



WENJI BIMAADIZIYAANG

Where Life Comes From



Treaty Natural Resources Division Comprehensive Plan

2020-2030

Red Cliff Band of Lake Superior Chippewa

88455 Pike Road
Red Cliff, WI 54814





Table of Contents

Executive Summary.....	1
Land Repatriation	3
Wildlife Resources	9
Forest Resources.....	21
Water Resources.....	33
Fisheries.....	43
Fish Hatchery	54
Air Quality.....	61
Waste Management	67
Conservation Wardens.....	75
Environmental Justice	80
Mino Bimaadiziwin Tribal Farm.....	87
Tribal Youth	101
Outdoor Recreation	106
References.....	117
Appendices	118





Executive Summary

Boozhoo Miskwabekong!

It is our pleasure to release this official draft of Wenji Bimaadiziyaang, Treaty Natural Resources Division's 2020 – 2030 Comprehensive Plan (Plan). This Plan will replace the Integrated Resources Management Plan (IRMP) which expired in 2016. You'll see this Plan pays homage to the IRMP through reference and overlap of the IRMP's overarching goals. This is especially prevalent in the "Vision Statement" in each document section. While many things have changed since the IRMP was completed in 2006, many things have also stayed the same. Continuity between these separate management documents was important to us throughout the drafting process.

Community engagement has been essential to the development of this draft Plan. TNR used a variety of outreach methods to hear the opinions of those who hold this place dear.

- Online Survey – TNR created a community survey in SurveyMonkey. It was launched on July 2, 2019 and remained available online (by link through the e-newsletter and the tribal webpage, and through the Tribe's Facebook page) for 2 months.
- TNR staff provided computer access to the survey during Pow Wow and Tribal Council elections, aiding survey-takers as needed. Throughout the time the survey was open, paper handouts were available around the community with the survey website and directions to access it.
- TNR Division Open House: On August 14 at our annual open house, the planning process was described and there were additional opportunities for paper versions of the survey to be filled out at the different program tables. Over 100 community members attended the Open House.
- Youth Listening Sessions: During the week of October 20, TNR staff reached 54 high school and 60 middle school students for guided listening sessions in their classrooms.
- Elder Listening Sessions: Elder listening sessions occurred on October 29 & 30. Comments from approximately 22 elders were received.
- An early draft was released to all Red Cliff tribal departments from Jan 20 – Feb 12. This early draft was also shared with our local agency & tribal partners (i.e. GLIFWC, Bad River, USFWS, NPS, DNR, Bayfield County, USFS, NRCS, BIA, USGS, Northland College and WCMP).
- We shared a second draft of the plan the week of March 9th by posting it to Facebook, the tribal website, weekly e-newsletter, and by leaving hard copies with comment boxes at the Community Health Center and Administration buildings. Due to the pandemic, the comment period was left open ended.
- We intended to have a community feast on April 1st, where we would have shared a presentation and had a time for discussion. Unfortunately, we had to postpone that event indefinitely due to COVID-19.
- We are now releasing this third draft to the community with the hope that community members will review and provide feedback to help us finalize the plan.

The current community comment period for this draft Plan is **Sept 30 – Oct 30**. During that time, we'll post short videos on the Tribal Facebook page that summarize each section of the plan. Community members are welcome to submit comments on paper by dropping them off at the tribal administration building, through the posted survey monkey link (posted with online videos), through email to TNR@redcliff-nsn.gov, or by calling 715-779-3750 and leaving a message.

Looking ahead, we hope to provide a final draft of this Plan for Tribal Council's review and adoption in late November-December.

On a final note, we'd like to thank Wisconsin Coastal Management Program for the funding that has supported this planning effort.

Wishing health and safety to you in this uncertain time, miigwech!

Treaty Natural Resources Division





Land Repatriation

Vision Statement

Reclaim the lands within the original reservation boundaries to fully accommodate the needs of the growing, thriving tribal community. The lands deemed most culturally sensitive, environmentally significant, and most plentiful for subsistence lifestyles will be priorities for acquisition and protection.- Adapted from IRMP Land Resources Vision Statement & Land Resource Goals (pg. 35)



Aerial view of Frog Bay Tribal National Park.

Discussion

Established by treaty, the Red Cliff Reservation encompasses 14,540 acres or about 22 square miles. By 2006, tribal aki (land) holdings within the boundary had dwindled to 7,982 acres or 55% of the original land base. A number of factors contributed to the alienation of Red Cliff lands. The result is the checkerboard ownership within the reservation boundaries we see today, with former reservation aki now held by Bayfield County, Apostle Islands National Lakeshore, and in private non-member status.² Mixed ownership inhibits comprehensive management and restricts tribal member use and, in some cases, access. Mixed ownership on the reservation also poses threats to habitat connectivity for migratory and large range species and could lessen fragmented habitats' resiliency to climate change.

With a growing population and limited aki base, repatriation of Red Cliff's aki is a high priority in the TNR Division and tribal government as a whole. To provide for Red Cliff's next seven generations, goal 4 of the Tribal Council's Strategic Plan states, "Red Cliff Band, and its members, own 100% of reservation lands as well as properties off-reservation." The IRMP also highlights creating a Red Cliff Land Recovery Project in 1999, demonstrating the sustained interest in accomplishing this goal. While there is a need for expanded residential, municipal,

agricultural, and commercial space on the Reservation, it should be noted that TNR's role in aki repatriation efforts is limited to the types of funding available. Our assistance with the Tribe's goals for repatriation generally focuses on aki with high conservation value or, in more limited cases, areas that have, or could be developed for, outdoor recreational areas.

97% of respondents to the 2019 community survey believed it was important for Red Cliff to repatriate former reservation aki. Of the 120 participants in the 2019 youth listening sessions at Bayfield School, 30 (55%) of the high school students and 29 (44%) of the middle school students considered aki repatriation "important" or "very important."

Results from the community survey question *"Based on your perception of the Red Cliff community's needs, please prioritize the future use of repatriated land by ranking in order of importance"* are shown in Figure 1.1 to the right. 38.46% prioritized residential aki and 36.36% prioritized preservation aki, showing that the community prioritizes residential use and preservation almost equally and above all other proposed uses.

Figure 1.2 to the right shows the response of 120 middle & high school youth participants when asked: *"What is the best thing to do with land that is bought back by the Tribe?"* Options given to choose from were Housing, Hunting & Harvesting, Logging, Business Property, Tribal Facilities, and Agriculture.

The majority of youth commented that the best use of aki that is repatriated is dependent on what the aki is most suited for. When the Division seeks to repatriate a parcel, each should be evaluated for best uses on a case by case basis before a purchase is made to avoid preserving a property that would be suitable for highly demanded housing space.

The Division has been actively involved in supporting the Tribe's aki repatriation efforts over the last decade. Frog Bay Tribal National Park (FBTNP) was the first

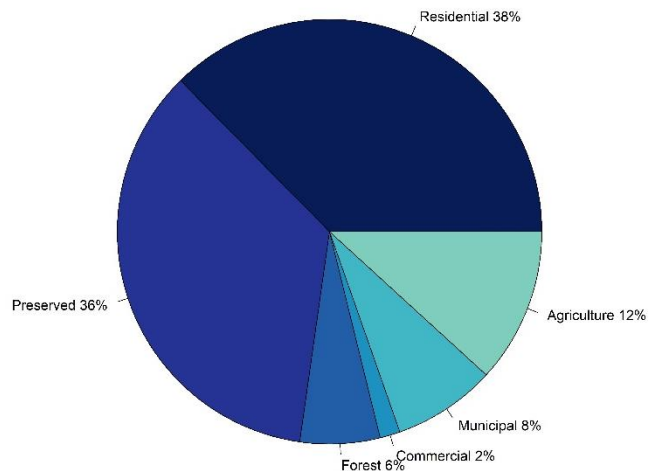


Figure 1.1 - Community survey results to: "Based on your perception of the Red Cliff community's needs, please prioritize the future use of repatriated land by ranking in order of importance"

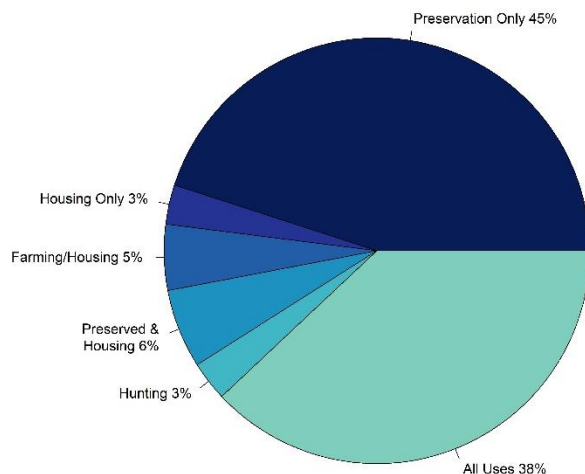


Figure 1.2 - Youth listening session results to: "What is the best thing to do with land that is bought back by the Tribe?"

successful acquisition for conservation purposes. FBTNP began as a 90-acre public hiking area when it opened in 2012 and has since grown to become a conservation area of nearly 300 acres (Figure 1.3). See the Outdoor Recreation section for additional information. Red Cliff has been widely-recognized and heralded for creating the first tribal national park in the United States. In 2019, the park received the Governor's Tourism Award for Stewardship from the Wisconsin Department of Tourism.

Other notable aki acquisitions the Division has accomplished for conservation purposes in conjunction with the Tribal Council, tribal administration and the Legal Department since 2012 include the 156-acre former pageant grounds, 160-acres of Bayfield County aki, two parcels totaling nearly 100 acres on Red Cliff's north shoreline, and two parcels totaling over 150 acres that were held by Wisconsin DNR. In total, the Division has assisted the Tribe in recovering over 950 acres since 2012, with 745 acres (78%) being zoned as preserved. These acquisitions are depicted in Figure 1.3.



Ribbon cutting at FBTNP on August 3, 2012. From left to right, Vice-Chairman Nathan Gordon, Bayfield Regional Conservancy's Ellen Kwiatkowski, Leo Lafernier, and former landowner David Johnson. David and his wife Marjorie donated nearly a half million dollars in land value to make the acquisition a reality for the Tribe.

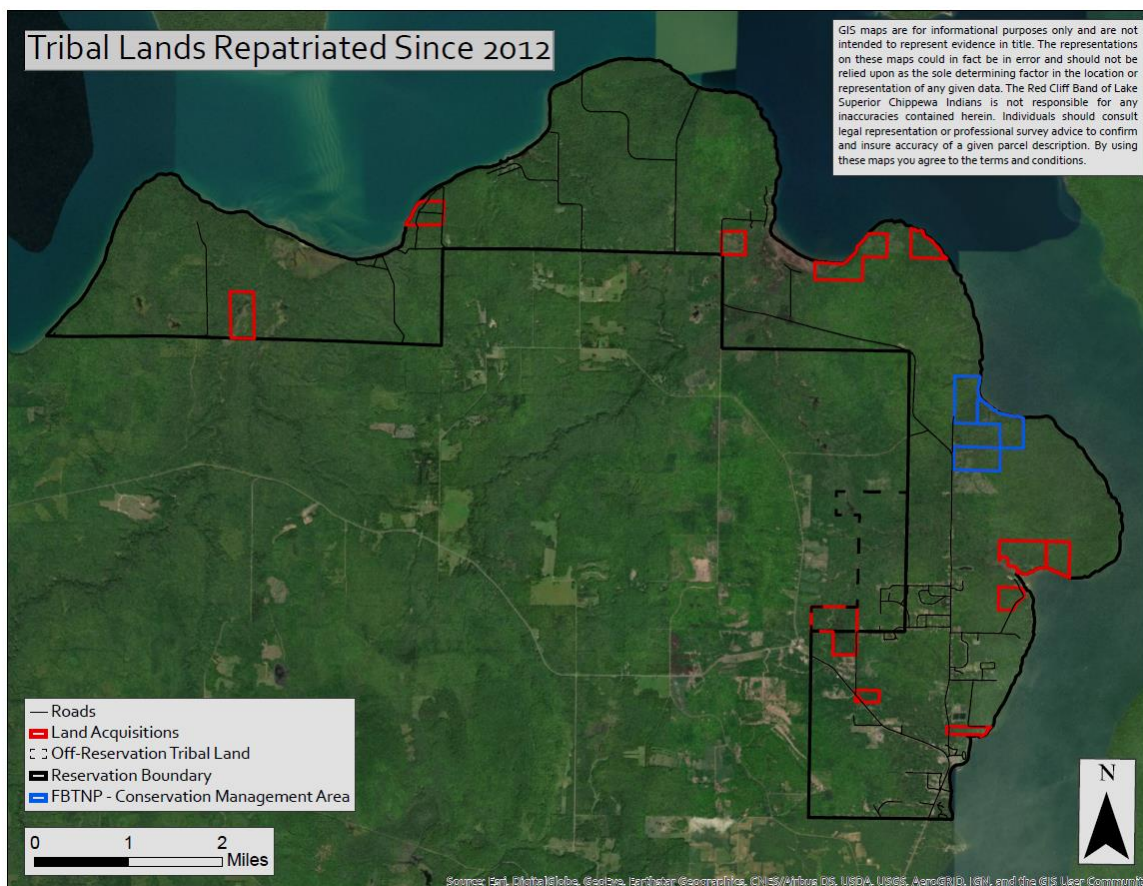


Figure 1.3 - Map of previously repatriated lands since 2012.

Over the next ten years, the Division's primary focus for aki repatriation will be for habitats and areas that exhibit high conservation value. The Division conducted a mapping exercise to identify these unique habitat areas. This evaluation determined that there are 2,098 acres of priority habitats available for repatriation.

National Park Service Lands

There are 1,100 acres of aki, spanning 12 miles of Lake Superior shoreline, within the Reservation boundary designated as the Apostle Islands National Lakeshore (Park), held and managed by the National Park Service. The Park's General Management Plan states that tribal members shall be permitted to access Park aki to exercise treaty rights and for sacred purposes.¹ However, it is the Tribe's perspective that not only should the Tribe have access to these lands but also some defined and formally recognized co-management over those areas that fall within the reservation boundary. When asked whether or not they agree or disagree with the statement "Red Cliff should co-manage this land with the National Park Service" (referring to the Park lands within the boundary), the vast majority (77%) of community members agreed. A total of 56.72% strongly agreed, 20.90% agreed, 5.97% neither, 8.96% disagreed, and 7.46% strongly disagreed. The Park's General Management Plan also states that the Park shall maintain a government to government relationship and work closely with the Red Cliff Band on resource and visitor management issues on those areas of the mainland unit that are within the Reservation boundaries (Desired Conditions and Strategies, pg. 96-97). While these outcomes and strategies have been listed in the Park's General Management Plan, they have not historically been executed on the ground. To ensure the Tribe's voice is heard on Park land management within the Reservation boundary, the Tribe should pursue a separate co-management agreement that clearly defines the roles and responsibilities of both parties.

Aki Outside the Reservation

The IRMP's vision statement for aki repatriation included "all lands within the original reservation boundaries *and additional lands outside the boundaries...*" as priorities for acquisition. Goal 4 of the Tribal Council's Strategic Plan likewise states, "Red Cliff Band, and its members, own 100% of reservation lands *as well as properties off-reservation.*"

¹ Excerpt from the Apostle Islands National Lakeshore General Management Plan, American Indian Treaty Rights and Access: "Several Lake Superior Chippewa tribes have hunting, trapping, and gathering rights guaranteed by treaty in Apostle Islands National Lakeshore, including the wilderness area. The National Park Service will honor those legally established rights and cooperate with the tribes holding those rights. American Indian access also will be permitted in the wilderness for sacred or religious purposes consistent with the intent of the American Indian Religious Freedom Act, Executive Order 13007: "Indian Sacred Sites" of May 24, 1996, the Wilderness Act, and related laws and policies."

We also received this comment from a tribal elder during a listening session:

It's Tribal Council's goal to get our land back, meaning within the original reservation boundaries first, then ceded territories. There's a loss of public land in ceded territories. If we want access to treaty rights in ceded territories, we need to maintain public land in ceded territories. Private property means we can no longer harvest there.

For the purposes of this planning document over the next ten years and considering realistically what the Division can do to assist the Tribe with aki repatriation efforts over that timeframe, we are limiting our acquisition efforts to important areas within the Reservation boundary. Two thousand ninety-eight acres remain available for preservation, outdoor recreation, or forestry within the reservation. Considerations for ceded territory properties are too unbounded to be practical to explore through a planning exercise. TNR will still explore off-reservation properties on a case by case basis, particularly when directed to do so by the Tribal Council, but our 10-year plan is to help the Tribe restore lost reservation lands.

Objectives

- Refer to the analysis of aki with high conservation value in non-tribal ownership (factors include: cover type, forest stand age, wetlands/estuaries, surface waters, Lake Superior shoreline, cultural significance, unique geology, and important wildlife areas) and update as new information becomes available.
- Formally request through the Zoning Administrator and Tribal Council that parcels identified as having high conservation and cultural value are rezoned as Preserved Overlay Districts.
- Reduce the risk and long term impacts of disturbances on repatriated aki by conducting needed restoration work on hydrology, soils, riparian areas, streams, wildlife habitats, and plant communities.
- Provide technical assistance to the Tribe in pursuing a formalized co-management policy with Apostle Islands National Lakeshore's mainland units with reservation boundaries.

Opportunities and Funding Outlook

Depending on the parcel and its future intended use, there are ample opportunities and funding mechanisms available for TNR to continue to assist the Tribe in aki repatriation efforts.

Funding Category	Examples	Considerations	Community Preference (based on 2019 survey)
Stewardship Funding	Great Lakes Restoration Initiative (GLRI)	Aki must be preserved, which would limit future use to hunting, fishing, gathering, and ceremonial activities	88% agree (57.58% strongly agree, 30.3% agree, 7.58% neither, 3.03% oppose, 1.52% strongly oppose)
Public Access Funding	<ul style="list-style-type: none"> - Coastal and Estuarine Land Conservation Program (CELCP) - WI Coastal Management Program (WCMP) - Migratory Bird Joint Ventures - North American Wetlands Conservation Act (NAWCA) - Community Forest & Open Space Conservation Program (CFP) - Forest Legacy Program (FLP) 	Grants in this category require the Tribe to open the aki purchased to the public, similar to Frog Bay Tribal National Park. Visitors to these places could create economic stimulus for the tribal economy.	66% agree (23.08% strongly agree, 43.08% agree, 16.92% neither, 9.23% oppose, 7.69% strongly oppose)
Timber Harvest Revenue	Red Cliff Tribal Council passed resolution 4-7-97C that directed timber revenues to be used for land purchase. This resolution was later rescinded, however, during the Tribe's financial crisis.	Through a Forest Management Plan, Red Cliff could do selective logging to raise funds for repatriation. Aki purchased in this manner would have no restrictions on future use.	63% agree (29.85% strongly agree, 32.84% agree, 19.4% neither, 11.94% oppose, 5.97% strongly oppose)
Tribal Finances	Settlement monies Revenue from tribal businesses Sales & lodging tax revenue	Using tribal finances for repatriation would mean that money would not be available to address other Red Cliff needs and priorities.	71% agree (33.33% strongly agree, 37.88% agree, 15.15% neither, 10.61% oppose, 3.03% strongly oppose)



Vision Statement

Wildlife will be protected and enhanced through sustainable stewardship that recognizes their intrinsic role as an ecosystem component, the spiritual and cultural connection to tribal members, and maintains their consumptive and non-consumptive values for current and future generations. - Adapted from IRMP Wildlife/Habitat Resources section vision statement and goal (page 39)



Wildlife camera photo of a migizi (bald eagle).

Discussion

Throughout history, the ancestors of the Red Cliff Tribe and the Anishinaabe people have relied upon wildlife for survival, protection, and spiritual health. Each village or community was historically organized through clans. Each clan had a representative in the natural world, and duties of the community were divided according to the clans. Each clan would identify a speaker, and the clan leaders would speak together and discuss the future of the entire village. Each clan had a voice, and decisions had to be agreed upon by all clan leaders. This societal organization provided the entire village security that their issue and concerns would be heard before any decisions could be made.

Each village member had certain roles and responsibilities to perform to ensure that all the village's chores were complete. These chores were identified through the symbolism of the animal and clan to which the individual was a member. Originally there were seven clans of the people; the crane and loon clans were both leaders of the people, the fish or turtle clans were great thinkers and philosophers, the bear clan were the healers and protectors, the marten clan were the warriors, the deer clan were gentle people and poets and artists, and the eagle clan were the spiritual leaders of the village. As the population grew, additional clans were needed to perform the many tasks of a growing community. Today there are over 25 clans, each with their own roles and responsibilities.

Each individual born to the Tribe becomes a member of the clan to which their father belonged. Great respect was given to the animals that represented these clans. The spiritual significance

of these clans has not diminished. The animals that are representative of the clans are highly respected and worshipped, and it is a belief that what happens to these animals will also happen to the human beings. Through time and the Indian Re-organization Act, Red Cliff's government structure has changed from the clan system to the current form of government, consisting of a 9-member council elected by the membership.

The Tribe defines wildlife as birds, animals, amphibians, insects, and plant life that are important to the overall ecological health of the Reservation's forest community. However, this section of the plan will primarily focus on wildlife other than plants, which will be addressed in other sections like forest resources. Many species of wildlife live on or visit the Red Cliff Reservation. Some species are found only seasonally, while many



Ajidamoo (red squirrel) making its way through young azaadi (aspen).

reside on-reservation throughout the year. Many varieties of wildlife have a significant cultural, traditional, or spiritual importance to the people of Red Cliff. It is important to be able to provide wildlife areas on the reservation for all species and varieties of wildlife.

Today much of the Reservation land base consists of a northern mixed hardwood forest, and the most common wildlife species found at Red Cliff are those that thrive in this type of forest. Waawaashkeshi (whitetail deer), Makwa (black bear), Bine (ruffed grouse), woodcock, and Waabooz (snowshoe hare) have traditionally been the most common game species. However, over the past 10-20 years, cottontail rabbit and wild turkey have also been found in increasing numbers. Beaver, coyote, raccoon, red fox, mink, river otter, muskrat, bobcat, fisher, and weasel are the primary furbearers on the Reservation.

Small areas of boreal forest, upland pine, mature conifer, and forested wetlands also are found within the Reservation and play crucial roles in expanding the diversity of habitat and associated wildlife species. Waabizheshi (marten), for example, is a species that seem to prefer mature conifer habitat types, and while present, are believed to be rare on the Reservation, much like their preferred habitat. Historically, adik (caribou) and mooz (moose) were common residents of the Red Cliff area before European settlement led to drastic losses of boreal forest and an environment favoring whitetail deer. Both moose and caribou are highly susceptible to a parasite known as brainworm that is carried by deer. While this parasite does not harm deer, infections in moose and caribou are often fatal. Given current and predicted forest and climate

conditions that favor deer it is unlikely that mooz and adik will again be anything other than rare visitors that pass through the Red Cliff area, at least for the foreseeable future.

No inland lakes are found within the Reservation. However, wooded upland wetlands and Lake Superior coastal estuaries, along with streams and beaver ponds, provide migratory and breeding habitat for many species of waterfowl and other birds. Common breeding waterfowl species include Canada geese, wood duck, blue wing teal, mallard, black duck, and common mergansers. Spring and fall migrations bring additional bird species to the reservation and wetlands as well.

The numerous non-game bird species that breed on the Reservation include songbirds, raptors, owls, wading birds, and shorebirds. Common songbirds include a variety of sparrows, robins, various warblers, and several species of finches. Bald eagles, red-tailed hawks, American kestrels, and barred owls are common raptors and avian predators that nest within the Reservation. Wading birds like the great blue heron, green heron, bittern, and killdeer are frequently observed in and around Reservation wetlands, ponds, and streams.



Migizi near mouth of Red Cliff creek

Rare and threatened plants thrive in many areas of the Reservation. Fir club moss, downy oat grass, heartleaf twayblade, white mandarin, mountain cranberry, arctic primrose, Chilean sweet cicely, dragonmouth orchid, Michaux's sedge, livid sedge, sooty beak rush, bog arrow grass, and common hairgrass are examples of rare plants found on the Reservation. Canada yew is an increasingly rare conifer that historically was common in old growth forests and is one of the woody-stemmed plants that can thrive in cool, moist, heavily shaded mature forests. Its tendency to form dense shrubby layers 1-6 feet high and tolerance for shade makes yew an important species for birds and small mammals and predators like pine marten as it provides cover in old-growth or mature forest stands. Canada yew also has several medicinal uses. Post-settlement logging was one factor in the loss of yew, but perhaps the more recent and primary threat in modern times lies in abundant deer populations as yew is a favored browse species. Manoomin (wild rice) stands also occur in some ponds and coastal estuaries. Rice restoration efforts, while ongoing, have provided for occasionally dense enough stands to support limited subsistence harvest in some years. Wetlands, in particular coastal wetlands, are important habitat for culturally important plants used for ceremonies and as medicines.

Riparian areas provide forage and breeding habitat for wildlife and serve as important travel corridors linking other important habitat types. Game species, wolves, and furbearers such as bobcat, coyote, beaver, mink, and river otter frequent these riparian zones at all times of the year. As Reservation streams twist and turn their way from upland areas to Lake Superior, they create a wide range of micro-habitats in the immediately surrounding forest. Changes in topography, soil types, sun exposure, moisture regimes, and vegetation along the banks provide diverse habitat for many different wildlife species making riparian areas critical zones to protect and restore. Birds, insects, reptiles, amphibians, and mammals all benefit from these riparian areas.



A young Obiigomakakii (toad) that may grow to adulthood and add its voice to the sounds of an early summer night.

There are many vertebrate, invertebrate, and plant species present on the Reservation but not mentioned here. These species and their habitats must be maintained to sustain the Reservation's rich biological diversity and ecological health. Whether common, rare, endangered, or culturally significant, there is a need to consider their respective needs and implement management or protection if, or when, they may be determined to be at risk.

Wildlife stewardship goals also need to be diverse. The wildlife program must address not only species that are harvested for

subsistence use, but species that have non-consumptive values and play a role in the overall health of the Reservation. Knowledge is a key piece of responsible stewardship and it is essential to regularly conduct monitoring designed to assess status and trends in populations of both game and nongame species. Monitoring can take several forms and should incorporate information about both the animal (or groups of animals) and its habitat. It is also important to bring together scientific and non-scientific approaches and seek community involvement and traditional knowledge.

Monitoring game and non-game species was an objective listed in the wildlife resources section of the 2006 IRMP. Some strides have been made toward this objective, although there are still many species that are not adequately monitored. An example of good progress lies with Ma'iingan. Grant funding has allowed Red Cliff to initiate a wolf monitoring program that has already proven beneficial – providing a wealth of knowledge about wolf pack use of Reservation and Ceded Territory lands that can guide future management direction.

Several objectives in the 2006 IRMP outlined a need to identify, restore, protect, and acquire critical habitats that serve both game and non-game animals. Red Cliff has been achieving

success in all these areas. Collared wolf and fisher movements have shed light on key wildlife areas of the Reservation while stream restoration and invasive species control efforts have been undertaken to restore habitats. Frog Bay Tribal National Park is one example of combining land acquisitions with protecting wildlife and wetland habitats while also meeting Tribal goals of land repatriation.

When asked if they agreed or disagreed with expanding management efforts for threatened or rare species, non-game species, and harvested species, respondents in the 2019 community survey indicated overwhelming support for all three categories. In another question about 20% of those responding said they hunted deer or other game but would like to do more while about 25% said they do not currently hunt but would like to. This suggests that there may be a need to consider increasing game populations or harvest opportunities. Increased outreach to the community to help them get involved in hunting or learn about hunting opportunities is also a goal to pursue.

Non-native species can also threaten wildlife and their habitats. Some non-natives may be relatively benign and pose little risk to the native communities. However, in other instances, they may be highly invasive and lead to detrimental impacts on native wildlife communities. Invasive species can take many forms, from plants to insects to fish to diseases, and in some cases may directly impact native species through competition or predation, and in others may act indirectly by altering habitat or impacting food chains. Sudden changes in any habitat, whether through natural or manmade causes, often lead to a situation where non-natives can quickly become established. Changing climatic conditions that alter temperatures, precipitation levels, or produce frequent damaging storms are also a real concern when considering risks of non-native species since environmental conditions may leave habitats vulnerable to the establishment of new, unwanted wildlife or disease outbreaks.

Preventing introductions of non-native species is the best approach. This calls for outreach and education to inform the community about potential invasive species and how they can help minimize the spread or establishment of new species. Control or eradication of invasive species after they become established is difficult and can be very expensive. Successful invasive species management programs are based on vigilance, conducting surveillance for new arrivals, and implementing swift and effective control efforts when they are first discovered.

As discussed above, climate change can alter habitat and make it more favorable for non-native species. It can also drive changes in plant communities and habitat conditions that directly impact native species. An increase in average temperatures alone could be problematic for species that are adapted to colder conditions. Another potential example of impacts to wildlife could be increased predation risk to snowshoe hares wearing a white winter coat that is a mismatch to the woods because snow cover does not arrive as early in winter or last as long in

the spring. Rain events in winter can lead to crusty conditions that make it difficult for grouse to burrow into the snow for overnight roosting.

It is equally important to recognize that not all climate impacts will necessarily be negative. Species like whitetail deer are very resilient and adaptable and are expected to fare well, as would species like wolves that utilize them for prey. Wild turkeys have already become common on the Reservation and will benefit under predicted future conditions. The bottom



Masters at blending in, Waabooz fur changes from brown to white each winter. Mis-matched coloration due to climate induced changes in timing or duration of snow cover could expose hares to increased predation risk.

line is that some habitats and species will most likely suffer from predicted changes, while others will benefit. Management planning must account for the most likely scenarios and determine the best path forward. In some cases, mitigating actions may be taken to develop or maintain key habitats and wildlife species. In others, there may be no real hope of overcoming changes that are coming. More protective regulations may be warranted for one species, while relaxed regulations to keep populations in a healthy balance with their environment may be needed for others. There may also be a need to encourage interest in alternative species. For example, if snowshoe hare populations falter, the cottontail rabbit may be a suitable replacement for harvest.

Eighty-one percent of respondents in the 2019 TNR community survey agreed with the statement that climate change will impact their ability to use treaty resources. This strong community awareness of an important issue highlights a need to incorporate climate change considerations and resiliency into wildlife planning.

Fortunately, while Red Cliff has a relatively small land base, it is rich in habitat diversity and provides a broad spectrum of wildlife, including plants. The surrounding Ceded Territory also plays a large role in determining what wildlife species are present at Red Cliff as animals do not

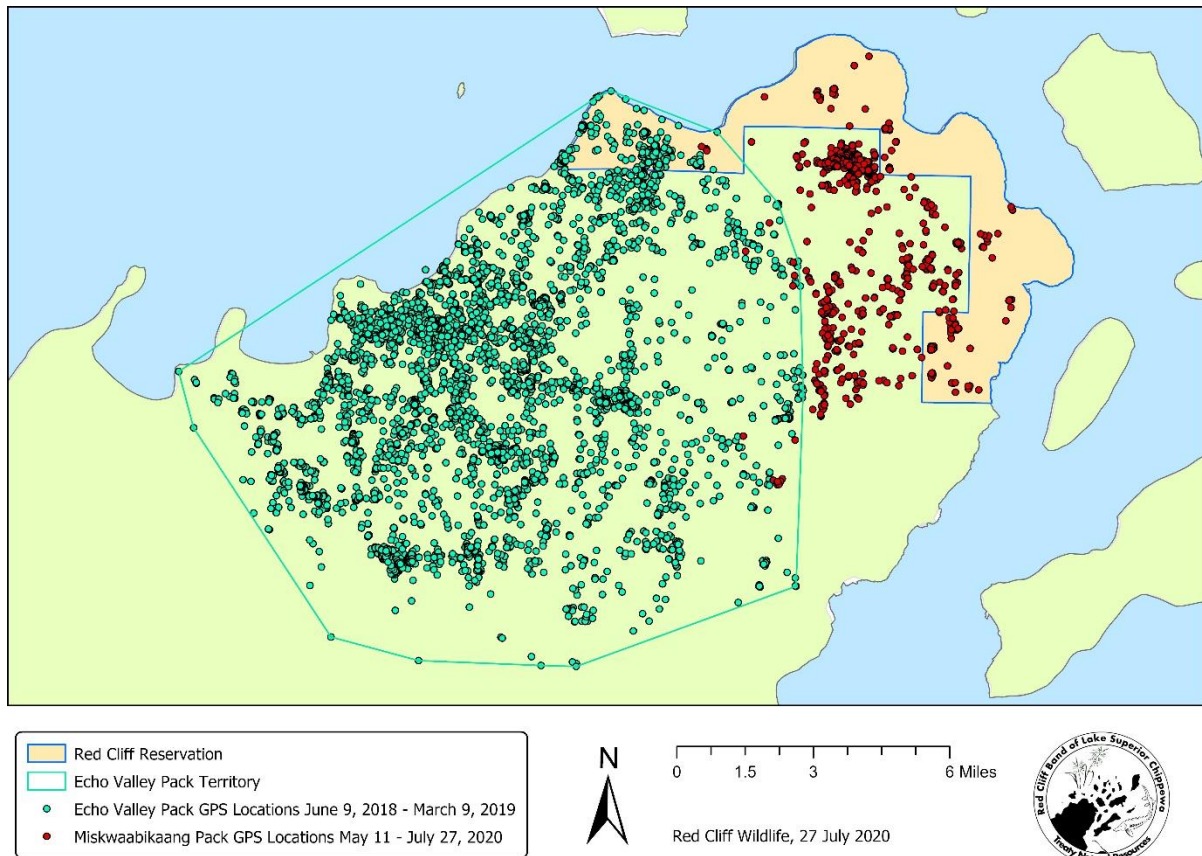


Figure 2.1 Approximate territories of two Ma'iingan, or wolf, packs that frequent the Red Cliff Reservation.

recognize arbitrarily drawn political boundaries. A good example of this can be found by looking at ma'iingan (wolf) pack territories. Currently, two local packs occupy the Red Cliff Reservation and surrounding ceded territory. The Echo Valley pack has an approximate territory size covering 120 square miles, and the territory overlaps the western one-third of the Red Cliff Reservation. Based on a recently GPS collared wolf, the Miskwaabikaang pack territory includes the eastern two-thirds of the Reservation and ceded lands (Figure 2.1). This highlights the need to extend stewardship efforts for wolves (and many other wildlife) beyond Reservation boundaries into the Ceded Territories.

In some cases, as with migratory waterfowl, impacts to the resource can occur hundreds or thousands of miles away and may warrant a broader involvement with management or awareness of management of those species well beyond the Reservation or Ceded Territories.

The 2019 TNR community survey asked respondents that hunted or harvested foods to indicate if they did so either on- or off-Reservation or in both locations. Slightly over 60% responded that they hunt and/or harvest foods both on the Reservation and in the Ceded Territories. About 25% hunt or harvest only within the Reservation, while 15% hunt only off-Reservation,

and 10% only harvest food off-Reservation. This shows a need to remain involved in the stewardship of off-Reservation wildlife and habitats, both for its importance to wildlife that cross boundaries and for protection of Tribally held subsistence harvest rights in Ceded Territories.

Though Red Cliff is blessed with diverse habitat and wildlife, it is important to remember that the environment is always changing due to factors of both natural and human origin. These influences can be positive, negative, or some combination thereof, and categorization of those changes often depends on the observer's perspective. As such, any given habitat is also under a constant state of change. The rate of change can also influence how we perceive the degree of change. Very slow changes (say a gradual increase in annual temperature) may not be noticed until a long period of time has passed, while sudden changes (i.e. storm damage) or change at a fast rate (a housing development for example) is perceptible much sooner. Wildlife populations dependent on those habitats are also in a constant state of flux. Those same populations may not only be influenced by a changing habitat(s) but may also face direct impacts from predators, hunting pressure, or competition for food and space. Realistic expectations for both habitat and wildlife populations should not include scenarios where either are static. While some wildlife can tolerate or even thrive in close proximity to humans, it is important to remember that wildlife needs its space. Even those species that can do well in populated areas often find themselves in conflict with their human neighbors at some point. Therefore, it may be necessary to ensure adequate wild space through zoning or some form of regulations.

One survey question asked respondents to indicate if they would support killing bears dependent on people for food or a ban on dumpsters in the late spring or early summer months in Red Cliff Housing Authority development areas as a means to reduce human/bear conflict. Two-thirds (65%) of survey respondents opposed killing of bears dependent on people for food. Similar numbers (62%) support a ban on dumpsters when bears are likely to enter residential areas for food. Another question asked if bear hunting permits should be issued to non-tribal



Makwa looking for food at the Red Cliff Transfer Station.

members as another way to help control the bear population. About 35% were agreeable to issuing non-tribal permits, while 56% were opposed. Together these results suggest the need for developing a non-lethal bear program that helps educate the community on ways to reduce potential bear-human conflicts and lays out alternative means to address the inevitable conflicts in a non-lethal manner in most cases.

If Red Cliff's overarching vision is to provide diverse habitats that can sustain a wide variety of wildlife, it is important to strive for a continual, basic understanding of both the current status and trends in habitat and wildlife populations. This points to a need for routine monitoring of at least key habitat types and species that allows for informed decisions about potential management strategies to ensure those habitats and species can continue to be sustained at Red Cliff. In many cases, monitoring and managing for these key habitats and species will benefit associated wildlife that have similar needs. There are also likely to be instances in which it is necessary to go beyond routine monitoring and delve deeper into understanding what is happening with a specific habitat and/or species. Goals and management objectives outlined in this plan are designed to maintain the level of knowledge needed to sustainably manage wildlife or habitats, increase understanding where it is lacking, and work toward gathering information on environmental and other changes that will influence wildlife and habitat trends in the future.

Objectives

- Preserve and protect populations of game and furbearer species at sustainable levels:
 - Survey harvested species to obtain population estimates or trends in status.
 - Monitor harvest levels of harvested species.
 - Integrate harvest data and population trend data to adjust harvest goals/quotas as appropriate.
 - Develop a system to accurately track effort and harvest.
 - Update Red Cliff Code of Laws to provide for annual setting of seasons and limits for Council recommendation and approval
 - Restore, enhance, or protect habitats to benefit game and furbearer species, when needed, and as appropriate.
 - Implement, or partner on, research projects to fill knowledge gaps.
 - Participate in inter-agency committees, working groups, etc. to increase Red Cliff's input, involvement, and oversight of management actions undertaken by others that influence game and furbearer species both on- and off-reservation.
- Preserve and protect populations of culturally important, threatened, or endangered species:
 - Monitor populations of culturally important, threatened, and endangered species.
 - Restore, enhance, or protect habitats.

- Implement Ma'iingan Protection Plan and review plan every five years or sooner if needed.
- Implement, or partner on, research projects to fill knowledge gaps.
- Develop, adopt, or adapt regulations as suitable.
- Participate in inter-agency committees, working groups, etc. to increase Red Cliff's input, involvement, and oversight of management actions undertaken by others that influence culturally important, threatened, or endangered species both on- and off-reservation.
- Preserve and protect populations of non-game wildlife:
 - Implement annual amphibian monitoring survey.
 - Implement annual owl survey.
 - Start and maintain a running list of all non-game species documented on the Reservation.
 - Restore, enhance, or protect habitats.
- Minimize human/wildlife conflict:
 - Provide community with information and guidelines (also known as Best Management Practices or BMPs) they can use to reduce conflict with animals like bear, raccoon, skunk, etc.
 - Institute a bear-proof dumpster policy through the tribal government process
 - Educate community on roles and benefits of wildlife that may be considered a nuisance or that are a source of fear.
 - Procure training and equipment needed to respond to and address persistent human/wildlife conflict problems (beaver/roads, habituated bears).
 - When possible use non-lethal means to address wildlife in conflict with humans.
 - Through zoning or other regulations maintain wild areas and connecting corridors where wildlife can reside with little human contact or conflict.
- Improve community understanding and appreciation of Red Cliff's wildlife resources:



Wiisagi-ma'iingan (coyote) exploring a Red Cliff residential area.

- Share results of research with community via direct interaction and various forms of media.
- Engage youth from pre-school to high school.
- Host events to get community into outdoors and interacting with wildlife (birding, track ID hikes, etc.).
- Provide community with guidance on ways to live with wildlife in their midst and reinforce concept of the importance of providing wildlife with their own space.
- Enhance program capacity:
 - Increase training opportunities for staff, both scientific and cultural/tek.
 - Acquire and maintain inventory of equipment and supplies for field access, monitoring, research.
 - Develop and maintain partnerships with other tribal, federal, and state agencies and non-governmental organizations (universities, non-profits, etc.) to stretch funding and expand Red Cliff's role in resource management.
 - Keep technological (GIS, GPS, internet mapping, etc.) capacity up-to-date.
- Incorporate climate concerns and resiliency into wildlife program:
 - Establish wildlife (or critical wildlife habitat) climate related monitoring program.
 - Recruit schools and/or community into climate-wildlife monitoring efforts, for example citizen based phenological monitoring/reporting.
 - Using results of locally based and tribally driven vulnerability assessments identify wildlife species/habitats likely to benefit or suffer from expected changes in climate.
 - Implement adaptation plan to prioritize and guide wildlife management goals.
- Minimize impacts of non-native and invasive species on wildlife and habitat:
 - Conduct surveillance for new non-natives.
 - Monitor established non-natives.
 - Engage in outreach and education to increase community awareness of potential invasive species, associated threats, and pros/cons of control options
 - Engage in outreach and education efforts stressing the importance of prevention as the best means of control
 - Control or eradicate invasive non-natives to extent possible.

Opportunities and Funding Outlook

Numerous grant opportunities exist for funding wildlife related projects. Many of those opportunities are managed by various Federal agencies and rely on frequent reauthorization and annual funding allocations. Opportunities can also exist at the State or local government levels as well but may indirectly result from Federal programs. Most grants at all levels are highly competitive. In most cases, it is easier to find project funds than it is to fund staff positions. This means it is important to strive for internal program staffing and capacity of at least two personnel. Doing so will allow outside sources of funding to be pursued and managed, greatly increasing the program's capacity to serve the Reservation community and its wildlife.

While enhancing Red Cliff's capacity and self-sufficiency is a priority, it is important not to lose sight of partnership opportunities. Past, current, and future partnerships with other Tribes, universities, and conservation groups can help Red Cliff access additional sources of funds and tap into other areas of expertise. Partnerships with federal agencies that build upon their trust responsibility to Red Cliff and that advance shared management goals should not be overlooked either. Likewise, opportunities to team up with state, county, or other local agencies can enhance the capacity of Red Cliff's wildlife program.



Forest Resources

Vision Statement

Red Cliff forest resources will be sustainably managed to provide a diverse and healthy environment protective of land and water quality that provides shelter and sustenance for wildlife and allows for cultural, subsistence, and economic uses for current and future generations. - Adapted from IRMP Forest Resources section vision statement and goal (page 32)



A dagwaagin (autumn) forest view near an amikob (beaver pond). Forests like this protect *nibi* (water) and wetlands, provide wildlife habitat, and support activities like gathering balsam boughs and collecting maple syrup.

Discussion

Red Cliff's forest lands are highly regarded by tribal members. These forests have provided everything necessary to sustain life, including, but not limited to: food, medicines, shelter, clothing, trade materials, breathable air, and drinkable water. Likewise, the forest supports diverse fish and wildlife important to tribal members as sources of food or other consumptive uses. These plants, fish, and wildlife are also regarded as relatives significantly tied to the cultural history and well-being of the Red Cliff Band and its role in the world. Reservation forests also can provide a source of income for both the Tribe and Tribal members through the harvest of timber and other forest products. Thus, Red Cliff forest resources are vital and

necessary to the livelihood and lives of tribal members, and it is important to provide a level of stewardship that sustains these forests for current and future generations.

Preservation and protection was the top choice of community survey respondents when asked to rank what objective should drive land and habitat management. However, cultural and historical importance, enhancement and restoration, and subsistence use also ranked highly. Sustainable timber harvest was supported by 80% of respondents if revenues were directed to land repatriation efforts. Taken together, the results show strong support for managing lands to maintain a diverse forest that favors wildlife and plant species, whether for hunting, gathering, or other purposes. One of the forest resources objectives listed in the 2006 IRMP called for developing Best Management Practices (BMPs) and a permitting system covering harvest of non-timber forest products like balsam boughs, bark, firewood, and other materials to guide sustainable harvest practices. A permitting system that incorporates some gathering BMPs was developed and has been codified under RCCL Chapter 11. However, a need remains to develop BMPs for additional species and harvesting practices.

When asked how often they consume locally harvested resources, a staggering 91% of survey respondents indicated that they did so at least once a month. Not all the consumed items are taken directly from the forest, but many are likely either directly reliant on a healthy forest or indirectly through the role that forests serve in providing healthy water, air, and habitat.

Another question asked respondents if they foraged for or harvested wild foods other than fish, game, and wild rice. Fourteen percent said they did, and their needs were met, another 27% indicated they would like to harvest more, and 47% said they did not but would like to. This highlights a need to manage forests for more than just timber or wildlife values.

Non-consumptive uses of the forest should not be overlooked. Hiking, camping, and picnicking all were identified as very common outdoor activities participated in by many respondents to the 2019 community survey. Additionally, it is important to consider aesthetic forest values as well – how the forest looks is important to all user groups.

Even without active management or harvest, forests are constantly changing from natural impacts. However, much of Red Cliff forest land today is different than what was found prior to European settlement of the region, the treaty signing era, and the establishment of the Red Cliff Reservation. Historically, area forests were largely composed of white and red pine, hemlock, and maples. By the early 1900s, much of that forest was gone, harvested in a few short decades by a local economy feeding the huge demand for wood products to construct homes, businesses, boats, and other items both locally and across the region. Another influence on the future forest came in the form of breaking landholdings into smaller parcels and encouraging individual ownership, both within the Reservation and in surrounding communities. In the case of tribal lands, the individual owners, or allottees, were often

pressured to sell the timber and even the land itself. This resulted in a patchwork of land ownership, even within the Reservation, which leads to multiple directions of forest management and much patchier forest types than were historically present.

The widespread clearing of the pine, hemlock, and maple forests had some immediate and lasting impacts. Wildlife habitat changes were correspondingly dramatic and influenced the composition and relative abundance of a wide suite of species. The rapid loss of forest cover and its function as a filter and buffer against runoff and erosion from rain, snowmelt, and wind also resulted in changes to water quality through increased stream temperatures and sediment loads. As streams changed, so did the associated fish and aquatic communities, as well as the terrestrial communities that utilized those water bodies.

Responses from the 2019 community survey listed preservation of the Lake Superior shoreline and riparian corridors as high priorities, indicating a continued need to protect water resources through forest management. The 2006 IRMP Forest Resources section included water quality protection objectives calling for the development of BMPs and riparian buffer zones. Both have been adopted and put into use since that plan. Various provisions in the Red Cliff Code of Laws partially address protection of water quality through establishment of setbacks and permit requirements for logging or other types of environmental impact. However, it is important to consider things like the mixture of tree species, ages, and densities when planning forest management near waterways as all those characteristics can influence rates of surface water runoff, sedimentation, water temperature, and other measures of water quality. Different types of timber harvest can also result in varying levels of impact on water quality, making it important to consider effects on nearby water bodies when choosing the most appropriate harvest technique.

As the forests began regenerating, they moved through several successional stages. Initial regrowth of the cleared landscape often consisted of faster-growing, sun-loving, pioneer species like Azaadi (aspen) and Wiigwaas (birch) with understory components like shade-tolerant Zhingob (balsam fir). Over time, these aging aspen and birch forests increased in canopy height and allowed more sunlight to reach the forest floor and eventually began breaking down. These processes allowed the slower growing, shade-tolerant species such as maples, basswood, balsam fir, and hemlock to gain footholds where the aspen and birch were declining and become a significant portion of the local forests.

Today, Red Cliff forests are quite diverse and are comprised of a patchwork consisting of many different tree species and age classes. Remnant stands of older hemlock, pines, Giizhik (northern white cedar), yellow birch, and maple still exist as do some small areas of boreal forest. Northern hardwoods consisting of red oak, sugar, and red maples, Wiigob (basswood), ash, and birch are common. Plantations of red pine are present, as are some areas of regenerating and mature aspen and older mixed aspen/balsam fir forest. The last

comprehensive assessment of Red Cliff's forests occurred several decades ago and is the basis of the maps found within this section. However, in spring 2020, another comprehensive inventory of forest lands owned by Red Cliff was completed. That data will provide the updated

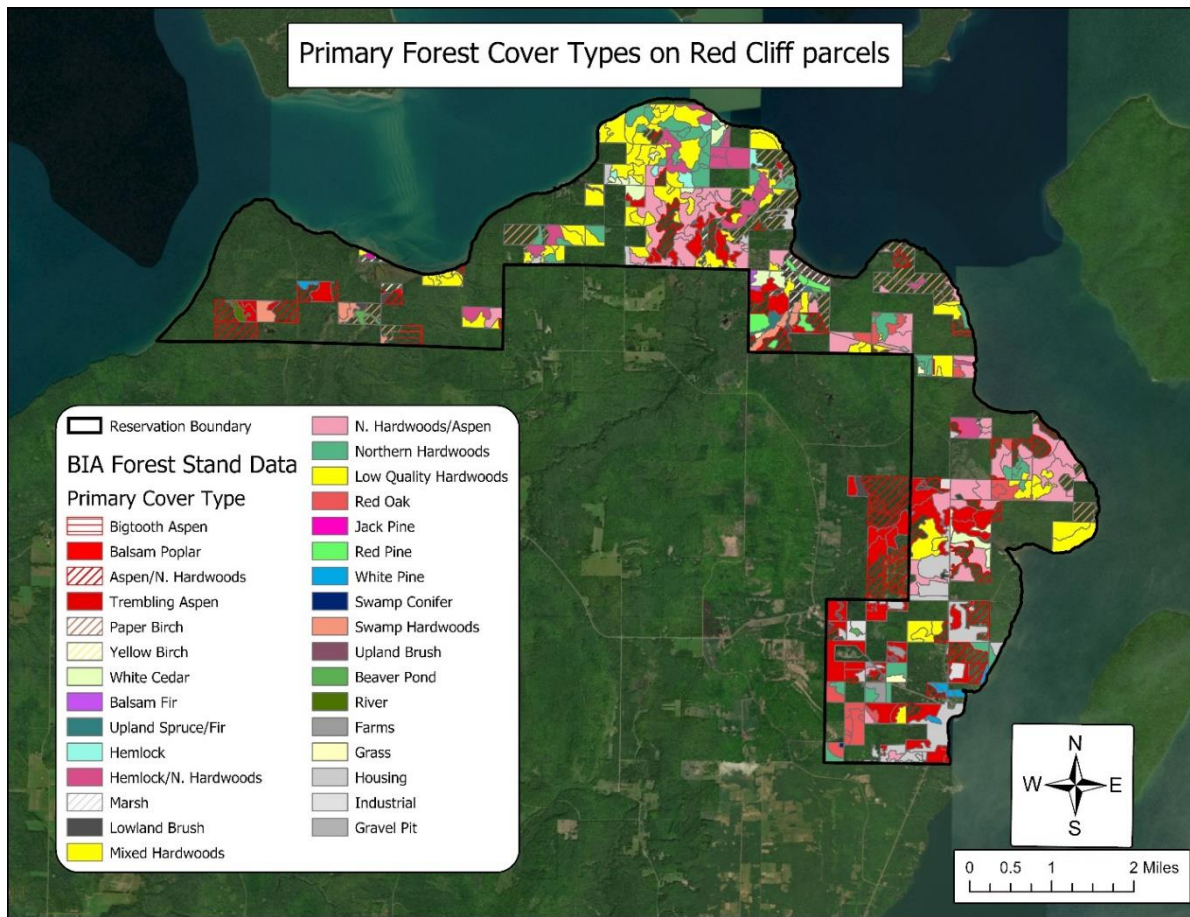


Figure 9.1 - Primary Forest Types on the Reservation.

information needed to achieve the forest goals and objectives outlined in this document.

Like the forest, land ownership within the reservation is also of a patchy nature and includes a mixture of tribal trust lands held for the common benefit of tribal members and tribal trust allotments held for the benefit of individual members and their heirs. Other categories include fee lands held by tribal and non-tribal owners and lands owned by Bayfield County and the National Park Service. This diversity of ownership and the history of forest management across those lands is a primary factor that determined today's forest composition within the reservation. Likewise, varied management goals across ownerships still present challenges in developing and implementing a forest management plan for the reservation as a whole.

The National Park Service is a significant landowner within reservation boundaries, managing about 1,100 mostly forested acres as part of the Apostle Islands National Lakeshore. In the 2019 community survey, 78% of respondents agreed that the Band should co-manage those

lands with the Park Service (6% neutral, 16% disagreed). Enabling legislation that created the Apostle Islands National Lakeshore prohibits commercial timber harvest on Park Service land. However, opportunities may exist to implement stewardship actions designed to protect and enhance subsistence and cultural activities like berry picking, sugarbushes, or medicine gathering. Actions to restore ecological function could also be considered.

Bayfield County also owns and manages 1,440 acres within the Reservation boundaries. At nearly 10% of the Reservation land base, these publicly accessible county holdings are important to community members for many activities, including subsistence hunting and gathering. Therefore, the Band must remain abreast of County plans for these lands and provide input on management decisions that affect their condition. As mentioned in the land repatriation section of this document, reacquiring former tribally held lands within the Reservation is a goal of the Band. Ultimately, the acquisition of these parcels would allow for more cohesive management of the Reservation's forests. Survey responses indicated strong support (97%) for repatriation efforts, and supported a goal of protecting acquired lands but leaving them available for hunting, fishing, gathering, and ceremonial use. The use of repatriated lands to meet residential expansion needs also garnered some support, but acquiring lands for the sole purpose of timber harvest and revenue generation received little support unless revenues were used for further land repatriations. Timber harvest activity has

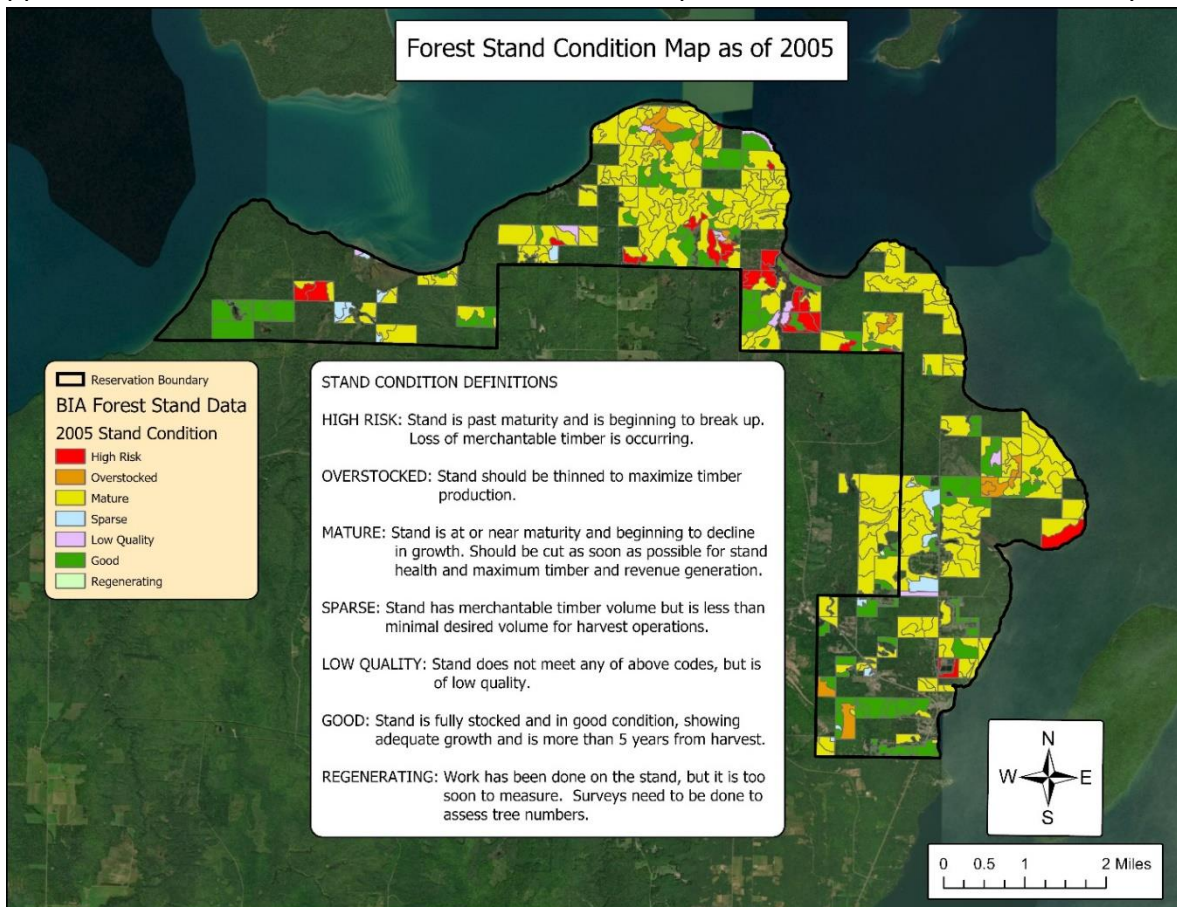


Figure 9.2 - Forest Stand Condition on the Reservation.

varied across the reservation as well, both by ownership and over time. In recent decades, little commercial timber harvest has occurred on tribally owned parcels. Forest land within the reservation owned and managed by the U.S. National Park Service's Apostle Islands National Lakeshore has seen little to no active management. Most commercial timber harvest activity within the Reservation is occurring on Bayfield County Forest lands and, to a lesser extent, on some privately-owned parcels.

Red Cliff's forests also face challenges beyond those posed by development and the resulting patchwork of varied ownership and management objectives. Impacts from a changing climate have the potential to drastically shape the future forest community. Changes in precipitation and temperature patterns, along with frequency and intensity of storm events, all help drive climate-related impacts to forests. Storms can alter a forest both suddenly and dramatically, while impacts from changing temperatures or precipitation levels can play out over a longer timeframe by altering growth conditions and favoring certain plant species over others. This can result in shifts in abundance and distribution of trees and other plants, particularly for those that may already be on the edge of their range like the boreal species found at Red Cliff.

Eighty-one percent of respondents in the 2019 TNR community survey agreed with the statement that climate change will impact their ability to use treaty resources. This strong community awareness of an important issue highlights a need to incorporate climate change considerations and resiliency into forest resource planning.

Invasive species present another challenge to Red Cliff's forests. Forests and associated wildlife populations are dynamic and always changing to some degree due to environmental and other pressures. However, such changes are generally limited in scope and play out over an extended timeframe. From a management perspective, invasive species would be considered as those that can drastically alter habitats or species composition within a generation or two. Disturbance to a system is often what allows a species to gain a foothold and start acting invasively, out-competing native, established species for resources. Invasive species can be of either foreign or native origin and take many forms, from wildlife to plants to diseases. Climate-related changes to Red Cliff's forest communities will likely increase opportunities for new invasive species to gain ground. Eradication of invasive species is difficult and often impossible. The best approaches to management are prevention, surveillance, and early implementation of control efforts when invasive species are first detected. That said, it is equally impossible to address all non-native or invasive species. Thus, there is a need to evaluate the potential and real impacts of each non-native and/or invasive species and prioritize management responses.

A suite of questions in the 2019 community survey were asked to gauge awareness about invasive species and solicit opinions about management approaches. About 50% of respondents indicated they were uncertain or lacked knowledge of invasive species, suggesting

a need for additional outreach efforts to help educate the community about invasive species in general. Surveillance, monitoring, control efforts, and policy development to address invasive species were all ranked as high priorities. Ninety percent of respondents supported the use of prescribed fire to address invasive species, and that would suggest acceptance of fire as a forest management technique for other objectives as well.

However, public opinion was strongly against using chemical treatments (i.e. spraying purple loosestrife or use of lampricides to control sea lamprey) to manage invasive species, with two-thirds of respondents indicating that they did not support use of chemicals even when other control methods were ineffective. While opinion on bio-control options (for example, releasing beetles to control purple loosestrife) was more evenly divided, a majority (57%) still opposed that route.

Given these opinions, prevention is a top priority. This will necessitate increased outreach and education efforts to stop the spread of invasive species to and within the reservation. An example of steps Red Cliff has taken to prevent invasive species impacts on reservation forests can be found in RCCL Chapter 11 under Section 6.1 that addresses the movement of firewood and potentially associated invasive species. Red Cliff's Project Application and Compliance (PAC) process also allows preventative measures (such as requiring logging or construction equipment to be inspected for cleanliness prior to, and after, use) to be attached as a provision of obtaining logging, construction, or other land use permits. Engagement with the community about various control options will also be critical to ensure a clear understanding of the benefits, disadvantages, and consequences of choosing one technique over another.

As mentioned at the outset of this discussion, Red Cliff forest lands are of vital importance to Tribal members not only for their direct benefits to members, but also for the habitat and protection they provide for fish, wildlife, and the environment. Successful stewardship will require increasing our knowledge about the current and future status of tribal forest land. However, forest land within the reservation that is not owned or managed by Red Cliff is also important to the overall health of reservation resources and should not be overlooked. While challenging, future forest management decisions need to incorporate an assessment of conditions across all forest lands within the Reservation, allow for tribal input on desired conditions, and maintain a diversity of forest type and age.

While this comprehensive plan is focused primarily on resources within reservation boundaries, to be truly comprehensive in scope, it is important not to lose sight of off-reservation forest resources that lie within the Ceded Territories. These forests and associated fish and wildlife communities are not only important because of tribally-reserved rights to utilize resources on those lands, but also for their critical function in protecting the well-being of reservation forests, waterways, fish, and wildlife. The reservation boundary places no constraints on air, water, fish, wildlife, or even plants. Beyond local impacts off-reservation, the condition of

Ceded Territory forests affects the quality of water and air that pass through the reservation. Likewise, fish and wildlife regularly cross back and forth between reservation and ceded territory lands. Tree and plant communities are also linked across the reservation boundary, exchanging seeds and pollen carried by animals, insects, and winds. These exchanges can be good for the forest community by ensuring genetic diversity but can also pose a risk through the transmission and spread of invasive species. In any case, the Band must exercise its authority and responsibility to participate in the stewardship of ceded territory forests and other resources. Responsible stewardship of on-reservation resources cannot and should not stop at the reservation boundary.

Survey respondents were asked to indicate where (on- or off-reservation or both) they participated in several activities. Most utilize both on- and off-reservation resources for fishing (71%), hunting (61%), harvesting foods (64%) and medicines (54%), and harvesting materials for buildings and structures (64%). Approximately 8-15% of the participants for each activity only did so outside the Reservation.

Objectives

- Develop a Forest Resources plan that outlines the general management goals and desired future condition of Red Cliff's forests
 - Convene a Forest Resources Advisory Committee comprised of community members and staff from BIA and TNR to aid in development of the Forest Resources plan
- Improve tribal public awareness and acceptance of forest plan goals and management activities
 - Develop and implement visual Best Management Practices (BMPs) in the design of harvest plans, such as establishing buffer zones around homes, community areas, and along roads.
 - Provide opportunity for community input on proposed harvest plans.
 - Engage in outreach to make the community aware of what tribal forestry goals are, for example, plan community visit opportunities to sites that have been managed with various silvicultural techniques to show results.
- Increase benefits received by tribal community from forest management
 - Place proceeds from timber sales into protected accounts to assist in land repatriation efforts and conduct forest management activities in situations where no merchantable timber is available.

- Conduct regular survey of public use areas (tribal government and community buildings, campgrounds, beaches, trails, etc.) to identify and address trees that are susceptible to disease or damage and may pose a risk or hazard to public safety and infrastructure
- Provide firewood gathering opportunities.
- As necessary, review and revise regulations and BMPs incorporated within RCCL Chapter 11 that regulate harvest of non-timber and miscellaneous forest products like birch poles, balsam boughs, birch bark, etc.
- Implement birch regeneration practices.
- Protect and maintain sugarbush locations.
- Incorporate practices to enhance berry production (blueberries, raspberries, etc.).
- Manage entire forest for diversity in both composition and age structure
 - Increase the amounts of pine, oak, and northern hardwood forest cover types.
 - Promote northern hardwoods in mixed aspen/northern hardwood stands.
 - Increase range of aspen age classes while decreasing overall aspen cover type acreage on tribal parcels.
 - Harvest pure aspen stands at different time periods to increase age classes of new pure aspen stands.
 - Increase paper birch regeneration and age structure.
 - Use variety of timber harvest prescriptions to diversify forest structure and age.
- Identify and preserve unique and/or culturally sensitive forest types on the reservation for future generations
 - Use zoning as provided in RCCL to designate unique areas as preserved.
 - Where necessary, purchase unique parcels to return those areas to tribal trust status.
 - Where appropriate, use specific silvicultural techniques (selection harvest, retention trees, prescription burning, etc.) to maintain unique character of managed stands or superior phenotypes of tree species with genetic differentiation.
- Enhance and preserve water quality through proper forest management
 - Implement appropriate Best Management Practices (BMPs) on all managed forest lands.
 - Ensure adherence to codified riparian setbacks (buffer zones) in forest management and development planning review (RCCL Chapter 37).
- Manage forests to support diverse populations of game and non-game wildlife.

- Maintain a mix of forest stand ages and types that provide a wide range of preferred habitats for many species including those native species threatened by post-settlement habitat loss.
- Maintain forest wetlands, openings, and edges.
- Maintain denning and nesting trees.
- Increase involvement in management and oversight of non-tribal forests within reservation boundaries.
 - Work toward active role in co-management of Apostle Island National Lakeshore land within reservation.
 - Review and comment on management of Bayfield County forest parcels within reservation.
 - Provide outreach materials to private landowners to assist them with their forest management goals, help reduce risks to tribal forests from invasive species, etc.
- Increase involvement in management and oversight of off-reservation forest resources.
 - Review and comment as necessary on forest management plans and projects undertaken by other agencies (USFS, State, Counties).
 - Build partnerships with other agencies and groups to increase involvement in off-reservation management and monitoring.
 - Increase communication efforts with tribal members to identify priority forest areas and off-reservation forest resources.
- Minimize impacts of non-native plants, wildlife, and diseases on forest resources and associated fauna.
 - Conduct regular surveillance to detect new non-natives as early as possible.
 - Regularly monitor non-native species to guide and evaluate control and eradication efforts where needed.
 - Control non-native species identified as actual threats to forest resources.
 - To the extent possible, avoid use of chemical or biological control techniques.
 - To aid review and permitting of projects under RCCL Chapter 12, identify and maintain a list of commonly available and acceptable herbicides and pesticides and BMPs for their use.

- Conduct outreach efforts to help community better understand potential impacts of non-native species on forest resources and understand steps they can take to aid in prevention and control efforts.
- Incorporate climate resiliency in forest planning.
 - Design and implement climate related monitoring to detect impacts to forest resources and guide future management planning.
 - Implement techniques to enhance condition of those forest components likely to be negatively impacted.
 - Identify, inventory, and protect potential refugia for species likely to be at risk.
 - Consider programs like seed banking to retain genetic material from unique, at-risk plants for potential future restoration projects
 - Evaluate potential alternatives to augment or replace forest components that are likely to decline or disappear.
 - Proactively manage for species anticipated to replace current forest components. This will require evaluating potential benefits and risks of techniques like assisted migration of plants or wildlife prior to making decisions on implementation.
- Increase self-sufficiency in forest management.
 - Incorporate use of GIS in data management and utilization
 - Obtain training in stand inventory techniques and data collection.
 - Hire additional staff dedicated to forestry duties.
 - Obtain training in forest management techniques and the results they can return.
 - Obtain certification in fire management.

Opportunities and Funding Outlook

Management of Red Cliff's forest resources is structured somewhat differently from other resources like fish or wildlife. The Bureau of Indian Affairs (BIA) provides a great deal of technical and management support. BIA forestry staff conducts forest inventories to monitor and categorize the forest resources and maintain a database containing information on the composition and age of all the stands on reservation trust lands. BIA staff also identify stands that need active management (harvest) and assist with planning, contracting, and implementing timber sales to achieve those harvest goals. Red Cliff staff are involved in these processes and provide input from the Division and the community as the projects are developed.

While this model has the advantage of minimizing Tribal staffing and funding needs for a forestry specific program, it has disadvantages. Because BIA staff are responsible for covering multiple reservations and their forestry needs, there can be significant delays when assistance is needed in designing, preparing for, and implementing necessary forest/timber management projects. Another potential concern is the adequate review of proposed projects, both on- and off-Reservation, that may impact forest resources. This includes the review of other agency forest management projects, for example, harvest plans on USFS, State, or County forests. BIA forestry has neither the time nor the resources to provide reviews on the many projects that Red Cliff should be vetting. Red Cliff should support efforts to increase BIA forestry staff yet also seek to increase its own forest program capacity. The Treaty Natural Resources Division and Red Cliff would benefit from having one or two dedicated Forestry personnel on staff to meet these unmet needs in a more timely fashion, to better incorporate local Red Cliff concerns or perspectives, and assist other Division staff in integrating forest management into our overall management goals.

The BIA forestry program is focused on trust management and, as such, is structured more along the lines of a commercial forest model, with emphasis placed on timber production and revenue accountability. In many cases, forest management expenses can be offset by generated revenue from timber sales. However, there are instances when it is necessary to conduct forest management in areas with little or no timber value. The accomplishment of those goals may require expenditures that will not be recovered through a timber sale. Likewise, techniques like prescribed fire, hand thinning of stands, or mowing of brushy areas might be better approaches to accomplish some goals than traditional timber harvest methods. Examples of this situation could include generating young forage or openings for wildlife habitat, or invasive species control efforts. In those cases, it is necessary to seek outside funding through grant programs focused on specific issues. Many of these grant programs are operated by federal agencies and are reliant on the federal appropriations process. Similar grant opportunities can also be found at the State or local government levels at times, and there are several other funding routes such as non-profits and foundations that can be explored. Red Cliff has successfully sought out these types of funds in the past and will continue to seek them in the future. One common challenge with the grants, however, is that they often restrict salary or personnel expenditures. Increasing the Division's capacity by including one or two forestry staff would enhance its ability and eligibility to successfully pursue outside sources of forest management funding.

Vision Statement

To have excellent nibi (water) quality to support healthy habitats, a broad diversity of native aquatic life, and the Tribal members who use the nibi resources today, tomorrow, and for seven generations. -Adapted from IRMP Water Resources Vision Statement & Resource Goals (pg. 51)



A sampling site location at the mouth of Sand River.

Discussion

The Red Cliff Reservation is located on the shores of Anishinaabe Gichigami (Lake Superior) and includes 22.32 miles of shoreline. The shoreline of Lake Superior is characterized by scenic sandstone cliffs and large protected wetland sloughs at the sandy mouths of relatively healthy rivers. Above the sandstone lies the erosion-prone red clay soils that are typical of the southern region of the Lake Superior basin. The reservation includes about 12 acres of inland lakes/reservoirs/ponds and 986 acres of wetlands². Wetlands provide many ecosystem services including, natural nibi (water) wellness improvement through filtering sediments, nutrients, and some pollutants. They provide flood protection, shoreline erosion control, and sustenance in the form of food (manoomin [wild rice], fish, blueberries, cranberries, etc.) and medicines. Wetlands also play an important role in groundwater recharge. Since the majority of Red Cliff's potable (drinking) water comes from groundwater, it's crucial to maintain healthy wetlands to aid in water filtration and recharging the supply. The reservation includes approximately 43 miles of streams/ivers within its boundaries (29.4 intermittent stream miles and 13.2 miles of perennial streams)³. Many of the unnamed intermittent streams play important roles in the

² Data derived from Wisconsin Department of Natural Resources Wisconsin Wetland Inventory

³ Data derived from Wisconsin Department of Agriculture, Trade and Consumer Protection and alterations were made after ground truthing

conveyance of water and in providing habitat for amphibians, wildlife, and many types of plants.

The exterior boundary of the reservation encompasses approximately 14,540 acres. Due to the unique geography of Red Cliff, which is located on the terminal end of a peninsula, there are many small unnamed frontal Lake Superior streams and small named river and creek systems. These systems are spread out across four sub-watersheds on the reservation. The four sub-watersheds (HUC-12⁴) are delineated by the US Geological Survey and include the Raspberry River, Red Cliff Creek, Sand River, and the Saxine Creek Sub-watershed (Figure 4.1).

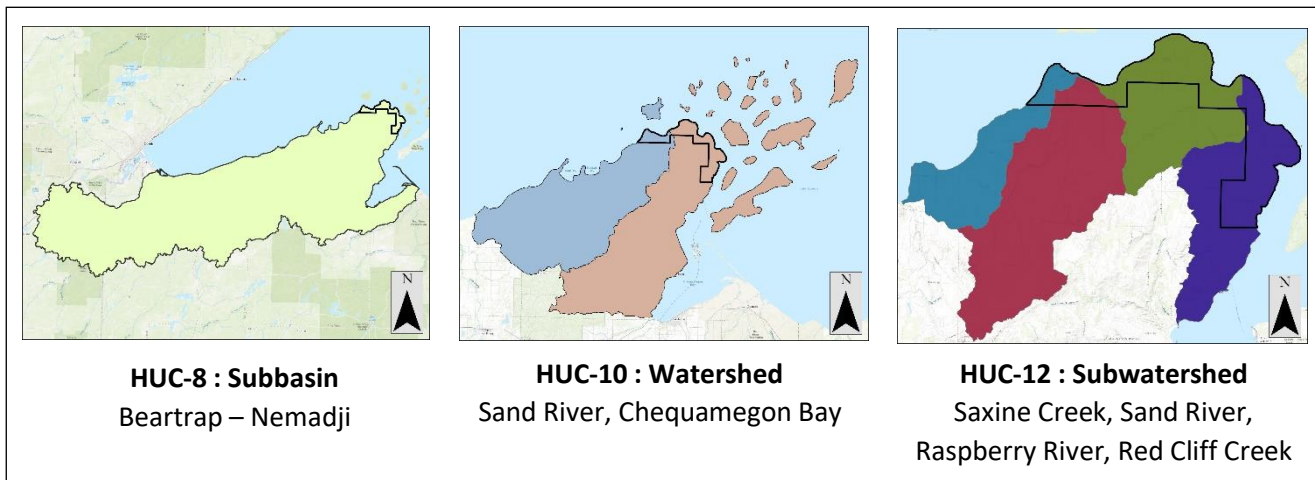


Figure 4.1 - The US Geological Survey's hierarchical system of hydrological areas starting with the larger HUC-8 which is a subbasin and breaking down into smaller units of HUC-10 or watershed and HUC-12, or subwatershed.

The Raspberry River Watershed is approximately 14,680 acres in size, and 37% (5,390 acres) lies within the reservation boundary (Figure 4.2). The Red Cliff portion of the Raspberry River Watershed is comprised of mainly forested vegetation (88.9%), including mixed (40.8%), deciduous (24.7%), and evergreen (23.4%) forest. There are 384.9 acres of wetlands in the Raspberry River Watershed. This system has Medium/Very Slow (49.5%) to Very Slow (20.5%) water infiltration rate meaning it takes water a long time to be absorbed into the ground. This slow infiltration is due to a mixture of clay soils. Slow infiltration can create problems of flooding and high runoff potential because it takes longer for water to be absorbed into the ground. There are two perennial streams that the Water Resources program samples in the Raspberry River Watershed, Sucker Creek and Raspberry River. Sucker Creek originates from springs and seeps in the northern part of the Bayfield Peninsula. Raspberry River is one of the largest river systems within the Red Cliff Reservation with over 100 small seasonal drainages channeling water into the primary stem. Raspberry River has been treated with lampricide

⁴ The US Geological Survey created a hierarchical system of hydrological areas or units. Each unit is assigned a unique Hydrological Unit Code or HUC. The hierarchy starts at region which is identified by two-digit HUCs and then further divides into subregion (four digits), basin (six digits), subbasin (eight digits), watershed (ten digits), and subwatershed (12 digits).

twice since 1963 to help control sea lamprey numbers, which have been identified as a priority aquatic invasive species. The last mile of the Raspberry River forms an extensive coastal wetland complex that the Lake Superior Binational Program identified as important to the integrity of the Lake Superior Ecosystem for coastal wetlands and fish and wildlife spawning and nursery grounds. The Raspberry River is of great importance to Tribal members for a variety of reasons. This area has been identified as one of the most culturally significant areas of the reservation in the IRMP survey results.

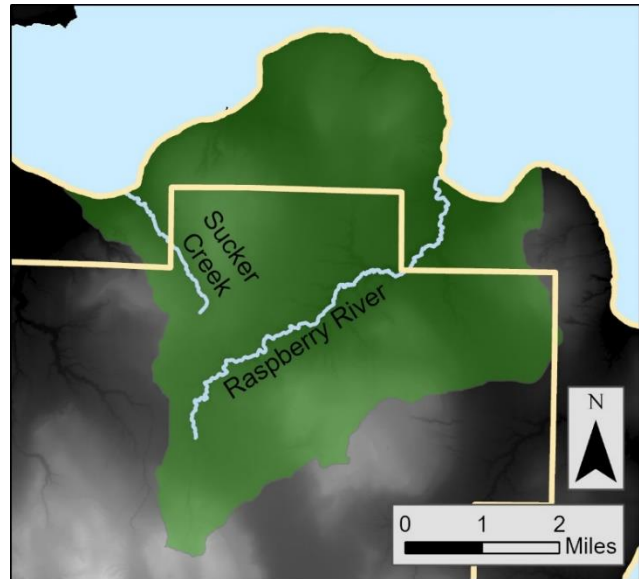


Figure 4.2 - Raspberry River Subwatershed and associated streams that are sampled by the Water



Figure 4.3 - Red Cliff Creek Subwatershed and associated streams that are sampled by the Water Resources Program.

The Red Cliff Creek Watershed is approximately 15,490 acres in size, and 40% (6,164 acres) lies within the reservation boundary (Figure 4.3). The reservation portion of the Red Cliff Creek Watershed is comprised of mainly forested vegetation (89.3%), including deciduous (40.2%), mixed (36.3%), and evergreen (12.8%) forest. There are 195.0 acres of wetlands. This watershed has mainly Medium/Very Slow and Slow Infiltration of water due to a mixture of clay soils. There are four perennial streams that the Water Resources program samples in the Red Cliff Creek Watershed: Red Cliff Creek, Frog Creek, Chicago Creek, and Clayton Creek. Red Cliff Creek is known to have a consistent spawning run of sea lamprey and has been frequently treated with lampricide over the years. Frog Creek is spring-fed and flows into Frog Bay at Lake Superior. Chicago Creek originates from springs and seeps on the eastern edge of the Bayfield Peninsula. Clayton Creek is a small spring-fed creek that travels approximately one mile before entering Lake Superior.

The Sand River Watershed is approximately 24,484 acres in size, and 5% (1,245) of the watershed lies within the reservation boundary (Figure 4.4). The reservation portion of the watershed is comprised of forested and shrub vegetation, including mixed forest (30.0%), deciduous forest (21.2%), and shrub/scrub (12.8%). The soil in the Sand River watershed has slightly less clay allowing for Slow and Medium/Very Slow water infiltration. There are 477.8 acres of wetlands. There is one perennial stream that the Water Resources Program samples in the Sand River watershed, Sand River. Sand River is fed by springs near the lower section. The mouth of the Sand River contains a vast wetlands complex that supports many unique species and rare wetland vegetation.

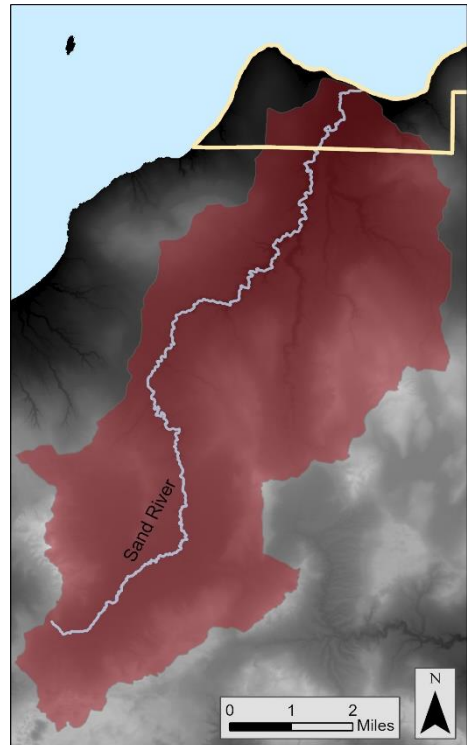


Figure 4.4 - Sand River Subwatershed and associated streams that are sampled by the Water Resources Program.

The Saxine Creek Watershed is approximately 9,829 acres in total, and 12% (1,149) lies within the reservation boundary (Figure 4.5). The Saxine Watershed is comprised of mainly forested vegetation (85.4%) as well, including mixed (35.0%), deciduous (26.9%), and evergreen (23.5%) forest. Water infiltration is generally Medium/Very Slow and Slow due to the mixture of clay in the soil. There are 44.8 acres of wetlands. There are currently no perennial streams in the Saxine Creek Watershed that are sampled by the Water Resources program.

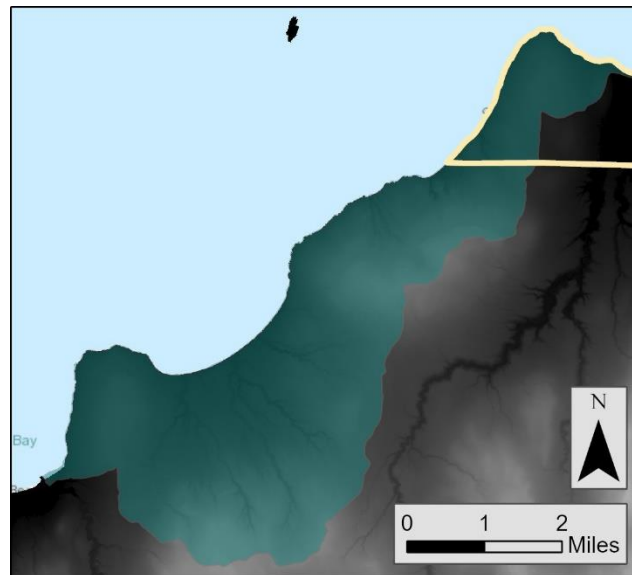


Figure 4.5 – Saxine River Subwatershed.

The Red Cliff Water Resources Program has been active since 1980, engaging tribal members and reflecting their awareness and concern for water quality on the reservation. In 1989, Red Cliff was granted treatment in the same manner as a state status (TAS) for implementing programs under Section 106⁵ of the Clean Water Act (CWA). In 2008, Red Cliff

⁵Section 106 deals with water pollution control, and the United States Environmental Protection Agency (EPA) funding is available to help build and sustain water quality programs that ensure the health of water resources.

was granted TAS status for Section 319⁶ of the Clean Water Act. These two programs form the backbone of Red Cliff's Water Resources Program.

The Water Resources Program monitors eighteen different surface water locations on seven streams originating or flowing through the reservation. These streams are tested monthly during the open water season (May through November) for chemicals, E. coli, and biological parameters. Consistent methodology and collection of this data beginning in 2012 have enabled Red Cliff to begin building a baseline dataset of water quality. Water quality monitoring includes field measured parameters, including pH, surface water temperature, dissolved oxygen, conductivity, and turbidity (Table 4.1). Laboratory measured parameters are also collected and include Total Phosphorus, Total Nitrogen, Nitrates and Nitrites, Total Kjeldahl Nitrogen, Nitrogen as ammonia, Total Suspended Solids, Chloride, and E. coli (Table 4.2). Basic meteorological data is also recorded during each sampling event, as are any observations of noticeable change to the sampling location environment, anomalies in results, or obvious indications of impacted water quality. Biological sampling in the form of macroinvertebrate collections and analysis to calculate biotic indices is also conducted on a rotating basis across sample locations. Physical habitat characteristics of each site are also described when macroinvertebrate sampling is conducted or if/when obvious changes have occurred. Continued monitoring of baseline water resource conditions on the reservation is needed to make a scientifically defensible evaluation suitable for the development of the Red Cliff Water Quality Standards. Some streams are also impaired by heavy sedimentation and erosion problems resulting in loss of substrate and important habitat.



TNR staff taking water quality field measurements in a stream.

⁶ Section 319 relates to non-point source (NPS) pollution of waters, and EPA funding is available to incorporate NPS monitoring and prevention into water resources programs

Table 4.1 – List of field measured parameters. These parameters are taken during the open water season (typically May-November) on a number of Red Cliff streams			
Field Parameter	Definition	Importance	Current Target Range
Dissolved Oxygen (DO)	Amount of oxygen in the water	All aquatic organisms need DO. It can be used as an indicator of a stream's ability to support aquatic life	5.0-12.0 mg/L
pH	A measure of hydrogen ion concentration or acidity	pH can determine species distribution and a fluctuating or sustained pH outside normal ranges can increase stress, decrease reproduction, growth, and survival	6.0-9.0
Temperature	How warm or cold the surface of the stream is	Temperature can affect community assemblages and drastic changes over a short amount of time can indicate pollution, altered land use, or changes to the stream channel	
Conductivity	A measure of the ability of water to pass an electrical current	Conductivity is affected by the presence of inorganic dissolved solids. Drastic changes to conductivity can indicate increases in sediment, failing sewage systems, an increase in fertilizer run-off, oil spills, etc.	
Turbidity	How clear the water is	Turbidity can affect the color of the water, increase water temperatures, and alter dissolved oxygen levels. It can indicate additional runoff from stormwater, agricultural fields, logging activity, any point source discharges, or increased erosion rates	≤30.78 NTU

Overall, the wellness of the surface water on the reservation is considered good. However, relative to pre-settlement conditions, most of the streams experience some nonpoint source impairment (pollution resulting from many diffuse sources usually in the form of runoff). These impairments are typically high levels sediment loads, nitrogen and phosphorus levels, and possibly temperature. Generally, these impairments are likely legacy issues related to the widespread loss and conversion of forest cover, resulting in changes in surface water runoff and associated erosion problems. Erosion and surface runoff continues to introduce high sediment and nutrient loads into reservation streams, impacting water quality to varying degrees. Elevated levels of nitrogen and phosphorus also reflect changes in land use over the last 150+ years. Other ongoing issues include fragmented ownership within the reservation and the fact that geographically, reservation water resources are located in the downstream portions of most local watersheds. Fragmented ownership can be problematic as addressing concerns of erosion and nutrient inputs can be more difficult when dealing with sources outside direct reservation jurisdiction. While the Water Resources Program strives to work in partnership with Red Cliff's neighbors, this type of situation will always present challenges.

Table 4.2 – List of lab based parameters. These parameters are taken during the open water season on a number of Red Cliff streams. Samples are brought back to the lab and sent out to contractors to analyze.

Lab Parameters	Importance	Current Target Range
Total Phosphorus	Essential for all organisms but at high concentrations can cause algae blooms, low DO levels, accelerated plant growth and the death of some aquatic species	≤0.012 mg/L
Total Nitrogen	The sum of all nitrogen, both organic and inorganic (Total Kjeldahl Nitrogen and Nitrate-Nitrite). Nitrogen is essential for all organisms but at high concentrations causes similar reactions as high levels of total phosphorus	≤0.44 mg/L
Nitrates and Nitrites	Nitrates and Nitrites are inorganic forms of nitrogen. Nitrates and nitrites end up in bodies of water more quickly than other nutrients because they dissolve more readily. Sources include fertilizer runoff, failing septic systems, wastewater treatment plan, and industrial discharge.	≤0.03 mg/L
Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen (TKN) measures organic nitrogen and ammonia. TKN is high in septic waste and manure.	≤0.33 mg/L
Nitrogen as Ammonia	Ammonia is a form of nitrogen that is toxic to fish and other aquatic organisms. Sources generally include human and animal waste, fertilizers, and industrial waste from either discharge or runoff	≤1.9 mg/L
Total Suspended Solids	The dry-weight of insoluble particles that can be trapped in a filter. High TSS levels are often associated with disease-causing bacteria. High levels also reduce water clarity, which can increase water temps and reduce photosynthesis.	
E.coli	E.coli is used as a bacterial indicator in streams because the presence of generic E.coli usually indicates fecal contamination and the pathogens that may be present	≤235 cfu/100 mL

Climate Change Impacts

Climate change may have many impacts on water quality. Shifting precipitation patterns may lead to increased flooding and drought. Both can impact water quality, by destroying habitat and diminishing aquifer recharge. Shifts in temperature and warming water may increase mercury methylation, which is a very poisonous form of mercury, in existing deposits. Warmer air temperatures may increase evaporation and may lead to diminished stream flows in summer and drying up of wetlands. Changes in upland vegetation may lead to increased levels of soil erosion.

Increased runoff associated with increased heavy rain events may increase nutrients, toxic substances, and pathogenic (disease-causing) microorganisms entering waterways. Increased runoff is also of concern for stormwater systems that are tied to sewer systems. During heavy rain events, wastewater treatment plants may be overwhelmed, leading to the release of raw sewage into the environment. Warming waters may lead to an increase in algal blooms, which can have rippling impacts on aquatic systems. Increased algal blooms are also a public health risk, both through skin contact from aquatic recreation or consumption through public water supplies.

Changes in sedimentation and wave action may increase the turbidity (cloudiness) of water bodies. Increases in turbidity may cause a loss of aquatic vegetation, which may lead to even

more turbidity. Losses of aquatic vegetation would also impact fish and macroinvertebrates that depend on the vegetation for food, cover, or spawning.

Changes to wetlands will also impact water quality. Across the region, wetlands are already under stress due to historical land-use changes. This existing stress will make these ecosystems especially vulnerable in a changing climate. As noted, increased temperatures in the summer will lead to increased evaporation and evapotranspiration, potentially drying out shallower wetlands. Human development and increased heavy rain events will impact wetlands' ability to absorb water and capture pollution. Wetlands that have become degraded are also more susceptible to invasive species. Boreal wetlands and vernal (seasonal) pools are especially vulnerable. Boreal wetlands are at the southern edge of their range, and as the climate changes, that range will likely shift northward. Changes in precipitation levels and air temperatures may also decrease available water for boreal wetlands. Increased flooding may increase erosion and pollutant loading. As boreal wetlands dry out, stored carbon may be released into the atmosphere, increasing speed and magnitude of climate-related impacts.

Vernal pools are dependent on snowmelt and runoff, and as precipitation patterns change, they may either dry up or become year-round ponds supporting fish. Many of the species that rely on vernal pools rarely move more than 300 yards from their home pools, meaning no viable alternative habitat exists. These species can also be susceptible to changes in wet and dry periods of the pools.

Shrub wetlands will also face the same stresses as boreal wetlands and vernal pools but are seen to be less vulnerable.

Objectives

- Maintain regular surface water monitoring program evaluating chemical, biological, and physical parameters of reservation streams and riparian habitat to provide baseline data needed to detect changes and evaluate restoration/protection activities.
 - Coordinate with fisheries program for additional biological data.
 - Apply for and seek renewal of grants funds.
 - Maintain local lab services.
- Develop a surface water sampling plan outside of baseflow conditions.
 - Install water monitoring stations that provide data on a more continuous basis.
 - Use data to create models to predict the effects of weather events.
 - Receive approval for quality assurance project plans.

- Establish a wetland monitoring program to delineate and better describe the wetlands on reservation
 - Apply for EPA Wetlands Development Grant.
 - Create a wetland specific staff position.
 - Have staff members attend Wetland Delineation Training.
 - Monitor the condition of existing wetlands – water quality, plants and animals, and function.
 - Adopt a wetland classification system.
 - Determine locations for potential wetland restoration projects.
- Determine if additional streams and locations should be added to the routine monitoring program.
 - Conduct an inventory of reservation streams.
 - Use GIS layers and visual observations to determine what other streams are perennial.
 - Prioritize sampling of additional streams based on habitat, wildlife use, function, cultural use, recreational use, and location.
- Develop a list of problem sites (erosion, barriers, invasive species, excessive runoff, and nutrient input, etc.) to be prioritized and addressed under restoration/remediation activities.
 - Collaborate with tribal programs to identify areas with invasive species in or near waterways.
 - Conduct reconnaissance surveys to identify erosion.
 - Analyze water quality monitoring data on an annual basis and compile comprehensive reports to establish nutrient trends.
 - Update the NPS Management Plan and NPS Assessment Report every five years.
 - Develop a prioritization method.
 - Apply for grant funds to restore any problem sites.
- Better understand off-reservation, upstream ecology, and land use on downstream impacts.
 - Continue to maintain and develop new partnerships with external agencies and groups to increase and expand water program capacity, both on and off-reservation.
 - Complete watershed management plan.

- Increase knowledge of water quality within ceded territories and Lake Superior.
 - Continue to submit data into EPA’s WQX database.
 - Partner with other agencies currently monitoring surface water in ceded territories and Lake Superior.
 - Attend collaborative meetings with partner organizations.
- Continue to provide and develop new outreach and education programs and materials to increase the community’s knowledge and understanding of water resources.
 - Create and regularly distribute a water quality report card.
 - Participate in TNR outreach events and World Water Day.
 - Create several water quality education programs, curriculum, or lesson plans that can be used at events, schools, or camps.

Opportunities and Funding Outlook

Historically, base funding has been provided via Environmental Protection Agency (EPA) through the Clean Water Act (CWA) Section 106 (surface water monitoring and pollution prevention funds) and CWA Section 319 (Non-point source pollution monitoring and prevention). Grants, particularly Federal but also at State, local, and NGO level, also provide some opportunities to help support activities of the water resource program. However, few of these programs provide for any stable, long-term capacity funding that allows sustainable program development and establishment. Often specific restoration projects or short-term data collection/monitoring can be funded by grants, serving to address short-term and specific objectives.

There remains a need to substantially increase steady, base funding if the water resources program is to be developed to the level needed to accomplish the objectives outlined in this plan realistically. Pressure must continue to be placed on the Federal government, emphasizing their trust responsibility and Red Cliff’s need for additional base funds to increase capacity. Without those funds, it will be necessary for Red Cliff to either adjust the goals of the program or to push for increased federal technical assistance under the auspices of federal trust responsibility to accomplish our objectives. The EPA and Bureau of Indian Affairs (BIA) are likely the most important federal agencies to target for increases in base funding. However, other agencies like US Fish and Wildlife Service, National Park Service, US Forest Service, Natural Resources Conservation Service, and National Oceanic and Atmospheric Administration should also be considered.

Vision Statement

Protect, rehabilitate, and restore fishes within the ceded waters and the Red Cliff Reservation to facilitate the sustainable use of fisheries resources for tribal members now and for seven generations. -Adapted from IRMP Fish Resources Vision Statement & Fish Resource Goals (pg. 45)



Lake Trout sampled during a fisheries assessment

Discussion

The Red Cliff Band of Lake Superior Chippewa continues to rely upon fishery resources for subsistence, economic, recreational, and cultural purposes. Fishery resources that have been and continue to be of importance are the waters of Lake Superior ceded by the Treaty of 1842, the inland ceded waters, and the waters within the Reservation. The focus of the TNR since the start of the fisheries program in the early 1980s has been the waters of Lake Superior ceded by the Treaty of 1842. Some attention has been given to the flowing waters on the Reservation, especially those that contain Brook Trout (*Salvelinus fontinalis*). Assessment and management of the inland ceded waters have been deferred to the Great Lakes Indian Fish and Wildlife Commission (GLIFWC). These three fisheries resources are discussed in more detail below.

Lake Superior

The native fish community in Lake Superior, when compared to the other Laurentian Great Lakes (i.e., Michigan, Huron, Erie, and Ontario), is mostly intact. Lake Superior still has robust commercial fisheries for Lake Whitefish (*Coregonus clupeaformis*), Cisco (also known as Lake Herring, *Coregonus artedii*), and Lake Trout (*Salvelinus namaycush*). Lake Superior is also home to many other native species that have commercial, subsistence, cultural, recreational, and ecological value.⁷ Examples include Lake Sturgeon, Brook Trout, Walleye, Northern Pike, Yellow

⁷ See: http://www.seagrant.umn.edu/fisheries/superior_fish_species

Perch, and Smallmouth Bass. Some of the native fishes still found in Lake Superior are no longer found in the other Laurentian Great Lakes, or their abundances have been severely reduced. Reasons for their disappearance or collapse are numerous and include ecosystem changes by invasive species such as Sea Lamprey (*Petromyzon marinus*), Zebra and Quagga mussels (*Dreissena polymorpha and bugensis*), and Alewife (*Alosa pseudoharengus*), habitat loss, and overfishing. It is imperative that lessons are learned from the other lakes, and the same problems are avoided or mitigated in Lake Superior. Nonetheless, Lake Superior has been troubled by similar problems. Lake Superior is now home to greater than 100 non-native species, some of which are invasive and cause significant ecological and economic harm,⁸ such as the Sea Lamprey, which devastated fish stocks during the mid-twentieth century. Lake Superior is among the fastest-warming lakes in the world, and the changing climate could change thermal habitat and disrupt aquatic food webs. Due to its large surface area, Lake Superior is especially vulnerable to the atmospheric exchange of toxic compounds, many of which originate from distant locations and are biomagnified through the food web. This can make certain quantities of fish and certain species of fish unsafe to eat by people and wildlife. The south shore of the lake has been experiencing cyanobacteria algae blooms. Similar blooms in Lake Erie have been toxic, but effects on fisheries are unclear. Lastly, at a more local level, the wastewater treatment plant at nearby Ashland, WI overflows raw sewage into Chequamegon Bay during high rainfall events, degrading water quality and could negatively impact fish. Due to the combination of the problems listed above and other problems, such as overfishing, some fish stocks collapsed in Lake Superior during the mid-twentieth century, but careful stewardship has allowed their recovery.⁹

Many governments are responsible for the stewardship of the fishes in Lake Superior—the states of Minnesota, Wisconsin, and Michigan, the Province of Ontario, and U.S. tribes. Stewardship by some tribes in some areas of the lake is facilitated through intertribal agencies such as GLIFWC, the 1854 Treaty Authority, and the Chippewa Ottawa Resource Authority. Understanding that management decisions in one jurisdiction can impact the fishes in another, many of these agencies, along with several federal agencies, are signatory to A Joint Strategic Plan for Management of Great Lakes Fisheries.¹⁰ This is a non-binding agreement that helps ensure cross-border collaboration. Principles of this agreement and cross-border collaboration are facilitated through the Great Lakes Fishery Commission and its committees. Examples of cross-border collaboration include Sea Lamprey control, the successful restoration of Lake Trout, and the ongoing restoration efforts for Brook Trout, Lake Sturgeon (*Acipenser*

⁸ See: http://www.seagrant.umn.edu/ais/superior_nonnatives.

⁹ For a case history of Lake Trout see: Hansen, M. J. *et al.* Lake Trout (*Salvelinus namaycush*) Populations in Lake Superior and Their Restoration in 1959–1993. *J. Great Lakes Res.* 21, 152–175 (1995).

¹⁰ See: <http://www.glfsc.org/pubs/misc/jsp97.pdf>

fulvescens), and Walleye (*Sander vitreus*). Red Cliff is currently not signatory to the plan¹¹ but is a member of the Lake Superior Technical Committee, a subcommittee of the Joint Strategic Plan Committees.

The waters of Lake Superior ceded by the Treaty of 1842 total approximately 8.9 million acres. The Red Cliff Tribe's rights to fish these waters is reserved in treaties with the federal government and were reaffirmed in federal courts in 1972.¹² Presently, Red Cliff has active commercial fisheries in the Wisconsin and Michigan waters of the ceded area. Lake Whitefish, Cisco, and Lake Trout are the principal fish species harvested. These fisheries are managed cooperatively with the agencies that share jurisdiction in these areas—Red Cliff Band of Lake Superior Chippewa, Bad River Band of Lake Superior Tribe of Chippewa Indians, and Wisconsin Department of Natural Resources for the Wisconsin waters and Red Cliff Band of Lake Superior Chippewa, Bad River Band of Lake Superior Tribe of Chippewa Indians, Keweenaw Bay Indian Community, GLIFWC and Michigan Department of Natural Resources for the Michigan waters. How these fisheries are managed depends on the jurisdictional area (i.e., Wisconsin and Michigan) and the management units within.¹³ In general, the management goals are to maintain sustainable harvests of self-sustaining (not relying on hatcheries) populations. This is achieved by regulation, stock assessment, and enforcement. Regulations may include how many fishing licenses are issued, what, when, where, and how fishing can be conducted, and how many fish can be safely harvested. Stock assessments are used to evaluate the regulations, modify them, or make new ones. Stock assessment is the process of estimating abundance, birth and death rates, growth rates, and other population metrics. Stock assessments can take many forms, which depends on the fish species of interest. They can include monitoring the commercial harvest, conducting fishery independent surveys, and integrating the commercial data and survey data in a model such as a statistical-catch-at-age model. Examples of the data collected are catch, effort, length, weight, age, sex, maturity, lamprey wounds, origin (i.e., hatchery or wild), and tag information. Collecting this data is a collaborative effort, and a typical stock assessment uses data from many agencies. Lastly, enforcement is needed to ensure compliance with the regulations.

The Red Cliff Fisheries Department conducts routine assessments of commercial harvest, Lake Trout, Cisco, Lake Whitefish, Brook Trout, Lake Sturgeon, and invasive species. These assessments are done in the Wisconsin and Michigan waters of the ceded area. The Red Cliff Fisheries Department also conducts short term studies of Lake Superior fishes, often with

¹¹ GLIFWC is a signatory on Red Cliff's behalf but is explicitly excluded from being involved in the Wisconsin waters of Lake Superior by stipulation of the parties in the LCO/Voigt case in 1985. A formal request to join the Joint Strategic Plan was made by Red Cliff in the fall of 2019.

¹² See *Gurnoe v. Wisconsin* 1972.

¹³ For management in the Wisconsin waters see:

https://p.widencdn.net/czkkap/LS_LakeSuperiorFishingAgreement2018-2028

partner agencies. An example of a recent short-term study is the tracking of Brook Trout movement in the Apostle Islands area of Lake Superior. Additional activities done by the Red Cliff Fisheries Department include managing commercial reports, issuing licenses, issuing license quotas, stock assessment, report writing, and serving on working groups and committees. These and other activities occupy most the Fisheries Department's time.

Inland Waters

The inland ceded waters include thousands of standing (e.g., lakes, ponds, etc.) and flowing (e.g., rivers, streams, etc.) waters that vary greatly in size, fish communities, and quality of fishing. Many of these waters provide excellent fishing opportunities, but like Lake Superior, they are impacted by a variety of human activities and are also changing. Some of the inland waters have been warming which can stress cold water fish species such as Brook Trout and Cisco. Invasive species have invaded many of the waters and have disrupted food webs. Popular fish species, such as Walleye, have declined in some waters which limits harvest opportunities. Lastly, toxic compounds are elevated in some waters and can be biomagnified through the food web. This can make certain quantities of fish and certain fish species unsafe to eat by people and wildlife. The Red Cliff Tribe's rights to fish these waters are reserved in treaties with the federal government and were reaffirmed in some areas in federal courts in 1983.¹⁴ Intertribal agencies, such as GLIFWC, facilitate tribal co-management of the fisheries in the inland ceded waters with the states of Minnesota, Wisconsin, and Michigan. Red Cliff is a member of GLIFWC and works cooperatively with their management efforts. Red Cliff also works with the Voigt Intertribal Task Force,¹⁵ landowners, and sportsman clubs to ensure partnerships are built, and concerns regarding the fisheries are addressed. The TNR does not have the capacity to assess fish stocks in the inland ceded waters, and this work is currently conducted by other agencies.

Reservation waters

The waters within the Red Cliff Reservation total 998 acres of standing water and 43 miles of flowing water. The standing waters on the reservation are not thought to support meaningful fisheries. The flowing waters on reservation, however, have a history of subsistence and recreational fishing and are still fished today. There are eight streams on the reservation, which are small-medium in size, have cold-, cool-, and warm- water habitats, and have different fish communities.



Brook Trout sampled in a reservation stream

¹⁴ See Voigt Decision 1983.

¹⁵ The Voigt Intertribal Task Force recommends policy regarding inland resource management issues that affect treaty rights of the GLIFWIC member tribes in the 1837 and 1842 Treaty ceded territories.

One of the principal species for fishing and management is the Brook Trout. Brook Trout are native to the area and require cold and clean water for survival. Two forms of Brook Trout are in Lake Superior and the connected waters – the resident form which spends its entire life within the connected waters and does not go to Lake Superior, and the coaster form which spends at least part of its life in Lake Superior. The coaster form can grow to a larger size than the resident form and exceed 20 inches in length and several pounds in weight. Coasters were once common in Lake Superior and the Bayfield area, however, their distribution and abundance declined considerably by the twentieth century. Reasons for the decline include overfishing and habitat destruction.

There is currently a lakewide effort to restore coasters to their former distribution and abundance. Red Cliff participates in this effort by raising coasters in the Red Cliff hatchery and conducting assessments of their distribution and abundance near the Bayfield Peninsula. Today, climate change, land use practices, and non-native species are among the biggest threats to both forms of Brook Trout in the Reservation streams and elsewhere in the Lake Superior basin. Warming air temperatures can increase water temperature, and changes in precipitation could alter hydrologic processes, which effect cold groundwater input. Most of the streams, at least the portion of the reaches within the Reservation, have intact riparian areas, which helps shade the streams and stabilize the banks. Nevertheless, past land use practices (e.g., logging) disturbed these areas, destabilizing banks, and increased sediment transport. These sediments can smother aquatic invertebrates, which are food for Brook Trout, and can also cover clean gravel, which Brook Trout need for spawning.

The management of Beavers has also affected Brook Trout habitat. Beaver dams can pool flowing water, which increases depth, slows water velocity, and traps sediments. Pros for Brook Trout include the pool and woody habitats created by the dams, which are important refuges from floods, droughts, and predation. Also, the trapping of sediments can protect downstream gravel reaches from sedimentation. Cons for Brook Trout include increased water temperatures and blocked passage, but the effect of Beaver dams on water temperature is complicated and site specific, and there is mounting evidence that Brook Trout can freely navigate Beaver dams.

Lastly, non-native fish such as the Rainbow Trout (*Oncorhynchus mykiss*), Brown Trout (*Salmo trutta*), and Coho Salmon (*Oncorhynchus kisutch*) may compete with Brook Trout for food, spawning habitat, and other resources. Since the non-native fish are typically larger than Brook Trout, Brook Trout redds (gravel spawning nests) are especially vulnerable to destruction by non-native species that spawn in similar areas.

In past interviews, community members recalled catching large Brook Trout, possibly coasters, in the streams on Reservation during the mid-1900s. To our knowledge, large Brook Trout are no longer caught within the reservation. Since 2016, Brook Trout have been captured in four of the eight streams, Chicago Creek, Clayton Creek, Frog Creek, and Sucker Creek. These fish,

however, were likely the smaller resident forms (maximum length = 9.8 inches).

Notwithstanding, hatchery raised coasters were found to use Chicago Creek, Red Cliff Creek, Frog Creek, and the Raspberry River.

Other fishes that use the Reservation streams and are the target for fishing or management include the non-native Rainbow Trout, Brown Trout, Coho Salmon, Rainbow Smelt (*Osmerus mordax*), and Sea Lamprey. Sea Lamprey, which invaded Lake Superior by 1938, is a voracious predator that can decimate fish stocks if not controlled. The United States Fish and Wildlife Service (USFWS) uses lampricides and other control measures¹⁶ to reduce Sea Lamprey abundance. Treatments are applied to Red Cliff Creek and the Sand River as needed. Red Cliff regulates the fisheries on the Reservation¹⁷, but land use practices off-reservation affect water quality and fish habitat. The TNR has not conducted regular fish assessments in the streams on the Reservation but has collected some fisheries data beginning in the late 1990s. The TNR has also completed some habitat improvement projects, such as the fish ladder in Chicago Creek.

Community survey results

Survey results indicate that respondents (n = 70) fish all three of the fishery resources described above, Lake Superior, the inland waters, and the waters on the Reservation. The respondents took the most fishing trips to Lake Superior (66% of all fishing trips), and the number of trips taken to the waters on the reservation and the inland waters were similar (17% of all fishing trips, each). Seventy-five respondents indicated that a total of 72 household members (average = 1 person per household) had an economic benefit from commercial fishing. Some high school (51 respondents) and middle school (40 respondents) students indicated that they fished some or all the fishery resources. Middle school students specifically mentioned that they fish the Raspberry River and Chicago Creek and like to ice fish. Of the 54 high school respondents, 28% responded that their household has an economic benefit from commercial fishing. Of the 52 middle school respondents, 33% responded that their household has an economic benefit from commercial fishing.

Survey results indicate that fish is an important part of the respondents' diets. Of the 76 respondents, most consumed one or more servings per month of Lake Trout, Lake Whitefish, and Walleye (Figure 5.1). Of the 54 high school respondents, 66% consumed wild fish, and 28% indicated they consume fish weekly. Of the 66 middle school respondents, 70% consumed wild fish, and 20% indicated they consume a lot of fish or eat fish weekly.

Survey results indicate that most of the respondents view the three fishery resources as adequate or great. However, 10%, 21%, and 21% felt the fisheries were in poor condition for Lake Superior, the Reservation, and the inland waters, respectively (Figure 5.2). The top five

¹⁶ For more information see: <https://www.fws.gov/midwest/SeaLamprey/index.html>.

¹⁷ See Red Cliff Code of Laws Chapters 5,6 and 10.

concerns for all the fisheries were pollution, over-harvest, climate change, invasive species, and accessibility (Figure 5.3). Most of the high school and middle school respondents felt some or all the fisheries were healthy, but some were unsure, others felt the fisheries were unhealthy, and others were concerned for the future. Concerns were climate change and pollution, specifically microplastics and wastewater discharge into Chequamegon Bay by the Ashland wastewater treatment plant.

The elders of the Red Cliff community also expressed concerns for the fishery resources during three community outreach events. Two elders felt the Lake Superior fishery was not economically sustainable. They commented that harvest and quotas can be volatile, the herring fishery has declined, and that people they know or themselves are losing interest or disinvesting in fishing. They suggested that aquaponics could be an alternative to wild fisheries. One elder was concerned about aquatic invasive species, specifically Asian Carp and Zebra and Quagga mussels. One elder felt the system for regulating walleye harvest in the inland waters was biologically unsustainable. They felt sport harvest far exceeds subsistence harvest, and catch-and-release regulations and outreach are needed to protect walleye populations. One elder felt the streams on the Reservation did not support fish migrations like they used to. Elders also liked the TNR’s youth intern program and would like to see more outreach and community involvement, specifically video compilations of projects and educational programs.

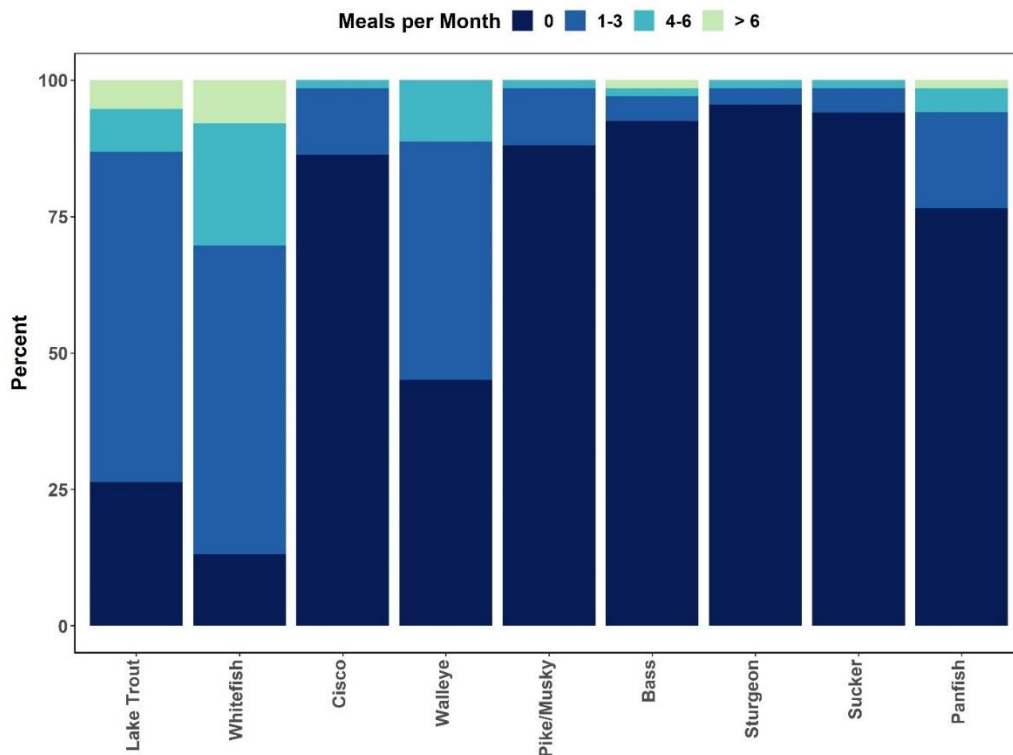


Figure 5.1 - The percentage of respondents (n = 76) that consumed fish by fish species/group and the number of servings per month

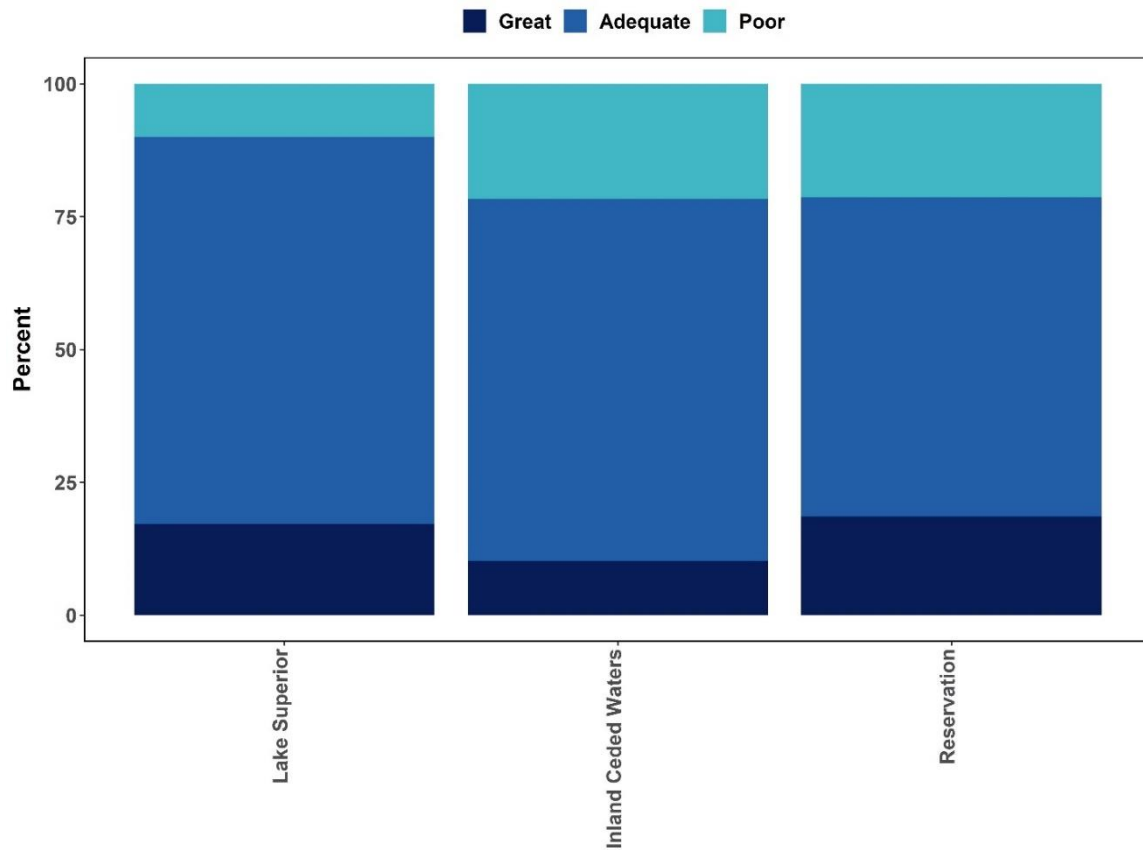


Figure 5.2 - The percentage of respondents (n = 72) that viewed the fisheries of Lake Superior, the inland waters, and the Reservation as great, adequate, or poor.

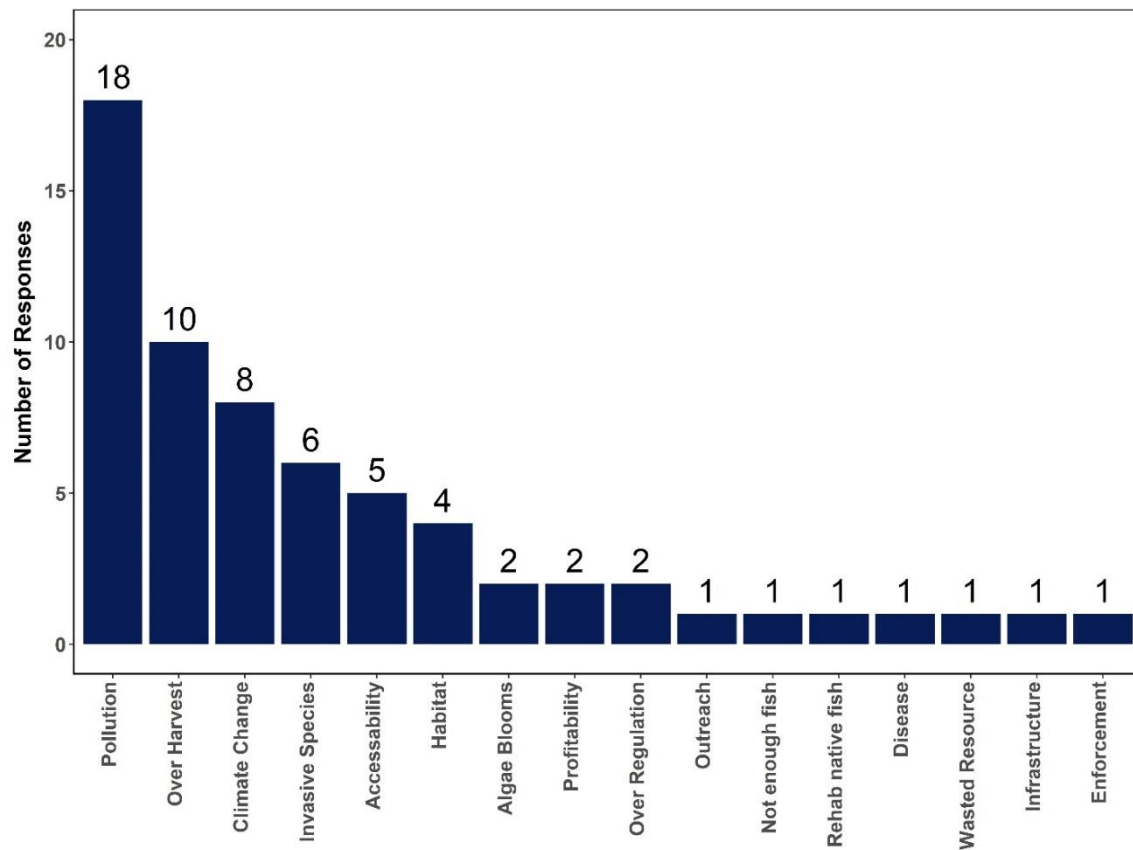


Figure 5.3 - The number of respondents (n = 45) by concern for all the fisheries resources.

Objectives

Lake Superior

- Protect, rehabilitate, and restore native fishes.
 - Work with partners to develop formal stock assessment methods of Lake Whitefish in the Wisconsin and Michigan waters of Lake Superior to facilitate sustainable harvest practices.
 - Work with partners to develop a formal stock assessment method for Cisco in the Wisconsin waters of Lake Superior to facilitate sustainable harvest practices.
 - Work with partners to investigate improvements or alternatives to the stock assessment method currently used for Lake Trout in the Wisconsin and Michigan waters of Lake Superior to facilitate sustainable harvest practices.
 - Work with partners to develop new stock assessments to facilitate sustainable harvest practices for other species as needed.
 - Collect baseline fisheries data in the under sampled nearshore areas.
 - Participate in lakewide restoration initiatives for Brook Trout, Lake Sturgeon, and Walleye. Also, participate in lakewide restoration initiatives for other species as needed.
 - Participate in research initiatives that further the understanding of aquatic ecology in the Great Lakes.
 - Work with partner agencies to evaluate potential climate change impacts to fish species.
 -
 - Support policies and resource acquisitions that protect native species and their habitats.
 - Invest in new technologies and techniques that can improve assessments.
 - Work with the Red Cliff fish hatchery to evaluate the performance of stocking strategies.
- Mitigate pollution, remediate polluted sites, and assess contaminant levels in Lake Superior fishes.
 - Support actions that protect Lake Superior from pollutants.
 - Support actions to remediate polluted sites.
 - Evaluate data gaps in fish contaminant testing and work cooperatively with partner agencies to assess fish contaminants.
- Prevent the introduction of new non-native species and monitor and control existing non-native species.
 - Support actions that protect Lake Superior from the introduction of non-native species.
 - Conduct assessments to monitor existing non-native species and early detection for new non-native species.
 - Work collaboratively with other agencies.
 - Continue to support Sea Lamprey control in the Great Lakes.

- Use best management practices to prevent the transport of non-native species to and from the Legendary Waters marina and other boat launches.
- Maintain existing partnerships and seek new partnerships as necessary.
 - Maintain membership on the Lake Superior Technical Committee.
 - Continue to seek membership to the Lake Superior Committee.
- Commit to formalized commercial fishing agreements.
 - Be a responsible partner in the 2018-2028 Lake Superior Fishing Agreement in Wisconsin waters.
 - Represent the Tribe at the technical level to renew the tribal agreement for the Michigan waters of the 1842 ceded waters of Lake Superior.
 -
- Keep the Red Cliff Community informed of activities and engage youth.
 - Continue to contribute fisheries articles to the TNR newsletter.
 - Continue to support the TNR youth internship program.
 - Collect more photos and videos during fish assessments.

Inland waters

- Protect, rehabilitate, and restore native fishes.
 - Work with GLIFWC to review and comment on management plans and regulations.
 - Support the Red Cliff fish hatchery.
- Mitigate pollution, remediate polluted sites, and assess contaminant levels in inland waters.
 - Support actions that protect the inland water from pollutants.
- Prevent the introduction of new non-native species and monitor and control existing non-native species.
 - Support actions that protect the inland waters from the introduction of non-native species and damage from existing non-native species.

Reservation waters

- Protect, rehabilitate, and restore native fishes.
 - Develop standardized procedures to routinely assess population demographics of Brook Trout.
 - Assess Brook Trout habitat and if necessary, improve habitats.
 - Assess what other fish species use the Reservation streams, including non-natives, and how they affect Brook Trout.
 - Invest in new technologies and techniques that can improve assessments.
 - Evaluate and update current regulations concerning what, when, where, and how fish can be harvested.

- Work with partner agencies to evaluate potential climate change impacts to Brook Trout and other species.
- Mitigate pollution and remediate polluted sites.
 - Support actions that protect the waters on the Reservation from pollutants.
 - Support other TNR programs and outside agencies to remediate polluted sites.
- Prevent the introduction of new non-native species and monitor and control existing non-native species.
 - Support actions that protect the waters on the reservation from the introduction of non-native species.
 - Assess the current status of non-native species in the Reservation waters.
 - Evaluate or recommend regulations or other actions to prevent or control the spread of non-native species in the Reservation waters. Continue to support Sea Lamprey control on the waters within the Reservation.
- Keep the Red Cliff Community informed of activities and engage youth.
 - Continue to contribute fisheries articles to the TNR newsletter.
 - Continue to support the TNR youth internship program.
 - Collect more photos and videos during fish assessments.



Sunset in the Apostle Islands of Lake Superior.

Vision Statement

To provide a comprehensive fish hatchery program capable of providing eggs, fry, or fish for both on and off reservation stocking for rehabilitation, restoration, and supplementation of fish stocks in waters ceded by the Treaty of 1842 for the next seven generations. -Adapted from IRMP Page 44, Mission (pg. 35)



Three newly constructed walleye rearing ponds. Construction completed in 2018.

Discussion

The Red Cliff Tribal Fish Hatchery is capable of both cool-water and cold-water rearing of fish. The hatchery is composed of four fish rearing areas: a production/office building, a broodstock¹⁸ building/office, an isolation building, and an area comprised of three lined grow out ponds.

Production Building

The production building houses one of the offices for the Red Cliff Tribal Fish Hatchery and Treaty Natural Resources Division. The fish rearing portion of the facility has several components. Care for fertilized eggs takes place in a 64-tray heath incubation system. There are two small 28.8 cubic foot raceways to hold fry until swim up and ten 607-gallon tanks that are flow-through systems for fingerlings¹⁹. The hatchery is also equipped with a partial recirculating aquaculture system (RAS)²⁰. The RAS utilizes eight 845-gallon round circular tanks and multiple filtration systems. This building also has a chemical storage room and a small lab used to analyze various biological samples. The fish reared in this building are raised from eggs to yearlings (Figure 6.1). Eggs are brought into the heath incubation set up until hatching. Sac fry are then brought into small flow-through tanks until they are strong enough to swim up to the

¹⁸ Adult fish retained for spawning.

¹⁹ Fish ranging in size from 3-5''

²⁰ Recirculating Aquaculture System: This is an intensive rearing system that reuses water from fish multiple fish tanks utilizing a drum filter, bio filter, ultraviolet filter, low head oxygenator, and side boxes. This system helps to rear fish utilizing less water.

top of the tanks and begin feeding. Fish are then brought over to the larger flow-through system until they reach about three inches in length. At this size, fish are now strong enough to be brought over into the RAS with minimal adjustments. When the Brook Trout reach six to

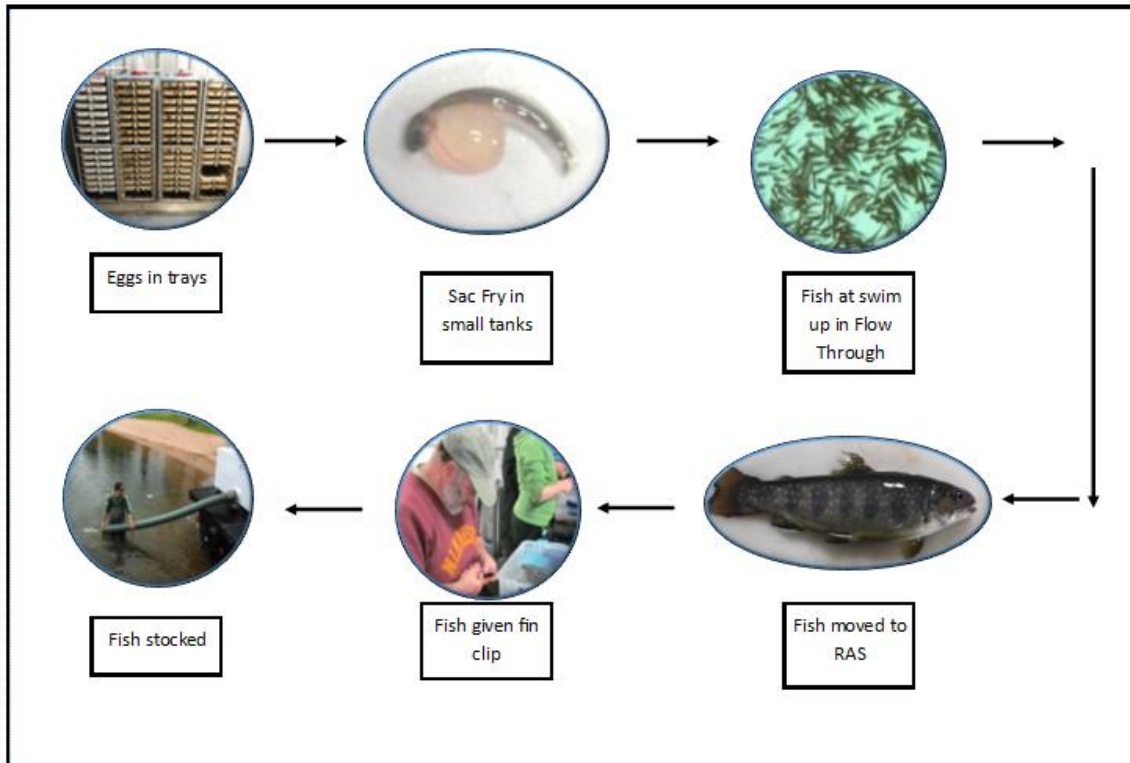


Figure 6.1 - Flow chart of brook trout rearing process. Eggs are hatched in the heath trays, sac fry are moved to small flow through tanks, fish at swim up are moved to larger flow through tanks, small fish are then brought over to circular RAS system, fish are fin clipped around 16 months of age, and finally fish are stocked in Lake Superior.

eight inches in length, they are then ready to be stocked. Two weeks before stocking, each fish is given an identifying mark in the form of a fin clip. One complete fin is removed from each fish so that they may be identified as a hatchery fish in the wild. Fish are then loaded into the hatchery’s stocking truck and brought to Lake Superior for stocking. Stocking has been done offshore utilizing the TNR’s research vessel and onshore from the stocking truck.

Broodstock Building

The primary purpose of this building is to house the brook trout broodstock, which are used as a parental stock for the propagation of fish for stocking into Lake Superior. This facility also houses a small space for offices and a wet lab. The broodstock building has six



Coaster Brook Trout broodstock at hatchery

large concrete raceways, 720 cubic feet in size, and maintains six year classes of adult brook trout. These broodstock fish are spawned each fall using single male to female crosses. Male and female fish can be distinguished by differing characteristics and are separated in each tank during the spawning season. Female fish are crossed with male fish from different year classes, and eggs are fertilized. Eggs are then transferred over to the production building for grow out.

Isolation Building

The isolation building is the site of the Tribe's cool-water fish production. Its primary use is to produce Ogaa (Walleye). In the past, this building has also been used to conduct research and rear Name (lake sturgeon) and lake herring. Currently, the building contains a rack for rearing walleye, which holds nine bell jars. Each jar can hold 5 liters of eggs. Each liter of eggs contains roughly 100,000 eggs. These bell jars empty into two large rearing tanks for walleye. This building is equipped with an on-demand water heater that allows for warmer water to rear the ogaa. The warmer the water, the faster the fish will hatch and more active they will be. Ogaa eggs are collected from tribal spear fishermen in the spring of the year. Eggs are fertilized on-site and brought back to the isolation building to hatch. Post hatch, a small sample is sent out for disease testing, and the rest are stocked in the ogaa rearing ponds. In the past, round holding tanks have been set up for the extended growth rearing of fish in the isolation building as well. In addition to being utilized for ogaa production, this facility is in isolation, meaning no water, equipment, or fish from this building ever enter the other hatchery buildings. This means that eggs taken from fish in the wild can be raised without jeopardizing the health of the brook trout inside the main production and broodstock buildings. The isolation building is only in operation for a few months out of each year, as ogaa are transferred out of the building and into the ogaa ponds shortly after hatching.

Ogaa Ponds

The next rearing location is the three 0.7-acre lined rearing ponds, located behind the main hatchery grounds. These ponds are dedicated to the sole purpose of rearing extended growth walleye. In 2018, the hatchery finished upgrades to the ogaa rearing ponds. Ponds were fitted with new liners (Enviro Liner 6050²¹), outlet structures,



Walleye fingerlings from a sample taken out of the walleye rearing ponds.

²¹ Enviro Liner is a coextruded material consisting of an LLDPE core and coating of HDPE liner on each side manufactured by Layfield Environmental.

catch basin, Kasco²² aeration units, and a surrounding fence. With these upgrades, the hatchery will better understand the future productivity of the oгаа rearing ponds. Oгаа reared at the hatchery originate from the ceded territory, which tribal members harvest oгаа from (See map of ceded territory). Oгаа eggs are collected during the spring of the year and brought to the hatchery to be raised to six to eight-inch extended growth fish for stocking (Figure 6.2). Eggs are hatched in the isolation building and stocked into the rearing ponds a few days post-hatch. Ponds are fertilized to start getting quality primary production going. In turn, this leads to small invertebrates eaten by oгаа fry. About 30 days post-hatch fish will be reevaluated, and small minnows will be fed as needed. As oгаа grow, they will eventually be fed crappie minnows until they reach a suitable size and can be stocked back in their originating waters. Ponds will be drained, and fish will be given a Left Ventral fin clip before they are loaded onto the stocking truck. The hatchery has seen some return as a few tribal fishermen have harvested Red Cliff fin clipped fish.

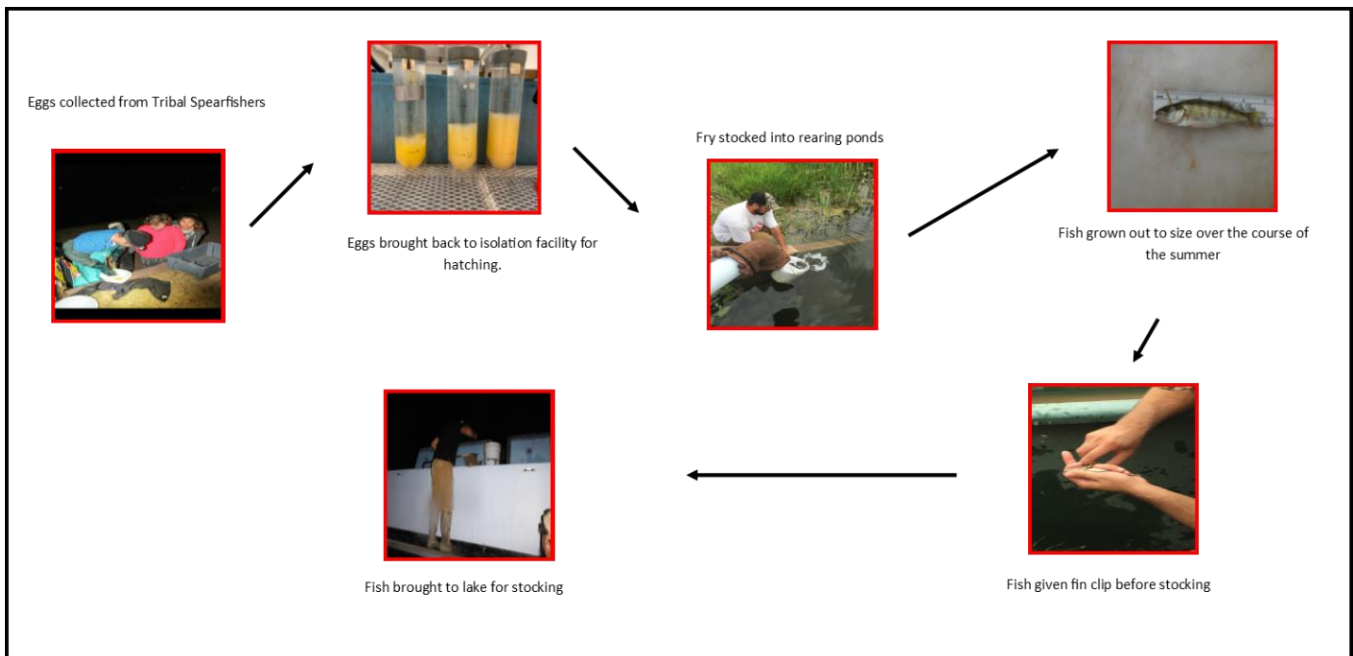


Figure 6.2 - Flow chart of oгаа at the red Cliff Tribal Fish Hatchery. Eggs are collected from lakes in ceded territory, eggs are brought to hatchery and hatched in bell jars, fry are stocked into walleve rearing ponds, fish are sampled to determine growth and food requirements, fish are fin clipped, finally fish are stocked back into lakes within ceded territory.

Hatchery Water Supply

The hatchery is supplied with well water from two high capacity wells located near the hatchery production buildings. Wells are 200 feet deep, and water is pumped from the aquifer to the rearing locations with 50 hp motors equipped with Variable Frequency drives to meet demand needs. Wastewater from each building is sent through a manmade wetland behind both the

²² Each pond has one Kasco Marine Robust Aire System with a post mount cabinet and 2 Robust Aire Diffusers. Each pond is also equipped with 2 surface aeration units for additional oxygen delivery.

production building and the broodstock building. This is where any fish waste and excess nutrients settle before water makes its way to Red Cliff Creek.

Hatchery Production

With the current setup in the hatchery, it has been found that around 65,000 – 75,000 high-quality coaster brook trout can be produced every year. Raising more than 75,000 fish results in a decreased condition factor²³, ultimately giving a less fit, lower quality fish. The hatchery has used different stocking densities in the past and will continue developing the best stocking practices in the future. In the past, the hatchery has worked with the Nipigon and Tobin Harbor strains of brook trout.

The Red Cliff Tribal Fish Hatchery has been actively involved in the stocking of Coaster Brook Trout and Ogaa into the nearshore waters of Lake Superior and the inland waters of the ceded territory for over 20 years. Since 1995, over 1.5 million Brook Trout have been stocked into the nearshore waters of Lake Superior, and over 600,000 ogaa have been stocked into the inland lakes within the ceded territory.

The Red Cliff Band of Lake Superior Chippewa has a rich fishing culture. Fishing has been a staple for many families for generations, and the Red Cliff Fish Hatchery understands this history and is dedicated to the restoration and protection of species important to the tribal community.

Aging infrastructure has been a limiting factor in hatchery production in recent years. Pump failures, plumbing issues, and electrical problems have plagued the hatchery. These issues have proven costly and difficult to maintain, ultimately resulting in decreased production for the hatchery. A future hatchery feasibility assessment and design needs to be conducted to address these issues.

Climate Change Impacts

The hatchery rears fish important to the tribal community, and these fish have the potential to be significantly impacted by climate change. Ogaa are the primary inland species the hatchery works with. Shallow, inland lakes may be significantly impacted by changes in precipitation levels and warming temperatures. Changes in the timing of ice-out dates may impact inland fish species such as ogaa. Ice coverage timing could result in major impacts to ogaa gamete collection for the hatchery. Ice coverage, along with changes in precipitation levels and timing, have the potential to impact spawning areas.

The hatchery also rears fish for stocking in Lake Superior. In general, fish species in Lake Superior will fare better than fish inland. The size of Lake Superior will help buffer climate change impacts, although some have already been noted, and others are predicted to occur.

²³ Condition Factor is the ratio of fish weight to the length cubed (Fish Hatchery Management p 61).

Impacts that Lake Superior fish may experience include changes in ice coverage, warming of shallow water areas, fluctuations in lake levels, impacts to spawning areas from increased rainfall, phenological mismatches, and expanded ranges of invasive species. Another factor that may impact both inland and Lake Superior fisheries is damage to harbors and marinas from extreme weather events and flooding. Fisheries will also be impacted by changes in water quality. For more information on water quality impacts, see the water quality section.

Objectives

- Assess the current state of the hatchery
 - Review of hatchery needs and goals
 - Assessment of current infrastructure and equipment
 - Seek recommendations on infrastructure improvements (design or retrofit)
- Stock fish in waters of ceded territory
 - Inland waters important to tribal community
 - Lake Superior
- Collaborate with Tribal, Federal, State, and private parties
 - All tribes with interest, WI DNR, USFWS, lake associations within the ceded territory, Northern Aquaculture Demonstration Facility (NADF), and individuals with common interest and goals
- Support fisheries staff in assessing fish stocks and needs of the different fisheries
 - Nearshore assessments help determine stocking densities or work on genetic lineages
 - Other assessments as needed
- Stay current with hatchery rearing strategies
 - Fish spawning cycles and techniques, feeding schedules, tank densities, recirculating aquaculture systems, aquaponics, ponds vs tanks, etc.
- Stay current with advancements in technology and equipment
 - Monitoring equipment, tank design, transportation tools, stocking tools, feeding assistance mechanisms, filtration mechanisms, etc.
- Attend workshops and conferences
 - Continue to gain knowledge with what is working for others
- Pursue funding opportunities for the enrichment of the hatchery and fisheries of tribal importance

- Possible species include: Brook Trout, Walleye, Lake Trout, Lake Sturgeon, Lake Herring, or other fish species of importance/concern to the tribe.
- Provide educational opportunities for community and tribal youth
 - Summer Internship
 - ECC Kids Fishing Day
 - Hatchery visits and tours
 - Collaborations with Bayfield School District

Opportunities and Funding Outlook

- The hatchery's physical assets are depreciating, and electrical, water delivery, and monitoring system issues continue to plague production and fish health. We plan to begin a feasibility study in 2020 to construct a new tribal hatchery in conjunction with BIA and USFWS.
- Continuing to work with surrounding partners is paramount in the success of the fisheries. The Red Cliff Tribal Fish Hatchery is committed to working with other Tribal, Federal, State, and private parties to aid in the stocking of Lake Superior and the inland waters of the ceded territory.
- With the rise of aquaponics and indoor aquaculture for food consumption, the hatchery could also potentially provide the resources for the indoor rearing of fish for food consumption.
- Over the past years, the hatchery worked with other Tribal, State, Federal, and private entities with a common goal of protecting and enhancing the fisheries in the area. The Red Cliff Tribal Hatchery looks forward to continuing to work with these various groups in any capacity to meet these common goals.
- With the concern of a changing climate, the hatchery is open to looking at different species of interest to the tribal community.



Air Quality

Vision Statement

Continue the air quality program to include indoor air and ambient/outdoor air monitoring from local, regional, and national sources and provide education to Tribal Members and the Tribal Community which allows for the Members of Miskwaabekong (Red Cliff) Tribe and surrounding community to breathe freely, and to protect the air quality of the Red Cliff Reservation.



View of Lake Superior skyline from the shore of Frog Bay Tribal National Park.

Discussion

Currently, the Red Cliff Tribe has acquired funding utilizing the EPA's 103 grant source and has since implemented the Air Quality Program, which has been in operation since 2010 and is housed under the Division's Environmental Department.

Indoor Air Quality

The Red Cliff Tribe has established an Air Quality Program to monitor effects on human health from both agwajjiing (outdoor) and biindig (indoor) air quality. The biindig air quality portion of the program focuses on the completion of basic residential and commercial/office assessments to determine the need for insulation, ventilation and moisture control measures. Problem areas are identified, and the source(s) documented. Homeowner and office management education is carried out to increase community knowledge on basic measures that can be implemented to control their biindig environment (moisture control, additional ventilation, pipe insulation, etc.). When feasible, the information can be used to remediate source problems. Proper management of moisture, air flow, and insulation results in a benefit to both health and heating and cooling costs. The Red Cliff Community Health Center has many patients that are suffering from respiratory problems that are exacerbated by poor biindig air quality. It has been determined through biindig air assessments that many of the smaller tribal buildings, including

housing units, do not have adequate ventilation or air exchange systems (an air exchange system would bring fresh air into the building while venting the stale air). Lack of proper ventilation therefore compounds the problems of a poor air health environment.

Outdoor Air Quality

The *agwajjiing* (outdoor) air quality field has been an area of interest in regard to human health. One (of many) way that this can occur is from dust/dirt/particulate matter (*wiyagasenh*) and *ondaabate* (smoke). These are tiny particles of materials like fine road dust or wood smoke that are inhaled but cannot be exhaled from the body. Exposure to *wiyagasenh* (particulate matter/dirt) can exacerbate the occurrence and severity of sinus infections, respiratory disease, allergies, and asthma. The 2015 Tribal Emissions Inventory identified wood-burning and dirt roads as the largest sources of *wiyagasenh* matter in Red Cliff.²⁴ The Red Cliff Tribe recognizes that the incidence of respiratory sensitivity, asthma and allergies is increasing, especially among *abinoojiinh* (children). The Air Quality Program has acquired funding through the EPA's 103 grant source to begin a study in monitoring for *wiyagasenh* in 2018. The *agwajjiing* air study will consist of tracking *wiyagasenh* 2.5 Microns in diameter and smaller (PM2.5) as it travels around and through Red Cliffs exterior boundaries, using the Met One E-Sampler Light Scatter Aerosol Monitor.²⁵



E-Sampler - Red Cliff Community Health Center

This equipment, coupled with accompanying Wind Speed/Wind Direction sensor will allow Red Cliff to not only track *wiyagasenh* levels, but also the direction it is coming from, which will aid in determining potential sources as they move through the reservation. This ongoing study will provide necessary data and information in the pursuit of attaining Treatment in a similar manner as A State (TAS) for Air Quality to include moving forward in attaining a Class I status.

²⁴ An emission inventory is an accounting of the amount of pollutants discharged into the atmosphere. An emission inventory usually contains the total emissions for one or more specific greenhouse gases or air pollutants, originating from all source categories in a certain geographical area and within a specified time span, usually a specific year.

²⁵ Particulate matter is the sum of all solid and liquid particles suspended in air many of which are hazardous. This complex mixture includes both organic and inorganic particles, such as dust, pollen, soot, smoke, and liquid droplets. Met One's E-Sampler is a light-scattering aerosol monitor that combines real-time measurement of light scatter with the accuracy standard of filter methods. The E-Sampler is commonly used for *outdoor* air monitoring, indoor air quality monitoring, surveying, source monitoring, fence-line and remediation site perimeter monitoring.

The *agwajiing* air quality within the exterior boundaries of Red Cliff can be affected by two main platforms: 1) from sources within or near the Reservation boundaries such as

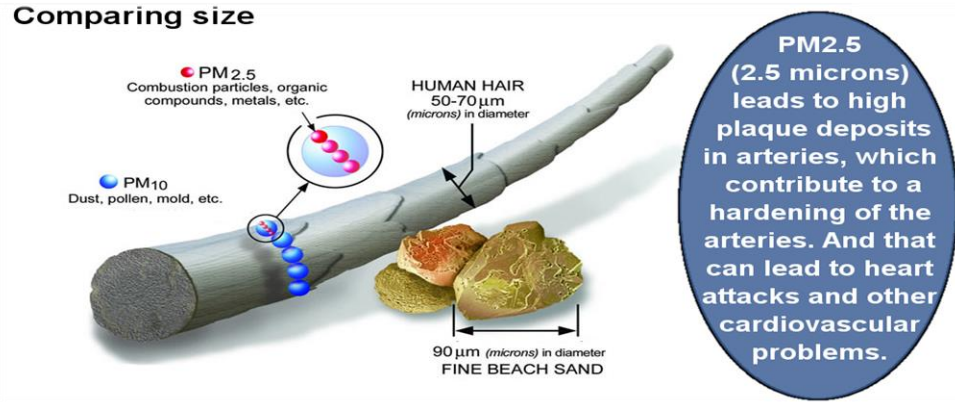


Figure 7.1 - Particulate Matter Size Comparison Diagram

emissions from bio-fuel/coal fired power plants, small industry, automobiles and other vehicles, landfills, wood-burning stoves, dirt roads, the burning of trash, and 2) from sources hundreds and/or thousands of miles away from wildland forest fires and/or controlled burns. As a note, the burning of waste and recyclables, i.e. burn barrels, which created offensive odors and air toxins has been banned tribal wide as of 2006, Red Cliff Code of Laws Chapter 12.8.1. The lack



Brush pile smoke (left), burn barrel smoke (2nd left), vehicle exhaust (2nd right), wildfire smoke (right).

of heavy industry within reservation boundaries means Red Cliff enjoys near pristine air quality. It remains the goal of the Red Cliff Tribe to protect and maintain all aspects of the mother earth/environment (*omaamaayan aki*) while promoting responsible future development.

Air Toxins

Air quality is also affected by the presence of air toxins. Air toxins are generated within the Reservation from air deposition (the process by which aerosol particles collect or deposit themselves on solid surfaces). Air toxins can accumulate in humans and *aweshiinh* (animals) and cause many health effects. Some toxins, such as Mercury (Hg), also accumulate and become more concentrated as it passes up the food chain due to methylation. Higher levels of Sulfur Dioxide (SO₂) can aid in the methylation of Mercury, creating Methylmercury. When humans, predatory *giigoonh* (fish), *zhaanqweshi* (mink), *nigig* (otter), *migizi* (eagles), *miskwaadesi* (painted turtles), etc., eat contaminated *giigoonh* species, the toxin is cumulative as it cannot leave the body. Since the implementation of the 1970 Clean Air Act requiring states to develop State Implementation Plans by 1977, the Great Lakes Indian Fish and Wildlife

Commission (GLIFWC) has performed several Polychlorinated Biphenyls (PCB's) studies in surrounding area fish habitats, providing maps that show which lakes were tested and recommended fish consumption charts.²⁶ More information can be found on the GLIFWC website glifwc.org/Environmental/

Air Quality Classifications

Air quality is classified following the National *Agwajiing* Air Quality Standards (NAAQS) that are determined by the U.S. Environmental Protection Agency. Air quality regions are currently described by class designations. These regions can then be re-designated to a higher class of protection if it meets certain standards. Air quality that meets these standards can then be further designated depending on how much the air quality would be allowed to be degraded. Class I allows a moderate amount of degradation and Class III allows the most degradation. Currently, Red Cliff's air is designated as Class II. Tribes have the right to re-designate their air quality designation from Class II to Class I for further protection of the quality of air. Having Class I air quality and designation would allow the Tribe to have a say on future developments near the Reservation which may degrade the quality of the air. Certain variances and exemptions can be made for reasons of land stewardship (such as prescribed burning for vegetation management) by the Tribal Council. The current monitoring strategies will aid in furthering the goal of attaining the Clean Air Act's "Treatment in the same manner As a State" (TAS), to include the potential of achieving Class I status.²⁷

Objectives

- Obtain available air monitoring data for the region in cooperation with other Tribes and agencies
- Continued compilations of pollutants created within Tribal exterior boundaries (i.e. Emissions Inventories)

²⁶ Any of a group of compounds in which chlorine atoms replace the hydrogen atoms in biphenyl: used in industry in electrical insulators and in the manufacture of plastics; a toxic pollutant that can become concentrated in animal tissue. Abbreviation: PCB

²⁷ This model of allocated responsibility for air quality management did not authorize Indian tribes to participate as governments in implementing, maintaining, or enforcing national air quality standards or other national air quality management programs. The 1990 amendments to the federal [Clean Air Act](#), however, have changed that by authorizing the Administrator of the United States [Environmental Protection Agency](#) (EPA) to "treat Indian tribes as States" under the Act. The [1990 amendments](#) established the minimum eligibility requirements for tribes to be treated as states for purposes of the Act and directed the EPA to "promulgate regulations ... specifying those provisions of [the Act] for which it is appropriate to treat Indian tribes as States." In response to that statutory directive, the EPA, on February 12, 1998, published its final rule ([TAS Rule](#)) setting forth "the CAA provisions for which it is appropriate to treat Indian tribes in the same manner as States," establishing "the requirements that Indian tribes must meet if they choose to seek such treatment," and providing "for awards of federal financial assistance to tribes to address air quality problems."

- Establish a monitoring system for mercury
- Investigate feasibility of Air Quality Codes in the Red Cliff Code of Laws
- Continue pursuit to seek the attainment of Class I Air Designation
- Continue pursuit of Treatment in similar manner As a State (TAS)
- Examine and implement methods of improving air quality through controlling and reducing local sources of pollution
- Participate in national and international efforts to reduce air emissions and air deposition
- Educate the community on biindig (indoor) and agwajing (outdoor) air quality, air toxics, and ways to reduce negative effects on air quality
- Advocate for the implementing of alternative energy for cleaner air (i.e. wind and solar)
- Assess extent of issues in housing and other buildings utilizing biindig air quality assessments/reports

Opportunities and Funding

- Codes and ordinances for the protection of air quality need to be defined in the Red Cliff Code of Laws, Chapter 12
- Increased asthma, allergies, and respiratory illness cases in the community
- Items of pollution created within Tribal exterior boundaries
- Road dust to be controlled without using hazardous materials
- Work with local Tribes, State, and Federal agencies to further protect air quality
- Educate the community on air quality and health effects
- Non-point sources of air pollution (fires started with oil, gas, kerosene, tires, etc.)
- Education of biindig air quality issues (building ventilation, mold/moisture problems, secondhand smoke, etc.)

Table 7.1 - Definitions	
PM (wiiyagaseh)	Material suspended in the air in the form of minute solid particles or liquid droplets, especially when considered as an atmospheric pollutant.
PM2.5	The term fine particles, or wiiyagaseh 2.5 (PM 2.5), refers to tiny particles or droplets in the air that are two- and one-half microns or less in width. "As found in smoke and fine dust".
Emissions	A substance discharged into the air, "as by an internal combustion engine, smoke, dirt roads".
Air Toxins	Air toxins are a diverse range of air pollutants that are usually present in <i>agwajing</i> air in relatively low concentrations but have characteristics such as toxicity or persistence that make them a hazard to human, plant or animal health.
Methylation	the process of replacing a hydrogen atom with a <u>methyl group</u> . "Sulfur Dioxide (SO ₂) aids in the breakdown of Mercury (Hg) creating Methylmercury".
Methylmercury	any of various toxic compounds of mercury containing the complex CH ₃ Hg — that often occur as pollutants which accumulate in living organisms (such as fish) especially in higher levels of a food chain.



Waste Management & Pollution Prevention

Vision Statement

To successfully manage all waste materials in the most efficient way possible so as not to negatively effect the environment, while developing waste management systems that will allow for expansion of current waste disposal efforts for the future generations' health and well being and for the protection of the environment. - Adapted from IRMP Waste Mangement Vision Statement and Goals (pg. 75)



Compactor at Red Cliff Transfer Station

Discussion

The Tribe maintains a Transfer and Recycling Station (Station) and offers a variety of waste disposal services. The Station is located on Blueberry Road on 10 acres designated for this purpose by Tribal Council resolution on August 5, 1996. In 2019, the Station was open two days at 20 hours per week. Additional days and hours of operation are under review to best fit the community's usage with the Station's operating budget. On-site equipment includes: a 42-yard compactor with a leachate pad and holding tank, which were added in 2005; 30-yard roll off container(s); hand tools; dump trailer; log splitter; acetylene cutting torch; snowblower; sheds; and a fork lift. The Station has undergone substantial improvements since its inception in 1997. However, continuing improvement of the operation and services offered are important to the protection of the health and welfare of the community and the natural environment on which the community depends.

The service area includes tribal family homes, Tribal Administration offices, and other Tribal programs within the Reservation as well as the Town of Russell residents within the Reservation. There are approximately 600 households in the Tribal community. Of the community households, 117 units, both single/multi-family units and elderly housing, are managed by the Red Cliff Housing Authority. The remaining units are individually owned homes or non-Red Cliff Housing Authority rentals. According to the 2014 Red Cliff Integrated Solid Waste Management Plan (ISWMP), “A 35% increase in population is projected by the year 2020. The expected population increase would require approximately 124 more housing units. In 2009, more single family housing units were added to the Bradum development, this raised the number of units in this area from 24 to 150 (page 2)”. Maintaining and expanding waste management services for an increasing population is paramount for protection of natural resources and the environment.

Solid Waste

Generators of solid waste reservation wide include residential, commercial, and government. Residents and entities bring their waste to the Station. The Red Cliff Tribal Housing Authority provides curbside collection services to tenants, under their purview, and disposal of collected waste occurs at the Station. Facility Maintenance staff collects waste from the tribal offices and drops the office waste off at the Station. Removal of waste from the compactor bin and the open top roll-off bins are contracted out and removed off site to certified landfills.

An annual, week-long, Spring Cleanup event is held with the assistance of all tribal employees and funded by the Red Cliff Environmental Department and Red Cliff Tribal Housing Authority. Residents who would like to dispose of household bulk items at this time must call in advance to get on the pick-up list. Roadside waste is collected along roadways by tribal departments and community volunteers during this week as well.

The TNRD’s 2019 community planning survey asked 104 respondents, to which 57 responded to being asked “In order to maintain the current Transfer Station services, equipment repairs, how much more are you willing to pay for red bag tags?” The 40% of respondents (23 out of 57) answered they would be willing to pay \$1.00 more per tag, while 29% of respondents (17 out of 57)

indicated they were not willing to pay any additional amounts. An increased annual operations budget means funds to build on-site capacity for disposal services, facilities expansion, and equipment.



TNR staff in field during Spring Cleanup

Recycling

Generators of recyclable materials reservation wide include residential, commercial, and government. In 2003, the Red Cliff Tribal Council adopted Red Cliff Code of Law Chapter 38 – Recycling, which defines recycle materials and declares the process of recycling. No fees are collected for the use of the recycling bins as to promote recycling practices. Currently, users bring recyclables (co-mingled bi-metal, glass, plastics and cardboard and paper) to the Station; recycling operations are single-streamed. The community has potential to recycle more of its solid waste; not all offices or households are recycling to their full extent. 2017 recycling efforts showcased the highest tonnage for every category for recyclable materials (see Graph 1). In 2012, a waste stream assessment was conducted at the Station by the Environmental Department in conjunction with Indian Health Service and EPA. According to the ISWMP, “the total waste amount collected for [the assessment] was 4,590.80 pounds, with 3,668 pounds of that being recyclables, 355.2 being compostable, and 567.6 pounds being land-fill waste (page 7)”. Source reduction, how to clean recyclables, and recycling education efforts will continue to be undertaken to increase the percentage of recyclable materials that are recycled within the community to reduce the amount of solid waste being disposed of in a landfill.

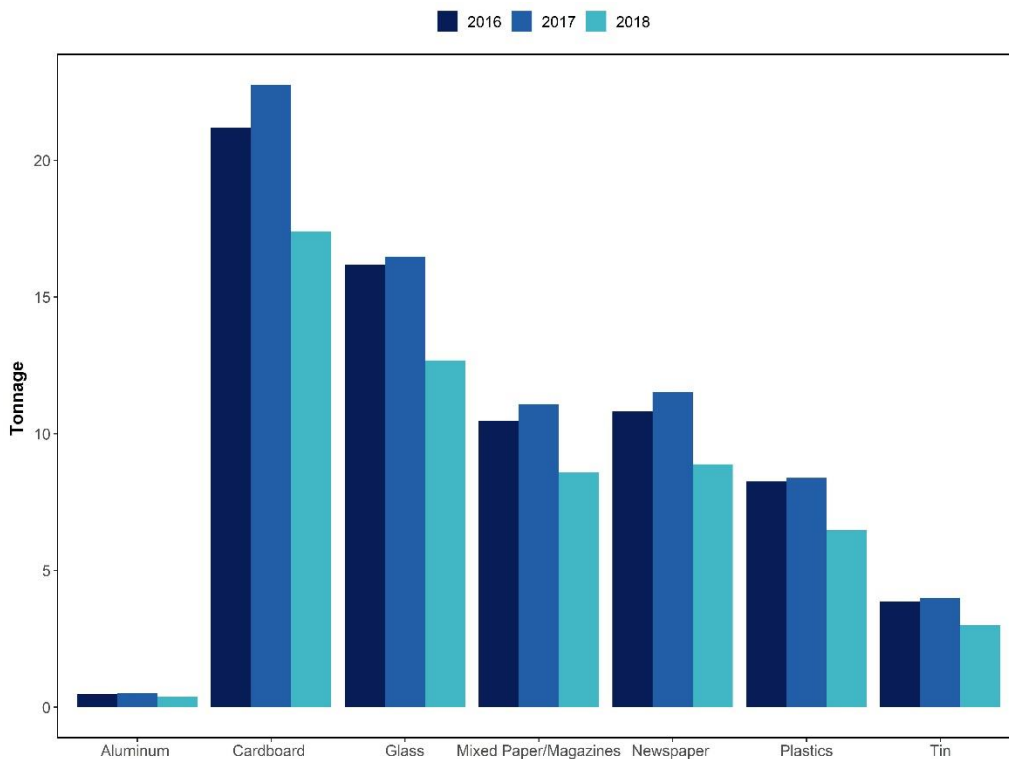


Figure 8.1 - Recycling materials by total tonnage for years 2016 through 2018.

Being in a rural area, waste management and tapping into recycling markets can be difficult. In 2016, a baler was installed at the Station and remains operational. At this time, aluminum cans are separated from the bulk recyclable materials and are baled for market.

The Station also provides electronic waste and tire recycling services. There are disposal fees associated with different tiers. At minimum, on an annual basis, e-waste and tires are moved off site to be disposed of. Non-treated wood debris and yard waste is currently burned on-site at the Station.

Hazardous Materials

To reduce open dumping, special waste services and collections are being created and provided to the community. On August 5th, 2013 and September 24th, 2019, the Environmental Department hosted hazardous waste sweeps. Bayfield County holds annual hazardous waste sweeps as well. Educational outreach and materials to spread awareness about labeling, handling, and storage are distributed community-wide as well as being available at the Environmental Department office.

Abandoned vehicles and homes can contain hazardous materials such as mercury, cleaning solvents, pesticides, oil, and leaking appliances. In 2019, Red Cliff Code of Law Chapter 12 – Environmental Pollution was revised. The purpose of Chapter 12 is to regulate pollution associated with opening dumping, abandoned structures and vehicles, materials storage, and permits that ensure adequate and safe handling and storage of any hazardous materials and chemicals.

Waste Water

GLRI Septic Tank Repair and Replacement Project:

Improperly installed or maintained septic systems may contribute pathogens and nutrients to the surrounding environment and nearby Lake Superior. Local septic inventories showed that a large number of rural Northern Wisconsin septic systems are not up to current standards and/or have failed due to age and lack of major repairs. The 2009 Septic System Inventory documented



Latrine installed at Raspberry Bay Tribal Campground.

conditions of septic systems within the Reservation. The results showed 30.8% needing replacement, 23.1% needing major repair, and 38.5% needing minor work. The remaining 7.7% represent 2 holding tanks, one that can be replaced with a mound, and the second could be connected to municipal sewer. In 2012, this project replaced and provided major maintenance and upgrades to 18 septic systems on the Red Cliff Reservation as well as installing a latrine at

the Raspberry Bay Tribal Campground. Success of project was based on increasing water quality trends in the downstream water monitoring sites.

EPA Wellhead Inventory Project: In 2017, windshield surveys were conducted throughout areas within reservation boundaries to determine possible locations that would meet the EPA’s Class V Injection Well criteria, and to include known system owners. Contact with system owners was accomplished via phone listings. Meetings were scheduled to survey logistics and operations status for each of the locations recorded during the windshield survey and to update outdated and/or incorrect information. Physical site visits were performed after property access approvals were given. Twelve sites were identified and updated in the EPA database (Figure 8.2). Compliance assistance was conducted by EPA staff, when needed.

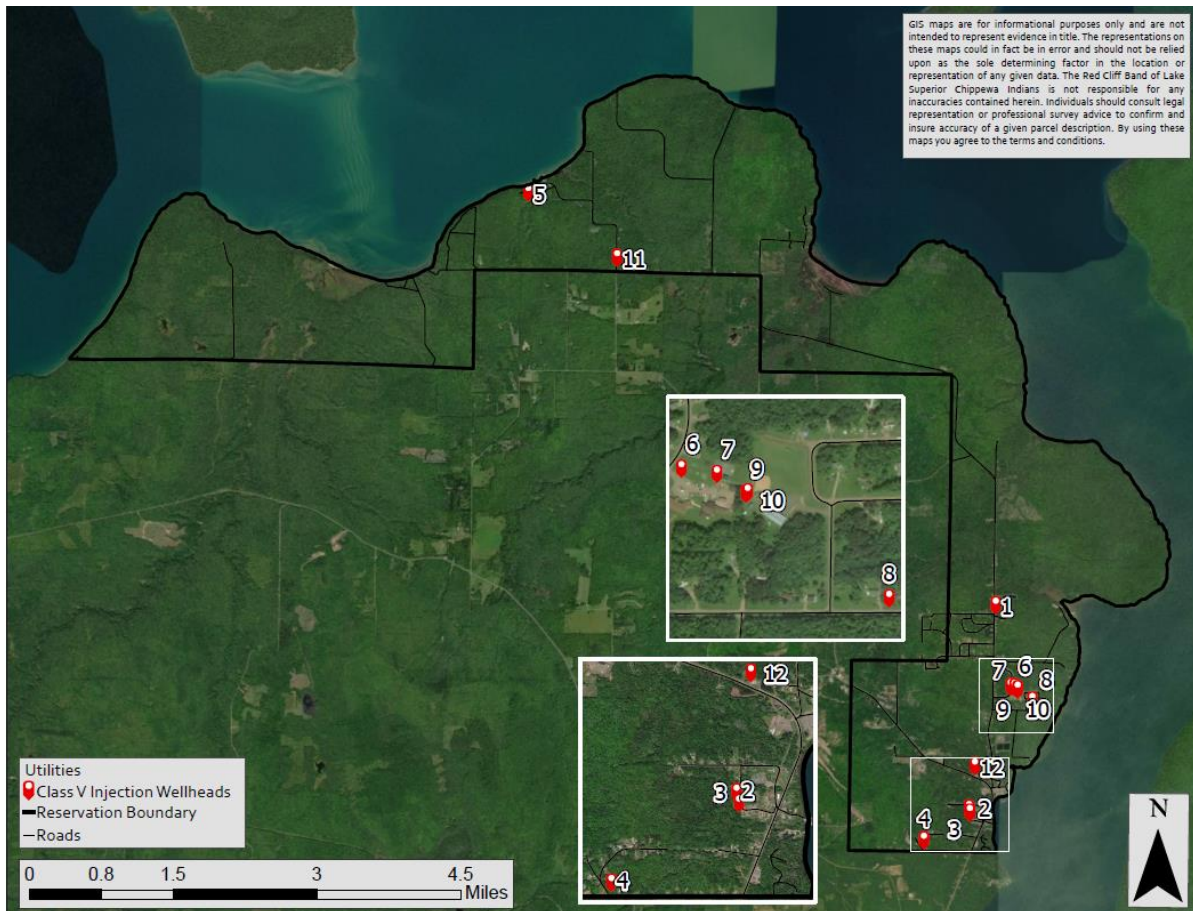


Figure 8.2 - Locations for Red Cliff's 2017 Class V Injection Well Sites.

Open Dumping

Until 1997, when the Red Cliff Transfer Station was officially opened, common practice included burying waste in designated dump areas, open burning of waste and storing waste in otherwise unused portions of residences. The Environmental Department has conducted numerous investigations and small-scale clean ups. Most recently, in 2017, the Environmental Department

in conjunction with EPA and IHS, conducted waste characterization of 9 documented dump sites. In 2019, a final report was published regarding the results of soil and ground water surveys. Efforts to identify, characterize, tribal adoption of standards of cleanup standards, and find funds for cleanup are on-going.

Waste Impacts on Climate Change

EPA estimates that increasing our national recycling rate from its current level of 27 percent to 35 percent would reduce gas emissions by 11.4 million metric tons of carbon equivalent (MTCE, the basic unit of measure for gases) over landfilling the same material. Waste prevention also makes an important difference, by cutting the amount of waste generated by just 5 percent, gas emissions are estimated to be reduced by another 10.2 million MTCE. The following are current efforts to reduce impacts on climate change through better management of waste:

- **Waste Reduction:** Under Pay-As-You-Throw Initiative, residents are charged based on the amount of trash they discard. This creates an incentive for them to generate less trash and recycle more.
- **Reduced Use of Incinerators:** By providing cost-free recycling, materials are diverted from incinerators, reducing emissions to the atmosphere. Recycling of paper products can leave more trees standing in the forest, which lets forest stands continue to absorb carbon dioxide from the atmosphere - a process called carbon sequestration.
- **Reduce Methane Emissions from Landfills:** Composting diverts organic wastes from landfills, which reduces the methane released when materials decompose.

Climate Change Impacts on Waste

With climate change predications for more intense weather events, flooding can produce household waste to increase as well as become hazardous. The following are current and future waste management efforts to mitigate impacts of climate change:

- **Proactive preparation through dedications a disaster debris section in the Integrated Solid Waste Management Plan** addressing staging areas, procedures for disposal of flood damaged materials, and developing a list of local and federal disaster assistance.
- **Apply for FEMA funds to develop a pre-hazard mitigation plan.**
- **Development of debris staging areas that complies with tribal and federal set back requirements of water ways and floodplains.**

Management Objectives

- Transfer Station Expansion
 - Services: waste oil (motor and cooking) disposal, and yard waste composting.
 - Facilities: driveway expansion, Reuse Center, and designated stalls for hazardous materials, and disaster debris staging area.
 - Equipment: riding lawn mower, ATV with plow/trailer/snow blowing attachments, metal saw, and decanting equipment for Freon items.
- Implementation of Red Cliff Code of Laws and Permits
 - Implement the following codes and permits and work with agencies as needed for enforcement:
 - *Chapter 12 – Environmental Pollution*
 - Environmental Change Permit
 - Environmental Activities Permit
 - *Chapter 38 – Recycling*
- Identification, Characterization, and Cleanup of Existing Dump Sites
 - Conduct joint annual lease inspections with the Red Cliff Land Office for early detection of solid waste problems.
 - Engage federal agencies like, EPA and IHS on waste characterization.
 - Secure funding for cleanup.
 - Implement tribal codes addressing open dumping.
- Partnership Development with Surrounding Waste Facilities
 - Establishing partnerships between Town of Russell Transfer Station, Bad River Transfer Station, and Red Cliff Legendary Waters and Casino.
 - Create methods for cost savings and revenue opportunities.
- Partnership Development with Surrounding Environmental Response Agencies
 - Continue partnership with US Coast Guard and EPA.
 - Maintain spill response equipment.



Example of garbage tags accepted at the Transfer Station.

- Continue compliance assistance with tribal underground storage tanks and above ground storage tanks.
- Attend and participate in area meetings regarding environmental response.
- Continued Education of Solid, Hazardous, and Recyclable Materials
 - Presence at various community fairs, TNR Open house, and other community events.
 - Continue education through online materials, brochures, newsletter articles.

Opportunities and Funding Outlook

The waste management services provided to the Red Cliff community are funded by state and federal grants as well as the revenue that is made from the Station’s operations. Current operations are funded sustainably to maintain current services, but will need to be reevaluated with an increasing population (see Table 8.1).

Table 8.1 - Description of funding opportunities		
Funding Category	Examples	Considerations
Federal Funding	EPA Indian General Assistance Program	There is a future risk that EPA will make solid waste activities ineligible under the GAP grant, but currently the Station operations are supplemented with GAP funds.
	Indian Health Service	Indian Health Service provides technical assistance, engineering services, and clean up funding opportunities.
	EPA Brownfields Program	Clean up grants provides financial assistance to states and tribes, which increases their capacity to meet the redevelopment challenges. Critical funding also helps to ensure that properties are cleaned up safely, according to tribal standards to protect human health and the environment.
	FEMA	Pre-Hazard mitigation funds will aid in the development of a plan to identify hazardous and plans to prepare for hazards.
State Funding	Wisconsin Department of Natural Resources Recycling Grant	Transfer Station operations will need to comply with state recycling statues.
Transfer Station Revenue	Metal Scraping, Garbage Tags, and Recycling markets	Pricing of market recyclables fluctuates and spacing may become an issue.



Conservation Wardens

Vision Statement

To protect and enhance the fish, wildlife and wild land resources of the Tribe for continued use for the next seven generations through enforcement, education and prevention.



Red Cliff and WI DNR wardens on the enforcement boat next to a large iceberg in Lake Superior in June 2014. The 2013 - 2014 winter was especially harsh, and it started the shift of record low water levels on Lake Superior to the record highs we see today.

The Conservation Department strives to accomplish its mission by maintaining qualified and professional staffing, monitoring resources through coordination and cooperation with Federal, State, Local and Tribal agencies, and educating users in the wise and ethical use of those resources.

The Department promotes public safety through enforcement of ATV and animal control regulations, education in off-road vehicle and firearms safety and assisting Federal, State, local and tribal law enforcement when needed to assist with a variety of public safety related enforcement issues.

Discussion

The Red Cliff Conservation Department employs five staff which includes three full time Conservation Officers (COs) and two seasonal Harvest Permit/Game Registration Clerks. The

Red Cliff Tribal Conservation Department provides a variety of services to the community and its members. A summary of services offered include:

- Issuance of permits for all on and off reservation treaty-based harvest activities.
- Provide regulatory information and educational resources to the public on treaty-based harvest activities.
- Monitor tribally licensed commercial fishing and fish marketing activities through enforcement of Tribal Commercial Fishing regulations on Lake Superior in Wisconsin and Michigan waters.
- Protect Red Cliff's natural resources through enforcement of the Tribes regulations related to the harvesting of wild game, plants and forest products. Record accurate harvest data and ensure compliance with established harvest quotas.
- Protect public safety by addressing concerns related to animal control issues, nuisance wildlife and enforcement of off-road vehicle regulations.
- Protect the environment by working closely with Red Cliff Environmental Department staff to investigate violations of regulations related to pollution and environmental protection and citing infractions into tribal court.

Objective 1: Commitment to qualified personnel

Conservation Officer (COs) are required to have law enforcement training by either attending a BIA law enforcement course or equivalent training before hire or attend and pass the required training within the first year of employment. Two of the three Conservation Department's COs are cross-deputized by the Red Cliff Police Department and are fully credentialed, state certified law enforcement officers with full arrest authority. On an annual basis COs attend all continuing education and training required by the State of Wisconsin's training and standards board to maintain state certification. Meeting and maintaining these certification requirements are also required by tribal policy. CO's training and conduct requirements are specified in the BIA 638 contract in the section on law enforcement. As Red Cliff tribal employees, the CO's professional conduct is also covered by the Red Cliff Human Resource Department's employee policies. As certified officer's credentialed through the Red Cliff Police Department, CO's conduct is also covered by the Red Cliff Police Department's Policies and Procedures handbook when conducting law enforcement operations under department authority. As per tribal policy any future COs must meet the education and training requirements for state certification to be eligible for consideration of employment.

Objective 2: Commercial Fishery Enforcement

Treaties and legal decisions have reinforced and affirmed the Tribe's authority to enforce laws and codes to protect the Red Cliff Reservation's land and natural resources on land and water. These include:

- The 1842 Treaty with the federal government and the Chippewa tribes, specifically retaining the Chippewa's' right to hunt and fish on the ceded territory.
- In an 1852 Presidential Executive Order, the Red Cliff Band was exempt from forced removal from their ceded territories.
- An 1854 Treaty permanently established homelands and the rights to treaty harvest on Lake Superior.



The 1836, 1837, 1842, 1854 Ceded Territories boundary map.

In addition, the Tribe was part of the Gurnoe decision (State V. Gurnoe 1972) pertaining to commercial and subsistence fishing on Lake Superior. This agreement between the State of Wisconsin, the Bad River Band of Lake Superior Chippewa and the Red Cliff Band recognized Red Cliff's responsibility for co-managing fish resources on Lake Superior. As part of this agreement, the Red Cliff Band employs conservation law

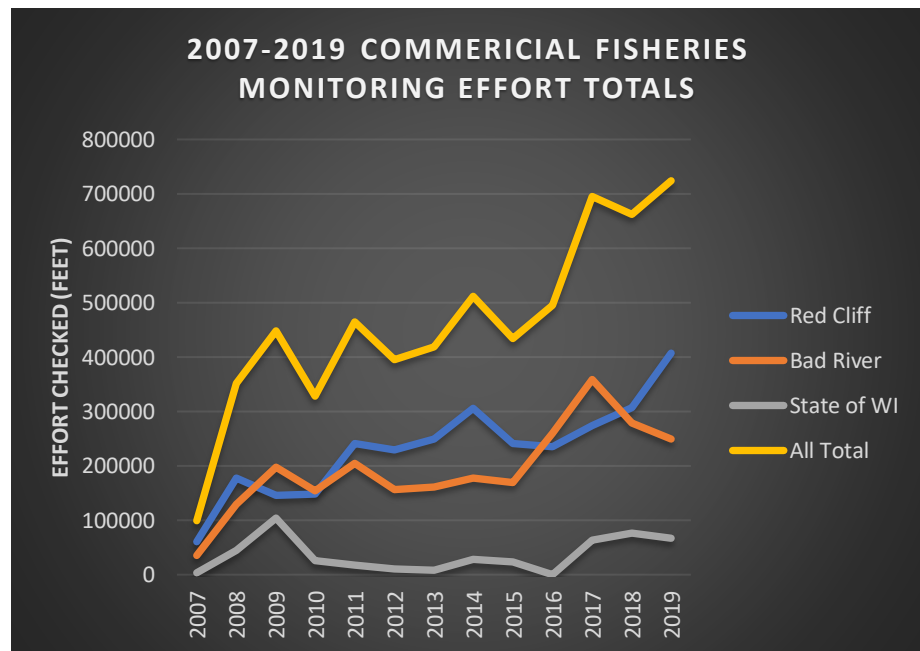


Figure 9.3 - Graph showing amount of commercial fishing gill nets (in feet) monitored by COs 2007-2019.

enforcement officers who are essential in monitoring commercial fish harvest activities, enforcing regulations and ensuring the safe and sustainable harvest of wild fish. Red Cliff COs have management responsibilities dictated by the Lake Superior Fishing Agreement in Wisconsin waters of Lake Superior. COs perform grid patrols on ice and open water, monitoring effort and gear. COs patrol refuge boundaries and restricted areas by boat for illegal fishing. Vehicle travel to landings to perform dockside checks is frequent. CO's authority extends into the 1842 ceded waters in Michigan management units MI-2, MI-3, MI-4 and MI5 and encompasses 7,051,090 surface acres of Lake Superior.

In 2017 and 2018 COs monitored over 600,000ft. of gill net effort while also inspecting buoys and recording information on effort tags to ensure tribal harvesters are compliant with harvest quotas.

These activities are essential in ensuring the safe harvesting of wild fish continues for years to come. COs will continue to monitor commercial harvest activities while on lake patrols and inspecting harvest during dockside inspections. COs also perform Coast Guard safety regulations outlined in Chapter 45 of the RCCL. Commercial fish tugs are certified on a bi-annual basis and inspected during random checks to ensure the safety of the tribal fleet, the fishermen and their crew.

Objective 3: Harvest Permit and Game Registration Station

On an annual basis permit clerks and Conservation Department staff issue over 2500 permits for activities related on and off reservation treaty-based harvest activities such as camping, hunting, trapping, spearfishing and gathering. Conservation department staff are also responsible for keeping accurate harvest data for the on-reservation harvests of whitetail deer, black bears, turkeys, furbearers and activities related to off-reservation spearfishing.

- Department staff will continue to provide broad opportunity to tribal harvesters to obtain permits and register game in support of treaty-based harvest activities.
- Provide accurate harvest data and work with biological staff to make informed recommendations on annual harvest quotas to the Conservation Commission or Tribal Council

Objective 4: Public Safety Considerations

COs hold many responsibilities related to public safety concerns. COs are fully credentialed, trained and equipped law enforcement officers with full arrest authority with the ability to respond and assist other law enforcement agencies with a variety of service calls related to criminal matters. COs are required by law to respond to such requests for mutual aid assistance in matters related to public safety issues; however rarely act as the primary enforcement authority and remain committed to natural resource protection as their primary

responsibility. COs are also responsible for enforcement of animal control regulations, off-road vehicle laws and regulations related to pollution and environmental protection.

- COs will continue to provide well trained, certified law enforcement officers to assist other law enforcement when needed to protect the public.
- COs will continue address public safety issues related to animal control concerns and off-road vehicle use through enforcement of the Tribe's animal control and off-road vehicle regulations, conducting investigations of possible violations and citing offenses into tribal court.
- COs will continue to work with Environmental Department staff to investigate complaints, conduct site inspections and cite violations related to environmental and public health concerns.



Environmental Justice

Vision Statement

Protect and preserve the 1837, 1842 and 1854 ceded territories to allow for the meaningful use of treaty rights by tribal members and the protection of all sacred sites and landscapes for future generations. To ensure that abandoned industrial project have been properly cleaned up and that any future projects meet the necessary environmental standards to protect all our relations.



**“Anishinabe Ogitchida (Protectors of the People) blocking railroad tracks on the Bad River Ojibwe Reservation in Wisconsin.”
Walter Bresette was the spokesperson for the railroad blockade.²⁸**

Discussion

Environmental Justice means everyone has a right to clean air, *nibi* (water), and food that are healthy and free from pollutants. This includes protecting *aki* (land), and *nibi* from activities such as: mineral and fossil fuel extraction, refining and transportation that may contaminate *aki*, *nibi* or air and in turn, our bodies. Miskwabekaang (Red Cliff Tribe) has the right to free, prior and informed consent before any entity begins surveys or operations that may impact the wellbeing of nearby beings and creatures. This includes the right to access information related to any such projects, participate in the regulatory process and have a voice equal to that of the involved company or a permitting governmental body.²⁹ Miskwabekaang holds legal power to protect ceded territory and all our relative that rely on it as a signatory of treaties including the 1837 Treaty of St. Peters and the 1842 and 1854 Treaties of LaPointe.

²⁸ For more information on the 1996 railroad blockade ask an elder or go to:

<https://web.archive.org/web/20060823065612/http://www.alphacdc.com:80/treaty/mtn-brx1.html>

²⁹ Adapted from the First National People of Color Environmental Leadership Summit’s *Principles of Environmental Justice*, October 24-27, 1991 <https://www.ejnet.org/ej/principles.html>

The Anishinaabe Gichigami (Lake Superior) region is the ancestral homelands of the Gichigami Anishinaabe (Lake Superior People). Our identity as a people and our way of life is inherently connected to the world around us and the gifts it offers. This deep connection to aki and nibi is why our great chiefs made sure to include the protection of treaty rights into treaties throughout the 18th and 19th century. Miskwabekaang and other Gichigami Anishinaabe’s long time connection to aki and nibi in this region also means our recognition of culturally important areas, sacred burial sites and sacred landscapes. Our Treaty Natural Resources Division acts as a

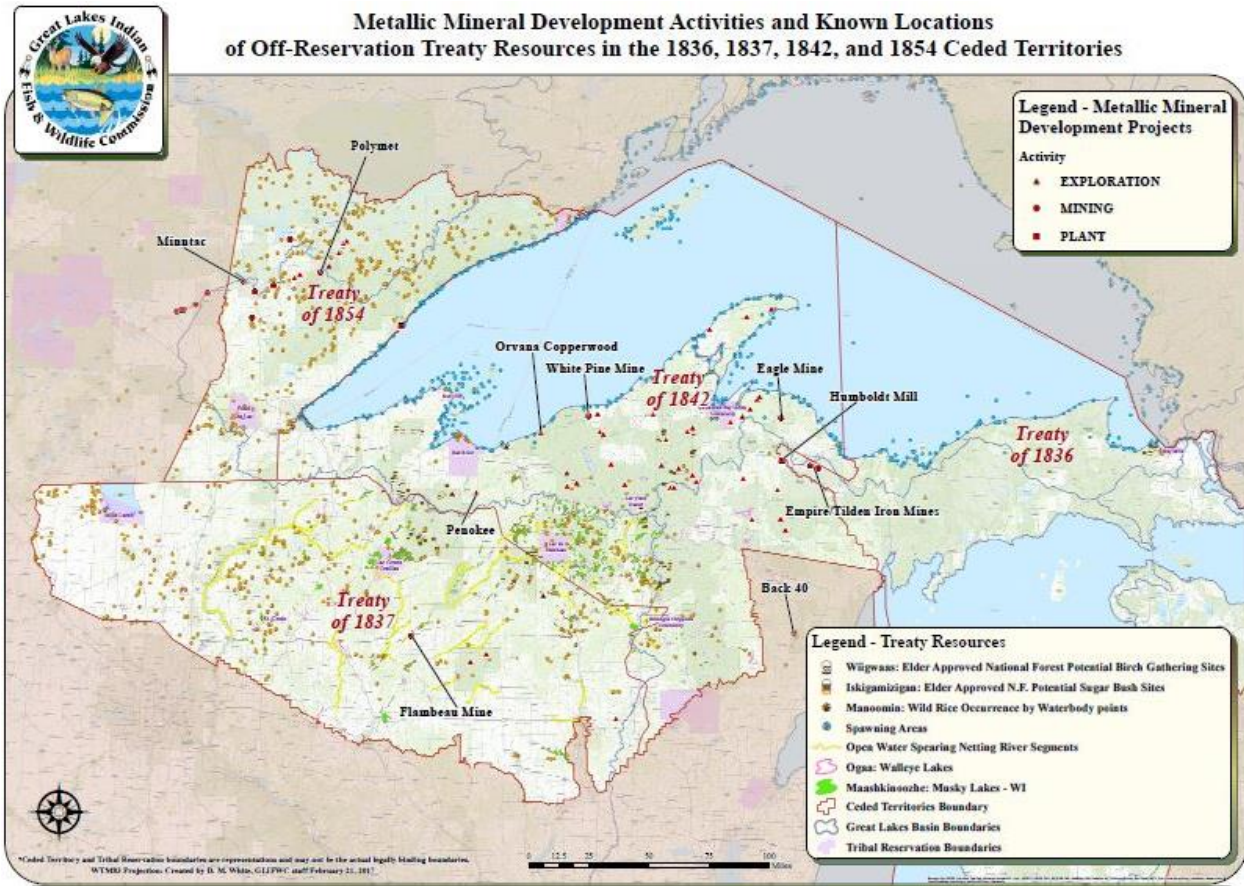


Figure 10.1 - Map made by Great Lakes Indian Fish and Wildlife Commission that shows Treaty Relatives and mining activity across ceded territory.

steward for ceded territory and within Red Cliff Reservation boundaries with the responsibility of protecting aki, nibi and all beings that rely on them for the next seven generations.

Companies are actively exploiting Anishinaabe Gichigami and its surrounding area for the vast mineral deposits as well as to transport tarsands, crude oil and natural gas through various pipeline networks. Companies’ economic interest in mineral deposits has led to exploratory mine sites, active mine sites and abandoned (or legacy) mines, which hurt nibi and those that rely on it for life (see figure 10.1). Many of these past, present and future mines, pipelines and refineries pose a grave threat to the wellbeing of aki, nibi and all other beings. Regardless of

how or when a project was designed, many of them pose an environmental threat to our wellbeing especially due to climate change. These projects generally don't take into account the change in weather patterns and especially the increased occurrence of 100-500 year storms and flooding the region has experienced since 2012.

As part of the youth listening component of the community survey process, TNR heard 64 students share their thoughts on pipelines in ceded territory (Figure 10.2 and 10.3). TNR's digital survey received 88 responses for the prompt: "Red Cliff Tribal Government 's Stance on Pipelines in Ceded Territory" (Figure 10.4). The same question for mines and refineries had similar trends, but public opinion leaned more towards opposition to the projects. Figure 10.5 shows how community members feel Red Cliff Tribal Council should respond to these projects.

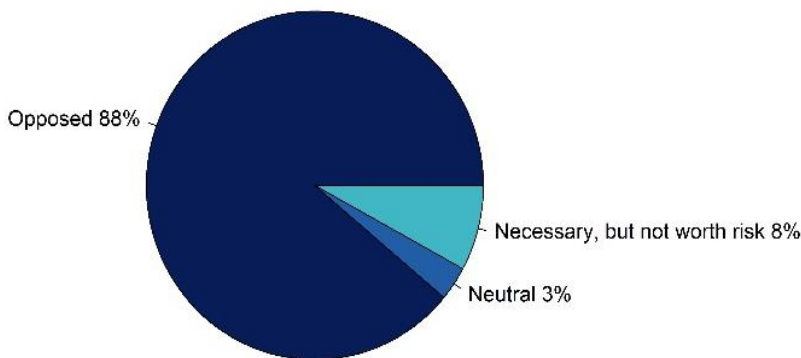


Figure 10.2 - Youth perspectives on pipelines in ceded territory.

Figure 10.3 - Youth perspectives on how Tribal Council should engage with pipeline projects. (below)

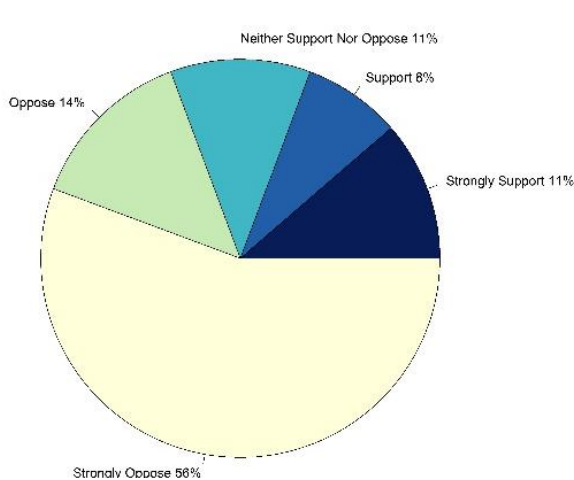
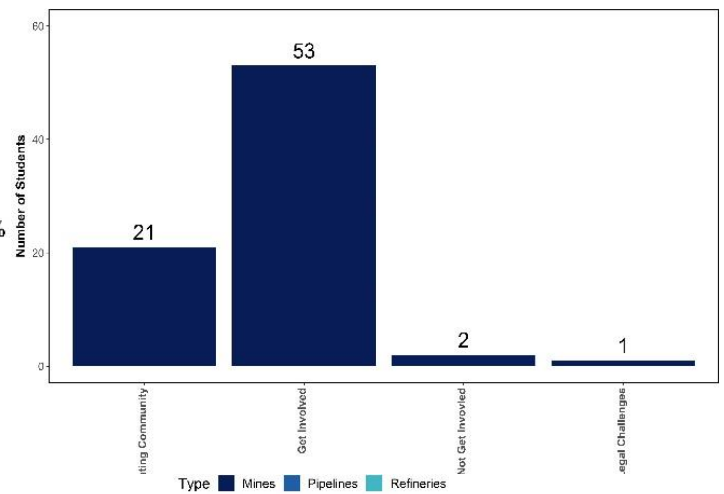


Figure 10.4 - Community perspective on what Tribal Government's stance on pipelines in ceded territory should be.

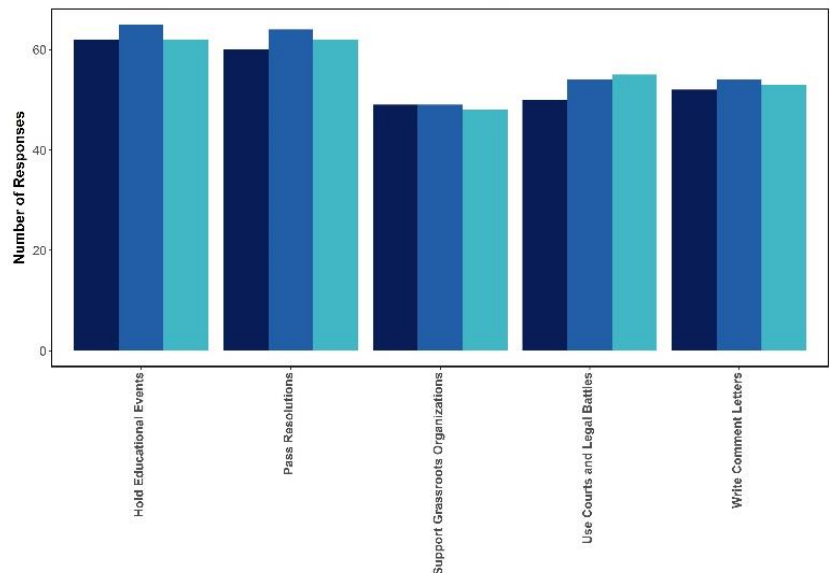


Figure 10.5 - Community perspective on how Tribal Government should respond to projects in ceded territory. (below)

The TNR Division has been actively involved in protecting ceded territory. TNR continues to protect ceded territory by preventing any environmental harm that may occur during any industrial project phase including: land surveys, pre-construction, construction, operation or post operation abandonment / “reclamation”. Environmental harm could occur due to the planned operating procedures or lack of foresight on how severe storms and other climate change related activity could impact a given project.

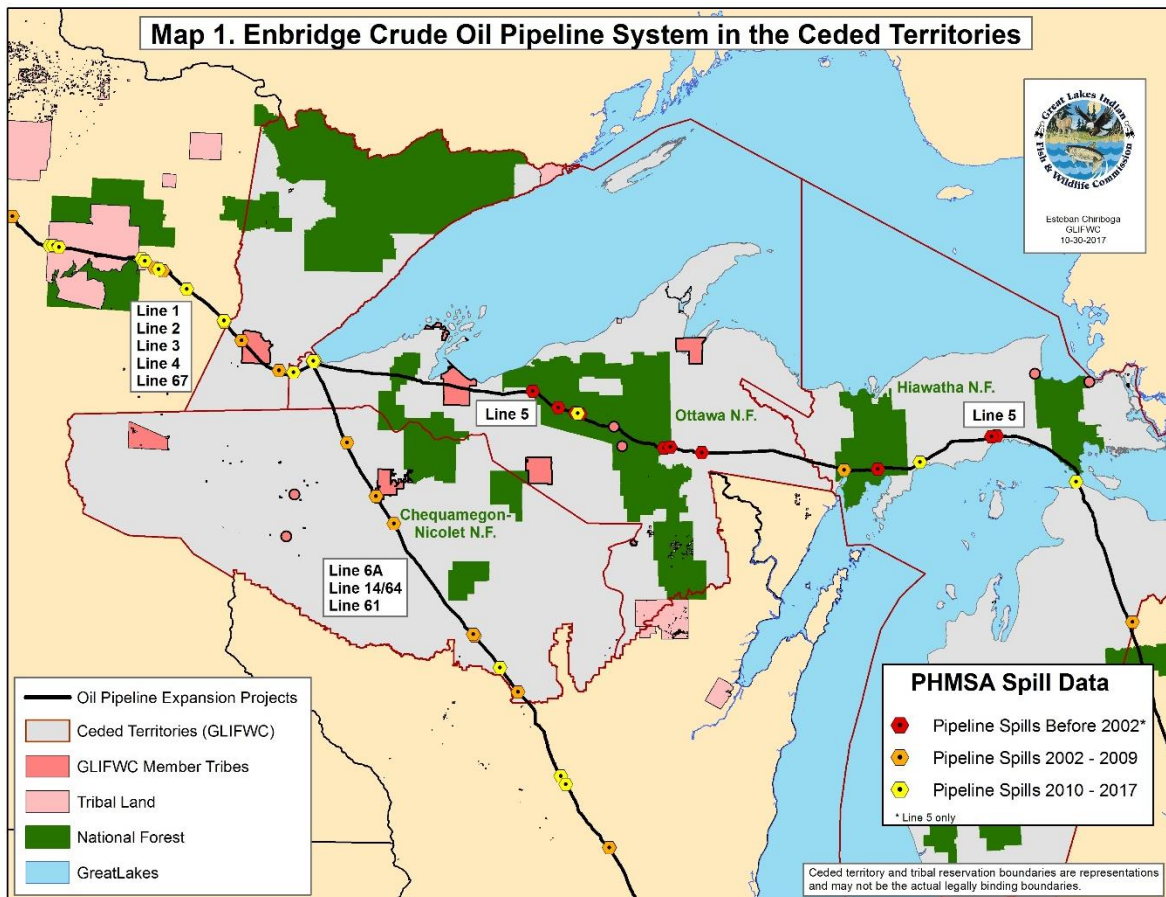


Figure 10.6 - Map made by Great Lakes Indian Fish and Wildlife Commission that shows Enbridge pipelines.

Red Cliff has several avenues for engaging with project development, corresponding permitting processes or related governmental policies. One of these avenues is reviewing documents, drafting concerns and submitting those concerns to the relevant agency such as:

- State Permits, for example a state Department of Natural Resources Water Crossing Permit for an area where a pipeline might go under a river
- Federal Permits, for example an Army Corp of Engineers permit where a mining company wants to pump water out of Lake Superior
- Environmental Review Document, for example a state or federally conducted Environmental Impact Statement.

These various documents generally have a 20-60 day public comment period based on the government agency involved, the type of permit or document up for comment, and if it is a new project or an existing project requesting modification or expansion. Red Cliff is also legally entitled to engage in formal consultation on projects that the federal government is involved in. The states of Minnesota and Wisconsin have also recognized their responsibility to consult with tribal governments through the adoption of Executive Orders. Similarly, Tribal Historic Preservation Officers may engage in consultation to ensure there is no impact on cultural ways or sacred landscapes (under Section 106 of the National Historic Preservation Act) anytime there is federal involvement of any form (including the use of federal funds).

Climate Change

Climate change is expected to have many Environmental Justice related impacts. As mentioned above, many of the projects that pose a threat our wellbeing are not designed with frequency or intensity of the severe storms that we have been seeing in the past decade. Additionally, the Miskwabekaang community is more vulnerable to the changes associated with climate change. Figure 10.7 outlines the different components of vulnerability. The Center for Rural Communities: Adaptation Planning Guide states that:

Climate change impacts are likely to disproportionately affect vulnerable populations depending on their exposure, inherent sensitivity, and adaptive capacity to respond and cope (see Figure 10.7). Some groups face several climate and non-climate related stressors simultaneously. People living in isolated rural areas are at risk of increased exposure, as are indigenous communities who experience higher numbers of existing health risks. Those who are dependent on the environment for sustenance are also likely to experience greater exposure.

This exposure can also extend to the loss of traditional lifeways and culturally important areas. The sense of loss experienced when it is recognized that the place one resides in and loves is changing for the worse has been termed “solastalgia”. In native communities, this solastalgia may also trigger historic trauma. In interviews conducted as part of GLIFWC’s assessment, tribal members expressed concern that younger generations will never see a snowshoe hare in

Table 4. Components of vulnerability

EXPOSURE	<ul style="list-style-type: none"> • Occupation • Time spent in risk-prone areas • Ability to respond (i.e., evacuate) • Socioeconomic status • Infrastructure condition • Compromised mobility or cognition • Traditional foods diet
SENSITIVITY	<ul style="list-style-type: none"> • Overall health status • Children • Pregnant women • Older adults • Indigenous communities
ADAPTIVE CAPACITY	<ul style="list-style-type: none"> • Socioeconomic status • Condition and accessibility of infrastructure • Accessibility of health care • Human and social capital • Institutional resources

Source: USGCRP, 2016: The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. <http://dx.doi.org/10.7930/JOR49NQX>

Figure 10.7 - Table 4 from the Center for Rural Communities: Adaptation Planning Guide.

their backyard, and traditional knowledge and stories about snowshoe hares will soon only be memories.

Climate change is placing culturally significant places and sacred landscapes at risk. Increased precipitation may increase erosion, exposing artifacts or limiting access. Changes in temperature and precipitation may alter ecosystems within traditional hunting grounds and fishing areas. Severe storm events may cause catastrophic failure of infrastructure (such as mines or pipelines) leading to oil or mine waste flooding the environment. This would cause irreparable harm to our relatives and to sacred landscapes.

Another impact The 1854 Treaty Authority report notes that impacts can also include “*a mismatch between traditional ecological knowledge, especially knowledge related to historic environmental conditions, traditional hunting and gathering techniques, and traditional resource management approaches and what may be needed in changing climate conditions.*” (US Global Change Research Program. 2014. U.S. National Climate Assessment.) As ecosystems shift and change, treaty rights may also be impacted if significant plants, animals, or aquatic species expatriate from treaty lands. These shifts and changes threaten centuries of cultural history and identity. Impacts to culturally significant areas may also result in the loss of access to medicinal plants. As seasons continue to change at different times, some relatives such as waaboozoog (snowshoe hares) that have adapted to a certain time are now easier prey. Waaboozoog’s fur changing colors is not always coinciding with snow fall making them easier prey.

Objectives

- Consult with community elders and youths to discuss proposed projects and how they may impact nibi and aki.
- Coordinate closely with the Tribal Historic Preservation Office to ensure that any proposed project or project expansions will not harm culturally significant areas or any sacred landscapes
- Monitor the status of permits and environmental reviews for project sites including future, proposed, current, and abandoned / “reclaimed” sites and make sure TNR staff are actively engaging with state and federal regulatory agencies about these projects
- Visit proposed project sites and speak with beings that live there.
- Ensure that baseline data that indicates the wellness of nibi, air, and other beings that live nearby is being collected proactively in areas of potential impact by coordinating with Great Lakes Indian Fish and Wildlife Commission and neighboring tribes

- Participate in comment periods as necessary based on community concerns with proposed activity, engage in consultation as needed and if concerns have not been resolved, use legal mechanisms such as lawsuits and courts to guarantee that sacred landscapes, treaty rights and all of our relations are being protected.
- Keep the community and Tribal Council informed of any updates relating to a specific project, site or relevant legislation
- Hold semi-annual educational events to update the community on specific projects or relevant legislation
- Be mindful of the future potential impacts on the landscape based on climate change (e.g. increase in severe storm activity) and incorporate these concerns into all actions that are taken
- Develop and approve intertribal regulations for ceded territory to develop legally recognized standards and permitting authority
- Use all available intergovernmental bodies (e.g. International Joint Commission, Lake Superior Partners Working Group, etc.) to diminish the ability of companies to harm the environment and increase funding availability to protect all our relations.

Opportunities and Funding Outlook

Currently the Environmental Justice position is funded exclusively through the Great Lakes Restoration Initiative’s Lakewide Action Management Plan (LAMP) Capacity Funding. This requires the position to focus on various pre-determined Lake Superior LAMP priorities as well as the various environmental threats discussed above.³⁰

Funding Category	Examples	Considerations
Capacity Building Funding	Great Lakes Restoration Initiative’s (GLRI) Lake wide Action Management Plan (LAMP) Capacity Funding	Funding must be used towards LAMP objectives.
Extraction Specific Mini Grants	Indigenous Environmental Network / Western Mining Action Network’s Mining Mini-Grants	Most contribute to efforts regarding mining whether that is educational events, supporting legal action, etc.
EPA Environmental Justice Grants	EPA Environmental Justice Small Grants	Awarded every other year

³⁰ For more information on the Lake Superior LAMP go to <https://binational.net/category/a2-2/lamps-paaps/>



Mino Bimaadiziiwin Tribal Farm

Vision Statement

To support and advance tribal food sovereignty efforts by serving as an important component of an integrated food system, increasing access to local, healthy and culturally appropriate foods, and by increasing sustainability of the farm through diversified means. – Adapted from 2006–2019

IRMP, 2004 Garden Plan, 2012 Garden Plan, and 2017-2019 Mino Bimaadiziiwin Farm Plan.



The crab apple tree blooms next to the greenhouse.

Discussion

Mino Bimaadiziiwin Gitigaanin (Return to the Good Life Farm) understands food and agriculture as an important piece of tribal sovereignty and community resiliency, and is dedicated to supporting the needs of the Red Cliff community. Mino Bimaadiziiwin Farm consists of 35 acres including approximately one acre of dedicated garden space and three acres of apple orchards. The rest of the acreage includes forest, open pasture, and a two-acre wetland site. Formerly a private dairy operation, the farm property was acquired by the Tribe in 2003 and managed for over a decade by a dedicated volunteer force called the Friends of the Dirt committee (FOTD). The FOTD worked to create a strategic plan for the farm and to provide nutritious produce to the Red Cliff community. A transition in management occurred in 2016, when the Tribal Council Strategic Plan identified food sovereignty and local food access as a primary goal for the Tribe. At this point, the Treaty Natural Resources Division (TNR) assumed management of the farm and hired a full-time farm manager. Building on the foundation, hard work and vision of the FOTD committee, TNR works diligently to increase local food access, strengthen the farm's role as an important part of food sovereignty efforts in Red Cliff, and balance those goals with the

sustainability needs of the farm. As other food sovereignty initiatives within Red Cliff take shape over the next several years, Mino Bimaadiziwin will work in relationship with those initiatives to ensure mutual support, continuing to connect the pieces of an increasingly integrated food system.

Designated Growing Space

The designated garden at Mino Bimaadiziwin totals approximately 1.25 acres of fenced-in area. That area is currently divided into distinct field plots in which a rotation of annual fruit and vegetable crops are grown. These field plots total approximately one-half acre of growing space. In the past, there were additional field plots within the designated, fenced-in area. However, over the years those plots have either been converted to more permanent native plantings or temporarily used for pasture space. This gradually decreased total growing space, but the option remains to convert the pasture space back to viable growing space if deemed necessary. The portion of the garden that was converted to native plantings is the lowest area of the garden and unsuitable for vegetable crops. Along with the field plots for annual fruits and vegetables, the garden also includes some perennial currant, grape, and strawberry beds, as well as some raspberries edging the fence.

The bulk of the farm, like the surrounding region, is made up of clay soils. Clay soils are known for poor drainage and pose many challenges for growing annual fruits and vegetables. To



Cucumbers grow up trellises inside the high tunnel.

mitigate these conditions, many efforts have been made over the years to improve soil conditions in order to manage nutrients, increase fertility, be an example of tribal land stewardship, and build resiliency for a changing climate. Strategies such as cover cropping, creating raised beds for improved drainage, and adding organic matter continue to improve soil well-being.

The growing season at Mino Bimaadiziwin Farm is relatively short compared to regions further south. In order to extend the growing season and increase food production, the farm utilizes protected growing spaces called high tunnels, or hoop houses. These hooped plastic structures extend the growing season by providing protection from cool weather, creating ideal conditions for popular heat-loving crops such as tomatoes, melons,

cucumbers and peppers. Along with extending the growing season, these high tunnels also provide protection and increased resilience against extreme weather events, which are becoming more common due to a changing climate. The first high tunnel was assembled in 2018 and measures 30' x 70', and the second was assembled in 2020 and measures 30' x 60'.

These structures are a huge asset to the farm and increase the amount yields. The farm also utilizes a small, heated greenhouse structure. This greenhouse has three raised beds for vegetable production and provides an essential seed-starting space. Regular upkeep of the farm's season-extension structures will be necessary to maintain structural integrity.

In addition to the annual and perennial fruits and vegetables grown at the farm, a series of medicine beds was installed in 2019 and 2020. These raised beds are used to grow traditional and medicinal plants and herbs available for community use. In the 2019 community survey, 69% of respondents indicated they would like the farm to grow traditional medicines and herbs available for community members. Prior to TNR management in 2016, the FOTD had several similar beds that provided medicines and herbs for the community. With the installation of these beds, the farm plans to carry on that tradition.



Medicinal herbs in the medicine beds .

Apple Orchards

Mino Bimaadiziwin is home to two apple orchards, both of which are nearly a century old. Despite gaps in orchard pruning over the years, and some disease pressure, the trees remain in relatively good health and produce an apple crop each year. The two orchards, North and South, cover an area of 2.32 and 0.82 acres, respectively. The trees are primarily older apple varieties, with some scattered pear and other stone fruit trees such as cherries. Current orchard stewardship includes pruning in the winter and mowing throughout the summer, with no pesticide applications (although some non-chemical pest management techniques have been used in the past by the FOTD). There are several invasive buckthorn trees throughout the orchard that need to be managed through non-chemical control methods. Apple crops vary year to year, and past drainage issues in the orchards have sometimes contributed to less productive seasons. Despite the challenges of maintaining the health of the old orchards, they remain a valuable and resilient resource for the farm and community. The annual apple harvest and potential for value-added apple products hold exciting potential for increasing local food access and providing a source of revenue to increase the economic stability of the farm.

Livestock and Animals

In 2017, TNR constructed a chicken coop to raise a flock of laying hens, which farm staff continues to raise year-round. Eggs produced by the hens are sold to the Early Childhood Center (ECC) at a reduced rate, are added to the farm's annual Community Supported

Agriculture program (CSA) and are always available for sale to community members. Past animal husbandry has included meat rabbits (2017 – 2018) and a few months of pastured hogs (2018). Previous farm plans have included considerations for other livestock such as cattle or sheep that could graze in the orchards. However, those plans would require increased staff capacity in order to be carried out. Additional livestock can represent an exciting opportunity to offer a wider variety of local, nutritious food to the community, as well as diversify revenue streams. Farm livestock can also provide a source of fertilization for the garden, contribute to holistic management goals, and increase educational opportunities. As production grows over the next few years, the farm will revisit the goals of past plans and analyze current capacity to determine what types of livestock make the most sense for the farm and community, and taking steps to acquire livestock and increase diversity of farm operations.



The flock of laying hens are often fed compost from the garden and other tribal programs.

Iskigamizigan (Sugarbush)

Along with stewardship of the garden, orchard, and animals, Mino Bimaadiziiwin began operating a yearly iskigamizigan (sugarbush) in 2019. Tapping maple trees is a traditional agricultural practice that not only provides opportunities for youth engagement through the Bayfield School District, but the zhiwaagamizigan (maple syrup) produced is an additional source of local and culturally appropriate food for the Red Cliff community. Due to a lack of maple trees suitable for tapping on the farm property, trees are instead tapped at nearby locations. Through grant funding from the U.S. Department of Agriculture’s (USDA) Farm to School Program, the farm acquired key infrastructure such as a sugar shack and an evaporator to support the continuation of this culturally important tradition. Zhiwaagamizigan produced is available to tribal programs, included in the CSA program, sold on-site, and donated. The farm will continue to operate an iskigamizigan each year to carry on this important cultural and agricultural tradition.

Forest

Aside from manual buckthorn control, the forest at Mino Bimaadiziiwin is not actively managed by farm or TNR staff. The forest has a species composition consistent with other forested areas of Red Cliff. As described in the 2017-2019 Farm Plan, the 15.5 acres of forest contains “a mix of hardwoods and softwoods with both lowland and upland sites. Lowland sites largely composed of aging aspen, hemlock, black ash, basswood, balsam fir, and red maple, with understory of

native honeysuckle and nannyberry. Upland sites also feature northern red oak, sugar maple, white pine, and ironwood. Alder, balsam poplar, serviceberry, and willows [are] found near [the] northern edge.”³¹ A previous farm plan also included plans for mushroom cultivation using felled trees from the forest. Initial attempts at mushroom cultivation were unsuccessful and there are no current plans to continue efforts. However, there is an abundance of seasonal edible mushrooms that grow in the forest, as well as other seasonal edibles such as ramps and fiddlehead ferns. Although there are opportunities for foraging these popular wild edibles, it is likely these efforts will take place on a small scale and not represent a significant portion of farm production. Rather, any foraged edibles, which will be harvested with respect and recognition of the natural abundance and health of the forest ecosystem, can be available to the community through CSA shares and the farm stand. The forest can therefore play an important role in future education, workshops, and community engagement.

Fish Processing Facility and Fish Compost

Commercial fishing represents a significant component of traditional agriculture in Red Cliff and has historically been a critical part of the local food system. A new on-reservation fish processing facility is planned for 2020 and initially will be managed by and housed within the TNR Division. The fish processing facility will be located near the commercial fishing dock at the corner of Dock Road and Hwy 13. Mino Bimaadiziwin Farm will work closely with this facility to process high volumes of fish waste into compost on-site at the farm, incorporating the compost into the field, garden, and orchards. The farm will also take advantage of the facility’s retail space to increase accessibility of farm produce and value-added products. As a primary goal of the farm is to support food sovereignty initiatives and work to strengthen Red Cliff’s local food system, it will be important to maintain a working relationship with fish processing facility staff.

Farm and Community Connections

Mino Bimaadiziwin is dedicated to increasing food sovereignty in Red Cliff and supporting the sustenance needs of the community. The farm strives build relationships with tribal programs and create many outlets for distribution of produce to the community. Currently, produce from the farm is both sold and donated to tribal programs including the Early Childhood Center (ECC), Legendary Waters Resort and Casino, the Food Distribution program, Oksi-Ombendaam (New Hope) Housing Development, the Elderly Center, and the Noojimo’iwewin (We Heal) Center. The grocery stores in Red Cliff (Peterson’s) and Bayfield (Andy’s IGA) also purchase produce from the farm, which increases the amount of local produce on their shelves. Produce is also sold to the Bayfield School District Cafeteria, of which approximately 80% of students are tribal members³².

³¹ Mino Bimaadiziwin 2017-2019 Farm Plan

³² <https://www.publicschoolreview.com/wisconsin/bayfield/5500900-school-district>

In addition to program, grocery store, and school sales, a farmer's market stand operates on-site. In the past the stand has operated with an intermittent schedule and variable location, but beginning in 2020, the farm stand will operate on a regular schedule throughout the season. In the 2019 community survey conducted by TNR, 90% of respondents indicated they would like better access to fresh fruits and vegetables. During the 2019 youth listening sessions,



Vegetables on display for an on-site farmer's market stand.

approximately 50% of youth surveyed also indicated they would like more access to fresh fruits and vegetables. Because an on-site stand can represent one of the most direct connections to the community, the farm will continue to operate the stand during the growing season. A steady supply of vegetables, fruits, eggs, and other value-added items will be priced at a pay-what-you-can rate.

There are barriers and challenges to overcome when distributing produce from the farm to tribal programs. These can include scheduling difficulties, a limited variety of produce that can be easily prepared in a kitchen, a lack of education on how to prepare certain foods, a lack of staff capacity to process foods in the kitchen, cost, or other related barriers. Mino Bimaadiziwin will continue to work diligently to communicate with tribal programs in order to overcome such barriers and ensure that current distribution avenues are maintained and expanded. For example, in both the 2019 community survey and the 2019 elderly listening sessions, it was indicated that there should be more fresh produce being provided to the Elderly Center. Efforts have been made throughout the past few growing seasons to provide free produce weekly to the Elderly Center, and any previous challenges have served as learning opportunities to continue striving to meet programmatic needs.

Another way that produce is distributed to the community is through the farm's Community Supported Agriculture program, or CSA. Through this program, which began in 2017, community members can sign up for a weekly or bi-weekly produce share and receive boxes of vegetables and other goods throughout the growing season. Boxes also include newsletters with recipes and tips for how to use and store the produce. Over the past decade, CSA's have become a popular way for farms to build connections with communities by providing fresh, local, and sustainably grown produce while also supporting operating costs. For all four seasons it has run, Mino Bimaadiziwin's CSA program has been subsidized through grant funding in order to offer free and reduced-cost shares to eligible families and tribal programs. Mino Bimaadiziwin's CSA is unique because Red Cliff is a rural community with many low-

moderate income households and limited access to fresh produce. Therefore, efforts must continually be made to ensure this program remains accessible and beneficial for the community.

Mino Bimaadiziwin also continues the annual tradition of a Plant Give-Away, in which thousands of vegetable starts, herb starts, and seed packets are given to community members for their home gardens. The Plant Give-Away takes place each spring and supports community members who desire to grow their own fresh produce. At this point, the farm's greenhouse is heavily relied upon for seed starting in the spring. As discussed above, regular upkeep will be required to maintain structural integrity of the greenhouse and ensure the farm and community can continue to rely on this valuable space.

Other spring garden support for the community includes garden tilling assistance, in which farm staff travel to community members' gardens to till them in the springtime. There have also been a couple raised bed give-away's where raised beds were assembled for community members to increase growing space in their yards.

In recent years, the farm has strengthened its relationship with programs at the Red Cliff Community Health Center and collaborates on efforts to increase education and access around nutritious foods. The farm also provides support for community members in recovery from substance abuse, working with programs aimed at empowering communities to achieve health and wellness. These efforts have been supported by grants from Good Health and Wellness in Indian Country (GHWIC) and from the Substance Abuse and Mental Health Services Administration (SAMHSA). The farm is located on Aiken Road, directly adjacent to the Health Center, which is an asset to continued exploration of ways to strengthen this relationship and provide mutual support.

There are also several youth engagement opportunities at Mino Bimaadiziwin. Collaborations with the Bayfield School District include the spring sugarbush, providing produce to the cafeteria, and numerous student field trips to the farm. Often these field trips take place during the fall harvest season, providing opportunities for apple harvests, cider pressing, and more. The farm will strive to maintain this relationship, as well as create more connections with other programs such as the Boys and Girls Club. The Division's annual summer interns also spend time at the farm during their employment with TNR.

As illustrated above, the farm represents a multi-dimensional program and important component of an increasingly integrated food system at Red Cliff. In the 2019 community survey, most respondents believed the farm should play multiple roles in advancing and advocating for food sovereignty. Responses were strong for each of the following categories: continuing to sell produce to Red Cliff programs, selling produce at local grocery stores and restaurants, creating spaces for community members to grow their own produce, providing

classes and trainings, and hosting a farm stand to sell produce and eggs. There will always be challenges in balancing the needs of the community while also increasing the economic stability of the farm so that it can continue to increase food available to the community, while supporting continued operations. For example, survey results show most respondents want the farm to help create spaces for community members to grow their own produce (77% of respondents). In the past, community members used plots at the farm for their own gardens. As the farm has transitioned and grown in capacity over the years, spaces like that may no longer be feasible on-site. However, the farm can still support this need by working with individuals or families to till garden plots in their own backyards, continuing to find programs to support raised garden bed give-away's, and for working with other departments to establish additional community gardens in other locations.

Survey results also indicated a community desire for more classes and trainings held at the farm (75% of respondents). In the past, the farm has lacked an adequate indoor gathering space in which workshops could be held or food could be processed and preserved. However, a 2019 grant through the Native American Agriculture Fund provided funds for the replacement of the old garage with a new building. When construction is completed in 2020, that building will provide office space, a commercial kitchen/food processing facility, and serve as a much-needed community gathering space. This will enable more events and workshops to be held to provide opportunities for community engagement and to support families and individuals with their own gardens and food production.

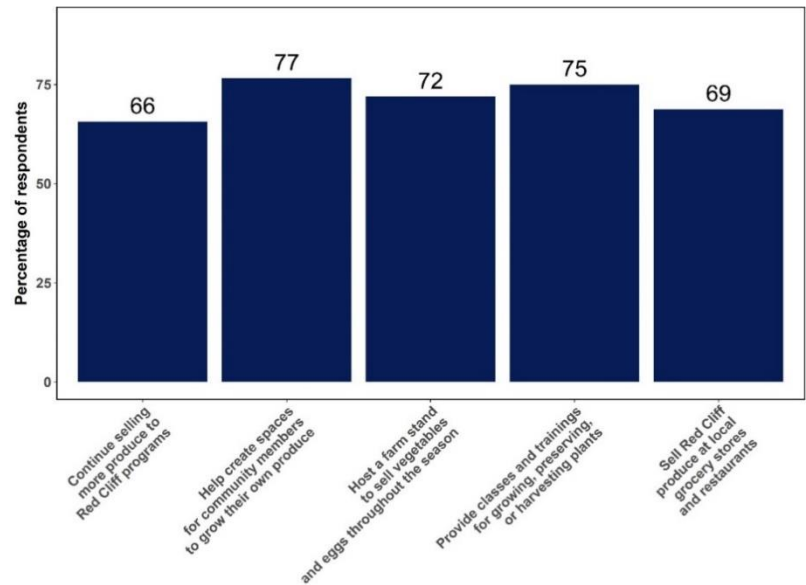


Figure 11.1 - Community responses to the question “What role would you like Mino Bimaadiziwin to play in promoting food sovereignty for the Red Cliff community?”

Climate Change

Climate change is contributing to many changes across the landscape and will also affect agricultural practices and availability of traditional foods. At Mino Bimaadiziwin Farm, these changes may manifest as variation in length of the growing season, increased severe weather events, or increased pest pressures, for example. However, because a diversified farm that stewards the land is more resilient to a changing climate, the farm will continue to carefully

build soil health and ecosystem wellness. By maintaining the health of the farm's soil, wetland, and forest, fundamental ecological and cultural functions of those ecosystems will be maintained. Maintaining infrastructure such as the high tunnels can mitigate damage from expected severe weather events and an unpredictable growing season. Increasing food sovereignty is not only essential for the well-being of the community but also an important step in building resilience to a changing climate. Food sovereignty and food security go hand in hand, and a strong local food system is a critical component in preparing for a changing climate, building community resiliency, and supporting a healthy and diverse ecosystem.

Management Objectives

Mino Bimaadiziwin Farm aims to advance tribal food sovereignty initiatives by strengthening its role as an important component of a more integrated food system for Red Cliff, increasing access to local, healthy and culturally appropriate food, and balancing those goals with a need to increase the economic sustainability of farm operations. The following management objectives will help to reach those goals.

- Create new food distribution channels and strengthen existing ones.
 - Work with tribal programs and key players to overcome barriers in utilizing fresh farm produce.
 - Create annual Produce Plans with tribal programs to determine seasonal produce needs, and create crop plans accordingly.
 - Seek out grant opportunities to subsidize produce for tribal programs or collaborate with programs on existing grants to increase access to produce.
 - Increase amount of produce available to youth through the Bayfield School District.
 - Create an annual Produce Plan with the cafeteria's Food Service Director to maximize farm produce in school lunches and breakfast; deliver produce during the school months of May, June, September, October and November.
 - Continue working with the District's Farm to School AmeriCorps volunteer to increase local procurement of snacks and produce for taste tests and sampling events with students.
 - Increase the number of days the farm stand is open during the growing season.
 - Consider the creation of a mobile farmers market and travel to other locations, e.g. Food Distribution, to increase accessibility for community members.
 - Establish new distribution channels among tribal programs and the Red Cliff community such as Peterson's grocery store and the fish processing facility.

- Host a farm stand at community events including Red Cliff Cultural Days, the annual Pow Wow, and the Community Health Center’s Fall Fest.
- Continue the CSA program including free and reduced-cost shares.
 - Provide reduced-cost shares annually to eligible community members.
 - Provide free shares annually to the Red Cliff Elderly Center and Oksi-Ombendaam (New Hope).
- Continue to raise laying hens and distribute eggs to the community and tribal programs.
 - Explore additional distribution outlets for egg sales, such as the retail section of the fish processing facility.
- Create a Farm Food Safety Plan utilizing Good Agricultural Practices to establish accountability and a commitment to food safety.
 - Create Standard Operating Procedures for staff training and consistency for basic farm operations.
- Continue to steward the land, increase food production, and maintain ecosystem health using traditional, holistic and organic practices.
 - Increase the number of perennial plants and shrubs on the farm for food production, pollinator habitat, and ecological well-being.
 - Plant edible and pollinator-friendly shrubs.
 - Maintain the health of existing perennials such as raspberries, currants, and grapes.
 - Rehabilitate the perennial strawberry beds.
 - Build raised beds to reduce weed pressure and reinvigorate the strawberry plants.
 - Introduce new strawberry plants as needed.
 - Construct another high tunnel to create more season extension opportunities and protected growing space.
 - Increase early-season, late-season, and overwintered crops like spinach and salad greens.
 - Improve drainage on the high tunnel structures by installing drain tile.
 - Maintain orchard health through seasonal pruning and integrated pest management techniques.
 - Prune the North and South orchard each spring.

- Monitor for pest activity and implement management strategies as necessary.
 - Plant additional orchard trees to replace dying trees where appropriate and manage for the health of existing young trees.
 - Evaluate tree health and orchard gaps each fall to plan for replacement plantings each spring.
 - Monitor existing young trees to ensure continued healthy growth.
 - Manage invasive buckthorn in the orchard and forest.
 - Work with TNR Invasive Species staff to create a management plan for buckthorn.
 - Utilize cover crops to manage nutrients and build soil.
 - Create a crop rotation/cover crop plan for the field plots.
 - Care for the Clayton Creek watershed by maintaining the health of the restored wetland on-site.
 - Prevent excess nutrient runoff into the wetland.
 - If feasible, convert previous field plots back into production in order to increase growing capacity within the garden.
 - Incorporate traditional farming and gardening knowledge by seeking to learn from community knowledge holders.
 - Regularly seek input from community knowledge holders through events, celebrations, and outreach.
- Increase the economic sustainability of farm operations through diversified revenue streams and value-added products.
 - Explore feasibility of and subsequently increase production of value-added apple products and other preserved vegetables.
 - Create a commercial kitchen space in order to process foods in a safe and certifiable manner.
 - Increase production of value-added apple products including apple chips, apple cider, apple butter and apple jam.
 - Increase production of preserved vegetables through fermentation, pickling, and canning.
 - Create a Mino Bimaadiziwin Farm label for marketing to local retailers, both on reservation and off.

- Establish connections at local retail establishments to sell value-added products.
 - Apply for USDA Value-Added grant to support increased production of value-added products.
- Better utilize the orchards for fresh produce sales (e.g. Pick-Your-Own) and non-food products (e.g. deer apples).
- Explore the feasibility of non-food products e.g. fish compost.
- Explore the feasibility of including additional animal husbandry e.g. cattle, sheep, rabbits or pigs.
 - Create an Animal Husbandry Plan by 2021 and incorporate livestock as appropriate.
- Ensure products offered are affordable and accessible to the community.
- Continue to ensure community needs are met by strengthening existing connections and continuing collaboration with other tribal programs.
 - Construct a new building that will be more conducive to community gatherings, workshops and events.
 - Host workshops and classes for growing, harvesting, processing and preserving fruits, vegetables, and wild edibles.
 - Create a seasonal schedule for workshops, classes, and demonstrations.
 - Gather community input for desired workshops through outreach.
 - Continue the annual Plant Give-Away each spring and increase traditional and medicinal plants available at the Give-Away.
 - Grow traditional and medicinal plants for community use.
 - Maintain existing medicine beds and establish new ones.
 - Host community feasts including an annual Planting Celebration, Harvest Celebration, and cider pressings.
 - Investigate the feasibility of a home garden assistance program.
 - Work with other departments to collaborate on a raised garden bed give-away program.
 - Provide backyard garden tilling for interested community members.
 - Provide educational and gardening resources, and demonstrations.
 - Where appropriate, explore other community garden space options in the community.

- Explore the feasibility of a volunteer program at the farm.
- Increase opportunities for youth engagement at the farm through field trips, workshops, and events.
 - Work with the Boys & Girls Club to coordinate opportunities.
 - Work with the Bayfield School District Alternative Education class and Farm to School program to coordinate field trips.
- Create signage with inclusion of Ojibwe language and culture.
- Ensure community feedback and input opportunities at all farm events, workshops, and celebrations.
- Maintain and strengthen the relationship between Mino Bimaadiziwin Farm and the Community Health Center and its related programs.
 - Continue to host a farm stand and cider pressing events at the Health Center's annual Fall Fest.
 - Maintain involvement in clinic programs in order to support community wellbeing and recovery efforts.
 - Work with Community Health Department staff to collaborate on initiatives such as the Garden Group through the Noojimo'iwewin (We Heal) Center.
- Support and enhance additional tribal food sovereignty initiatives
 - Support increased integration of a tribal food system.
 - Meet with tribal programs and other key players to compile resources and assess needs for strengthening a community food system.
 - Work with divisions and the community to establish food sovereignty goals.
 - Establish a mutually beneficial relationship with the fish processing plant.
 - Create and maintain fish compost piles.
 - Provide farm produce for value-added fish product recipes.
 - Participate in and support existing program activities such as annual wild rice processing.
 - Explore ways to increase opportunities for community members to participate in wild rice harvests and other traditional food harvesting, e.g. maple syrup.
 - Include wild edibles and traditional, locally foraged foods in workshops, events, and preserving.

- Increase the varieties of traditional, indigenous agricultural crops grown at the farm.
- Provide a kitchen and other resources for community members to process and preserve their own harvests.
- If appropriate, implement Tribal Food Codes following the example of the Great Lakes Indian Fish and Wildlife Commission's pilot project for tribal food codes.

Opportunities and Funding Outlook

The majority of farm operations and staff wages (one full time manager and 1-3 seasonal staff) are currently supported through multiple grants. In order to balance the needs of the community while also increasing the economic sustainability of farm operations, new revenue channels will be explored with the recognition that at current capacity, Mino Bimaadiziwin may not generate a self-sustaining profit. However, increased revenue can support the farm, allow purchases of necessary supplies such as seeds and tools, and help ensure continued operations and expanded capacity. The farm will continue to seek out grant opportunities to support operations and will continue to strengthen community relations in order to help increase seasonal capacity.

Current and past grants that have supported Mino Bimaadiziwin:

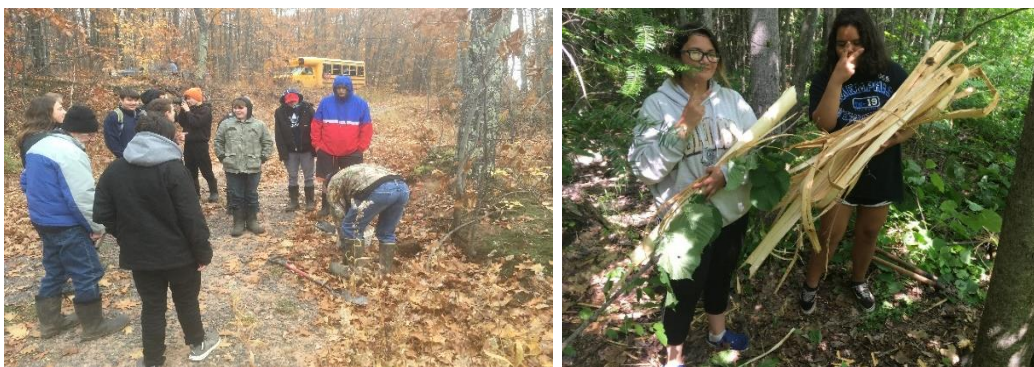
- The Native American Agricultural Fund
- USDA Farm to School Program
- NRCS EQIP Fund
- Farm Aid
- Good Health and Wellness in Indian Country (clinic-based grant support)
- Substance Abuse and Mental Health Services Administration (clinic-based grant support)
- Great Lakes Restoration Initiative

Potential future grants may include:

- USDA Value-Added Producer Grant
- First Nations Development Institute: Gather Food Sovereignty Funding
- Honor the Earth grants
- Sustainable Agriculture Research and Education grants

Vision Statement

To empower Tribal youth to witness and participate first hand in the history, culture, and traditions that the Red Cliff Band identifies with. - Adapted from 2006-2016 IRMP, Page 19



Left: TNR Wildlife/Forestry Technician Ron Nordin teaching the Bayfield Alternative Education class about Mai'ngan (Wolf) trapping for research purposes. **Right:** TNR summer interns learning how to collect and process Wiigoob (Basswood) bark for cordage.

Patty Loew (Miskibiizii tribal member and author), on 7th generation thinking – “It’s a concept that means, in practice, that when you sit down to make a decision, you think about how that decision is going to affect seven generations into the futures, so you’re thinking 240 years ahead, and it really makes a difference.” - The Larry Meiller Show October 15, 2014

Discussion

Per the tribal census of 2018, there are 409 children (0-17) living in Red Cliff, of whom 355 (87%) are tribal members. There are additional 28 children that are enrolled members of a different tribe. In total, there are 383 total native children (94%) and 26 non-native children (6%). As per information received from the tribal enrollment office, there are an additional 461 Red Cliff member children ages 0-17 living in Bayfield County outside of the Reservation boundaries.

In the 2019 youth listening sessions, the youth ranked themselves at an average of 4/10 in terms of their cultural well-being, and also indicated that they desire to be at an average of 8/10. When adults were asked the same question through the 2019 community survey, their response was similar. Additionally, the youth listening sessions showed that while the tribal youth are passionate about protecting the environmental integrity of the reservation and ceded territories, they often are not well educated about the issues. For example, out of 68 students

who answered the question about how much they know about invasive species, 56 felt that they knew a little or nothing about invasive species, while only 12 felt like they knew a lot.

Thomas Peacock, (Fond du Lac tribal member and U-Minn Duluth professor) on the loss of traditional ways of relating: "As a people we have survived the darkest chapter of our existence, that period just following colonization when we were subjected to repressive governmental and church efforts to rid us of all vestiges of our Ojibwe ways. The resultant loss of culture, including traditional health and wellness practices, is conveyed by I. Broker (Night Flying Woman, 1983) when she describes the generations of Ojibwe sent to boarding school (pg 125):

They danced the powwow and did the beadwork because these were expected of them by the tourists from the east. They did the planting and harvesting, the blueberry picking and the ricing, for these were necessary. But they never stood with eyes cast down before the Old Ones to ask about the old ways and the old people. They never offered the first of the harvest. They did not respect the Mi-de-wi-wi-n people. Instead they feared them. They never knew the forest trails and the animal people. They never gathered herbs and medicine or listened to the si-si-gwa-d (the murmuring that trees make)." - Thomas Peacock, Waasa Inaabida, We Look in All Directions, pg 110

The historic trauma that Peacock and Broker describe above, as well as the pressures of the modern world, help to explain why such a significant percentage of tribal youth are not as engaged with the natural world as they could be. It became clear during the community feedback sessions that the regular events and activities that TNR has provided for the youth is an appreciated step in the right direction, as they are geared towards culturally-appropriate ways of relating with and protecting the environment. These event and activities are also in alignment with TAP's (Tribal Action Plan) goal of providing sober fun opportunities that help to regain a sense of community; some also are aligned with TAP's goal of increasing youth internship opportunities. These events and activities are also reflected in GLIFWC's Tribal Climate Adaptation Menu: Section 3.1 - Maintain and revitalize traditional relationships and uses; Section 3.4. - Establish and maintain cultural, environmental education, and youth programs.

The events and activities are described below.

- Mino Bimaadiziiwin Tribal Farm activities: Since 2019 the Farm has been running a sugarbush, in partnership with student groups from the Bayfield School District (especially the Alternative Education high school class), and the Boys and Girls club. In the fall of 2019 TNR constructed a new sugar shack to aid with the boiling process. Similarly, the Farm has partnered with student groups in a variety of activities, such as apple picking and cider pressing, and has been involved with the Bayfield School's farm-to-table program.
- Ogaa (Walleye) spearing: Each spring the Boys and Girls Club, aided by TNR and GLIFWC staff, lead Ogaa spearing trips for the youth. This is a great way for the youth to learn about

their treaty rights. Fish eggs and milt are extracted, and the youth also learn about Ogaa reproduction and the role of the Red Cliff hatchery in fish management.

- Manoomin (Wild Rice) education, gathering, processing, and seeding: Each fall the Boys and Girls Club, in conjunction with TNR staff, put on Manoomin-related educational events – a day of knocking-stick carving, a day of Manoomin gathering, and a day of processing traditional and modern processing. TNR staff also work together to have community members, including youth, help out with Manoomin re-seeding projects on Red Cliff waterways.
- Hunting Education: Red Cliff Wardens co-host (along with Bad River Wardens) an annual hunter education class, aimed at helping youth engage in hunting in a safe and appropriate way.
- Kids Fishing Day: TNR staff put on an annual cook-out at the tribal hatchery, where ECC kids and families have the opportunity to fish from a freshly-stocked pond and learn about the tribal fish hatchery and other TNR efforts.
- Ma'iingan (Wolf) Ecology: Several times a year TNR wildlife biologists work with the Bayfield school district, teaching ages k-12 in a hands-on way about ma'iingan ecology and related topics - telemetry, tracking, trapping, trail cameras, wolf howling and more.
- Summer Internships: Since 2012, TNR has hired three tribal youth interns each summer. This effort has been funded by WI DNR's Summer Youth Program in more recent years. The interns get a chance to participate in, and get a feel for, the broad range of activities that various TNR staff are involved in. The goals are to expose and engage youth in the spectrum of careers associated with natural resources. As such, interns spend a portion of their summer with the Washburn District Forest Service each year. This collaboration is part of a Memorandum of Agreement TNR executes for the Tribe with the Washburn District.
- TNR staff often help out at various tribal events (Red Cliff Culture Days, Wolf Camp, Language Camp, Winter Camp, Summer Gathering, GLIFWC Camp) with various recreational, educational and cultural activities.
- The TNR-led 2012 creation of Frog Bay Tribal National Park and associated Ojibwemowin nature signage (created in collaboration with Bayfield School students) on its trail system has provided a space for youth recreational and learning opportunities. See the Outdoor Recreation section for more details of this and other TNR-led recreation-focused projects.
- Indigenous Art and Sciences (IAS) Program: From 2017 through 2019, TNR has also been managing the IAS program (in cooperation with Earth Partnership, a University of Wisconsin-Madison organization which operates mainly through a National Science Foundation grant). Through this program, two week-long natural resource/cultural learning institutes have been put on for youth and teachers, as well as ongoing year-round involvement with tribal youth. This program continues to fund the Youth Science Coordinator. Beginning in 2020, the coordinator position transferred to the Education

Department, but the staff person's workspace is in the TNR's offices and considerable program overlap and collaboration across the tribal departments continues.



Left: Manoomin re-seeding of Raspberry River, 2019. Middle: ECC Kid's Fishing Day, 2015. Right: Bayfield High School students helping process Waawaashkeshi (Deer) meat for the elders after the annual Elderly Hunt alongside TNR staff, 2019.

Although there have been many activities available, results of the 2019 youth listening sessions indicated that 30% of the high school and middle school youth would like to be more involved with TNR events, either as part of their school education or during the summer - when they have more time. Tribal elders also commented that they would like to see more youth involvement with natural resource-based activities. When surveyed, many youth responded that often they don't know about the opportunities that are available to them at TNR.

TNR staff recognize that they are uniquely positioned to help educate and inspire tribal youth about the wild relations and help them to carry on the cultural continuum of the elders. There is also the recognition that it is good to inspire and support the youth to get the education necessary to fill the roles of Red Cliff natural resources professionals. This drives TNR's work in regard to youth, as well as raises questions as to how TNR staff can be more effective in being of service.

Management Objectives

Currently TNR is on track to continue its current youth programming, outlined above, as well as creating new learning opportunities, outlined below.

- The IAS program is being moved to the Tribe's Education Department, however collaboration and mutual support is projected to continue as the Science Youth Coordinator will continue to be stationed at TNR and will be instrumental in the implementation of future efforts to expand youth-focused effort.
- Natural Resources Young Adult Initiative is a new program which begins in the summer of 2020. This program is a summer natural resources-focused work experience for tribal young adults aged 18-25, and will be administered in conjunction with the Bad River Band.

- In 2020 the Tribal Farm will be building a new facility at the Farm, which will provide a more conducive space for educational events and workshops, especially in the area of food sovereignty.
- TNR will continue to be involved with, and grow its relationship with, various partners including the Boys and Girls Club, Bayfield School District, Early Childhood Center, and Brighter Futures Initiative, among others.
- TNR will facilitate educational events during the school year, as well as in the summer when students have more availability. Presentations at the Bayfield school, plant walks, birdwatching, conservation projects, water and air monitoring projects are some potential examples.
- TNR will invite tribal elders and other knowledge holders from the community to various educational events to help facilitate cultural learning.
- In order to facilitate youth involvement with TNR programming, TNR will look for ways to reach out through appropriate social media, such as Instagram, about upcoming events. Social media platforms are a more effective way to reach the young demographic at Red Cliff.
- TNR plans to formalize collaborative relationships with more local natural resources agencies for the summer intern program, similar to the collaboration TNR has maintained for years with the Washburn District Forest Service. Apostle Islands National Lakeshore (NPS) and WI DNR have expressed interest in the past and have close office locations conducive to collaborative efforts.

Opportunities and Funding Outlook

WI DNR's summer youth program is a stable, non-competing funding source that is available annually to fund TNR's intern program. IAS has been a reliable source of funding for the Youth Science Coordinator for several years now, but it's largely based on continued support by National Science Foundation. Solidifying this important position for youth activities should be considered by Education Department and TNR so youth-based activities can continue to grow.

"The teachings to attain wisdom were all around our ancestors as they are also all around us as contemporary Ojibwe. From their elders and spiritual people, our ancestors learned the values and spiritual lessons that would guide their lives. From their elder brothers, the animals, they learned lessons of gentleness, courage, and keenness of vision. From silence, they gained knowledge to contemplate and to think through things before acting. From the wind and lapping of water and from birds, they learned the beauty and depth of music. These same things are with us today. We need only to listen and observe things to perceive their deeper meaning. Moreover, just as with our ancestors, the path to wisdom really comes down to simple things, simple yet complex at the same time: honor the Creator, honor elders, be kind, be peaceful. Live in a gentle way." - Thomas Peacock, Waasa Inaabida, We Look in All Directions, pg 71.



Outdoor Recreation

Vision Statement

Ensure the health and wellbeing of the environment and community members through the planning, placement, protection and education of outdoor recreational and cultural activities for all ages with little to no impacts on the natural and cultural resources of the Red Cliff

Reservation. - Adapted from IRMP Recreational Resources Vision Statement (pg. 71)

Discussion

The location of the Tribe on Lake Superior offers a vast number of recreational opportunities, and tribal members also have the opportunity to recreate in the wooded acres of the reservation (IRMP, 2006). Red Cliff's 2006-2016 IRMP recognized that most recreational opportunities on the reservation occur in the wilderness, which fits well with this plan as the TNR's role in the community's recreational opportunities is centered around agwajiing (outdoor) recreational and treaty reserved cultural resources. While the TNR may not be involved in management of all these activities, in and around Miskwabekong (Red Cliff) agwajiing recreation and cultural activities are generally comprised of, but not limited to:

- Boating
- Gabeshi (s/he camps)
- Jiime (s/he canoes, paddles)
- Manashkikiwe (s/he gathers medicine)
Community events: Wolf Camp, Language Camp, Wild Rice Event, Kid's Fishing Day
- Craft harvesting: birch bark, ash, boughs, etc.
- Giigoonyike (s/he fishes): hook and line, netting, spearing
- Gitige (s/he gardens): food, medicines, flowers
- Giiyose (s/he hunts) and wanii'ige (s/he traps)
- Motorized: ATVing and snowmobiling
- Non-motorized: hiking, snowshoeing, skiing
- Picnics
- Niimi'idiwin (pow wow)
- Manoominike (s/he goes ricing)
- Iskigamizigan (sugar bush)
- Bagizo (s/he goes swimming)
- Sports and Games (such as baaga'adowewin (lacrosse), snow snake, basketball and baseball)
- Wild food harvesting (mushrooms, leeks, etc.)

There are abundant agwajiing (outdoor) recreation and cultural activity opportunities in Miskwabekong and within the ceded territories of 1837 and 1842. For the scope of this

document, TNR has focused in on local opportunities on the Reservation and within Bayfield County, see “Red Cliff Outdoor Recreation Opportunities Inventory” in Appendix #. The 14,540-acre reservation falls within the boundaries of Bayfield County, which is the second largest county in Wisconsin, consisting of 966,000 acres. The landscape of the region varies greatly; there is a range of hills known as the Bayfield Peninsula Ridge stretching northeast-southeast, which drop abruptly at their southwestern end and shift into flat pine barrens. Also south of these ridges are many moraine hills and kettles³³, which are occupied by lakes and numerous wetlands. The Bayfield Peninsula extends into Anishinaabe Gichigami and its coast is regularly dotted by coastal wetlands. Extending beyond the peninsula is the 22 island Apostle Islands archipelago, 21 of which comprise the Apostle Islands National Lakeshore. The Apostle Islands region is especially significant to the Anishinaabe people as the final stopping place in their westward migration in search for the “food that grows on water”, manoomin. These unique features of the region provide bountiful opportunities for community members and area visitors to explore and harvest agwajiing.

The 2019 community survey asked respondents which agwajiing recreation activities they currently participate in and which activities they would like to participate in. Figure 13.1 below shows the results of the 61 responses to this question. While there is engagement in all categories, the activities most highly participated in (>60%) are ATVing, biking, boating, gabeshi (camping), hiking, giyose (hunting), language camp, picnics, niimi’idiwin (pow wows), bagizo (swimming), and wild food harvesting. Likewise, respondents have interest in all activity types, but the activities that many community members are not currently participating but would like to participate in more (>60%) are; craft harvesting, bagida'waa (fishing with a net), manoominike (wild rice harvesting) and manoomin events, sports and games, and wanii’ige (trapping).

The activities that people are not currently participating in but are most interested in are those that generally require specific equipment and knowledge to be able to engage in, causing a barrier to participation. The TNR can aid interested community members in their pursuit of these types of activities by working with other tribal programs and community knowledge-holders to provide training on how to participate, and assist in/host participatory events such as the annual manoomin (wild rice) harvesting and processing events. The manoomin events consist of a community member day trip to a manoomin lake for a day of harvesting, followed by a day for processing in Miskwabekong after the manoomin has dried. TNR-sponsored trainings and events such as this can help meet the Division’s goals to protect natural resources by educating people on sustainable practices and by allowing both staff and community members to learn from community knowledge-holders.

³³ Moraines are deposits of rock and sediment left behind by glaciers. Kettles are depressions in the landscape left behind by partially buried blocks of glacial ice.

The TNR has carried out many efforts to increase agwajiiing recreation opportunities for the community. Outreach and education on responsible harvesting practices was an objective of the IRMP and has been a long-standing effort in TNR to protect the community's natural & recreational resources and enable involvement. The TNR has been conducting outreach on an ongoing basis through community events such as: program open houses; ECC Kid's Fishing Days; hatchery tours; participating in, and as of 2019 leading, iskgamizigan (sugar bush) activities; hunter's safety classes; and manoomin harvesting, processing and reseeding events, among others. Revisions and additions were also made to Red Cliff Code of Law Chapter 11 (Logging, Burning, Woodcutting, and Harvesting) in 2016 to include harvesting regulations and a permitting system for non-timber forest product harvesting within the Reservation.

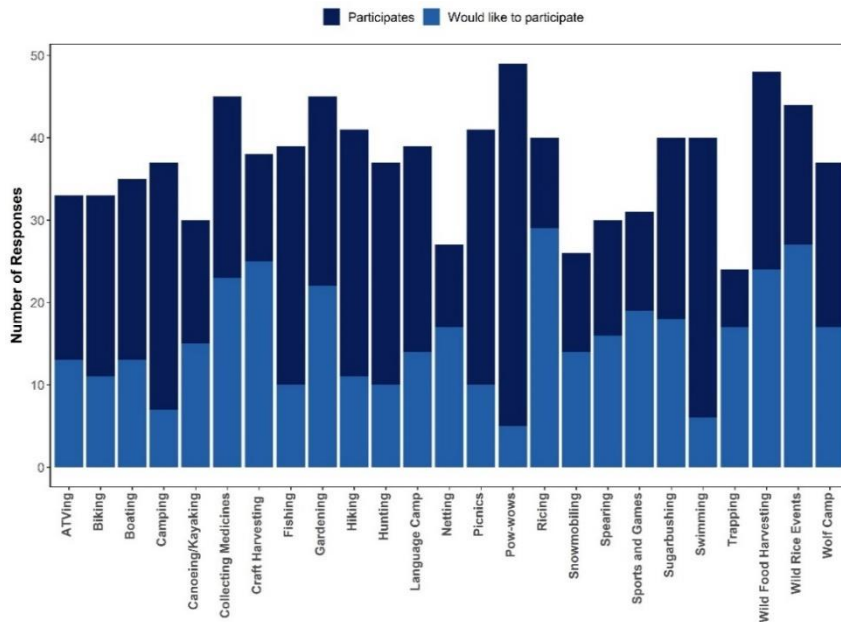


Figure 13.1 - Responses to “What outdoor activities do you currently participate in, either on or off the Red Cliff Reservation? And what activities would you like to participate in?”

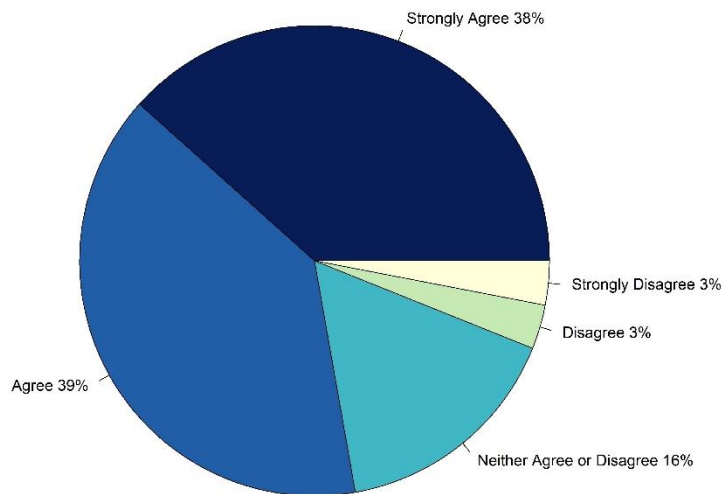


Figure 13.2 - Percentage of responses to the statement “TNR should host more outdoor recreation activities and events (i.e. birding, nature walks, tracking hikes).”

During 2019 youth listening sessions at the Bayfield School, about 60% of the students who participated expressed interest in learning more about the environment from TNR-led workshops, both during summer break and during the school day in place of regular classes (65 students responded to this question specifically). At the 2019 elder listening sessions, an elder commented that people in the community are continually seeking out learning opportunities

and suggested that the TNR coordinate with LCO Community College and Northland College to provide classes/trainings. The vast majority of survey respondents also supported more TNR hosted activities (see Figure 13.2).

To support and protect natural resources within the Reservation for recreational, cultural, and subsistence use by tribal members, the TNR has assisted the Tribe in recovering 950 acres of lost lands since 2012, with 745 acres (78%) being zoned as preserved (see Land Repatriation section for more information). Preservation of these lands will provide long-term species, habitat and resource preservation for tribal members to utilize for the next seven generations.

One of the largest efforts to date includes the designation of the 90-acre Frog Bay Tribal National Park (FBTNP) in 2012 as the first Tribal National Park in the United States. In 2017 FBTNP was further expanded to 170 acres and the Frog Bay Conservation Management Area (CMA) was also created, which encompasses FBTNP and protects nearly 300 acres of boreal forest and coastal wetlands, ¾ mile of Anishinaabe Gichigami (Lake Superior) shoreline, and 1 mile of riparian corridor in Frog Bay. FBTNP now hosts nearly 2 miles of hiking trails, a large steel truss bridge, several foot bridges, many interpretive cultural signs, and a scenic beach that are all available to the tribal community and general public alike. The larger CMA is only accessible to tribal members for cultural and subsistence practices.

In the 2019 community planning survey, of the 61 responses to the statement: “The Tribe should acquire more land for the expansion of Frog Bay Tribal National Park”, 32.79% strongly agreed and 36% agreed, with 26.23% neither agreeing or disagreeing, and 1.64% disagreeing and 3.28% strongly disagreeing. During youth listening sessions, the vast majority of students said they had been to and liked FBTNP. Although there were mixed opinions, many students supported the idea of expanding the park with the consensus being to conduct expansion slowly and by utilizing grant funding, and one student suggested additional hiking trails. One elder commented that they don’t mind seeing public access on the Reservation for agwajjiing recreation as long as it is limited and that the Tribe is able to maintain the land without damages from activities such as camping. Overall, the Red Cliff community is generally supportive of FBTNP, however there is a desire for improved accessibility for tribal members



In 2019, FBTNP received the Wisconsin Governor’s Tourism Award for Stewardship.



“Public Recreation Opportunities on the Red Cliff Reservation” sign at Legendary Waters Resort.

to be able to utilize an access road within the park to be able to readily access the beach for fishing activities. Motorized access into the park is a concern because of incompatible uses (people walking on the trail) and potential infrastructure and environmental damages. While this issue is not currently resolved, the Division will continue to work with the community to explore solutions, and special events will permit the use of the access road (such as fishing events or wild rice events).

In 2017 TNR also developed the 1-mile Clayton Creek Hiking Trail, which brings both tribal and non-tribal agwajiiing enthusiasts on a walk through diverse habitats between the Tribe’s Community Health Center, Pow wow Grounds and Farm to the Legendary Waters Resort and Tribal Administration buildings. The idea for this trail was identified during a 2015 sustainable community planning exercise that noted a need for better walkability options between central tribal facilities. To promote agwajiiing recreation tourism in the Red Cliff community, the Division has developed trailhead signage for the Clayton Creek Trail, wayfinding signage along Highway 13 for Frog Bay Tribal National Park, and a public recreation opportunities sign at Legendary Waters Resort (see photo) along with a corresponding brochure. TNR staff also assisted the Tribe’s Tourism Team in creating a Visitor’s Guide which outlines the programs of the TNR and includes a 2-page spread on Frog Bay Tribal National Park. The Tribe also joined the newly formed Bayfield Area Trails Committee in 2019 and has begun collaborating with area partners on a variety of trail maintenance and development needs.

While there can be economic and social benefits to tourism, there are mixed opinions about promoting tourism in the Red Cliff community. While 68% of survey respondents agree and 18% are indifferent to the statement, “In order to promote tourism, the Tribe should open more recreational opportunities to the public in designated areas”, 12% strongly disagree and 2% disagree (see Figure 13.3). With this consideration, it is important that the TNR works diligently to manage recreational spaces in a way that is respectful to the community, and if any additional areas are to be made accessible to the general public, the community must be consulted first to ensure that such a decision is in the best interest of tribal members. There are many environmentally and culturally significant areas throughout the Reservation that must be kept reserved for tribal members only, and it is important

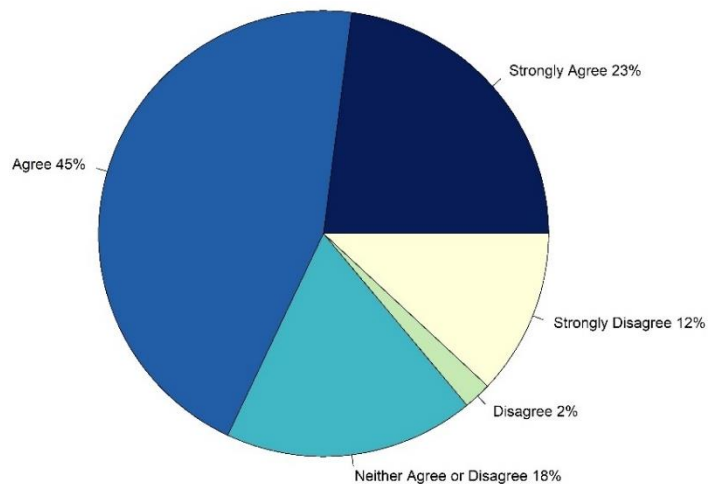


Figure 13.3 - Percentage of responses to the statement “In order to promote tourism, the Tribe should open more recreational opportunities to the public in designated areas.”

to clearly define where the public is not allowed to avoid any damages or conflict. These sensitive areas and the Reservation's small land base dictate that any public access areas are thoughtfully planned and restricted to a minimum. It is also important to deter the general public from trespassing on tribal lands, which can be done by wayfinding signage, posting no trespassing signage in other areas, and providing education to non-members so that they are aware of regulations prohibiting them from certain areas. Areas where non-tribal members are allowed to recreate provide opportunities to educate the general public on Ojibwe culture, history, and lifeways. These opportunities include interpretive and Ojibwemowin signage along hiking trails, such as the omakakii sign shown here, and the development of a Miskwabekong cultural center/visitor's center.



Ojibwemowin sign located at FBTNP.

Climate Change

While there is an abundance of agwajiing recreation and cultural activities in and around the Red Cliff community, there are several challenges and threats to these opportunities. One of the most concerning threats to Miskwabekong's agwajiing resources is climate change, of which significant impacts have been already been observed in the region. Dramatically high Anishinaabe Gichigami water levels have occurred over the past 5 years that are causing shoreline erosion and marine infrastructure concerns. While lake levels are currently high, from about 2007 to 2013 lake levels were reaching extreme lows due to drought, raising marine industry concerns over accessibility and docking issues. Historic storms have also swept across the region and led to significant erosion across the landscape, destroyed undersized road infrastructure, caused sedimentation and even led to algae blooms in Anishinaabe Gichigami ³⁴. These extreme weather patterns greatly effect accessibility and availability of recreational and cultural resources for the community.

Many phenological³⁵ and species shifts have also been observed. During listening sessions, many elders and community members noted changes that they have observed over their lifetimes: harvesting seasons are now 2-4 weeks behind what they used to be; over the past decade there have been less and less freezing nights during the iskgamizigan season which affects the flow of maple sap; and there are less species such as waawaashkeshi (deer), waabooz (snowshoe hare), gaag (porcupine), zhigaag (skunk), leeks, ozhaaboomin

³⁴ Algae is a recreation concern because it prevents accessibility for swimming, fishing, and tourism for both aesthetic and health reasons.

³⁵ Phenology is the observed cycles of plants and animals on an annual basis and how these cycles are influenced by variations in climate and habitat factors.

(gooseberries), gozigwaakomin (juneberries), miinan (blueberries), wiigwas (birch) and mashkiki (medicines) in Miskwaabekong which many elders also related to increased development and loss of habitat. Development pressure for additional housing and economic development in Miskwaabekong's limited land base is, and will continue to be, a significant challenge for the community. As such, planning for both development and agwajiiing recreation/cultural activity areas must follow a smart growth³⁶ approach to avoid conflicting uses and to protect the Tribe's resources. To minimize additional damages to the environment from agwajiiing activities, TNR staff must be diligent in monitoring recreation sites for issues such as erosion or invasive species and address issues rapidly. Education on principles such as "leave no trace"³⁷ and enforcement of tribal codes intended to protect the environment are also important to prevent damages from occurring in the first place. While some new opportunities may emerge from various ecosystem changes, cultural identity and economic and recreational opportunities based around historical use of and interaction with the environment is at risk.

Many of the tribal elders who spoke with TNR staff during listening sessions also commented on reduced engagement/participation and overall connection amongst the community. These comments were primarily regarding youth and young adults and their time spent using electronics rather than being outside. With modern technology, many people are becoming increasingly disconnected from the agwajiiing and it is important for the TNR to work on engaging community members, especially youth, in agwajiiing and cultural activities. In these efforts, staff will seek out appropriate community knowledge holders, teachers, and methods to help reach out to the community.

Management Objectives

- Maintain existing hiking trails to be in a safe and pleasant condition with minimal impact.
 - Establish a maintenance schedule for recreational areas.
 - Work with forestry staff to conduct hazard tree assessments in recreational areas and address risk trees.
 - Reinforce infrastructure to meet expected changes in future conditions.
 - Incorporate natural or low impact development into design.
 - Reroute, relocate, or remove infrastructure to increase access efficiency and minimize harmful impacts.
 - Restore degraded sites in recreation areas.

³⁶ Smart growth is a way to build cities, towns, and neighborhoods that are economically prosperous, socially equitable, and environmentally sustainable.

³⁷ Leave No Trace is a set of principles and best practices to help ensure enjoyment of nature while limiting human impacts.

- Support cultural and language revitalization efforts.
 - Consult with the Tribal Historic Preservation Office (THPO) on all culturally related efforts.
 - Add interpretive signage along hiking trails where appropriate.
 - Incorporate Ojibwemowin into educational materials such as trail maps and brochures.
- Expand hiking trail systems and recreational access points where appropriate.
 - Construct and maintain a floating walkway at Raspberry Bay for better tribal access to the Raspberry Bay beach.
 - Establish road biking routes to improve pedestrian/bicyclist safety.
- Collaborate with partners.
 - Continue actively taking part in Red Cliff's Tourism Team and support eco-tourism and agwajiing recreation efforts.
 - Assist in environmentally conscious site selection and development of a Miskwabekong Traditional Ojibwe Village/Visitor's Center/Museum.
 - Maintain good working relationship with area partners such as Bayfield County, City of Bayfield, Chequamegon-Nicolet National Forest Service and Apostle Islands National Lakeshore, and seek opportunities for collaboration on recreation.
 - Continue actively taking part in the Bayfield Area Trails Committee.
 - Collaborate with the Red Cliff Community Health Center to promote and increase agwajiing recreation opportunities to improve physical and mental wellbeing.
- Provide recreation access information to tribal members and the general public alike.
 - Improve and maintain wayfinding signage and brochures.
 - Maintain clear signage for recreational areas not open to the public on the reservation, to protect culturally sensitive and other areas that are off limits to non-members.
 - Provide information to the tribal community about recreational opportunities outside of the reservation.
 - Maintain information on tribal website and Facebook page.
- Provide public education to encourage participation and protect recreational resources from degradation.
 - Revitalize traditional relationships and uses by collaborating with tribal programs and community knowledge-holders to provide activity specific trainings for the community (ex: craft harvesting, traditional games, etc.)

- Continue hunter's safety classes.
- Offer trapper's education classes.
- Invasive species signage and cleaning methods (boats, firewood, hiking boots, etc.).
- Establish adequate boat cleaning facilities at Legendary Waters to prevent the spread of aquatic invasive species.
- Include Leave No Trace principles for camping and hiking in brochures, signage, etc.
- Post sensitive habitat signage where appropriate.
- Disallow and effectively prevent motorized vehicle use in sensitive areas.
 - Assist in the planning of ATV/snowmobile trail routes to ensure natural resource protection.
- Provide recreational tools to tribal members to remove participatory barriers. Examples:
 - Continue wild rice knocker-making, harvesting and processing events.
 - Continue kid's fishing day and youth spearing events.
 - Provide sustainable harvesting information (on permits) and training opportunities to community members.
- Buffalo Bay Campground:
 - Assist in reforesting campground area to protect water resources and provide aesthetically pleasing camping spaces.
 - Assist in protecting/restoring Anishinaabe Gichigami shoreline from erosion.
 - Assist in site selection and development of new swimming area away from marina.
 - Assist in site selection and development of fishing/overlook pier.
- Point Detour Campground:
 - Assist in reforesting campground area to protect water resources and provide aesthetically pleasing camping spaces.
 - Establish "modern" vault restroom facilities at Pt Detour campground to reduce groundwater contamination risk.
 - Establish hike-in campsites at Pt Detour campground.
 - Explore opportunities to develop a hiking trail from Pt Detour Campground to Little Sand Bay where there is a beach and Visitor's Center.
 - Assist in protecting/restoring Anishinaabe Gichigami shoreline from erosion.

- Assist in the enhancement of existing sites by creating flat, well-drained areas for tent campers.
- Revitalize traditional relationships and uses:
 - Consult with THPO on traditional relationships and uses of various plants, animals, and areas.
 - Seek opportunities to preserve, expand or restore harvesting/gathering habitats (balsam, birch and maple regeneration as a goal in forestry efforts, prescribed burns for blueberry regeneration, wild rice seeding, food forest trail at farm, etc.).
 - Collaborate on harvesting opportunities with the Tribal Farm.
 - Host wild edible and medicinal harvesting workshops.

Opportunities and Funding Outlook

Depending on the type of agwajiing recreation project, there are ample opportunities and funding mechanisms available for the TNR to continue to assist the Tribe in maintaining and improving agwajiing recreation for the community. This list is not all-inclusive:

- Duluth Superior Area Community Foundation:
 - Anishinaabe Fund
 - Apostle Islands Area Community Fund
 - Alexandra Smith Fund- In Support of Native American Treaty Rights
 - Biodiversity Fund
 - Four Cedars Environmental Fund
 - Red Cliff / Miskwaabikaang Fund
- Federal Recreation Grants:
 - Land and Water Conservation Fund (LWCF):
 - State and Local Assistance Program
 - Outdoor Recreation Legacy Partnership Program
 - Recreational Trails Program (RTP)
- Great Lakes Restoration Initiative
- Outdoor Industry Association, Outdoor Foundation Grants
- United States Forest Service Community Forest and Open Space Conservation Program

- Wisconsin Coastal Management Program
- Wisconsin Department of Natural Resources Knowles-Nelson Stewardship Program:
 - Aids for the Acquisition and Development of Local Parks (ADLP)
 - Urban Green Space (UGS)
 - Urban Rivers (UR)
 - Acquisition of Development Rights (ADR)



References

To be included in final draft



Appendices

To be included in final draft