

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

Wetlands Specialist
Bad River Natural Resources Department
72682 Maple Street
Odanah, WI 54861

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

February 6th, 2012

3. Country:

United States of America

4. Name of the Ramsar site:

“Kakagon and Bad River Sloughs” (Kakagon and Bad River Sloughs of the Bad River Band of Lake Superior Tribe of Chippewa on the south shore of Lake Superior)

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

a) Designation of a new Ramsar site ; or

b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

New site designation.

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of site in the Ramsar List): ;
- ii) an electronic format (e.g. a JPEG or ArcView image) ;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

b) Describe briefly the type of boundary delineation applied:

The following are excerpts taken from the Bad River Band of Lake Superior Tribe of Chippewa's (Bad River Band) Integrated Resource Management Plan.

"The federal government requires tribes with forested reservation land to develop a Forest Management Plan or a more extensive Integrated Resource Management Plan (IRMP). The Bad River Band of Lake Superior Chippewa Indians adopted a tribal resolution to develop and an IRMP in 1990. An IRMP is a comprehensive, long-term plan that provides for the conservation, preservation, and sustainable use off all the natural resources of the Bad River Reservation. The goal of Bad River's IRMP is to maintain and improve the health of ecosystems within the Bad River Reservation for at least the next seven generations, while providing resources at a sustainable level of harvest."

"The Kakagon and Bad River Sloughs wetland complex, lands on Madeline Island, and major floodplains (approximated by an area ¼ mile wide on both sides of the Bad, White, Marengo, and Potato Rivers) are designated as Conservation Areas. Conservation Areas will be managed primarily for their natural, ecological, and cultural values and will be protected from timber harvest activities as well as future residential, industrial, and recreational development."

The areas delineated to be designated as a Ramsar Wetland of International Importance site are lands under tribal management that are protected by the Bad River Band's IRMP Conservation Area (Figure 1). Only the red shaded areas are part of the site.

8. Geographical coordinates:

46° 38.542' N, 90° 40.957' W

9. General location:

The site is located on the northern border of Wisconsin with Lake Superior on the Bad River Band of Lake Superior Tribe of Chippewa's Reservation. The Bad River Natural Resources Department is located in Odanah, WI (population 254), approximately 3.0 mi/4.8 km South Southeast of the mid-point of the Kakagon/Bad River Sloughs (Figure 2).

From the Bad River Natural Resources Office in Odanah, WI, distances in miles/kilometres to major cities by highway are as follows:

Duluth, MN. 81/130
St. Paul, MN. 227/365
Madison, WI. 291/468

Chicago, IL. 424/ 682
Detroit, MI. 631/1015

10. Elevation:

Elevation ranges from 184 meters above sea level at the headwaters of the Kakagon River and the up-stream side of the Bad River on the site to the average elevation of Lake Superior of 183 meters above sea level.

11. Area:

4,354.997 hectares

12. General overview of the site:

Where the meandering Kakagon and Bad Rivers empty into the cold waters of Lake Superior, there exists a coastal wetland ecosystem recognized to be among the richest and most extensive of its kind. The associated wetland complex, a mosaic of sloughs, bogs, and coastal lagoons, harbors the largest natural wild rice bed on the Great Lakes. This wild rice bed thrives among a myriad of dynamic and diverse wetland habitats, supporting scores of rare plant and animal species. Here, important fish spawning and nursery sites are found alongside critical stopover habitats for migratory birds.

As they flow north to Lake Superior, the Kakagon and Bad Rivers spread out into diverse wetland complexes including floodplain forests, sedge meadows, and coniferous bogs characterized by stands of tamarack (*Larix laricina*), white cedar (*Thuja occidentalis*) and black ash (*Fraxinus nigra*). In the downstream reaches of the rivers, a series of coastal lagoons support extensive marshes with a vast abundance of aquatic plants. Common plants in the Sloughs complex include wild rice (*Zizania palustris*), cranberry (*Vaccinium* sp.), many sedge species (*Carex* sp.), bur-reed (*Sparganium eurycarpum*), and sweet gale (*Myrica gale*). Even carnivorous plants like sundew (*Drosera rotundifolia*) and pitcher plants (*Sarracenia purpurea*) abound in this unique area.

The Kakagon and Bad River Sloughs are an outstanding migratory stopover habitat in both the spring and fall; these diverse wetlands host tens of thousands of passerines, raptors, shorebirds, and waterbirds. Species that use the site for breeding include the yellow rail (*Coturnicops noveboracensis*), Virginia rail (*Rallus limicola*), northern harrier (*Circus cyaneus*), sedge wren (*Cistothorus platensis*), Le Conte's sparrow (*Ammodramus leconteii*), northern waterthrush (*Seiurus noveboracensis*), blackburnian warbler (*Dendroica fusca*), golden-winged warbler (*Vermivora chrysoptera*) and the piping plover (*Charadrius melodus*), a federally listed endangered species. The forested river corridors flowing into the Sloughs are particularly important for breeding neotropical migrants such as the ovenbird (*Seiurus aurocapilla*), Canada warbler (*Wilsonia Canadensis*), Nashville warbler (*Vermivora ruficapilla*), and mourning warbler (*Oporornis philadelphia*). Bald eagles (*Haliaeetus leucocephalus*) are present year round in the Sloughs with many active nests easily visible from the rivers. The Sloughs also provide spawning and nursery habitat for a rich assemblage of native and sport fishes; including lake sturgeon (*Acipenser fulvescens*), walleye (*Sander vitreus*), and yellow perch (*Perca flavescens*).

This rich landscape is the product of extraordinary geological conditions and a legacy of unwavering environmental stewardship. Receding glaciers and fluctuating lake levels have scoured and tempered the topography over the eons. Lacustrine clay deposits beneath sandy soils have further honed the landscape and directed the gradual movement of ground and surface waters. The result is a wide, flat expanse of rich wetlands sheltered by a long coastal sand barrier and draining miles of forested uplands. So rich and unique is this landscape, that it marked the providential home of the westward-migrating Bad River Band of Lake Superior Chippewa. Centuries later, despite invasion, wars, logging, and industry, the Bad River Band remains as stewards to the Kakagon-Bad River Sloughs; and the Sloughs, in turn, provide for the Tribe.

13. Ramsar Criteria:

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

**14. Justification for the application of each Criterion listed in 13 above:
 (See Figures 3a, 3b, and 3c for this section)**

Criterion 1:

The site is located at the mouth of the Bad River watershed on Lake Superior. This freshwater estuary is the largest and possibly most pristine remaining, intact wetland on Lake Superior. The Nature Conservancy claims that the sloughs system is the largest undeveloped wetland complex in the upper Great Lakes (Chequamegon Bay Watershed Site Conservation Plan). Although small pockets of wild rice can be found throughout Lake Superior, the Kakagon and Bad River Sloughs are unparalleled in the abundance and distribution of natural, wild rice beds. In addition, as the only remaining coastal wild rice wetland of its size on the Great Lakes, it provides exceptional habitat for a diverse host of fish, wildlife, and migratory birds.

Criterion 2:

The site is the only remaining extensive coastal wild rice wetland in the Great Lakes and is the largest and possibly most pristine remaining estuary on Lake Superior.

The gray wolf (*Canis lupis*; federally endangered) and Canada lynx (*Lynx canadensis*; federally threatened) are two rare and illusive species known to inhabit the Kakagon and Bad River Sloughs.

One of only two remaining nesting sites for the federally endangered piping plover (*Charadrius melodus*) is located immediately to the north of the site at Long Island. Similar habitat to that found on Long Island is present within the site. Protection of this habitat is crucial for expanding critical nesting habitat and, thereby, encouraging future population growth of Piping Plover on the south shore of Lake Superior.

Criterion 3:

The Kakagon and Bad River Sloughs support populations of lake sturgeon important to maintaining the biological diversity of the species in this bioregion. The site includes the lower reaches of the Bad River, which is home to the largest spawning area for lake sturgeon on the south shore of Lake Superior. The importance of this habitat as a pristine spawning area has increased over time because of the building of dams, increased sedimentation, and pollution in the other traditional spawning areas on Lake Superior's south shore.

Criterion 4:

The site provides critical aquatic and terrestrial habitats to sustain migrating populations of birds in the Mississippi Flyway during the spring and summer. Flocks of birds moving between Hudson Bay and the Gulf of Mexico are known to use the site as stopover habitat to shorten the open water flight across Lake Superior. The site provides necessary and rare feeding, resting, and nesting habitat for both migrating and local populations of birds. Many species of puddle ducks, Canada geese (*Branta canadensis*), tundra swans (*Cygnus columbianus*), trumpeter swans (*Cygnus buccinator*), sandhill cranes (*Grus canadensis*), great blue herons (*Ardea herodias*), golden eagles (*Aquila chrysaetos*), and bald eagles frequent the site.

The site also protects wild rice beds. Because of fluctuating lake levels, increased wave action from watercraft, nutrient increases, and global warming, wild rice beds are becoming increasingly fragmented on Lake Superior. This fragmentation has, in turn, threatens the genetic diversity of the remaining wild rice beds and raises concerns about the rice's natural ability to evolve and adapt to changing habitat conditions. As the only remaining extensive coastal wild rice bed in the Great Lakes, Kakagon and Bad River Sloughs is critical to ensuring the genetic diversity of Lake Superior wild rice.

Criterion 7:

The importance and quality of the spawning habitat for endemic lake sturgeon (*Acipenser fulvescens*), walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), and northern pike (*Esox lucius*) within the site is unparalleled on the south shore of Lake Superior. The site includes the lower reaches of the Bad River, which is home to the largest spawning area for lake sturgeon on the south shore of Lake Superior. The importance of this habitat as a pristine spawning area has increased over time because of the building of dams, increased sedimentation, and pollution in the other traditional spawning areas on Lake Superior's south shore

Criterion 8:

The shoreline of the river within the reservation remains relatively unaltered by development and dams. Critical feeding stock, spawning ground, nursery and migration paths for Lake Sturgeon remain at this site. Without the vast connectivity of the Bad River to other rivers and streams flowing into Lake Superior there may not be many opportunities for Lake Superior to have a sizable breeding population, particularly as attempts to reintroduce native lake sturgeon in rivers historically used by the fish for spawning have failed because the traditional spawning areas have been made impassable by dams, and polluted by runoff, and have been over harvested by fisherman.

15. Biogeography

a) biogeographic region:

The wetland site is located within an area that covers the northern reaches of Minnesota, Wisconsin, lower Michigan and all of the upper peninsula of Michigan commonly known as the Laurentian Mixed Forest Province. The ecological sub-region known as the "Southwest Lake Superior Clay Plain" (212-Y) section affects the climate of this region resulting in greater precipitation and milder temperature regimes, when compared to areas further inland. The landscape is variously dissected, nearly level lake plain of Lacustrine clays. The sub region encompasses a total of 2,121 miles² representing 2.1% of the larger province.

b) biogeographic regionalisation scheme

McNab, W.H.; Cleland, D.T.; Freeouf, J.A.; Keys, Jr., J.E.; Nowacki, G.J.; and Carpenter, C.A., comps. 2005. Description of ecological subregions: sections of the conterminous United States [CD-ROM]. Washington, D.C: U.S. Department of Agriculture, Forest Service. 80p.

16. Physical features of the site:

The site lies entirely within the Bad River Watershed that drains over 1000 miles²/2590 kilometers² of Wisconsin's Lake Superior shoreline (Figure 4). Watersheds within the site include: Fish Creek-Frontal Chequamegon Bay, Lower Bad River, and Bad River. Within the three watersheds are seven sub watersheds. They are: Lake Superior Tributary 62, Wood Creek Slough 1, and Kakagon River 1 in Fish Creek-Frontal Chequamegon Bay; Bear Trap Creek 1 and Bad River 1 in the Lower Bad River; and Denomie Creek 1 and Denomie Creek 2 in the Bad River.

The wetland complexes at the site formed behind the protection of a coastal barrier sand spit known as Chequamegon Point and Long Island. Although the two are now connected, Chequamegon Point and Long Island remained separate from one another until a large storm on Lake Superior in the November of 1975 (Figure 5). This spit continues southeast from Long Island along the south shore past the mouth of the Bad River, Bad River Slough, and Honest John Lake.

These two major wetland complexes known as the Kakagon Slough and Bad River Slough are separate river systems in terms of hydrology but are ecologically linked. The Kakagon River empties north northwest into the Chequamegon Bay on the west side of Chequamegon Point and Long Island, while the Bad River empties northeast directly into Lake Superior on the east side of the point. Similarly to the way water sways back and forth in a tub after you run your hand through it, water levels in Lake Superior constantly sway back and forth as the result of a phenomenon known as seiche activity. Both wetlands are highly influenced by seiche activity from Lake Superior and water levels can be observed fluctuating in cycles of six high-to-high periods per day. The seiche activity can change the water levels within the Sloughs by as much as 40 cm at each cycle (Meeker, 1993).

The Kakagon and Bad Rivers are not the only rivers influencing these wetlands. Sucker Creek, Bear Trap Creek, and Wood Creek all drain into the Kakagon Slough. Flow inputs from the Bad River likely contribute very little of

the water inputs in to the Bad River Slough. Observing the turbid waters of the Bad River mixing with the far less turbid waters flowing from the Bad River Slough at the mouth of the river just before it empties into Lake Superior make this apparent. Denomie Creek and water draining from Honest John Lake are the major contributing sources of water into the Bad River Slough (Figure 3c).

The Sloughs are similar in that both formed behind the Chequamegon Point barrier spit and have bog areas, sedge meadows, marsh, alder thickets, coniferous bogs, coniferous swamps, and abundant wild rice beds. A view from the air makes their differences quickly apparent (Figure 5). The Kakagon Sloughs make up a greater “collection” of areas known locally as Little Round River, Big Round River, Big Slough, Northeast Slough, Wood Creek Slough, Bear Trap Creek, Sandcut Slough, and Oak Point. These areas make up a weaving system of channels through an inundated river delta. The Bad River Slough and Honest John Lake have larger areas of open water wetlands with soft, irregular shorelines and Riverine influences (Figures 3a, 3b, and 3c).

Wetlands like these resulted from the retreating glaciers of the last ice age (around 12,000 years ago). As a result the earth's crust begins to rise in relief from the absence of the weight of the glaciers, also known as isostatic rebound. Melting ice contributed to the water that now fills Lake Superior. The crushing waves produced by storms helped to shape the barrier spit much in the same way that they connected Long Island to the rest of Chequamegon Point. Interestingly this is the same feature that now protects the Sloughs from the same waves. Today, the Chequamegon Point-Long Island barrier spit is the most intact coastal barrier spit on western Lake Superior.

The succession of sand spit formation since the last glaciers moved through this area can be viewed from the air, looking down over Oak Point at the mouth of the Kakagon River and Chequamegon Point (Figure 3a). Here, a series of ridges extend nearly parallel from a single point on the eastern side of Oak Point, the location at which Oak and Chequamegon Points join. These ridges mirror the northern and southern shore lines of the point and host stands of pine and oak while lower areas lie in between the ridges that play host to obligate wetland plant species.

Glaciers helped flatten what is known as the Red Clay Plain or Lake Superior Clay Plain (discussed in Section 15). The heavy red clay soils are derived from glacial till and lacustrine deposits. This area of red clay parallels the Wisconsin shoreline and can extend inland in places up to 20 miles/31 kilometres. Streams in this area flow north to Lake Superior with their origins based in an ancient mountain range on the south end of the clay plain known as the Gogebic-Penokee Iron Range (Figure 4). These streams have cut through the clay and down to bare rock in many places along their upper reaches, forming many waterfalls and cliffs along their banks.

Soils types vary within the site but most are poorly drained and/or are made up of organic material. The main soil type immediately adjacent to the open water areas of the Sloughs is Saprist, Aquents, and Aquepts (3114A) with 0-1% slopes. These are organic soils on which water is either ponded or at the surface throughout the year. Between the Kakagon and Bad River Sloughs lies an area of Lupton, Cathro, and Tawas soils (405A) that are also derived from organic parent material. Water tables in these soils are at the surface year round. Closer to the headwaters of the Kakagon River, and adjacent areas of the Bad River, are floodplain soils of loamy alluvium parent material called Moquah fine sandy loam (6A). The sand ridges of Oak Point that were previously discussed are of sandy glacial drift parent material often associated with lake and stream terraces known as Croswell sand (500B) (Figure 6).

Lake Superior greatly affects the climate of the site. In general, summer temperatures remain lower than areas outside the range of lake breezes. Air near the lake remains cool due to the low water temperatures of the lake. During the winter months only the shallow bays on the lake become ice covered, while the main basin of the lake always remains ice free. With open water temperatures in the main basin of the lake remaining near freezing during the winter, local climate is affected inversely as in the summer. During the winter, air over the lake warms to temperatures near freezing keeping near shore areas warmer than surrounding inland areas. The open water also contributes to what is known locally in the Great Lakes Basin as “Lake Affect Snow”. When the warm moist air over the lake moves to areas inland with colder temperatures the moisture in the air falls from the sky in the form of snow. This effect of this causes average seasonal snow fall amounts for this area to reach 58.0 in/147.32 cm with average precipitation amounts totalling 30.02 in/76.25 cm annually. The average temperature for the area is a cool 40.5°F/4.7°C with average high temperatures of 51.3°F/10.7°C and average low temperatures of 29.7°F/-1.3°C.

17. Physical features of the catchment area:

The site lies at the lower end of the Bad River Watershed, an area draining approximately 1000 miles²/2590 kilometers² of the northern Wisconsin coastline. Lands within the Bad River reservation account for roughly 1/3 of the area within the watershed. To the south, the watershed is bordered by the Chequamegon-Nicolette National Forest and the Gobeic-Penokee Range while Lake Superior lies to the north. Major land uses in the watershed include agriculture (10%), forest (79%), and wetlands (16%). The area remains sparsely developed with only small towns spread out throughout the landscape, the largest being Ashland, Wisconsin (population 8,795) (Figure 4).

Historically this area was covered by white pine forests but logging depleted the resource by the early 1900's. Although white pine can still be found in the area, aspen has become the major tree species replacing the old growth conifers. Timber harvests are much less prevalent in the area now, and best management practices for forestry have been developed to help protect the natural resources of the area.

The glacial history described in section 16 applies to the majority of the catchment area. This area of red clay parallels the Wisconsin shoreline and can extend inland in places up to 20 miles/31 kilometres. Streams in this area flow north to Lake Superior with their origins based in an ancient mountain range on the south end of the clay plain know as the Gogebic-Penokee Iron Range. These streams have cut through the clay and down to bare rock in many places along their upper reaches forming many waterfalls and cliffs along their banks.

The site is located in the "Dfa" climate region as described by the Köppen climate classification system. This is a cold region with at least 1.18 inches/30 mm of rain in the driest month with hot summers averaging temperatures greater than 71°F/22°C in the warmest month.

18. Hydrological values:

The wetlands on this site perform the important function of trapping sediment before it reaches Lake Superior and Chequamegon Bay. Since the wetlands on this site are at the lowest reaches of the watershed they play a large part in flood control. The Bad River Band has kept this area from being developed by instituting an Integrated Resources Management Plan and setting the wetlands within the site aside as a conservation area, which greatly aids in shoreline stabilization. It is essential to maintain and, if possible, enhance the wetlands within the Kakagon and Bad River Sloughs in order to encourage the sediment trapping and pollutant filtering functions performed by these wetlands for the benefit of the south shore area of Lake Superior.

19. Wetland Types

a) presence:

Inland: L, M, O, Tp, Ts, U, W, Xf, Xp

b) dominance:

Type	Name	Hectares	Percent of total
U	Non-forested peatlands.	2085.465	47.89%
W	Shrub-dominated wetlands.	1369.366	31.44%
Ts	Seasonal/intermittent freshwater marshes/pools on inorganic soils.	1296.849	29.78%
L	Permanent inland deltas.	307.378	7.06%
Tp	Permanent freshwater marshes/pools.	264.819	6.08%
M	Permanent rivers/streams/creeks.	216.000	4.96%
O	Permanent freshwater lakes.	120.912	2.78%

O	Lagoons.	108.796	2.50%
Xp	Forested peatlands.	15.268	0.35%
Xf	Freshwater, tree-dominated wetlands.	6.139	0.14%
	Upland	1122.556	25.78%

Areas of the above wetland types are interpreted from a wetland vegetation and mapping study completed in 1993 for use in the Bad River Band's Integrated Resource Management Plan. Wetland types have yet to be mapped in the Kakagon and Bad River Sloughs. Due to the fact that the original intent of the data was not to map wetland types, they consequently do not align with the wetland types described in Annex 1 of the RIS. Any given area of that vegetation type may be represented in more than one wetland type, thus the reason why the sum of the hectares for wetlands types listed above is larger than the actual size of the site.

20. General ecological features:

The diversity and uniqueness of this site is unparalleled by other wetland on Lake Superior and possibly in all of the Great Lakes. These wetlands have remained relatively unchanged over at least the last two centuries despite the logging and shipping booms that occurred in the area. Due to the natural protection offered by Chequamegon Bay and Chequamegon Point, the area was once an ideal location for harbouring ships. Physically, Chequamegon Point forced ships entering and leaving the bay to do so on the far west side away from the mouth of the Kakagon River, thus limiting the erosion impacts from passing ships. Since its designation as a reservation in the 1854 Treaty, the Bad River Band has sought to continuously protect the cultural resources (wild rice) of the Kakagon and Bad River Sloughs, in effect also protecting the ecological diversity that they provide.

Sedge meadows make up the vast majority of the non open-water areas of the Sloughs. Within these vast areas, pockets of sphagnum moss (*Sphagnum sp.*) are found associated with wild cranberries (*Vaccinium sp.*), sweet gale (*Myrica gale*), leather leaf (*Chamaedaphne calyculata*), pitcher plants, and sundews. Along the fringes of the open water lie the largest wild rice beds remaining on the Great Lakes. In the Kakagon River system, the wild rice grows in the shallower edges adjacent to the deeper channels in the center. Pickerel weed (*Pontederia cordata*) grows on the deeper edges of the wild rice effectively protecting the rice from boat wakes and lake seiche activity; both have a tendency to rip young wild rice plants out of the sediment.

During spring migration, many species of birds utilize the abundant areas of aquatic vegetation to nest and forage for invertebrates hidden both above and below the water's surface. These insects are an important source of nutrients for young birds. The actual seeds of the wild rice plants are mature by late summer, just in time for the fall migration. By the time migrating waterfowl from parts of Canada arrive, most of the rice has fallen off of the plants into the shallow water where it is searched out by the birds and plucked from the sediment.

Nesting habitat for waterfowl and raptors is abundant in both the Kakagon and Bad River Sloughs. The site was chosen for a Trumpeter Swan re-introduction project in 1996 because of its suitable habitat. 14 swans were released into the Sloughs; four pairs bonded and set up territories in the Sloughs. Swans continue to be observed during the ice free months. In the winter of early 2007, six Bald Eagle nests were monitored on the reservation to determine nesting success and feeding habits. Although there are more than six eagle nests within the site, the exact number of active nests is unknown at this time. Sandhill Cranes also frequent the Sloughs in seemingly increasing numbers.

Habitat also abounds below the surface of the water. Fish young and old find suitable habitat in the submergent and emergent vegetation and feed on the invertebrates found in the Sloughs. There is no shortage of hiding places for small fish and fry seeking refuge from predators among the vegetation. This is especially important in the spring when the fish are most susceptible to predation. By summer when the water temperature in the Sloughs warm and the dissolved oxygen concentrations drop, fish will be larger and more apt to survive in the cooler, more oxygen rich waters of the lake.

Submergent and emergent vegetation in the Sloughs are susceptible to damage from the high waters caused by large seiche events associated with storms when the protection from the pickerel weed is not sufficient. This increased wave action frequently tears the vegetation out of the fine sediments where it is rooted. Years of drought and large storms are considered to be products of global warming and will continue to be threats to the habitat within the Sloughs complex.

Without Lake Superior being immediately adjacent to the Sloughs, none of this diverse landscape would exist. The US Army Corp of Engineers has been monitoring Lake Superior water levels since 1918. In 2007 the lowest ever average annual water level was recorded for Lake Superior at 182.9833 m (all time average = 183.4084 m). Water at these levels limited the amount of suitable habitat for wild rice in the Sloughs. Areas that were thick with rice in previous years became vast mud flats during the summer months. The same year was also the first and only time in the history of the Bad River Reservation that the wild rice Harvest Season was closed by the tribal council. Since then the abundance of wild rice on the site has greatly improved, however many people suggest that wild rice has not reached its former abundance.

21. Noteworthy flora:

The Kakagon and Bad River Sloughs play host to the largest remaining wild rice habitat on the Great Lakes. The rice is harvested annually by members of the Bad River Band for personal use and economic gain. Wild rice harvesters can also choose to sell their freshly harvested rice to the Bad River Natural Resources Department to be re-seeded in areas of the Sloughs where habitat restoration projects are ongoing.

According to Anishinabe tradition, the first prophet said to the people, “In the time of the First Fire, the Anishinabe nation will rise up and follow the Sacred Shell of the Midewiwin Lodge... The Sacred Megis will lead the way to the chosen ground of the Anishinabe... There will be seven stopping places along the way. You will know that the chosen ground has been reached when you come to a land where food grows on water” (Edward Benton-Benai, *The Mishomis Book*).

The “food that grows on water” is, of course, wild rice. It is for this reason that the ancestors of the Bad River Band chose this place for their home. Wild rice has always been regarded by the Ojibwa people as a sacred gift of their chosen ground (Edward Benton-Benai, *The Mishomis Book*). Other species used by the Ojibwa people include small cranberry (*Vaccinium oxycoccos*), highbush cranberry (*Viburnum opulus*), mint species (*Lamiaceae sp.*), and white cedar (*Thuja occidentalis*).

22. Noteworthy fauna:

Immediately adjacent to the north of the Kakagon and Bad River Sloughs is Long Island, which is not technically an island, as it is connected to the south shore of Lake Superior by a sand spit known as Chequamegon Point. Long Island is one of only two known remaining nesting sites of the federally endangered Piping Plover in Wisconsin (Figure 5). Wetlands International’s Waterbird Population Estimates from 2006 indicate that this species declined globally from Vulnerable to Nearly Threatened between 2002 and 2006 (Wetlands International 2006). The same report stated that 110 individuals of the Great Lakes population of this subspecies were found in a 2004 survey. According to the United States Fish and Wildlife Service, only 13 breeding pairs were observed in all of the Great Lakes in 1984. By 2008, the number of breeding pairs was up to 63, with six of those pairs observed on the Wisconsin shore. Although Long Island is not included within the site, habitat similar is located immediately adjacent to it within the site, allowing for the potential future growth of nesting sites in the area.

A recent study by the WDNR found five species of bats on the Bad River and Bad River Slough alone. Of these five species, the northern long-eared myotis (*Myotis septentrionalis*) and little brown myotis (*Myotis lucifugus*) are listed as threatened and hoary bat (*Lasiurus cinereus*), eastern red bat (*Lasiurus borealis*), and silver-haired bat (*Lasionycteris noctivagans*) are listed as Species of Special Concern by the state of Wisconsin. All five bat species are considered “Species of Greatest Conservation Need” as noted in the “Wildlife Action Plan” put together by the WDNR.

The gray wolf (*Canis lupis*) and Canada lynx (*Lynx canadensis*) are two more examples of federally endangered and threatened, respectively, species that are known to inhabit the Kakagon and Bad River Sloughs.

Nesting habitat for waterfowl and raptors is abundant in both the Kakagon and Bad River Sloughs. The site was chosen for a Trumpeter Swan re-introduction project in 1996 because of its suitable habitat. 14 swans were released into the Sloughs; four pairs bonded and set up territories in the Sloughs. Swans continue to be observed during the ice free months.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The inherent, intrinsic social and cultural values of the site remain now as they were since before the 1854 Treaty that retained this land as Tribal property. Tribal members continue to fish in the waters of the rivers within the site by netting, spearing and conventional rod and reel. Timber harvesting is prohibited in areas designated as Conservation Areas by the Tribal Integrated Resource Management Plan, including the site.

Many resources are considered sacred within this site by the Anishinabe people. The Nibi (Water) itself is perhaps the most sacred element of religious importance at this site. Without water, no other life can exist. The Manomin (wild rice) is of the most historic and religiously significant resource at the site as well, as it was the resource that determined the final stopping place of the Anishinabe during the tribe's historic migration journey from the east. Nearby Madeline Island was once known as the *Mecca* of the Ojibwe Nation as it is the central place of national congregation for matters of utmost importance to the overall Nation. Its close proximity to this place provides a form of intangible confirmation that this is the final stopping place. Although there were many naturally grown wild rice beds in the Midwest region during European settlement, the Kakagon and Bad River Sloughs is the only site in the region along Lake Superior that has retained its integrity because of minimal ground disturbing activities to the area. The significance of the site's unique marshes was recognized by the Secretary of Interior in 1973 when it designated the site a National Natural Landmark under the National Natural Landmarks program of the National Park Service.

Tribal members continue to frequent this area primarily for subsistence trapping, hunting, fishing, and to retain historic harvesting techniques. Wild rice, cranberries, wild onions, bitterroot, rhubarb, red osier, crab apples, and wild grapes are among the plethora of food plants and traditional medicines available for harvest on or near the site. Many historic trap lines leading to the site are still in use today.

The Tribal Historic Preservation Office has no information concerning previous archaeological expeditions in the area, although a copy of a circa 1870's historic hand-drawn map shows homes along the Kakagon River leading to the site.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) The entire wetland complex is a sacred site for the Bad River Band because it is the area that the Tribe's ancestors decided to call home. The tribe sees the Kakagon and Bad River Sloughs as the reason the Anishinabe were called to this area from the east. To say that the Bad River Band is invested in the preservation of this site would be an understatement. For tribal members to be able to talk about how their ancestors came to call the Kakagon and Bad River Sloughs their home brings great pride to the community here.
 - ii) The Tribe sees the importance of maintaining the scientific, cultural, and intrinsic values of the site and as such has chosen to protect the Kakagon and Bad River Sloughs by implementing regulations that would cause negative impacts to the value of the Sloughs. These rules protect the traditional and cultural values of the Sloughs so that future generations can also appreciate their benefits.
 - iii) Many local Bad River tribal members frequent the Sloughs throughout the year for fishing and in the late summer for the wild rice harvest each year.
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24. Land tenure/ownership:

- a) within the Ramsar site: All lands being proposed for the Ramsar site are controlled by the Bad River Band as either Tribal Trust or Tribal Fee lands being managed as a Conservation Area under the Bad River Band's Integrated Resource Management Plan
 - b) within the Reservation: The exterior boundaries of the reservation surround approximately 50,585 ha of land (including the site). Within the reservation are trust lands, allotments, fee land, and private land.
 - c) Outside of the Reservation boundaries lies a mosaic of private, township, county, state, and federal owned lands. The Chequamegon-Nicolet National Forest covers 607,028 ha to the west and south of the Reservation with land in 11 counties in northern Wisconsin.
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25. Current land (including water) use:

- a) Land uses within the site are strictly recreational and cultural including hunting, fishing, harvesting of wild rice, and wildlife viewing.
 - b) Land uses in the Reservation areas surrounding the site include small residential areas and timber sales. Most of the reservation is undeveloped. A few agriculture sites owned by non tribal members exist on the southern part of the reservation.
 - c) The nearest cities outside of the Reservations boundaries with populations over 6,000 residents include the cities of Ashland, Wisconsin and Ironwood, Michigan. Other scattered residences can be found outside of the towns in the more rural areas. Agricultural land uses are prevalent between the reservation and National Forest borders. Due to the climate, farmers are limited to growing crops that can be grown in cooler temperatures with shorter growing periods including wheat, hay, and beans. Cattle pastures are found infrequently throughout the area. Forest lands are widespread in the area with the inclusion of the National Forest lands, state owned lands, and other private lands managed for forestry and recreation. Lakes in the area are typically managed for recreational fishing, with summer homes common on the shorelines. Lake Superior, to the north, is utilized for shipping, recreational fishing, commercial fishing, recreational boating, and wildlife viewing.
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26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

- a) The largest ecological threat to the site at this time is from invasive species. Each summer, the Bad River Natural Resources Department works to control hybrid and narrow leaf cattail (*Typha x glauca* and *Typha angustifolia*, respectively), purple loosestrife (*Lythrum salicaria*), and giant reed grass (*Phragmites australis*) from encroaching on the native vegetation within the Kakagon and Bad River Sloughs. Threats of damage to the vegetation from increased boat traffic are also an issue, but this issue can be monitored and controlled much more efficiently than can threats from invasive species.
 - b) Water quality also has the potential to be affected by municipal wastewater, mining activity, failing household septic systems, and agricultural and logging practices within the watershed, according to the Bad River Watershed Association.
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27. Conservation measures taken:

- a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

This site is recognized by the National Park Service as a National Natural Landmark. In addition, the Bad River and Kakagon Sloughs have been recognized for their importance by many non-governing entities including, but not limited to, The Nature Conservancy, the Wisconsin Wetlands Association, the Wisconsin Coastal Management Program, the Wisconsin Bird Conservation Initiative, and the Bad River Watershed Association.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Four of the IUCN categories listed for protected areas currently apply, although no formal designations have been made by the Bad River Band using this designation system.

Ia ; Ib ; II ; III ; IV ; V ; VI

c) The areas delineated to be designated as a Ramsar Wetland of International Importance site are lands under tribal management that are protected by as Conservation Areas by the Bad River Band's Integrated Resource Management Plan (IRMP). The following is excerpted from the IRMP:

"The federal government requires tribes with forested reservation land to develop a Forest Management Plan or a more extensive Integrated Resource Management Plan (IRMP). The Bad River Band of Lake Superior Chippewa Indians adopted a tribal resolution to develop and IRMP in 1990. An IRMP is a comprehensive, long-term plan that provides for the conservation, preservation, and sustainable use off all the natural resources of the Bad River Reservation. The goal of Bad River's IRMP is to maintain and improve the health of ecosystems within the Bad River Reservation for at least the next seven generations, while providing resources at a sustainable level of harvest."

"The Kakagon and Bad River Sloughs wetland complex, lands on Madeline Island, and major floodplains (approximated by an area ¼ mile wide on both sides of the Bad, White, Marengo, and Potato Rivers) are designated as Conservation Areas. Conservation Areas will be managed primarily for their natural, ecological, and cultural values and will be protected from timber harvest activities as well as future residential, industrial, and recreational development."

d) Multiple sites within the Kakagon and Bad River Sloughs are monitored annually throughout the ice-free months for water chemistry, vegetation, invasive species, and aquatic macroinvertebrates. Future sampling with increased parameters are planned for the site; however funding is yet to be secured.

28. Conservation measures proposed but not yet implemented:

Monitoring and management strategies are constantly being updated and improved by the Bad River Natural Resources Department.

29. Current scientific research and facilities:

The Bad River Band currently employees staff for its own Natural Resources Department. The department includes the following management programs:

Water Resources
Wetlands
Fisheries
Forestry
Air Quality
Wildlife
Tribal Historic Preservation
Geographic Information Systems

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

Current public outreach and education is limited to members of the Bad River Band of Lake Superior Tribe of Chippewa. Access to the Kakagon and Bad River Sloughs via the Bad River Reservation is strictly limited to Bad River tribal members and Bad River Natural Resources staff. Entry by all others is prohibited without a signed access permit from the Bad River Natural Resources Department.

While the site is not open to the public, several initiatives increase public awareness of the importance. One such initiative is the Wisconsin Wetlands Association's Wetland Gems Program, which recognizes Kakagon and Bad River Sloughs as one of 100 state-wide "Wetland Gems."

31. Current recreation and tourism:

Camps set up for fishing, hunting, and the gathering of wild rice are common during the summer months by Bad River Tribal members. Currently, there is no system in place to monitor the number or amount of resources gathered by the Tribe's members. Access to the Kakagon and Bad River Sloughs via the Bad River Reservation is strictly limited to Bad River tribal members and Bad River Natural Resources staff. Entry by all others is prohibited without a signed access permit from the Bad River Natural Resources Department.

32. Jurisdiction:

All tribal lands within the site and the reservation are under the jurisdiction of the Bad River Band of Lake Superior Tribe of Chippewa and the Bad River Tribal Council. Access to the Kakagon and Bad River Sloughs via the Bad River Reservation is strictly limited to Bad River tribal members and Bad River Natural Resources staff. Entry by all others is prohibited without a signed access permit from the Bad River Natural Resources Department.

33. Management authority:

Bad River Natural Resources Department
Chief Blackbird Center
72682 Maple Street
Odanah, WI 54861

34. Bibliographical references:

Bad River Watershed Association
<http://www.badriverwatershed.org/>
Last revised: December 29, 2010

Benton-Benai, Edward. The Mishomis Book: The Voice of the Ojibway. The University of Minnesota Press and Indian Country Communications Inc. 1988.

Chequamegon-Nicolet National Forest. United States Department of Agriculture, United States Forest Service.
http://www.fs.usda.gov/wps/portal/fsinternet!/ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9AI8zPwhQoY6BdkOyoCAPkATIA!/?ss=110913&navtype=BROWSEBYSUBJECT&cid=FSE_003853&navid=09100000000000&pnavid=null&position=BROWSEBYSUBJECT&ttype=main&pname=Chequamegon-Nicolet%2520National%2520Forest-%2520Home/

City of Ashland, Wisconsin
<http://www.ci.ashland.wi.us/>

Coastal Wetlands of Wisconsin's Great Lakes. Wisconsin Department of Natural Resources.
<http://dnr.wi.gov/wetlands/cw/ELSup/index.asp?mode=detail&RecID=1E8E552BBB>
Last revised: October 10, 2005

Epstein, E.J., Judziewicz, E.J., and Smith, W.A. Wisconsin's Lake Superior Coastal Wetlands Evaluation, Including Other Selected Natural Features of the Lake Superior Basin. A report to the Great Lakes National Program Office. U.S. Environmental Protection Agency. PUB ER-095 99. 1997.

Great Lakes Ecoregional Plan. The Nature Conservancy.

http://conserveonline.org/workspaces/cbdgateway/era/reports/index_html

Last revised: January 30, 2007.

Historical Climate Studies. Midwestern Regional Climate Center.

http://mcc.sws.uiuc.edu/climate_midwest/mwclimate_data_summaries.htm#

Integrated Resources Management Plan. Bad River Band of Lake Superior Tribe of Chippewa Indians. 2001.

Köppen Classification System.

http://www.uwsp.edu/gEO/faculty/ritter/geog101/textbook/climate_systems/climate_classification.html

Meeker, J. E. 1993. The ecology of “wild” wild rice (*Zizania palustris* var. *palustris*) in the Kakagon Slough, a riverine wetland on Lake Superior. Ph.d thesis, University of Wisconsin, Madison.

National Natural Landmarks. National Park Service.

http://www.nature.nps.gov/nnl/Registry/USA_Map/States/Wisconsin/NNL/KS/index.cfm

Threatened and Endangered Species List for Wisconsin. United States Fish and Wildlife Service.

http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=WI&s8fid=112761032792&s8fid=112762573902&s8fid=24012960726161

Toward a New Conservation Vision for the Great Lake Region: A Second Iteration. The Nature Conservancy. 2000.

http://www.nature.org/search?proxystylesheet=NatureOrg&site=NatureOrg&client=NatureOrg&ie=ISO-8859-1&oe=ISO-8859-1&sort=date%253AD%253AL%253Ad1&output=xml_no_dtd&ud=1&entqr=0&q=kakagon&col=1

Web Soil Survey. United States Department of Agriculture, Natural Resources Conservation Service.

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

Last revised: November 11, 2009

Wisconsin Important Bird Sites. Wisconsin Bird Conservation Initiative.

<http://www.wisconsinbirds.org/iba/sites/kakagonbadriver.htm>

Wisconsin Land Legacy Report. An Inventory of Places to Meet Wisconsin’s Future Conservation and Recreation Needs. Wisconsin Department of Natural Resources.

Wisconsin’s Wildlife Action Plan. Wisconsin Department of Natural Resources.

<http://dnr.wi.gov/org/land/er/wwap/plan/>

Last revised: August 9, 2006.

Wisconsin’s Wetland Gems. Wisconsin Wetlands Association

<http://www.wisconsinwetlands.org/>

http://wisconsinwetlands.org/Gems/SU4_Kakagon-Bad_River_Sloughs.pdf