Designation of Sensitive Areas
Mayflower Lake, Marathon County

Wisconsin Department of Natural Resources
Eau Claire, WI

Sensitive Area Designation
Mayflower Lake, Marathon County

I. INTRODUCTION
Designation of sensitive areas within lakes provide a holistic approach to the protection of those sites within a lake that are most important for preserving the very character and qualities of the lake that initially attracted developments on the lake. These sites are those sensitive and fragile areas that support the wildlife and fish habitat, provide the mechanisms that protect the water quality in the lake, harbor quality plant communities and preserve the places of serenity and aesthetic beauty for the enjoyment of lake residents and visitors. The sensitive area designation will provide a framework for management decisions that impact the ecosystem of the lake.

A Sensitive Area Study was conducted October 13, 2003 on Mayflower Lake, Marathon County.
The study team included:
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Deborah Konkel, DNR, Aquatic Plant Specialist
Buzz Sorge, DNR Lakes Manager
Rick Weide, DNR Wildlife Biologist
Keith Patrick, DNR Water Regulation and Zoning Specialist
Mark Hazuga, DNR Water Resource Specialist

Mayflower Lake is a 98-acre lake with a maximum depth of 16 feet and an average depth of 7 feet.

II. THE SENSITIVE AREAS
The reasons for selection of each sensitive area varied among the sites; all sites were selected because of their importance for fish habitat (Figure).

All of the sensitive areas that were selected have the potential to be used for educational purposes.

Sensitive Area ML1 – Mayflower Bog

This sensitive area includes the entire, shallow upper end of the lake, approximately 15 acres, averaging 2 feet in depth and supports important near-shore terrestrial habitat, shoreline habitat and shallow water habitat (Figure). This habitat is found in the deep-water marsh, the shallow-water marsh and the tamarack/cedar bog. The sediment is sand, silt, and gravel. Fallen woody material is present in the shallow zone for habitat.

Reasons for site selection:

1) its importance for maintaining water quality;
2) its distinctly unique site of outstanding natural scenic beauty
3) the diverse aquatic plant community
4) the unique terrestrial vegetation community
5) its value for wildlife habitat
6) its value for fish habitat.
7) The site provides a visual and audible barrier from structures, roads and boat traffic.

The site is currently in compliance with shoreline zoning and does not require any erosion control or nutrient run-off control at this time.

The Plant Community:

Tamarack and white cedar colonize the shoreline.

Soft-stem bulrush, northern lake sedge, spike rush, arrowheads and cattails emerge from the shallow water.

White water lily floats on the surface.

Coontail, common waterweed, bushy pondweed, great bladderwort, northern watermilfoil, small pondweed, floating-leaf pondweed, variable-leaf pondweed, white-stem pondweed, flat-stem pondweed and sago pondweed colonize the underwater habitat up to a depth of 5 feet.

Muskgrass and filamentous algae are present.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Mayflower Lake.

1) The submerged and floating-leaf vegetation in this area ties up nutrients in their tissues that would otherwise be available for algae growth.
2) The wetlands are filtering water that enters the lake and preventing shoreline erosion.
3) The submergent vegetation is protecting the lake bottom from resuspension of the sediments by boat traffic and wind action, thus maintaining clarity.
4) The wetland is a seepage inlet, providing water for Mayflower Lake
5) The variety of plant species provides more micro-habitats that increase diversity.
6) The healthy plant community occupying the site will make it more difficult for exotic species to invade

Fish Habitat

The mosaic of emergent, submergent and floating-leaf vegetation provides a diversity of habitat and feeding opportunities for the fish community.

This area provides

1) The outer edge of the plant beds provide cover and feeding areas for walleye and spring spawning sites, spring to summer nursery sites , cover and feeding sites for yellow perch
2) spring through fall nursery areas, feeding sites and cover for large-mouth bass, bluegill, pumpkinseed
3) Spring through fall spawning sites, feeding areas and cover for crappie
4) Spring nursery area, feeding areas and cover for white suckers.

Wildlife Habitat

The wooded bog provides great wildlife cover. The bog along with the emergent vegetation and scattered snag and perch trees provide important habitat resources for wildlife

1) winter shelter and feeding area for upland wildlife such as deer
2) shelter and cover, nesting areas and feeding areas for furbearers such as muskrat and mink
3) migrating habitat for waterfowl
4) feeding area for herons, bitterns and rails
5) potential cover, nesting and feeding areas for eagles and osprey
6) feeding area for loons
7) cover, nesting areas (mallards and wood ducks) for ducks and geese
8) the wooded edge, cattails and sedges provide shelter, cover, nesting and feeding sites for songbirds
9) habitat for turtles, snakes, salamanders, toads and frogs, such as bullfrogs, spring peepers, wood frogs, green frogs

Recommendations

1) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a nutrient buffer for water quality protection.
2) Protect the emergent vegetation as habitat an erosion buffer.
3) Maintain shoreline vegetation, especially cavity and snag trees for wildlife habitat and wildlife corridors.
4) Prohibit logging in the shoreline cedars.
5) Recommend slow-no-wake zone in the cove.
6) No alteration of the littoral zone except for improvement of spawning habitat
7) Minimize removal of any shoreline or aquatic vegetation.
8) Leave site undeveloped and do not permit any rip-rap, bank grading, retaining wall, dredging, pier placement, boat ramp placement, recreational floating devices, pea gravel beds or sand blankets.
9) Prohibit drain or filling of wetland

Sensitive Area ML2 – North Shore

This sensitive area extends for 1500 feet along the lakeshore on the north shore, just east of the bog, averaging 5 feet in depth (Figure). The shoreline is wooded with about 10% of the shore developed. The deep-water marsh at this site provides shallow water habitat. The sediment is comprised of sand and silt. Large woody debris is present in the littoral zone for habitat.

Additional reasons for site selection:

1) natural scenic beauty
2) the diverse aquatic plant community
3) the terrestrial vegetation community
4) its value for wildlife habitat
5) its value for fish habitat.
6) The area provides visual and sound buffers.

The Plant Community:

Trees colonize the shoreline.

Soft-stem bulrush and arrowheads emerge from the shallow water.

White water lilies float on the surface.

Coontail, common waterweed, bushy pondweed, northern watermilfoil, white-stem pondweed, flat-stem pondweed, small pondweed, clasping-leaf pondweed and floating-leaf pondweed colonize the underwater habitat up to a depth of 11 feet.

Filamentous algae and muskgrass present.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Mayflower Lake.

1) The shoreline and submergent vegetation protect the shoreline from erosion.
2) The submergent vegetation is protecting the lake bottom from resuspension of the sediments by boat traffic and wind action, thus maintaining clarity.
3) The variety of plant species provides more micro-habitats that increase diversity.
4) The healthy plant community occupying the site will make it more difficult for exotic species to invade
5) This site is a seepage inlet of groundwater to the lake

Fish Habitat

The large woody cover along the shore and the mosaic of emergent, submergent and floating-leaf vegetation provides a diversity of habitat and feeding opportunities for the fish community.

This area provides

1) The outer edge of the plant beds provide cover and feeding areas for walleye and spring spawning sites, spring to summer nursery sites , cover and feeding sites for yellow perch
2) spring through fall nursery areas, feeding sites and cover for large-mouth bass, bluegill, pumpkinseed
3) Spring through fall spawning sites, feeding areas and cover for crappie
4) Spring nursery area, feeding areas and cover for white suckers.

Wildlife Habitat

The emergent vegetation, floating-leaf vegetation, fallen logs, shoreline trees and shrubs provide important habitat resources for wildlife

1) The wooded shoreline provides shelter and feeding area for upland wildlife such as deer and bear
2) shelter and cover, nesting areas and feeding areas for furbearers such as muskrat and mink and cover for beaver
3) feeding area for loons, herons and eagles
4) cover, limited nesting areas and feeding areas ducks and possibly geese
5) trees and shrubs on the shoreline provide shelter, cover, nesting and feeding sites for songbirds
6) shelter, cover, nesting and feeding areas for salamanders, toads and frogs
7) shelter and feeding areas for turtles

The site is currently in compliance with shoreline zoning and requires no erosion control

Recommendations

1) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a buffer for water quality protection.
2) Do not remove fallen trees along shoreline.
3) Maintain snag and cavity trees to provide wildlife habitat
4) Restore shrub cover on the shore to control nutrient run-off, improve habitat and increase wildlife corridor
5) Protect emergent vegetation
6) Minimize removal of any shoreline or aquatic vegetation.
7) No alteration of littoral zone except for improvement of spawning habitat
8) Do not use lawn fertilizers
9) Restrict location and size of pier construction
10) Do not permit any rip-rap, bank grading, retaining wall, dredging, boat ramp placement, recreational floating devices, pea gravel beds or sand blankets