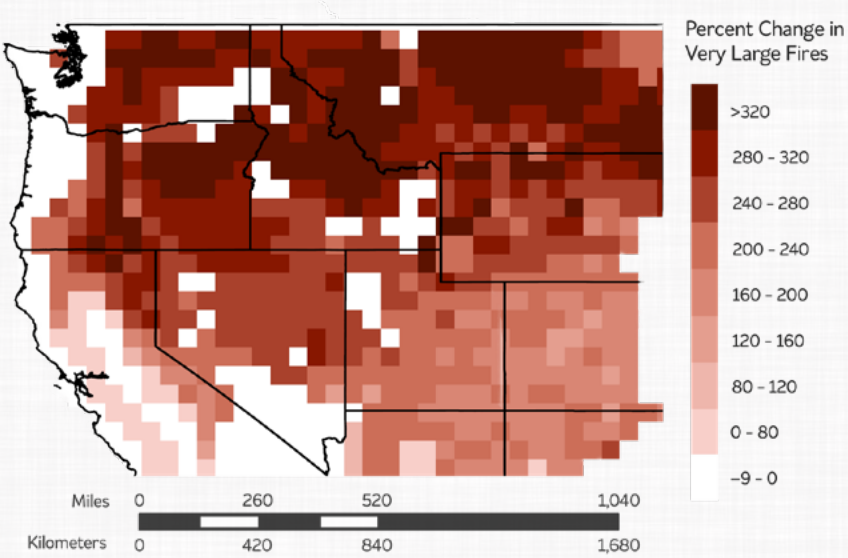


Figure 4. Projected increase (% change) in annual large fires (>12,300 acres) of modeled mid-century (2040–2069) and historic (1971–2000) time periods (Barbero et al., 2015). The multi-model mean was derived from 17 MACAv2-METDATA downscaled CMIP5 models using the higher-emissions scenario RCP 8.5. Map created by M. Jeffries, USGS, using Climate Mapper tool (Hegewisch et al., 2024).

Summaries of climate projections completed as part of the USRT Vulnerability Assessment point to increases in median annual area burned resulting from the projected regional temperature and precipitation changes. Local impacts will vary greatly within these broad areas due to the sensitivity of some fuels relative to precipitation, invasive species, and fire behavior.

Controlled burn at Hart Mountain National Wildlife Refuge, Oregon (2006). © Scott Shaff, USGS.

3 TRIBAL RESILIENCE ACTIONS

FOR PRESCRIBED WILDFIRE

CLIMATE RESILIENCE ACTION DATABASE

AND TRIBAL USE OF PRESCRIBED FIRE

Tribes across the nation are using prescribed fire as a tool to manage unique, culturally and ecologically important habitats both on and off their respective nations. The Tribal Resilience Action Database (RAD) project recently created a culturally sensitive, easily accessible, and useful database of climate adaptation strategies and community resilience actions already published by Tribes as part of their existing adaptation or resilience plans. The database has 29 unique entries for Tribal communities that incorporated prescribed fire into their management plans, implementation actions, and land management policy paradigms. Each of these entries are primarily related to Tribes in the Northwest, Upper Great Basin, Great Lakes, Montana, and California. For more information and to view the actions, please visit and support Tribal Resilience Action Database.

The use of prescribed fire in a community resilience context is a direct recognition that climate change will have consequences for plant and animal relatives and those people involved in combating wildfire in our Tribal communities. The Tribal RAD supports Tribal communities by offering 'real-world' examples of strategies

^ **Prescribed Fire.** © Scott Hauser, USRT.

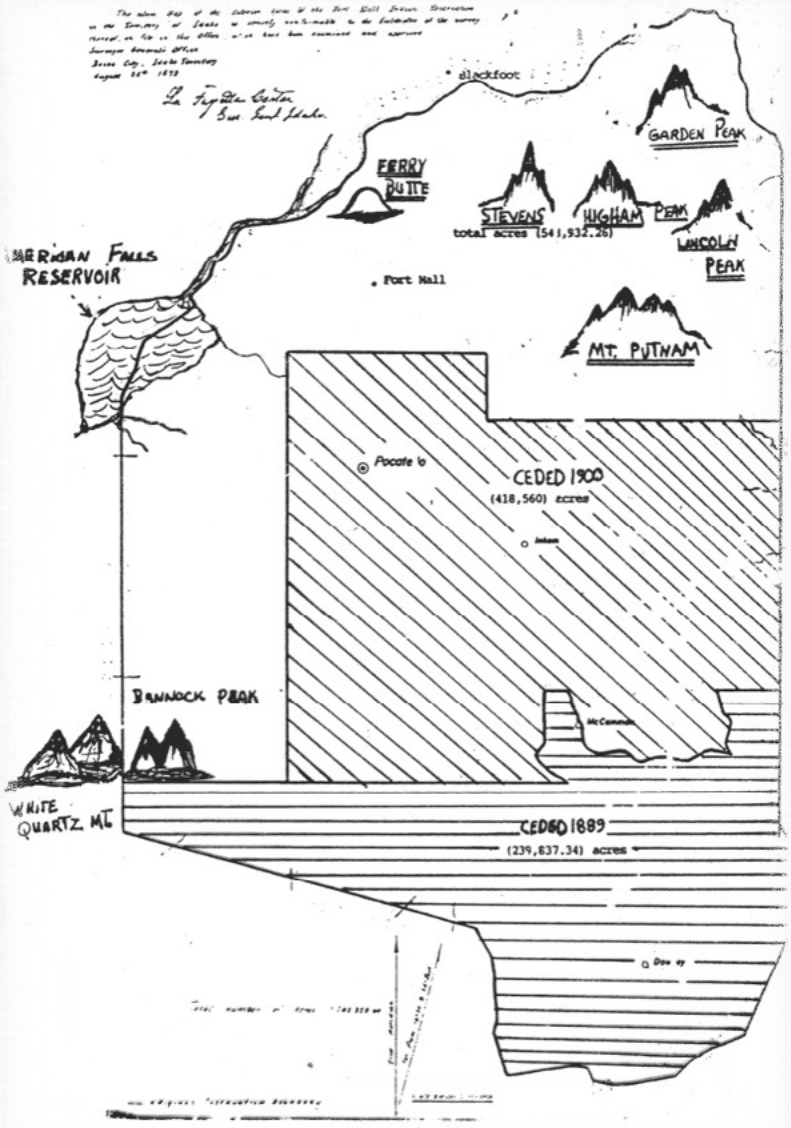
being employed using the best available science for landscape management. Each Tribe is unique and each reservation will have its own planning criteria based on the resources present in that specific geographic region. The Shoshone–Bannock Tribe, in the northern portion of the Great Basin, provides one example of how fire can be incorporated into a holistic approach to land management.

PERMANENT HOME

SHOSHONE-BANNOCK TRIBES OF THE FORT HALL RESERVATION

The Fort Hall Reservation is the permanent home of the Shoshone-Bannock Tribes, whose traditional homelands are within the northern range of the Great Basin, the Snake River Plain, Columbia River Plateau, and Upper Missouri River. Initially surveyed at 1.2 million acres, a series of forced cessions reduced the reservation to its current land base of about 544,000 acres (of which over 98% is owned by the Tribes or Tribal members).

The transition to reservation life was not easy and until the mid-1970's the majority of land management activities were required to be approved and coordinated through the BIA. Following the transition of management authority back to the Tribes, a new paradigm of managing fire began to emerge that would help promote ecological health, normative processes in watersheds, and the use of culturally prescribed fire to create defensible space for critical Tribal resources. The following case study is used to specifically highlight the accomplishments of the Shoshone-Bannock Tribes and the local BIA in preserving the Fort Hall Reservation.



Map of the Fort Hall Reservation and ceded lands (1931). © Shoshone-Bannock Tribes.

MANAGING THE RISK OF WILDFIRE TO TRIBAL RESOURCES

Managing a landscape requires a careful blend of consistency and adaptation to every aspect of the ecosystem and fire is a key part of that functional ecosystem. Managing landscapes where fire is supposed to be present and playing its natural role requires detailed and flexible planning processes and availability of sufficient information. At the same time, it is also important in preventing catastrophic fire from burning through old growth sagebrush, forests, or woodlands.

> *"Balancing fire being present on the landscape with protecting critical resources is why we need to use good information and assessments to help our Tribal decision makers maintain our permanent homeland. We need to be strategic about how fire is used on the landscape, along with suppression, so we are making the best resource decisions and creating defensible space."*
>
> – Chad Colter, Shoshone-Bannock Tribes Fish and Wildlife Director

Adaptation efforts may require the use of mechanical thinning or management of encroaching species prior to the use of fire, particularly in the Great Basin. Species like juniper in sagebrush-steppe habitats or conifer encroachment in aspen habitats can increase the risks of catastrophic fire and require a careful balance and mix of mechanical treatments with prescribed fire.

< Sagebrush, Perjue Canyon, Idaho (2020). © Corey Gucker.

MANAGING FOR

WILDFIRE RISK

ON A RESERVATION

Any land management activity that is attempting to modify or manipulate the natural condition of an ecosystem must be carefully planned by the agency implementing it. Forest health activities that include prescribed fire should be initiated with adequate forest and woodland inventories. This should include an assessment of those inventories to indicate where and when prescribed fire could be used to benefit those resources. At the initial assessment phase, the use of remote sensing or satellite imagery information can be useful on a landscape level when selecting candidate sites for treatments. However, it is critical to put 'boots on the ground' during these inventories and to have qualified staff or contractors perform the assessments. Critical resources like old growth conifers, aspen stands with evident conifer encroachment, and sagebrush stands with juniper encroachment, may all be candidates for prescribed fire actions.

The Shoshone-Bannock Tribes utilized the Fire Regime Condition Class (FRCC) for the current assessment because it is a standardized tool used by multiple agencies to determine how much a current landscape has changed from its historical conditions. This type of assessment can help managers set priorities and treatment objectives in a variety of habitat types. Fire regimes are often described by their size, intensity, frequency, and vegetation type; all of which can be impacted by climate change.

< **Pinyon planting post-burn (2024).** © Daniel Stone, Shoshone-Bannock Tribes.

THE IMPORTANCE OF

PROGRAMMATIC

MANAGEMENT

Planning is an iterative process, best performed in a collaborative, representative, interdisciplinary, and adaptive setting determined by the needs of each community. The risks associated with wildfire on Tribal lands are heightened due to the cultural and personal relevance on every reservation acre. Fire management is intended to be responsive to immediate needs for suppression, long-term resource management objectives, and managing for more normative fire regimes on Tribal lands. Programmatic planning is one way to develop a process that documents compliance with various environmental laws while providing flexibility within a specified period of time.

The Shoshone-Bannock Tribes determined that the nature of management activities, specifically for prescribed fire, was inherently different in timbered mountainsides than in shrub-steppe and cottonwood woodlands on the reservation. The Tribes developed different management strategies for each habitat type, often with particular sensitive or listed species constraints as well as timing limitations based on optimal prescribed fire conditions. The goals for prescribed fire in the aspen/conifer forest type help aspen regeneration in southeastern Idaho by opening the overstory and providing a small disturbance for new shoots. By breaking those bigger goals into smaller objectives, the Tribes are able to allocate man-power and funding into projects over a longer period of time.

< Fort McDermitt and Adaptation International staff discussing climate change impacts to the landscape on the Fort McDermitt Reservation, Utah (2017). © Sascha Petersen.

CLIMATE VULNERABILITY AND WILDFIRE

The Shoshone-Bannock Tribes use the NatureServe Climate Change Vulnerability Index (CCVI) to analyze the climate change vulnerability of a selected species; such as quaking aspen. The CCVI tool utilizes data inputs that include projections of changes in air temperature and moisture availability, species range data, and species-specific life history characteristics. These data are used by the CCVI tool to calculate a species' relative vulnerability ranking using 23 distinct factors that affect the species' climate change exposure, sensitivity, and adaptive capacity.

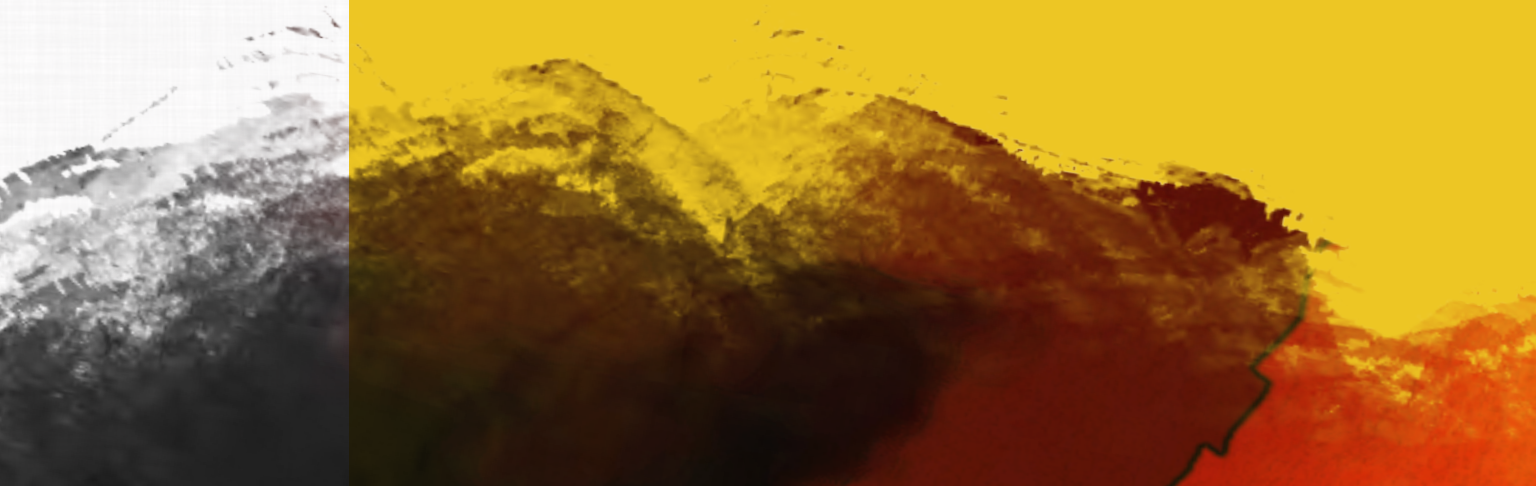
The CCVI tool defines exposure as the projected changes in climate (e.g., temperature and moisture) across the range of a species within the assessment area; sensitivity as the extent to which a species will respond to shifts in climate; and adaptive capacity as a species' ability to withstand environmental changes. Based on these calculations, species are assigned one of four climate change vulnerability rankings. For the purposes of this example, the focus will be on quaking aspen stands on the Fort Hall Reservation and how prescribed fire can play a role in their management.

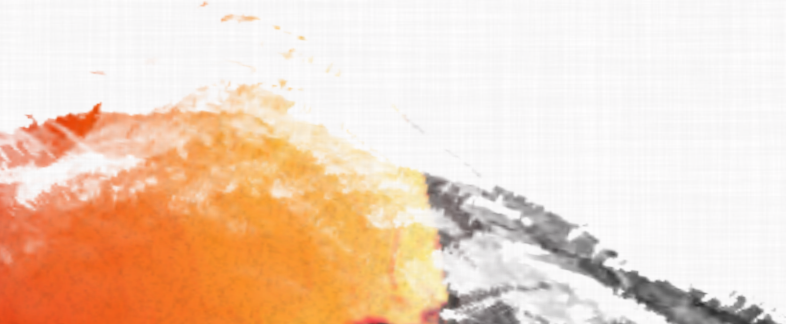
Arches National Park, Utah (2022). © Daniel Stone, Shoshone-Bannock Tribes. >

FORT HALL:

4 A TRIBAL CASE STUDY

OF PRESCRIBED FIRE AND ASPEN CONSERVATION

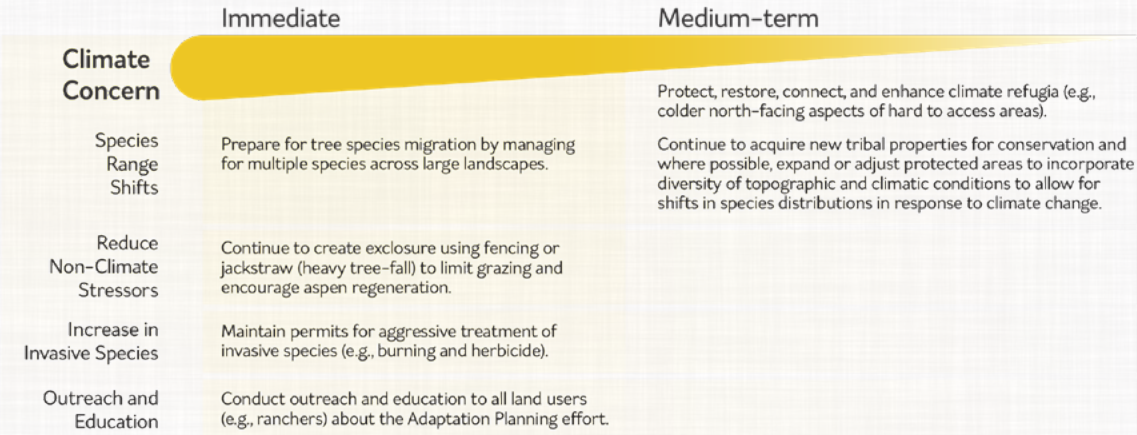




CLIMATE VULNERABILITY ANALYSIS FOR

QUAKING ASPENS

Quaking aspen is a culturally significant species that provides habitat for a number of wildlife species, is associated with numerous cultural practices, and is a source of winter heat for Tribal members on the Fort Hall Reservation. There isn't one single tool to maintain healthy aspen stands, but one of the primary threats to the persistence of aspen stands is the encroachment of conifers. Prescribed fire, often in combination with mechanical thinning of conifers, can encourage new growth in aspen stands. This 'hands-on' approach requires careful planning, accurate inventories of conifer removal, and appropriately timed use of fire to maximize new aspen stem production.



^ *Figure 5.* Actions to Build Resilience. The Tribes identified a wide variety of actors they can use both internally and with partners to build climate resilience of quaking aspen. These actions range from outreach and education to changing policies and further strengthening programs to address the potential impacts of climate change. A complete list of strategies can be found in the full project report (Petersen et al. 2017)

< Aspen restoration project, FASMEE, Fishlake National Forest, Utah (2023). © David Grove/Graylight Media

< Pre-burn aspen/conifer, Fort Hall Reservation (2024). © Daniel Stone, Shoshone-Bannock Tribes.

Post-burn aspen/conifer. Fort Hall Reservation (2024). © Daniel Stone, Shoshone-Bannock Tribes.

GOALS FOR THE MANAGEMENT OF

WOODLANDS

ON THE FORT HALL RESERVATION

GOAL

Fire and Fuel Management

Return the normative role of fire in the woodland ecosystem and improve Fire Regime Condition Class across the reservation woodland types.

The Fort Hall Reservation has adopted goals based primarily on the Fire Regime Condition Class (FRCC), an interagency, standardized tool for determining degree of ecological departure from historical (reference) vegetation, fuels, and disturbance regimes. Assessing FRCC can help managers establish treatment objectives and set priorities for project work. In the case of woodland management, the Shoshone-Bannock Tribes determined that using a mix of treatments would help optimize the productivity and resilience of aspen and other woodland types over the long-term.

OBJECTIVE

Manage the woodland vegetation types to achieve FRCC 1.

1. Utilize manual, mechanical, chemical, rehabilitation, and prescribed fire treatments to meet resource objectives and FRCC 1.
2. Tribal Members would be encouraged to gather "dead and down" in Aspen Conifer type in FRCC 2 and 3.
3. Utilize prescribed fire in the Aspen/ Conifer Type to achieve FRCC 1.
4. For the woodland vegetation types, implement treatment measures in FRCC 2 and 3 to promote ecological integrity and reduce wildfire risks.

Aspen restoration project, FASMEE, Fishlake National Forest, Utah (2023). © David Grove/Graylight Media

QUAKING ASPEN

GROVES AND THEIR TRIBAL SIGNIFICANCE

Quaking aspen stands contain exceptionally diverse and important transitional habitat for myriad species of fish, wildlife, and botanicals that Tribal members use for subsistence and traditional cultural practices. Species in this habitat type can also occur with montane riparian areas, such as beaver dam wetland complexes, willows, berries, aquatic species, and terrestrial wildlife. Infrequent wildfire or prescribed fire, along with mechanical thinning of conifers, can increase the size class diversity of the stand and open the canopy, which encourages new growth.

Aspen grows in a wide range of environmental conditions, from moist streams to dry ridges, on talus slopes, and in shallow or deep soils of various origins, and is tolerant of wide variations in climate; making it a common species across the Upper Snake River Basin. Fire is a natural feature in much of the aspen ecosystem, and it is considered a fire-induced successional species. When used appropriately, prescribed fire in an aspen stand can reduce the overstory, stimulate sprouting of new shoots, and remove conifers growing in the aspen grove. As many as 50,000 to 100,000 suckers can sprout and grow on a single acre following an appropriately planned prescribed fire action, or a wildfire. Preventative fire management or complete suppression, however, may permit coniferous species to take over an aspen grove and displace some of the species associated with that habitat type.

In southeastern Idaho, aspen forests are most commonly associated with the transitional zone between coniferous forests and sagebrush-dominated habitat types. This woodland type has consistently provided wood resources for Tribal members' winter heating needs, as well as habitat for subsistence foods. On the Fort Hall Reservation aspen groves are an important cultural and ecological feature that requires careful management.

< Aspen restoration project, FASMEE, Fishlake National Forest, Utah (2023).

5 MANAGING FOR CLIMATE RESILIENCE AND FUTURE GENERATIONS

MANAGING FOR

TRADITIONAL SPECIES

Each management action a Tribe will take has a series of consequences for each species within the project area based on the ecological relationship to their habitat. Developing actions that are focused on restoring ecological processes can reduce the overall management burden and allow for successional processes to play the dominant role across the landscape. Stochastic events, like catastrophic wildfire,

can irreparably damage or derail those processes, so an adequate planning process will include resilience planning.

Extreme events like higher surface temperatures could be associated with extended periods of drought in the coming decades, increasing the risks of more frequent wildfires across the Great Basin with long-term consequences for Tribal communities. One example of this is the transition from sagebrush-dominated communities to annual grasslands with reduced diversity and increased wildfire risk. In the context of planning for prescribed fire, resilience is designed into the action by carefully considering the fire history of the area, fuel assessments, and the potential for a disturbance to benefit native species over invasive species. Adopting both quantitative research tools and qualitative or observational data from Tribal managers can help balance the project in favor of measures that support ecosystem resilience.

Sagebrush-woodland ecotone Wood River Valley, Idaho (2022). © Corey Gucker.

CLIMATE KNOWLEDGE

A GUIDE FOR THE FUTURE GENERATIONS

The current Tribal reservation system operates to isolate management systems to narrowly delineated parcels of lands, often directly adjacent to other land managers (federal, state, or private) with different perspectives on the maintenance of landscapes. Tribal communities are implementing contemporary management actions that honor the traditional ecological knowledge of fire on our homelands. The development of the Tribal RAD and each of the individual climate plans contained in the database has been a significant step forward in sharing information and working together to maintain safe and resilient Tribal communities. The role of fire in sustaining the environment has changed based on anthropogenic modifications to the planet's ecology and the functions of modern society. Our collective actions and how we choose to use and incorporate wildfire into land management will have consequences for plants, animals, and our human communities. Our actions will reverberate and have consequences across the web of life.

I've always been drawn to the descriptions of how the animals who worked together to steal fire were changed and those changes passed on to their descendants. Wildfire has had generational impacts across the homelands of the Shoshone-Bannock Tribes in a contemporary setting, with recent wildfires marking the sagebrush communities with new grassland boundaries and increasing communities of invasive species. The description of how fire etched its mark on the animals from Tribal creation stories has clear echoes of the current context for fire management in the Great Basin. Each year wildfires will occur, our approach to managing the response to those fires should include proactive measures that are focused on resilient ecological processes and allowing fire to be on the landscape without compromising an entire system.

< Shoshone-Paiute tribal members during release of salmon, Duck Valley Reservation (2015). © Scott Hauser, USRT.

The ancestors of the Shoshone, Bannock, and Paiute peoples lived in harmony with the pulse of the riverine ecosystem, every component of the ecosystem operating to sustain the next in a connected web of life. The obligation of a human is to be accountable for their actions and to reciprocate the gifts of life with humility and respect. Managing resources in a changing climate will require actions to improve resilience and continue to respond to emerging challenges like disappearing snowpacks and extended heat waves. Tribes have always responded to their environments and have been leading on this issue. Listening and learning from the

past and using wildfire to help our forests and ecosystems thrive is part of that response.

The image for this page is a culturally significant marker for our people along the Snake River, near present day Boise, Idaho. It is aptly named map rock and shows our presence and the resources in our homelands. The process of reclaiming traditional knowledge is not to live in the past, rather it is the thoughtful and proactive act of taking our traditions and moving into the future.

Map Rock, Canyon County, Idaho (2014).

REFERENCES

Barbero, J.R., Abatzoglou, J.T., Larkin, N.K., Kolden C.A., Stocks B. 2015. Climate change presents increased potential for very large fires in the contiguous United States. International Journal of Wildland Fire. 24(7): 892–899.

Hegewisch, K.C. and J.T. Abatzoglou, J.T. 2024. Climate Mapper. Climate Toolbox [Accessed November 19, 2024].

Lertzman, D.A. 2010. Best of two worlds: Traditional ecological knowledge and Western science in ecosystem-based management. BC Journal of Ecosystems and Management 10(3):104–126.

Petersen, S., Bell, J., Hauser, S., Morgan, H., Krosby, M., Rudd, D., Sharp, D., Dello, K., and Whitley Binder, L., 2017. Upper Snake River Climate Change Vulnerability Assessment. Upper Snake River Tribes Foundation and Member Tribes.

Stephens, S. 2000. Handbook for culturally responsive science curriculum. Fairbanks, AK: Alaska Native Knowledge Network, Alaska Science Consortium, and Alaska Department of Education. 67 p.

Steward, J.H. 1944. "Some western Shoshoni myths." Bureau of American Ethnology Bulletin. 136 (31):249–299. The Indigenous Peoples of the Great Basin have unique cultural stories and traditions. The *How coyote stole fire* story is intended to convey one of those stories that was published through Julian Steward's ethnography work with tribes in the Great Basin. Traditional fire stories help pass teachings to the next generation about our Tribal origins and our relationship to the natural world. In that spirit it is important to set the stage for this perspective with a fire story.

Van Wagtendonk, J.W. The history and evolution of wildland fire use. Fire Ecology 3: 3–17. (2007).

ADDITIONAL READING

Culturally Prescribed Fire, through a USGS and Yurok Tribal Partnership in northern California

Tribal Resilience Action Database

Regional climate adaptation resources available through the USGS Climate Adaptation Science Centers

The Shoshone-Bannock Tribes' Climate Adaptation Plan and Woodlands Plan available by request to the Shoshone-Bannock Tribes - Fish and Wildlife Department; Shoshone-Bannock Tribes, Box 306, Fort Hall, Idaho 83203.

US Forest Service has resources and detailed information about the rangewide aspen issues.

Tribal Climate Action Guidebook and project planning for Tribes; particularly the use of traditional knowledge in the planning process.

GREAT BASIN **FIRE SCIENCE** EXCHANGE

This publication was created in collaboration with the Great Basin Fire Science Exchange (GBFSE), a regional organization funded by the Joint Fire Science Program, that brings together scientists, land managers, and communicators to share up-to-date information about the best ways to reduce the negative impacts of wildfire.

The Exchange works with public, Tribal, and private land managers to make scientific knowledge accessible, so that it can be used to reduce the risks that come from wildfire without sacrificing the ecological benefits of fire, and to help the land recover as rapidly and as fully as possible after wildfires do occur. One way that is done is by sharing the successes and expertise of land stewards like the Shoshone-Bannock Tribes.

The GBFSE is excited to be able to provide support to the Upper Snake River Tribes Foundation and their member Tribes through this publication and in their future efforts to manage fire on their reservations.

The Upper Snake River Tribes Foundation is comprised of four member tribes: Burns Paiute Tribe, Fort McDermitt Paiute Shoshone Tribe, Shoshone-Paiute Tribe of the Duck Valley Reservation and the Shoshone-Bannock Tribes.

USRT and our member Tribes have been engaged in climate change research, adaptation planning, emissions reduction, and education for over a decade with the help of collaborative partners such as Adaptation International. Wildfire risks continue to pose a threat to traditional cultural practices and functional ecological processes sustaining those practices.


GreatBasinFireScience.org