

Additional Information
Door Peninsula Coastal Wetlands Ramsar Site

Geographical coordinates (latitude/longitude, in degrees and minutes):

The central coordinate is: 45°13'20.26"N, 86°59'44.09"W

Approximate northern end of the Ramsar Site:

45° 17' 9" N -86° 58' 29" W

Approximate southern end of the Ramsar Site

45° 3' 54" N -87° 7' 19" W

General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

The Door Peninsula Coastal Wetlands Ramsar Site is located in Door County, Wisconsin, USA. The site occupies a major section of the eastern Lake Michigan shoreline of northern Door County. The site lies in the northwestern region of Lake Michigan, one of the Laurentian Great Lakes.

The Ramsar Site occupies portions of three townships; Liberty Grove, Baileys Harbor and Gibraltar. The site covers portions of Townships 30, 31 and 32 North and Range 27 and 28 East. The site is in the U.S. House of Representatives' 8th District, and the Wisconsin Senate and Assembly 1st districts. The largest city near the site is Sturgeon Bay about 30 miles (48 km) from the southern end of the site (population 9,180). Green Bay, Wisconsin (population 102,313) is about 40 miles (64 km) south of Sturgeon Bay.

Area:

The Ramsar Site comprises 4,630.77 hectares (11,443 acres). This includes 21.85 hectares (54 acres) owned by Door County; 186.56 hectares (461 acres) owned by Door County Land Trust; 1,291.75 hectares (3,192 acres) owned by The Nature Conservancy; 570.2 hectares (1,409 acres) owned by The Ridges Sanctuary; 277.61 hectares (686 acres) owned by the University of Wisconsin – Green Bay (Toft Point); and 2,229 hectares (5,508 acres) owned by the Wisconsin Department of Natural Resources. Also included in the Ramsar Site are two privately owned properties with lands permanently protected by easements – 9.3 hectares (23 acres) owned by George and Sharon Cobb and 44.5 hectares (110 acres) owned by Ed and Sandy Miller. The Ramsar site includes 36 kilometers (22.55 miles) of protected Lake Michigan shoreline.

Criterion 2.

According to the WDNR Natural Heritage Conservation Bureau, the following state endangered or threatened species are also found within the Ramsar Site.

<i>Cicindela hirticollis rhodensis</i>	Beach-dune Tiger Beetle	END	Beetle
<i>Cipedium arietinum</i>	Rams-head Lady-slipper	THR	Plant

<i>Eptesicus fuscus</i>	Big Brown Bat	THR	Mammal
<i>Myotis lucifugus</i>	Little Brown Bat	THR	Mammal
<i>Trisetum melicoides</i>	Purple False Oats	END	Plant
<i>Viola rostrata</i>	Long-spurred Violet	SC	Plant

END = Endangered THR = Threatened SC = Special Concern

See criterion 1 for significant plant communities found within the Ramsar Site.

Criterion 4. A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

The Door Peninsula Coastal Wetlands Ramsar Site and surrounding Focus Area provide valuable migratory stopover habitat for 140 migratory bird species. Most passerine bird species migrate at night and descend to earth at first light, looking for available habitats to rest and feed. In areas around the Great Lakes, birds that may be over open water at sunrise descend to the closest habitats along the shorelines, resulting in higher than normal concentrations of birds in areas adjacent to the shore. The configuration of the Door Peninsula, which juts out into Lake Michigan, presents a large amount of shoreline edge in relation to land area, resulting in very high levels of migratory bird use. This area is also located within the major migration corridor between neotropical wintering areas and Canada's boreal forest ecosystem, the primary breeding area for up to 3 billion birds of over 300 species.

During peak migration periods in spring and fall, large numbers of migrating warblers, vireos, thrushes, flycatchers, and other species use habitats adjacent to the Lake Michigan shoreline for resting and feeding on their journey between wintering and breeding areas. The high quality habitats present here fill critical habitat needs by providing areas where birds can safely rest and replenish energy reserves on the high quality food sources found in these habitats. The availability of these high quality habitats is critical to the successful completion of their annual migration cycle.

Several important sport and commercial fish reside in the shallow waters of Lake Michigan just offshore in the bays (e.g. Moonlight Bay, Baileys Harbor, North Bay, Rowley Bay) that are fed by the focus area's tributary network. Forage species are critical for maintenance of the top predator fish species as well as the numerous fish eating birds (e.g., bald eagle, osprey, great blue heron, green heron, American bittern, double crested cormorant) which utilize this area.

The waters of North Bay were found (in research done in the late 1970's) to be an important spawning site for lake whitefish. Of the 1.2 - 1.5 million whitefish estimated to inhabit Lake Michigan, an estimated 1.1 million spawn in the coastal waters from Moonlight Bay to North Bay (Becker and Boronow pers. comm., Frederick 1982). Commercial fisherman and ice fisherman harvest large amounts of whitefish from the Door County area.

Ephemeral wetlands located within these habitats are greatly important to herptile populations in Door County. The shallow depth to bedrock and fractured nature of the underlying limestone bedrock results in a scarcity of shallow ephemeral wetlands over much of Door County, with the exception of these low-

lying wetland areas near the shoreline. Numerous amphibian species such as wood frog (*Rana sylvatica*), spring peeper (*Hyla crucifer*) are dependent upon these wetlands as breeding areas to maintain their local populations.

Criterion 9. According to Tim Vogt, a Hine's emerald research, that conducted mark/recapture work in 1998 in Illinois and Wisconsin, "there probably are >30,000 individuals globally; 20,000 of these may occur in Door County" Conservation William Smith with the WDNR estimates that 30-40% of the world's Hine's emerald dragonfly population is found in the Ramsar site.

Map 2 shows the locations of Hine's emerald dragonfly sites (critical habitat and contributing ground water). U.S. Fish & Wildlife Critical Habitat Units within this wetland site indicating the breeding and foraging habitats for the species. According to the Fish & Wildlife Service, Critical Habitat "is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery" (http://www.fs.fed.us/r9/wildlife/tes/docs/esa_references/critical_habitat.pdf).

Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

This cuesta has a sharp, dramatic west-facing scarp with a gentle eastward dipping back slope. The majority of the Ramsar Site rests on the eastern most exposed surface of the back slope before it slips under the waters of Lake Michigan. A smaller portion of the Ramsar focus area occupies an area of the back slope that lies under the near shore waters of Lake Michigan.

The Silurian-age dolomite is a calcareous unit with high concentrations of magnesium and small concentrations of iron. The chemical nature of the dolomite creates a reactive base easily modified through dissolution, leading to the development of enlarged vertical crevices and horizontal bedding planes, sinkholes, swallets and other solution features associated with karst topography. These karst features in combination with the thin soils allow contaminants to easily enter the groundwater system and travel quickly to nearby down gradient wetlands, streams, Green Bay or Lake Michigan (WDNR, 2009).

Numerous glaciations of the peninsula during the Pleistocene epoch accentuated the escarpment and formed the features visible on the landscape. Most notably, the scouring of previously deposited material and deposition of a buff-colored pebbly loam occurs throughout much of the northern part of the county. The soils of Door County originate from glaciation, bedrock weathering, and fluvial activity. The majority of the soils are formed in glacial till; but a smaller portion is also formed in outwash sand and gravel or lacustrine sediment.

Ridge-swale habitats developed as a result of longshore transport of sand and subsequent wind action during previous lake stands. They now parallel the shoreline of Lake Michigan, having become exposed as a result of changing water levels in the Holocene and post-glacial, isostatic rebound. Some species

present are characteristic of wetland and bog communities, as in swales with standing water, while ridges often have sufficient drainage to support mixed mesic or dry-mesic conifer / hardwood forests.

The Ramsar Site comprises several important natural features described below (from north to south). Additional information and maps on the nine State Natural Areas located within the Ramsar Site are attached as Appendix 1.

Europe Lake is a 273 acre seepage lake located at the northern end of the site. The average depth of this lake is six-feet with a maximum depth of ten-feet. It is separated from Lake Michigan by a dolostone ledge and sand dune topography. Europe Lake is classified as oligotrophic; with a fine, flocculent, nutrient-poor bottom substrate that supports a sparse growth of submerged aquatic plants. Some rooted aquatic plants are scattered throughout with a general concentration in the northeast corner. Even though it's shallow, the low biological production favors sufficient oxygen to prevent winterkill conditions. At present, water quality for the lake is very good. The system surrounding the lake is made up of 1,700 acres of northern mesic forest consisting of birch, white cedar and pines with a marsh at the northern end; these features create a significant ecological habitat of forest, wetland and shoreline habitat.

Lying a few kilometers south and west of Europe Lake is the **Mink River**, a fresh water estuary that drains extensive wetlands and discharges into **Rowley's Bay**, Lake Michigan. Rowley's Bay and the Mink River lie in a bedrock valley that extends across the Peninsula from Lake Michigan to Green Bay. During the Algonquin Lake Stage, when the water levels were much higher, the valley formed a strait that connected the two large water bodies. The declining lake level and isostatic rebound have separated the Mink River watershed from Green Bay. The 880-acre area of the estuary and surrounding habitat is very unique in that it features a mosaic of wetlands, lowland forests, emergent aquatics, northern sedge meadows, alder thicket, shrub-carr, hard springs and spring runs and beach. The Mink River is 2.8-miles long and flows continuously. The average width of the primary channel is 300-feet, but the small streams that feed the Mink River are considerably smaller (15-feet wide). The water depth in the Mink River estuary can vary yearly and seasonally with the levels of Lake Michigan, and daily due to the seiche of the river, but in general depths are below 3 feet. Sediments in this stretch of the river are soft and generally unconsolidated, consisting of a mixture of muck, marl, and sand (WDNR, 2007). The primary sources of water for the estuary are precipitation, groundwater springs, and Lake Michigan. The precipitation and spring flow have little annual variability. The seiche activity of Lake Michigan plays a significant role in the wetland community. The Mink River estuary is one of the highest quality freshwater estuaries in the western Great Lakes.

North Bay is located in the center of the site and is a rather shallow bay that opens southward into Lake Michigan. Three Springs Creek empties here and a large portion of the shoreline of the inner bay is dominated by an emergent marsh and sedge meadow. The substrate of the sedge meadow, emergent marsh and near shore is a mix of sand and gravel, exposed bedrock, clay, and rubble. A significant portion of the shoreline of North Bay and adjacent Marshall's Point is shelving bedrock, a natural habitat of considerable ecological rarity and significance. Offshore habitat is a sand, rock and rubble bottom-type. The North Bay/Three Springs area comprises approximately 4,700 acres and contains 8,500 feet of shoreline, a very significant stretch of high quality Great Lakes shoreline. This area contains several rare species including the federally endangered Hine's emerald dragonfly and is host to a range of plant communities that change through time in response to the periodic rise and fall of lake water levels. The site contains many high quality natural communities including northern sedge meadow, calcareous fen,

northern wet, wet-mesic and mesic forest, boreal forests of white spruce and balsam fir, and springs and spring runs. Also present are coastal marshes and a complex of Lake Michigan dunes with associated ridge and swale topography. During low water years the bay provides excellent habitat for waterbirds. (Marshall's Point, adjacent to North Bay, is a residential development with 31 residential lots, 222 hectares (550 acres) common area and a 45 hectare (113 acre) State Natural Area. Marshall's Point is not included in the Ramsar Site.)

Mud Lake is a shallow, 155-acre drainage lake within the Mud Lake State Wildlife and Natural Area, with a predominantly marl bottom located near the southern end of the Focus Area surrounded by an extensive shrub and timber swamp. The maximum depth is five-feet and 55 percent of the lake is less than three feet deep and empties southerly into Moonlight Bay via Reiboldts Creek. Two unnamed streams enter Mud Lake and drain the large wetlands surrounding the lake. Mud Lake then drains into Moonlight Bay via Reboltz Creek. The vast Mud Lake consists largely of lowland swamp species such as black spruce, tamarack and white cedar. Though the bottom of the lake is predominantly marl, dolomite bedrock is exposed in some areas. Aquatic plants are most diverse in the outlet stream and the wetlands and lake provide habitat for the federally-endangered Hine's emerald dragonfly. The west shore of Moonlight Bay has a high concentration of wetlands hydrologically connected to the bay. The sheltered bay has sand beaches within and shelving bedrock on its sides.

The **Ephraim Swamp** to Baileys Harbor Complex is situated at the southwest end of the Focus Area. Ephraim Swamp is a lowland swamp that extends from the west shore of Door County at Eagle Harbor to the southeast towards Baileys Harbor. Vegetation consists of lowland swamp species such as black spruce, tamarack and white cedar. Upland hardwood portions contain maple, hemlock and yellow birch. Soils are shallow to deep, well drained, and moderately steep. A sandy loam or loam subsoil covers sandy loam or fine sandy loam till or dolostone bedrock. Hidden Springs Creek, designated as an Exceptional Resource Water by the State of Wisconsin, originates in Ephraim Swamp and outlets to the bay of Green Bay. The Baileys Harbor Forest Corridor continues from the perimeter of Ephraim Swamp southeast to the Lake Michigan shoreline. This area consists largely of lowland swamp dominated by species such as black spruce, tamarack and white cedar. Two creeks flow into this swamp: Hidden Brook Creek, which follows a ridge/swale system and flows through the Ridges Sanctuary, and an unnamed stream that flows into Mud Lake. Ephraim Swamp is a new State Natural Area project with the lead being taken by DCLT.

The **Ridges Sanctuary** is located at the north end of Bailey's Harbor and comprises the south end of the Focus Area. Deposition of sand by longshore currents from Lake Michigan into the harbor has contributed to the formation of ridges present in the Sanctuary. Fluctuating lake levels have created a landform of approximately thirty parallel crescent-shaped ridges with a succession of vegetation ranging from sedges and grasses to a boreal forest community consisting of black spruce, white spruce, balsam fir, and white pine. The shallow swales between the ridges are spring-fed and are occupied by swamp conifers as well as marsh and bog flora. The Ridges Sanctuary is one of the most botanically diverse places in Wisconsin (DNR 2010) and many rare species have been documented including the dwarf lake iris and 25 species of orchid. The Ridges also contains the largest known population of the federally-endangered Hine's emerald dragonfly.

Dominance of wetland types:

The Focus Area contains 4,850 hectares (11,988 acres) of wetlands above the Lake Michigan ordinary high water mark (OHWM) and 3,797 hectares (9,385 acres) below the OHWM. The site contains many high quality natural wetland communities including northern sedge meadow, boreal rich fen, northern wet, wet-mesic and mesic forest, and springs and spring runs. The dominant inland forest wetlands include; northern wet-mesic forest (75%), northern hardwood swamp (10%), and northern wet forest (1%). The dominant inland wetland types include: northern sedge meadow (10%), boreal rich fen (1%), and great lakes ridge and swale (1%). The dominant shoreline wetlands include, emergent marsh (80%), northern sedge meadow (10%), and great lakes alkaline rockshore (10%),

General ecological features:

Below are descriptions for the two most common community types.

Northern wet-mesic forest: Balsam fir (*Abies balsamea*), black ash (*Fraxinus nigra*), and spruces (*Picea glauca* and *P. mariana*) are among the many potential canopy associates. The understory is rich in sedges (such as *Carex disperma* and *C. trisperma*), orchids (e.g., *Platanthera obtusata* and *Listera cordata*), and wildflowers such as goldthread (*Coptis trifolia*), fringed polygala (*Polygala pauciflora*), and naked miterwort (*Mitella nuda*), and trailing sub-shrubs such as twinflower (*Linnaea borealis*) and creeping snowberry (*Gaultheria hispidula*).

Northern sedge meadow: There are several common subtypes: Tussock meadows, dominated by tussock sedge (*Carex stricta*) and Canada bluejoint grass (*Calamagrostis canadensis*); Broad-leaved sedge meadows, dominated by the robust sedges (*Carex lacustris* and/or *C. utriculata*); and Wire-leaved sedge meadows, dominated by such species as woolly sedge (*Carex lasiocarpa*) and few-seeded sedge (*C. oligosperma*). Frequent associates include marsh bluegrass (*Poa palustris*), manna grasses (*Glyceria* spp.), panicled aster (*Aster lanceolatus*), joy-pye-weed (*Eupatorium maculatum*), and the bulrushes (*Scirpus atrovirens* and *S. cyperinus*).

Noteworthy flora:

A substantial population of a globally rare plant, the federally threatened dwarf lake iris (*Iris lacustris*), is found throughout the Door Peninsula Coastal Wetlands Ramsar site.

Other species found in the Ramsar Site include:

Found in Baileys Harbor Township:

<i>Cakile lacustris</i>	American Sea-rocket	SC S3 G5T3T5	Plant
<i>Calamintha arkansana</i>	Low Calamint	SC S2 G5	Plant
<i>Carex concinna</i>	Beautiful Sedge	THR S1 G5	Plant
<i>Carex garberi</i>	Elk Sedge	THR S2 G5	Plant
<i>Trisetum melicoides</i>	Purple False Oats	END S1 G4	Plant

Found in Liberty Grove Township

<i>Astragalus neglectus</i>	Cooper's Milkvetch	END S1 G4	Plant
<i>Cicindela hirticollis rhodensis</i>	Beach-dune Tiger Beetle	END S1 G5T4	Beetle

Solidago simplex var. gillmanii

Dune Goldenrod

THR S2 G5T3?

Plant

Noteworthy fauna:

Several species of uncommon birds nest within the Ramsar site and surrounding focus area including the bald eagle, osprey, merlins, and northern goshawk.

The Ramsar site is also an important migratory and/or nesting habitat for the following waterfowl: bufflehead (*Bucephala albeola*), redhead, ring-necked duck, scaup, mallard, black duck, American wigeon, blue-winged teal, green-winged teal, and northern pintail. The site is one of the few known nesting sites in Wisconsin of common goldeneye (*Bucephala clangula*). Hooded, common, and red-breasted mergansers (*Mergus merganser*), plovers, rails and a wide variety of shorebirds are also known to use the site.

Four species of state-threatened bats, the big brown bat, (*Eptesicu fuscus*), little brown bat (*Myotis lucifugus*), northern long-eared bat (*Myotis septentrionalis*), and eastern pipistelle (*Perimyotis subflavus*), are found in Door County and migrate along the Lake Michigan shoreline. For four years bat counts conducted at a historic barn with the North Bay State Natural Area have found between 500 to 700 big brown bats living in barn and raising young. Many of these bats hunt over the water in emergent wetland habitat. Significant numbers of some of these species are probably found within the Focus Area.

Social and cultural values:

The Focus Area has a great deal of historical social and cultural significance dating back to approximately 11,000 years before present. Signs of how this area was valued by Native American people as well as early European settlers are considered cultural resources today, and include:

- **Traditional use areas** such as sugar bushes (gathering and boiling sap for making maple syrup), medicine gathering areas, sacred springs, and ceremonial sites;
- **Archaeological sites**, such as campsites and villages, caves and rock shelters, quarries and flint knapping areas, large animal kill and butchering stations, ridged fields and other types of garden beds, enclosures and earthworks, fish weirs, rock art sites, ruins of trading posts and homesteads, and shipwrecks;
- **Cemeteries** Platted cemeteries, family cemeteries and individual graves, and Native American burial mounds;
- **Historic structures** such as houses, barns and outbuildings, lime kilns, and three lighthouses: Old Baileys Harbor Light, Baileys Harbor Range Lights, and Cana Island Lighthouse.

Today, the Ramsar Site and surrounding Focus Area are highly valued for a variety of educational and recreational activities including research, field trips, tours, and an abundance of silent sports. The rare plants and animals dependent on the site's wetlands are an important part of what draws so many people here for these activities. See section 30.

Door County was an important area for timber harvesting during what is known as the "Cut-over" in the late 1800's to early 1900's. Most of the forested areas in Door County were logged during this period. The Focus Area is conspicuously intact compared to much of the rest of the county. The site is not a

major area for forestry activities since much of the protected land does not allow for timber harvest and wetland forest types are off low value timber.

Historically, the site has been very important for fishing uses. Every culture inhabiting the area has been known to value the fishery in Lake Michigan. Currently the site continues to provide crucial habitat for northern pike, smallmouth bass, whitefish and salmon which are some of the most popular fisheries in the county (WDNR 2009). There is also a significant commercial harvest of whitefish from a commercial fishing operation out Baileys Harbor.

Land tenure/ownership:

Not included in the Ramsar Site are eight additional permanent conservation easements held on private land by the Door County Land Trust. These lands are not included in the Ramsar site at this time since some lands have recently changed ownership or are for sale.

Marshall's Point, adjacent to North Bay is a residential development with 31 residential lots, 222 hectares (550 acres) common area, and a 45 hectare (113 acre) State Natural Area. Marshall's Point is not included the Ramsar Site at this time.

The conservation partners continue to acquire fee title land and conservation easements from private landowners within the Ramsar Focus Area. WDNR has 452 hectares (1,118 acres) of privately owned land within their project boundaries and TNC has 1,335 hectares (1,335 acres) within their project boundaries. Parcels acquired will be added to the Ramsar Site.

Current land (including water) use:

within the Ramsar site:

All of the land within the Ramsar Site is owned and managed for conservation purposes and are permanently protected. This includes land owned by the conservation organizations including the State Natural Areas and Newport State Park.

Newport State Park is Wisconsin's only "Wilderness Park" with 13 wilderness, back pack camping sites along with group site. The park contains hiking trails and provides public access to the lake shore.

All areas are open for low impact forms of recreation such as bird watching, photography, nature appreciation, and hiking. State-owned land is open for hunting and fishing. Land owned by conservation organizations is open for gun, deer hunting. However, some DCLT and TNC properties are open for additional hunting. All land is open for fishing. There is significant fishing in the Mink River Estuary and people fish during early summer in the shallow coastal wetlands for smallmouth bass, mostly using catch and release. The shallow wetlands, lakes, and Mink River Estuary are also used by visitors using canoes or kayaks.

The Ridges Sanctuary trail system is heavily used by visitors and thousands of people visit the Cana Island Lighthouse that is managed by the Door County Maritime Museum.

In the surroundings/catchment:

Most of the land use within the Focus Area is undeveloped areas dominated by forest, old field, forested wetlands or cropland along with some residential and seasonal homes. Much of the rural land is hunted by local residents for deer and wild turkeys.

Today there are few active farms in, or adjacent to, the Focus Area, and most old agricultural fields are in some stage of succession back to a forest landscape. A number of small orchards do remain along the edge of the Focus Area.

Factors (past, present or potential) adversely affecting the site's ecological character in the surrounding area:

Hydrologic regimes of the wetlands are disrupted by groundwater extraction by private wells associated with development.

Increasing recreational vehicle use, is another factor threatening the wetlands. Off-road vehicle use, including ATVs, causes increased soil compaction and erosion that can disrupt the small-scale drainage patterns of the wetland communities. Off-road vehicle use is also highly detrimental and can cause long-term habitat degradation due to the sensitive nature of the wetland soils (WDNR 2004). Motorized boat use (on the shallow Mink River and in Rowleys, North, and Moonlight Bays) stirs up the sediment on the river or lake bottom. Both the suspension and resettling of the sediment are detrimental to the submerged aquatic vegetation that is essential for fish spawning, nursing, and foraging. Groundwater and/or surface water contamination from gasoline and oil leaks and spills during fueling also threatens the Northern Door Coastal wetlands. (WDNR 2007)

Inappropriate logging on private forestland is a threat as well. In this fragile environment logging, unless very carefully planned and conducted, fragments the forest canopy, disrupts the surface hydrology, and introduces exotic species into the forests and wetlands.

The introduction and spread of invasive species is both a consequence from other threats, and a threat itself. Invasive species including *Phragmites australis*, Japanese knotweed, autumn olive, and garlic mustard threaten to compromise the quality of the much of the Focus Area and surrounding landscape. The impacts of these invasive species include uptake of excessive amounts of water compared to native vegetation, and disruption of the nutrient cycle in wetlands and the surrounding uplands. With the increase in development, tourism and recreational activities, the threat of people transporting invasive species into the county is rising.

With respect to the impacts of climate change outlined in section 26.a, upland areas surrounding the Ramsar Site will be increasingly important in order for this landscape to adapt to climate change impacts.

Conservation measures taken:

Most of the State Natural Area land, whether owned by the WDNR or by partners, is legally dedicated and has the highest level of legal protection in Wisconsin. Dedicated land cannot be used for other purposes unless approved by the legislature and governor. Since this program began in 1985, not a single parcel has been undedicated.

In 2009, Wisconsin Wetlands Association designated select high quality wetland sites in the state of Wisconsin as *Wetland Gems™*. Only 100 wetland sites were given this prestigious designation across the state, and three of them lie within the Ramsar Site: Mink River Estuary, North Bay, and Moonlight Bay & Connected Wetlands (which includes Ephraim Swamp, Baileys Harbor Swamp, Ridges Sanctuary State Natural Area, Toft Point State Natural Area, and Mud Lake State Wildlife and Natural Area).

Ridges Sanctuary-Toft's Point-Mud Lake Area National Natural Landmark is a series of sand ridges and swales with associated boreal forest and bog vegetation. The site contains unusually high species diversity, as well as the best mixed stand of large red and white pine, hemlock, and northern hardwoods on the western shore of Lake Michigan. The landmark was designated in 1967.

Mink River Estuary-Newport State Park and Toft Point-Ridges-Mud Lake have been designated as Important Bird Areas (IBA) by the Wisconsin Department of Natural Resources. The IBA program is a global initiative that links local and state conservation efforts to national and international efforts to protect essential habitat for all birds. The IBA program is a voluntary, cooperative initiative that aims to identify and protect those sites that are most important to birds at any stage in their life cycle (breeding, feeding, wintering, or migration). These sites are considered to be exceptionally significant for bird conservation, and their protection is one important approach to the conservation of many bird species. Although the program places special emphasis on birds, the designation of a site as an IBA can also benefit many other species that share the same habitat. (United States Fish and Wildlife Service, 2004.)

Some of the lands within the Ramsar Site were protected utilizing funds from highly competitive Federal Grant Programs. The site has been awarded eight coastal wetland grants from the U.S. Fish and Wildlife Service worth \$5,064,000 to acquire land within the Ramsar Site.

Management Plan

The Focus Area includes ten designated State Natural Areas (SNA's), which all have Wisconsin Department of Natural Resources SNA Management Plans. The Nature Conservancy, Door County Land Trust, and The Ridges Sanctuary also have approved management plans and annual work plans for their lands. WDNR also has a management plan for Newport State Park.

Most of the lands within the Ramsar Site are also within a State Natural Area and many have signed contracts between the conservation organization that owns the land and the State of Wisconsin, legally ensuring that the lands will be managed in accordance with the SNA Management Plans.

Lands that are part of the State Natural Areas are being managed by a Wisconsin Department of Natural Resources natural area management crew based in northeast Wisconsin, along with staff and volunteers from Door County Land Trust, The Nature Conservancy, The Ridges Sanctuary, and UW-Green Bay including Friends of Toft Point. Much of the management is focused on removal of invasive species.

Current scientific research and facilities:

Within the Ramsar Site there are three main locations used as field stations for research: The Ridges Sanctuary (TRS), the University of Wisconsin-Green Bay (UWGB) Research Field Station at Toft Point, and the Mink River field station owned by The Nature Conservancy (TNC), which is utilized by the University of South Dakota for Hine's emerald dragonfly research.

Examples of current research projects include impacts of invasive plant control to Hine’s emerald dragonfly (TNC, USFWS, and the University of South Dakota – Vermillion), and an ongoing breeding bird census (TNC), as well as citizen monitoring projects including bat monitoring (UWGB), Christmas bird count and backyard bird count (TRS), and water quality monitoring at TRS (TRS and UWGB).

TRS is working with the WDNR on a research project to improve dwarf lake iris habitat through canopy removal thinning, and is conducting research on flying squirrels using nest boxes.

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

The Wisconsin Department of Natural Resources, The Nature Conservancy, The Ridges Sanctuary, the University of Wisconsin-Green Bay, and the Door County Land Trust all have nature trails and many offer information about these natural areas on their websites and in their publications. They also regularly conduct field tours of their lands for members, general public and invited guests. One example is the Door County Festival of Nature, an annual event put on by the collaborative efforts of area conservation partners that offers three days of field trips and lectures throughout the Door Peninsula. The Festival is held each May and provided 42 field trips for the 210 participants in 2014. Most of the field trips were to lands within the Ramsar Site.

The Ridges Sanctuary is constructing a new visitors center, the Cook-Albert Fuller Center, which will open in 2015. This \$3,500,000 visitor center will be a gateway to the Ramsar Site and designated Scenic Byway. It is anticipated that annual usage will be 40,000 visitors.

Site-specific programs or products	Audience/Participants	Estimated size of audience/participants
Ridges Sanctuary Preserve tours	Public	1,000 per year
Ridges Sanctuary workshops	Public	200 per year
Hiking all areas	Public and tours	15,000 per year
Bird watching all areas	Public and tours	500 per year
Hunting all areas	Public	100 per year

A few of the Ramsar Site’s other educational uses include:

- educational classes, hikes and tours conducted by The Clearing, an adult educational facility located in the northern area of the site.
- schools in the Gibraltar and Sevastopol School Districts for science and art-related projects
- field trips lead by Wisconsin Department of Natural Resources naturalists from Newport State Park, located in the northern part of the site.
- Field trips led by The Nature Conservancy staff and volunteers to preserves within the Ramsar Site.

In addition to newsletters, all partners have websites. The Door County Land Trust and The Ridges Sanctuary maintain exceptional websites that greatly assist visitors (<http://www.doorcountylandtrust.org/> and <http://www.ridgessanctuary.org/>).

Current recreation and tourism:

The Ridges Sanctuary Cook-Albert Fuller Center: will provide opportunities for tourism and recreation as of 2015.

Scenic Byway. The Door County Coastal Byway (DCCB) is one of three Scenic Byways in Wisconsin. Designated as a Scenic Byway in 2013, the DCCB stretches over 66 miles as it loops through the beautiful Door Peninsula. Beginning just north of the City of Sturgeon Bay, it follows State Highway 57 north along one side of the Peninsula to Northport and Gills Rock at the very tip, and then heads south on State Highway 42 back to the starting point. The Byway offers abundant opportunity for bird watching, post-card quality scenery, fascinating cultural history and accessible natural geologic features. Part of the DCCB runs through the Ramsar site.

Cana Island Lighthouse – Door County Maritime Museum. The Door County Maritime Museum operates Door County’s Cana Island Lighthouse (<http://www.dcomm.org/cana-island-lighthouse/>). In 2013 an estimated 35,000 – 40,000 people visited the Cana Island Lighthouse. During the peak tourist season a trolley brings people from Baileys Harbor to the Lighthouse and on the way visitors pass by Baileys Harbor Boreal Forest and Wetlands, Moonlight Bay, Mud Lake and The Ridges Sanctuary State Natural Areas (<http://www.doorcountytrolley.com/>).

Lakeshore Adventures. Lakeshore Adventures is a fairly new business in Baileys Harbor and provides charter fishing opportunities and rental of kayaks. There has been a large increase in people kayaking along the coast and in windy weather kayakers stay in the protected bays (<http://lakeshore-adventures.com/>).

Village of Baileys Harbor. Baileys Harbor is increasing their advertising to attract people to experience low impact nature appreciation in the local area. In 2000, Baileys Harbor and other partners including the Wisconsin Coastal Management program and the WDNR constructed a marine in the center of Baileys Harbor that draws boaters and fishers to the area (<http://www.doorcounty.com/baileys-harbor/> and <http://townofbaileysharbor.com/marina.html>)

The Town of Liberty Grove also provides boat access to Lake Michigan.

Door County Festival of Nature, three-days of guided field trips to Door County natural areas	Public	200 per year
Educational classes, hikes and tours conducted by The Clearing, an adult educational facility	Public	250 per year
Road Scholar field trips. The Road Scholar program is coordinated by the Geneva Center from Lake Geneva, WI. This provides	Public	240 per year

an educational experience to retired individuals from around the U.S.		
Gibraltar School District	Students	60 per year
Hiking	Public and tours	500 per year
Bird watching	Public and tours	200 per year
Hunting (deer, small game, waterfowl)	Public	100 per year
Photography	Public	100s per year
Fishing	Public	100s per year
Cross-Country Skiing	Public	100s per year
Kayaking or Canoeing	Public and tours	100s per year

Jurisdiction:

Territorial jurisdiction:

- Town of Liberty Grove, 11161 Old Stage Road, Sister Bay, WI 54234, USA
- Town of Baileys Harbor, 2392 Cty Rd F, P.O. Box 308, Baileys Harbor, WI 54202, USA
- Door County, 421 Nebraska St, Sturgeon Bay, Wisconsin 54235, USA
- State of Wisconsin, Office of the Governor, 115 East Capitol, Madison, WI 53702, USA
- United States of America, U.S. Department of the Interior, 1849 C Street NW, Washington, DC 20240, USA

Functional jurisdiction

- Wisconsin Department of Natural Resources, 101 S Webster Street PO Box 7921, Madison WI, 53707-7921, USA
- United States Fish and Wildlife Service, International Affairs, 4401 N. Fairfax Drive, Arlington, VA 22203, USA

Other Bibliographical references:

Specific reference to the ecological significance of this site has been made in the following documents:

- Wisconsin Land Legacy Report (WDNR 2003)
- Hine’s Emerald Dragonfly Draft Recovery Plan (USFWS 1999)
- SOLEC 2000 Biodiversity Investment Areas Integration Background Paper (USEPA 2000)
- The Niagara Escarpment Inventory Findings 1999-2001 and Considerations for Management – Final Report 2002 (WDNR 2002)
- A Data Compilation and Assessment of Coastal Wetlands of Wisconsin’s Great Lakes – Final Report (WDNR 2002)
- A Guide to Significant Wildlife Habitat and Natural Areas of Door County, Wisconsin (Aiken et al. 2003)
- Surface Water Inventory of Door County (Door County Soil and Water Conservation Department 2000)
- Great Lakes Ecoregional Plan (The Nature Conservancy 1999)
- Site Conservation Plan for the Northern Door Peninsula (The Nature Conservancy – Wisconsin Chapter 2000)

United States Fish and Wildlife Service. 2006. Hine’s Emerald Dragonfly Fact Sheet.

http://www.fws.gov/midwest/endangered/insects/hed/hins_fct.html

United States Fish and Wildlife Service. 2010. Dwarf Lake Iris Fact Sheet. <http://www.fws.gov/midwest/endangered/plants/dwarflak.html>

Wisconsin Department of Natural Resources. 2002. A Data Compilation and Assessment of Coastal Wetlands of Wisconsin's Great Lakes – Final Report.

Wisconsin Department of Natural Resources. 2002. The Niagara Escarpment Inventory Findings 1999-2001 and Considerations for Management – Final Report.

Wisconsin Department of Natural Resources. 2003. Wisconsin Land Legacy Report.

Wisconsin Department of Natural Resources. 2004. Coastal Wetland Conservation Grant Proposal. North Bay – Mud Lake – Ridges Land Acquisition. Available from WDNR, Madison, WI.

Wisconsin Department of Natural Resources. 2007. National Coastal Wetland Conservation Grant Proposal. Mink River Estuary – Rowley's Bay Great Lakes Acquisition. Available from WDNR, Madison, WI.

Wisconsin Department of Natural Resources. 2008. Coastal Wetland Conservation Grant Proposal. Baileys Harbor State Natural Areas Coastal Wetlands Land Acquisition. Available from WDNR, Madison, WI.

Wisconsin Department of Natural Resources. 2009. 2009 Wisconsin Fishing Report. PUB-FH-506-2009. Madison, WI.

Wisconsin Department of Natural Resources. 2010. Endangered Resources. On-line: <http://dnr.wi.gov/topic/endangeredresources/>. Accessed 5/3/2013.

Wisconsin Society for Ornithology, Breeding Bird Atlas – Website. <http://wsobirds.org/>