

The Ahtna Intertribal Resource Commission (AITRC) remains deeply engaged in scientific research, securing funding for future initiatives, and collaborating with other organizations on Game Management Units 11 and 13 projects. Our work goes beyond fish and wildlife conservation. We are actively mapping our customary and traditional use territory, establishing a Tribal Historic Preservation Office, and developing apps to track the distribution of individual subsistence harvests. Our primary goal is to bridge data gaps and enhance the management of subsistence species that the eight federally recognized tribes and their citizens in the Ahtna Region have relied on since time immemorial. By doing so, we aim to strengthen co-management efforts with partnering agencies.

## **Wildlife-**

### *Mentasta Caribou Research*

AITRC, in partnership with the Cheesh'na Tribal Council, received funding from USFWS through the Tribal Wildlife Grant (TWG) to assist WRST in their already established Mentasta Caribou Herd Monitoring. The capture and collaring of the Mentasta and Chisana Caribou Herds was conducted in the first week of October. AITRC will contribute GPS collars, flight time, and equipment (ultrasound and thermal cameras) as needed. In addition, AITRC has requested samples from historic and upcoming captured caribou to conduct nutritional analysis and disease testing, an expansion of the Moose Health initiative that AITRC's Ecologist has been working on over the last couple of years. Based on capture success rates and winter survival, AITRC will transition to research calving and recruitment rates in spring/summer 2025. As we have funding through December 2025, AITRC will submit research permits to be the lead PI of this project to the Institutional Animal Care and Use Committee (IACUC). AITRC requested that WRST and AITRC establish a data-sharing agreement for NPS-collared caribou and AITRC-collared caribou. This would allow for a more holistic understanding and aid in updating the management plan.



### *Wolf Research*

AITRC, in partnership with the Native Village of Tazlina, received funding from USFWS through the TWG to research the range, distribution, and seasonal diet of wolf packs within GMU 11. Wolf captures occurred in November 2024 and again in March 2025. Through this research, AITRC will initially focus on the area between the Sanford River and the Nebesna River, with approval to conduct research within NPS boundaries north of McCarthy Road. This is an AITRC-led project with an approved IACUC through NPS and research permits from NPS, ADFG, and Ahtna Inc. Once adequate snowfall is available, two AITRC technicians will conduct site investigations of clustered GPS points to collect biological samples and set up trail cameras at potential kill-sites, rendezvous sites, and denning sites via snowmobiles and aircraft. In addition, AITRC is working with local trappers to collect supplemental biological samples to better understand the diet throughout Ahtna's Eastern Territory. This funding will continue through December 2025, and after the preliminary analysis is complete, additional funding may be pursued, focusing on insights from the ongoing wolf research.

## Ecology-

### *Disease Surveillance of Copper River Salmon*

The Ahtna Intertribal Resource Commission (AITRC) continued its preliminary study to assess disease and parasite burdens in sockeye and Chinook salmon in the Copper Basin. This ongoing research aims to monitor parasites such as *Ichthyophonus* and *Anisakis* species, among others, for better planning and proactive mitigation rather than scrambling to react. It also seeks to identify any diseases or stress in Copper River salmon.

*Ichthyophonus* can cause mortality in salmon and affect the quality of fillets, presenting a significant food security concern, though it does not pose a direct human health risk. Anecdotal reports of symptoms of this pathogen from Tribal Citizens have been an important motivator for the project. Given that *Ichthyophonus* is suspected as a potential contributor to the declining Yukon salmon (In 2021, 44% of Chinook salmon returning to the Yukon to spawn were infected with *Ichthyophonus*, which was higher than in previous years. In 2022, preliminary results from testing 2022 Chinook indicated a high prevalence of *Ichthyophonus* at around 40%.) returns, proactive monitoring of Copper River sockeye and Chinook salmon is essential.

In 2023, AITRC collected 148 samples to analyze parasite burden and *Ichthyophonus* presence, and 75 cultures (64 sockeyes and 11 Chinook salmon) were sent to the ADFG Pathology Laboratory for testing. One sample returned a positive result for *Ichthyophonus*, but due to contamination—a common issue during field sampling—it cannot be confirmed with 100% certainty. Samples were collected for both culture and histology. None of the 2022 histology samples showed signs of *Ichthyophonus*. However, the histology of the 2023 samples revealed inflammation lesions and myocyte cell death in some samples. Inflammation and myocyte cell death in salmon hearts are signs of stress and disease that could significantly impair their survival and reproductive success. It's essential to investigate the underlying causes to understand their potential impact on fish populations and food security.

In 2024, AITRC partnered with ADFG Pathology Lab and Sitka Sound Science Center on this project and expanded the sampling scope to include kidney, liver, and spleen from Chinook and sockeye salmon. This more holistic approach utilized both PCR and histology to examine different diseases. This more holistic approach should provide deeper insights into disease dynamics in Copper River salmon. There are currently no results.

### *Moose Health Monitoring Project*

The Ahtna Intertribal Resource Commission entered year three of the Moose Health Monitoring Program, initiated in response to Tribal Citizens' concerns about meat quality and health risks. Focusing on environmental contaminants from historical mining operations and military dump sites in Ahtna territory, the project aims to ensure that subsistence resources are safe for consumption.

**Sample Collection:** In 2022, we collected eight samples, followed by 33 in 2023 and 41 in 2024. To diversify research opportunities, samples are sourced from hunter harvest, roadkill, educational, or ceremonial take.

### **Preliminary Findings:**

**Mercury:** No high mercury levels were found in samples from 2022 and 2023.

Copper is an essential trace element for all living organisms, including moose. It is critical in enzymatic activities, immune function, connective tissue formation, and





iron metabolism. In Alaska, copper deficiency in moose is a concern, often linked to poor soil quality or competition with other metals, such as high iron or molybdenum, which can inhibit copper absorption. Copper deficiency in moose can weaken immunity, making them more susceptible to diseases and parasites. It can also cause poor growth, fertility issues, and developmental abnormalities such as bone and connective tissue disorders. While copper is essential, it can also become toxic at high concentrations. Copper toxicity may lead to liver damage and interfere with other metabolic functions. However, the primary issue in Alaska is deficiency rather than excess, particularly in regions where soil copper availability is naturally low.

- Hair: Among 24 moose samples analyzed for copper, only one showed an adequate level, while 95.8% were deficient or inadequate. Hair analysis reflects only the period of growth, which limits its utility as an indicator.
- Kidney: Copper levels were well below the adequate range defined by existing studies.
- Liver: Out of 39 samples, 14 showed copper below the minimum threshold, and values varied greatly. Additional analysis is needed to explore drivers such as location, season, or moose age.
- Muscle: Muscle tissue generally has copper concentrations below the criteria, though muscle may not be a reliable indicator of copper status. However, it remains an essential nutritional source for human consumers.

Cadmium is a non-essential heavy metal that poses a toxicological threat to wildlife. In Alaska, cadmium contamination is often linked to historical and ongoing mining activities and pollution from other industrial sources. Cadmium can accumulate in soils and be taken up by plants, which are subsequently consumed by herbivores like moose. In moose, cadmium accumulates primarily in the kidneys and, to a lesser extent, in the liver. Chronic exposure leads to the gradual buildup of cadmium over time, which can eventually reach harmful levels. The range of cadmium concentrations observed in moose kidneys is vast, with significant overlap between normal and concerning levels, indicating exposure variability based on location and environmental factors. High levels of cadmium in moose can cause kidney damage, impairing the organ's ability to filter waste effectively. It can also disrupt calcium metabolism, weaken bones, and cause other physiological issues. Cadmium toxicity can reduce moose's health and survival rates, particularly in areas with significant environmental contamination. Sublethal effects may weaken moose, impairing their ability to find food, escape predators, and cope with harsh environmental conditions.

- Kidney: Showed a wide range (almost 100-fold difference) in cadmium levels, spanning both normal and concerning concentrations.

An Ahtna tribal citizen is analyzing the University of Alaska Fairbanks and Texas A&M as part of her master's thesis. These data are preliminary, and the final findings will be published in a thesis and/or peer-reviewed manuscript highlighting significant drivers of heavy metal accumulation.

We are grateful for the continued support from Ahtna Inc., the Alaska Department of Fish and Game, the Bureau of Land Management, and Wrangell-St. Elias National Park, all of whom assisted in distributing sampling kits to hunters in the Ahtna region. These projects heavily rely on public participation, and we appreciate the collected samples.

### **Fisheries-**

*Water temperature monitoring-* As part of the state-wide stream monitoring program, AITRC deployed remote temperature loggers in the major tributaries to the Copper River and other feeder streams. As ambient summer temperatures significantly affect non-glacial stream temperatures, emphasis was placed on the Gulkana River system. Partnered with USFWS, AITRC helped collect data from 121 remote sensors in the Middle and West Fork Gulkana. An MOU is in place for AITRC to take over this project.

*Tanada Weir -* AITRC Fisheries Biologist, is beginning the hiring process and will assume responsibility for operations in 2025.

*Juvenile salmon abundance—In partnership with Prince William Sound Science Center, in 2024, AITRC conducted year three of hydroacoustic surveys in Klutina Lake to assess Juvenile sockeye abundance. A pilot study verified target species via trawl. Future funding is pending.*

*Klutina River Escapement Estimate using Sonar -* At this writing, AITRC is awaiting a decision on funding for 2025.

*NPS-WRST Inventory of Freshwater Fish—Beginning this field season, AITRC will begin an inventory of harvestable freshwater fish in Wrangell St-Elias National Park's lakes and streams.*

**Anthropology-**

*Community Household Surveys—This is a multi-year study on how residents of Mentasta Lake, Mentasta Pass, Chistochina, Slana, and Nebesna Road participate in subsistence. Surveys, data analysis, and community reviews have been completed. The feedback gained during the community data review is being incorporated into the results, and the partners are writing a report, which will be completed by December 2025.*

*Exploring Alternative Harvest Monitoring Methodology-* Several people participating in the Copper Basin Community Harvest Assessment expressed that a one-year snapshot of a household's participation in subsistence does not capture how harvesting has changed over time. It also became clear that while sharing happens, how resources move through and across communities is unclear. The two primary objectives of this project are to develop a methodology to bridge the gap between comprehensive harvest assessments and harvest monitoring and to delve deeper into methods of studying sharing networks within the Copper Basin. AITRC's Anthropologist and WRST GS-9 cultural anthropologist will conduct exploratory life history interviews to gain insights into subsistence activities, harvest practices, and sharing patterns. In addition to these interviews, the anthropologist will conduct a literature review of existing social network analysis work conducted in Alaska. By combining the results, the project aims to develop a methodology to fill the data gap between harvest assessments, potentially transforming into a systematic data collection method like the comprehensive harvest assessment. The analysis of the interviews and the development of the methodology will be presented in an extensive report.

*Ahtna Cultural Preservation Capacity Building Project-* We are building our capacity to provide Tribal Historic Preservation Office services to the Native Village of Chitina and, eventually, the other Ahtna Tribes. In September of 2023, there was a discovery of graves within the right-of-way of the O'Brien Creek trail. This led to AITRC participating in discussions between the Native Village of Chitina and the Alaska Department of Transportation to devise a temporary solution: installing bridges and boardwalks to protect these graves while allowing people to access the personal fishery. Last fall, AITRC, through an Archeological Consulting Firm, conducted further research in the O'Brien Creek area. AITRC continues to collect ethnographic and archeological data to catalog and compile an inventory of culturally sensitive sites.



AITRC plans future cultural management activities, including monitoring DOT work in the Tonsina area this summer. With this information and working closely with the state of Alaska and the tribe, AITRC has been making headway in fulfilling the Native Village of Chitina's vision for protecting these important cultural sites.

*NPS Ethnography- Ahtna and Wrangell-St. Elias National Park and Preserve: An Ethnographic Overview and Assessment* has been published.

## Indigenous Sentinel Network-

*Harvest & Subsistence Sharing Apps* - AITRC has been working diligently with the Indigenous Sentinels Network (ISN) and the Open Landscape Network (OLN) to design and develop two mobile applications: the Harvest App and the Subsistence Sharing App. These apps are built upon AITRC's authorization to administer federal community subsistence hunts for moose and caribou on federal public lands open to federal subsistence uses. The apps will capture data on harvesting successful catches/hunts and sharing the harvests with family, friends, and other community members, near and far.

These apps have multiple benefits: Harvest App - allows users to report their harvest by filling out the form on their phone and printing it out later for submission, instead of pulling out a writing utensil and filling out the form itself while in the bush. Sharing App - sharing and bartering are standard practices in traditional subsistence lifestyles. The app will allow users to see various maps and diagrams of the extent of their sharing. The resulting data collected from the sharing app will also provide invaluable information to AITRC when advocating for subsistence rights. These two apps will also communicate with each other, sending harvest data to their pantry in the sharing app if the user wishes to do so. The primary short-term goal is to have both apps fully functional and available to our tribal communities by the start of the fishing season 2025. The long-term and ultimate goal is to allow tribal communities from all over Alaska to utilize these apps, ease the reporting process, and obtain quantitative data that can be used in proposals, public comments, and any other data-driven decision-making processes.

