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## Abstract

The past twenty five years, my sister and I join hundreds of other Wild Rice harvesters at the lakes edge for the annual harvest. Wild rice "Manoomin" (Zizania palustris L.) has cultural, ecological and economic value to the people of White Earth Nation. Wild Rice is considered sacred amongst the Anishinaabe people of the upper Great Lakes Region not only because it was a staple food component in their diet; but also, a cultural tie to our ancestors since their migration west to the "food that grows on water". Wild rice yield productivity is a concern to the tribal communities who rely upon the annual wild rice harvest each year, and therefore it is important to understand yield expectation to derive to a total harvest permit numbers. This research project explored two lakes: Lower Rice Lake located on the White Earth Reservation, and Mitchell Dam/Rice Lake on the Tamarac National Wildlife Refuge (TNWR). Using geometry calculations in ArcGIS, GPS waypoints, and estimates based on personal and Traditional Elder Knowledge, the goal for this project was to research and estimate the Wild Rice productivity of each lake to make recommendations on how many harvest permits can be issued for each of the lakes. In the near future, I hope to secure more detailed data for the two surveyed lakes and begin to acquire data for other bodies of water on the reservation and refuge which offer rice

## **Introduction and Background**

White Earth Reservation is located in Becker, Clearwater, and Mahnomen counties in north-western Minnesota. The reservation covers 832. hectares or 1,310 sq. miles. Created in 1867 by a treaty between the United States and the Mississippi Band of Chippewa Indians, it is one of seven Chippewa reservations in Minnesota. Tamarac National Wildlife Refuge covers 42.724 hectares or 164.96 acres and lies partially within the boundaries of the White Earth Reservation in the glacial lake country of northwestern Minnesota in Becker County. The Collier Agreement of 1936 was an agreement between the Biological Service (which is now the US Fish and Wildlife Service) and the Bureau of Indian Affairs to establish the Tamarac National Wildlife Refuge. This agreement allows enrolled White Earth Tribal Members to hunt, fish, and harvest wild rice within the Tamarac National Wildlife Refuge, in exchange for allowing the Fish and Wildlife Service to take control of this land.



# DEVELOPMENT OF A WILD RICE PERMIT SYSTEM FOR THE WHITE EARTH NATION

### Project objective statement

The objective of this project is to determine if we, with the NRD can develop a model for allocating ricing permits for these unsurveyed lakes for the White Earth Nation.







#### Materials and Methods

The Geospatial data for this project came from the MN Geo orthoimagery and GPS units used in the field. NAIP imagery (National Agriculture Imagery Program) was downloaded into ArcCatalog and ArcMap10 software. Using the orthoimagery, nine unsurveyed lakes and one river perimeters were hand digitized, using ArcGiS for rice lakes on and off the reservation, focusing on two main lakes: Lower Rice Lake and Mitchell Dam/Rice Lake



Special permits from the "Tamarac NWR" allowed water access to Rice Lake and to locked gateways to a lake landing to conduct research. Kayaks were used to access the lakes. Garmin handheld GPS units were used to take waypoints of wild rice bed stands and aquatic vegetation on these two lakes. Personal photographs were also used as a waypoint visual of each lake.







## Results and Discussion

Through my research data shows that Mitchell Dam/Rice Lake has 106.73 hectares (2207 acres) of surface water (based on geometry calculation in ArcGIS). Data from 2011 harvest it was estimated to be 223.93 pounds of wild rice that is typically harvestable from an acre of "thick" wild rice (which is what was identified as the rice conditions for each lake). The yield estimate was 23,900 pounds of wild rice available on Rice Lake. Based on the rice available, and taking into account an average take of 1500 pounds per harvester, there should be approximately 16 permits issued for Mitchell Dam/Rice Lake this harvest season.









#### Recommendations for Future Work

Unfortunately, data for wild rice permits and production is limited. I would have like to have had at least 10 years of permit and harvest records for each lake. Permit data was only available for Mitchell Dam/Rice Lake (because it is a part of Tamarac NWR). Harvest data was only available for Lower Rice Lake. This data, however, was incomplete as many individuals keep wild rice for themselves, which goes unaccounted for. Therefore, the estimate is conservative. For the reasons listed above, I was forced to attempt to piece together a formula for determining wild rice permit issuance based on two parts, which did not equal a whole. Because of this, my formula will need to be modified moving forward.

In the near future, I hope to secure more detailed data for other ricing bodies of water on the reservation and refuge. Data I would like to attain includes; information from the wild rice processors; pound finished and off which lakes, GPS data for the other six lakes and river, past and present estimates of wild rice harvested of these lakes and permit data issued for these lakes. With this data I would secure a more accurate wild rice nermit system for the White Earth Nation.

## Acknowledgements

Kathi Bennett
Dr. Bull Bennett; Kiksapa Consulting, LLC
Dr. Eiru Wood, USGS EROS
Volker Mell; Grand Ronde Confederated Tribes
Joshua Bronston, Navajo Technical College
Dr. Sona Statistics of the Confederated Tribes
Joshua Bronston, Navajo Technical College
Dr. Dan Wildeal
Haskell Indian Nation University Staff
Holly Ristan for the historic maps (WETCC)
White Earth Natural Resource Department
Tamarae National Wildlife Refige
Dr. Steve Dahlberg; WETCC
Andrew Ulven Gist Mentor WETCC

## Literature Review

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Data for Maps

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