CRITICAL HABITAT DESIGNATION
FAWN LAKE
ADAMS COUNTY, WI

December, 2006

Submitted by Reesa Evans
Adams County Land & Water Conservation Department

Wisconsin Department of Natural Resources

CRITICAL HABITAT DESIGNATION
For Fawn Lake, Adams County 2006

I. INTRODUCTION

Designation of critical habitats within lakes provides a holistic approach for assessing the ecosystem and for protecting those areas in and near a lake that are important for preserving the qualities of the lake. Wisconsin Rule 107.05(3)(i)(I) defines a "critical habitats" as: "areas of aquatic vegetation identified by the department as offering critical or unique fish & wildlife habitat or offering water quality or erosion control benefits to the body of water. Thus, these sites are essential to support the wildlife and fish communities. They also provide mechanisms for protecting water quality within the lake, often containing high-quality plant beds. Finally, critical habitats often can provide the peace, serenity and beauty that draw many people to lakes in the first place.

Protection of critical habitats must include protecting the shore area plant community, often by buffers of native vegetation that absorb or filter nutrient & stormwater runoff, prevent shore erosion, maintain water temperature and provide important native habitat. Buffers can serve not only as habitats themselves, but may also provide corridors for species moving along the shore.

Besides protecting the landward shore areas, preserving the littoral (shallow) zone and its plant communities not only provides essential habitat for fish, wildlife, and the invertebrates that feed on them, but also provides further erosion protection and water quality protection.

Critical habitat designations provide information that can be used in developing a management plan for the lake that protects the lake's ecosystem by identifying areas in need of special protection. These areas usually contain several types of aquatic plants: emergent; floating-leaf; rooted floating-leaf; and submergent.

II. FAWN LAKE IN BRIEF

Fawn Lake is a mesotrophic impoundment with good water quality and fair water clarity. It has 18 surface acres, with a maximum depth of 14.1 feet and an average depth of 4.14 feet. Water level is controlled by a dam constructed in 1971 which is owned by Adams County and managed by the Adams County Land & Water Conservation Department.

Lake Area*: 17.82 acres below OHWM and without island (18.08 acres with island)

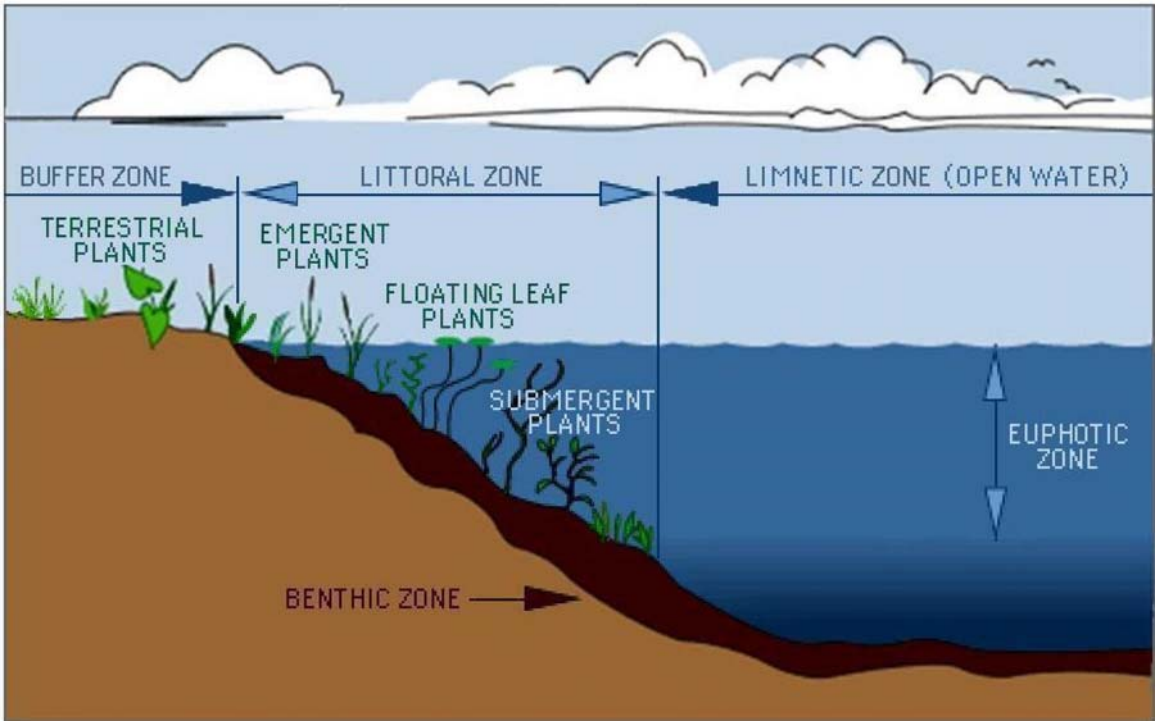
Lake Type: (1971) Impoundment of Trout Creek
Full Pool Elevation: 743 Ft (Hartnett)
Mean Depth: 4.14 feet (using area of 17.82 acres)
Maximum Depth: 14.1 feet (Hartnett, June, 2006)
Shoreline Length: 1.33 miles / 7010 feet without island. (Based on 2005 DOP)
Lake Volume: 73.78 Acre Feet (Hartnett)

Maximum Rooting Depth: 8 ft. (July 12, 2006 survey)
Number of Plant Species in 2006 Survey: 24 (21 native, 3 exotic)
Littoral Area: 15.1 acres (Trombly using 8 ft rooting depth bathymetry line)

Surface Watershed:** 1440 acres (Trombly, using 1:24,000 USGS topo)
Watershed to Lake Ratio: 81 : 1

*Wisconsin Statute 30.635 Motorboat prohibition. On lakes 50 acres or less having public access, motorboats may not be operated in excess of slow-no-wake speed, except when such lakes serve as thoroughfares between 2 or more navigable lakes. The department by rule may modify or waive the requirements of this section as to particular lakes, if it finds that public safety is not impaired by such modification or waiver.

** The surface watershed area for a lake does not include the lake itself. However, wetlands, ponds and lakes within the watershed are included in the watershed area because all of these 'shed' water into the lake. Example: The Wisconsin portion of the Lake Michigan watershed does not include Lake Michigan but would include Lake Winnebago.



Field work for a critical habitat area study was performed on September 19, 2006, on Fawn Lake, Adams County. The designation was assisted by aquatic plant and shoreline assessment data collected in August, 2006. Potential areas were identified visually, with GPS readings and digital photos providing additional information.

The designation team included:

Scot Ironside, DNR Fish Biologist
Deborah Konkel, DNR Aquatic Plant Specialist
Reesa Evans, Adams County Land & Water Conservation Department. (author)

Additional input from:

Terence Kafka, DNR Water Regulation
James Keir, DNR Wildlife Biologist
Buzz Sorge, DNR Lakes Manager
Neil Trombly, DNR Water Resources Specialist (Copy edit / statistics / map.)

III. CRITICAL HABITAT CRITERIA

The critical habitat area designated on Fawn Lake was selected because of its importance for fish and wildlife habitat, importance for protecting water quality, importance of the natural buffer of terrestrial vegetation, and importance of protecting the diverse aquatic plant communities they supported. Each of these sites needs to be preserved in their current natural state and should not be further developed. All of the sites have potential to be used for educational purposes.

Common Attributes of All Critical habitats

Water Quality: The vegetation at critical habitat sites (near and in the water) provide a nutrient buffer that reduces algal growth. Its service as a biological buffer that reduces the opportunities for invasions by exotics. The physical buffer the vegetation gives protects against shore erosion and plant fragmentation, as well as stabilizes sediment, thus reducing nutrient recycling and likelihood of algal blooms. Many of these plant areas also provide microhabitat for fish and wildlife, as well as providing conditions that encourage higher biodiversity at the site

Fish Habitat: Critical habitat areas provide important fish habitat and are the most essential areas in the lake for a healthy fish community. These areas provide space for spawning, nursery sites, feeding sites, and protective cover from predator fish. Eliminating even one of these sites would reduce the amount of fish habitat available, resulting in a reduction of the size and diversity of the fish community that Fawn Lake can support.

Wildlife Habitat: Shoreline, emergent and floating-leaf vegetation are primary habitat for many kinds of wildlife. Shore and emergent vegetation are especially important as nesting and brood-rearing areas. This vegetation also provides cover during migrations and provides travel corridors all throughout the year. Floating-leaf vegetation also provides cover. Most of this vegetation is also used by various fish and other wildlife for food.

A map of the designated critical habitat area on Fawn Lake is on the next page.

Figure 2. Critical Habitat Designated Areas

Critical Habitat Area FL1

This area extends along approximately 500 feet of the shoreline and has an average water depth of 3'. Maximum rooting depth of aquatic vegetation in FL1 was 6'. Sediment includes marl, muck, peat, sand, silt and mixtures thereof. 75% of the shore is native herbaceous cover and 25% is wooded. Some woody cover is available for habitat. Human disturbance impact on this area is currently limited.


North Side of Point FL1

Fishery in this area includes largemouth bass and several types of panfish, including bluegills, pumpkinseed and crappie. Geese and songbirds are known at this site, as are amphibians and reptiles.

Aquatic vegetation found at FL1 includes emergent plants such as bulrush, cattails, rushes and sedges. Emergents provide important fish habitat and spawning areas, as well as food and cover for wildlife. White water lily, a floating-leaf rooted plant, was also found in FL1. Floating-leaf vegetation provides cover and dampens waves, protecting the shore. Submergent aquatic vegetation at this site were *Ceratophyllum demersum* (Coontail), *Chara* spp (Muskgrass), *Elodea Canadensis* (Waterweed), *Potamgeton crispus* (Curly-Leaf Pondweed), *Potamgeton nodsosus* (Long-Leaf Pondweed), *Potamogeton pectinatus* (Sago Pondweed) and *Potamogeton pusillus* (Small Pondweed). A diverse submergent community provides many benefits. Most of these plants are used by a variety of fish and wildlife (see Table 1).

Table 1: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Carex spp		F	F,I				
Ceratophyllum demersum	F,I,C,S	F,I,C			F		
Chara spp	F,S	F,I,C					
Juncus spp	F,I,C,S	F,I,C	F,C				
Nymphaea odoratoa	F,I,C,S	F	F		F	F	
Phalaris arundinacea		C					
Potamogeton spp	F,I,C.S	F,I	F		F	F	F
Scirpus spp	F,C,I	F,C	F,C,N	F	F	F	F
Typha spp	I,C,S	F	F,C,N		F,C,N	F	

F = Food; I = Shelters Invertebrates; C = Cover; S = Spawning; N = Nesting

Filamentous algae were found at this site as well.

This area of some woody cover, emergent aquatic vegetation, submergent and a little floating vegetation provides spawning and nursery areas for many types of fish: largemouth bass; bluegill; pumpkinseed; yellow perch; crappie; and other panfish. All of these fish also feed and take cover in these areas. No exotic aquatic wildlife was noted in this area, i.e, no carp, smelt or rusty crayfish were seen.

One aquatic exotic invasive plant was found in this area, Curly-Leaf Pondweed. *Myriophyllum spicatum*, Eurasian Watermilfoil, has been found in Fawn Lake in the past years, but appeared to be under control after chemical treatment. None was found at Site FL1.

RECOMMENDATIONS FOR AREA FL1

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove any fallen trees along the shoreline or in the water.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain any snag/cavity trees for nesting.
(6) Install nest boxes.
(7) Maintain or increase wildlife corridor.
(8) Maintain no-wake zone.
(9) Protect emergent vegetation.
(10) Minimize aquatic plant and shore plant removal to maximum 30' wide viewing/access corridor. Leave as much vegetation as possible to protect water quality and habitat.
(11) Use best management practices on shoreline properties.
(12) No use of lawn products on nearby shores.
(13) No bank grading or grading of adjacent land.
(14) No pier placement, boat landings, development or other shoreline disturbance in the shore area of the wetland corridor.
(15) No pier construction or other activity except by permit using a case-bycase evaluation.
(16) No installation of pea gravel or sand blankets.
(17) No bank restoration unless the erosion index scores moderate or high.
(18) If the erosion index does score moderate or high, bank restoration only using biologs or similar bioengineering, with no use of riprap or retaining walls.
(19) Placement of swimming rafts or other recreational floating devices only by permit.
(20) Maintain aquatic vegetation buffer in undisturbed condition for wildlife habitat, fish use and water quality protection.
(21) Post exotic species information at public boat landing.
(22) No chemical treatments in area except specific spot-treatment for nonnative invasive species.

SOME DEFINITIONS :

Aquatic Plant : A plant that grows partly or wholly in water whether rooted, held in place by holdfasts or floating without anchorage. These hydrophytic plants are classified in this report as Emergent, Floating Leaf or Submergent.

Benthic Zone : Lake bottom sediment including bottom-dwelling organisms.

Buffer Zone : A near shore area containing **terrestrial plants** which filter and absorb nutrients before they reach the lake. Their stems and roots also stabilize soil to prevent erosion. A Buffer Zone reduced to lawn is not effective and can lead to loss of valuable shoreland in addition to accentuated runoff pollution of the lake. The Buffer Zone also provides habitat and movement corridors for wildlife.

Emergent, Floating Leaf, and **Submergent** aquatic plants in the Littoral Zone are collectively called macrophytes—plants large enough to be visible to the naked eye. Native macrophytes are desirable for a number of reasons including dampening of wave action which reduces shoreline erosion and stirring up of sediments. In addition to helping preserve water clarity, native macrophytes also provide habitat for spawning, food and shelter of fish as well as the life cycle needs of a wide variety of other creatures.

Euphotic Zone : Upper layer of water exposed to sufficient sunlight for effective photosynthesis to occur. The maximum euphotic depth indicates the maximum rooting depth of aquatic plants and thus helps determine the size of the Littoral Zone. Depth of the Euphotic Zone can vary greatly from season to season.

Limnetic Zone : The expanse of open water surrounded by the Littoral Zone and within the Euphotic Zone. This area is occupied by a variety of phytoplankton. Shallow lakes may be entirely Littoral Zone and not have a Limnetic Zone.

Littoral Zone : Characterized by high plant and animal species diversity and is commonly the site where fish reproduction and development occur. Extends from the shoreline out to the maximum rooting depth of aquatic plants.