Grand Portage Band of Lake Superior Chippewa:
Creative Solutions for a Changing Environment

The Grand Portage Band of Lake Superior Chippewa Indians resides in the northeast corner of Minnesota along Lake Superior. The dynamic environs of the region host a wide array of birds, fish, mammals, amphibians and reptiles. Unprecedented warming of Lake Superior in recent years suggests that climate change is taking effect around Grand Portage and is threatening local wildlife species. One of the Grand Portage Band's major concerns is that climate change may lead to the loss of culturally significant subsistence species including moose and brook trout in the Lake Superior region.

The tribe hopes that by investing in mitigation projects it can accomplish environmental and natural resources goals, achieve energy and food independence, contribute to carbon solutions, and reduce expenses to community members. In addition to existing mitigation projects and initiatives, the tribe is currently developing a comprehensive climate change adaptation and mitigation plan for tribal lands and resources. The plan addresses water quality, air quality, sustainable forestry, adaptation to shifts in fisheries and wildlife, sustainable food ventures, alternative energy development, and energy conservation programs.

Climate Change Adaptation & Mitigation Plan

Climate change will disproportionately affect tribes and the natural resources upon which tribes depend for maintaining a subsistence lifestyle. Consequently, the Grand Portage Natural Resources Management Department is actively developing an adaptation and mitigation plan that will protect both human welfare and ecosystem integrity.

Subsistence species:

Moose are the primary subsistence species for the Grand Portage Band and define the subsistence culture. Over the last two decades moose populations have been declining in Minnesota. Climate change is believed to be a contributing factor because Minnesota is at the southern edge of the moose range. The Grand Portage Band is working on a climate change project that assesses habitats used by moose (and the temperatures of those habitats) by recording moose movements with GPS tracking collars. This work will benefit the species and the tribe by providing critical range and migration data which can then inform land-use decisions that will benefit moose populations.

Fisheries:

To adapt to climate change, the tribe has shifted management of a 61-acre inland lake from a cold water (brook trout) fishery to a cool water fishery (yellow perch and walleye) through fish propagation and stocking. This occurred because warming temperatures in the lake reached critical lethal levels for brook trout causing complete collapse of the population. The Grand Portage Natural Resources Department adapted to the fishery collapse by choosing to develop a cool water fishery using yellow perch and walleye. The Grand Portage Native Fish Hatchery is now using re-circulating water systems to achieve the water temperatures needed for rearing cool water native fish species like walleye and lake sturgeon, in addition to rearing cold water brook trout for Lake Superior. This allows for better utilization and flexibility of the hatchery and stocking operations, while also providing higher growth rates for fish. The Grand Portage Band is also revising legacy contaminant (mercury) concentrations in fish tissue for consumption advisories for the Grand Portage Community.

Invasive Species Management:

Aquatic invasive species (AIS) assessments for plants, fish, and invertebrates have been planned for water bodies in Grand Portage. The additional AIS surveys have stemmed from the climate change adaptation plan which noted that warmer water temperatures may increase or aid dispersal of AIS. Similarly, increases in air temperatures associated with climate change may promote population growth of native and non-native forest pests and disease. Fortunately, the Forestry Department is active in the Slow-the-Spread gypsy moth program and the trapping of emerald ash borer in ash trees. Personnel have also received training in invasive pest and disease first detector courses, with discussions about creating an emerald ash borer action plan.

Forest Management:

The Forestry Department has been active in addressing issues related to climate change with their current management practices. This includes promoting mixed tree-species forests over monocultures, which allows for greater flexibility with adaptive management of forest resources in the future. Native tree species are planted annually to promote native forest communities and enrich species diversity. This is important given that the Grand Portage Indian Reservation consists largely of a boreal forest and cold climate animals, which are predicted to be negatively impacted by climate change.

Sustainable Foods Initiatives: Project Implementation and Progress

Northern Minnesota has virtually no agricultural food production. This lack of food production is referred to as a “food desert” by the US Department of Agriculture (USDA) and results in the need to import all foods from faraway sources. Food importation relies heavily on fossil fuels and as a result, the price and availability of imported food is partially determined by the price of gasoline. Having the means of local food production gives the tribe a greater degree of independence and sovereignty, which is important during times of rising fuel costs and uncertain economic conditions.

The Grand Portage Band has several ongoing projects within their sustainable foods initiative: a community garden, a planned bison ranch, wild rice seeding, and prescribed burns for enhancing blueberries. Not only do these programs improve public health

within the community by increasing access to healthy, locally grown foods, they also position the Grand Portage Band to be a part of the carbon solution. By reducing its reliance on imported food products, the tribe cuts down its carbon footprint – one of the important reasons that local, sustainable agriculture is hailed as an effective carbon mitigation technique.

The Grand Portage Environmental Department has been working towards the creation of a bison ranch within the reservation. The goal of this operation is to create a healthy, affordable and local food option for the community. Grass-fed bison are a great fit for Grand Portage Band for several reasons:

- Bison meat is naturally very low in fat and very high in protein.
- Bison meat is similar to moose and is recommended by doctors as a healthy alternative to conventional (corn fed) beef.
- Bison are very hardy animals - they thrive even in extremely cold conditions and require minimal shelter.

Completed tasks include:

❖ *Community Garden*

- Construction and expansion of the community garden: The original garden plot was big enough for 5 families to each have an individual plot. Due to the overwhelming interest shown by the community, the garden has quadrupled in size since 2009 and now accommodates 20 families.
- The community has planted 16 apple and cherry trees, as well as grape vines, rhubarb, and currant and raspberry bushes.
- Organizers constructed an 8 ft. tall perimeter fence around the garden to prevent deer and moose from destroying the crops and installed three 300-gallon tanks for irrigation purposes.

Grand Portage Community Garden

The Grand Portage Community Garden was started in the spring of 2009 and is intended to provide community members with the space and infrastructure needed to grow their own produce.

❖ *Proposed Bison Ranch*

- In 2010, several meetings with the Grand Portage tribal council and the Grand Portage Trust Lands office indicated a positive interest in developing a bison ranching project in Grand Portage.
- Subsequently, the Grand Portage Environmental Department submitted a proposal for a grant to help fund startup of the bison ranching project. That grant was not

funded; however several other grant opportunities are being explored, including one with the USDA.

- While funding possibilities are being explored, the Trust Lands office is actively searching for suitable locations for the bison ranch.

❖ *Wild Rice Seeding*

- For the past 6 years, the Grand Portage Environmental Department has been working to boost wild rice abundance in local lakes and impounds by seeding.

Future goals for the sustainable foods projects include:

- Continue expanding the community gardens as demand increases.
- Secure funding and subsequently develop the bison project in the near future.
- Conduct ongoing seeding and monitor for wild rice establishment.

Challenges and Lessons Learned

Bison need large quantities of grass to grow and reproduce. However, the heavily wooded terrain around Grand Portage creates some considerable difficulties in the creation of a pasture. This has forced the Trust Lands staff to developed creative solutions that address the landscape-based challenges associated with bison husbandry.

Project leaders have determined that after selecting a site for the pasture, it will be partially logged, leaving some areas of timber to serve as shelter from inclement weather. The next step will be to bulldoze stumps and remove as much woody debris as possible. Then the pasture will be seeded with the appropriate seed mix of grasses. After the construction of a very sturdy fence, the bison, initially a small number of calves, will be introduced into their new home. Natural resource managers will evaluate the herd's progress over time.

Key Partners

The Natural Resources Management Departments have been instrumental in the establishment of the community garden. Several others within the community have also helped to develop and maintain the garden. These partners include:

- The Grand Portage Wildland Fire Crew (keep community garden watering tanks full)
- Community members

Anemometers used in the Grand Portage wind feasibility study.

Alternative Energy Development and Energy Conservation: Project Implementation and Progress

For the Grand Portage Band, meeting local energy demands currently requires purchasing energy from conventional, non-renewable sources, however, the tribe is actively transitioning toward energy independence through improvements to existing systems as well as adoption of new technologies.

The tribe currently operates two biomass heat generators – woodchip boilers located at the community center and at the lodge and casino. They are now investigating options for increasing their biomass capacity using the existing units as well as perhaps purchasing new biomass energy generators.

Given the tribe's remote location, alternative energy, namely wind and biomass, could provide security to residents who might otherwise be vulnerable to freezing winter temperatures during power outages. Feasibility studies suggest that alternative energy could provide sufficient power to Grand Portage communities at a reduced cost. In fact, the studies indicated that the improved biomass boiler system could provide heating for buildings at a much lower cost than propane. The cost savings would be very helpful to the community given that many people heat their homes for up to eight months of the year.

In addition to developing alternative energy on tribal lands, the Grand Portage Band is currently reviewing methods for improving energy efficiency in tribal buildings. This effort, coupled with the Housing Department's home weatherization program, promises to reduce overall energy consumption within Grand Portage.

Completed tasks include:

Wind and Biomass Energy Development

- Grand Portage Band conducted a comprehensive energy audit for the community's total energy consumption (estimated 9.7 GWH).
- The tribe contracted two independent energy development companies to perform feasibility studies for wind and biomass energy.
- Anemometers were installed on a television communications tower at 50 and 80 meters on a high ridge in Grand Portage; 15 months of wind data was collected for the wind feasibility study. The study, which was conducted several years ago, formed out of a partnership between the tribe, the Center for Sustainable Community Development, University of Minnesota, Duluth, and the National Renewable Energy Laboratory.
- The feasibility studies were completed in 2011 and submitted to the tribe – results of the studies indicate that wind speeds are sufficient to support wind power.
- Project managers have subsequently developed a proposal for two wind turbine generators (1.65 megawatts of power generation each) that will produce 10.3 GWH of electricity for the Grand Portage village.

- The proposal has been submitted to the tribal council for review.
- Grand Portage Band has explored the benefits of heating buildings using biomass generators – results indicate that the cost of heating with woodchips in Grand Portage is 17.5% of what it costs to heat with propane.
- The tribe is currently reviewing a variety of biomass generator scenarios including development of a central heating plant and construction of underground piping to heat individual homes and buildings within the community.

Anemometers along the ridgeline in Grand Portage.

Energy Conservation

- Project managers have calculated baseline data on energy consumption for tribal council buildings and private residences by examining vendor payments and records.

The tribe has made an impressive amount of progress in recent years, and is now looking toward **future goals**, which include:

- Conducting bird and bat studies to ensure that the proposed wind project will not cause serious harm to populations of migratory and year-round birds and bats.
- Evaluating financing options for the proposed alternative energy projects.
- Installing a wind project and/or investing in biomass generator systems.
- Increasing biomass capacity from the existing unit and improving energy efficiency.
- Weatherizing residences in the community and adopting energy efficient practices in tribally-owned buildings (i.e. installing compact fluorescent lights [CFL] and adjusting thermostats).

Challenges and Lessons Learned

Tribal representatives have expressed that an important challenge to wind development in Grand Portage is access to the proposed site. The ridge where the feasibility study was conducted is in a rural location, several miles from the Grand Portage village. Thus the project is subject to increased costs associated with installing wind turbines in a rural location, installing underground connection line, increased line loss (voltage lost in the line transfer), and the added expense of building a road that must meet certain grade and turning requirements.

Despite the challenges faced by managers of the renewable energy project, there seems to be a strong sentiment of optimism. When asked about major lessons learned, one Grand Portage employee spoke to the importance of engaging with community members about the future role of renewable energy in the community. It's been good to "get the topic out there," she stated. It's important to discuss the fact that "the energy that we're relying on right now is not forever – it's not renewable." Others have spoken highly of the natural resource management agencies and their efforts to interact with young people in the community through educational programs. Tribal agency employees visit schools and offer lessons to help students understand where energy comes from, how long the tribe can rely on the existing sources, and how to improve energy efficiency.

Key Partners

A project of this nature requires collaboration and partnership between management agencies. There have been many contributors to the alternative energy development project, including:

- The Grand Portage Tribal Planner
- The Grand Portage Environmental and Forestry Departments
- Department of Energy - Recovery Act, Energy Efficiency and Conservation Block Grant

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About the Grand Portage Band of Lake Superior Chippewa

The Grand Portage Band is located in northeastern Minnesota and constitutes 1,000 enrolled members, 200 of whom live in Grand Portage. According to the tribally-operated Lodge and Casino, Grand Portage was one of the earliest Oijbwa settlements in Minnesota. The reservation is located on the North Shore of Lake Superior along the picturesque US-Canadian border. Grand Portage hosts an abundance of wildlife and was famous for its active fur trade during the 18th and 19th centuries. Traditional activities in the area include hunting, fishing and plant gathering.

Resources and References

Grand Portage Trust Lands and Resources: http://grandportagetrustlands.org/

Gii-wen (so the story goes): News and information from Grand Portage Trust Lands, Vol. 4(2), fall 2011:
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Minnesota American Indian Chamber of Commerce, Grand Portage Band of Lake Superior Chippewa:
http://www.maicc.org/tribal_governments/tribe_grandportage.aspx

Minnesota Department of Natural Resources, Grand Portage State Park:
http://www.dnr.state.mn.us/state_parks/grand_portage/index.html

Indian Affairs Council, State of Minnesota. Tribes: Grand Portage:
http://www.indianaffairs.state.mn.us/tribes_grandportage.html

Grand Portage Lodge and Casino, Our Heritage: http://www.grandportage.com/heritage.php

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Project Contact:

Seth Moore, PhD
Director of Biology and Environment,
Grand Portage Band of Chippewa
Email: samoore@boreal.org
Phone: 218-475-2022

Photos in this profile are courtesy of the Grand Portage Band of Chippewa.

This profile was developed by Cristina González-Maddux, Institute for Tribal Environmental Professionals, Northern Arizona University, and EJ Isaac and Yvette Chenaux Ibrahim of the Grand Portage Natural Resources Management Department.

The profile is available on the Tribes & Climate Change website: www4.nau.edu/tribalclimatechange/. The tribal climate change profiles featured on the website are intended as a pathway to increasing knowledge among tribal and non-tribal organizations about climate change mitigation and adaptation efforts.

For more information, contact:

- Sue Wotkyns, Climate Change Program Manager, Institute for Tribal Environmental Professionals, susan.wotkyns@nau.edu
- Mehrdad Khatibi, Director, Institute for Tribal Environmental Professionals, mehrdad.khatibi@nau.edu