Designation of Sensitive Areas
McGinnis Lake, Adams County

Wisconsin Department of Natural Resources
Eau Claire, WI

Sensitive Area Designation
McGinnis Lake, Adams County

I. INTRODUCTION

Designation of sensitive areas within lakes provide a holistic approach to ecosystem assessment and the protection of those areas within a lake that are most important for preserving the very character and qualities of the lake. These sites are those sensitive and fragile areas that support the wildlife and fish communities, provide the mechanisms that protect the water quality in the lake, harbor quality plant beds and preserve the places of serenity and aesthetic beauty for the enjoyment of lake residents and visitors. Sensitive areas are dependent on the protection of shoreline and in-lake habitat.

Protecting the terrestrial plant community on shore provides a buffer that absorbs nutrient runoff, prevents erosion, protects water quality, maintains water temperatures and provides important habitat. The habitat is important for species that require habitat on shore and in the water as well as those species that require a corridor in order to move along the shore (Figure 1).

Protecting the littoral zone and littoral zone plant communities is critical for fish, wildlife and the invertebrates that both feed upon (Figure 1).

The sensitive area designation will provide a framework for management decisions that impact the ecosystem of the lake.

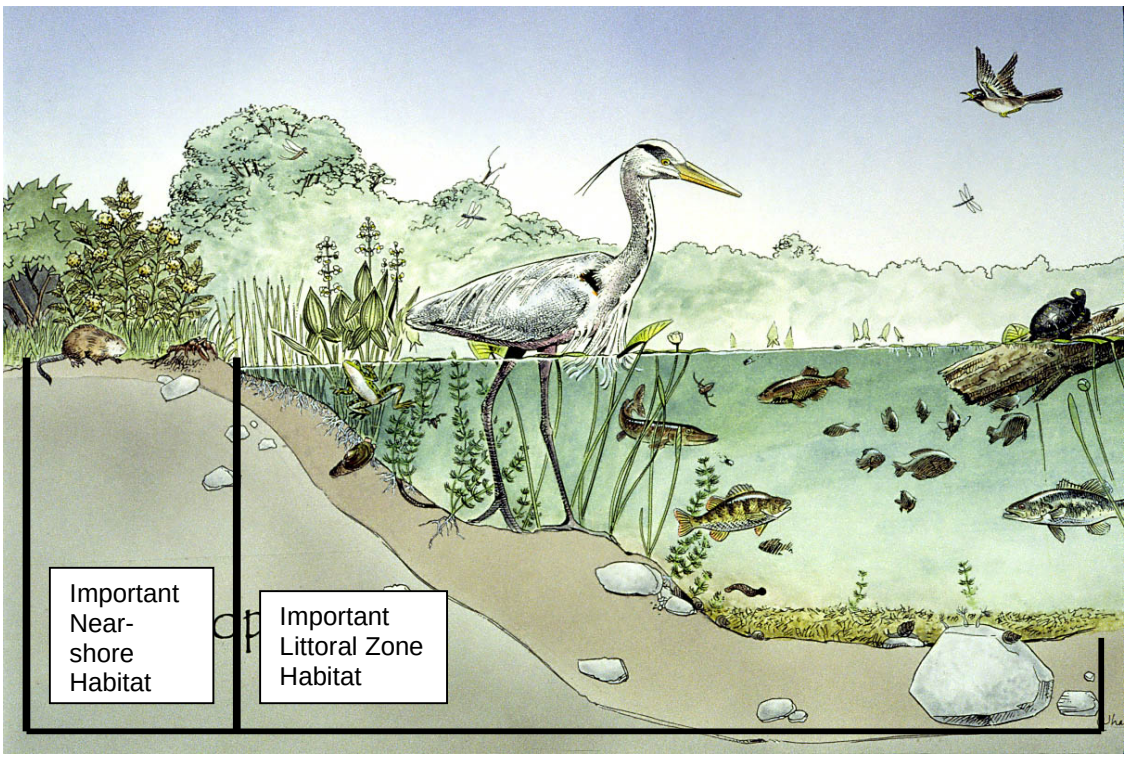

Figure 1. Location of important near-shore and littoral zone habitat.

A Sensitive Area Study was conducted July 2, 2004 on McGinnis Lake, Adams County. The study team included:
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Deborah Konkel, DNR, Aquatic Plant Specialist
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McGinnis Lake is a 33-acre lake with a maximum depth of 28 ft and an average depth of 9 ft.

II. THE SENSITIVE AREAS

The reasons for selection of each sensitive area are important; all sites were selected because of their importance for fish and wildlife habitat, importance for protecting water quality, the natural buffer of terrestrial vegetation and the aquatic plant communities they supported (Figure 2). All of the sites need to be preserved in their natural state. All of the sensitive areas that were selected have the potential to be used for educational purposes.

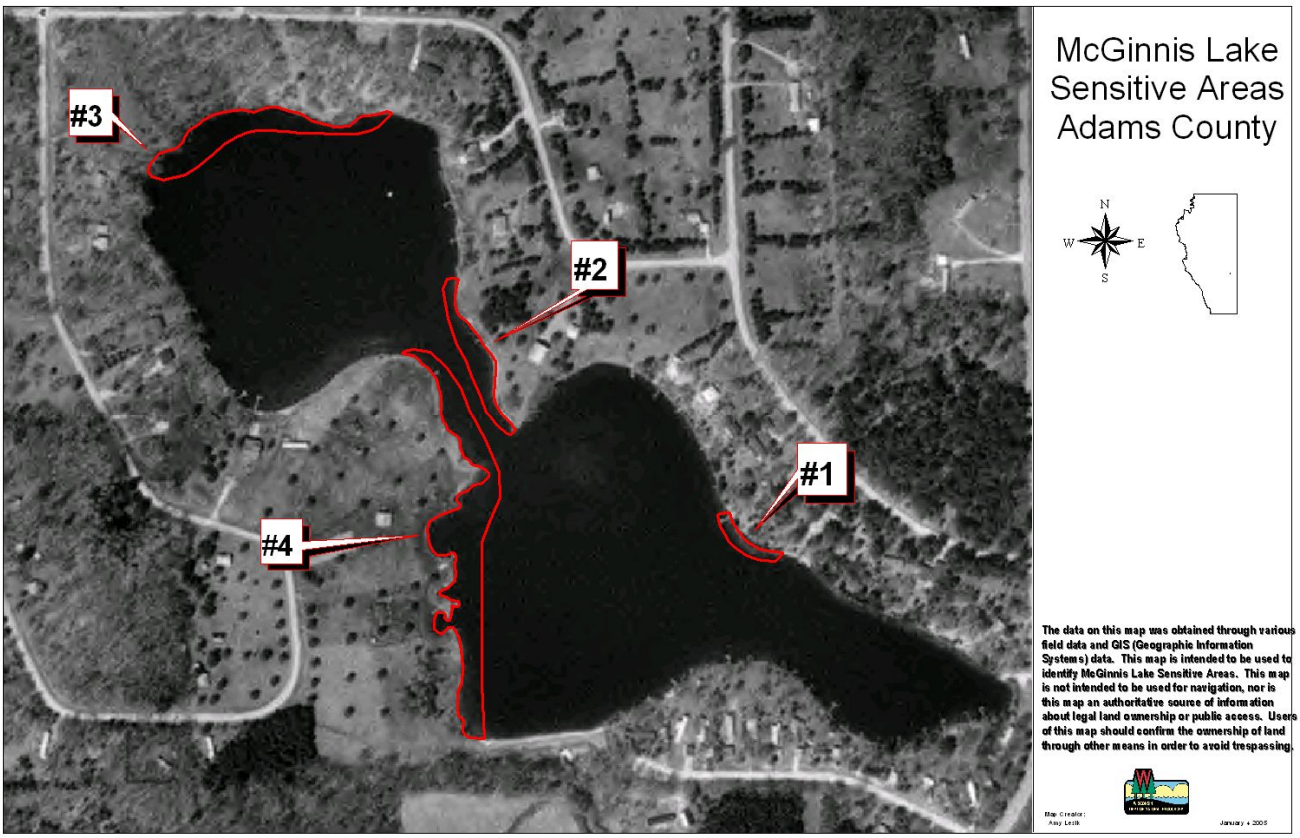

Figure 2. Location of Designated Sensitive Areas on MGinnis Lake.

Common Attributes for All the Sensitive Areas

Water Quality

The vegetation at all of the sites provide a nutrient buffer (the plants use nutrients thus reducing algae growth), a physical buffer (the plants protect the shoreline against wave erosion), sediment stabilization (the plants anchor the sediments and preventing their resuspension by boat motors and waves) and a biological buffer that reduces invasion of exotic species.

Fish Habitat

All of the sensitive areas provide important fish habitat. The sensitive areas are the areas in the lake that are most important for the fish community. These areas provide spawning areas, nursery areas, feeding sites and protective cover for northern pike, large-mouth bass, bluegill and pumpkinseed. McGinnis Lake is small, so all sensitive areas provide habitat for essentially the same fish community. However, all sites are important. Eliminating the habitat at one of these sites would reduce the amount habitat, resulting in a reduction in the size and diversity of the fish community that McGinnis Lake could support.

Wildlife Habitat

The shoreline vegetation, emergent-standing water vegetation and floating-leaf vegetation are premier habitat for wildlife. The shoreline vegetation on the land and in standing water is critically important for nesting and brood-rearing. This same vegetation provides cover during the spring and fall migrations and as travel and flight corridors during all seasons. The shoreline, emergent vegetation and floating-leaf plant species must be retained in the sensitive areas.

Sensitive Area MG1

This sensitive area extends along approximately 200 feet of shoreline and supports important near-shore terrestrial habitat composed of mature pines, shoreline habitat and shallow water habitat (Figure 2). The sediment is sand.

The natural scenic beauty at this site also figured into the selection of this site. The area provides visual and sound buffers and an area of beauty for lake residents and visitors.

The shoreline is 75% pine woods and 25% herbaceous growth.

The Plant Community:

Pines buffer the shoreline and provide habitat.

Marsh fern grow on the wet edge.

The submerged vegetation provide important habitat for the fish community (Table 1). Coontail is common in the deeper water. Illinois pondweed and sago pondweed are abundant and clasping leaf pondweed is common.

Exotic curly-leaf pondweed is present

Muskgrass and filamentous algae are common.

Table 1. Wildlife Uses of Aquatic Plants in Lake McGinnis Sensitive Area MG1

Aquatic Plants	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Chara sp.	F*, S	F*, I*					
Potamogeton crispus	F, C, S	F(Seeds, Tubers)					
Potamogeton illinoensis	F, I, S*,C	F*(Seeds)	F		F*	F	F
Potamogeton pectinatus	F, I, S*,C	F*			F*	F	F
Potamogeton richardsonii	F, I, S*,C	F*(All)			F*	F	F

F=Food, I= Shelters Invertebrates, a valuable food source C=Cover, S=Spawning

***=Valuable Resource in this category**

*Current knowledge as to plant use. Other plants may have uses that have not been determined.

After Fassett, N. C. 1957. A Manual of Aquatic Plants. University of Wisconsin Press. Madison, WI

Nichols, S. A. 1991. Attributes of Wisconsin Lake Plants. Wisconsin Geological and Natural History Survey. Info. Circ. #73

Recommendations

1) Do not remove fallen trees along shoreline.
2) Maintain buffer of shoreline vegetation
3) Do not alter the littoral zone except for improvement of spawning habitat
4) Selectively manage the exotic curly-leaf pondweed to prevent its dominance and allow lake use.
5) Protect shoreline vegetation and aquatic vegetation in natural state for wildlife habitat.
6) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a buffer for water quality protection.
7) To minimize habitat loss, individual permit and review required for:
    a) shoreline erosion control
    b) pea gravel beds, sand blankets or dredging, except for DNR fishery or wildlife approved projects
    c) pier placement limited to standard guidelines
    d) boat ramp placement
    e) recreational floating devices

Sensitive Area MG2

This site is part of the old stream channel before the dam was built. The sediment is sand and silt.

This sensitive area extends along 500 feet of shoreline and supports near-shore terrestrial habitat and shallow water aquatic vegetation (Figure 2). The shoreline is mostly shrub growth.

An additional reason this site was selected was its natural beauty.

The Plant Community:

The shore and submergent vegetation provides a diversity of habitat and feeding opportunities for wildlife and the fish community (Table 2).

Willow growth lines the shoreline.

Bluejoint and reed-canary grasses colonize the wet edge with dock mixed in.

Blue-flag iris dominates the shallow water. In addition, softstem bulrushes, bulb-bearing water hemlock, cattails and marsh milkweed also emerge from the shallow water.

Bushy pondweed is common and northern watermilfoil, white water crowfoot and coontail are present in the littoral zone. Clasping-leaf pondweed is dominant; Illinois pondweed is common; sago-pondweed is present in the littoral zone.

Exotic curly-leaf pondweed is present

Muskgrass and filamentous algae are present.

Fish Habitat

This area provides spawning, nursery, feeding and protective cover sites for northern pike, large-mouth bass, bluegill and pumpkinseed. Eliminating the habitat at this site would reduce the amount habitat, resulting in a reduction in the size and diversity of the fish community that McGinnis Lake could support.

Wildlife Habitat

The shore and shallow water emergent vegetation at this site are critical for wildlife habitat. This site provides important nesting and brood-rearing cover. This same vegetation also provides cover during the spring and fall migrations and as travel and flight corridors during all seasons. The shoreline, emergent vegetation and floating-leaf plant species must be retained in the sensitive areas.

Table 2. Wildlife Uses of Aquatic Plants in McGinnis Lake Sensitive Area MG2

Aquatic Plants	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Chara sp.	F*, S	F*, I*					
Myriophyllum sibiricum	F*, I*, S	F(Seeds, Foliage)	F(Seeds)		F		
Najas flexilis	F, C	F*(Seeds, Foliage)	F(Seeds)				
Potamogeton crispus	F, C, S	F(Seeds, Tubers)					
Potamogeton illinoensis	F, I, S*,C	F*(Seeds)	F		F*	F	F
Potamogeton pectinatus	F, I, S*,C	F*			F*	F	F
Potamogeton richardsonii	F, I, S*,C	F*(All)			F*	F	F
Emergent Plants							
Asclepias incarnata				Fibers for nests	Roots		
Calamagrostis canadensis					Graze sprouts		Graze sprouts
Cicuta bulbifera		F, seeds					
Iris versicolor		F, C	F		F		
Ranunculus longirostris.		F		F			
Rumex sp.		F, seeds			C, F		F*
Salix sp.		C	C*	C*	F	F*	F*
Scirpus validus	F, C, I	F (Seeds)*, C	F(Seeds, Tubers), C	F (Seeds)	F	F	F
Typha latifolia	I, C, S	F(Entire), C	F(Seeds), C, Nest	Nest	F*, C*, Lodge	F	

Recommendations

1) Increase the width of the buffer of natural shoreline vegetation.
2) Do not alter the littoral zone except for improvement of spawning habitat
3) Selectively manage the exotic curly-leaf pondweed to prevent its dominance and allow lake use.
4) Protect shoreline vegetation and aquatic vegetation in natural state for wildlife habitat.
5) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a buffer for water quality protection.
6) To minimize habitat loss, individual permit and review required for:
    a) shoreline erosion control
    b) pea gravel beds, sand blankets or dredging, except for DNR fishery or wildlife approved projects
    c) pier placement limited to standard guidelines
    d) boat ramp placement
    e) recreational floating devices
7) Designate slow-no-wake through the channel

Sensitive Area MG3

This sensitive area extends along 750 feet of steep shoreline and supports important near-shore terrestrial vegetation, shoreline habitat and shallow water habitat (Figure 2). The sediment is sand and silt. The shoreline at this sensitive area is mostly wooded with about 10% developed. Large woody cover from fallen trees is present in the shallow water, providing important habitat in fish cover and wildlife resting areas.

The natural scenic beauty and springs that provide a water source for the lake at this site are also important to the selection of this site.

The Plant Community:

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 (Table 3).

Mature hardwood trees and angelica colonize the shoreline.

Sedges, blue-flag iris and cattails are common emergents in the shallow water. Blue-joint grass is also present.

Several colonies of floating-leaf smartweed beautify the surface.

Coontatil and northern watermifoil colonize the littoral zone. The pondweeds, sago pondweed and clasping-leaf pondweed are common and Illinois pondweed is present in the underwater habitat.

Muskgrass is abundant.

Water Quality

Maintaining the integrity of this sensitive area is especially important for protecting the water quality of McGinnis Lake as this site contains springs that provide water flow to the lake.

Fish Habitat

This area provides spawning, nursery, feeding and protective cover sites for northern pike, large-mouth bass, bluegill and pumpkinseed. Eliminating the habitat at this site would reduce the amount habitat, resulting in a reduction in the size and diversity of the fish community that McGinnis Lake could support.

Wildlife Habitat

The shoreline vegetation, emergent-standing water vegetation and floating-leaf vegetation are important habitat for wildlife. The shoreline vegetation on the land and in standing water is critically important for nesting and brood-rearing. This same vegetation provides cover during the spring and fall migrations and as travel and flight corridors during all seasons. The shoreline, emergent vegetation and floating-leaf plant species must be retained in the sensitive areas.

Table 3. Wildlife Uses of Aquatic Plants in McGinnis Lake Sensitive Area MG3

Aquatic Plants	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Chara sp.	F*, S	F*, I*					
Myriophyllum sibiricum	F*, I*, S	F(Seeds, Foliage)	F(Seeds)		F		
Potamogeton illinoensis	F, I, S*,C	F*(Seeds)	F		F*	F	F
Potamogeton pectinatus	F, I, S*,C	F*			F*	F	F
Potamogeton richardsonii	F, I, S*,C	F*(All)			F*	F	F
Floating-leaf Plants							
Polygonum amphibium	I, S	F*(Seeds)		F(Seeds)	F(Seeds)		F(Seeds)
Emergent Plants							
Calamagrostis canadensis					Graze on sprouts		Graze on sprouts
Carex stricta	S	F	F* (Roots, Sprouts, Seeds)	F* (Roots, Sprouts, Seeds)	F* (Roots, Sprouts)	F	F
Iris versicolor		F, C	F		F		
Typha latifolia	I, C, S	F(Entire), C	F(Seeds), C, Nest	Nest	F* (Entire), C*, Lodge	F	

F=Food, I= Shelters Invertebrates, a valuable food source C=Cover, S=Spawning
***=Valuable Resource in this category**

*Current knowledge as to plant use. Other plants may have uses that have not been determined.

After Fassett, N. C. 1957. A Manual of Aquatic Plants. University of Wisconsin Press. Madison, WI

Nichols, S. A. 1991. Attributes of Wisconsin Lake Plants. Wisconsin Geological and Natural History Survey. Info. Circ. #73

Recommendations

1) Do not remove fallen trees along shoreline.
2) Do not alter the littoral zone except for improvement of spawning habitat
3) Protect shoreline vegetation and aquatic vegetation in natural state for wildlife habitat.
4) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a buffer for water quality protection and the prevention of curly-leaf pondweed invasion.
5) To minimize habitat loss, individual permit and review required for:
    a) shoreline erosion control
    b) pea gravel beds, sand blankets or dredging, except for DNR fishery or wildlife approved projects
    c) pier placement to standard guidelines
    d) boat ramp placement or recreational floating devices

Sensitive Area MG4

A portion of this site is also part of the old stream channel before the dam was built. This sensitive area is approximately 1000 feet along the shore, approximately half in the channel. This area supports important shoreline habitat and shallow water habitat (Figure 2). The shoreline is protected by shrub buffer along 60%, a wetland along 10% and pockets of sedge meadow within the remainder which is developed with cottages.

The area provides an area of beauty for lake residents and visitors.

The Plant Community:

The mosaic of emergent and submergent vegetation provides a diversity of habitat and feeding opportunities for the fish community (Table 4).

Willow is the dominant shrub along the shoreline.

Blue-flag iris and sedges commonly emerge form the shallow water with marsh milkweed also present and cattails emerging in some areas.

Coontail colonizes the littoral zone along with the pondweeds: sago pondweed is abundant; clasping-leaf and Illinois pondweed is common and small pondweed is present.

Curly-leaf pondweed was not found here after treatment.

Fish Habitat

This area provides spawning, nursery, feeding and protective cover sites for northern pike, large-mouth bass, bluegill and pumpkinseed. Eliminating the habitat at this site would reduce the amount habitat, resulting in a reduction in the size and diversity of the fish community that McGinnis Lake could support.

Wildlife Habitat

This site is across the old channel from site MG2 and provides a contiguous wildlife habitat with that site. Adding to this size of site MG2 increases the value of these sites, resulting in more valuable as one unit together each would be separately. The shoreline vegetation, emergent-standing water vegetation and floating-leaf vegetation are important habitat for wildlife. The shoreline vegetation on the land and in standing water is critically important for nesting and brood-rearing. This same vegetation provides cover during the spring and fall migrations and as travel and flight corridors during all seasons. The shoreline, emergent vegetation and floating-leaf plant species must be retained in the sensitive areas.

Table 4. Wildlife Uses of Aquatic Plants in McGinnis Lake Sensitive Area MG4

Aquatic Plants	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Potamogeton crispus	F, C, S	F(Seeds, Tubers)					
Potamogeton illinoensis	F, I, S*,C	F*(Seeds)	F		F*	F	F
Potamogeton pectinatus	F, I, S*,C	F*			F*	F	F
Potamogeton pusillus	F, I, S*,C	F*(All)			F*	F	F
Potamogeton richardsonii	F, I, S*,C	F*(All)			F*	F	F
Emergent Plants							
Asclepias incarnata				Fibers for nests	Roots		
Carex stricta	S	F	F* (Roots, Sprouts, Seeds)	F* (Roots, Sprouts, Seeds)	F* (Roots, Sprouts)	F	F
Iris versicolor		F, C	F		F		
Salix sp.		C	Cover of song and marsh birds	Cover	Eat leaves	F*	F*
Typha latifolia	I, C, S	F(Entire), C	F(Seeds), C, Nest	Nest	F* (Entire), C*, Lodge	F	

F=Food, I= Shelters Invertebrates, a valuable food source C=Cover, S=Spawning
***=Valuable Resource in this category**
*Current knowledge as to plant use. Other plants may have uses that have not been determined.
After Fassett, N. C. 1957. A Manual of Aquatic Plants. University of Wisconsin Press. Madison, WI
Nichols, S. A. 1991. Attributes of Wisconsin Lake Plants. Wisconsin Geological and Natural History Survey. Info. Circ. #73

Recommendations

1) Protect current buffer of natural shoreline vegetation along the shoreline and maintain the width of the buffer to at least 35 feet deep.
2) Do not alter the littoral zone except for improvement of spawning habitat
3) Selectively manage the exotic curly-leaf pondweed if it reappears.
4) Protect shoreline vegetation and aquatic vegetation in natural state for wildlife habitat.
5) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a buffer for water quality protection.
6) To minimize habitat loss, individual permit and review required for:
    a) shoreline erosion control
    b) pea gravel beds, sand blankets or dredging, except for DNR fishery or wildlife approved project
    c) pier placement limited to standard guidelines
    d) boat ramp placement
    e) recreational floating devices
7) Designate slow-no-wake through the channel