



CHIGNIK INTERTRIBAL COALITION
127 AIRPORT ROAD
CHIGNIK LAGOON, ALASKA 99565

Chignik Intertribal Coalition Preliminary Climate Risk Assessment



December 2022

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Produced By

This plan was produced by the Chignik Intertribal Coalition for the Ivanof Bay Tribe with facilitation and writing support from George Anderson, President of the Chignik Intertribal Coalition and Hazel Nelson, Land and Sea Resources.

Acknowledgments

The Coalition acknowledges the help from each of the tribes in the completion of this document as well as the help of the Alaska CASC staff in the final report. We acknowledge and sincerely appreciate to the following:

- Chignik Bay Tribal Members
- City of Chignik Council Members
- Chignik Lagoon Tribal Members
- Chignik Lagoon Native Corporation Members
- Chignik Lake Tribal Members
- Ivanof Bay Tribal Members
- Perryville Tribal Members
- Alaska Climate Adaptation Science Center, Tribal Resilience Learning Network

We would like to acknowledge the following Elders for their valuable contributions and knowledge:

- Edgar Shangin, Ivanof Bay Tribal Member
- Alvin Shangin, Perryville Tribal Member
- Nick Aleck, Chignik Lake Tribal Members
- Virginia Aleck, Chignik Lake Tribal Members

This project was made possible through in-kind and administrative support from the Ivanof Bay Tribe and funding from the Bureau of Indian Affairs, Tribal Climate and Resilience Program.

INTRODUCTION

The Chignik Intertribal Coalition (CIC) is comprised of the tribes from Chignik Bay, Chignik Lagoon, Chignik Lake, Ivanof Bay and Perryville.

Since 2018, the tribes in the Chignik region communities have endured four consecutive years of disastrous returns of Chinook and sockeye salmon to the Chignik watershed, and this has caused complete upheaval in their lives. The disaster was so devastating that the communities formed the Coalition in 2018 to procure and coordinate delivering enough food donations for the tribes to last through the winter. The disaster continued in 2019, and the CIC again repeated the same efforts for the tribes. In 2020, another disastrous low salmon return occurred and the local economy and food security deteriorated further. Leaders in the communities recognized that they needed to prepare long term recovery steps to help the tribes as a whole. With that direction, the Chignik Intertribal Coalition began working on several priorities, including this Tribal Resiliency Planning grant.

Our people are stressed in their ability to maintain their cultural and traditional harvesting patterns. We are struggling to maintain our economic and social infrastructure in our communities. - George Anderson President Chignik Intertribal Coalition



Local boat delivering food and donations following the salmon crash. Photo credit: Austin Shangin

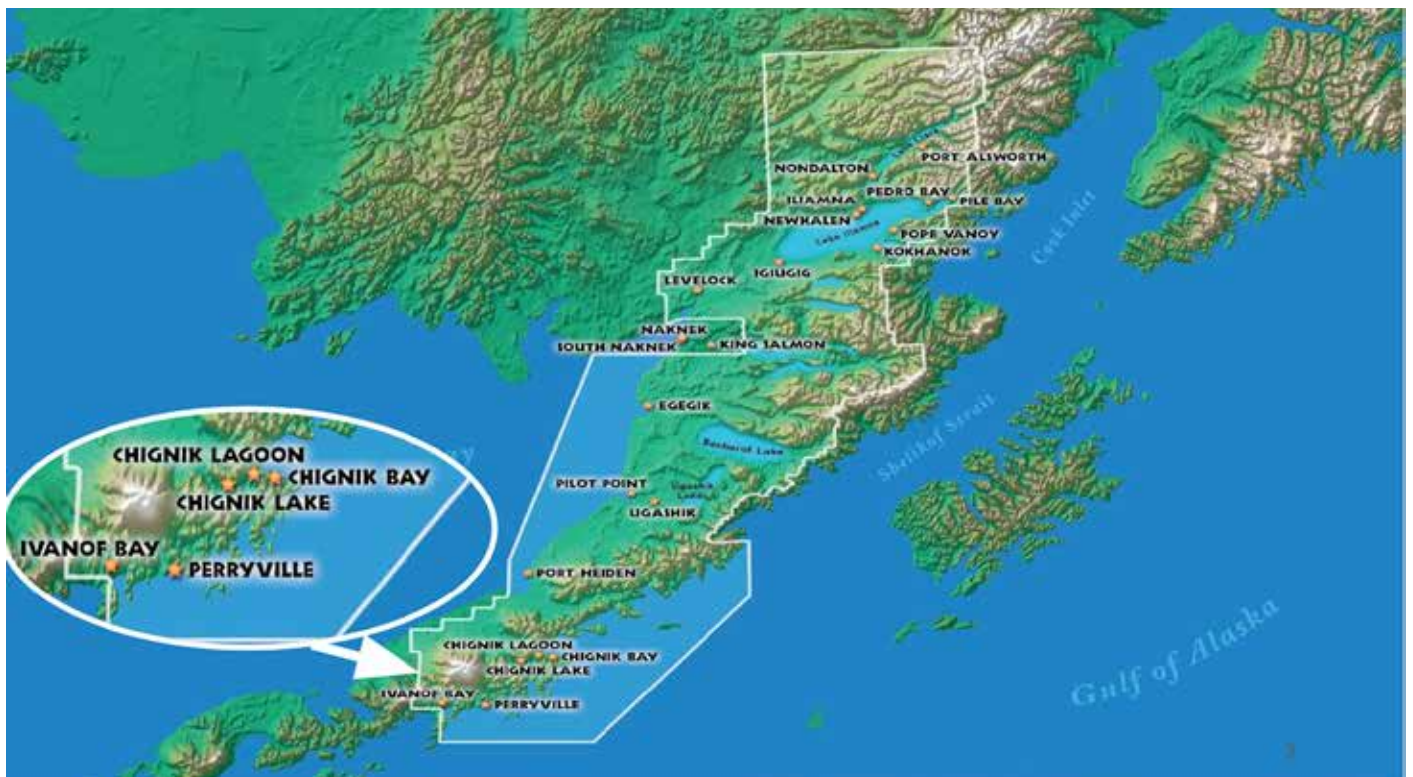


Figure 1: Chignik Intertribal Coalition communities. Photo Credit from Lake and Peninsula Borough.

Planning Process and Timeline

When planning began on this grant project the Chignik region had already experienced the 2018 and 2019 fish disasters and warm weather events that affected our communities. By 2020, the CIC was completing the initial multi-year food security grant and the CIC recognized that it would be prudent to begin planning for more long term solutions to help stabilize the local economic prospects and stem family outmigration due to the lack of fishing income in a region with few job opportunities. In March of 2020, the Ivanof Bay tribe sponsored the CIC in pursuit of this BIA Category 6 Tribal Climate Resiliency Planning grant to help build the foundation for adaptation planning of long term social and economic solutions for the tribes.

After hiring a consultant (Land & Sea Resources) in late December 2020, the CIC began gathering community input in early 2021. The CIC began by requesting permission from the individual tribes to attend their meetings that were already scheduled for the early months of 2021. Due to the pandemic all the meetings were conducted by zoom or telephonically. All five tribes provided verbal observations in meetings and one tribe provided input from three different meetings of mixed attendees. One tribe provided both written and verbal observations. During the first step meetings we asked for feedback on the following questions; what changes in the environment have you observed or have occurred in the past, and what are the key species necessary for food and for commercial sale that your communities rely on? In the second step meetings we asked for input on identifying a plan that assigns priority funding needs and a plan that defines next steps for resilience. In 2022, additional meetings were held and one final (and the only in-person) meeting was convened for final feedback on the draft document with representatives from each tribe on October 19, 2022. That meeting was held at the Bristol Bay Native Corporation (BBNC) headquarters in Anchorage.

Successful completion of this document will fulfill the requirements of meeting the Category 6 BIA Tribal Climate Resilience Program grant. Once the BIA approves completion of this grant project, the tribes will then be able to apply for the Category 2 grant, which is the next step in the grant application process in building tribal resilience.

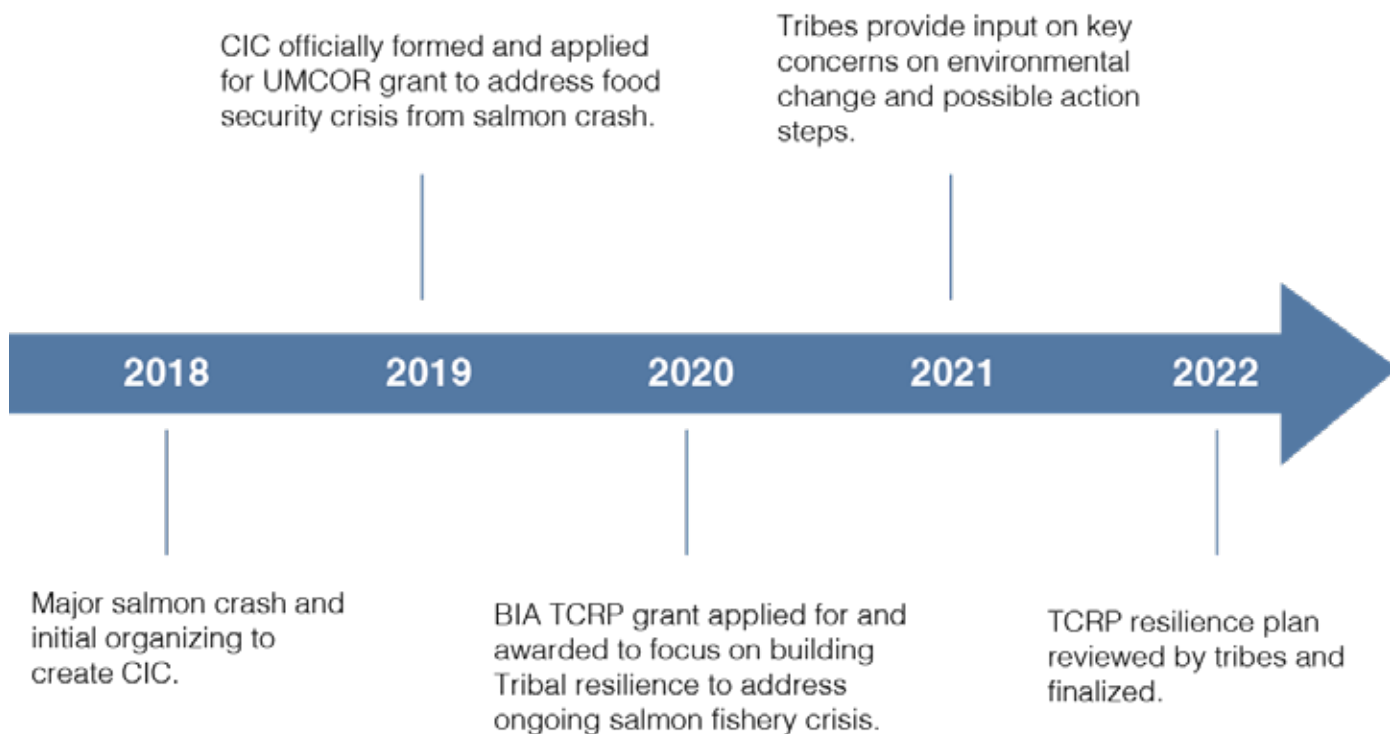


Figure 2: CIC organization and resiliency planning timeline.

STEP 1: Identifying Key Concerns

The five tribes have completed the first steps required to document observations of what is occurring around the communities and identified some risks that need to be monitored and assessed. They have described changes in the environment and identified the key species at risk which are necessary for food, bartering, and/or for commercial sale. Additional observations were gathered from attending the Chignik Science Symposium on May 28, 2022, in Chignik Bay, including risks that require monitoring for local infrastructure needs. The following are the issues and concerns identified by the tribes and some risks that need to be monitored and assessed to build capacity and resiliency in the tribes. The findings so far, include:

1. Loss of main food source, salmon, including redfish from Chignik Lake
2. Loss of main economic driver is commercial salmon fishing
3. Loss of traditional hunting and gathering areas due to changes in the local environment
4. Brush overgrowth in/around communities increase fire and predator safety hazards
5. Loss of traditional berry supply and berry picking areas
6. Loss of all types of bivalves as a food source and as a traditional barter and trade essential
7. Loss of different types of birds for harvest, such as ptarmigan and eiders
8. Essential infrastructure and maintenance needs

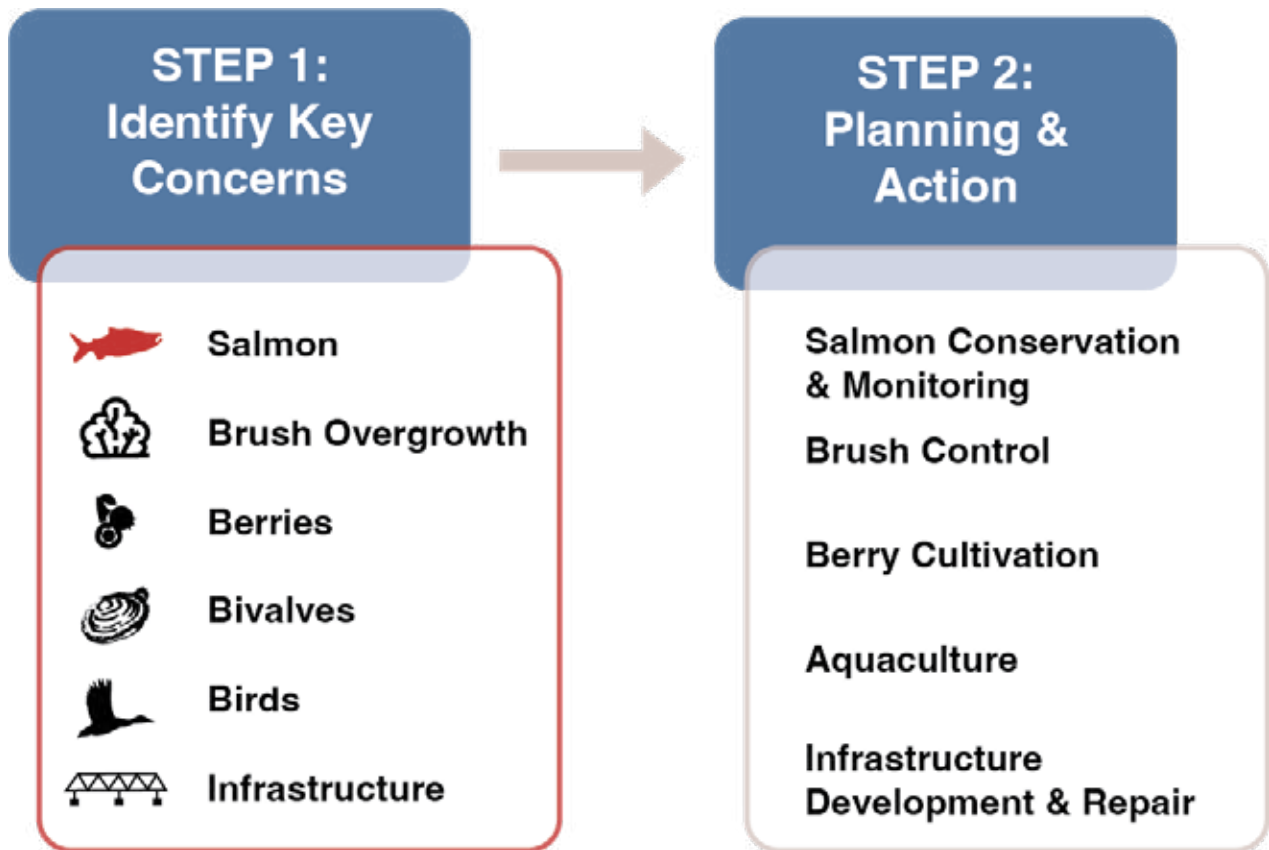


Figure 3: Key concerns and planning action steps identified by CIC members.

Salmon Crash: Key Concerns 1 and 2



Drone footage of Red fishin' on Chignik Lake.

The tribes have begun discussing ideas that define how to live a sustainable life amid the rapid environmental changes affecting their livelihood, and the availability of food and water sources in and around their respective areas, including the entire Chignik Watershed. The loss of their main food source, wild salmon, are all the tribe's foremost concern. Salmon harvests make a substantial contribution to the food supply of the communities with historic annual harvests in usable weight ranging from about 100 pounds per person to 265 pounds per person. Wild salmon has been documented to comprise between 33 and 70 percent of the total annual harvest of all resources by Chignik area residents. (L. Hutchinson-Scarborough, J. Fall, ADF&G, 1996)

All the tribes have also relied on salmon in its late stage of life, locally called "redfish." Redfish harvested from Clarks River and Hatchery Beach, in Chignik Lake, serve as a traditional winter protein source and have long been an important trade and barter resource for receiving caribou meat and other foods from neighboring tribes. Redfish haven't been found in harvestable amounts since 2018 and each year the amount found is increasingly less on Hatchery Beach.

Progress to address this problem has been slow and inefficient given the scale and timelines of this issue.

"The locals would go subsistence fishing in Clarks River and used to be able to catch redfish through December, January and into February. For the past 4-5 years now, there are less and less redfish and this year they couldn't catch any after October. Neighboring tribes have been coming to try and catch redfish because they don't have any fish and they aren't catching many redfish."

- A Chignik Lake member

"People here had little to no salmon in 2021 unless it was brought in from another area. This past summer there were some salmon going up Indian Creek, and although not a lot, more than ever before. Someone caught a couple silvers there in October. In the deep creek behind my house, I saw some salmon and a land otter that was trying to catch them."

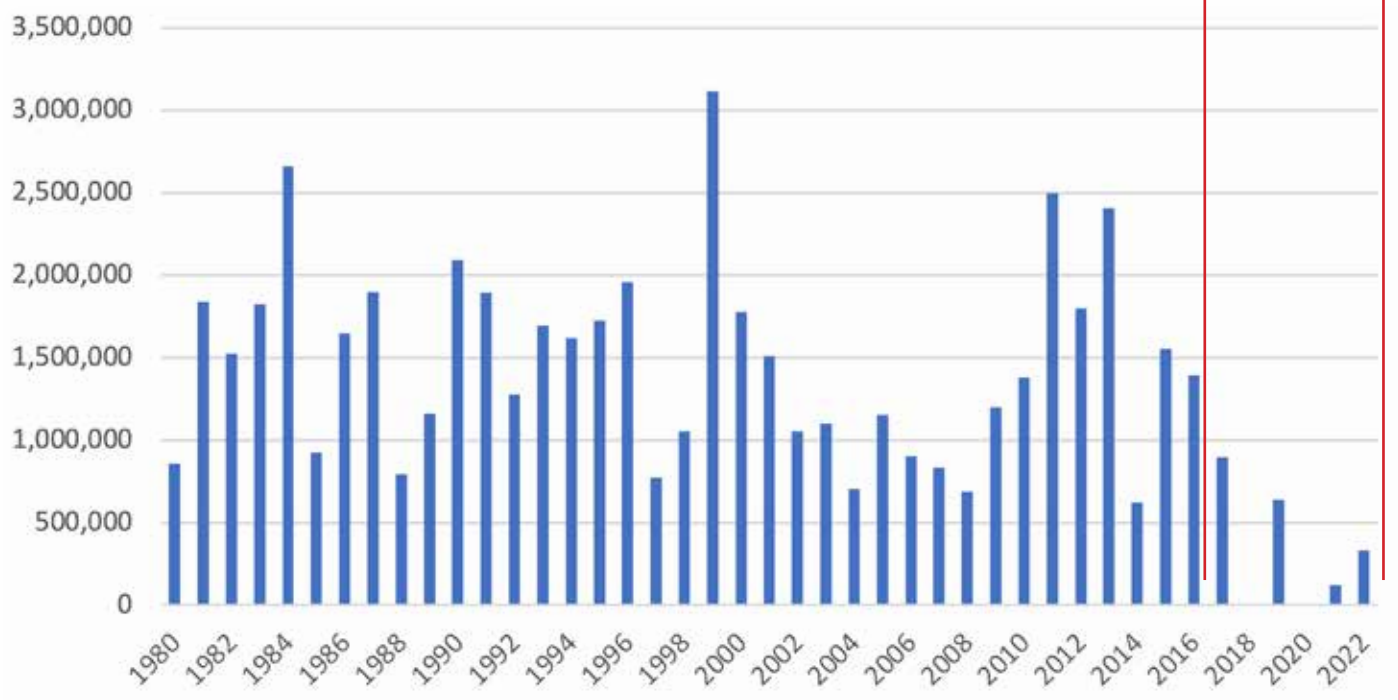
- A Chignik Bay member

Furthermore, it is not only an environmental concern but also of justice and equity, as inaction continues to cause disproportionate climate change harm on underrepresented groups, including the Chignik tribes, in Alaska. In 2019, the Alaska Federation of Natives passed Resolution 19-56 declaring a climate change state of emergency (AFN, 2019) and the U.S. House of Representatives requested a report on climate change impacts to Alaska Native villages. Limited progress has occurred and is due to the lack of investment in locally prioritized research, lack of qualified workforce to carry out the work, and lack of an effective communication framework that serves to facilitate solutions for threatened communities such as those of the Chignik Intertribal Coalition.

2018-2021- Early run sockeye remain at an unprecedented low return.

2022- Sockeye designated stock of management concern by Alaska Board of Fisheries (BOF).

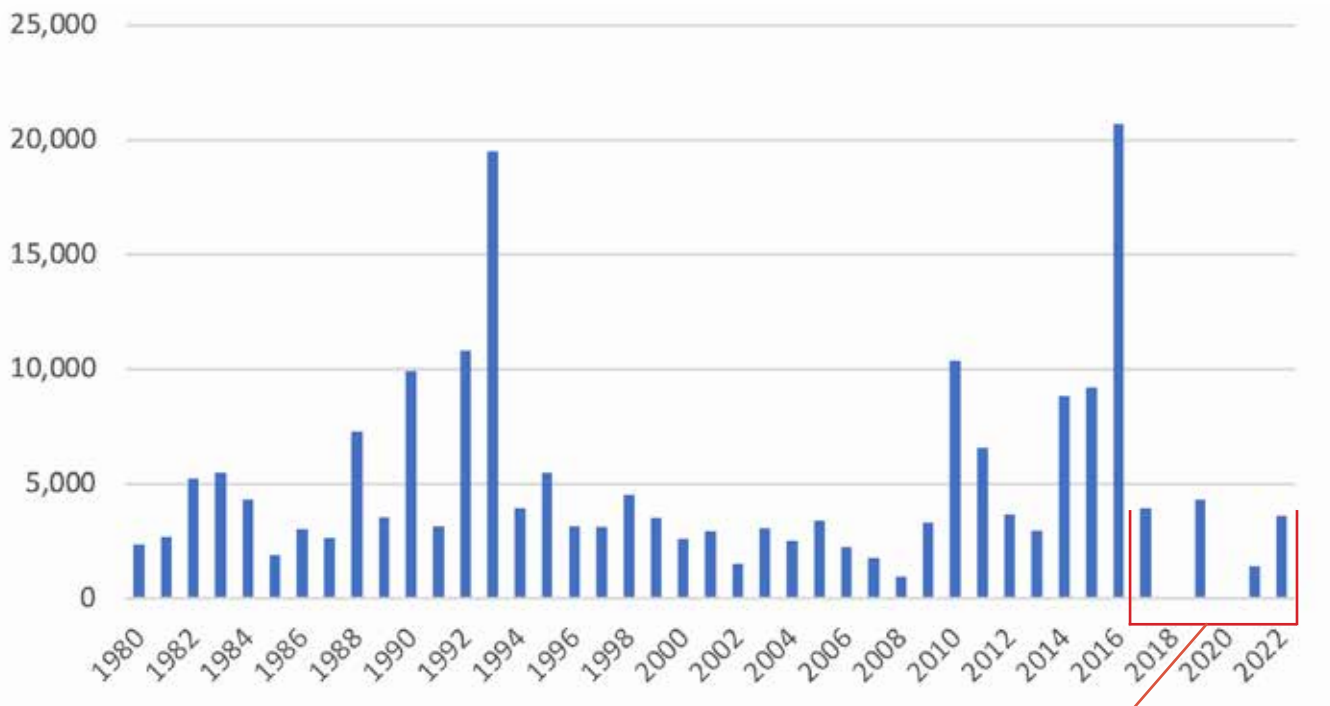
Sockeye salmon commercial harvest for Chignik Management Area



Figures 4: Total annual Chignik Management Area commercial salmon harvests for Sockeye Salmon (including home pack and ADF&G's test fishery harvests), by species and year, 1980-2021.



Chinook salmon commercial harvest for Chignik Management Area



Figures 5: Total annual Chignik Management Area commercial salmon harvests for Chinook Salmon (including home pack and ADF&G's test fishery harvests), by species and year, 1980-2021.

2017- 2022 Chignik Chinook fishery restrictions and closures for conservation.

2018 & 2022 - Unprecedented low return of Chinook Salmon

2022 - Chinook recommended as stock of management concern to BOF

Brush Overgrowth: Key Concern 3 and 4

Many tribal members discussed seeing increased vegetation and brush growing up on the hillsides and into the middle of communities where it wasn't historically growing. Several key issues were raised related to this concern. Foremost is the increased risk to life and property from brush fires occurring near homes and outbuildings. Several brush fires within communities have already occurred near homes. Concern was also raised about challenges in accessing traditional hunting areas, and the encroachment of brush inhibiting other food sources that tribal members harvest. Safety concerns were also raised about the increasing amount of overgrowth that makes it difficult for harvesters to see predators, like wolves, foxes, or bears coming into communities. Foxes often come into communities looking for food and when they have rabies, they are a health and safety threat to locals, especially children, and family pets.

“The overgrowth of brush surrounding the village is causing caribou to migrate and stay higher up the mountains now for protection. Predators hiding in the brush can't get at the caribou as easily, but it also makes it harder for the local hunters to harvest caribou. We've even had several brush fires in town because it's growing everywhere.” - A Chignik Lagoon member

“There are rapid changes in our lands, with alders and other overgrowth in areas where alder historically hasn't grown, and also growing over traditional berry patches.” - An Ivanof Bay member

Changing Berry Abundance and Availability: Key Concern 3 and 5

The Chignik region has a variety of wild berries that include both high bush salmon berries, wineberries, blueberries, mossberries, and lowbush cranberries. Boiled cranberries were used as medicine for colds or the flu. All these berries have been a subsistence staple and used in trade and barter with neighboring tribes for millenia. Many of the tribes indicated that berry harvest areas are affected by hot dry weather, and from fireweed, lupine, and alders overgrowing traditional berry picking areas. With less berries available, some members believe ptarmigan have moved to other areas.

“For the last three years there aren’t many mossberries, blueberries, or cranberries, and there are different vegetation (alders and other plants) overgrowing the traditional berry picking areas, especially up Clarks River and up the lake. There have been plentiful salmonberries in recent years.” - A Chignik Lake member

“I’m concerned for all our moss berries, salmonberries, cranberries, and blueberries due to changes in the weather.” - A Chignik Lagoon member

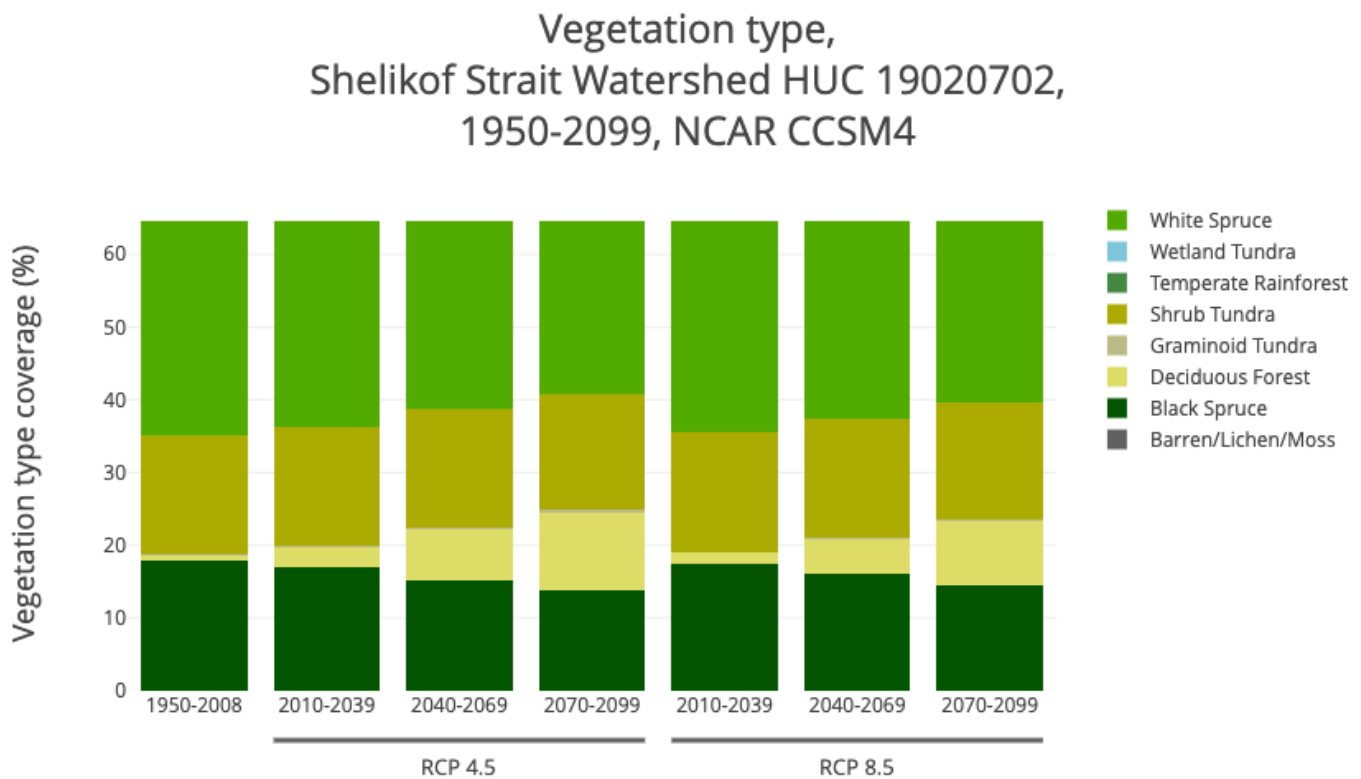


Figure 6: Historical and projected vegetation changed of the Sheilikof Strait Watershed from the Northern Climate Reports. Projected and historical values are taken from ALFRESCO model output.



Loss of Harvestable Bivalves and Shellfish: Key Concern 6

The Tribes in the Chignik region historically harvested razor clams, butter clams, cockles, and mussels, for subsistence and for trade and barter with neighboring tribes. Mussels were the first bivalve that Chignik tribes stopped harvesting and eating when people in Kodiak died from mussels that had high PSP levels back in the 1990's.

To safely consume bivalves, locals have to send samples out of the region to be tested before consumption. The results have shown that it's unsafe to consume them for a long time now. The Ivanof Bay tribe is concerned that there is no locally available testing service to expedite the ability to know what is safe to consume for the tribes.

“Razor clams are inedible all the time now due to PSP. Cockles and butter clams are also inedible due to the red tides which have occurred regularly now for the last 5-6 years, including 2015, when the warm water Blob occurred in the area.” - A Chignik Lagoon member

When people went to the beach to harvest seafood they were looking for food and some species weren't bivalves. Although candlefish, sea urchins, and snailfish aren't bivalves, the tribes also traditionally harvested them in the nearshore waters. Sea urchins and candlefish are considered a delicacy and are still harvested when they present themselves. Snailfish are a deepwater species and are rarely found. They can be found in rocky outcrops in deeper waters at low tide after a storm. Locally, they are called button fish because they are found attached to the rocks by a circular sticky muscle on the bottom of their stomach. Elders also considered them a delicacy.

Chignik Lake members are no longer able to harvest the different kinds of clams and cockles anymore at Chignik Lagoon, Chignik Bay, and Perryville because of paralytic shellfish poisoning concerns. This lack of shellfish harvest has also affected the tribe's long standing ability to trade with Port Heiden residents for caribou. The bivalves found in the Chignik region aren't found on the Pacific side of the Alaska Peninsula, only on the Gulf of Alaska side of the peninsula. Although there is a distinct Southern Alaska Peninsula Caribou Herd, that herd is much smaller and harder to hunt than the larger North Alaska Peninsula Caribou Herd which are easier to access from Port Heiden. In recent years, both these herds have been in a slow recovery from collapsing populations due to diseases associated with lack of adequate food nutrition and from predation. The traditional trade and barter dynamics with both the Chignik Lake tribe and the Port Heiden tribe for bivalves and caribou meat have been difficult to maintain due to the losses of food sources on both sides of the peninsula. Although Port Heiden isn't considered part of the Chignik region, families have been inter-married between the communities for generations. This trade and barter between the two neighboring and inter-related tribes has been highly active and valued for generations.



Loss of Traditionally Harvested Birds: Key Concern 7

The tribes in the Chignik region have long supplemented their diet with seasonally harvested birds that included freshwater fowl, saltwater fowl, and birds that are found on the tundra. The environmental changes are affecting all traditional wild foods, including berries, and other food that birds return for and survive on. Locals harvested Snipes, Mallard ducks, Loons, and King Eiders. These were hunted along the beaches or on the lakes. King Eiders were the first birds of the spring to arrive and were hunted in Chignik Lagoon and at Chignik Lake. The Eiders don't come as much as they used to after the Exxon Valdez Oil Spill. Canadian geese, Sand Crane, and Old Squaws were hunted on the sand spits and Ptarmigan were all hunted on the tundra.

“There are no more ptarmigan, possibly because there's hardly any berries for them to eat, it's been so dry. Eiders are also of concern for subsistence food. The Eider flocks number around 100 now, down from between 2,500-5,000 birds that have been seasonally available for hunting.” -A Chignik Lake member

“We used to have ducks that people hunted but they don't stay over anymore.” “Very little ptarmigan, maybe 8 years since someone went ptarmigan hunting because they don't flock up there anymore, although someone saw two recently.” - A Chignik Bay member

“Ptarmigan flocks have been gone for 8-10 years now.” Another Perryville member observed that “Birds are now nesting in April and May, earlier than they used to nest. Strange birds are coming around now every summer.” - Perryville member observations

Essential Infrastructure Maintenance Needs: Key Concern 8

Chignik Bay Infrastructure

Risks to delivery of food, freshwater supply, and infrastructure needs are interrelated concerns. Due to rising fuel prices and legislative funding cutbacks, regular ferry service to Chignik Bay has been diminished. This affects all five tribes in the Chignik Coalition. An ongoing risk would be complete loss of inter-community marine transportation for hauling bulk fuel supplies, equipment, construction/maintenance essentials, food and other bulk supplies and as local transportation due to inclement weather.

Because all the communities are adjacent to water, they share similar concerns about the ability to maintain and upgrade docks, bridges, landings, and staging areas where supplies are offloaded. For instance, risk to the loss of bridges over Indian Creek crossings in Chignik Bay, jeopardizes access to the tsunami shelter, the airport, the docks, the water tank, and all different sections of the community.



Port of Chignik Bay

Chignik Lake Infrastructure

In Chignik Lake, the tribe indicated that the riverside landing pad that is used to offload bulk fuel supplies and all other materials and supplies is deteriorating rapidly and needs to be relocated. In addition, shallow waters have jeopardized the ability for the Chignik Lake tribe to receive bulk fuel and other essential supplies in time for winter. In recent years barges are forced to wait until flood conditions or very high tides to avoid getting grounded on the rocks or sand bars as fuel is hauled upriver to the Chignik Lake riverside landing pad. In late 2021, winter fuel had to be flown in. The tribe expressed that for the long term the community really needs access to deeper water and a road is necessary to be built to avoid the ongoing risk of being without winter bulk fuel supplies for the community members.

“Winters have been warmer so there’s been less water in the summers with more grass growing in the lake. Shallow water is getting worse. Freighting supplies up the river to the lake is getting more difficult. We now must wait until there are flooding conditions or very high tides for freight to be barged up because it’s so shallow.” - A Chignik Lake member

Chignik Lagoon Infrastructure

In 2019, a drought occurred due to an extended period of stationary high pressure weather systems that occurred over much of the Alaska Peninsula. Chignik Lagoon experienced a drought due to insufficient water levels entering the water system from wells and the local creek supply. In 2022, due to another extended period of stationary high pressure weather systems that occurred over much of the Alaska Peninsula, Chignik Lagoon went into a required “boil water” notice beginning in July and the requirement is still in effect. The community is in the process of seeking adequate funding to replace and reconfigure the community wells and distribution lines to mitigate against future droughts under the same circumstances.

Perryville Infrastructure

In Perryville, the tribe indicated that all the rivers now have higher hydrologic flow jeopardizing safe crossing with all-terrain vehicles. Due to higher and faster river flow, four-wheel ATVs are no longer able to cross safely to access traditional caribou hunting grounds. This impediment to access hunting grounds is due to warmer temperatures causing increased ice and snow melt runoff from Mt. Veniaminof, which is situated immediately behind and above Perryville and their traditional caribou hunting grounds. This safety hazard began occurring about a decade ago and safe access has continued to deteriorate. The tribe needs bridge access built over several of the rivers to restore hunting access to traditional caribou hunting grounds.

Ivanof Bay Infrastructure

In discussions with the Ivanof Bay Tribe, the members highlighted several infrastructure needs in the community of Ivanof Bay. The members are focused on plans to live a sustainable life along with the rapid changes in the area. Foremost is concern for safety and the need to rehabilitate the runway. Adequate basic infrastructure necessities are all priorities, but a safe runway is their foremost priority. In addition, the local water and sewer systems need replacement and a new central power system. Black mold in several of the buildings have jeopardized the tribe's ability to use the buildings and replacing them will need to occur before key buildings can be safely utilized. The tribe discussed pursuing marine debris clean-up as a project due to the advantage of existing crew and equipment, however, the existing grants available require a 50% match, making it difficult to aggregate adequate matching resources.

STEP 2: PLANNING AND ACTION

Salmon Research for Change in Regulations

The Chignik tribes have been discussing plans with the goal of ensuring sustainability of their commercial and subsistence salmon species and of their traditional way of life. This plan will progress through documenting change and building appropriate datasets to substantiate the need for changes to improve salmon management goals for the affected tribes and communities in the Chignik Management area.

In one example of laying the groundwork to build resiliency, the CIC partnered with the Office of Subsistence Management (US DOI OSM) and the Alaska Department of Fish & Game (ADF&G) on a multi-year salmon escapement enumeration project, through the Federal Subsistence Monitoring Program (FRMP). This research project fits within the tribes' goals of substantiating the need to improve state fisheries management practices by recognizing effects of climate change on sockeye and other salmon species to enact new conservation and commercial fisheries management measures in state waters that improve sustainability of transiting Chignik salmon stocks.

In addition, some research projects that fit within goals focus on substantiating the need to improve state fisheries management practices by recognizing effects of climate change on sockeye and other salmon species. These steps towards resilience are intended to enact new conservation and commercial fisheries management measures in state waters that improve sustainability of transiting Chignik salmon stocks. Several tribes currently have Tribal Environmental plans (ETEP) that are already complementing efforts to this BIA Tribal Climate Resilience Planning grant. As mentioned above, the Chignik Bay Tribe is advancing the possibility of the creation of a Chignik watershed entity that will secure a body of research that will also complement the TCRP grant effort.



Photo contributed by Edgar Shangin

Brush Control and Vegetation Assessment

Indications from communities show the need for a mitigation strategy for the tribes to reestablish their security in their communities against fires and predators that can't be easily seen due to changes in habitat. An assessment should also occur where brush growth is inhibiting traditional food availability.

Berry Cultivation and Food Security Initiatives

One of the tribes is interested in establishing a community garden to improve food security and may include non-traditional berry shrubs that can be purchased and planted in a garden to ensure continued access to berries.

"We can secure a plot and start small. I've been attending community gardener and Master Gardeners classes and learning techniques such as composting methods." - An Ivanof Bay member

Improve Testing for Bivalves

To safely consume bivalves, locals must send samples out of the region to be tested before consumption. The results have shown for a long time now that it's unsafe to consume them. In addition, testing sand lance and sea urchin can also be included in the testing, since these are species that are traditionally harvested and can be affected by high levels of PSP. The Ivanof Bay tribe is concerned that there is no locally available testing service to expedite the ability to know what is safe to consume for the tribes.

Aquaculture

Ivanof Bay community members discussed built-in advantages for an aquaculture project in the (Ivanof) Bay itself, including an optimal location for a processing center. The members' discussion highlighted the viability of an oyster farm in Ivanof Bay. Optimal conditions at the head of the bay may also be suitable for a kelp growing and processing operation. The location is the same location that cod, and salmon processing plants were built on and successfully operated for many years.

Long Term Infrastructure Security

Infrastructure priorities for the entire Chignik Bay area include maintaining the inter-community marine transportation ferries that are essential for maintaining community infrastructure and for food security. On October 19, 2022, members from all five tribes met in Anchorage to review the comments from their communities and discuss a path forward. One of the additional observations that the tribes acknowledged was important is that due to each of their remote locations, they need well maintained equipment and experienced operators to keep the equipment in good working order. Working equipment is essential to health and safety, especially now that response to weather events are required more often and wind intensity is increasing in the Chignik region.



Communities that are part of CIC all have priorities that are unique to their locations. Community specific priorities include:

- Chignik Bay - Several infrastructure priorities were identified by Chignik Bay including the need to upgrade docks, bridges, landings, and staging areas where supplies are offloaded.
- Chignik Lake – Identified the need to build a new road that can access deeper water where a new riverside landing pad to offload bulk fuel and other supplies can be built.
- Chignik Lagoon – Due to recent drought events, the community identified the need to secure funding to replace and reconfigure community wells and distribution lines to mitigate against future droughts.
- Perryville – With hotter weather increasing snow melt and making previously fordable rivers uncrossable, construction of new bridges to restore access to important traditional caribou hunting grounds.
- Ivanof Bay – Several infrastructure priorities were identified by Ivanof Bay tribal members. These included, the need to rehabilitate the existing runway, replace the local water and sewer systems, install a new central power system, and either removal of black mold from existing community buildings to make them usable, or replacing them altogether.

Conclusion

Throughout the meetings that began in early 2021 and through the closing meeting in October, 2022, there were heartfelt expressions of concern for the future of all the communities in the Chignik region. The leaders of the tribes have begun a process of identifying what needs to be addressed so they can manage changes in ways that strengthen their future. This document is intended to support further action and planning to respond to the tribe's concerns and their desire for a sustainable fishery and a healthy local environment.