Wild Rice Research and Restoration along the Trent-Severn Waterway 2010

Rick Beaver at Emily Creek 2010

Report by:
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Table of Contents **Page**

List of Figures

List of Appendices

Abstract

Background and Purpose

The Trent-Severn Waterway is a National Historic Site of Canada that crosses the central portion of Southern Ontario from Trenton on Lake Ontario to Port Severn on Georgian Bay. The Waterway is 386 km in length and follows the course of the Trent, Otonabee and Severn Rivers that connect a chain of lakes and canal cuts controlled by dams and navigation locks. The Waterway's lakes and rivers encompass more than 4,500 km of shoreline.

There is a great diversity of aquatic and upland habitats along the Trent-Severn Waterway with a corresponding diversity of species, varying from remnants of Carolinian species in some of the southern portions of the system to more northern species on the Precambrian Shield. More than 40 COSEWIC (Committee on the Status of Endangered Wildlife in Canada) listed species have been identified along the length of the Waterway. However, although this diversity currently exists. There are increasing development pressures on aquatic habitats and shorelines that threaten to destroy many of these unique areas and species.

To begin to address the concerns of species and aquatic habitat loss along the Waterway, Parks Canada has developed an integrated program entitled-"Leaders on the Landscape-Integrated Aquatic Habitat Conservation". By building on a solid foundation of existing work and strong partnerships, an integrated aquatic habitat conservation program is being developed, implemented and evaluated along the Trent-Severn Waterway. The program will provide individual and habitat protection for a variety of species at risk through ecological investigation and restoration, valuable visitor experiences and targeted education in order to create a lasting ethic of conservation in this area.

Wild rice, although much less common now, once comprised an integral component of the aquatic habitats within the Kawartha Lakes region of the Trent-Severn Waterway. There are two species of wild rice Zizania palustris or northern wild rice and Zizania aquatica aquatica (var) or southern wild rice. Southern wild rice is quite rare in Ontario and is currently known to exist at one location along the Waterway. Both species of wild rice provide valuable cover and forage for a variety of wildlife species including, waterfowl, marsh birds, muskrats, and fish. Wild rice is highly valued by First Nations people along the Waterway and is considered by Parks Canada to be a heritage cultural resource. In recent years there has been a rejuvenation of some wild rice beds along the Waterway, and with this has come increasing pressure from landowners for the removal of this resource, considered by many to be a "nuisance aquatic weed".

(Taken from Parks Canada Wild Rice Research and Education, Statement of Work 2010)

1. Introduction

Wild rice is our only native cereal. It is a wild grass that grows from seed each year and produces a very valuable grain that has been used by the First Nations people from parts of North America for food for thousands of years. The natural rice bowl extends over an area west of Lake Superior to Southern Manitoba and into adjacent states of Minnesota, Wisconsin and Michigan. Many lakes and rivers have received their names from the presence of wild rice, eg. Grass Creek, Grassy Bay, Zizania Lake. The best known is Rice Lake part of the Trent-Severn Waterway, which was possibly the largest of these in Canada. The ecological benefits of large beds of wild rice can really only be experienced by slowly paddling a canoe through the thick grass that can reach 2 meters above the water level. Muskrat, fish, ducks, geese, migrating birds by the thousands are there in September during the harvest. Wild rice filters the waters, binds loose soils, provides protection from high winds and waves along shorelines, provides habitat for Species at Risk like Least Bittern and Black Terns which have been observed in the rice during the summer of 2010.

2. Native Use and Management

The exact date when wild rice came into the area known, as the Trent-Severn Waterway has not been thoroughly researched. Through archaeological records the Rice Lake area has been inhabited first by Paleo or Stone Age natives for 10,800 years. The earliest post glacial record of wild rice is the 10,000 year old fossil at Bog Creek in east central Minnesota (Birks 1976). A study of Late Quaternary Vegetation History of Rice Lake by John H. McAndrews, Department of Botany, Royal Ontario Museum finds that wild rice was well established in bays around Serpent Mounds 3,500 years before present, also with abundant wild rice and likely larger deer herds and increased food supply for the expansion of the Late Archaic human populations in the Rice Lake area (J.H. McAndrews)

The Anishinabe word for wild rice is Manomin "gift from the creator" and other First Nations refer to it as the Good Seed.
The Seven Fires an account of our life that has been handed down by our Elders tells that 7 prophets came to the Anishinabe. They came when our people were living along the northeastern coast of North America. Each prophecy was called a Fire. The third prophet refers to wild rice, and that when the Anishinabe find the path to the chosen ground a land to the west to which they must move their families. This will be the land where food grows on the water. After many years of traveling they finally found the place where food grows on the water, near Spirit Island on the southern shore of Lake Superior. Wild Rice has always been regarded as the sacred gift of their chosen ground. (From The Mishomis Book The Voice of the Ojibway, by Eddie Benton-Benai)

2.1 Local Knowledge and Other Historical Records

Elmer Marsden speaks of what his father-in-law Jack Simpson told about the rice being so thick from Sugar Island to Rainy Island that you would have a hard time paddling through it.

Barry Marsden (Elmer's son) remembers his grandfather Jack Simpson talking about the rice harvest in Rice Lake, exact dates are not known (possibly early 1900's). A local farmer with a team of horses and a wagon was hired to meet canoes at Island View Camp near Roseneath. There would be 12 canoes loaded with bags of cleaned rice, the rice would be dropped off at various homes in Alderville. When the team got back there would be 12 more canoes to unload, this would continue until all the rice was brought to Alderville.

Mel Smoke talked about duck hunting on Rice Lake when the rice was so thick you had to look for a gap to be able to put out a few decoys then take cover in the rice to wait for the ducks to come in.

Betty Grant remembers paddling through the rice with Hank Comego around the south point and on the west side of Whites Island in 1937. I suspect she may be the last person connected to Alderville that recalls the rice in Rice Lake. (See Map Figure 4)

Elmer Marsden and Jack Simpson were probably the last harvesters to gather rice around Slaughter Island just below the community of Trent River. He said they harvested for 8 or 10 days and the rice was good quality and cleaned up to a weight of about 500 lbs. the rice disappeared shortly after. (See photo of plaque placed at Trent River in 2008)

Other research over past years has found newspaper articles on the harvest at Rice Lake, which record 345 and 475 bushels in 1871. Another from the Globe, Toronto, Friday October 22, 1909 which states that the rice belongs to the Indians and that seed is being shipped to Georgia, Milwaukee, Nebraska, Ohio, Michigan, and New York. (Appendix 1)

Many other stories exist from Curve Lake, Hiawatha, and Ardoch about ricing on Rice Lake, the harvest celebrations, and having ball games on Sugar Island.

Naturalist Charles Fothergill writes about the wildlife species and the native muskrat harvest at Hiawatha in 1821 being around 10,000. The pelts were sought after by fur buyers as they were of excellent quality. He writes about 2 white muskrat pelts and two black ones. The rice certainly provided excellent habitat for muskrat, waterfowl, and many other species of fish and wildlife. (Appendix 2)

A 1906 Field and Stream magazine writes about the wild rice harvest at Rice Lake. The author Bonnycastle Day speaks of 5 thousand acres and 50,000 bushels waiting to be thrashed out by the Hiawatha and Alderville Indians in the area of East Sugar Island. (Appendix 3)

2.2 Wild Rice and the Early Explorers

The earliest written account of native wild rice harvesting in North America dates from the 17th century. Pierre-Esprit Radisson describes the importance of wild rice as a staple food to those he encountered in the Great Lakes region between 1653 and 1684 (Chambliss 1940:203). As well Rev. Pere Menard, a 17th century Jesuit Missionary, gave a detailed description of native harvesting, processing, and storage of wild rice in the Jesuit Relations (Avery and Pawlick 1979; 51) Subsequent European missionaries, explorers, and traders who traveled in the Great Lakes region in the 18th and 19th centuries marveled at the profusion of wild rice stands and stressed that they could not have completed their long journey without this food (Aiken et al. 1988:81) Vennum 1988:29-32)

In Southeastern Ontario, the settlers of the early 19th century noted the cultivation of wild rice on Lake Scugog by Mississauga Indians (Frost 1973:50). In treaties with the Crown of 1818 and 1856, the Mississauga Nation surrendered lands in South-eastern Ontario. In these treaties, aboriginal rights to harvest wild rice stands throughout their homeland were not surrendered. However the construction of the Trent canal system, which took place in several stages between 1837 and1920, raised water levels on lakes and marshes and eventually destroyed wild rice stands throughout the region (Howard et al. 1987).

Between the years 1891 and 1915, representatives of the Mississauga Nation lodged a series of complaints with the Federal government. The Mississauga's claimed that the increase of water levels on Rice Lake was damaging the wild rice stands and requested that natural water levels be restored. In written correspondence, the Federal government acknowledged the Mississauga Nation's exclusive right to the wild rice stands. However, Federal officials claimed that the raising of water levels could not damage wild rice (Howard et al.19887: 38-45).
Between the years 1875and 1923, the Mississauga Nation also placed restrictions on who could harvest the wild rice stands at Rice Lake.

2.3 Establishment of the Wild Rice at Ardoch

Mary Buckshot and Joseph Whiteduck, Algonquin people from Golden Lake who settled in Ardoch in the early part of the 19th century planted wild rice from Rice Lake at Mud Lake in the late 19th century. It is important to note that the Algonquians of Golden Lake never signed any treaty with the Crown nor surrendered aboriginal title to their homeland, which includes the whole Ontario side of the Ottawa River watershed south of the Mattawa River (Sarazin 1989:193).

2.4 Historical Continuity

Native people have harvested wild rice in the Great Lakes region since before recorded history. The profusion of wild rice stands and the nutritional significance of wild rice were noted by many explorers, missionaries, and traders who traveled through the Great Lakes region in the 17th and 18th centuries. The original settlers in Southeastern Ontario noted the Mississauga Nation was cultivating wild rice. Aboriginal rights to harvest and manage wild rice were not surrendered through treaty by the Mississauga Nation. The wild rice at Mud Lake is located within the homeland of the Algonquin Nation, which has never signed any treaty nor surrendered any of its aboriginal rights.

There is some historical evidence that the Mississauga Nation managed the wild rice at Rice Lake until the 1920's when the wild rice stands were destroyed through the raising of water levels. Oral history states that wild rice was transplanted from Rice Lake to Mud Lake in the late 19th century. Since the wild rice was planted at Mud Lake, an unbroken line of hereditary stewards has existed.

3.0 The Wild Rice Plant

Wild rice, like most vascular plants is composed of roots, stems, leaves, flowers, and fruits. (Figure 1)

Roots

The primary root is the first root to emerge from a germinating seed. Soon after the primary root appears, a permanent adventitious root system develops from the first stem node and later from higher nodes. These roots grow into the mud diagonally and anchor the plant firmly against the lifting force of waves and currents. The root system of a mature plant is shallow (up to 35cm deep) with a lateral spread approximating the circumference of the aerial leaf coverage.

Stems

The stems of grasses are surrounded closely by enveloping sheaths. Ordinarily the stems of wild rice are visible in the emergent stage and vary in height from 0.6 to 3.0 m depending on the variety, plant density, competition, nutrient status, water depth, and other associated environmental factors. Stems in the middle of a wild rice stand are usually uniform in height, whereas the water depth influences the height of those near the margins of the stands. Internally the stems are hollow with air filled cavities that act as air locks and assist the buoyancy of the whole rice plant hence, plants that are uprooted float to the surface and never regain a foothold.

Leaves

Following the emergence of the coleoptiles, the next two or three leaves to appear are thin, pale green, and ribbon like. They grow rapidly and are characterized by the absence

of epicuticular wax. Each succeeding leaf is larger than the preceding one. When the later leaves reach the water's surface, the submerged leaves slough off, leaving the lower stems smooth. As more leaves reach the surface, wax forms on the upper surface of the epidermis. At this stage, internal tissue differentiation allows air to reach all parts of the plant. The long ribbon-like floating leaves lie on the waters surface and are moved about by the waves and prevailing wind. There are usually two or three leaves per plant and they persist until the aerial leaves are well established.

Flowers

Male and female flowers are born on the stems in late July early August and are mostly green and yellow in color. Wind pollination starts and continues until all of the tillers have flowered. Environmental factors such as wet, cold, or calm weather conditions may interfere with the shedding of pollen, which affects grain production.

Grain

Within 24 hours of pollination the grains begin to form, and continues for about the next 4 or 5 weeks. The grains at this time are light green with a milky interior. As the ripening continues the grain turns olive brown and finally to a dark brown/black with a hard kernel. Grain shedding occurs in late August and continues well into September.

Zizania aquatica aquatica

Southern wild rice is present in Canada along the shores of the Great Lakes and along muddy shores of streams and ditches in Southern Ontario and Quebec. It occurs throughout Florida, Louisiana, and the eastern seaboard states because the grain is short and thin there is little commercial interest in it, and the places where it is now found in Canada are mostly sites of natural distribution.

Dore (1969) documented the limited and disjunct distribution of this southern variety in Canada and concluded that because of its lack of aggressiveness, it is unlikely to extend northward under present climatic conditions. Southern rice is found in one location on the Trent Severn-Waterway. (Figure 2)

Zizania palustris

Northern wild rice grows extensively along many rivers or their lake like expansions from the southern edge of the Precambrian area in Alberta and Saskatchewan (range extended by planting) through Manitoba and Northwestern Ontario. It is widespread in Southern Canada where some stands are found in waters of the Trent Canal System and rivers flowing into the Ottawa from the north and west. It occurs as far east as Nova Scotia and extends southward into the northern United States.

4. Field Research

4.1 Background

The last wild rice inventory project out of Alderville took place during the summer of 1994.The research team consisted of 4 members of Alderville First Nation. The study consisted mainly on locating and mapping all the existing wild rice beds. The study area was from the Parry Sound area to Southern Central and Eastern Ontario. Rice seed was harvested from five locations Ardoch, Staples River, Emily Creek, Little Bald Lake, Mitchell Lake and 16 sites were planted which included Crowe Lake and a local beaver pond. A total of 6 first time rice harvesters and 14 experienced ricers came out to various locations during the 94 season. The wild rice started growing in Stoney Creek, a small amount in Indian River and in the beaver pond, the rice plants did not grow in any of the other sites.
The wild rice project was not funded again until 2007-2008-2009 when a non-profit organization called Plenty Canada applied for funding to do wild rice mapping, seeding, processing and involve native youth in various other activities. Wild rice seed was gathered at Little Bald Lake and the south section of Stoney Creek was seeded with about 35 lbs. Other partners in this project included Ontario Federation of Anglers and Hunters who provided opportunities for Queens University students to do work on fish census including carp. The Northumberland County Roads Department controled beaver debris from plugging culvert, 4 different landowners along the creek. Alderville First Nation, Sir Sanford Fleming College BEAHR (Building Environmental Aboriginal Human Resources) Lower Trent Conservation Authority, Trent –Severn Waterway Species at Risk Branch.

Common Carp were uprooting the young rice plants in Stoney Creek so Ontario Federation of Hunters and Anglers biologist Ed Reid had a carp barrier built of iron bars. The barrier could be lowered in early June to prevent the large carp access to the seeded part of the creek. Steel bars were placed 4 inches apart to allow the smaller fish safe passage through the culvert. Beavers however took full advantage of our steel gate across the front of the culvert and completely plugged the barrier preventing any water from moving towards Rice Lake. The water levels behind the barrier began to rise fast and threaten the road so we had to raise the gate and get the water moving. After repeated beaver problems the barrier was removed this fall, November 2010 as requested by the landowner. Heavy equipment used to remove beaver debris had damaged the bars and frame.

4.2 Field Research 2010

We continued our work on wild rice under Plenty Canada's project Our Traditions Our Future in mid June by checking and plotting the rice beds on our G.P.S. We checked Stoney Creek and the planted rice had reached the floating leaf stage, ducks and geese were grazing it off heavily.

July 5 - checked a large bed at Pigeon Lake and Emily Creek with biologist Rick Beaver. Located a colony of nesting Black Terns. Also checked Little Bald Lake and noted a lot of damage by Canada Geese, plants were cut off at about 12" above surface of water.

Pigeon Lake rice was at the floating leaf stage and Emily Creek the rice was up about 2 feet and looking very good. (See photo)

August 10 - conducted a Rice Harvesting Stick making workshop at Alderville with about 8 people in attendance to carve out rice harvesting sticks.

August 16 - Checked Percy Boom area and found a few plants remaining of the Southern Rice also observed a Snowy Egret and a Blandings Turtle in the mouth of small creek where the Southern Rice is growing. There was a lot more of this species in 1994 an approximate size estimate 30 ft. diameter circle very thick and heavy with this type of rice. Only a few plants are left along the shoreline at this time.

August 17 - Checked the Slaughter Island area with Dave Bland T.S.W. this was a traditional harvesting area for people from Alderville. We did not find any rice. Also checked Puffball Island but did not find any rice. Checked Percy Boon again and got G.P.S. location for the Southern Rice. (See Map Figure 5 , 2009 Wild Rice Locations)

5. The Harvest 2010

Weather conditions made for a difficult season. High winds and driving rain prevented the harvesters from going into the rice beds.

September 3 - met the film crew at Little Bald Lake and did some filming for the Visual Heritage Film Project. Approximately 4 canoes, 3 Parks Canada Staff, 4 harvesters. Rice coming off well in some areas, green in others. Harvested about 40lbs. green rice.

September 13 - the harvest at Emily Creek, rice was ripe and the bed was in great shape. This creek is quite hard to paddle through, lots of submerged logs and stumps. Four harvesters gathered about 40 lbs of rice.

September 14 - took the youth group up to Little Bald Lake and showed them how to thrash out the rice. 3 canoes and 6 harvesters gathered approximately 20 lbs.

September 14 - harvested rice today at Mitchell Lake. The rice was about 90% gone probably blown off by the high winds and rain earlier in the month. The plants were quite thick and difficult to paddle through on the north side of the lake. Harvested about 10 lbs. harvest is over as most of the rice has fallen back into the lakes and creeks.

6. Restoration of Wild Rice at Curve Lake and Alderville

In mid October several potential wild rice seeding sites were checked in Chemung and Buckhorn Lake. These sites along the west side of Chemung were selected as trial seeding sites for later in the fall. Fox Island part of Curve Lake First Nation was also checked for potential planting sites. The rice collected earlier in September was kept in the lake and was sown in November after the majority of ducks and geese had migrated. Approximately 10 lbs of seed per site sown. (Figure 9)

Stoney Creek in Alderville was seeded again this fall in November just before freeze up. Approximately 20lbs. of Northern Rice; 1 lb. Southern Rice.
Trent University the M.N.R. and the Anishinabek/Ontario Fisheries Resource Centre contacted Parks Canada about a research study on the decline of Muskellunge in Rice Lake. Muskie like to spawn on old rice straw, and the young fish have some cover in the rice beds from predators so the project fit well with what we were already working on. Tom Whillans PhD. from Trent University came to have a look at the creek. We paddled down stream for a kilometer then met First Nation Elder and landowner Elmer Marsden at the road. Elmer was able to relay past information about muskie spawning down through the flooded woods south of County Road 18. As a result a project was drafted to confirm muskellunge spawning, explore the relationship between the muskellunge and wild rice, assess the creation of spawning habitat and support the current efforts to re-establish wild rice in Stoney Creek. (Figure 7)

7. Risks and Threats to Wild Rice

Threats to the survival of wild rice throughout the Trent-Severn Waterway are increasing as more natural shoreline is changed to suit the cottage and tourism industry. In many cases the owners do not realize the plant that grows along the shorelines is wild rice. Usually the landowners try to find various ways of getting rid of it and refer to it as "The Weeds" permits to chemically kill it, dredging, and hand pulling the plants are all attempted throughout wild rice country. Unfortunately this continues every year as we go to the rice beds we see new docks, new cottage development, shoreline destruction, boat paths cut through the beds and piles of rice plants around the docks. This continues on the mainland as well as out on the islands wherever there is a cottage or house the rice gets taken out.

Crowe Lake about 1990 had a good bed of wild rice. I went there with Mel Smoke an Elder from Alderville and great rice harvester to get some. While paddling along the west side of the lake we saw lots of people wading in and pulling up the rice plants. There were piles 6 feet high in front of each cottage. A sad and shocking sight, unfortunately this is still happening today 20 years later. (See photo of new docks in Little Bald Lake 2010). Water levels are also a major threat especially during the floating leaf stage at this time in June raising the water levels drowns the rice.

Common Carp an introduced species of large fish brought from Europe into the Great Lakes during the late 1890's. Carp worked their way into the waterways and easily

uproot or dislodge young rice plants in the loose soils at the bottom of lakes and rivers. Carp populations have increased into the millions in lakes along the waterway.

During our 2010 rice monitoring we saw that nearly all the rice at Little Bald Lake had been cut off about 12 inches above the waterline. Later we watched 3 different flocks of Canada Geese working through the rice grazing it off. Little Bald Lake this year was good in some spots other places were quite thin. I would guess that grazing off the leaves sets the plants back until new leaves emerge. No further research on exactly how this affects the end harvest has been done.

Commercial airboat harvesting has also occurred on several lakes in the Trent-Severn Waterway. The long and short-term affects on the rice needs more research. The rice beds in the Trent-Severn Waterway were most likely planted and managed by First Nation People for the use of all community members. There is the threat that airboat harvesters are very efficient and take most of the available seed eventually depleting the resource. Airboats are also much wider than canoes and as they move around flatten the plants into the water making any available rice that was still green unavailable for the season.

The threat of the genetic resource being collected and stolen by large producers of wild rice products in the Central States has been identified by First Nations in the Northern States, Michigan, Minnesota, and Wisconsin. The concern is hybridization of wild rice, which could affect the original rice.

The effect of lowering water levels in late fall requires more research and monitoring. Rice seed on the lakebed becomes available to ducks and geese, shorebirds would also have greater access to rice as more lake bottom is exposed.

8. Public Education

Public education will become one of the most important tools to help save the wild rice. Public and High Schools over the past 3 years have indicated a lot of interest in having First Nation people come to schools to do related presentations. This has been done in Cobourg, Peterborough, Oshawa, and Roseneath with estimated contact list of over 700 students and staff. The wild rice life cycle and ecology is always an important part of the presentation.

A wild rice fact sheet has been done which could be reproduced and given as handout information throughout the Trent-Severn and the province. (Appendix 5)
Videos such as First Scientist, which has been shown on T.V.Ontario several times exploring the value of wild rice. This has also been shown at High Schools.

Wild rice information could be included in county tourist guides along with specific tourist guides for various lakes along the waterway.

9. Recommendations

1. Provide complete protection of all remaining wild rice beds. Keep all shoreline development away from wild rice. Treat them as a special First Nation cultural resource.

2. Continue to gather traditional knowledge about wild rice from the local people and First Nations along the waterway to gain more knowledge about wild rice and related fish and wildlife species.

3. Encourage the First Nation youth to get involved with the wild rice restoration project along with harvesting, seeding, processing and the other management concerns.

4. Continue seeding and monitoring of the sites that indicate potential for creating a self-sustaining bed of wild rice.

5. The southern rice is becoming very scarce. Continue to monitor and gather more information on this species.

6. Develop partnerships with governments, naturalist societies, outdoors clubs, birdwatchers, hunting, fishing and trapping clubs. Create more awareness of the importance of wild rice within the ecosystem.

7. Encourage the public to use the Species At Risk (S.A. R.) or Natural Heritage Sighting forms to record SAR .

8. Continue to build relationships with Colleges and Universities for possible future research requirements.

9. Monitor the fish and wildlife species that utilize wild rice at various times through the spring, summer, and fall.

10. Continue with school presentations and others as interest grows throughout 2011.

11. Monitor the effect of low water levels on those areas where wild rice is present.

12. Get the Wild Rice Fact Sheet printed and available for distribution early in 2011.

13. Monitor the carp numbers in Stoney Creek and provide some basic protection for the planted sites.

14. Commercial Airboat harvesting should not be allowed in traditional community rice beds.

15. Access to our rice bed at Little Bald Lake has been changed new owners now want to charge a fee of $10.00 to launch a canoe another $10.00 to pick up. Another launch point will need to be located.

16.Create awareness among all Ontario Citizens about the threat of loosing this resource to other countries. Prevent other countries from taking our genetic information from the original wild rice varieties. Conduct our own research to be able to identify the original seed from the rice beds in our area.

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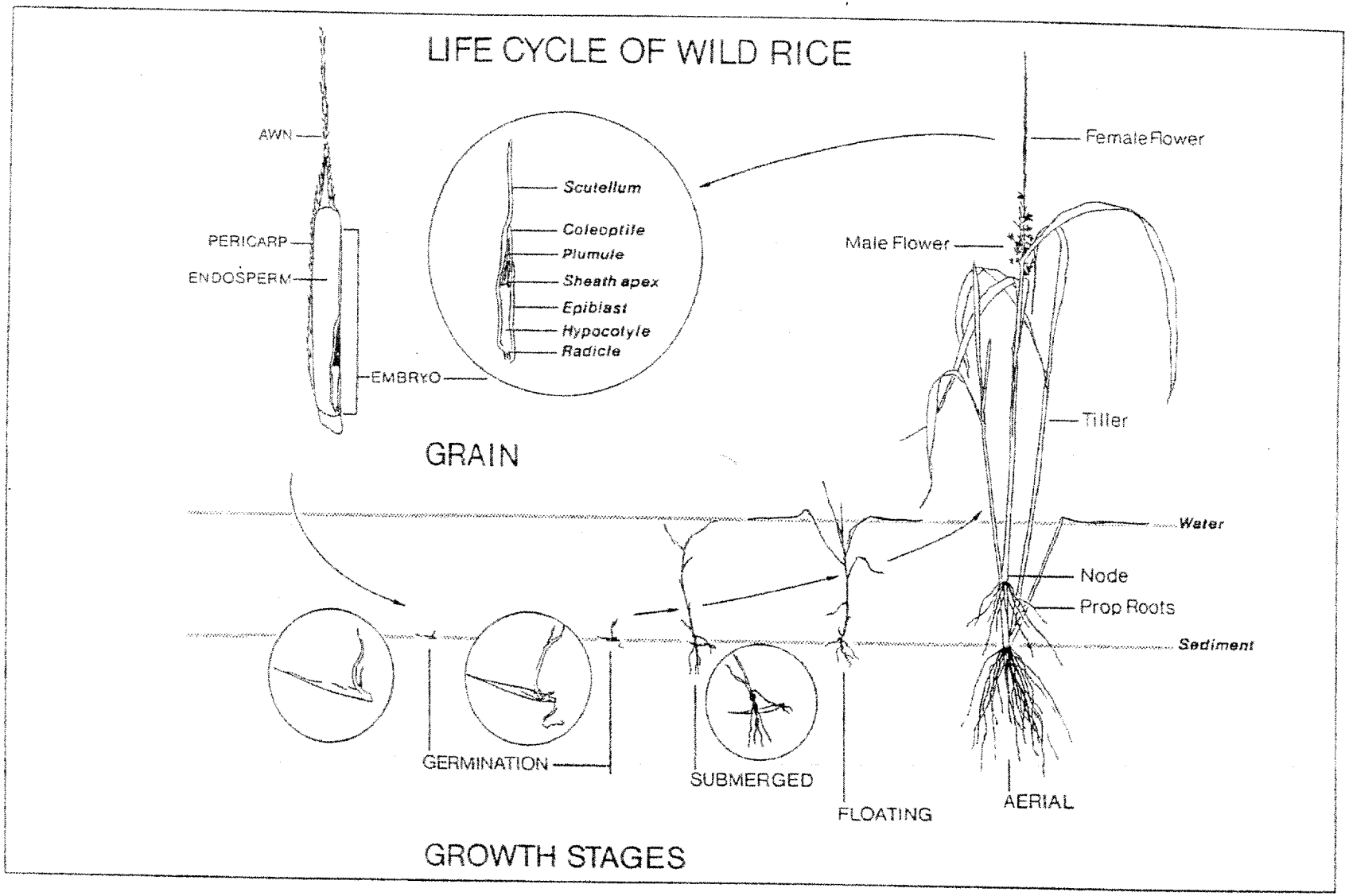
LIFE CYCLE OF WILD RICE
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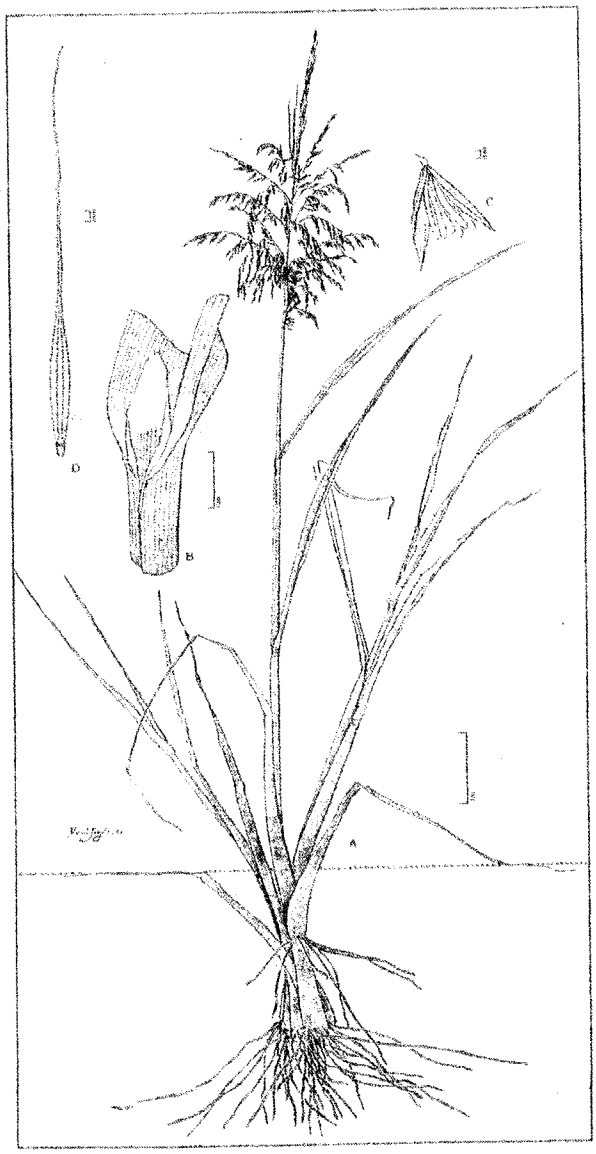
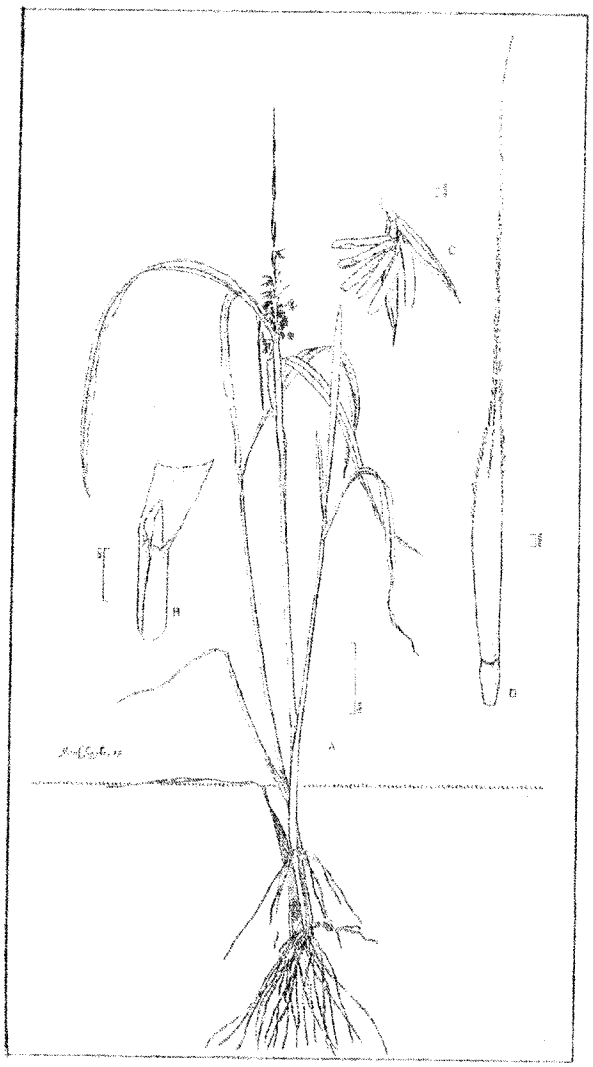
ENDOSPERM
EMBRYO
Scutellum
Coleoptile
Plumule
Sheath apex
Epiblast
Hypocotyle
Radicle
GRAIN
Female Flower
Male Flower
Tiller
Water
Node
Prop Roots
Sediment
GERMINATION
SUBMERGED
FLOATING
AERIAL
GROWTH STAGES

Figure 2



Zizania aquatica. *(A)* Flowering plant, approximately 2 m high. *(B)* Junction between leaf sheath and blade showing ligule. Scale bar = 1 cm. *(C)* Pendulous male spikelet at anthesis showing six anthers. *(D)* Erect female spikelet with long awn. Scale bar = 1mm.

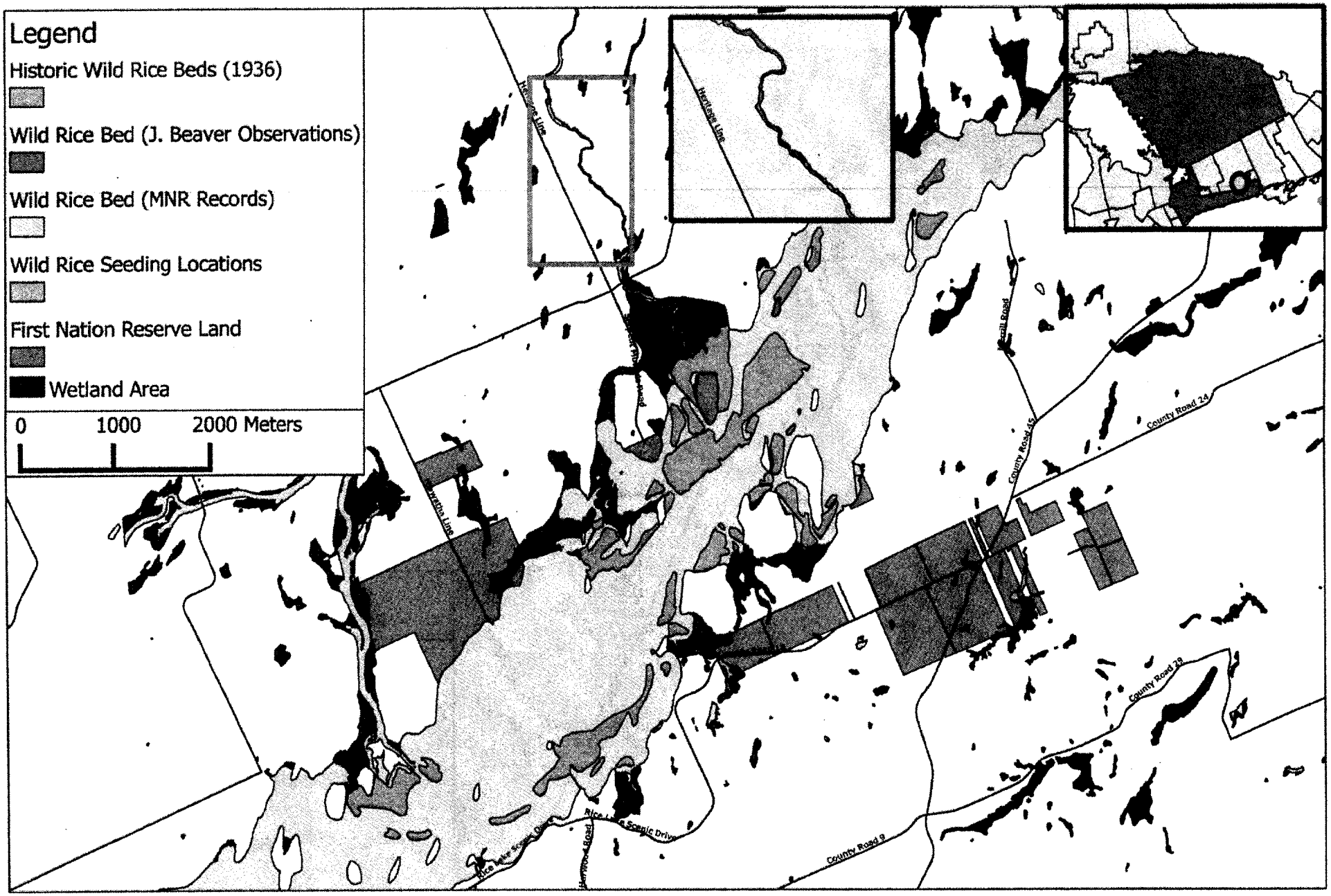
Figure 2



. *Zizania palustris*. *(A)* A flowering plant approximately 1.5 m high. *(B)* The junction between leaf sheath and blade showing ligule. Scale bar = 1 cm. *(C)* Pendulous male spikelet at anthesis, showing six anthers. Scale bar = 1 mm. *(D)* Erect female spikelet with long awn. Scale bar = 1 mm.

Figure 3.

Rice Lake -- Historic and Present Wild Rice Beds



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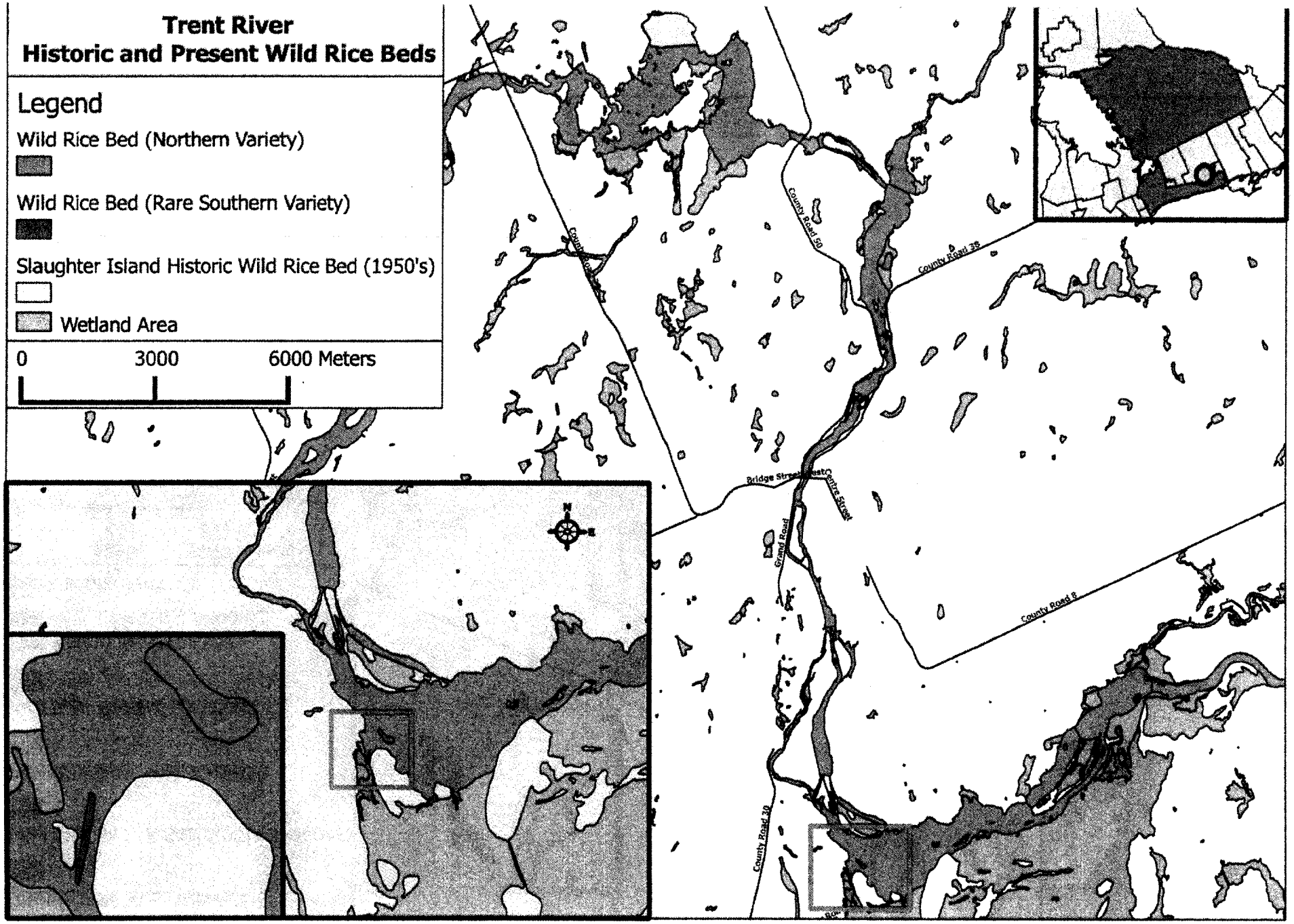
Coordinate System:NAD 83 (CSRS) /Ontario MNR Conformal Conic
Vector Sources:Rice Beds:MNR records (LIO) and Digitized from Observation by Jeff Beaver 2010, First Nation Reservation Boundaries, Ontario Boundaries and Highways: www.Geobase.ca, Water/Shoreline: www.geographynetwork.ca, Williams Treaty Boundary: Global Forest Watch. Historic Rice Beds: Digitized from Scanned 1936 map of Rice Lake.

Figure 4



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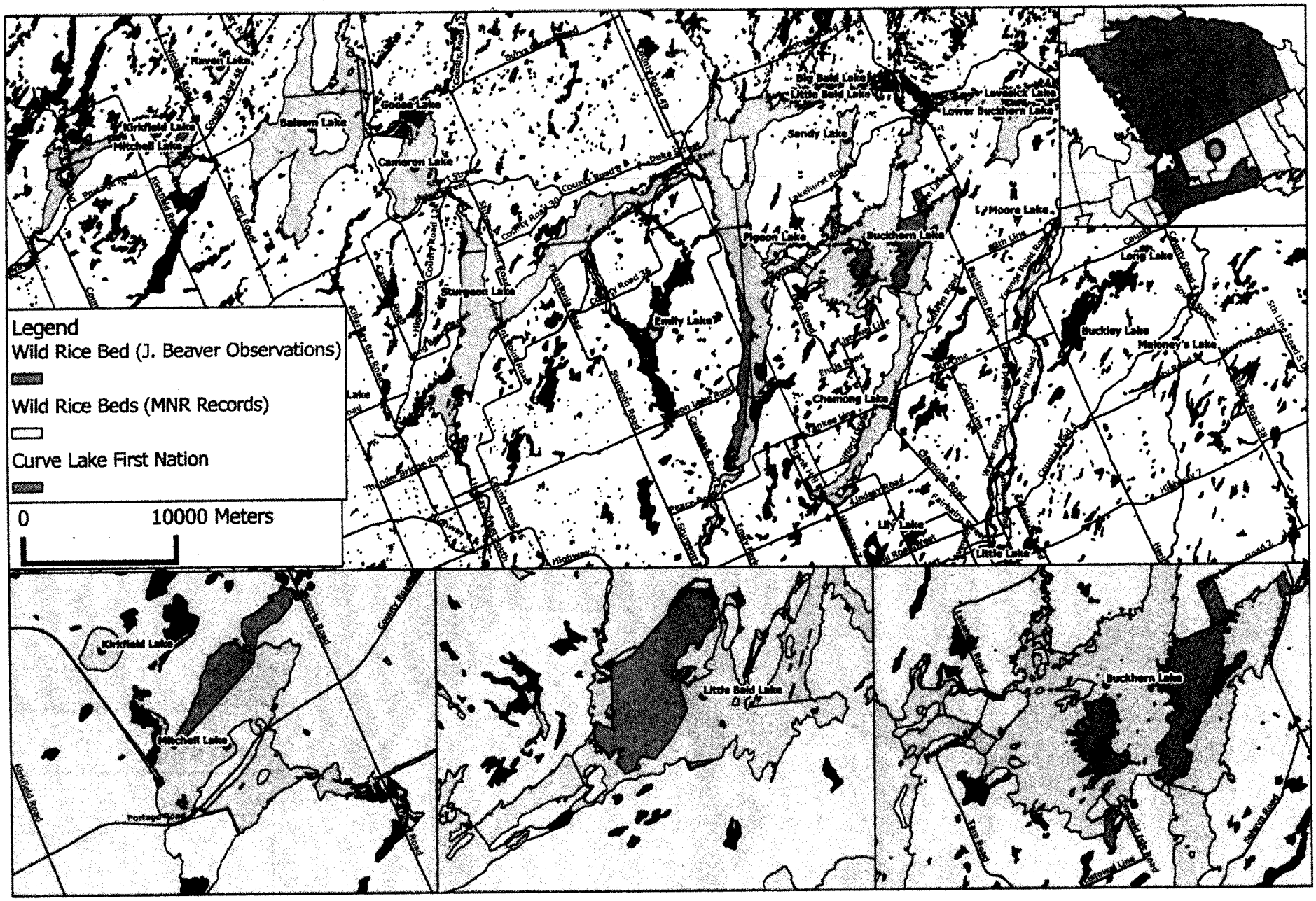
Vector Sources:Rice Beds:Digitized from Observation by Jeff Beaver 2010, First Nation Reservation Boundaries, Ontario Boundaries and Highways: www.Geobase.ca, Water/Shoreline/Wetlands: www.geographynetwork.ca, Williams Treaty Boundary: Global Forest Watch. Historic Rice Beds: Digitized from Scanned 1936 map of Rice Lake.

Figure 5

Pigeon, Mitchell and Buckhorn Lake Wild Rice Beds



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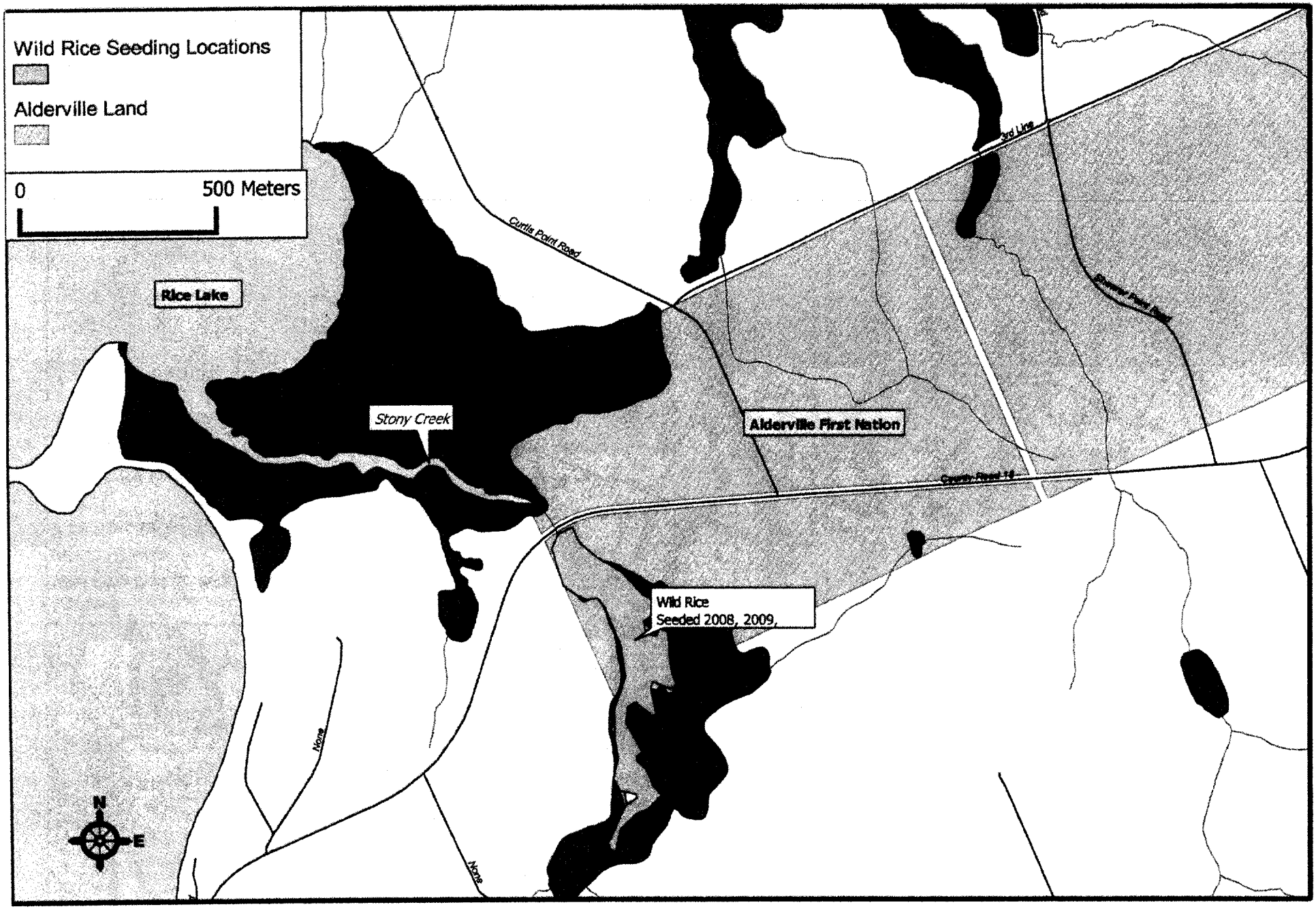
Vector Sources:Rice Beds:MNR records (LIO) and Digitized from Observation by Jeff Beaver 2010, First Nation Reservation Boundaries, Ontario Boundaries and Highways: www.Geobase.ca, Water/Shoreline: www.geographynetwork.ca, Williams Treaty Boundary: Global Forest Watch.

Figure 6

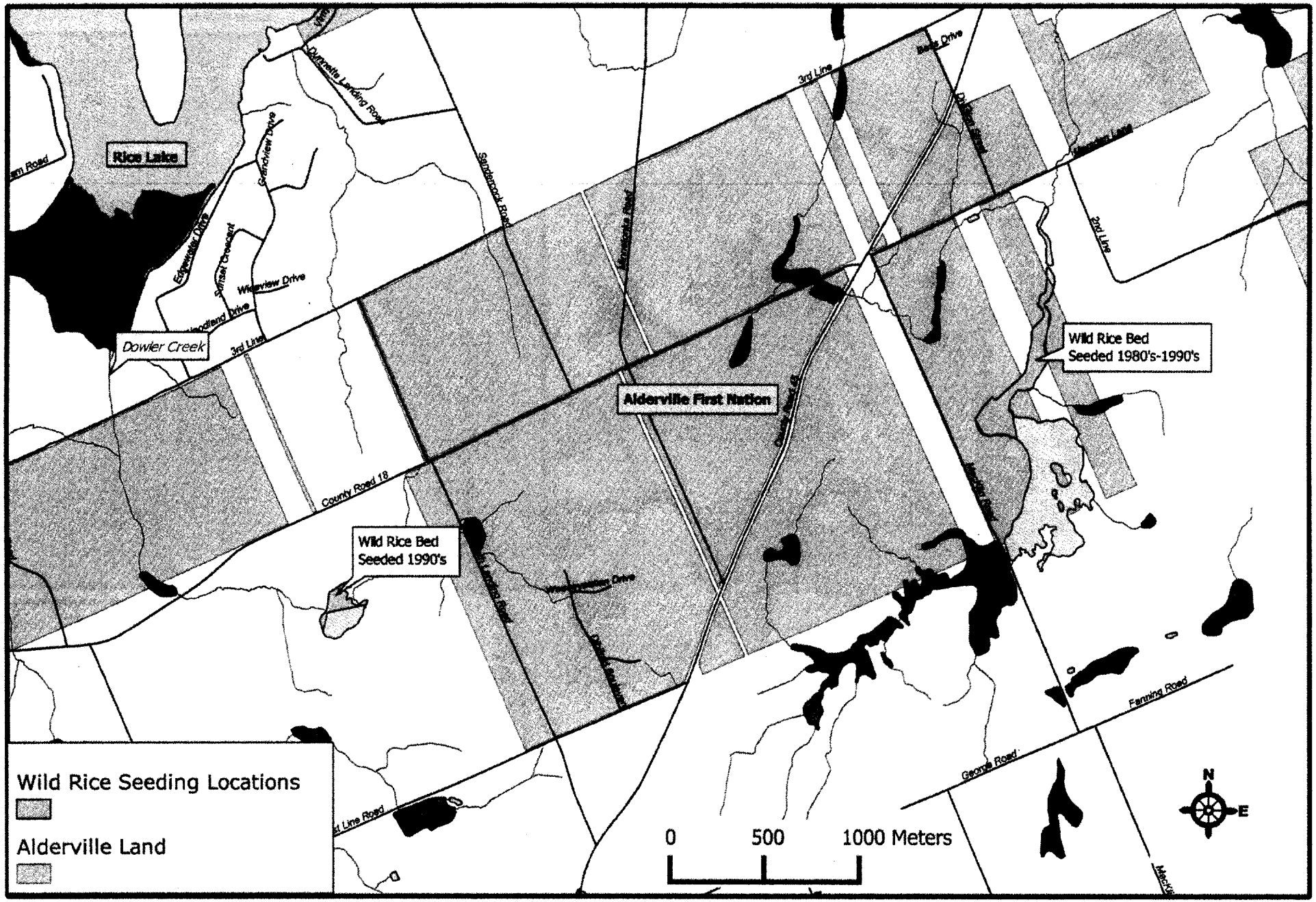
Wild Rice Seeding Locations



Date: Dec 15, 2010
Coordinate System:NAD 83 UTM Zone 17
Vector Sources:Seeding Locations: Digitized from Observation by Jeff Beaver 2010. Wild Rice Beds: MNR LIO. First Nation Reservation Boundaries, Ontario Boundaries and Highways: www.Geobase.ca. Water/Shoreline: www.geographynetwork.ca

Figure 7

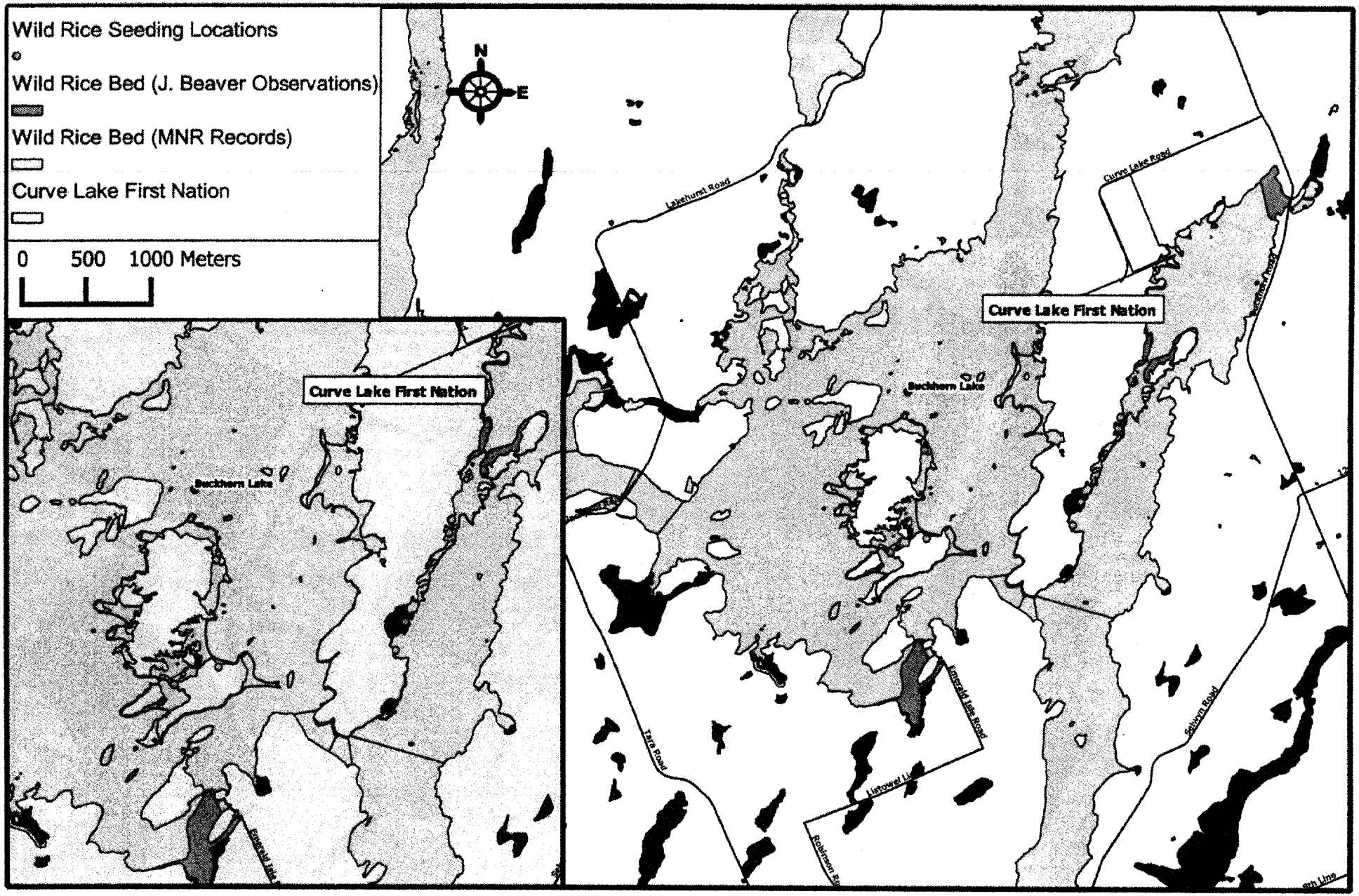
Wild Rice Seeding Locations



Date: Dec 15, 2010
Coordinate System: NAD 83 UTM Zone 17
Vector Sources: Seeding Locations: Digitized from Observation by Jeff Beaver 2010, First Nation Reservation Boundaries, Ontario Boundaries and Highways: www.Geobase.ca,
Water/Shoreline: www.geogratis.gc.ca

Figure 8

Wild Rice Seeding Locations
Curve Lake First Nation 2010



Date: Dec 02, 2010
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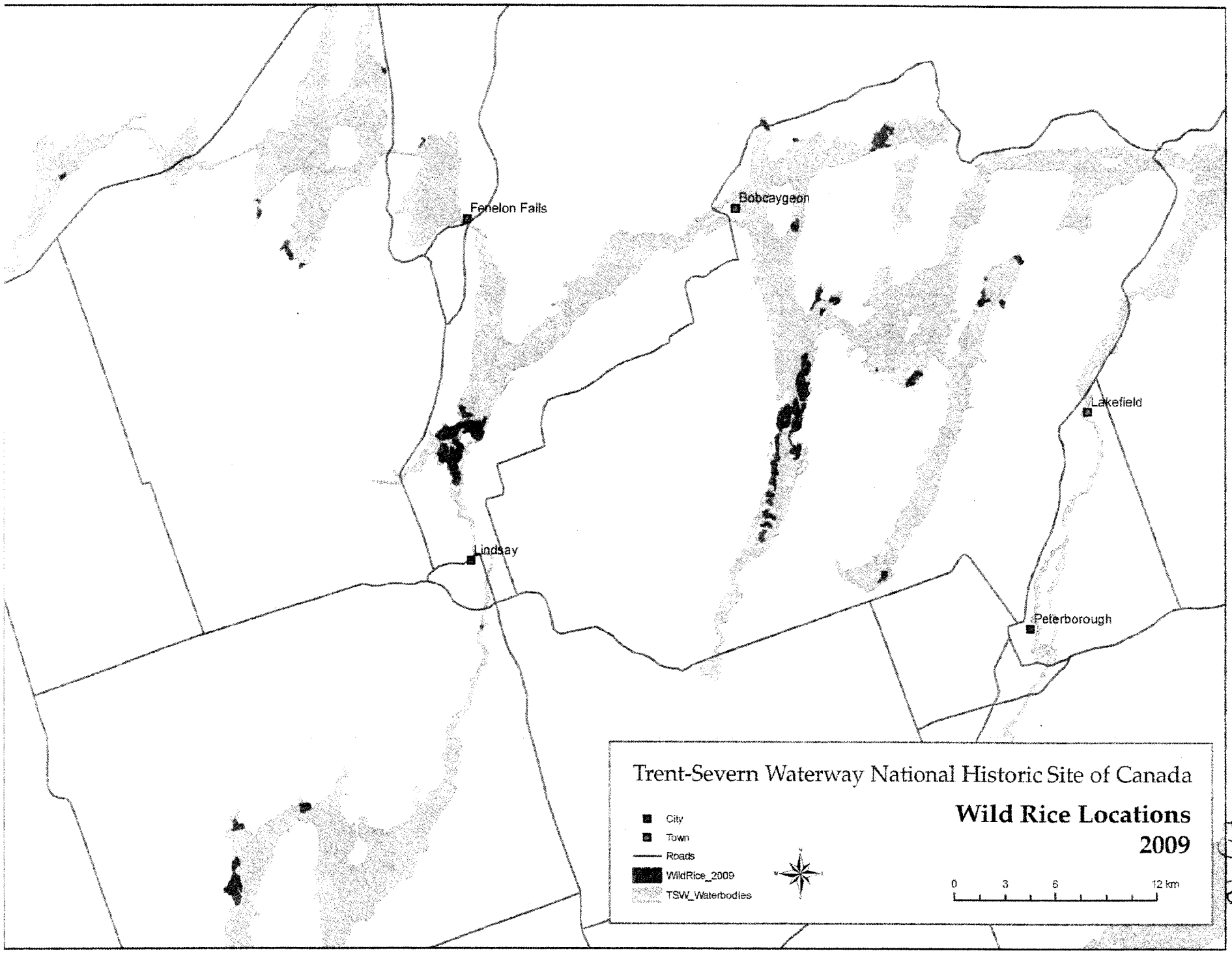
Vector Sources:Rice Beds:MNR records (LIO) and Digitized from Observation by Jeff Beaver 2010, First Nation Reservation Boundaries, Ontario Boundaries and Highways: www.Geobase.ca, Water/Shoreline: www.geographynetwork.ca,

Figure 9


Fenelon Falls
Bobcaygeon
Lakefield
Lindsay
Peterborough
Trent-Severn Waterway National Historic Site of Canada
Wild Rice Locations
2009
City
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Roads
WildRice_2009
TSW_Waterbodies
0 3 6 12 km

E-9-10

The Globe (Toronto), Friday October 22, 1909, p. 4

Appendix I

WILD RICE HARVEST.

INDIANS HAVE A CASTIRON MONOPOLY OF THE SALE.

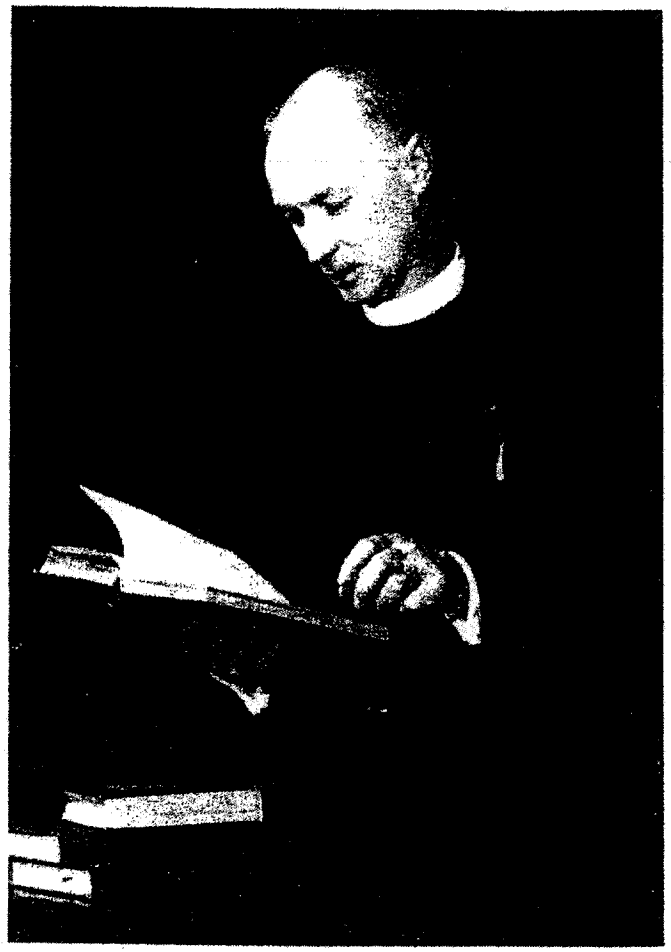
Market for the Crop Extends All Over the Continent—How the Crop is Gathered—Little of it Now Used for Food by Indians.

(Special Despatch to The Globe.)

Harwood, Oct. 21.—It is generally known probably that the wild rice crop, from which Rice Lake gets its name, is by treaty the property of the Indian, and no white man may gather it. It is not so generally known perhaps that applications are received for it from all parts of the continent. Mr. Charles Gilchrist, who for many years was Fisheries Overseer for Rice Lake and its tributaries, it is learned, has secured this year about forty barrels of wild rice for seed, and has shipped this season seed to Georgia, Milwaukee, Wis., Illinois, Nebraska, Ohio, Michigan and New York.

The wild rice does not mature evenly. On the same straw will be found ripe and green seeds and even blossoms. Primitive means are still used to harvest it. The Indians and squaws force their way in canoes through the rice beds, one paddles and the other bends the rice down with sticks and knocks it off into the canoe.

When the Indians desire to keep some of the wild rice for food they may be seen cleaning the grain in the old way. They parch it to get rid of the hulls and then toss it in the air to separate the grain from the chaff. The Indians, however, sell a large amount of the crop which they harvest.



Rev. Lloyd Delaney.

About the author

The Rev. Lloyd Jackson Delaney, B.A., L.Th., B.D.

Born in Manchester, Eng. Served at Toronto, St. Michael and All Angels, Asst., Perrytown, Gore's Landing and Harwood, Lakefield Boys' School Chaplain, Lakefield and Warsaw Parish, Midland, St. Mark's, Barrie Central Collegiate. Currently: Hon. Asst. St. Luke's, Price's Corners, Vice-Pres. of the Rural Workers Fellowship, U.S.A. & Canada, Boy Scout Chaplain and Nature Tour Canoe Trip Leader.

Rice Lake Story
Gore's Landing, Ontario
by
Lloyd J. Delaney

"A small one shall become a strong nation" Isaiah 60:22
"Let us arise to the great,
the beautiful and the true,
which are summed up in Him
who is altogether lovely,
the first and the last -
the Lord Christ"
Derwyn Trevor Owen

ISBN 0-919333-03-6

&

Printed by
Dyment-Stubley, Printers Ltd., Orillia, Ontario

We are fortunate to have so capable a recorder to tell us of the early days on Rice Lake as Charles Fothergill. His great love was the study of bird life, but he made notes on the animal and fish life as well. He also wrote about the Indians, and there are a few references to white people in the district.

In his description of the muskrat, he says that this species "varies considerably in size and is subject to change in colour. In one year I had two white ones, a colour that is very rare, and the following year I had two black ones. The last are still in my possession. The two former ones I was silly enough to let a man, who did not seem sufficiently aware of their rarity or value, carry to New York. The common colour is a sort of bright chestnut or reddish brown intermixed with long hairs, especially on the back, of a darker hue. They are caught by spearing, trapping, shooting. They are an Indian delicacy, roasted and boiled. About ten thousand are annually killed upon the Rice Lake although there are but a few families of Indians remaining. The average price of skins in my time, 1/3 U. Cy". 'Rice Lake Muskrat' fur became famous for quality, and a profitable local industry. He mentions also tame raccoons at Rice Lake.

Writing of the cougar "a most formidable animal", he says, "I have not known of more than three or four instances.....within any of our settlements during the past fifteen years". He relates the case of an attack in the township of Hamilton, "since my residence in the Newcastle District a stout young man was struck by a cougar, from the branch of a tree under which he was passing, and had a very narrow escape with his life; the accident occurred in the dusk of the evening. More recently a man was followed for some miles in the township of Otonabee by one of these animals and escaped only by the ferocious beast seizing a bag that the man was carrying on his back instead of the man himself".

At the back of his manuscript "Canadian Researches" he jotted down the progress of spring in 1821 at the mouth of the Otonabee. March 21st: Ravens are paired and give their usual coarse love-song of joy as the harbinger of spring, though we may have very severe weather after this. April 6th: The ice is nearly all gone out of the Otonabee River. 7th: Thousands of wild ducks, geese and gulls have been flying to the northward, indeed for the

past ten days, a certain sign of Spring. Heard the first drumming of the cock partridge this day. Saw the first flock of the golden winged oriole at my place this day, also two common herons. The wild leeks have been out in the woods for some days and have given their disagreeable flavour to the milk of cows which is early, as the snow is not yet gone out of the woods entirely.

8th: A fall of snow last night to the depth of more than three inches. 9th: Bald eagles paired. Wood ducks, robins for the first time. Muskrats seem to take the earliest opportunity of sporting and feeding in the water after the ice is gone. 12th: I have seen the common hen-harrier of England beating the marsh opposite my house for several days. 17th: The Rice Lake first open, and that only a narrow and crooked channel across for a boat. 18th: The first garter snake seen this spring. Northern Diver making a great noise (Loon). 19th: Kingfisher arrived. Osprey. 20th: Lead Coloured Buntings in flocks. Red Poll, Lesser. 21st: Golden Winged Woodpecker. Brimestone Bellied Woodpecker. 23rd: Frogs begin to croak. 24th: Sheldrake and Mergansers arrived. 25th: Killed the first mosquitoe. Many about. May 6th: Heard the first Whip-poor-will. The High-Flying Emperor has been out some days. 7th: Lilacs in leaf.

The following note on the fishing is interesting. Maskinonge, 30 lbs.; Salmon Trout, rare; Black Bass, any amount; Eels, innumerable, delicious; Perch, abundance; Common Mullett or sucker, myriads, not esteemed; Small Sunfish with Perch around islands.

Appendix III.

FIELD AND STREAM

ELEVENTH YEAR AUGUST, 1906 NUMBER FOUR

THE WATER HARVESTERS

WILD RICE GATHERING BY THE MISSISSAUGA AND OJIBWAY INDIANS ON RICE LAKE, CANADA, IN AUGUST

By BONNYCASTLE DALE

ILLUSTRATED WITH PHOTOGRAPHS BY THE AUTHOR

"KID-NAHN waubuhnoomin" (our rice) the Mississauga said as he pointed his big brown hand toward the waving green fields in mid-lake. We were seated beside the Indian's tent on Paudash-an Island in Rice Lake; the month was August and the tribe were gathering in their canvas homes on the islands of the lake, awaiting the next week, the week of September, when all the wind-tossed tops of the rice would be heavy with the black grain.

The scene was one of unusual beauty. Picture to yourself a winding island-studded lake, twenty-five miles long by two to three wide, with high rolling shores, waving green with their rich firs and pines, maples, birches and oaks, all the underscrub a luxuriant tangle of red willow, alder, sumach, brier, red cedar and young white silver birch. Down the center of the lake a chain of wooded islands stretched, emerald green with their uncut trees. In May the entire surface of the lake heaves and tosses to the wind without disclosing the wild rice shoots that are pointing even then toward the surface. June shows the ribbons of the rice floating on the surface, pointing ahead of every vagrant breeze, turning the lake to a waving mass of yellow-green grasses. July is the blossoming time. Then the garnet and yellow seed flowers on the standing stalks haze all the rice beds in a purplish bloom. August strengthens the straw and fills up the seed and colors all a rich, ripe yellow. Then the green islands stand out like emeralds in a plain of gold.

This wild rice riots in changing colors

HALF-BREED AND SQUAW GATHERING IN THE HARVEST

and shades, its golden fields rippling before the wind with the blue lake channels intermingling. Once seen it is never forgotten. Add to this the darting white sails and flashing paddles of the Mississaugas, and you have a faint pen picture of Rice Lake, Canada.

A century and a half ago the ancestors of these peaceful red men fought hard to retain these wild game-filled waters. The Mohawks descended like a dusky cloud, drove the timid Hurons before them like deer, annihilated the scattered bands of the Ojibways and built their village on the heights above where we sat. From the shores of the Silver Water, our Lake Superior, the warriors of the Mississaugas, a mighty branch of the powerful Ojibways, came, past the Soo, across the Georgian Bay, as we now call it, down the many rivers and lakes till where the busy city of Peterboro now stands. A portage of the Otonabee's rapids floated them in the main river and they sped on to their revenge, reaping clean as a harvester the Mohawk-crowded battlefields of Campbelltown, Spook Island, and the Serpent Mounds—just above us the sinuous earthwork of the blacksnake and the turtles rose upright against the skyline—what a sinister revenge, burying them in trenches formed after the shape of the totems of the slaughtered enemy, to tell to coming generations of their victory.

Now their peaceable descendants were gathered to discuss another Indian invasion. A band of red men, mainly of Mississauga extraction, had lived for years several miles back of the southern shore line of the lake. Year after year they had gathered the wild rice in company with its rightful owners, the men of Hiawatha. These great water farms were theirs by treaty, not even the whites daring to gather it, but this band from Rosecath, taking custom for license, insisted they also had rights. They pointed with pride to Sugar Maple Island, lying amid the rice, purchased for them by the

Dominion Government. "Yo's! Ah—tuhyah's!" and other exclamations burst from the dusky throng, a petition to the premier was prepared and presented, and presently the green and golden rice fields blossomed forth with little notice boards that forbade the rival band touching the ripe grain. White men, friends of the Hiawathas, counseled moderation, for, as we pointed out, in unity there is strength, let the red men divide among themselves and some white wire puller would get a claim on the reservation, a bill passed, and the red men would be moved a degree or so toward the North. Our words fell on deaf ears.

As we stood on the Serpent Mounds and looked over the far-reaching rice beds we felt there was grain enough and to spare for all. Bays a mile deep and two miles wide were crowded by this aquatic plant, all the shores were edged with it, the islands wreathed by the swaying rice, long beds of it stretched away in midlake, fully five thousand acres of it stood ready for the beating sticks, fifty thousand bushels waiting to be gathered and the owners quibbling over a point of law. For once let the winds of September into it and it would all blow off and sink as seed for another year or food for the diving ducks.

The channels that hold their position year after year puzzled us. This mighty water farm has been growing untilled and unattended for centuries. Each year's straw, sinking, has decomposed into rich black liquid mud as fertilizer for the next crop. Each fall the heavy winds have beaten it, each winter the thick ice has covered it, and each spring the mighty force of the ice-shove has passed over it, but still the long, even line of the beds stands up, piles of liquid mud in a lake fifteen feet deep, and never lose their place or form. We know the muskrats help to keep these paths open. The trolling canoe of the Indian also makes for open water, but why the entire bed does not wash away out into the deep water is our wonder and delight.

This last week of August the beds were

MESHEMA'GA HOLDING UP WILD RICE STALK TO SHOW ITS LENGTH

fairly alive with blackducks, woodducks, teal, mallards and a few hooded mergansers. All the whites were handling their guns anxiously, tenderly, awaiting the first. In many an old shack or flapping tent the ancient musket of the red man was lying ready and the shot and powder pouches bulging with their contents. Not a rice gatherer's canoe had passed along the channels yet, the rival camp on Sagar Island was still untenanted—and the shore rice was ripe and falling.

OUR CANOE LODGED IN THE HEAVY GRAIN

The first passed away in a glorious rattle of guns, the tack-tack of the smokeless and the rip-bang bung of the fearful old weapons tore red streaks in the dawn of morning and filled the wooded shores with booming echoes. The day passed. The big night shoot sent the alarmed birds winnowing away in silky, rustling masses overhead, or dropped them splashing and quacking into the rice. The next day a half-hearted attempt to gather was made. Everybody seemed waiting for a fight. The Rosneath band began to arrive at the camping places. A white lawyer had said to go ahead and he would protect them—for all he could get.

Day after day as our canoe passed the Indians on our way to the "Hide," we saw they were still busy duck shooting, fishing, anything but gathering the great fall crop. Here were five thousand bushels of ripe grain, worth a dollar and a half a bushel, standing at the mercy of the first heavy gale. It was the fifth of September and the harvest time was half over. Day after day we urged them to reap the now uncertain harvest. Then we found out that the Rosneath men were gathering in the far eastern end of the beds. Almost simultaneously the Hiawathas started at the west and both tribes worked might and main. The equinoctials were approaching and only a few days left. Insensibly the bands neared one another. Every path forced through the thick beds brought them closer. Day by day we pictured them in

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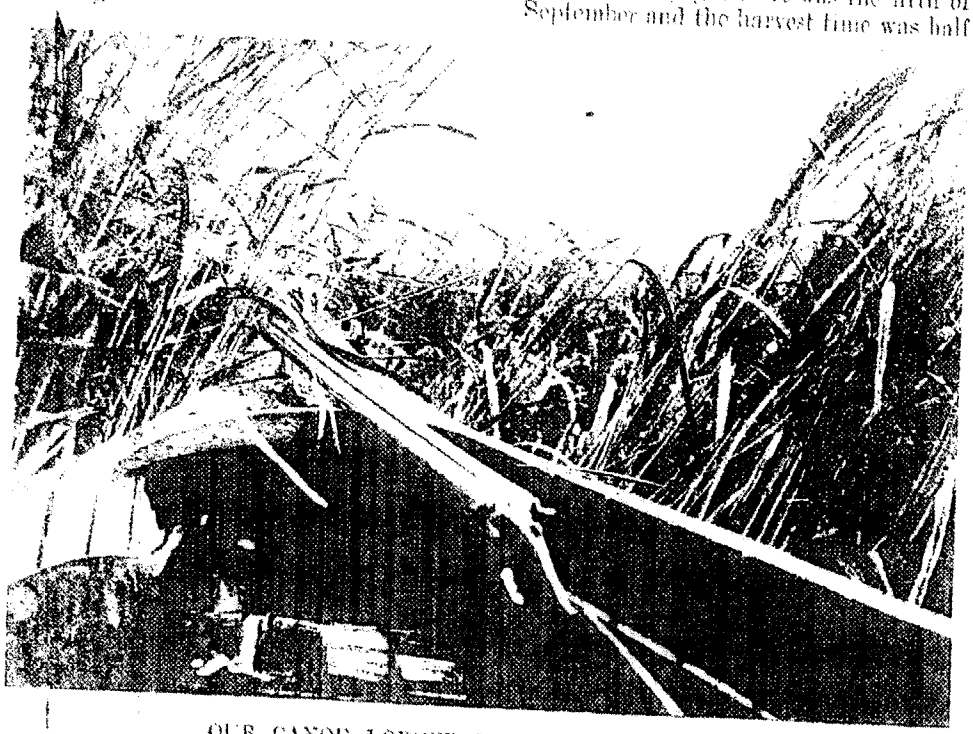

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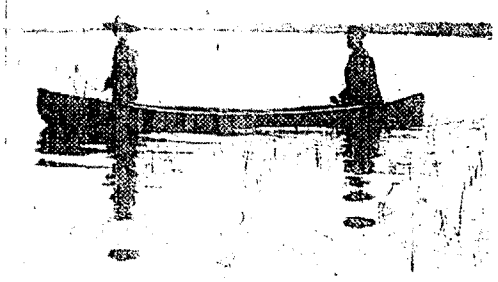
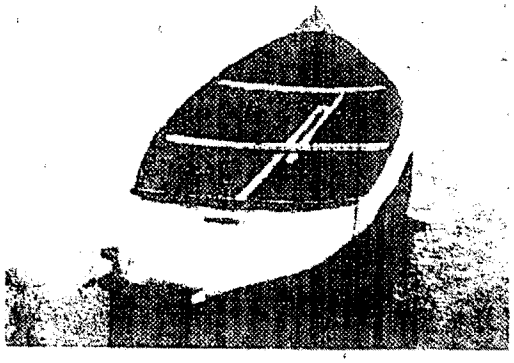
the various interesting operations of taking in the water harvest.

From our camp on the bank the flashing wet paddles of the bucks could be seen in waving golden grain and the course of the canoes could be traced by the ducks and rail, crakes and bittern, herons and coot jumping ahead. Occasionally a puff of smoke and a distant report would tell where a webfooted one had jumped too late. Nearly every canoe had a musket or old muzzle-loader in the bow. If these decadent red men had any of the fierce determination of their ancestors the day the rival rice gatherers met would be a bloody one; but we gauged by past experience that Lo had become tamed.



YOUNG MISSISSAUGAS IN WELL-MADE DUGOUT

We were among them as the villages neared one another. Sundry grunts and low mutterings had been heard. Distant calls of "Shaguhum" (get out), "Keemoode-weneme" (thief), swept over the beds, but we noticed the women were in the sterns now. At first all the harvesters were bucks, while the squaws wove baskets and chattered anxiously on the island banks. Along came the canoes, the bucks plunging the paddles deep into the tall, tangled rice and fairly lifting the canoe over the thickest places, the squaws in the sterns napping in a steady stream of black seeds from the stalks that bent in over the craft behind the struggling bowman. To the north of where we sat photographing the Roseneath men passed,



CANOE LADEN WITH WILD RICE, BEATING STICKS ON TOP

quiet, silent men eyeing the other Mississaugas apprehensively. Our friends the Hiawathas swept rustling through the beds just south of us, muttering and frowning. We were between the rivals and passed friendly "boozhoos" (good-day) to each and all. I hope our presence helped to ward off trouble at this vital point. The entire fleet passed without a collision and we got several good pictures—all Hiawathas.

It was as innocent as the ways of children to hear these rival red men scoff and hurl back Ojibway insults when they

YE YOUNGE OF YE MISSISSAUGA IN CAME

were widely separated. Then, away to the east the Roseneath flotilla paddled, singing a song calculated to make the enemy feel very small. Later we followed them and visited their camps. The rice gatherers were afloat again, so we took some of ye young of ye Mississaugas, wild and shy and fleet as deer if not actually cornered. One little chap, innocent of clothes as Raphael's cherubs, sped up from the lake at our approach. A canoe drawn up on the shore, laden with the wild rice that lay like a great green cushion in the bottom, with the cedar sticks the squaw had used ad morning on top, gives you a fair idea of four hours' work; some three bushels of rice worth in this condition a dollar a bushel. Cleansing it—that is, parching it in great pots and stirring hard to remove the husk, then throwing it in the air to let the wind blow the chaff out, a squaw's work accompanied with much gutteral singing—added a half dollar to its value. For four days the paddles flashed in the sun. The rivals scowled in passing, and many streams of ripe black rice fell into the canoes. Shots boomed out, but always at game birds. "The tempest in a teapot passed, one seemed afraid and the other dare not." Each night the fires of the rival camps gleamed forth beneath the dark trees and the winds carried many a fierce song and taunting message.

One dark September morning our tent swayed ominously in the heavy gale and we rushed out to see the great rice beds bent flat before the roaring equinox and all the grain, save a paltry few hundred bushels, sunk beneath the water, seed for another harvest time and an abundance of food for the myriads of diving wild duck.

THE INHABITANTS OF THE WILD RICE BEDS

ANGLING

PART II—WIT

BR

THE run back take long an of experienc we got there. Co pound sea trout an in the Little Codro in which lasted t loafed about unt Madam and I got the river; but befo Struggles where t salmon. He only had promised not told him I had no and that I though to Campbell's Bro the arm and asked and when I satisfi confided to me the Brook that the C salmon. Now whe to be a Mason? S brook with the s away, but failed nel's stunt. Iuste beautiful sunset. which the fog was here and there sh on their dark gree scene reflected in illuminated. At take off my hat a

The next morni up the road as fa the Little Codroy the Home Pool, o being the extent o noon was spent i with Mr. and Mrs ark, N. J., over to Codroy, down to i Little River villa

Peter Jones, Life (1860)

Appendix IV

J. L

WILD RICE GATHERING, RICE LAKE, September 17, 1829.

Sept. 17, 1829

159 [September 17, 1829] [Rice Lake] The Indian sisters were busily engaged in gathering the rice, which grows in great abundance in the lake. The manner of gathering and preparing it is: two go, with
160 a birch canoe, into the thickest part of it, and with their paddles thrash it into the canoe. After this they take it to their camps, and dig a hole in the ground, put a deer-skin into it, then go pour the rice into it; boys are set to trampling the chaff out with their feet, after which they fan it, and it is then prepared for use.

(X) "Wild Rice Harvest," The Globe, Friday, Oct. 22, 1909, p. 4, c. 3. ← Toronto Globe, Oct. 22, 1909

WILD RICE HARVEST—RICE LAKE (Oct. 22, 1909)

Oct. 21, 1909

[Special Dispatch to The Globe]

Harwood, Oct. 21— It is generally known that the wild rice crop, from which Rice Lake gets its name, is by treaty the property of the Indian, and no white man may gather it. [...] The wild rice does not mature evenly. On the same straw will be found ripe and green seeds and even blossoms. Primitive means are still used to harvest it. The Indians and squaws force their way in canoes through the rice beds, one paddles and the other bends the rice down with sticks and knocks it off into the canoe.

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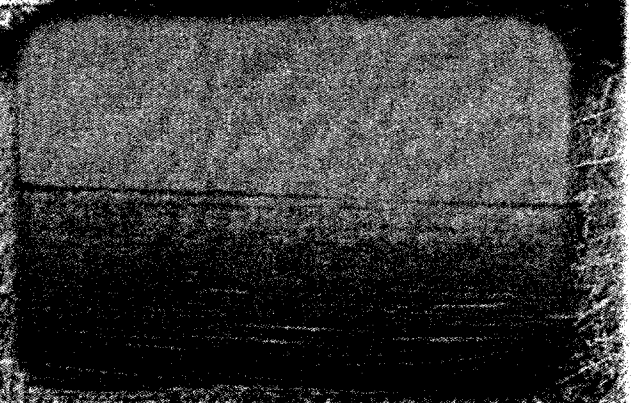
Wild Rice - Manomin

Wild Rice (*Zizania palustris*) is actually not rice; it is an annual aquatic grass that can grow in slightly brackish water but thrives in shallow clear lakes or stream where soft mucky bottoms encourage its growth. It naturally occurs in the provinces of Québec, Ontario and Manitoba but can be found in other parts Canada and the United States. Wild Rice has been an important part of the ecosystems in which it grows in, it has cultural, economical and social significance to Anishinaabe for thousands of years as well as many benefits within the environment.

Today, rice beds are still being traditionally harvested by the Anishinaabe for personal use and for educational purposes.

To the Anishinaabe it is called manomin, which is considered a special gift from the creator. It is the "food that grows on water," whose presence fullfilled the prophecies foretold in the story of the Anishinaabe's migration from the east. Manomin has been a central component of Anishinaabe culture for thousands of years. The August, or Rice Making Moon, signaled the harvest season, which was a time for celebrations and thanksgiving. The Anishinaabe people manage the rice beds to ensure reliable supply of food for future generations, by transferring seed to other suitable water bodies allows for alternative harvesting sites throughout the territory. Manomin had great importance to early European explorers as well. Their journals contain many references to the plant they found growing on the lakes and riverways they traversed. As a staple food of the voyageurs, it helped the regional fur trade flourish.



Wild Rice in floating leaf stage

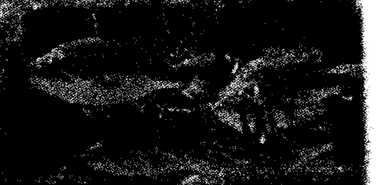
Ecological Significance

The value of wild rice to wildlife has been long appreciated by Anishinaabe and was marveled at by early European settlers. Both migrating and resident wildlife and aquatic species rely on the nutritious and abundant seeds of wild rice. These seeds have long been recognized as an important source of food during fall migrations of waterfowl.

... plant provides food during the ... such as Canada geese, trumpeter ...

In addition, rice worms and other insect larvae feed heavily on natural wild rice. These, in turn, provide a rich source of food for small marshland birds. In the spring, decaying rice straw supports a diverse community of invertebrates and thus provides an important source of food for a variety of wetland wildlife including birds, small fish, and amphibians.

The stems of wild rice provide nesting material for such species as common loons and muskrats as seen in picture above; and critical brood cover for waterfowl.



... increases in algal growth and lake turbidity.

LIFE CYCLE

The life cycle for Wild Rice is fairly simple, in August or September the ripened seed drops off the stem and sinks rapidly like a torpedo to the sediment where it will remain dormant until spring when the water begins to warm and low oxygen conditions stimulate germination. Majority of the time the seed will germinate the first spring but some may remain dormant for five years or longer which allows wild rice to survive occasional crop failure.

There are 3 distinct growth phases that occurs after the wild rice germinates; the seed beings to sprout in early May when water temperature is about 45° F (5° C).

Grains of ripe wild rice

Female Flower

Male Flower

The first seeds usually ripen by the end of August depending on temperature and environmental conditions, if it is hotter, they tend to ripen soon and if it is cooler, they tend to ripen later. Natural stands of wild rice have a growing season of 106 to 130 days but climate change is starting to have an effect on the growing season of the wild rice.

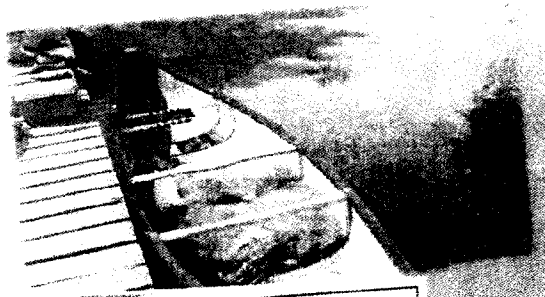
Mature wild rice plant

By the end of June, the stem and emergent leaves stick out of the water. Flowers begin to appear by mid-July and the seeds will begin to form.

Stalk of wild rice

Wild rice - floating leaf stage

For the first 3 or 4 weeks of growth the young plants are under water which is considered the submerged leaf stage, then as long thin leaves begin to float on the surface of the water it becomes the floating leaf stage.



Nutrition Facts

Serving Size 164 g

Amount Per Serving	
Calories 166	Calories from Fat 5
	% Daily Value*
Total Fat 1g	1%
Saturated Fat 0g	0%
Trans Fat	
Cholesterol 0mg	0%
Sodium 5mg	0%
Total Carbohydrate 35g	12%
Dietary Fiber 3g	12%
Sugars 1g	
Protein 7g	
Vitamin A 0% • Vitamin C	0%
Calcium 0% • Iron	5%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

Harvest

Harvesting wild rice can be a deeply rewarding experience. A fall day spent gathering this grain can yield a year's worth of memories to be relived each time the harvest is savored. The grain is nutritionally rewarding as well. Low in fat but high in protein, fiber, B vitamins and minerals, manomin is nutritionally higher than white rice, oats, barley, wheat or rye. Gatherers of the wild crop often enjoy knowing their harvest hasn't been treated with commercial fertilizers, herbicides or insecticides. The timing of the peak will vary from site to site. However, there is consistency from year to year, with river beds generally being earlier than lakes, and with the same lakes being relatively early or late each season.

Management

Although wild rice has declined in abundance from historic levels, there is hope this trend may be reversed through a growing effort which is underway to manage and restore wild rice.

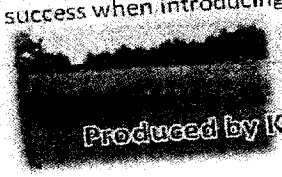
Wild Rice Management can take several forms such as:

Abundance Monitoring is important to determine whether or not rice is continuing to decline in abundance. Because of the high variability in abundance from year-to-year, only long term studies will answer this question. Abundance monitoring can also be used to direct harvesters to the most productive stands and save unnecessary trips to waters with poor stands.

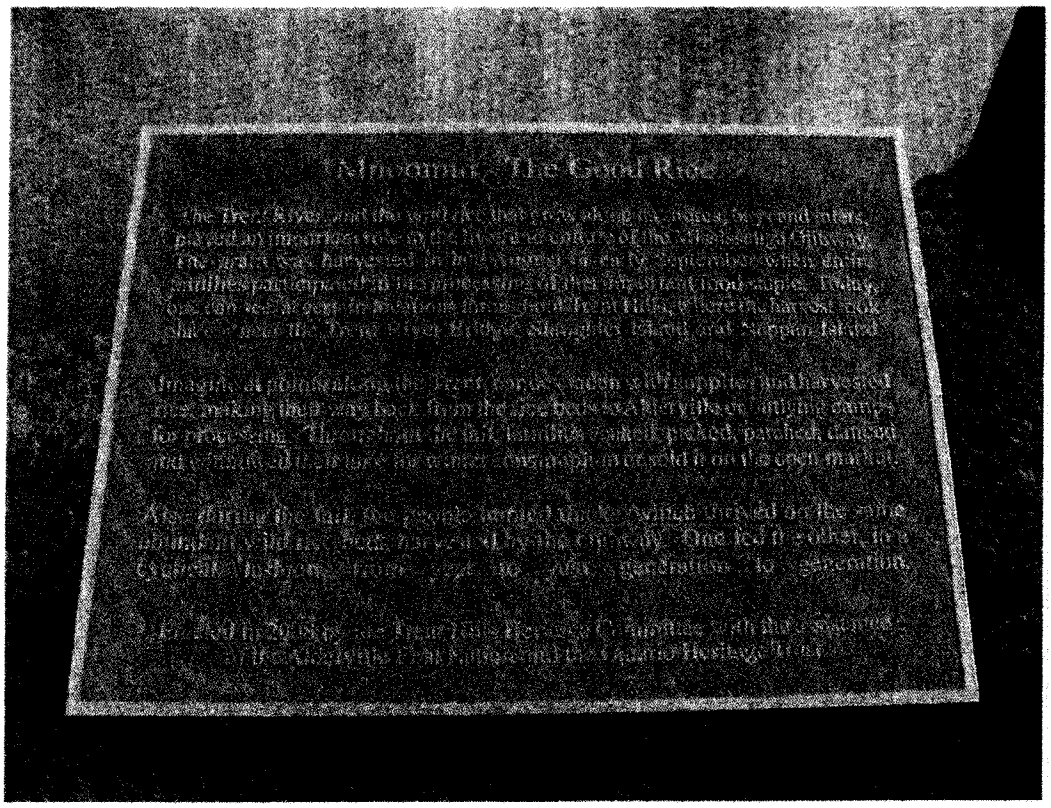
Restoration and Enhancement includes seeding rice at historic sites and introducing rice to sites with suitable habitat. It can also involve restoration of historical habitat conditions (such as water levels) or protection of rice beds from negative environmental impacts.

Harvest Monitoring can occur on individual waters or across broad areas. It can help biologists determine if wild rice abundance is adequate to meet the human demand or be used to monitor the effectiveness of restoration efforts.

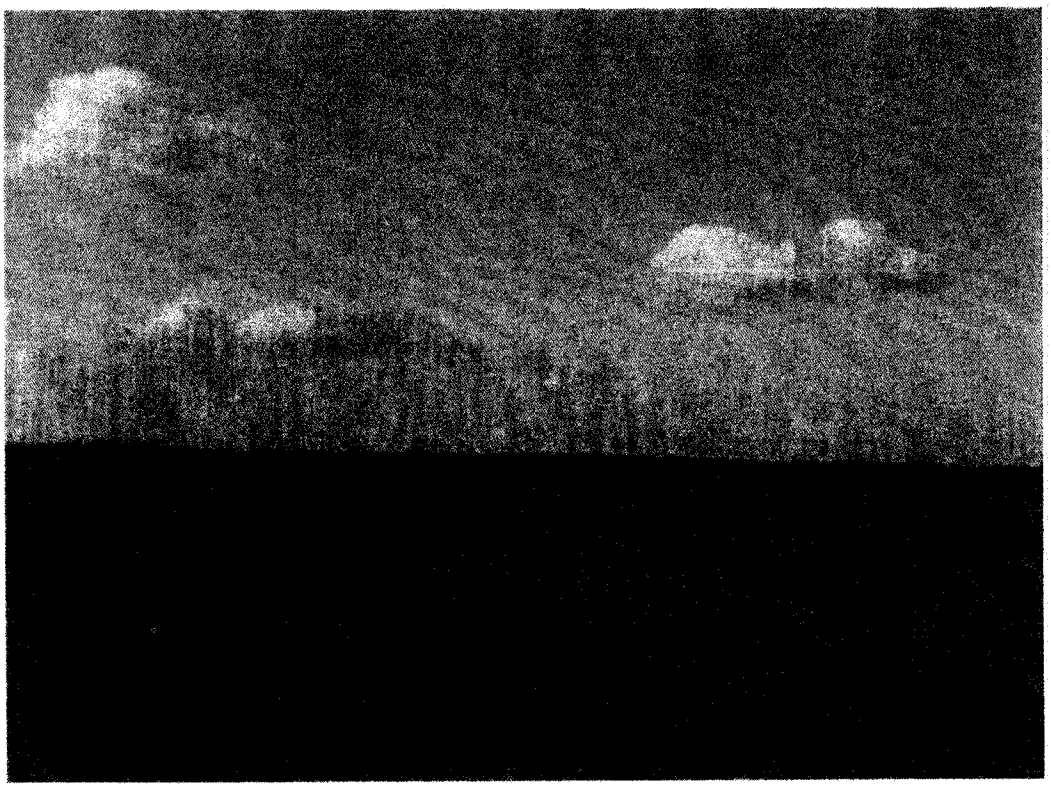
Research can increase our understanding and appreciation of this unique plant. It may also improve our ability to restore lost beds or increase the likelihood of success when introducing rice at new sites.



Produced by Krista Coppaway

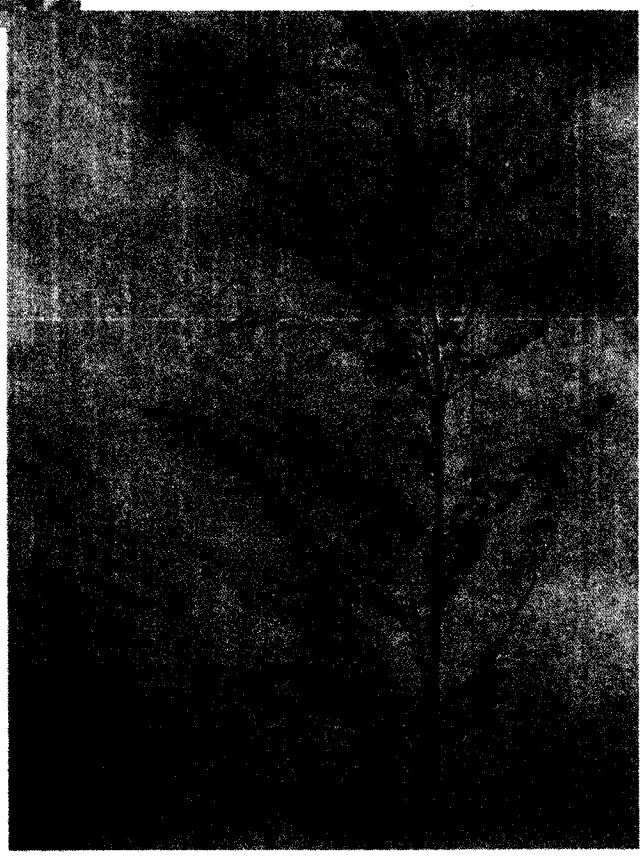


Plaque at Trent River 2008 - Elmer Marsden and Jack Simpson were the last to gather wild rice in this area.



Wild rice stand at Emily Creek, September 2010

Southern rice at Percy Boom, August 2010

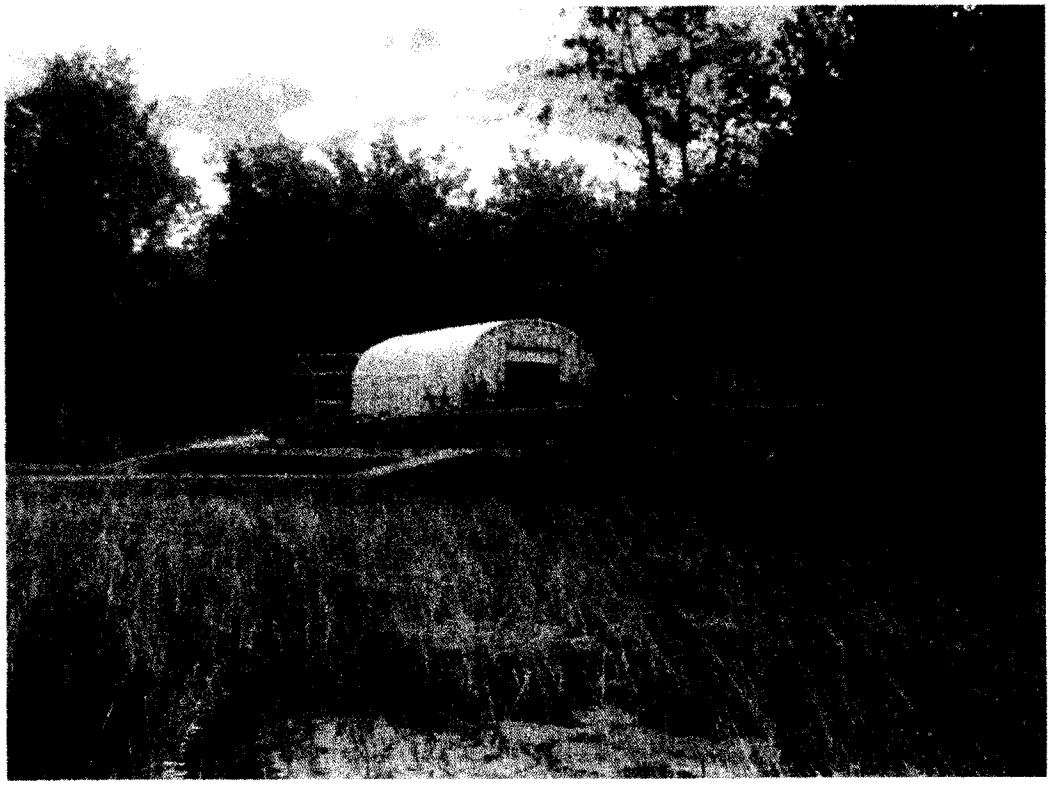


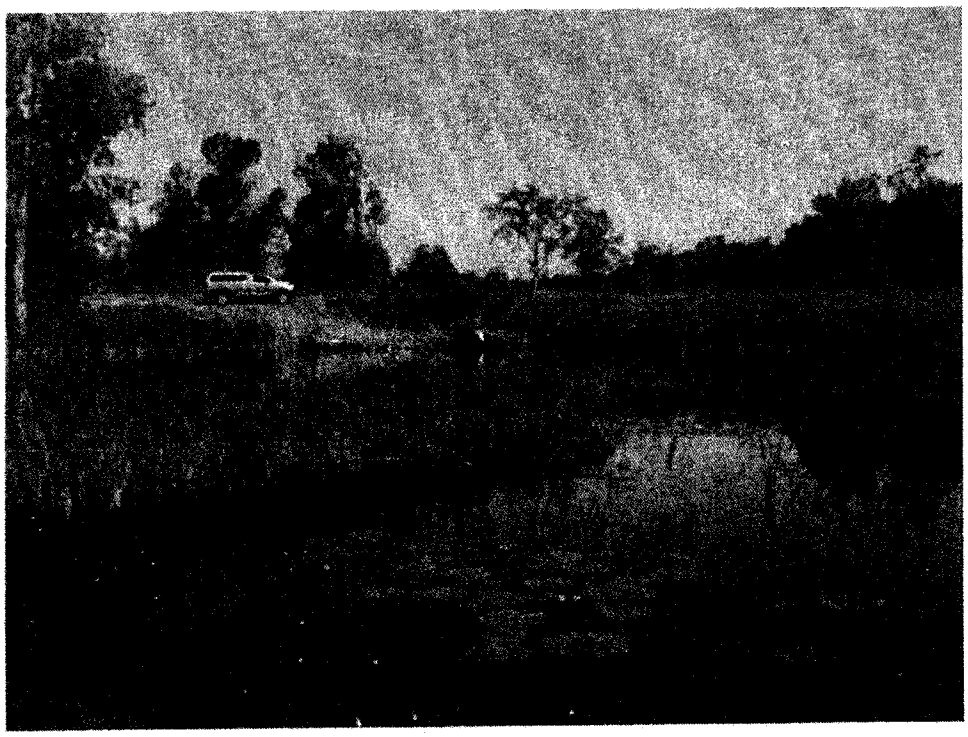
Southern rice at Napanee River, 12 feet high, August 2010

Youth Harvester Krista Coppaway, Curve Lake First Nation - Mitchell Bay 2009

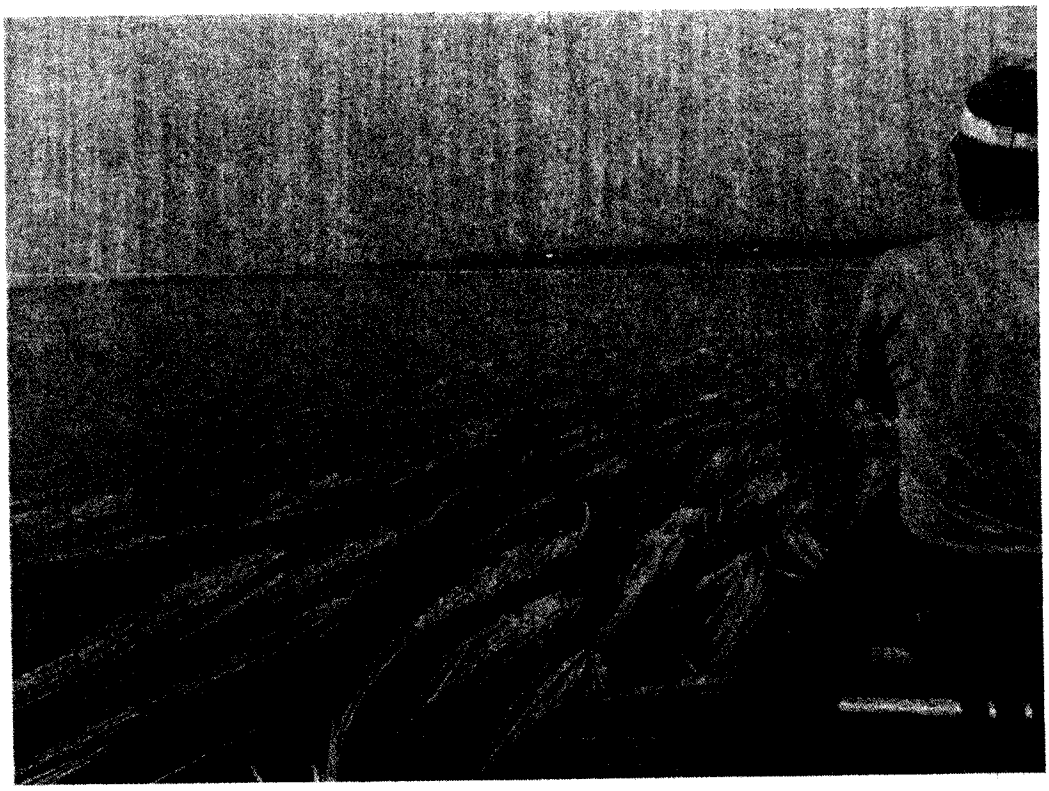
Riley Gray and John Mattson, Alderville First Nation - Little Bald Lake 2009

New Development in the wild rice beds, September 2010 -
Little Bald Lake



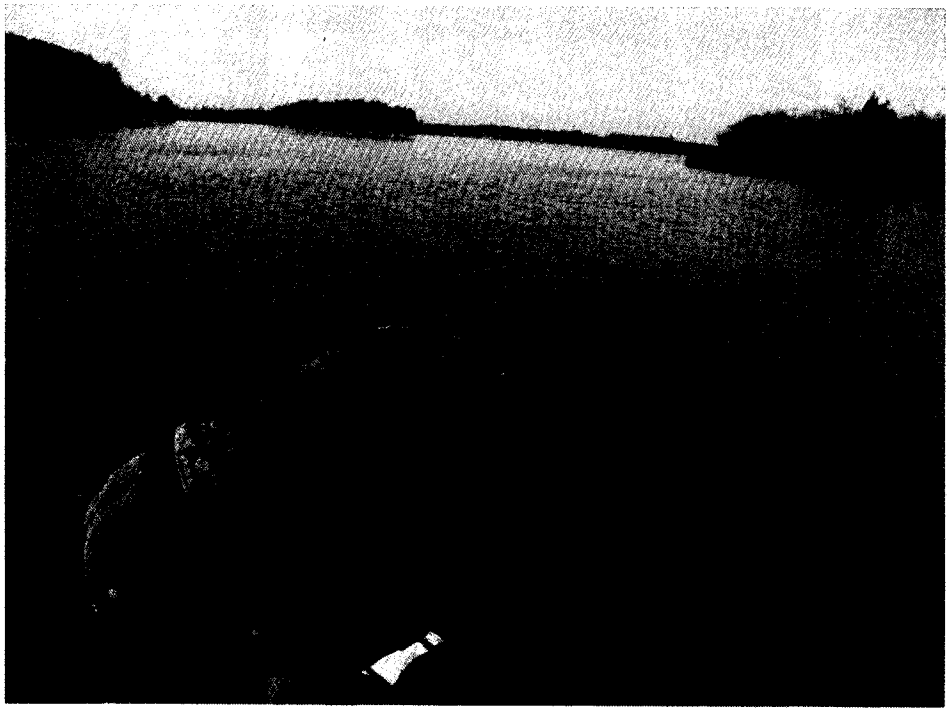


Stoney Creek wild rice patch, seeded in 2009, Alderville First Nation



Floating leaf stage at Pigeon Lake, July 2010, Rick Beaver and Jeff Beaver

Wild Rice seeding at Curve Lake First Nation, November 2010
- Krista Coppaway (Guide), Dave Bland TSW, Jeff Beaver



Wild Rice seeding at Fox Island Curve Lake First Nation, November 2010
- Dave Bland TSW

Snowy Egret at Percy Boom, July 2010

Larry McDermott, Corey Mattson, Zack Potter, Riley Gray, John Mattson