KOOTENAI TRIBE OF IDAHO

Environmental Plan

November 2025

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This Environmental plan contains the following sections:

Glossary of Terms

Aquaculture
The cultivation of aquatic species, similar to farming. The Kootenai Tribe of Idaho has been working to restore severely depleted white sturgeon and burbot populations in the Kootenai River and its tributaries for decades

Bioaccumulation
The buildup of pollutants in the tissues of living organisms over time, including chemicals, metals, or plastics. This occurs when organisms live in an increasingly polluted environment. Small organisms ingest the pollutant and as continually larger species ingest those small organisms, the pollutant moves up the food chain

Climate Driver
A specific measure that provides information about the state of the climate system or about trends and changes in climate. These indicators are used to monitor and communicate how the climate is changing over time. Examples include temperature, precipitation, and snowpack

Climate Vulnerability Elements:

Climate exposure:	Local factors that affect how much a person or asset is exposed to a particular change in climate
Climate sensitivity:	The degree to which a person or asset is susceptible to or impacted by climate change
Magnitude of consequence:	A measure of the severity of the consequence if a climate hazard should occur
Adaptive capacity:	A measure of the social, organizational, and management capacity of an asset or group of people to respond to a particular climate hazard

eDNA
Environmental DNA, which can be collected through samples that shed from a species, including hair, excrement, soil, and snow

EV
Electric Vehicle

HMP
Hazard Mitigation Plan. These are typically conducted at a County wide level. In this document, the HMP referenced is for Boundary County, Idaho, where Tribal headquarters and the Reservation are located

HVAC
Heating, ventilation, and air conditioning systems

Juvenile Fish
Young fish. Younger fish may be more sensitive to environmental stressors

Ktunaxa Territory
Areas the Tribe has cared for and depended on since time immemorial. These lands continue to support travel, hunting, gathering, trading, and cultural life, reflecting the Tribe's enduring responsibility as stewards and their deep relationship with the land

KVRI
Kootenai Valley Resource Initiative, a working group of local, state, and tribal representatives that collaborate on regional environmental issues

Federal and State Agencies:

USGS	United States Geological Survey
IDEQ	Idaho Department of Environmental Quality
USFS	United States Forest Service
IDFG	Idaho Department of Fish and Game
USFWS	U.S. Fish and Wildlife Service
USACE	U.S. Army Corps of Engineers
BPA	Bonneville Power Administration
WDFW	Washington Department of Fish and Wildlife

Mesocarnivore
Small to medium sized mammals that are mostly carnivores, with diets containing around 70% meat

Morphological Functions
Applied to river ecosystems in this report, morphological functions refer to the form and movement of rivers, which can be influenced by topography, environmental factors, and human-made structures

Non-Climate Vulnerability
Factors that threaten an asset, person, or species' ability to thrive. Non-climate stressors often interact with climate stressors to magnify vulnerability

Propagate
The process of breeding new plants from parent plants

RCP
Representative Concentration Pathway, a model for the amount of greenhouse gases emitted across a time period and its effect on climate change. There are multiple RCP scenarios used for climate planning, including RCP 4.5 and RCP 8.5. RCP 4.5 assumes a dramatic global reduction in greenhouse gas emissions, and RCP 8.5 assumes a "business as usual" scenario for greenhouse gas reduction, with no meaningful global action. RCP 8.5 is the pathway used to summarize climate impacts for Ktunaxa Territory (Kootenai Valley and Boundary County)

PM 2.5
Particulate matter in the air that is less than or equal to 2.5 mm in size, small enough to penetrate human lungs and cause damage

Recruitment
Refers to expanding a population of a certain species through adding new individuals. Plant populations grow when new seedlings are introduced, either through human intervention or natural processes.

Species Climate Vulnerability:

Exposure:	Local factors that affect how much a species is exposed to a particular change
Sensitivity:	A species' physiological factors or ecological relationships that have a level of tolerance to climatic changes. Some climatic changes are direct, such as high temperatures, while others are indirect, including soil pH that responds to climate drivers
Confidence	A rating based on the number of available peer-reviewed studies to substantiate exposure and sensitivity claims

Acknowledgements

This report is the outcome of decades of environmental stewardship by Kootenai Tribal leadership, staff, and partners. The Tribe would like to acknowledge the ongoing work of all who have contributed to the Tribe's programs, safeguarding all life within the Ktunaxa Territory for millennia.

KOOTENAI TRIBE OF IDAHO

Measure Meant prepared this report and conducted the climate vulnerability assessment referenced in this report in collaboration with the Kootenai Tribe of Idaho's Environmental and Fish & Wildlife Departments.

MEASURE MEANT

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Introduction

PURPOSE

The Kootenai Tribe of Idaho is devoted to protecting all life and caring for the lands entrusted to them by their ancestors. This environmental plan recognizes the ways in which the Tribe fulfills their covenant with the Creator, presenting a vision for environmental resilience in the spirit of continuous improvement.

BACKGROUND

The Kootenai Tribe of Idaho has historically experienced four distinct seasons with long, snowy winters and mild summers. The Kootenai River has supported the Tribe since time immemorial as a means of travel and habitat for important food sources, especially white sturgeon and burbot. In the Kootenai basin, there are abundant forests that support diverse wildlife and plant species. Climate change is currently affecting the region in a variety of ways and is projected to accelerate through the end of the century. The Kootenai basin and surrounding lands face increasing high heat and wildfire risk, decreasing snow depth and duration, shifting streamflow, and increasing drought. These climate drivers are impacting fish and wildlife, human health, and cultural practices, and may disrupt infrastructure and services. This environmental plan reports on the Tribe's climate vulnerabilities and outlines strategies to support climate adaptation.

ENVIRONMENTAL PRIORITIES

This plan will guide efforts to ensure that Tribal citizens and Ktunaxa resources have clean air and water for generations to come. Actions that support this include:

1. Prioritize cultural resilience and the health and well-being of Tribal citizens in environmental planning and implementation
2. Work with partner agencies and ensure Tribal representation when gathering information and making decisions
3. Maintain progress and expand current program areas: Aquaculture, Wildlife Management, Habitat Restoration, Aquatic Nutrient Productivity, Clean Air and Water
4. Develop and maintain a collective data repository for ease of access and comprehensive analysis
5. Include climate change considerations in Tribal planning and when commenting on local and regional planning efforts

Guiding Principles

These Guiding Principles, originally established in the 2008 Environmental Plan, reflect the Tribe's commitment to stewardship, leadership, harmony, and guardianship of the natural environment.

STEWARDSHIP

Encourage and promote stewardship of land, air and water resources. Strive for consistent and accountable actions that ensure ecological and economic sustainability of the resource now and for future generations.

> *"I have created you Kootenai People to look after this beautiful land, to honor and guard and celebrate my Creation here, in this place. As long as you do that, this land will meet all your needs. Everything necessary for you and your children to live and be happy forever is here, as long as you keep this Covenant with me. Will you do that?"*

> *"During all those terrible years, we never lost sight of our original purpose, our Covenant: to be guardians of the land forever. We continue to work to that purpose."*
>
> - Century of Survival, A Brief History of the Kootenai Tribe of Idaho

LEADERSHIP

Encourage participation as a sovereign Indian nation in programs, policies, and initiatives that promote healthy ecosystems and productive government-to-government relationships. These efforts will continue to build self-reliance, economic capacity, and Tribal resources while preserving the Kootenai Cultural identity.

HARMONY

Ensure that the needs and wishes of the people are appropriately addressed in decisions involving the Tribe's resources.

> *"After time began, for thousands and thousands and thousands of years, we lived here in peace and harmony with Creation and with each other, fulfilling our Covenant with the Creator."*
>
> - Kootenai Oral History

> *"We know that within our aboriginal territory, there is no bit of land...that has not felt the touch of Kootenai feet. There is no smallest place that lacks historical or religious importance, no place that does not bear its ancient Kootenai story and name. We continue our guardianship."*
>
> - Century of Survival, A Brief History of the Kootenai Tribe of Idaho

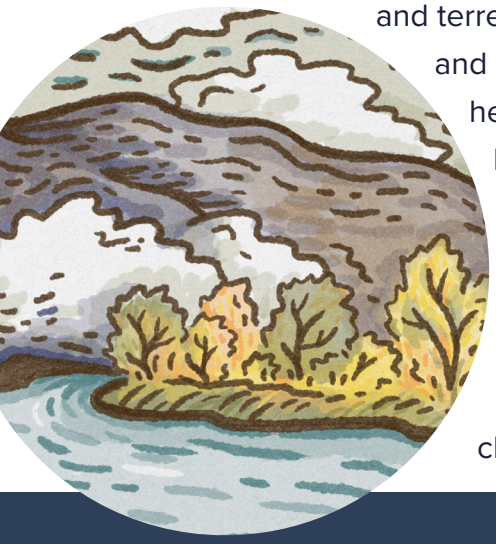
GUARDIANSHIP

Allow for the use of prudent and careful planning to assure the conservation of Tribal values. Preserve and protect natural resources in a manner that is compatible with the environment, as the Tribe has done since time immemorial.

Climate Vulnerability

CLIMATE VULNERABILITY ASSESSMENT OVERVIEW

The Kootenai Tribe conducted a climate vulnerability assessment in late 2024 and early 2025 to understand how their work and livelihoods will be impacted by changing climate drivers such as high heat, increasing wildfires, shifting precipitation, and shrinking snowpack. The assessment combined publicly available climate data, insight and information from Tribal staff and biologists, as well as Tribal Knowledge to rate the risks associated with projected changes in climate and extreme weather for aquatic and terrestrial species; water and air quality; culture and health; and infrastructure. Interviews and listening sessions gathered insights from Tribal staff and Traditional Knowledge holders to assess the impacts of climate change.



CLIMATE IMPACTS

Major climate drivers impacting Ktunaxa Territory include increasing temperatures, shifting precipitation, and increasing wildfire risk. Compounding climate events, such as high winds that blow dust during periods of drought, can lead to disruptive events and affect health through poor air quality.

PROCESS

Multiple factors determined which human, plant, and animal systems are at significant risk due to climate change, including:

- Probability of a climate hazard occurring
- The magnitude of consequence or extent of damage if the hazard occurs
- Existing adaptive capacity and knowledge held by the Tribe

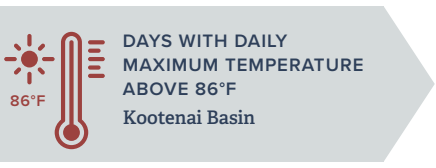
Right: View of the Moyie River Canyon, Idaho

Projected Climate Change

IN BOUNDARY COUNTY AND THE KOOTENAI VALLEY

2070-2099

DAYS WITH DAILY MAXIMUM TEMPERATURE ABOVE 86°F
Kootenai Basin

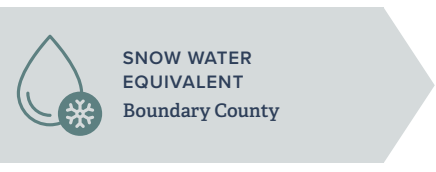


KOOTENAI RIVER TEMPERATURE
Kootenai River at Nimz Ranch

DAYS WITH DAILY MINIMUM TEMPERATURE ABOVE 32°F
Kootenai Basin

DAYS WITH EXTREME WILDFIRE DANGER
Boundary County

SNOW WATER EQUIVALENT
Boundary County



Data Source: The Climate Toolbox, accessed November 2024. Projections are based on RCP 8.5, considered the "Business as usual" path of carbon emissions

Climate data was procured through the following sources:

- Tribal Climate Tool, created by the Climate Impact Group at the University of Washington. This tool uses the Kootenai Basin for the Tribe's location
- Climate Toolbox, created by the University of California, Merced. Boundary County was set as the location for data sourced from this tool

CRITICAL CLIMATE VULNERABILITIES

The Climate Vulnerability Assessment results reveal key considerations: the relative fragility of streams and aquatic species, and the importance of access to reliable water and power in the late century. Most of the elements included in the assessment ranked Medium in Vulnerability, demonstrating that important species, ecosystems, and aspects of Tribal health and culture are likely to be significantly impacted by climate change. The graphic on the left displays the Climate Vulnerability Assessment results for areas of importance to the Tribe. Detailed scoring can be found in Appendix B.

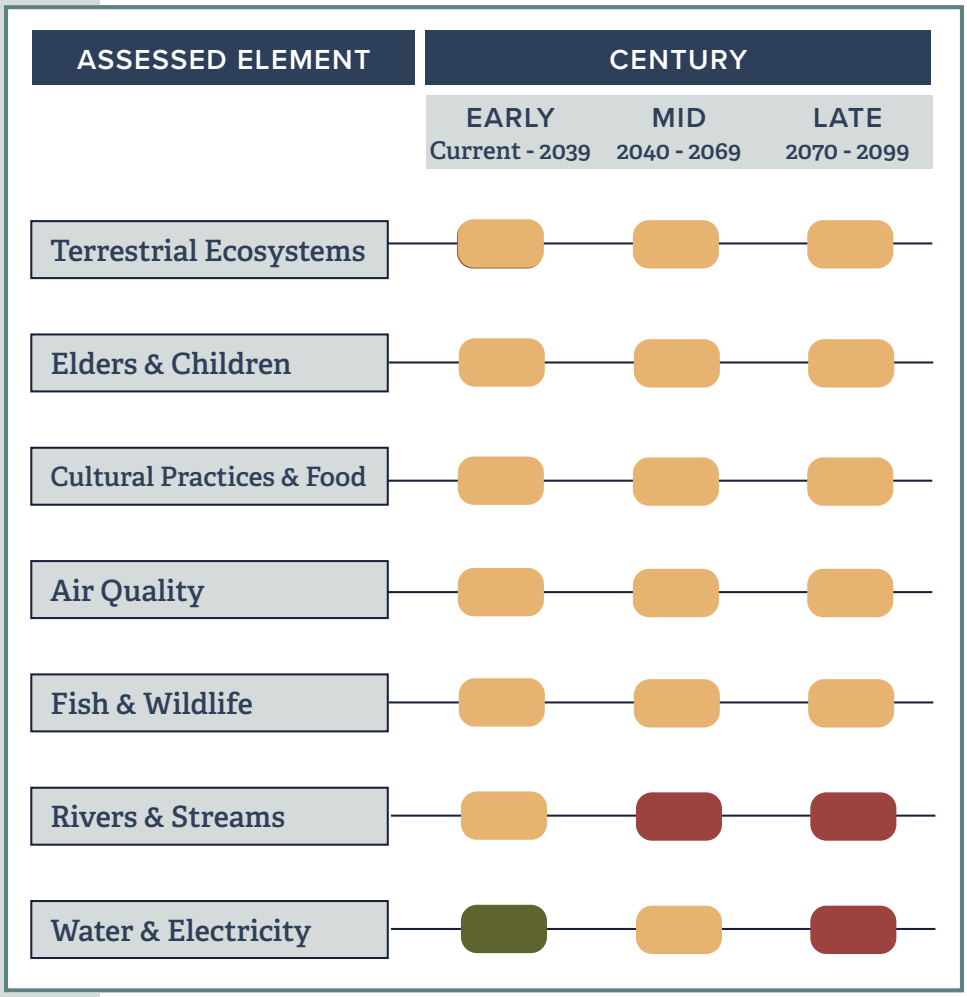


TABLE LEGEND: CLIMATE VULNERABILITY

Low Vulnerability:	LOW
Medium Vulnerability:	MEDIUM
High Vulnerability:	HIGH

STREAMS

River and stream habitats have the highest vulnerability of all assessed elements. Rising temperatures, shrinking snowpack, and shifting rainfall are projected to cause warming stream temperatures and low summer flows throughout the century. Warmer winter water temperatures are reducing ice cover on the Kootenai River, disrupting burbot spawning and lowering survival rates. Burbot require cold water temperatures for spawning and embryo development, at 6°C and 3°C, respectively. Libby Dam exacerbates climate impacts by warming winter stream temperatures and cooling springtime temperatures with water releases. Springtime water temperatures are often unpredictable, making it difficult to time the release of hatchery fish into the river. Colder spring flows may delay sturgeon spawning and slows the growth of plankton and other nutrients, reducing food availability for aquatic species during critical times of development.

The Tribe collaborates extensively with numerous governments in the Territory on river and

stream management, including US Army Corp of Engineers in its operation of Libby Dam. Streams will remain vulnerable, however, as long as dams remain in place and global emissions are not significantly reduced, threatening the success of the Tribe's hatchery program. As white sturgeon, burbot, and other native fish species are important to the Tribe, these climate impacts are a serious concern.

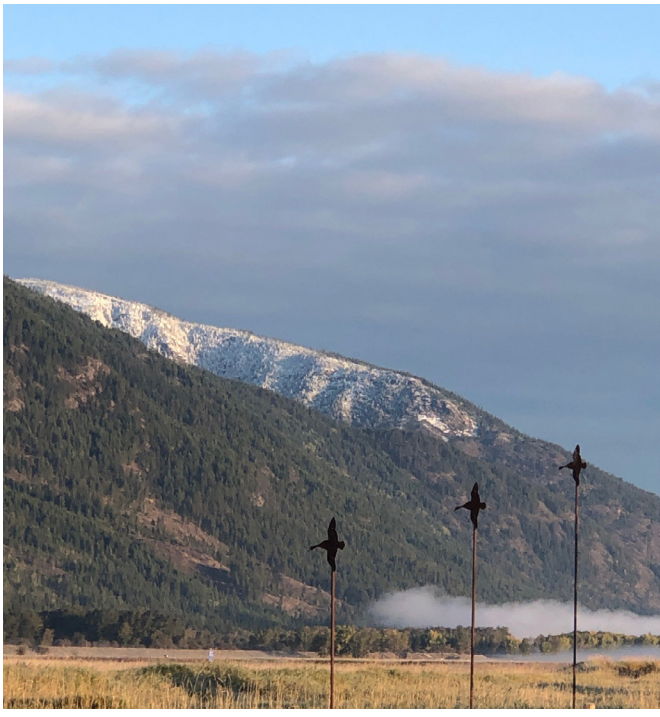
FORESTS

The Kootenai Tribe is surrounded by millions of acres of national forests and state lands. Increasing drought, high heat, and extreme storms are expected to increase the number of wildfires within the Ktunaxa Territory. Healthy forests are vital for wildlife and plant species, and have cultural importance to the Tribe. According to the Kootenai Tribe's Natural Resources Wildlife Management webpage, "The Kootenai Tribal Council heeds the words of its elders, who say the forests in the Territory do not look the way they are supposed to look based on Ktunaxa oral histories, nor do they support the Territory and the Ktunaxa people in the manner they should. The Covenant must be honored to make the forests healthy once again." While many species, such as huckleberries, have adapted to wildfire, climate change and decades of improper forest management are fueling larger and more intense fires that can destroy even fire-dependent species.

WILDLIFE

Wildlife face a variety of climate challenges depending on their habitat, physiology, and ecological role. Some species may be unable to recover from a large-scale wildfire even if they have adapted to withstand smaller fires. Animals that rely on snow, including caribou, lynx, and wolverine, are facing winters with less snow pack and fewer annual days with snow cover. Many animals, such as birds and ungulates, are shifting their migration patterns due to climate changes. To support species in adapting, the Tribe monitors priority species and uses the data to guide conservation efforts.

Sculpted geese installation at the Kootenai National Wildlife Refuge



HUMAN HEALTH

Wildfires and rising temperatures are already leading to more frequent impacts on air quality and human health. These trends are projected to continue throughout the century. High heat days can often exacerbate unhealthy air quality and are especially harmful for people who do not have air conditioning in their homes. The Tribe's Environmental Department monitors vital air quality metrics

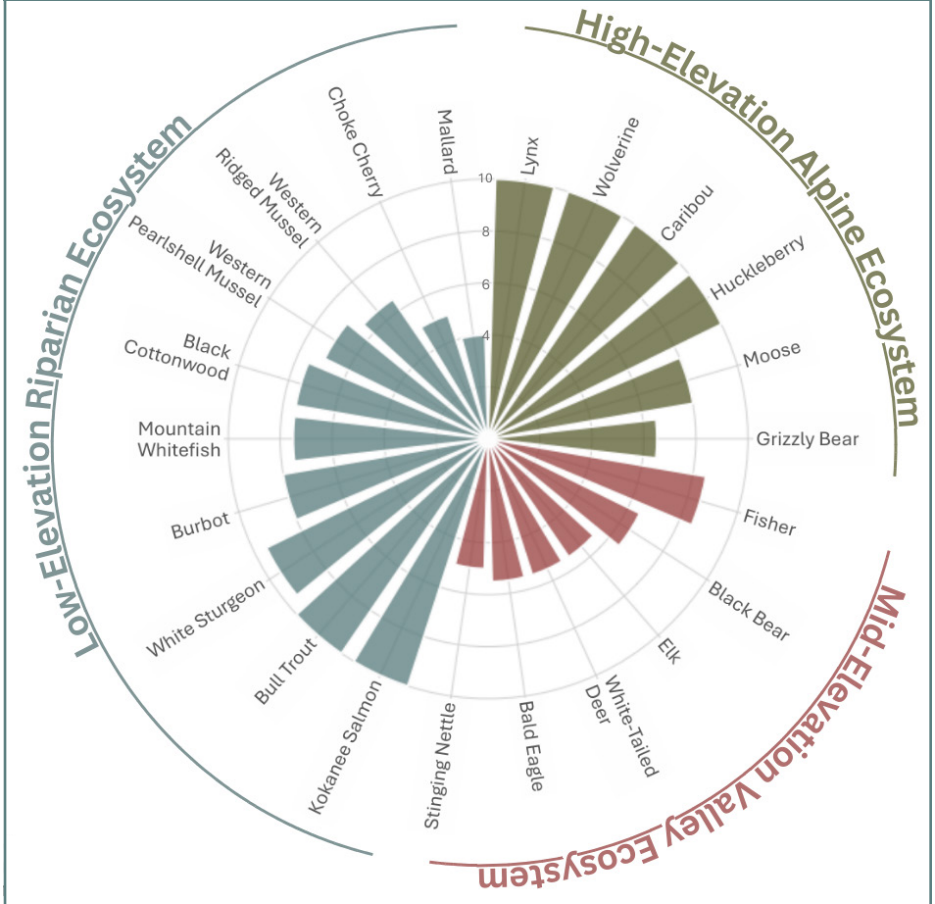
that provide information to the public about indicators that have reached hazardous levels. Air quality alerts, burn bans, and fire danger warnings are shared with the Health Department and Tribal Council, who notify Tribal citizens. Common indoor air quality risks include mold, poor insulation, and the potential presence of radon or other pollutants that impact human health. Structural wellness, including solid roofing, siding, and HVAC equipment, play a vital role in ensuring safe and healthy living.

SPECIES VULNERABILITY ASSESSMENT

The Kootenai Tribe's Fish & Wildlife and Environmental Departments support the health of all living beings within the Ktunaxa Territory. Certain species are of high importance due to their relative vulnerability and cultural meaning to the Tribe. These priority species have been assessed for climate and non-climate vulnerability using a process adapted from the Washington Department of Fish & Wildlife's methodology for ranking the Climate Change Vulnerability of Species.
WDFW's approach includes rating each species on a scale of 1-5 for climate sensitivity and exposure. These two rankings are then averaged for a climate vulnerability ranking. To provide a greater understanding of each species' current status, the Tribe developed a non-climate vulnerability ranking, also on a scale from 1-5. Climate and non-climate ratings were weighted equally to establish an overall vulnerability score. The highest vulnerability score a species can receive is 10, while 1 is the lowest. Confidence rankings were assessed based on the availability of scientific research. The full methodology, including definitions for each rating, is included in Appendix C.

The radial chart to the right demonstrates species vulnerability by habitat type. The results show that high elevation alpine ecosystems and riparian or aquatic ecosystems have a higher number of vulnerable species compared to the mid-elevation valley ecosystem, based on the species surveyed.

SPECIES VULNERABILITY BY HABITAT TYPE, INCLUDING CLIMATE AND NON-CLIMATE STRESSORS



Legend: Overall vulnerability is assessed on a scale of 1 to 10, 10 being the most vulnerable. This chart considers both climate and non-climate factors.

The table below displays vulnerability rankings and notes by species in order from highest to lowest vulnerability. Key threats or adaptations for each species are noted to give context to the ratings. While some species are more impacted by non-climate stressors, climate change may still be an important force that warrants further research. See Appendix C for more detail on the rating methodology.

SPECIES	CLIMATE VULNERABILITY Key threat(s) or adaptation(s):	NON-CLIMATE VULNERABILITY Key threat(s) or adaptation(s):	OVERALL VULNERABILITY	SCORING CONFIDENCE
Canada Lynx	RATING: HIGH Loss of snowpack and wetter snow, altered wildfire regimes causing intense fires that destroy habitat, food availability, hunting, and travel	RATING: HIGH Habitat fragmentation, the loss of mature trees through poor forest management practices, and competition from bobcats and coyotes	High	High
Wolverine	RATING: HIGH Loss of persistent spring snow reduces ability to den and cache food	RATING: HIGH Habitat loss and disturbance from backcountry recreation	High	High
Caribou	RATING: HIGH Decreased snowpack, altered fire regimes, and changes in precipitation impact food sources and migration patterns	RATING: HIGH Habitat degradation, reduced availability of lichens (main winter food source), hunting, wolf predation, and small population size	High	High
Huckleberry	RATING: HIGH Increasing spring minimum temperatures, shifting phenological timing that may not align with pollinators	RATING: HIGH Overharvesting, including through illegal methods, and habitat loss	High	High
Fisher	RATING: HIGH Increased fire risk and potential disease impacts to forest habitat	RATING: HIGH Alterations of forest habitat through logging and farming, low population numbers due to historical logging and trapping	High	High
Kokanee Salmon	RATING: HIGH Warming water temperatures due to increasing drought and warmer air temperatures	RATING: HIGH Blockages in habitat and warmer water temperatures from Libby Dam, mining pollution	High	High
White Sturgeon	RATING: HIGH Warming water temperatures due to increasing drought and warmer air temperatures	RATING: HIGH Sediment build up from Libby Dam obstructs habitat for laying eggs, poaching, habitat degradation from development, mining pollution	High	High

SPECIES	CLIMATE VULNERABILITY Key threat(s) or adaptation(s):	NON-CLIMATE VULNERABILITY Key threat(s) or adaptation(s):	OVERALL VULNERABILITY	SCORING CONFIDENCE
Bull Trout	RATING: HIGH Warming water temperatures due to increasing drought and warmer air temperatures	RATING: HIGH Habitat degradation, invasive fish species, lack of habitat connectivity due to water diversion systems, mining pollution	High	High
Moose	RATING: MODERATE-HIGH Habitat shifts and loss due to warming temperatures and changing snow conditions	RATING: MODERATE-HIGH Parasites and disease, as well as poaching and wolf predation	Moderate - High	Moderate
Black Cottonwood	RATING: MODERATE-HIGH Sensitive to drought, can re-sprout after fires, reliant on flooding for reproduction	RATING: MODERATE-HIGH Clearing for development or agriculture, impacted by Libby Dam	Moderate - High	High
Mountain Whitefish	RATING: HIGH Sensitive to altered stream temperatures and flows, increased water temperatures impact life cycle stages	RATING: MODERATE-HIGH Warming stream temperatures exacerbated by Libby Dam, mining pollution	Moderate - High	High
Burbot	RATING: MODERATE-HIGH Warming water temperatures due to increasing drought and warmer air temperatures, increasingly variable spring flows that burbot rely on post-spawning	RATING: MODERATE-HIGH Habitat degradation from Libby Dam, potential for overfishing, mining pollution	Moderate - High	Moderate
Western Pearlshell Mussel	RATING: MODERATE-HIGH Warming water temperatures and declining fish populations may increase larvae mortality, increased storms may degrade habitat	RATING: MODERATE-HIGH Habitat destruction from Libby Dam and other water diversions, water pollution from human development and agriculture, mining pollution	Moderate - High	Low
Grizzly Bear	RATING: LOW-MODERATE Diverse diet helps reduce the impact of climate change, hibernation can be impacted by late and reduced snowpack and warmer temperatures, grizzlies live in alpine habitats most exposed to climate change	RATING: MODERATE-HIGH Human interactions are highly detrimental, incomplete protection measures given that bears require a large habitat area	Moderate	Moderate
Black Bear	RATING: LOW-MODERATE Diverse diet helps reduce the impact of climate change, hibernation can be impacted by late and reduced snowpack and warmer temperatures	RATING: MODERATE-HIGH Human interactions are highly detrimental, and there are incomplete protection measures given that bears require a large habitat area	Moderate	Moderate

SPECIES	CLIMATE VULNERABILITY Key threat(s) or adaptation(s):	NON-CLIMATE VULNERABILITY Key threat(s) or adaptation(s):	OVERALL VULNERABILITY	SCORING CONFIDENCE
Elk	RATING: LOW-MODERATE Decreased snowpack and drought can impact food availability, shifting migration patterns with snowmelt, chronic wasting disease	RATING: MODERATE Hunting, habitat loss and fragmentation, danger from vehicles	Moderate	Moderate
White-tailed Deer	RATING: LOW-MODERATE Snow accumulation heavily impacts populations, deer may benefit from reduced snow accumulation, chronic wasting disease	RATING: MODERATE Displacement through intensive land use by humans, deer may benefit from some habitat disturbance or clearing that creates successional vegetation	Moderate	High
Western Ridged Mussel	RATING: LOW-MODERATE Warming water temperatures and declining fish populations may increase larvae mortality, increased storms may degrade habitat	RATING: MODERATE-HIGH Libby Dam and other water diversion destroys habitat, water pollution from human development and agriculture	Moderate	Low
Bald Eagle	RATING: MODERATE-HIGH Warming temperatures and changing precipitation may alter food sources and impact nests, eagles are opportunistic hunters	RATING: LOW-MODERATE Environmental contaminants including mercury, biocide contamination, human disturbance and habitat loss	Moderate	Moderate
Stinging Nettle	RATING: LOW-MODERATE At risk due to drought	RATING: MODERATE Impacted by frequent disturbances, flooding from Libby Dam causes damage and habitat loss	Low-Moderate	Low
Chokecherry	RATING: LOW-MODERATE Well adapted to fire, threatened by spring flooding which may increase with highly concentrated precipitation events	RATING: MODERATE At risk to fungal diseases and flooding from Libby Dam	Low-Moderate	Low
Mallard	RATING: LOW-MODERATE May shift northward in the summer to avoid high heat	RATING: LOW-MODERATE Mallards are game birds, however, populations remain stable, water pollution from pesticides and lead are threats	Low-Moderate	Moderate

Programs

The Kootenai Tribe of Idaho has stewarded the land for millennia, responding to the needs of wildlife and ecosystems through long-standing environmental programs. This section outlines the status of these programs, observed climate impacts, current mitigation efforts, and future intentions for each of the Tribe's six goals: Clean Air, Environmental Stewardship, Clean and Safe Water, Protecting and Restoring the Land, Healthy Communities and Ecosystems, and Continuous Improvement.

CLEAN AIR

CONTINUOUS IMPROVEMENT

ENVIRONMENTAL STEWARDSHIP

HEALTHY COMMUNITIES & ECOSYSTEMS

CLEAN & SAFE WATER

PROTECT & RESTORE THE LAND

PROGRAMS

Clean Air

The Kootenai Tribal headquarters and many Tribal citizens' residences are located in a valley, where unhealthy air or smoke can settle for days at a time. Unhealthy air on the Reservation is typically caused by wildfire smoke, agricultural burning, and other air-borne pollution. When high temperatures and smoke occur at the same time, people without air conditioning cannot cool their homes by opening windows and still maintain healthy indoor air. Chronic exposure to high heat and poor air quality can have long-term negative affects on human health.

The Tribe's Clean Air Program is funded by EPA Clean Air grants and is dedicated to monitoring air quality to protect the health and wellbeing of Tribal citizens. The air quality monitoring station tracks particulate matter (PM 2.5), precipitation, windspeed, wind direction, temperature, barometric pressure, and relative humidity. Data collected from the station, which can be viewed at AirNow.gov, is shared with the Idaho Department of Environmental Quality (IDEQ) and EPA. Timely release of public health advisories during periods of extreme heat or poor air quality are shared with the health clinic and general public.

The Tribe's air monitoring station, Kootenai Tribe of Idaho

CLIMATE IMPACTS

Rising temperatures and prolonged drought are expected to worsen wildfire conditions, resulting in more frequent and intense wildfires throughout the region. Smoke from these fires can travel long distances and settle in the Kootenai Valley, creating unhealthy air conditions. Poor air quality can disrupt daily life, particularly for elders, children, those with health concerns and people without access to air conditioning or effective air filtration.

Extreme heat is also projected to increase throughout Ktunaxa Territory and surrounding areas. The number of days exceeding 86°F is expected to rise 43 days by the end of the century. Chronic exposure to high temperatures negatively affects both human and ecosystem health. In a region that has historically experienced few days over 86°F, residents may not have adequate time to acclimate to sudden temperature spikes. According to the Center for Disease Control's National Institute for Occupational Safety and Health, workers who gradually increase their exposure to high heat over 7-14 days are less likely to be impacted by heat-related illnesses.[1]

FUTURE OPPORTUNITIES

The Clean Air Program aims to maintain quality data collection, look for trends over time to better predict future conditions in the Kootenai Valley, and help prepare Tribal citizens for unhealthy air conditions. Beyond providing air quality information, continued efforts to reduce the Tribe's reliance on fossil fuels can improve local air quality and strengthen climate resilience, particularly for Tribal enterprises and operations. Transitioning to locally owned renewable energy sources can further support long-term energy independence and economic opportunities.

FOCUS AREAS

- Maintain consistent quality data collection on air quality and look for trends over time to better predict future conditions in the Kootenai Valley
- Expand air monitoring efforts to additional metrics that impact health and well-being
- Prepare Tribal citizens for unhealthy air conditions through increased education on health impacts and mitigation strategies for unhealthy air
- Establish available testing for air pollutants, including radon
- Provide access to community spaces with clean and cool air during smoke events, poor air quality days, and heat waves
- Explore solar or other renewable energy sources to power Tribal offices and residences, increasing energy independence and improving local air quality
- Plan for backup energy generation in renewable energy installations, preferably through batteries, to support energy independence and resilience during local outages

PROGRAMS

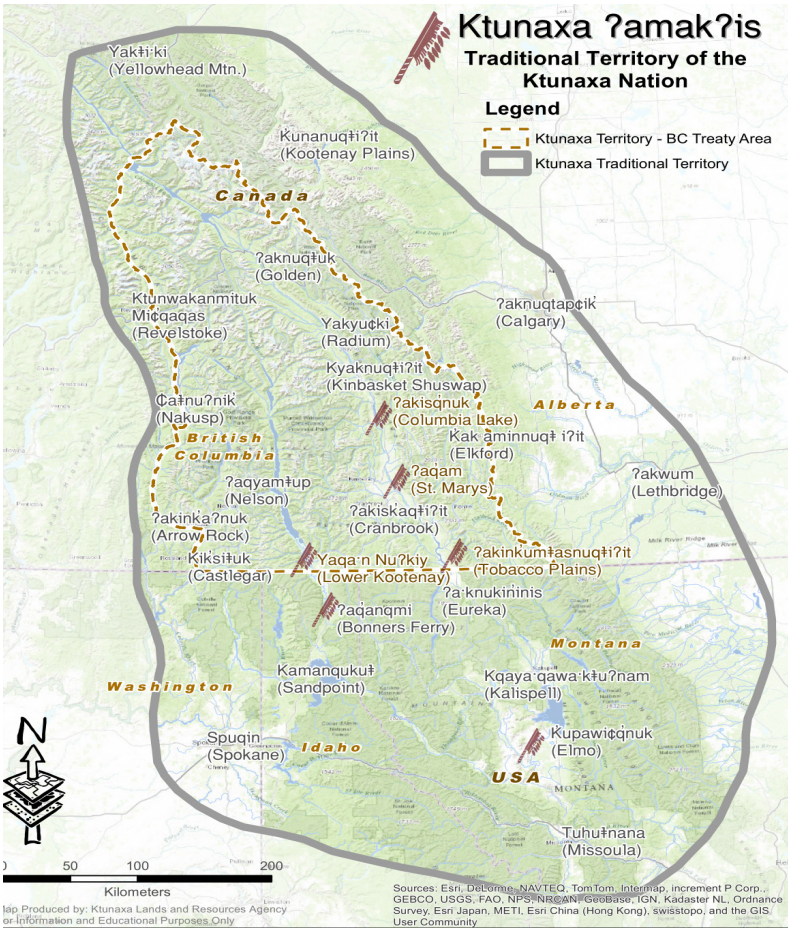
Environmental Stewardship

Ktunaxa Territory consists of portions of what is now NE Washington, North Idaho, NW Montana, SE British Columbia and SW Alberta. Although the Kootenai Reservation is small, the Tribe exercises rights and environmental stewardship throughout the Territory. The Tribe is an advocate for protecting the environment and cultural practices within many contexts, including forest, fire, and river management, wildlife conservation, and habitat restoration.

AGENCY COLLABORATION

The Kootenai Tribe of Idaho collaborates with regional agencies to advise on forest and land management practices, with a particular focus on priority species and culturally significant areas. The Tribe maintains a strong working relationship with the U.S. Fish and Wildlife Service to collaborate on ongoing programs. Additional key partners include the U.S. Forest Service, Idaho Department of Fish and Game, U.S. Geological Survey, Boundary County Commissioners, US Army Corps of Engineers, and the City of Bonners Ferry. The Kootenai Tribe is also a member of the Kootenai Valley Resource Initiative (KVRI), a unique and collaborative partnership that brings together local, state, federal, and environmental representatives. These collaborations are essential to the success of the Kootenai Tribe's Fish & Wildlife Department, ensuring Tribal interests are represented in environmental planning and project implementation.

Map of the Tribe's Traditional Territory, Kootenai Tribe of Idaho



PLANT AND ANIMAL CONSERVATION

The Tribe works closely with agencies and organizations dedicated to species conservation. As a member of the Interagency Grizzly Bear Committee, the Tribe contributes to regional coordination of policy and conservation strategies to support grizzly bear recovery across the western United States.

The Tribe's grizzly bear monitoring involves the collection of hair samples at baited stations outfitted with snagging devices. DNA extracted from these samples is analyzed by the Wildlife Genetics International Laboratory in Nelson, British Columbia, to produce individual genotypes. These genetic profiles, combined with remote camera imagery, are used to assess population health, genetic diversity, relatedness among individuals, and patterns of gene flow. Watch this video to learn more about the project.

Grizzly bear and cubs, Kootenai Tribe of Idaho

The Tribe also partners with the U.S. Forest Service (USFS) and U.S. Fish and Wildlife Service (USFWS) on mesocarnivore monitoring, focusing on lynx, wolverine, and fisher. Genetic material is collected using snow track surveys, environmental DNA, and bait stations. These samples help confirm species' presence or absence, support habitat use studies, and provide population estimates where possible.

In addition, the Tribe collaborates with the Arrow Lakes Caribou Society, supporting their maternal penning efforts for caribou conservation. The Kootenai Tribe of Idaho also leads the Southern Mountain Caribou International Technical Working Group, partnering with Canadian and U.S. stakeholders to coordinate ongoing recovery strategies for the Southern Mountain Caribou in British Columbia and its subpopulations.

Huckleberry protection presents an opportunity for increased collaboration in the Kootenai Basin. Enforcement challenges for illegal huckleberry harvesting and climate impacts are dual threats to huckleberry plants. Some harvesting methods destroy or significantly weaken the huckleberry plant, threatening the harvest the following year and cutting off Kootenai Tribal citizens from culturally significant berry patches. The Tribe has noted these challenges for future conservation work. Despite strong partnerships, conservation work remains underfunded and the future of many species remains uncertain.

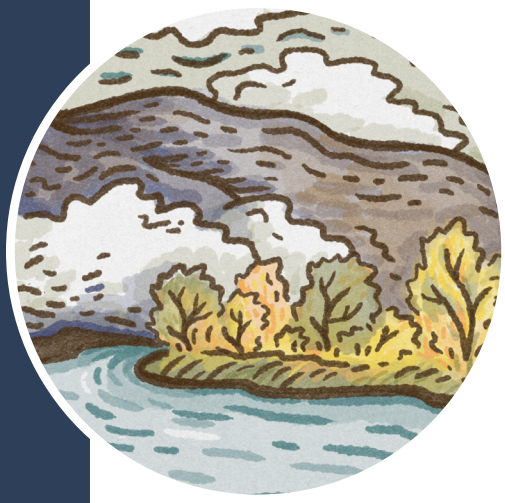
Climate Impacts

FALL

Drought is projected to become more frequent and prolonged as precipitation patterns change. Forest ecosystems are increasingly threatened by expanding pest populations and drought conditions that heighten the risk and severity of wildfires. Due to a combination of historical forest management practices and climate change, wildfires today are often larger, hotter, and more destructive than historical norms. Even landscapes that have evolved with periodic fire can experience severe damage under these intensified conditions. Some species may be unable to flee in time to escape large fires, or may face reduced food availability in the aftermath of such events.

WINTER

Snowpack volumes are decreasing, and the duration of annual snow cover is shortening as rising temperatures cause more precipitation to fall as rain rather than snow. In the Cabinet and Selkirk mountain basins, snowpack levels vary widely. Some areas accumulate enough snow, while key sub-basins remain well below expected levels. These changes have profound implications for wildlife species that depend on deep, persistent snow. Caribou, lynx, and wolverine, for example, rely on extensive snow cover for travel and hunting. Their strong dependence on snowy habitats makes all three species particularly vulnerable to the impacts of climate change.



SPRING

Shifting precipitation and temperature patterns are resulting in warmer winters and colder spring runoff, affecting the availability of primary and secondary productivity that feeds juvenile fish. The temperature variability complicates the Tribe's hatchery release schedules and threatens the viability of fish. Reduced snowfall in winter and a faster rate of snowmelt alter spring stream temperatures and is leading to low summer water levels. Altering stream dynamics can stress aquatic species that depend on specific flow and temperature conditions to survive and thrive.

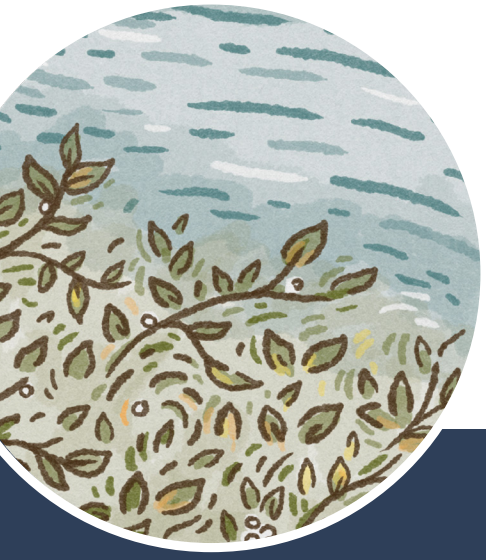
SUMMER

Huckleberries, a culturally important food, are at risk from shifting seasons and increasingly severe wildfires. Accelerated spring and summer warming is shifting the phenology of huckleberries, causing them to flower and produce fruit earlier in the season. It is unknown how pollinators will respond, and whether bears that have historically relied on berries later in the year will need to find alternative food sources to gain enough weight for winter. High heat and changing precipitation patterns are also leading to more frequent and prolonged droughts. Animals may find that vegetation and water sources are sparse in late summer.

Future Opportunities

The Kootenai Tribe will continue to collaborate with agencies and partners working on environmental stewardship in the region. Developing a comprehensive Tribal planning and priorities document would streamline the Tribe's comment process and clearly define priorities to strengthen the Tribe's representation in regional decision-making. Gaining efficiency and clarity on priorities can help the Tribe expand influence over important species, such as huckleberries. Continuing to advocate for huckleberry protection and enforcement of penalties for illegal harvesting can restore huckleberry habitat for Tribal citizens.

Kootenai River in the fall, Kootenai Tribe of Idaho



FOCUS AREAS

- Expand wildlife monitoring and research related to the Tribe's primary species, especially those most sensitive to climate impacts
- Develop a comprehensive Tribal planning and priorities document with standardized comment processes to reduce the burden on Tribal staff from outside agency requests
- Advocate for huckleberry protection and enforcement of harvesting laws to protect cultural access and improve species conservation, both for huckleberries and animals that rely on huckleberries

PROGRAMS

Clean & Safe Water

STURGEON AND BURBOT RECOVERY

The Kootenai Tribe has spent decades working to restore white sturgeon and burbot populations in the Kootenai River. By extensively studying the survival rates of hatchery-reared sturgeon and burbot, the Tribe has identified critical spawning habitat and life-stage challenges to native fish. Despite years of effort, white sturgeon continue to face significant survival challenges due to habitat degradation in the mainstem of the Kootenai River, and their post-release survival remains low relative to their natural lifespan. The Tribe is committed to collaborating with partners to restore river conditions that support both hatchery- and wild-origin sturgeon. In coordination with the U.S. Army Corps of Engineers, the Tribe participates in flow management planning from Libby Dam to support key ecological functions and improve off-channel habitat connectivity.

Kootenai Tribe staff release sturgeon into the river, Kootenai Tribe of Idaho

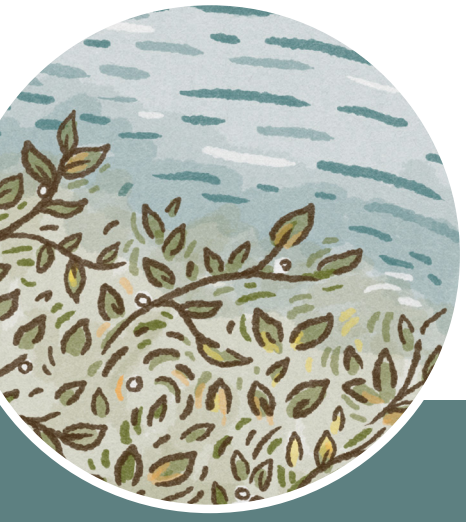
An adult burbot is caught by hatchery staff, Kootenai Tribe of Idaho

In contrast to white sturgeon, burbot have shown stronger recovery. In 2019, the burbot fishery was successfully reopened, marking a major milestone that has revitalized both recreational and cultural connections to the river.

Today, the Kootenai River and its native fish populations face ongoing threats from contamination, climate change, and competing demands on water resources, including hydropower and flood control from regional dams. These pressures result in rising water temperatures, altered flow regimes, and disrupted spawning habitat, which jeopardizes the Tribe's goal of restoring naturally thriving native fish populations.

WATER QUALITY MONITORING

Mining pollution, including nitrate and selenium, has emerged as a significant concern due to historic coal mining operations upstream, particularly across the U.S.-Canada border. Nitrate pollution alters the river's chemistry and can disrupt the food chain. Selenium is known to reduce reproductive success and cause larval deformities in fish. This metalloid bioaccumulates in fish tissue and is difficult to remove from the aquatic and terrestrial environment. Because the pollution source lies outside the Tribe's regulatory jurisdiction, addressing it is especially complex. The Tribe is planning to continue its contaminants monitoring efforts, including for selenium, to strengthen the case for its harmful impacts on fish and aquatic life.



DRINKING WATER

Most Tribal citizens rely on the City of Bonners Ferry's drinking water system, which is sourced primarily from Myrtle Creek. If this water supply becomes compromised – for example, by wildfire ash contamination as occurred in the early 2000's – the backup source is the Kootenai River and adjacent wells. However, the long-term impacts of relying on the Kootenai River as a secondary drinking water source are unclear and may pose risks to both public health and the ecological integrity of the river.

Hatchery staff release a white sturgeon into the Kootenai River, Kootenai Tribe of Idaho

Climate Impacts

The Kootenai River is experiencing growing impacts from shifting seasonal patterns, including warmer winters and colder springs. These changes disrupt the natural food web essential for juvenile fish, reducing survival rates and slowing both metabolism and growth. As a result, the Tribe faces increasing challenges in timing hatchery releases to align with optimal environmental conditions. Earlier and more rapid snowmelt is leading to colder spring streamflow, which can diminish nutrient availability before juvenile fish are able to benefit. In summer, rising drought conditions are lowering water levels and increasing stream temperatures. Because cold-water fish - such as burbot, trout, and mountain whitefish - depend on narrow temperature ranges to survive, their available habitat is shrinking under future climate projections.

Future Opportunities

The Kootenai Tribe is actively working to enhance habitat conditions within the Kootenai River and its tributaries to support long-term sturgeon and burbot recovery and ecological resilience. In addition, the Tribe aims to expand water quality monitoring efforts and continue exploring remediation options to reduce bioaccumulation of toxins in aquatic species. To support the health and wellbeing of Tribal citizens, the Tribe can consider developing an emergency response plan to procure temporary water supplies if primary sources are compromised.

Tribal community joining a sturgeon release, Kootenai Tribe of Idaho

FOCUS AREAS

- Maintain fisheries operations for restoring sturgeon and burbot
- Expand research on conditions needed and barriers to burbot and sturgeon recruitment
- Continue and expand water quality monitoring, including for selenium and nitrate concentrations in the Kootenai River
- Explore feasible remediation options to reduce bioaccumulation of toxics in aquatic species
- Advocate for mines to be accountable for watershed pollution
- Protect access to clean drinking water by planning for backup water sources if primary sources are compromised
- Encourage the City of Bonners Ferry to plan for future climate-related disruptions to water supplies

PROGRAMS

Protecting & Restoring the Land

The Tribe is leading large-scale restoration projects to revive culturally significant landscapes, including key sites along the Kootenai River such as the Kootenai National Wildlife Refuge, Trout Creek Peninsula, and the Nimz property. These efforts focus on enhancing both riparian and aquatic habitat for species by recreating conditions and morphological functions once lost to logging, diking, damming, and mining. Over the last century, these activities disconnected the Kootenai River from its natural floodplain, which is essential for transporting nutrients and providing shallow, warmer areas where plankton and juvenile fish can rear—supporting fish and other aquatic life.

To counter these losses, the Tribe has undertaken restoration projects that help to reestablish riparian and floodplain habitats previously converted to agriculture and other uses or have been degraded over time from excessive grazing or poor land management practices. These projects directly support the Tribe's aquaculture and wildlife management goals and represent a long-term commitment to ecological and cultural revitalization.

Restored floodplain on the Kootenai River, Kootenai Tribe of Idaho

For more information on the Tribe's habitat restoration projects, visit the Natural Resources website for a map of completed and pending restoration sites. Note: The table and figure are updated yearly, and the figure is subject to change. (Clickable link to this map is pending website updates).

Climate Impacts

Shifts in temperature and precipitation are altering the viability of certain plant species, with some experiencing reduced habitable range. While some plants can migrate or tolerate a degree of environmental change, native and locally adapted species are most likely to survive and thrive under changing conditions. This underscores the need to prioritize local genotypes in restoration work. Additionally, warmer temperatures and altered rainfall patterns are contributing to the spread of certain plant diseases which can further threaten restoration success.

Future Opportunities

Building on the knowledge and momentum from past projects, the Tribe has identified new areas for future restoration. A key step has been the establishment of the Nimz Ranch conservation nursery, dedicated to propagating native and culturally significant plant species. This nursery will strengthen revegetation success, bolster ecological resilience, and ensure restored habitats remain functional and sustainable under future climate conditions. Just as importantly, the nursery will provide opportunities for Tribal youth to learn about the cultural, spiritual, and ecological importance of native plants.

FOCUS AREAS

- Expand conservation nursery to propagate a wide variety of native plants to supply the Tribe's restoration projects
- Utilize conservation nursery to provide knowledge and experience to Tribal citizens
- Initiate restoration projects to reconnect the floodplain in the Kootenai watershed, building on the knowledge and momentum from past projects
- Secure land for conservation in key locations and work with other agencies and landowners to partner on restoration projects
- Increase the Tribe's internal capacity to manage and staff restoration projects

PROGRAMS

Healthy Communities & Ecosystems

TRIBAL HOUSING

The Tribe continues to grow but faces a shortage of land suitable for housing on the Reservation. Many existing homes need upgrades to better withstand increasing heat and smoke. Although natural gas remains the most common heating source due to its lower cost, many homes are ready to transition to heat pumps, which could provide long-term benefits. Rooftop solar has not yet been adopted, but it offers an opportunity to offset electricity costs in the future. A shortage of skilled HVAC and heat pump technicians, a common challenge in rural areas, further increases vulnerability to extreme heat and cold.

POWER OUTAGES

As energy demand continues to grow, power outages are expected to become more frequent. Contributing factors include the expansion of data centers, increasing household reliance on technology, and the effects of climate change. When outages occur, households may lose access to heating, cooling, or electricity needed for medical devices. Work and school are also disrupted by the loss of lighting and wireless connectivity. A windstorm in fall 2024 highlighted these risks when a widespread outage led to food spoilage at local grocery stores that lacked backup systems. In such events, Tribal citizens often rely on mutual support, checking in on family and neighbors to ensure safety and share resources.

WASTE REDUCTION

The Tribe is committed to reducing waste and promoting environmental stewardship. With limited local recycling and no local composting services, reusing and reducing waste presents a major opportunity. The Environmental Department is working to expand recycling and composting options for Tribal citizens, offering education and providing in home composters to help them begin composting at home.

Climate Impacts

By the end of this century, Ktunaxa Territory is projected to experience 62 days annually with a heat index above 90 degrees, an increase of 54 days compared to today.[3] The heat index combines temperature and humidity to reflect the "feels like" condition, providing a clearer measure of how people are affected during heat events. Rising temperatures will continue to increase energy demand, especially for cooling. If utilities cannot meet peak demand, which occurs during extreme heat or cold, power outages are more likely, creating risks to health and well-being. Tribal citizens and staff have identified high summer heat as a major concern, along with the compounding impacts of poor indoor air quality from smoke. Wildfire risk is increasing throughout Ktunaxa Territory, with 15 additional days of very high fire danger[4] projected per year by the end of the century, which will exacerbate smoke-related health issues.

Future Opportunities

The Kootenai Tribe will look for opportunities to build local resilience by expanding the local workforce, preparing for power outages, and reducing waste. Supporting and advocating for expanded workforce training programs for electricians, HVAC technicians, and other skilled trades will increase local capacity to install and maintain heat pumps, solar systems, and other home energy equipment.

The Tribe can better prepare citizens for power outages by increasing access to backup generators or on-site renewable energy systems, providing public education, creating a safe community gathering space, and maintaining an emergency food pantry. A registry of Tribal citizens who rely on electricity for medical devices could help ensure targeted support during outages.

Establishing consistent recycling and composting services for Tribal homes, offices, and enterprises would reduce waste and support environmental goals.

FOCUS AREAS

- Develop or find workforce training programs for skilled trades relevant to home maintenance to expand Tribal capacity for servicing heat pumps and other essential equipment
- Support Tribal citizens in upgrading insulation and roofing to increase climate resilience
- Upgrade buildings on the reservation for energy efficiency and climate resilience
- Create a registry of Tribal citizens who rely on electricity for medical devices to ensure targeted support during power outages
- Develop a plan to support Tribal citizens' food security during power outages to prevent spoilage
- Reduce waste by establishing recycling and composting services for Tribal homes, offices, and enterprises

PROGRAMS

Continuous Improvement

CLIMATE INFORMED PLANNING

Climate projections are not yet fully integrated into planning for Tribal facilities, enterprises, transportation, or health services. Regional and state agencies may also overlook climate considerations in land use and emergency planning. For example, Boundary County's recent Hazard Mitigation Plan does not include climate data, which may lead to less effective responses to both climate and non-climate-related hazards.

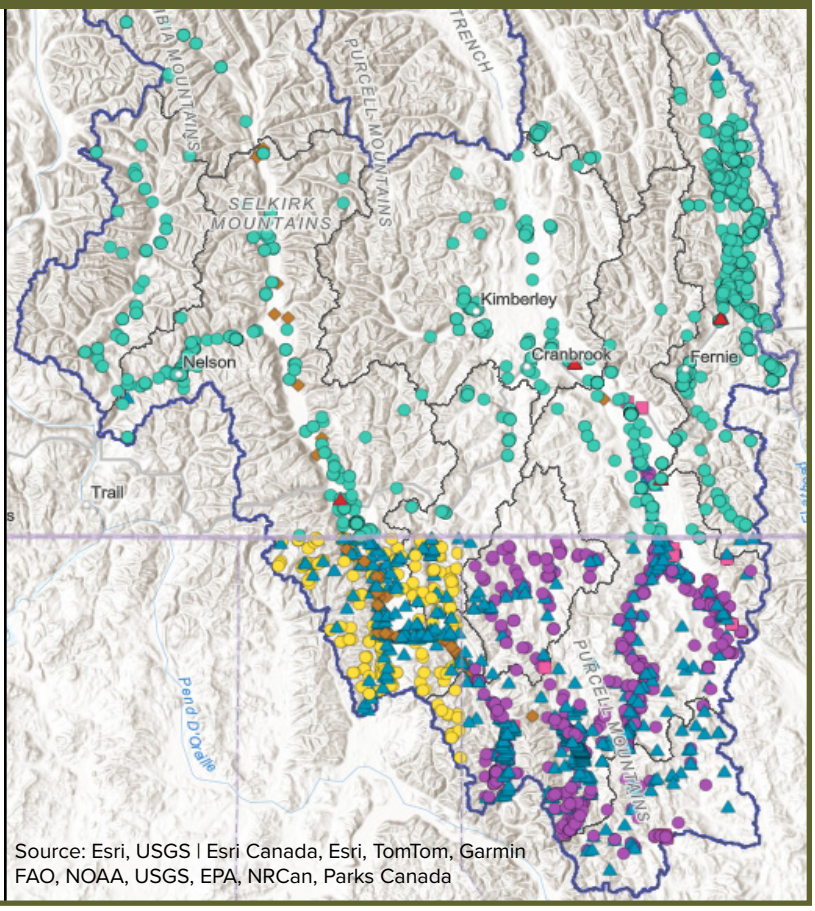
DATA REPOSITORY

The Tribe is developing a central repository to store and map ecosystem and wildlife data. This tool will enhance internal data access for Tribal staff and help communicate the Tribe's environmental work more effectively. Tribal water quality data has already been included in a Kootenai River Basin map by USGS, see map below and find it here.

TRANSBOUNDARY KOOTENAI RIVER BASIN WATER QUALITY MAP

Transboundary Kootenai Water Quality Sites

- Federal - Canada
- Federal - U.S.
- British Columbia - Environmental Monitoring System
- Montana
- Idaho
- Tribal
- Nonprofit
- Private



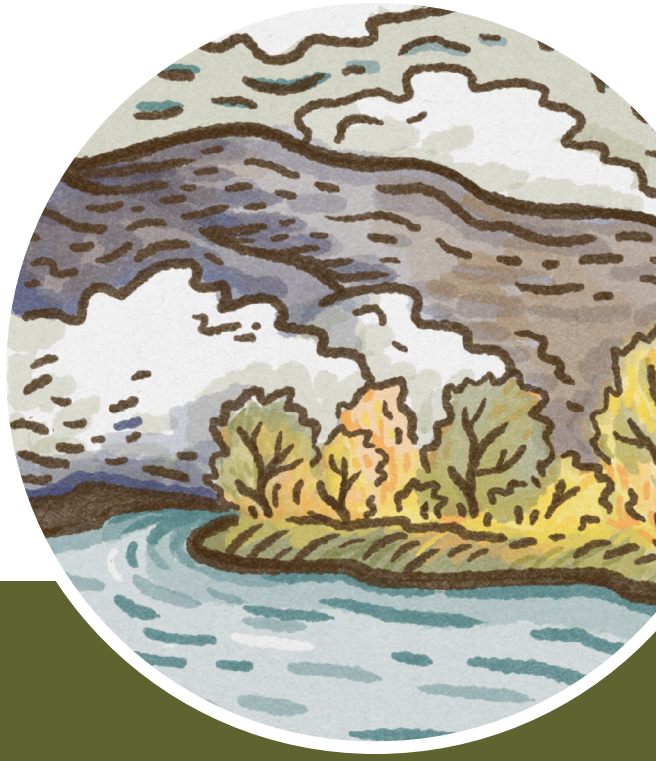
Source: Esri, USGS | Esri Canada, Esri, TomTom, Garmin FAO, NOAA, USGS, EPA, NRCan, Parks Canada

Climate Impacts

Several hazards listed in Boundary County's Hazard Mitigation Plan, such as flooding, wildfire, and landslides, are expected to intensify with climate change. However, other key threats like heatwaves and drought are missing from the plan and warrant inclusion for future resilience.

Future Opportunities

The Tribe plans to use climate data gathered through this project to better integrate climate considerations into Tribal, regional, and intergovernmental planning. Continued development of the Tribal data repository will strengthen the Tribe's ability to plan, communicate, and adapt to a changing environment.



FOCUS AREAS

- Utilize climate data gathered through the Tribe's climate vulnerability assessment to better integrate climate considerations into Tribal, regional, and intergovernmental planning
- Advocate for incorporating climate considerations in county-wide hazard mitigation planning
- Develop a central repository for environmental data collection across departments
- Create engaging maps to communicate complex topics, such as watershed health or species conservation efforts

APPENDIX A – GOALS

The following goals reflect the Tribe's current priorities and are subject to change based on emerging needs, funding availability, or other factors.

Program	Goals	Focus Areas	Key Outcomes
 **Clean Air**	**1. Tribal citizens have clean air in their homes and workplaces and are prepared for poor air quality days**	**1.1** Maintain consistent quality data collection on air quality and look for trends over time to better predict future conditions in the Kootenai Valley	Reliable air data made public
		1.2 Expand air monitoring efforts to additional metrics that impact health and well-being	Indoor air quality information provided to citizens and staff
		1.3 Prepare Tribal citizens for unhealthy air conditions through increased education on health impacts and mitigation strategies for unhealthy air	75% of Tribal citizens receive education
		1.4 Establish available testing for air pollutants, including radon	Citizens have access to current air quality readings
		1.5 Provide access to community spaces with clean and cool air during smoke events, poor air quality days, and heat waves	Community space identified and prepared
	2. Tribal homes, services, and enterprises are powered by clean renewable energy and prepared for power outages	**2.1** Explore solar or other renewable energy sources to power Tribal offices and residences, increasing energy independence and improving local air quality	Funding sources are identified
		2.2 Plan for backup energy generation in renewable energy installations, preferably through batteries, to support energy independence and resilience during local outages	Strategic energy implementation plan created
 **Environmental Stewardship**	**3. Expand wildlife monitoring and research related to the Tribe's primary species, especially those most sensitive to climate impacts**	**3.1** Expand wildlife monitoring and research related to the Tribe's primary species, especially those most sensitive to climate impacts	Additional monitoring needs incorporated into current efforts
		3.2 Develop a comprehensive Tribal planning and priorities document with standardized comment processes to reduce the burden on Tribal staff from outside agency requests	Tribal priorities document completed

Environmental Stewardship (continued)	**3. Expand wildlife monitoring and research related to the Tribe's primary species, especially those most sensitive to climate impacts**	**3.3** Advocate for huckleberry protection and enforcement of harvesting laws to protect cultural access and improve species conservation, both for huckleberries and animals that rely on huckleberries	Local cooperations to protect the most at-risk huckleberry habitat established
 **Clean & Safe Water**	**4. The Kootenai River is supportive of life, with habitat and water quality that supports aquatic species, especially for sturgeon and burbot**	**4.1** Maintain fisheries operations for restoring sturgeon and burbot	
		4.2 Expand research on conditions needed and barriers to burbot and sturgeon recruitment	Additional research needs identified
		4.3 Continue and expand water quality monitoring, including for selenium and nitrate concentrations in the Kootenai River	Consistent water quality data for desired locations in the Kootenai watershed
		4.4 Explore feasible remediation options to reduce bioaccumulation of toxics in aquatic species	Remediation options are updated to include current studies on effects of toxins
		4.5 Advocate for mines to be accountable for watershed pollution	Efforts will continue to reflect evidence of impact as a means for reducing pollution
	5. The Kootenai Tribe has safe, reliable access to clean drinking water	**5.1** Protect access to clean drinking water by planning for backup water sources if primary sources are compromised	Back up drinking water sources identified
		5.2 Encourage the City of Bonners Ferry to plan for future climate-related disruptions to water supplies	Outreach to City completed
 **Protecting & Restoring the Land**	**6. Tribal restoration work and the resources for completing restoration projects are at full capacity**	**6.1** Expand conservation nursery to propagate a wide variety of native plants to supply the Tribe's restoration projects	Ideal nursery production identified, including species type and number
		6.2 Utilize conservation nursery to provide knowledge and experience to Tribal citizens	Method of access for Tribal citizens created (tours, classes, job opportunities)
		6.3 Initiate restoration projects to reconnect the floodplain in the Kootenai watershed, building on the knowledge and momentum from past projects	Timeline for new restoration projects identified

Program	Goals	Focus Areas	Key Outcomes
Protecting & Restoring the Land (continued)	**6. Tribal restoration work and the resources for completing restoration projects are at full capacity**	**6.4** Secure land for conservation in key locations and work with other agencies and landowners to partner on restoration projects	Land identified for restoration projects
		6.5 Increase the Tribe's internal capacity to manage and staff restoration projects	Internal capacity gaps identified for upcoming projects
Healthy Communities & Ecosystems	**7. Tribal buildings are climate-resilient**	**7.1** Develop or find workforce training programs for skilled trades relevant to home maintenance to expand Tribal capacity for servicing heat pumps and other essential equipment	Research for workforce training started
		7.2 Support Tribal citizens in upgrading insulation and roofing to increase climate resilience	Inventory of Tribal homes completed
		7.3 Upgrade buildings on the reservation for energy efficiency and climate resilience	Inventory and energy efficiency audits for reservation buildings completed
	8. Tribal citizens are prepared for power outages and storms	**8.1** Create a registry of Tribal citizens who rely on electricity for medical devices to ensure targeted support during power outages	Voluntary registry completed
		8.2 Develop a plan to support Tribal citizens' food security during power outages to prevent spoilage	Conversations with Tribal citizens started
	9. The Kootenai Tribe diverts waste from landfill	**9.1** Reduce waste by establishing recycling and composting services for Tribal homes, offices, and enterprises	Recycling and composting services established at Tribal headquarters
Continuous Improvement	**10. Climate change is included in Tribal, local, and regional planning efforts**	**10.1** Utilize climate data gathered through the Tribe's climate vulnerability assessment to better integrate climate considerations into Tribal, regional, and intergovernmental planning	Tribal staff, government, and enterprises have information to inform decision making
		10.2 Advocate for incorporating climate considerations in county-wide hazard mitigation planning	Specific climate projections included in the next County Hazard Mitigation Plan

Program	Goals	Focus Areas	Key Outcomes
Continuous Improvement (continued)	**11. The Tribe effectively communicates environmental concepts and research**	**11.1** Develop a central repository for environmental data collection across departments	Data repository completed
		11.2 Create engaging maps to communicate complex topics, such as watershed health or species conservation efforts	Climate StoryMap completed

APPENDIX B – VULNERABILITY ASSESSMENT RESULTS

The chart below is an excerpt from the full Vulnerability Assessment that shows the scores for each area of importance to the Tribe. Each rating for probability, magnitude, and adaptive capacity includes a corresponding description that explains the background behind the rating.

ELEMENTS	PROBABILITY			MAGNITUDE	RISK			ADAPTIVE CAPACITY	VULNERABILITY		
Terrestrial Ecosystems	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Forests	Medium	High	High	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Fire management											
Fish	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Sturgeon	High	High	High	High	High	High	High	Medium	Medium	Medium	Medium
Burbot											
Wildlife	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Aquatic animals	High	High	High	Medium	High	High	High	Medium	Medium	Medium	Medium
Land mammals											
Birds											
Rivers and Streams	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Kootenai River	Medium	High	High	High	Medium	High	High	Low	Medium	High	High
Floodplain Reconnection											
Wetlands / Riparian Areas											
Air Quality	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Indoor Air Quality	Medium	High	High	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Outdoor Air Quality											
Cultural practices and food	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
First Foods	High	High	High	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Health of cultural sites											
Medicinal plants											
Recreation, hunting, fishing, camping											

ELEMENTS	PROBABILITY			MAGNITUDE	RISK			ADAPTIVE CAPACITY	VULNERABILITY		
Ktunaxa people - elders and children	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Health Children Elderly People with pre-existing health conditions	Medium	High	High	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Infrastructure - Water and Electricity	2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Water Delivery Systems Utilities and Energy Solid Waste	Medium	High	High	Medium	Medium	High	High	Low	Low	Medium	High
Housing					2010-2039	2040-2069	2070-2099		2010-2039	2040-2069	2070-2099
Indoor Air Quality (older buildings) Heating and cooling (what aspects of housing should we call out?) Availability of housing	Medium	High	High	Medium	Medium	High	High	Medium	Medium	Medium	Medium

APPENDIX C – SPECIES VULNERABILITY RATINGS

Species vulnerability was assessed using Washington Fish & Wildlife's Species Climate Vulnerability methodology. To find a species' climate vulnerability, sensitivity and exposure were averaged. For this Environmental Plan, the Tribe added a ranking for non-climate vulnerability that was rated equally to climate vulnerability. The scores from climate and non-climate vulnerability are summed for overall species vulnerability. WDFW's methodology also includes a confidence ranking based on the amount of existing research for each species.

The rating process in equation form:
(Climate Sensitivity + Exposure / 2) + Non Climate Vulnerability = Species Vulnerability

Definitions for each ranking are below. Climate Sensitivity, Climate Exposure, and Confidence rankings came from the Washington Department of Fish & Wildlife. The Non-Climate Vulnerability ranking was developed for the Kootenai Tribe of Idaho using the framework from WDFW.

CLIMATE SENSITIVITY RANKING	
LOW	Unlikely to be affected by a given change in climatic factors. The species exhibits little to no physiological or phenological sensitivity to climatic factors. The species is more of a generalist with few to no dependencies (e.g., on specific habitat types, prey or forage species). For those dependencies that do exist, they are unlikely to be sensitive to climate change.
LOW-MODERATE	May be somewhat affected by a given change in climatic factors but to a low degree. The species may exhibit some slight sensitivity to climatic factors in terms of physiology, phenology, and/or ecological relationships (e.g., habitat needs, forage or prey).
MODERATE	Likely to be noticeably but not significantly affected by a given change in climatic factors. The species exhibits a fair amount of sensitivity to climatic factors in terms of physiology, phenology, and/or ecological relationships.
MODERATE-HIGH	Likely to be significantly affected by a given change in climatic factors. The species exhibits more significant sensitivity to climatic factors in terms of physiology, phenology, and/or ecological relationships.
HIGH	Likely to be substantially affected by a given change in climatic factors, with major implications for species long-term persistence. The species exhibits substantial physiological sensitivity to climatic factors AND/OR the species is more of a specialist with critical dependencies (e.g., on specific habitat types, prey or forage species) that are likely to be significantly affected by climate change.

CLIMATE EXPOSURE RANKING	
LOW	Unlikely to be exposed to and affected by a given change in climatic factors.
LOW-MODERATE	May be somewhat exposed to and affected by a given change in climatic factors but to a low degree.
MODERATE	Likely to be noticeably but not significantly exposed to and affected by a given change in climatic factors.
MODERATE-HIGH	Likely to be significantly exposed to and affected by a given change in climatic factors.
HIGH	Likely to be substantially exposed to and affected by a given change in climatic factors, with major implications for long-term persistence.

NON-CLIMATE VULNERABILITY RANKING	
LOW	Unlikely to be affected by a given change in non-climatic factors. The species exhibits little to no physiological or phenological sensitivity to non-climatic factors. The species is more of a generalist with few to no dependencies (e.g., on specific habitat types, prey or forage species). For those dependencies that do exist, they are unlikely to be sensitive to change.
LOW-MODERATE	May be somewhat affected by a given change in non-climatic factors but to a low degree. The species may exhibit some slight sensitivity to other factors in terms of physiology, phenology, and/or ecological relationships (e.g., habitat needs, forage or prey).
MODERATE	Likely to be noticeably but not significantly affected by a given change in non-climatic factors. The species exhibits a fair amount of sensitivity to non-climatic factors in terms of physiology, phenology, and/or ecological relationships.
MODERATE-HIGH	Likely to be significantly affected by a given change in non-climatic factors. The species exhibits more significant sensitivity to non-climatic factors in terms of physiology, phenology, and/or ecological relationships.
HIGH	Likely to be substantially affected by a given change in non-climatic factors, with major implications for species long-term persistence. The species exhibits substantial physiological sensitivity to non-climatic factors AND/OR the species is more of a specialist with critical dependencies (e.g., on specific habitat types, prey or forage species) that are likely to be significantly affected by change.

CONFIDENCE RANKING	
LOW	Little to no information exists in the scientific literature and/or information is characterized by high uncertainty.
MODERATE	Some (e.g., 1-3 scientific or gray literature reports or papers) exist for the sensitivity or exposure factors identified although there may be some uncertainty and/or conflicting information.
HIGH	Multiple (>3) scientific or gray literature sources exist for each sensitivity or exposure factor identified with less uncertainty.

APPENDIX D – SOURCES

END NOTES

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[4] Krosby, M., Hegewisch, K.C., Norheim, R., Mauger, G., Yazzie,K., H. Morgan. 2018."Tribal Climate Tool" web tool. Climate Impacts Group (https://cig.uw.edu/resources/tribal-vulnerability-assessment-resources/) and Climate Toolbox (https://climatetoolbox.org/) accessed on October 27, 2025

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