

Identification of Critical Nesting Habitat for Wetland Birds in Michigan: Western Upper Peninsula -Year Four Report



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Photo: Great Lakes marsh at Pointe La Barbe just west of the Mackinac Bridge near the Straits of Mackinac, 6 June 2007 (photo by M.A. Sanders).

Inset photo: Kim Borland playing game caller during fixed point count, Portage Lake wetlands, 26 June, 2007 (photo by M.A. Sanders).



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Introduction

Both coastal areas and inland wetlands provide unique habitats that sustain considerable native biodiversity. Informed management of these ecosystems is required to enhance the long-term viability of native species and sustainability of ecological resources. Devising appropriate protection and restoration strategies relies on the availability of current status assessments of environmental features and associated biota. Nearly two-thirds of the birds that are listed as federally threatened or endangered in the United States are associated with wetlands (Mitsch and Gosselink 1993). In Michigan, at least 19 bird species currently listed (endangered, threatened, or of special concern) are associated with wetlands.

Although much is known about many terrestrial or land birds of the Great Lakes, the ecology of most marsh-dependent species has received less attention (Weeber and Vallianatos 2000). The wetland birds, as a group, have suffered severe population declines over the last several decades (McPeck and Brewer 1991). Draining and filling of wetlands, and other human actions continue to threaten habitat for these birds and associated flora and fauna. Many of the remaining Great Lakes wetlands are fragmented due to intensive agriculture or urban development. Additionally, the spread of exotics such as common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) into coastal and inland waterways presents a very serious threat to the ecological integrity of these systems further fragmenting suitable wetland bird nesting habitats. Some wetland birds are area sensitive, and therefore, do not occur at small, isolated sites (Brown and Dinsmore 1986). Wetland birds provide great value as indicators of environmental integrity, as well as substantial aesthetic and recreational value to those who enjoy the outdoors.

In 1996, the State of the Lakes Ecosystem Conference (SOLEC) began to evolve from a small group of indicators to an initiative developing a comprehensive set of basin-wide indicators that would more accurately report on progress under the Great

Lakes Water Quality Agreement (Weeber and Vallianatos 2000). Through this process, a recommended set of indicators was presented at SOLEC 1998, two of which are directly related to this project – wetland bird diversity/abundance and threatened and endangered species.

Our purpose is to identify critical sites in Michigan for the continued protection of wetland birds. Many projects (e.g., Michigan Natural Features Inventory's Great Lakes Marsh Work, the Great Lakes Marsh Monitoring Program, MSU graduate studies, Important Bird Areas Programs, and the Michigan Breeding Bird Atlas II Project) are currently underway to study wetland birds in Michigan. Most, however, have been limited in scope or have answered specific research questions, therefore lacking the state-wide perspective needed to identify and potentially prioritize these critical wetlands.

The existing data needs to be compiled, analyzed, summarized, and presented at the appropriate spatial scale that is useful to land managers, planners, and others. New and updated inventories and ecological assessments of these coastal wetlands will provide valuable data describing 1) the status of important wetland breeding bird communities and species, 2) current status of encroaching exotic species at survey sites, and 3) conservation management needs for coastal wetland bird species. In addition, up-to-date inventories will help fill information gaps and will provide a much stronger foundation for devising sound conservation and management strategies.

This four-year project is helping public land managers and planners identify the wetland bird species, communities, and habitats of concern - both locally and statewide. The first year focused on public lands on the eastern side of Michigan's Lower Peninsula along the coastal areas of Lake Huron, Lake Erie, and Lake St. Clair (Cuthrell and Monfils 2004). Year two looked at private and public sites in the eastern Upper Peninsula (Sanders et al 2005). Year three was carried out along the Lake Michigan shoreline in the Lower Peninsula from New

Buffalo to the Straits of Mackinac (Sanders et al 2006). The fourth year (this report) looks at sites in the western Upper Peninsula along the shores of northern Lake Michigan and southern Lake Superior.

The Michigan Natural Features Inventory (MNFI) is prepared to undertake research to: 1) gather reports and other records for nesting wetland birds in these coastal wetlands and incorporate the information into an environmental decision-making process for planning and management, 2) conduct targeted wetland bird surveys on public lands where records older than 20 years exist and update occurrence records and population status estimates for these wetland bird species, 3) collect ecological data at survey sites to characterize critical habitats and communities necessary for sustaining viable populations of wetland birds in Michigan and elsewhere, and 4) disseminate this information to key land management partners.

This progress report presents the results of the third year of a four-year project to conduct systematic inventories of selected Great Lakes wetlands in order to identify critical nesting habitat for listed wetland birds. Over the past two decades MNFI has surveyed numerous coastal communities and rare species found in or allied with Great Lakes wetlands. In this compilation we provide the results of wetland bird inventories conducted by MNFI zoologists during the late spring of 2007. These surveys focused on private and public land parcels in the western Upper Peninsula. Important wetland bird nesting habitats are highlighted in a site summary section as well as depicted on regional maps. Also provided are brief descriptions of these survey sites and results of bird surveys, and summaries of data review activities. In addition, an analysis of the project to date is provided as both an overview and a basis for assessing the future direction of this multi-faceted effort.

Study Area

The study sites for the fourth year of the wetland bird inventory included emergent and submergent wetlands associated with the shorelines of the western Upper Peninsula. A total of 23 study areas were visited on at least one occasion by MNFI field staff during the late spring of 2007 (Figure 1). These sites represent both public and privately-owned parcels. Public lands included two state wildlife management areas, two state parks, the Hiawatha National Forest, the L'Anse Indian Reservation, and several state forests.

Regional Landscape Ecosystems of Michigan, Minnesota, & Wisconsin (Albert 1995) provides a useful framework for

Niagaran Escarpment and Lake Plain (Subsection VIII.1.)

St. Ignace (Sub-subsection VIII.1.1.)

The St. Ignace Sub-subsection is characterized by sandy lake plain and exposed limestone or with thin soils over limestone. The growing season ranges from 130-140 days; the longest period along the Great Lakes shoreline (Eichenlaub et al 1990). Annual precipitation

understanding broad patterns of occurrence for natural communities, species, and natural disturbance across the state. The landscape units integrate climatic, landform, soil, and vegetation factors. The classification is hierarchically structured with three levels in a nested series, from broad landscape regions called sections, down to smaller subsections and sub-subsections. Survey sites identified in this study spanned four subsections including the Niagaran Escarpment and Lake Plain; Luce; Bergland; and Keweenaw (Figure 1). These are further divided into five sub-subsections: St. Ignace; Escanaba; Grand Marais Sandy End Moraine and Outwash; Baraga; and Calumet.

averages around 30 inches. Annual snowfall averages 60-80 inches and is fairly uniform across the sub-subsection.

Many broad coastal marshes in protected coves and embayments existed along the Lake Huron shoreline during presettlement times. These were especially common in and around the Les Cheneaux Islands (Albert 1995). The substrate in these marshes was often clay or marl (Comer et al 1995). In many of the

embayments, there were extensive fens, dominated by stunted white pine (*Pinus strobus*), northern white cedar (*Thuja occidentalis*), tamarack (*Larix laricina*), and black spruce (*Picea mariana*). Much of the coastal zone along northern Lake Huron and Lake Michigan where soils were thin overlays bedrock dominated by balsam fir-spruce-cedar forests and northern hardwoods.

Roads and highways have probably had the most negative impacts on coastal wetlands in the area, being responsible for disrupting the wetland hydrology and facilitating shoreline development. Several emergent marshes along northern Lake Huron have been destroyed by highway construction. In addition, the highways have lead to increased residential development which is quite dense on many of the Les Cheneaux Islands (Albert 1995).

Escanaba (Sub-subsection VIII.1.3.)

The Escanaba/Door Peninsula Sub-subsection lies along the northern Lake Michigan shoreline, beginning just east of Manistique in Schoolcraft County all the way to Menominee at the Michigan-Wisconsin border. The entire area is underlain by sedimentary bedrock including limestone and dolomite, as well as less resistant gypsum and shale. Big Bay de Noc and Little Bay de Noc were formed by glaciers and lakes carving out these soft gypsums and shale.

This sub-subsection is separated from the St. Ignace Sub-subsection due to the region's milder climate. The growing season is approximately 140 days and average rainfall is 30-32 inches. As expected, colder temperatures occur inland where it can reach -46 F (Albert 1995).

Several types of glacial lacustrine landforms characterize the area. Beach-ridge and swale topography, where dozens of low, linear ridges alternate with shallow depressions called swales. They typically form a narrow 1- to 2-mile wide band along the shorelines of the protected embayments of Lake Michigan. Important rivers include the Menominee, Escanaba, Ford, Big, and Cedar. Soils are diverse, but primarily sands. The poorly drained sands are underlain by lake clays or bedrock and

common in the shallow depressions between dunes and beach ridges.

Fluctuating water levels of Lake Michigan are reflected in the vegetation changes of coastal marshes, wet meadows, and swamps. In general, forest composition in the sub-subsection changed from primarily conifers to hardwoods due to extensive logging activities. Livestock grazing is the primary agricultural activity. Major transportation corridors and urban development are located along the lakeshore. Important urban centers include Menominee, Escanaba, and Rapid River. Rare birds include bald eagle (*Haliaeetus leucocephalus*), Caspian tern (*Sterna caspia*), black tern (*Chlidonias niger*), and common tern (*Sterna hirundo*). Twelve of our survey sites are located in this sub-subsection.

Luce (Subsection VIII.2.) Grand Marais Sandy End Moraine and Outwash (Sub-subsection VIII.2.)

The shoreline of this sub-subsection extends westward from Point Iroquois on the St. Mary's River to just north of the mouth of the Tahquamenon River on Whitefish Bay. Six of our survey sites are within this sub-subsection. Sandy ridges of end moraine and pitted outwash are characteristic landforms of this region. The growing season ranges from <100 days in the interior to 140 near the margins where Lake Superior's moderating influence is felt. Average annual precipitation is 32-34 inches. Annual snowfall amounts reach 180 inches on the uplands near Lake Superior. Elevations range from 602 to 1,300 feet (Albert 1995).

Rare bird species occurring in the sub-subsection include piping plover (*Charadrius melodus*), common loon (*Gavia immer*), osprey (*Pandion haliaetus*), and common tern. Dominant land use in the area has been commercial timber harvesting. Urban development is concentrated in the Munising area. Many of the wetlands were probably altered by logging and fires.

Bergland (Subsection IX.6.)

Baraga (Sub-subsection IX.6.3.)

Four of our survey areas are located in the Baraga Sub-subsection: Portage Lake Wetland Complex, Pequaming Tombolo, and the north and south units of the Sturgeon River Sloughs State Wildlife Management Area. The Baraga Sub-subsection extends westward from the northeast corner of Baraga County, along the south Lake Superior shoreline into the southern part of Houghton County.

The cool growing season ranges from 110 to 130 days, the longest being near Lake Superior. Average annual precipitation ranges from 30-36 inches. The high average snowfall (140-200 inches) is primarily due to lake-effect. Precambrian bedrock underlies most of the sub-subsection. Large, broad ground-moraine ridges are the predominant glacial landforms. Present-day land use includes mining, logging, and recreation. No rare bird element occurrences were established from this sub-subsection prior to 2007 (Albert 1995).

Keweenaw (Subsection IX.7.)

Calumet (Sub-subsection IX.7.2.)

The Calumet Sub-subsection occupies the western half of the Keweenaw Peninsula. The region is noted for steep ridges composed of Precambrian basalt lavas and conglomerates that rise several hundred feet above Lake Superior. Elevations range from 850-1,490 feet. Only one of our survey sites is located here. The shoreline of Lake Superior is composed of craggy volcanic bedrock. The area is known for extensive copper and silver deposits, which were heavily exploited in the nineteenth century.

Rocky, red sandy loams and silt loam soils dominate the Calumet Sub-subsection. Forest type varies throughout. Major land uses have included mining, logging, and more currently, recreation and residential development. Merlins (*Falco columbarius*), a state-listed species, breed in the region (Albert 1995).

Methods – Bird Surveys

The Michigan Natural Features Inventory obtains information from a variety of sources including university researchers, government and non-government organizations, nature centers, and the general public. This information is screened for reliability, accuracy, and whether or not the data conform to natural heritage methodology standards. Only then is it entered into Michigan Natural Features Inventory's Biological and Conservation Database (Biotics database).

For this specific study, data from the Michigan Breeding Bird Atlas I Project, the Great Lakes Marsh Monitoring Program, several university graduate thesis works, and other data sources were compiled, consulted and then reviewed. Relevant information was added to the Biotics database. Maps were generated and key wetland bird nesting areas delineated.

Wetland-obligate birds currently listed as Michigan endangered, threatened, or of special concern were our primary survey targets (Table 1). The Biotics database was consulted for known occurrences of rare wetland birds throughout the study area. Information on various species was gathered by consulting expert ornithologists, zoologists, wildlife biologists, pertinent unpublished reports, and a variety of published sources.

Survey areas were prioritized based on their potential for supporting listed species, and by the degree to which they have been recently surveyed. Priority was given to those coastal areas lacking recent survey work. Potential for detecting listed species was determined by several characteristics including the existence of historical records, the presence of suitable habitat, and location within a range currently known for one or more listed birds. A field

schedule was developed based on prior Michigan observation and collection dates for each target species.

Our sampling window occurred during late spring when detection (activity) is high for wetland-obligates. The field season ran from 4-

26 June 2007. Surveying began at Pointe La Barbe near the Mackinac Straits, and finished at the Portage Lake wetland complex near Houghton.

Morning surveys began at, or shortly

Common Name	Scientific Name	State Status	State Rank	Global Rank
American Bittern	<i>Botaurus lentiginosus</i>	Special Concern	S3S4	G4
Least Bittern	<i>Ixobrychus exilis</i>	Threatened	S2	G5
Caspian Tern	<i>Sterna caspia</i>	Threatened	S2	G5
Forster's Tern	<i>Sterna forsteri</i>	Special Concern	S2	G5
Common Tern	<i>Sterna hirundo</i>	Threatened	S2	G5
Black Tern	<i>Chlidonias niger</i>	Special Concern	S3	G4
Marsh Wren	<i>Cistothorus palustris</i>	Special Concern	S3S4	G5
Yellow Rail	<i>Coturnicops noveboracensis</i>	Threatened	S1S2	G4
Common Moorhen	<i>Gallinula chloropus</i>	Special Concern	S3	G5
Common Loon	<i>Gavia immer</i>	Threatened	S3S4	G5
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Special Concern	S2S3	G5
Osprey	<i>Pandion haliaetus</i>	Threatened	S4	G5
Wilson's Phalarope	<i>Phalaropus tricolor</i>	Special Concern	SN	G5
King Rail	<i>Rallus elegans</i>	Endangered	S1	G4G5
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	Special Concern	S2	G5
Northern Harrier	<i>Circus cyaneus</i>	Special Concern	S3	G5
Short-eared Owl	<i>Asio flammeus</i>	Endangered	S1	G5
Prothonotary Warbler	<i>Protonotaria citrea</i>	Special Concern	S3	G5
Great Blue Heron Rookery	-	-	-	-
Black Rail	<i>Lateralus jamaicensis</i>	-	-	-

Table 1. Endangered, threatened, and special concern bird species and natural features which were targeted for surveys or for which data was entered into our database.

after sunrise and ended around 1100 EST. Evening surveys commenced around 1900 EST and terminated around 2200 EST. Bird species presence/absence and relative abundance were recorded at each survey site. Surveys were not conducted if sustained winds exceeded 16 mph (24 km/h) or during periods of heavy rain. Survey methods included 1) 100m fixed radius plots for passerines, 2) con-specific taped playback call surveys for rails (Rallidae), bitterns (Ardeidae) and marsh wrens, 3) visual surveys for terns and other wetland birds along line transects when appropriate, and 4) meandering boat/canoe/kayak and foot surveys.

Methods – Data Review and Transcriptions

An important component of this project is the preparation of field information for use within MNFI's new, Geographic Information

Standard Natural Heritage Special Animal Forms were completed for all rare bird occurrences. Data from all sightings included numbers of individuals seen or heard and the extent and quality of occupied habitat. These data establishing new or updated element occurrences were entered into MNFI's Biotics Database. In addition, a list of all birds observed at each location was compiled. This data will be submitted to the Michigan Breeding Bird Atlas II Project, as these secretive wetland species often go undetected and are vastly underrepresented in such compilations. We also gathered information on the encroachment of exotic vegetation such as common reed.

System (GIS) based data platform. A GIS system allows the known spatial extent of an element occurrence to be represented. Spatial

data is far more useful for resource managers, land-use planners, scientists, and the general public than the traditional natural heritage database. Before the advent of GIS, element occurrences were recorded with an estimated lat/long point and a mapping precision. Three types of precision were used: second (S), minute (M), and general (G). “Second” precision means the location was known exactly. “Minute” precision means the location was known to within a mile. “General” means that the location is only known to the township level.

Now, with GIS, the known spatial extent of an element occurrence can be digitally represented. Data best represented by a point (i.e. single bird nest, small populations, etc.) are represented with a small, approximately six-meter radius circle. Older, pre-GIS records are represented spatially by applying a buffer to the estimated lat/long point. The buffer size is based on the mapping precision of the element occurrence. Second precision records are assigned a 100-meter diameter buffer, minute precision records are assigned a 2,000-meter buffer, and general records are assigned 8,000-meter buffers.

During the wetland bird survey, new natural features data were transcribed and entered with respect to heritage data standards developed for the spatial representation of

element occurrences. Heritage data standards and methodology are defined by NatureServe (www.natureserve.org). Under heritage methodology, only the known extent of an element occurrence may be digitized. For example, if the only information known about an element occurrence is that it occurs within a specific legal section, with no more precise spatial information, the section boundary becomes the extent of the occurrence.

In addition to digitizing MNFI data obtained during the 2007 wetland bird surveys, information from outside sources was also entered and digitized when appropriate. Then all existing breeding bird information within the study area was carefully reviewed, and where possible circular buffers replaced with a digitized spatial extent. This digitizing effort entailed closely examining source information for previously documented records, including field forms and any associated maps indicating the specific locations and the spatial extent of the records. The digitizing effort results in a natural heritage data set that supplies more precise and useful information than either a stand-alone database or circular spatial extents derived solely from a mapping precision protocol.

Results

From our 2007 fieldwork, a total of thirty-one element occurrences (EO) were either updated or newly transcribed. Of these, eighteen were updated EO and thirteen were either new EO or transcribed for the very first time (Table 2). New EO were established for marsh wren (*Cistothorus palustris*), American bittern (*Botaurus lentiginosus*), least bittern (*Ixobrychus exilis*), black tern (*Chlidonias niger*), yellow rail (*Coturnicops noveboracensis*), common

moorhen (*Gallinula chloropus*), and common tern (*Sterna hirundo*).

Several existing element occurrences were updated this year, including three EO for common tern, black-crowned night-heron (*Nycticorax nycticorax*), and osprey. These data, along with data from the last breeding bird atlas, help provide a more complete picture of wetland bird breeding habitats in the western Upper Peninsula.

Common Name	State Status	Updates	New	Total
American Bittern	Special Concern	2	4	6
Least Bittern	Threatened	0	1	1
Caspian Tern	Threatened	2	0	2
Forster's Tern	Special Concern	0	0	0
Common Tern	Threatened	3	1	4
Black Tern	Special Concern	1	1	2
Marsh Wren	Special Concern	2	4	6
Black Rail	-	0	0	0
Yellow Rail	Threatened	0	1	1
Common Moorhen	Special Concern	0	1	1
Common Loon	Threatened	0	0	0
Black-crowned Night-heron	Special Concern	3	0	3
Osprey	Threatened	3	0	3
Wilson's Phalarope	Special Concern	0	0	0
King Rail	Endangered	0	0	0
Yellow-headed Blackbird	Special Concern	1	0	1
Northern Harrier	Special Concern	0	0	0
Short-eared Owl	Endangered	0	0	0
Great Blue Heron Rookery	-	0	0	0
Piping Plover	Endangered	2	0	2
TOTALS		18	13	31

Table 2. Summary of data that was updated or newly added to MNFI's Biotics database during 2007.

Site Summaries

A major goal of this project is to identify critical breeding habitat for wetland birds in Michigan. As established in the format of several other coastal zone inventories, we provide here summary descriptions of the significant wetland sites identified during the project's fourth and final year. These summaries are categorized by Ecoregion as defined in the Study Site section. These descriptions summarize the importance of these wetland areas as well as provide context for the site. While a complete analysis requires multi-year data, areas we feel are important nesting sites are described.

Niagaran Escarpment and Lake Plain (Subsection VIII.1.) St. Ignace (Sub-subsection VIII.1.1.)

1. Pointe La Barbe – located just west of the Mackinac Bridge in St. Ignace, Pointe La Barbe has an excellent reputation among experienced local birders (Figure 2) (Chartier & Ziarno 2004). The site is a mosaic of habitats including Great Lakes cat-tail (*Typha* spp.) marsh, wet sedge (*Carex* spp.) meadow, and monotypic stands of bulrush (*Schoenoplectus* spp.). Large expansive pockets of common reed are scattered throughout. In general, dense cat-tail grades to wet sedge meadow as you move toward the lake.

Despite the fact that many rare birds have been observed at this site, only two element occurrences from Pointe La Barbe exist in MNFI's Biotics database. Three marsh wrens were observed on 18 May 2004, and thirty-two black-crowned-night heron nests were observed on Green Island in 1985 (MNFI Biotics 2007). A red-necked grebe (*Podiceps grisegena*) was observed 15 July 2001 (Bryne 2002).

MNFI field staff conducted a meandering foot survey of the area on the evening of 4 June 2007. We also conducted a visual survey (with spotting scope) of Green Island just south of the point where double-crested cormorants (*Phalacrocorax auritus*) have established a nesting colony.

MNFI staff visited twenty-three (23) study areas, and we determined the following sites to be of conservation value to wetland breeding birds based on field surveys in 2007, existing element occurrence records, habitat value for rare birds, existing protections, and site viability.

The site descriptions contain information on general habitat types, survey results, existing rare bird records, potential for other rare bird occurrences, and opportunities for conservation and management. Since MNFI staff could not survey all of these sites multiple times, inventory needs are also identified as applicable.

Two marsh wrens and one American bittern responded to taped playback calls over a series of three point counts during the survey. Both the wrens and the bittern responded from dense cat-tail stands. Also, two black-crowned night-herons were observed on Green Island, although a nest was not detected among the hundreds of cormorant nests in the trees. The bittern represents a new element occurrence for this location. Associate species observed include Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), Wilson's snipe (*Gallinago delicata*), American white pelican (*Pelecanus erythrorhynchos*), and a pair of sandhill cranes (*Grus canadensis*). Both the Virginia rail and sora responded to taped calls.

Additional surveying is recommended at this location to confirm breeding for marsh wrens and American bitterns. It should also be determined whether black-crowned night-herons still breed on Green Island. If not already in place, a cormorant control strategy needs to be implemented for Green Island. The large number of nesting birds threatens the vegetation and the biodiversity on Green Island, a situation which has occurred on other Great Lakes islands. Woody encroachment and the spread of exotic species (i.e. common reed) should also be monitored.



Figure 2. Part of the large Great Lakes marsh at Pointe La Barbe located just west of the Mackinac Bridge at the Straits of Mackinac. A new element occurrence for American bittern, as well as updates for black-crowned night-heron and marsh wren, was recorded the evening of 6 June, 2007.

2. Pointe aux Chenes River Mouth – the Pointe aux Chenes River flows southward through an extensive dune and swale wetland complex on the northern Lake Michigan shoreline. Dune and swale wetland complexes form along flat shoreline landforms such as sand lake plains. These dunes, or beach ridges towering up to fifteen feet high, were deposited by receding Lake Michigan waters over the past several thousand years. Overhead, they appear as a series of arcs paralleling the adjacent shoreline. Shallow wetlands, called swales, form between the beach ridges (Albert 2003). The water levels of the swales closer to the lakeshore are directly related to the water levels of the Great Lakes (Albert 2000).

MNFI field staff surveyed a section of the extensive sedge-dominated marshy swales on the north side of US-2 on 5 June 2007. Associate vegetation included tag alder (*Alnus rugosa*), cat-tail, and shrubby cinquefoil (*Potentilla fruticosa*). The MNFI Biotics database contains local element occurrences for osprey and bald eagle (MNFI Biotics 2007). No

target species responded to taped playback calls during three point counts performed over a 2-hour meandering foot survey. Associate species observed include sandhill crane, Wilson's snipe, alder flycatcher (*Empidonax alnorum*), and sedge wrens (*Cistothorus platensis*). We also surveyed a location near the Pointe aux Chenes sand dunes further west on US-2 where an existing element occurrence exists for piping plovers (MNFI Biotics 2007). A pair of common terns was observed mating on a small rocky shoal off of Pointe aux Chenes, thereby establishing a new site element occurrence (Figure 3). We failed to locate any piping plover activity.

Large areas of wet sedge meadow exist in the area north of US-2. We suggest a more aggressive survey of the area, particularly targeting yellow rails, which have been located in similar areas to the east along the northern shore of Lake Huron (Sanders et al 2005). Common reed influx should be monitored.



Figure 3. Looking west over an extensive wet sedge meadow among the dune and swale wetland complex near the mouth of the Pointe aux Chenes River, 5 June 2007.

3. Epoufette Bay – this open bay wetland is located on the northern shoreline of Lake Michigan in Mackinac County. An open embayment is a curving section of shoreline which is exposed to the wind and wave action of the big lakes. This wetland type is formed on a sand lake plain where the constantly shifting sand limits aquatic plants from rooting, thereby restricting wetlands to a narrow fringe along the shore (Albert 2003).

MNFI staff conducted a survey of the bay by kayak on the evening of 5 June 2007. The choppy sea state restricted our efforts to the west end of the bay toward Point Epoufette. The dominant vegetation included various sedges, bulrushes, and scattered pockets of narrow-leaved cat-tail (*T. angustifolia*). Patches of common reed were scattered throughout. Willow (*Salix* spp.) was the dominant woody vegetation. Fourteen common tern nests were observed in 1977 on a series of large shoals near Epoufette Island (MNFI Biotics 2007). Other than four common terns foraging overhead, we

failed to locate any target species during our survey. Associate species observed include common yellowthroat (*Geothlypis trichas*), song sparrow (*Melospiza melodia*), willow flycatcher (*Empidonax traillii*), and yellow warbler (*Dendroica petechia*).

No additional survey work is recommended for this site. If terns are located on the rocky shoals and nearby offshore islands, it is best to let those who have the ability to access these sites such as the Great Lakes Colonial Waterbird Survey which is conducted every ten years. Attempting to locate offshore birds is logistically difficult and time consuming via foot and/or self-powered vessel. It is better to undertake such endeavors with aerial surveys.

4. Little Fishdam River – the Little Fishdam River flows into Lake Michigan’s Big Bay de Noc just west of Garden Corners in Delta County. The river originates in Warner Lake and is fed by Little Fishdam Creek and Hartman Creek. Similar to the Pointe aux Chenes River,

the Little Fishdam meanders through an extensive dune and swale wetland complex formed by the continuing deposition of sand along the shoreline for thousands of years. The area is part of the Hiawatha National Forest. MNFI staff surveyed the areas east and west of the river mouth, and south of US-2 on the morning of 12 June 2007.

Records of previous sightings of target species were not located during our data mining period. The habitat west of the river mouth is a very extensive, with sedge-dominated wet meadow grading to cat-tails toward the Fishdam River. Many areas have a good mixture of cat-tail, sedge, and rushes. Woody encroachment, led by willow is prevalent throughout as well as is scattered pockets of common reed. No target species were detected during a point count conducted among a dense stand of cat-tails near the west end of the site. Associate species detected include Wilson's snipe, swamp sparrow (*Melospiza georgiana*), common yellowthroat, and willow flycatcher.

Although not a priority site, we suggest additional survey work as the area east of the river holds potential for yellow rails if water levels were higher. Woody encroachment and common reed influx should also be monitored.

Escanaba (Sub-subsection VIII.1.3.)

5. Nahma Marsh Birding Trail – the Nahma Marsh Birding Trail was created in 1988 as part of the Nahma Marsh Impoundment Project, a cooperative habitat development effort by the United States Forest Service, Ducks Unlimited's M.A.R.S.H. Program, and the Michigan Department of Natural Resources. The site is located in Delta County off County Road 497. MNFI staff conducted a foot survey of the marsh on the morning of 6 June 2007.

The marsh is largely a mosaic of scrub/shrub-sedge meadow dominated by various sedges and sweet gale (*Myrica gale*). Water depths range from 1-1.5' throughout. We conducted two point counts during a meandering survey through the south side of the marsh. An American bittern responded to the taped playback calls during a point count taken from

the observation platform located at the trail terminus. This establishes a new element occurrence for the site. Associate species observed included sora, yellow warbler, and swamp sparrow.

This is a relatively pristine area with extensive marshland surrounded by northern forest types. However, woody encroachment and fluctuating water levels threaten the site. In addition, scattered patches of common reed could foretell future problems.

The southern part of the marsh has potential for yellow rails and we recommend additional field work. The site lacks the dense vegetation preferred by American bitterns so our sighting was probably a young transient. Woody and exotic species (common reed) encroachment is a problem that warrants monitoring

6. Nahma Wetlands – extensive marshland habitat lies to the north and west of the Village of Nahma. We surveyed a site along County Road 499 on the west side of the village on 7 June 2007. The area features a combination of sedges, rushes, grasses, as well as bog associate plants (Figure 4). Woody encroachment is prevalent with northern white cedar and sweet gale dominating. Local breeders include osprey, bald eagle, Caspian tern, common tern, black tern, and marsh wren (Chartier and Ziarno 2004). Ospreys successfully nested in the area from 1984-1994 (MNFI Biotics 2007).

No target species responded to taped playback calls during point counts conducted on both the north and south side of County Road 499. Wetland associate species observed include Wilson's snipe, yellow warbler, alder flycatcher and common yellowthroat. There was no sign of osprey nesting activity.

A more aggressive search for yellow rails is needed on the south side of County Road 499. The number of yellow rail reports is increasing throughout the UP and the habitat is suitable here. Advanced woody encroachment and high water levels exist north of CR 499.



Figure 4. Part of the vast Nahma wetlands along County Road 499 just west of Nahma, Michigan.

7. Big River Mouth/Ogontz Bay – this United States Forest Service site is located in Delta County on the east side of the Stonington Peninsula. From US-2, go south on County Road 503 for approximately five miles to Ogontz Bay Lane. Follow Ogontz Bay Lane to the parking area near the mouth of the Big River. MNFI field staff conducted a foot survey of the area the evening of 6 June 2007 and on the morning of 7 June 2007.

We conducted two point counts as part of a meandering survey of the area located between the Big River and the Little River to the north. Wet sedge meadow with scattered patches of bulrush is the dominate habitat type. Dense stands of common reed are scattered throughout the area north of the Little River, presenting a serious threat to the quality of the area. An extensive bulrush marsh extends for several hundred meters to the south of the Big River. Chartier and Ziarno (2004) reported osprey, bald eagle, Caspian tern, common tern, black tern, and marsh wren as local breeders.

No target species responded to taped playback calls during a point count conducted at

the south end of the parking area the evening of 6 June. Ten black terns were observed catching insects (their main food source) on the wing over the marsh. Although black terns have been reported here before, this represents a new element occurrence for the site. A Virginia rail responded to the calls, and three common terns were foraging along the lakeshore.

Seventeen black terns and three nests (Figure 5) were observed on 7 June. The nests were located on floating mats of bulrush closer to deep water along the river's edge. Although only three nests were observed, there were probably several more nests in the colony as many birds were observed landing among the bulrushes. An osprey was observed flying over. Associates observed include common merganser (*Mergus merganser*), common yellowthroat and tree swallow (*Tachycineta bicolor*).

Additional survey work is needed in many areas. The black tern colony should be closely monitored as their habitat requirements are narrow and quite sensitive (Brewer 1991). Also continue to monitor common reed invasion. We strongly recommend a rigorous canoe survey of the large bulrush marsh south of the

river mouth; the area has high potential for both American and least bittern. And, although

limited in size, the area between the two rivers has potential for yellow rails.



Figure 5. Black tern on nest near the mouth of the Big River, Ogontz Bay, 7 June 2007.

8. Kipling Marsh – this area represents part of a small peninsula jutting out into Little Bay De Noc near Kipling. Dense stands of cat-tail line both sides of the small embayment on the southwest side of the peninsula. Kielb (1997) reported thirty pair of common terns near the area in the summer of 1996.

We conducted a point count from the access road leading onto the peninsula on the morning of 12 June 2007. Although no target species responded to the taped playback calls, a pair of red-necked grebes was observed. Yellow warbler, swamp sparrow, and common yellowthroats were some of the associates present. A female brown-headed cowbird (*Molothrus ater*) was observed in the marsh. The area is small and has little potential for sustained habitat. No further surveying is recommended.

9. Lower Escanaba River/Wells – we observed a portion of the lower Escanaba River from a boardwalk located near the Escanaba

Boat Launch, however the habitat, and accessibility, wasn't suitable for surveying. We did update an osprey nest element occurrence located on the grounds of the C. Reiss Coal Company near the boat launch parking lot. This nest has been active since 2000. A pair of adults was actively adding material to a nest perched on top of a utility pole. No further surveying is recommended for the lower Escanaba River but the osprey nest should be monitored annually.

10. Portage Marsh State Wildlife

Management Area – this 200-acre site in Delta County is managed by the Michigan Department of Natural Resources. Portage Creek, which flows through the center of the marsh, empties into Lake Michigan near Portage Point. The extensive marshland habitat was created behind the Portage Point sand spit that juts into Lake Michigan (Figure 6). The lake side of the spit is exposed to the forces of Lake Michigan while the area behind is protected, allowing for the deposition of organic material and the

development of fertile/productive wetlands (Albert 2003). The area is located 3.5 miles south of Escanaba. A ramp allows access to the site by boat or canoe. During low water periods

it is possible to survey the entire marsh on foot (Black & Smith 1994). In addition, a foot trail following the peninsula leads out to the point (Seng 1994).



Figure 6. Typical habitat encountered at Portage Marsh State Wildlife Area. Cat-tails grade to bulrushes and giant bur-reed moving toward open water. New element occurrences were established for least bittern, marsh wren and yellow rail during three days of surveys in June 2007.

The expansive cat-tail marshes found here offer excellent habitat for several marsh-nesting species during the summer. Summer breeders have included American bittern, black-crowned night-heron, and yellow-headed blackbird (*Xanthocephalus xanthocephalus*) (Chartier & Ziarno 2004). Black and Smith (1994) also report yellow-headed blackbirds, but current conditions lack the deep-water cat-tails they normally prefer. Thirty-four common tern nests were observed in 1977 near Portage Point (MNFI Biotics 2007). Rollo (2007) reported that forty-three common tern nests failed presumably to weather conditions in 2007. One hundred Caspian terns were observed during the breeding season in 1996 (MNFI Biotics 2007).

While earlier observations exist, an element occurrence for American bittern wasn't established at the site until 2006 when DNR

employee Billy Rollo submitted a Special Animal Form to MNFI (MNFI Biotic 2007). Evers (1989) lists least bittern as a "key bird" at the site, even though there is only one UP element occurrence for the species in the MNFI database (MNFI Biotics 2007). This was observed in 1975 at Scott's Marsh, eight miles southeast of Munising (MNFI Biotics 2007).

MNFI staff zoologists conducted a series of meandering canoe and foot surveys on 7, 9, and 11 June 2007, totaling eight point counts during the survey periods. Two American bitterns, one least bittern, five yellow rails, and eleven marsh wrens were observed over the three day period. New element occurrences were established for least bittern, yellow rail and marsh wren. The least bittern responded to taped calls from a section of heme marsh in the west end of the refuge (Figure 7).

The yellow rails were observed in a vast wet sedge meadow located to the east of the creek

outlet. As far as we know, this is the first yellow rail record at Portage Marsh SWA.



Figure 7. A least bittern responded to taped playback calls in the eastern part of Portage Marsh SWA on 11 June, 2007. Note the heme marsh conditions, which is prime least bittern habitat.

We also updated element occurrences for American bittern, black-crowned night-heron, yellow-headed blackbirds, and Caspian and common terns in 2007. Site leads were established for bald eagle and osprey as they were observed flying over on 9 June. Associate species observed during the three-day period include sedge wren, Virginia rail, sora, and sandhill crane. Both the Virginia rail and sora responded to taped calls. Several brown-headed cowbirds were observed throughout.

The first Michigan Breeding Bird Atlas reported only one UP location for yellow rails: Seney National Wildlife Refuge (Walkinshaw 1991). Recent years indicate that this state threatened bird is spreading throughout the UP, not just at Seney NWR, but also in areas east of the bridge, the Keweenaw, and at Portage Marsh. A yellow rail was observed in a bog near Point Isabelle on the Keweenaw Peninsula

in 2007 (Stewart 2007). There are very few western UP records for this species.

Additional survey work is recommended for the site. We suggest concentrating efforts to confirm breeding for American bittern, least bittern and yellow rail. A wide diversity of wetland birds are found at this site. All efforts should be made in site management plans to promote their presence. This includes controlling woody encroachment and invasive exotic species as there are several large stands of common reed present.

11. Ford River Mouth –the Ford River empties into the Green Bay portion of Lake Michigan just south of Escanaba. From Escanaba, take M-35 south until you cross the Ford River in the Village of Ford River. The marsh is accessed from a small parking area located on the south side of the road approximately 250m south of the Ford River Bridge. MNFI field zoologists

conducted a foot survey of the river mouth on the evening of 10 June.

The area is a composite of two habitats: wet sedge meadow grades to monotypic cat-tail moving from the parking area to the lake. Previous observations of our target species have been reported in the area. Chartier and Ziarno (2004) mentioned marsh wren as a local summer resident. A colony of forty-three black-crowned night herons reported in the area just south of the river mouth represents the only element occurrence for the site (MNFI Biotics 2007). The heron colony was not observed in 2007.

Two male marsh wrens were observed in appropriate habitat fluttering over the dense, marsh vegetation while emitting their diagnostic rattling song. This establishes a new element occurrence for the site (Figure 8). Two Virginia rails responded to taped playback calls. Other associate species observed include red-wing blackbird (*Agelaius phoeniceus*), sedge wren, and swamp sparrow.



Figure 8. A new element occurrence for marsh wren was established near the mouth of the Ford River in Escanaba County on 11 June 2007.

We conducted one point count from the mid-point of the jetty, broadcasting the series of taped calls two times toward the north. No

Several marsh wren nests were observed on site, but nest building alone does not indicate breeding as this species builds several nests in its territory during the breeding season (Sydlik 1991). Additional monitoring is recommended to confirm marsh wren breeding. According to the first Michigan Breeding Bird Atlas, marsh wrens were scarce across the UP, with only one confirmed breeding township reporting (Sydlik 1991). The extensive cat-tail areas may also harbor American bittern. The area is too dry for least bittern. Woody encroachment is an issue as tamarack and willow are abundant throughout.

12. Cedar River Mouth – the Cedar River empties into Green Bay in the village of Cedar River in Menominee County. MNFI field staff surveyed the area north of the rock jetty at the Cedar River Harbor Park on the morning of 10 June (Figure 9). The area is quite small and isolated with abundant woody encroachment dominated by willows. Several patches of common reed were present.

target species responded. A lone bald eagle was observed feeding in the open water of the lake. Breeding was confirmed for spotted sandpiper

(*Actitis macularia*) killdeer (*Charadrius vociferus*), bobolink (*Dolichonyx oryzivorus*), and common grackle (*Quiscalus quiscula*).

The last Great Lakes Colonial Water Bird Survey reported nesting black terns in the area. We failed to locate black terns this year. Further survey work is not recommended for this small, isolated location.

13. M-35 Wetlands – several long stretches of Great Lakes Marsh exist along M-35 between J.W. Wells State Park and the City of Menominee in Menominee County. These narrow strips of wetland are dominated by narrow-leaved cat-tail and common reed, and are bordered by M-35 and the Lake Michigan shoreline. MNFI staff encountered two concentrations of marsh wrens while driving south on M-35 along Green Bay the morning of 10 June 2007. Four wrens were observed just south of Bailey Park and an additional four individuals were located further south near Menominee. All birds were emitting their diagnostic “rattling” call while fluttering over

the marsh. We did not access the sites because they are both located on private property.

A lone Caspian tern was observed foraging along the shoreline at the northern site, but no breeding colony was observed. Thirty-five American white pelicans were seen in the open waters of Green Bay at the southern location. Other associates included swamp sparrow, yellow warbler, and warbling vireo (*Vireo gilvus*).

Only one township in Menominee County reported marsh wrens during the first Michigan Breeding Bird Atlas period (Sydlík 1991). We feel increased effort and improved coverage would produce more individuals along the lakeshore. Additional surveying is recommended along the shoreline to determine the extent and breeding status of this species. To do this would necessitate acquiring access to several tracts of private property. Dense stands of common reed exist at both locations, as well as all along the coast. Efforts should be made to control the spread as well as monitor changes associated with fluctuating water levels.



Figure 9. MNFI zoologists surveyed for black terns along the rock jetty near the mouth of the Cedar River on 10 June 2007.

Luce (Subsection VIII.2.)
Grand Marais Sandy End Moraine and
Outwash (Subsection VIII.2.)

14. Tahquamenon River Mouth - the Tahquamenon River empties into Whitefish Bay approximately 4.5 miles south of Paradise in Chippewa County. The state land (Tahquamenon Falls State Park) around the river mouth offers a variety of wildlife observation opportunities. MNFI staff conducted a canoe survey of the area on the morning of 19 June 2007. We accessed the river at the boat launch site on the east side of M-123, and surveyed the large marshy area to the north of the river mouth.

The lower reaches of the river contain several pockets of suitable habitat. Several, small, dense patches of bulrush are abundant throughout the site. A narrow mosaic of cat-tails, bur-reed, bulrushes, and sedges exists on the northern side of the marsh (Figure 10). We

were unable to locate any relevant or reliable breeding/observation records for the site during our data mining process.

We conducted three point counts at selected sites throughout the marsh. No target species responded to the taped playback calls. Two bald eagles were observed flying over. Associate species observed include alder flycatcher, belted kingfisher (*Ceryle alcyon*), and sedge wren. We do not recommend additional visitations because the habitat, while of good quality, is rather diminutive to support any of our target species. Tag alder, sweet gale and other woody vegetation are heavily encroaching on the area. Monitoring efforts should be included in the park management plan. No exotic vegetation was observed.



Figure 10. Woody encroachment has made suitable habitat, such as this narrow strip of giant cat-tails, bur-reed, bulrushes, and sedges, rare in the lower reaches of the Tahquamenon River near Paradise, Michigan. Photo taken 19 June, 2007.



Figure 11. Kathy Davis, a volunteer with the United States Fish and Wildlife Service searches for piping plover chicks near the mouth of the Sucker River near Grand Marais. MNFI staff updated an element occurrence for this species as four young fledged off a nest among the sand and gravel environment.

15. Grand Marais/Sucker River Mouth – the countryside around Grand Marais represents a mixture of northern coniferous and hardwood forests, high sand dunes and unspoiled beaches (Black and Smith 1994). The Sucker River flows into Lake Superior just east of Grand Marais. We attempted to conduct a survey of the area upriver from East Bay on 19 June 2007. However, the area is overgrown with woody vegetation and making progress upriver proved impossible on foot. We did update a piping plover element occurrence from East Bay (MNFI Biotics 2007), when we observed two adults and four chicks among the wide, undisturbed sand and gravel beach off the end of Webb Road. This site is a well-known plover location and the USFWS staffs volunteers here to monitor nest productivity and fledgling survival. Local volunteer Kathy Davis located the birds for us and provided breeding and other pertinent information (Figure 11). Associate species included two bald eagles feeding off dead fish carcasses in the bay. No additional surveying is suggested for our target species but piping plover monitoring should continue.

16. Sand Point Marsh Trail – a hike on the Sand Point Marsh Trail leads through a scenic area of Pictured Rocks National Lakeshore (PRNL). The trail is located just east of Munising off of Sand Point Road, not far from the National Park Service’s Sand Point Visitor Center. This ½ mile barrier free boardwalk leads through 25 acres of the various wetland habitats encountered at PRNL. The rich landforms range from relatively dry, forested sand ridges to swales occupied by a mosaic of wetland types (e.g., cat-tail and wet sedge meadow). Waterfowl, herons, and other wetland-obligates are found in the wet swales between the forested sand ridges found here (Sand Point Marsh Trail 1993). Scott Hickman, a local birder from Au Train (2007) observed an American bittern along the trail in April 2007 (Hickman 2007). MNFI zoologists conducted a foot survey along the trail the morning of 20 June 2007. A point count conducted in an area of open water and scattered emergent vegetation (including cat-tails and sedges) failed to detect any target species. This spot of open water is maintained by beavers (*Castor canadensis*),

whose engineering abilities have flooded the area. Associate wetland species located include sandhill cranes, alder flycatcher, swamp sparrow, and yellow warbler. No further field work is recommended. The area is limited in

size and woody encroachment by white cedar, sweet gale, and leatherleaf (*Chamaedaphne calyculata*) has successfully choked out breeding possibilities.



Figure 12. Woody encroachment along the lower reaches of the Au Train River in Alger County. MNFI staff conducted a canoe survey of the lower river bottoms on 20 June 2007.

17. Au Train River Bottoms – the headwaters of the Au Train River originate in the Cleveland Cliffs Basin and the Au Train Basin Wildlife Management Area. The river meanders northward through Au Train Lake, then crosses a vast dune and swale wetland complex before emptying into Lake Superior just east of Au Train on M-28. The lower reaches of the river feature a variety of habitats including wet sedge meadow and cat-tail-, bulrush-, and bur reed-marshes. Tag alder, northern white cedar and sweet gale are the dominant woody vegetation. However, despite the various habitat types, low water levels and woody encroachment has greatly reduced the quality of this site.

MNFI staff conducted a canoe survey of the lower river 20 June 2007. Our survey originated at the Doucette Bridge where the river crosses under County Road H05. We conducted

five point counts along the way including one at the Doucette Bridge, taking advantage of the high perch to broadcast the game caller. Each point count was conducted in a different habitat type at estimated equal distances along our course. Despite these efforts we failed to locate any of our target species. Wetland-obligates encountered include willow flycatcher, cedar waxwing (*Bombycilla cedrorum*), belted kingfisher, clay-colored sparrow (*Spizella pallida*) and spotted sandpiper. Additional survey work is not recommended for this time. The lower river bottoms are extremely woody, with sweet gale and tag alder having choked out much of the site (Figure 12). Woody encroachment needs to be controlled; succession has progressed too far. The available habitat is too small at this time to support our target species. No exotic plants were observed.



Figure 13. MNFI staff surveys for yellow rails in the extensive boreal sedge meadows of the Escanaba River State Forest just west of Au Train, 21 June 2007.

18. Onota-Au Train Wet Meadow – we discovered this location through Scott Hickman, a local birder living in Au Train. Scott, who has an intimate knowledge of the local area, suspects that yellow rails breed here. This site is part of the Hiawatha National Forest, and is located north of Onota-Au Train Road between the Village of Au Train and Rock River Road. MNFI staff conducted a foot survey of the site on 21 June 2007 (Figure 13).

The area is a vast boreal wet sedge meadow that extends northward toward M-28 and Lake Superior. Dominant vegetation includes sedges, rushes, and bog-loving insectivorous plants such as sundew (*Drosera* spp.) and picture-plant (*Sarracenia purpurea*). Standing water averages 5 inches. In addition to two standard point counts, we broadcast the yellow rail recordings at several locations along a meandering route. Despite these efforts, we failed to locate any target species. Wetland associates included yellow warbler, great blue heron (*Ardea herodias*) and swamp sparrow. No exotic vegetation was encountered.

We strongly recommend a more aggressive survey for yellow rails in these open sedge meadows. Yellow rail observations are increasing across the UP, and areas such as this could harbor a new breeding population of this rare summer visitor to Michigan.

19. Sand River Wildlife Flooding/Shiras Wildlife Area – this state managed site is located along the Sand River in Marquette County just south of the Village of Sand River. A directional sign located at the M-28 and Mangum Road intersection refers to the as site the Johnson Wildlife Flooding. MNFI staff surveyed the area by foot the evening of 21 June 2007.

We saw the sign while driving west on M-28 and upon initial inspection the site looked promising. We started our survey at the old boat ramp located at the north end of the area near the dam. There is a wide variety of habitat here: a sizable wet sedge meadow in the north grades to overgrown alder, willows, sweet gale, and

leatherleaf southward. A small, dense cat tail stand is found towards the south.

We failed to locate any target species during an extensive meandering survey along the east side of the area. Associate species present included swamp sparrow, common yellowthroat, LeConte sparrows (*Ammodramus*

leconteii), and sandhill cranes. This extensive site has a nice sedge meadow, but it is very dry and woody encroachment is extensive to the south. We recommend additional field work when water levels are higher, as there is a potential for yellow rails. No exotic vegetation was present.



Figure 14. Extensive bog/wet sedge meadow complex on the Pequamining Tombolo near L'Anse, Michigan. No target species were detected along a meandering foot survey conducted on 22 June 2007.

Bergland (Subsection IX.6.)

Baraga (Sub-subsection IX.6.3.)

20. Pequamining Tombolo – lacustrine wetlands along the Great Lakes occur where there is adequate protection from the intense forces of wind and waves. Tombolos are a unique type of wetland that forms when bedrock islands are linked to the mainland by current-deposited sands. The embayment created on the leeward side is protected from the lake's strong wave action, allowing for a pocket of marsh vegetation to exist (Albert 2003). The Pequamining Tombolo is located north of L'Anse on the west side of the Abbaye Peninsula in Baraga County. MNFI staff

conducted a foot survey of the area on 22 June (Figure 14).

Our survey originated on the southern side of the tombolo off of Pequamining Road, moving north toward Second Sand Beach Road. Traversing through the site was impeded due to the extreme, hummocky conditions. The habitat is a mixture of grasses, sedges, and rushes in the southern part of the marsh. However, we encountered bog conditions as we continued north. Bog plants observed included pitcher-plant, sphagnum moss, bog rosemary (*Andromeda glaucophylla*), and sundew. Water depths ranged from 1-2 feet throughout. The conditions became much drier the farther north we moved. Dominant woody vegetation included sweet gale, leatherleaf, and willow.

No target species responded to taped calls during two point counts along our meandering survey route. Associate species observed include swamp sparrow, sandhill crane, clay-colored sparrow, and sedge wren.

No further surveys are recommended until the woody encroachment is brought under control. Several ORV tracks were observed; this needs to be continually monitored as the marsh can be severely damaged as a result (Figure 15).



Figure 15. ORV tracks threaten the wetland habitat on the Pequamining Tombolo near L'Anse, Michigan.

21. Sturgeon River Sloughs State Wildlife Management Area – this 2,800 acre site is owned by the Michigan Department of Natural Resources. Located in Houghton and Baraga counties, the site is divided into two units: the southern unit commonly referred to as the “Arnheim Sloughs;” and the north unit which features the deVriendt Nature Trail. Both locations contain diked impoundments where water levels can be raised or lowered to provide waterfowl and wildlife habitat. Each site provides excellent opportunities to observe a variety of wetland species such as American bittern and Northern harrier (*Circus cyaneus*) (Black and Smith 1994).

The northern unit is located approximately 2 miles south of Chassel on US-41. The area is easily surveyed by following the dikes around the impoundments. We were unable to locate any specific information

regarding previous sightings of our target species at the north unit.

MNFI staff surveyed the southern impoundment of the north unit on the evening of 24 June 2007, during which we conducted four fixed point counts along the dikes. The enclosure was very dry except for a few open water areas near the far eastern end. Several pockets of “wet” sedge meadow are found near the center of the unit. Woody encroachment is prevalent throughout. Exotics observed were spotted knapweed (*Centaurea maculosa*) on the dikes and reed canary grass (*Phalaris arundinacea*) within the impoundment.

A new element occurrence was established when we flushed an American bittern from a dry ditch that bisects the southern impoundment (Figure 16). We also observed a Northern harrier foraging near the same location.

Associate species included a bald eagle flying over, sedge wrens, and a belted kingfisher.

The low water levels here do not provide for suitable marsh bird habitat. Water levels need to be increased to promote wetland obligates. The area currently lacks the extensive cat-tails preferred by least bittern, common moorhen, and marsh wrens. Additional survey work is recommended when higher water levels exist within the impoundments. Management should also monitor the spread of reed canary grass.

The southern unit of the Sturgeon Sloughs Wildlife Management Area is located six miles north of Baraga off of Arnheim Road.

The “Arnheim Sloughs” has nine impoundment units including a goose pasture managed for geese. The area is reached by traveling west for 1 mile on Arnheim Road from its intersection with US-41. MNFI staff surveyed impoundments 7 & 8, the southernmost units, on 22 and 24 June, 2007. The area is an excellent place to observe wetland-obligate species and is popular among Upper Peninsula birders. Although several site records exist, there are no element occurrences in the MNFI Biotics database (MNFI Biotics 2007).



Figure 16. An American Bittern emerged from this low ditch bisecting the southern impoundment at the Sturgeon River Sloughs State Wildlife Management Area (northern unit) on 24 June 2007.

Chartier and Ziarno (2004) report this to be one of the best places in Michigan to observe American bitterns. Four American bitterns were reported at the unit on 5 June 1996 (Klieb 1997). Least bitterns, a UP rarity were observed 12 June 1999 (Byrne 2000) and in 2007 (Haas 2007). Three marsh wrens were heard singing in appropriate habitat 25 June 1999 (Byrne 2000). A lone yellow rail was heard 29 April 2006

(Reinoehl 2006). Sora, pied-billed grebe (*Podilymbus podiceps*), and Northern harrier are also reported as local breeders (Chartier & Ziarno 2004).

Along with the Portage River SWA near Escanaba, the southern unit contains some of the highest quality wetland habitat encountered during the fourth year of our research. Both units contain a balance of dense areas of bulrush,

cat-tail and giant bur reed, with several locations with heme marsh conditions. Woody encroachment is dominated by willows. Some patches of reed canary grass are present, but no common reed or purple loosestrife was observed.

MNFI field zoologists walked the dikes of impoundments 7 & 8, conducting six fixed point counts at selected locations around the units. Sites were chosen subjectively based on

the quality of the habitat, such as vegetation type, amount of open water: vegetation, and water levels. A lone common moorhen was the only target species to respond to the taped calls during our point counts. The bird was heard calling in the north end of impoundment number 7. Two American bitterns flew into impoundment number eight from the goose pasture to the west (Figure 17). Both birds remained silent during our observations.



Figure 17. A new element occurrence was established when two American bitterns were observed in this area of Impoundment 8 at the southern unit of the Sturgeon River Sloughs State Wildlife Management Area on 22 June 2007.

Also, two Virginia rails responded to taped calls from the southwest section of unit 7. Other associate species included sedge wren, Wilson's snipe, sandhill crane and swamp sparrows.

No common moorhens were reported in the UP during the first Michigan Breeding Bird Atlas period (Higgins 1991). This species is quite elusive; they occupy habitat that is often inaccessible or undesirable to even the most experienced and dedicated birder. However, moorhens are quite cooperative and will respond readily to taped playback calls. A common moorhen was reported in the Copper Harbor area on 26 May, 2006 representing only the third ever

record for the Keweenaw Peninsula at that time (Byrne 2000). Several additional sightings have been reported since then, but specific documented records are hard to locate (Haas 2007). There are no western UP element occurrences for common moorhen in the MNFI Biotics database (MNFI Biotics 2007).

We strongly recommend additional survey work at this site. The diverse habitat is suitable for several of our target species, especially when water levels are higher. A more aggressive survey into the interior is needed to confirm breeding activity. The largest concentrations of common moorhen in Michigan

are found on public marshes managed for waterfowl. These and other marsh dependent species should be considered in area management plans. The importance of

preserving/creating wildlife management areas is crucial to ensure the survival of this species in Michigan (Higgins 1991).



Figure 18. Suitable habitat is restricted to narrow strips such as this one in the Portage Lake wetland complex 25 June 2007.

22. Portage Lake Wetland Complex – the Portage River is a drowned river mouth best accessed by boat along the Sturgeon River. Drowned river mouths originate in the riverine/lacustrine interface along the lower stretches of tributary rivers. During times when Great Lake water levels were low, these tributary rivers carved out deep gorges through the bluffs bordering the shoreline. When the water levels rose, the mouths of these rivers were “drowned” creating a protected and fertile wetland. The associated vegetation is largely dependent on the water levels of Lake Superior (Albert 2003). This wetland complex was almost eradicated during the construction of the Portage Lake Ship Canal linking Portage Lake to Lake Superior (Albert 1995). On 25-26 June MNFI zoologists conducted a boat survey of the Portage River complex including the lower Sturgeon and Snake rivers.

With a boat on loan from the Michigan Department of Natural Resources, we put in at the Sturgeon River boat launch north of the Sturgeon River Sloughs Wildlife Management Area (north unit). We surveyed the area the evening of 25 June and the morning of 26 June. Although suitable habitat was present, it is quite fragmented. For example, a survey conducted on a borrow island in the middle of the Portage River had a narrow border of broad-leaved cat-tail and bur reed (Figure 18). A narrow strip of cat-tail and bulrush habitat existed along the edge of the lower Snake River as well. There are many small inlets with appropriate habitat, but again it is very small. Water levels were extremely low (Figure 19) providing excellent habitat for shorebirds.

We did not locate any records of previous sightings for our target species during the data mining process. There are no element

occurrences for the site in the MNFI Biotics database.

We conducted eight point counts during the two-day survey period. We failed to locate any target species during the meandering survey of the lower river bottoms. We did update an element occurrence for bald eagle with the discovery of an active nest with two adults and

one chick. Several Wilson's snipe, sandhill crane, swamp sparrow, and white-throated sparrow (*Zonotrichia atricapilla*) were among the associate species observed. We strongly recommend further surveys when water levels increase, as the area is quite extensive and has potential for our target species.



Figure 19. Low water levels along the Sturgeon River near Portage Lake 25 June 2007.

Keweenaw (Subsection IX.7.)
Calumet (Sub-subsection IX.7.2.)

23. F.J. McClain State Park/Bear Lake – F.J. McClain State Park is located on the western edge of the Keweenaw Peninsula just north of where the Portage Lake Ship Canal reaches Lake Superior. From the Houghton/Hancock area, M-203 leads to the park. We selected this site because least bitterns have been observed in the cattail marshes surrounding Bear Lake, which is located across from the main park entrance on the south side of M-203 (Chartier & Ziarno 2004). MNFI staff conducted a foot survey along the northern shore of Bear Lake on the morning of 23 June 2007.

We accessed the site from the park hiking trail that parallels Bear Lake on the north. We concentrated on two areas to conduct point counts: the narrow strip of cattail along the northeast section of the lake, and a dense stand of bulrush and cat-tails in the northwest area of the lake. Pockets of heme marsh conditions occur at both sites, but especially in the northwest section (Figure 20). Woody encroachment is heavy with red maple, tag alder, and sweet gale dominating.

No target species responded to the taped calls. However, two Virginia rails responded to taped calls in the northwest area of the lake. Associate species observed include swamp sparrow, white-throated sparrow, and belted

kingfisher. Neither common reed nor purple loosestrife was detected.

The quality and quantity of the habitat is suitable for least bittern, as well as American bittern and common moorhen. The site also seems suitable for black terns. Additional

surveys are necessary to determine breeding status of all these wetland-obligate species, but especially least bittern, an extremely rare breeder in the Upper Peninsula. Woody encroachment needs to be monitored.



Figure 20. Extensive pocket of cat-tail/bulrush wetland complex on the northern end of Bear Lake at F.J. McClain State Park, Houghton County. Acting on a report of least bittern breeding activity, MNFI staffers surveyed the lake on 23 June 2007.

Future Efforts and Recommendations

Ten different MNFI zoologists visited 108 survey sites during this four year study. A total of 295 element occurrences (EO) were either established or updated over the study period, broken down as 214 updates and 81 new EO. Observations for several of our target species were encouraging. Marsh wrens occurred at thirty-one percent (31%) of the study sites, followed by black tern (25%) and American bittern (24%) (Table 3).

However, we have learned from the four years of field work that some rare bird species are in need of focused inventory effort. For example, we failed to locate a single king rail (*Rallus elegans*) during the entire study. Least

bitterns occurred at only ten percent (10%) of the study sites, while other listed species', such as common moorhen (7%), yellow rail (6%), and yellow-headed blackbirds (2%) numbers were low as well (Table 3). However, the increased number of yellow rail sightings in the Upper Peninsula, especially in the Les Cheneaux and Munuscong Bay areas is encouraging. Our Portage Marsh observation in 2007 is only one of several that have been reported in the western Upper Peninsula in recent years. Accomplished birders in the area believe the habitat exists to support this species throughout the western Upper Peninsula, and efforts should focus on determining breeding activity. However, despite

Species	2003	2004	2005	2007	Total	Percent ^a
American Bittern	12	8	2	4	26	24
Black-crowned Night-heron	5	0	0	1	6	5
Black Tern	10	7	9	1	27	25
Caspian Tern	5	5	8	0	18	17
Common Moorhen	6	0	1	1	8	7
Common Tern	1	4	3	2	10	9
Forster's Tern	3	1	0	0	4	4
King Rail	0	0	0	0	0	0
Least Bittern	5	1	4	1	11	10
Marsh Wren	11	4	14	4	33	31
Northern Harrier	4	3	0	2	9	8
Yellow-headed Blackbird	2	0	0	0	2	2
Yellow Rail	0	6	0	1	7	6
Common Reed	23	NA ^b	12	8	43	40
Purple Loosestrife	7	NA ^b	10	0	17	9

^a rounded to nearest percentage based on 108 study sites.
^b data incomplete for 2004 field season.

Table 3. Observations of listed species during the MNFI wetland bird study 2003-2007.

this encouragement, yellow rails should remain as threatened species.

Additional systematic surveys are needed for least bittern, yellow rail, common moorhen, and king rail. The king rail was not recorded from any site during the entire study, including the St. Clair Flats, considered to be Michigan's best remaining site for the species. Common moorhen were observed at only four locations during the four-year period, indicating the possible need to upgrade from special concern to threatened. In addition, more information on the king rail is critical to the development of management strategies and future research is needed to assess the effects of various land management practices on rail populations. Also, common reed and other exotics pose serious threats to many of our survey locations (Table 3).

Although not as common as in the Lower Peninsula, the marsh wren is fairly widely distributed throughout the northern shore of Lake Michigan, further supporting removing it from the list of special concern species. Only one least bittern was spotted during the 2007 field season, down from five in 2005. This species is extremely rare in the Upper Peninsula, and it should remain a threatened species.

Surveying for terns often poses severe logistical difficulties because they often breed on offshore islands and shoals. Additional tern surveys should be done through efforts of the Great Lakes Colonial Wetland Bird surveyors, or other focused researchers, whose use of aerial flights can more effectively determine the locations and activities of these species.

The shorelines and coastal wetlands of Michigan provide important habitat for a number of rare and declining species of wetland birds, as well as numerous common species of wildlife. We feel we were successful in covering/surveying/identifying the important coastal wetland areas in Michigan. On occasion we were unable to dedicate the necessary time to adequately survey an area because of time constraints and the geographic distances between locations. However, we were able to conduct relatively good evaluations of each site in terms of quality and suitability of wetland bird habitat. We are confident in our recommendations and suggestions. Hopefully this study will lead to additional research opportunities necessary to improve the management and conservation of wetland bird in Michigan.

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Appendix I

Wetland Bird Survey Form

MNFI BIRD SURVEY FORM

I. TARGET SPECIES/GROUP_____

II. LOCATION INFORMATION Site Name_____ Mgmt. Name_____

Date_____ Surveyor(s)_____

Quad _____ Town/Range _____ Sec. _____ 1/4 Sec _____

Directions/access _____

II. BIRD LIST (list all birds observed) **POINT/TRANSECT #** _____

[illegible]

II. GENERAL SITE DESCRIPTION

Soil Type _____ Geology _____

Potential habitat for target species present? ☐ ES ☐ D ☐ NSURE Comments_____

If you answered yes to the above, please rate the relative quality of the site to the target species or group:

☐ HIGH ☐ MODERATE ☐ LOW ☒ NONE Justification_____

III MANAGEMENT CONSIDERATIONS

Evidence of disturbance_____

Exotic species_____ Other threats (e.g. ORV's, excessive mt. bike use, etc.)_____

Restorability of site_____

Stewardship Comments _____

IV. ZOOLOGICAL INDICATOR SPECIES_____

V. SPECIES LIST(S) _____

Appendix II

Wetland bird habitats and associated element occurrence map for the Lake Michigan Shoreline

Appendix III.

Wetland bird habitats and associated element occurrence map for the Lake Superior Shoreline

Appendix IV.

Bird Species for all Sites Sampled During 2007 Wetland Bird Surveys