

# Lake Noquebay Critical Habitat Designation Report

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## Lake Noquebay Critical Habitat Designation Report

Lake Noquebay (WBIC 525900) is located in southern Marinette County in Middle Inlet Township and Town of Lake. The lake covers 2,409 acre with a shoreline of 9.83 mi and a maximum depth of 51 ft. It has been designated as an Area of Special Natural Resource Interest. Three named streams flow into the lake, the Upper Inlet (WBIC 530100), and the trout streams, the Lower Middle Inlet (WBIC 529100). Drainage of the lake is regulated by a 7.3 foot high dam at The Outlet (WBIC 525500) at the southwestern corner of the lake.

Many species of wildlife make Lake Noquebay their home including species listed as threatened or of special concern by the Department of Natural Resources. Birds that utilize the lake include the Black Tern, Bald Eagle, and Osprey. A species of special concern, the Blanding's turtle has been found near the lake.

Lake Noquebay has a diverse aquatic plant community with many species that are of high value to fish and wildlife. Currently it is free of the invasive species Eurasian water-milfoil (*Myriophyllum spicatum*) and Curly-leaf pondweed (*Potamogeton crispus*). The native species various-leaved water-milfoil (*Myriophyllum heterophyllum*) has been invasive since it became established in the lake. Farwell's water-milfoil (*Myriophyllum farwellii*) is listed by the DNR as a species of special concern is found in the lake. The harvest of Wild Rice is regulated on the lake. Lake Noquebay has many areas of bulrush beds that are in need of protection.

Table 1. High Value species listed under NR 107 found in sensitive areas and public rights features on Lake Noquebay.

<i>Eleocharis sp.</i>	Spike-rush sp.
<i>Potamogeton amplifolius</i>	Large-leaf pondweed
<i>Potamogeton illinoensis</i>	Illinois pondweed
<i>Potamogeton pectinatus</i>	Sago Pondweed
<i>Potamogeton richardsonii</i>	Clasping-leaf pondweed
<i>Potamogeton robbinsii</i>	Fern pondweed
<i>Schoenoplectus sp.</i>	Bulrush sp.
<i>Vallisneria americana</i>	Wild celery
<i>Zizania aquatica</i>	Wild rice

### Fishery

The Marinette County Land & Water Conservation is responsible for the operation and maintenance of Lake Noquebay Dam located in the Town of Lake in the southeast corner of the lake. The Lake Noquebay Dam was constructed in 1929. It consists of an earthen embankment with concrete and steel sing walls on the upstream face.

The Lake Noquebay Rehabilitation District performs the daily operation and water level

adjustments under a contract with the Land & Water Conservation. Water levels in the lake are held between 666.2 feet and 666.6 feet of elevation except during the draw down period. Between October 15 and spring ice out, the lake is drawn down to 664.95 feet. Lake Noquebay is drawn down to prevent shoreline erosion due to ice movement and as a control measure for Variable Leaf Milfoil (*Myriophyllum heterophyllum*).

Lake Noquebay supports a very good panfish population which provides the major emphasis of the fishery. A 1982 creel survey revealed 87% of the angler catch was panfish. The next creel survey will be in 2010. The lake also contains gamefish species of largemouth bass, northern pike, walleye and muskellunge. Since it's the largest lake in Marinette county and only an hour drive from Green Bay, Noquebay receives heavy fishing pressure throughout the year.

This lake is routinely surveyed by WDNR fishery staff. The last comprehensive fishery survey occurred in 1996 and the next one is scheduled for 2009. In 1996, during spring netting, we caught 330 walleye from 9.2 to 27.2 inches and mean size of 16.8 inches; 612 northern pike from 8.2 to 37.2 inches and mean size of 16.0 inches; 345 bluegill with a size range of 3.6 to 9.4 inches and mean size of 5.5 inches; and 62 largemouth bass ranging from 5.7 to 18.7 inches and average size of 14.7 inches. The above facts demonstrated a balanced fishery in 1996 but 13 years have elapsed and this year's survey will either confirm that status or reveal the need for management changes. During the 1996 survey, we did not catch any muskellunge and they have been stocked annually since then so the 2009 survey should yield that species and related impacts on the fishery communities as well as other impacts from angler harvest.

### **Critical Habitat Designation Program**

The Critical Habitat Designation Program was created to identify and provide protection for areas of lakes and streams that provide important fish and wildlife habitat, water quality and quantity protection, navigational routes, and natural scenic beauty. The department of natural resources is given the authority to make Critical Habitat Designations (CHD) under NR 105 and NR 107. It provides waterfront property owners with information that will help them protect the health of waterways where they live, and recreate. The identified areas are often locations of valuable fish spawning habitat, diverse aquatic plant communities, springs that provide water flow, and natural shorelines.

Critical Habitat Designations affect lake front landowners with critical habitat in front of their shoreline. There are no prohibitions of activities within CHD. However, the DNR will work with the landowners through a permit process to minimize the impact of activities such as, aquatic plant removal, pier installations, and shore protection. For example if a lake front property owner wants to place a pier within a CHD. DNR Staff would work with the property owner to design the pier in a manner that does not adversely impact the area. This may mean the pier extends to a greater depth out past a high quality fish spawning area or the pier is positioned to one side of the property where the impact would be the least.

Critical Habitat Designations fall into two categories. The first is a Sensitive Area Designation (SAD). Sensitive Area designations are made to protect aquatic plants that are sensitive to human disturbance. Aquatic plants are vital to maintain water quality,

and healthy fish and wildlife populations. The second category is a Public Rights Feature (PRF). These identify areas of a water body that are important for fish, wildlife, navigation, scenic beauty, and have features that protect water quality.

### Lake Noquebay Critical Habitat Designations



Figure 1. Lake Noquebay Critical Habitat Designations

#### Sensitive Area Designation LN1

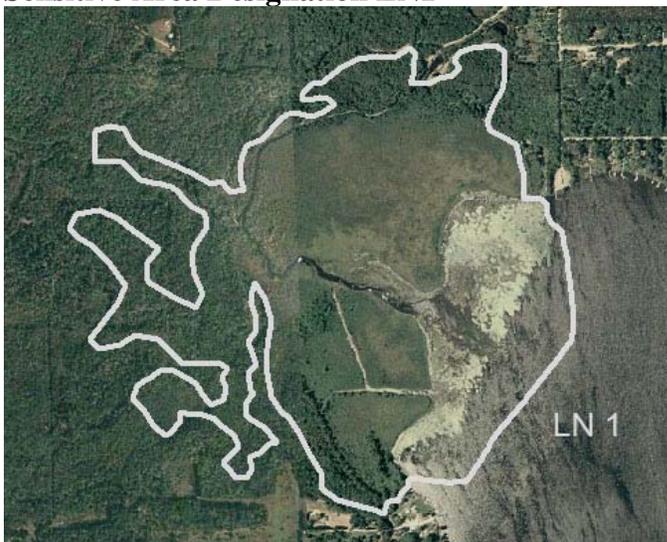


Figure 2: LN 1 aerial view

This site is located in the northwest corner of the lake. Several habitats are found within the sensitive area including the Lower Middle Inlet flowing through the area into the lake

lake. LN1 includes undeveloped areas bordered by on the northeast by an unnamed stream (river system WBIC 5007111) and residential lakefront properties to the south.

This site was selected because of its diverse and undisturbed habitats that benefit fish, wildlife, water quality, and the scenic beauty of Lake Noquebay. LN1 includes the riparian area which is 100% wetland and the adjacent littoral zone. The only significant human disturbance is a manmade channel through the marsh that intersects the Lower Middle Inlet and the lake.

The combined habitats are important for nesting and feeding areas for song birds and waterfowl. The black tern has been known to nest within the littoral zone. The habitats are also used by furbearers, macro invertebrates (insects), amphibians and reptiles. This area is a possible spawning area for black crappie, northern pike, and muskellunge. Submergent plants provide nurseries for game fish and forage areas for adults. The aquatic plant community provides a physical buffer zone that prevents shoreline erosion, enhances lake sediment stabilization, and reduces the likelihood of exotic invasions and affords protection of black tern nesting area.

The Lower Middle Inlet is a classified as an exceptional resource water and a class I trout stream. It provides the lake with a source of clear cold water. This influx of cold water provides temperature fluctuations which can increase biodiversity.

### Management Recommendations

Protect emergent vegetation.  
No aquatic plant harvest.  
Recommend no-wake zone.

### **Sensitive Area Designation LN 2**



Figure 3. LN 2 aerial and water views

This site on the northern shore of the lake includes habitats within the lakes littoral zone and the Middle Inlet, which is surrounded by wetland area. Middle Inlet is classified as class I trout water and a designated outstanding resource water upstream of CTH X and

downstream flowing into Lake Noquebay it is a class II trout and smallmouth bass stream. The Middle Inlet provides the lake with cold water and increases the diversity of the lake. Brown trout that overwinter in the lake come from this stream. Ice conditions in this area are always treacherous.

Within this sensitive area are areas of sand, silt, and muck substrates. Large woody cover is present along the shoreline and provides fish habitat. Submergent and emergent plants provide spawning, nursery and forage areas for game fish and forage fish. Wild rice is abundant and important waterfowl food.

### Management Recommendations LN 2

Do not remove fallen trees along shoreline.

Maintain current habitat

Maintain snag trees / cavity trees

Protect emergent vegetation

### **Sensitive Area Designation LN 3**





Figures 4 and 3. LN 3 areal and water views

LN3 is located on central part of the north shore of Lake Noquebay is bordered by a dredge channel and includes a sedge meadow. Bulrushes dominate the aquatic plant community and along with wild rice provide important waterfowl foods.

The substrate is sand. Yellow perch utilize the common large woody cover along the shoreline. The area is also important spawning area for centrarchid fish.

#### Management Recommendations LN 3

Aquatic vegetation removal allowed only to maintain a 30 foot navigational channel to docks.

#### **Sensitive Area Designation LN 4**



Figure 5. LN 4 aerial view

This sensitive area is located in the north central area of the lake. The shore line is composed of wetland. A unique feature of this sensitive area is that it is bordered by a steep drop off to 15 feet of water.

This area provides an excellent spawning ground for centrarchid fish and yellow perch.

The emergent vegetation consists of abundant bulrush and bur-reed, both important sources of waterfowl and muskrat food. Wild rice is also growing in the area. The submergent vegetation is dominated by *Potamogeton* species and *Myriophyllum heterophyllum*. The high value aquatic plants *Potamogeton richardsonii* and *P. robbinsii* are common here.

#### Management Recommendations LN 4

Do not remove fallen trees along shoreline.

Aquatic vegetation harvest allowed only to maintain a 30 foot navigational channel to docks.

#### **Public Rights Feature LN 5**



Figures 6 and 7. LN 5 aerial view and island.

This area is located around East Island in the northeastern part of the lake. The primary reason for this designation is for fish habitat preservation. This is the primary site for walleye spawning on the lake. The site is also benefits the lakes small mouth bass fishery which is much smaller than in the past. The substrate around the island is primarily rubble and gravel. Aquatic plants are mostly found south and east of the island.

### Management Recommendations LN 5

No alteration of littoral zone unless to improve spawning habitat.  
Aquatic vegetation removal allowed only to maintain a 30 foot navigational channel to docks.

### **Public Rights Feature LN6**



Figure 8 and 9. LN 6 aerial and water views

This area on the northeastern shore of the lake is primarily protected because of its undeveloped shoreline and the unique habitat that is found here. The riparian zone is wooded with a narrow wetland fringe. The wetland fringe is undercut with overhanging trees and shrubs. Large woody habitat is abundant providing excellent fish habitat along with the undercut banks.

Management Recommendations LN 6

Aquatic vegetation harvest allowed only to maintain a 30 foot navigational channel to docks.

**Sensitive Area Designation LN7**



Figures 10-12. LN 7 aerial and water views

Much of this area is within the Lake Noquebay Wildlife Area which is composed of wetland vegetation. The littoral zone margin in the lake consists of bulrush, wild rice and various submerged vegetation.

A warm water stream, the Upper Inlet flows through this area and into the lake and is an important habitat for wildlife and fish. Bald Eagles and Ospreys nest inland on the margins of this area.

Management Recommendations LN 7

Aquatic vegetation harvest allowed only to maintain a 30 foot navigational channel to docks.

**Sensitive Area Designation LN8**



Figure 13. LN 8 aerial view

This area is located on the southeastern shore of the lake. The shoreline is completely developed with lawns, docks and some trees. The area is primarily being designated for its scattered dense bulrush beds which provide wildlife habitat and spawning areas for centrarchid fish. The littoral zone has a sandy substrate.

Management Recommendations LN 8

Aquatic vegetation harvest allowed only to maintain a 30 foot navigational channel to docks.

## Public Rights Feature LN9



Figure 14 and 15. LN 9 aerial and water views

This site is located on the southeastern shore. It includes a wide variety of habitats: sedge meadow, shrub carr, bog, and littoral zone. These wetland habitats provide scenic beauty, nesting areas for birds and protection for shoreline erosion.

The eastern third of the shoreline is abundant with large woody cover. The littoral zone has a gravel substrate and is a possible spawning area for centrarchid and a nursery area for esocids.

The wetland at this site was the land in question during the landmark 1972 court case *Just v Marinette County*. Ronald and Kathryn Just filled in part of wetland in violation of Marinette County's new shoreland zoning. The case went to the Wisconsin State Supreme Court on appeal and they held up the constitutionality of shoreland zoning, and that it did not result in a "taking" by the county of private property.

### Management Recommendations LN9

Aquatic vegetation harvest allowed only to maintain a 30 foot navigational channel to docks.

## Public Rights Feature LN10



Figure 16. LN 10 aerial view

This area surrounding a small island in the southwest section of the lake provides uncommon fish habitats. The granite riprap that prevents erosion of the island provides micro environment not common on the Lake Noquebay for various fish species. This island is also a potential spawning habitat for walleye.

The aquatic plant community is diverse.

### Management Recommendations

Do not remove fallen trees along shoreline.

No alteration of littoral zone unless to improve spawning habitat

Aquatic vegetation harvest allowed only to maintain a 30 foot navigational channel to docks.

## Sensitive Area Designation LN11



Figure 17. LN 11 aerial view

This site is located on the southwest end of the lake along a channelized area where Lake Noquebay's hydrological drainage outlet flows over a dam into The Outlet. This dam is used to manage the Lake Noquebay water level. This area includes a sedge meadow and shrub carr. The aquatic community in the channel consists of mainly *Potamogeton sp.* and *Najas*. An active marina is located along the shoreline of this area.

### Management Recommendations

Aquatic vegetation harvest allowed only to maintain a 30 foot navigational channel to the docks.

Protect wetland habitat.



## **Acknowledgements**

The WDNR like to thank the Chuck Druckrey and Marinette County for assistance with, and sharing plant and GIS data. We would also like to thank the efforts of the Lake Noquebay Rehabilitation District and property owners committed to the conservation of Lake Noquebay. We would also like to acknowledge WI. DNR Fish Technician Greg Kornely for his input and perspective regarding fishery uses in the designated areas.

## **Appendix A**

An informational meeting was held on Lake Noquebay Critical Habitat Designation on June 17, 2009, 6:00 pm at Crivitz Town Hall. Information was presented on what critical habitats are, what they mean to landowners, the process of designation, the location of the designations and why they were designated. Background on Lake Noquebay's wildlife and a summary of a 2009 fisheries survey were also presented. Opportunity was provided for written and verbal comments. The public provided us with many constructive comments at the meeting and afterward. Some of these comments were taken into consideration in making the following changes to the draft report and the final location of the locations of the designations.

### **Changes to Lake Noquebay Draft Report**

LN 1 was redrawn to exclude the area around the boat landing.

LN 2 redrawn to exclude docks on west side

LN 3 redrawn to exclude navigational channel on north side

LN 4 redrawn to exclude houses. Original delineation was based on Wisconsin Wetland Inventory maps, which were, in this case inaccurate.

The recommendation that there be no alteration to the littoral zone was removed from LN 1, 2, 3, 4. The recommendation is kept for LN 5 and 10 to protect walleye spawning areas.

## Appendix b

**September 2003 Vegetation Sampling:** Species followed by a \* are considered to have high value under NR 107

D = Dominant, A = Abundant, C = Common, P = Present

	LN 1	LN 2	LN 3	LN 4	LN 5	LN 6	LN 7	LN 8	LN 9	LN 10	LN 11				
<b>Wet edge plants</b>															
<i>Alnus incana</i>				Tag alder	-	-	A	A	-	C	P	-	-	-	A
<i>Carex sp.</i>				Sedge sp.	-	-	D	-	-	-	A	-	-	-	A-D
<i>Cornus sp.</i>				Dogwood sp.	-	-	C	P	-	C	P	-	-	P	C
<i>Eleocharis sp.*</i>				Spike-rush sp.*	-	-	-	-	-	-	A	-	-	-	P
<i>Iris versicolor</i>				Northern blue flag	-	-	C	-	-	-	-	-	-	-	-
<i>Juncus sp.</i>				Rush sp.	-	-	-	-	-	-	-	-	-	-	C
<i>Lobelia cardinalis</i>				Cardinal-flower	-	-	P	-	-	-	-	-	-	-	-
<i>Lobelia sithilitica</i>				Great Blue Lobelia	-	-	P	-	-	-	-	-	-	-	-
<i>Onoclea sensibilis</i>				Sensitive Fern	-	-	C	-	-	-	-	-	-	-	-
<i>Osmunda regalis</i>				Royal Fern	-	-	C	-	-	-	-	-	-	-	-
<i>Salix sp.</i>				Willow sp.	-	-	-	-	-	-	-	-	-	P	C
Scientific Name				Common Name											
<i>Spirea sp.</i>				Meadowsweet sp.	-	-	C	P	-	P	P	-	-	-	-
<i>Thelypteris sp.</i>				Marsh Fern sp.	-	-	C	-	-	-	-	-	-	-	-
				Grasses	-	-	A-D	-	-	-	-	-	-	-	A-D
<b>Aquatic Emergents</b>															
Scientific Name				Common Name											
<i>Pontederia cordata</i>				Pickerelweed	C	C	P	C	-	-	P	-	-	-	-
<i>Sagittaria sp.</i>				Arrowhead sp.	-	-	P	P	-	P	P	P	P	-	-
<i>Schoenoplectus sp.</i>				Bulrush	-	A	C-D	C	-	-	C	D	P	-	-
<i>Sparganium sp.</i>				Bur-reed sp.	-	-	-	A	-	-	-	-	-	-	C

<i>Typha sp.</i>	Cattail sp.	A	C	-	C	-	-	C	-	-	-	A
<i>Zizania aquatica</i>	Wild rice*	A	A	C	A	-	-	C	-	P	-	C
<b>Aquatic Floating Leaf</b>												
Scientific Name	Common Name											
<i>Nuphar variegata</i>	Bullhead lily	A-D	A	P	-	-	-	A	-	P	-	-
<i>Nymphaea</i>	Water-lily sp.	A-D	C	-	-	-	-	P	-	-	C	C
<i>Spirodela polyrhiza</i>	Large duckweed	-	-	-	A	-	-	-	-	-	-	C
<b>Aquatic Submergents</b>												
Scientific Name	Common Name											
<i>Ceratophyllum sp.</i>	Hornwort sp.	C	C	-	P	-	-	P	-	-	-	-
<i>Elodea sp.</i>	Waterweed	P	-	-	-	-	-	P	-	-	P	P
<i>Megalodonta beckii</i>	Water beggar-ticks	-	-	-	-	-	-	-	-	-	-	C
<i>Myriophyllum heterophyllum</i>	Two-leaf water-milfoil	P	C	P	P	C	C	P	-	-	A	P
<i>Myriophyllum sibiricum</i>	Northern water-milfoil	-	P	-	-	-	-	P	-	-	C	C
<i>Najas sp.</i>	Water-nymph sp.	A-D	A	-	C	-	-	-	-	-	A	A-D
<i>Potamogeton amplifolius</i>	Large-leaf pondweed*	P	P	-	P	-	-	-	-	-	A	C
<i>Potamogeton foliosus</i>	Leafy Pondweed	-	-	-	-	-	-	P	-	-	-	-
<i>Potamogeton gramineus</i>	Variable pondweed	P	C	C	C	C	A	P	P	P	C	C
<i>Potamogeton illinoensis</i>	Illinois pondweed*	P	C	C	A	C	A	P			P	P
<i>Potamogeton natans</i>	Floating-leaf pondweed	-	C	P	-	-	-	C	-	P	-	-
<i>Potamogeton pectinatus</i>	Sago Pondweed*	C	P	-	-	P	-	C	-	-	-	-
	Clasping-leaf											
<i>Potamogeton richardsonii</i>	pondweed*	-	P	-	C	C	-	A	-	-	P	P
<i>Potamogeton robbinsii</i>	Fern pondweed*	C	-	P	A	-	-	-	-	-	P	-
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	A-D	C	-	A	-	A	-	-	-	C	C

<i>Ranunculus sp</i>	Buttercup/water crowfoot	-	-	-	C	-	-	-	-	-	-	-
<i>Schoenoplectus subterminalis</i>	Water-bulrush	-	-	-	-	-	-	P	-	-	-	-
<i>Utricularia sp.</i>	Bladderwort sp.	C	C	-	-	-	-	C	-	-	P	P
<i>Utricularia vulgaris</i>	Common Bladderwort	-	-	-	-	-	-	P	-	-	-	-
<i>Vallisneria americana</i>	Wild celery*	-	C	C	A	C	C	-	-	-	C	C
<i>Zosterella dubia</i>	Water stargrass	P	P	-	-	-	-	-	-	-	C	-
<b>Algae</b>												
Scientific Name	Common Name											
<i>Chara sp.</i>	Muskgrass sp.	-	C	A-D	A	-	A	C	P	C	-	A
<i>Nitella sp.</i>	Stonewort sp.	-	-	-	-	-	-	-	-	-	-	P

