CRITICAL HABITAT AREAS OF JORDAN LAKE, ADAMS COUNTY, WI

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CRITICAL HABITAT DESIGNATION
For Jordan Lake, Adams County 2006

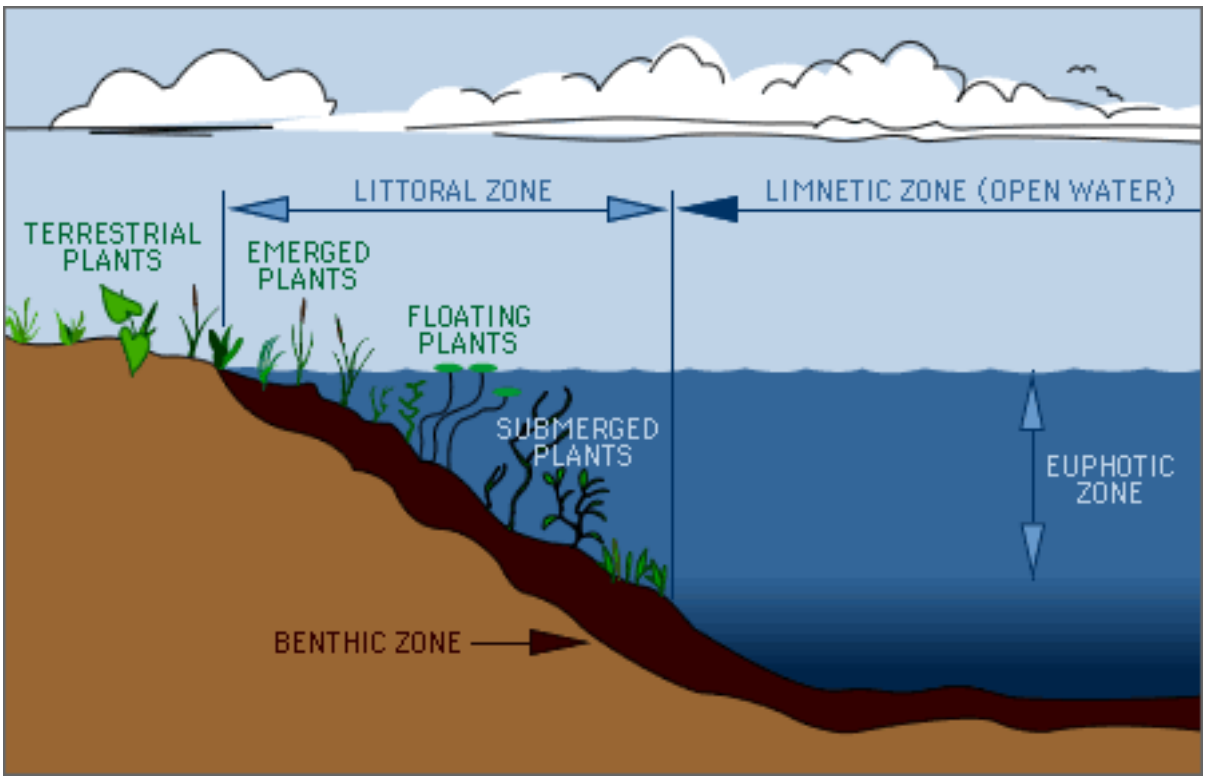
I. INTRODUCTION

Designation of critical habitat areas 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 "sensitive areas" 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, sensitive areas often can provide the peace, serenity and beauty that draw many people to lakes in the first place.

Protection of critical habitat areas 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 area 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; free-floating; rooted floating-leaf; and submergent.



Field work for a critical habitat area study was performed on October 4, 2006, on Jordan Lake, Adams County. The study team included: Scot Ironside, DNR Fish Biologist;; Deborah Konkel, DNR Aquatic Plant Specialist; and Reesa Evans, Adams County Land & Water Conservation Department. Areas were identified visually, with GPS readings and digital photos providing additional information. Input was also obtained from Terry Kafka, DNR Water Regulation; Jim Keir, DNR Wildlife Biologist; and Buzz Sorge, DNR Lake Manager.

Jordan Lake is a mesotrophic/oliogotrophic seepage lake with good to very good water quality and very good water clarity. It has 213 surface acres, with a maximum depth of 80 feet. Except for one section, Jordan Lake is heavily-developed. As in the case for all seepage lakes, the water level on Jordan Lake fluctuates naturally with the underground water table. There is a public boat ramp owned by the Adams County Parks Department on the west side of the lake.

II. CRITICAL HABITAT AREA CRITERIA

All the sensitive areas on Jordan Lake were selected because of their importance for fish and wildlife habitat, importance for protecting water quality, importance of the natural buffer of terrestrial vegetation, and importance of protecting the 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 the Critical Habitat Areas

Water Quality: The vegetation at these sites (near shore and in the water) provides a nutrient buffer that reduces algal growth. Its service as a biological buffer 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. In the instance of a seepage lake like Jordan Lake, these areas may help protect the quality of the water entering the lake from groundwater seepage or springs.

Fish Habitat: All of these 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 Jordan 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 areas on Jordan Lake is seen on the next page.

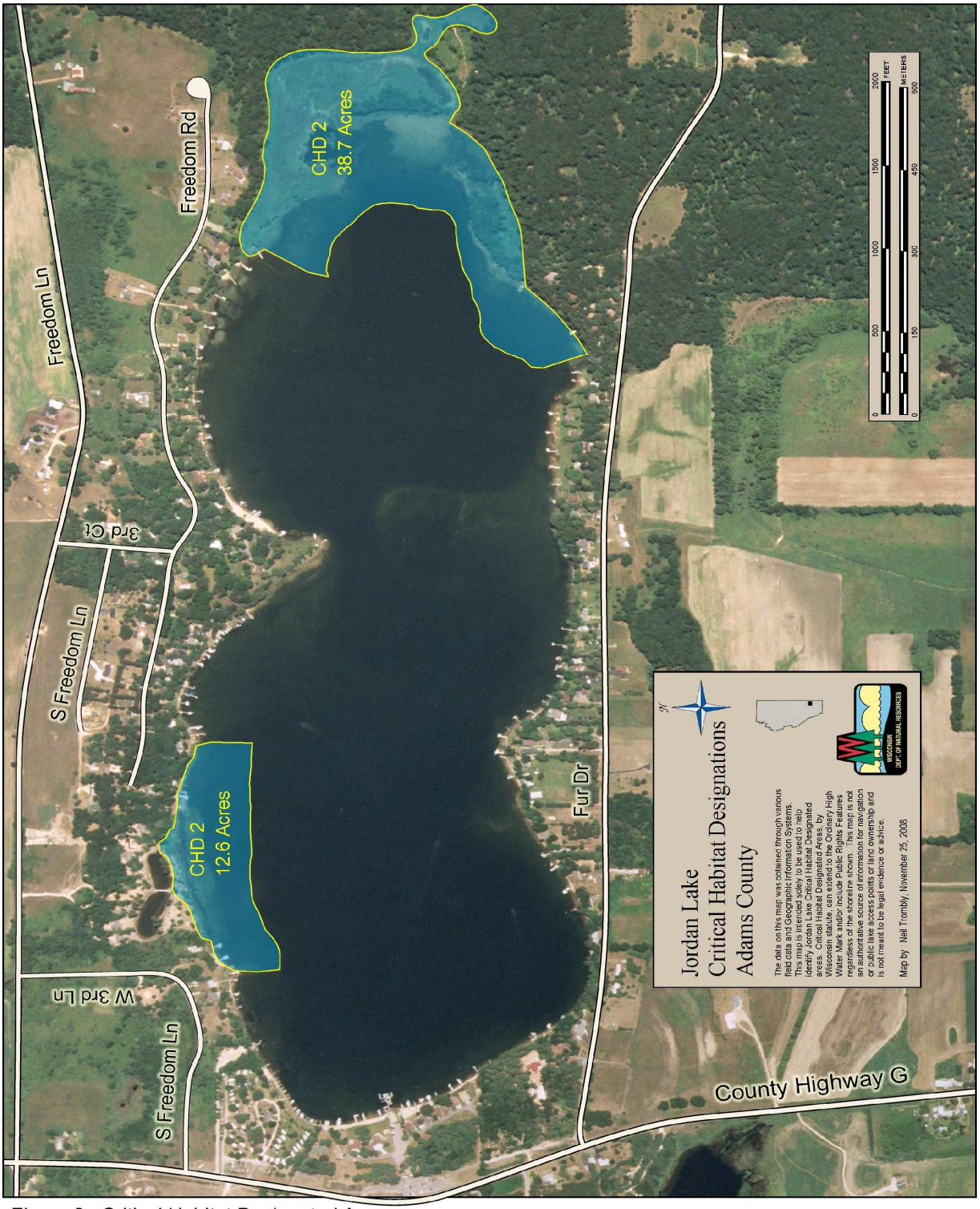


Figure 2. Critical Habitat Designated Areas

Critical Habitat Area JO1

This area extends along approximately 2600 feet of the shoreline along the north side of the lake, extending up to the ordinary high water mark. Sediment includes marl, muck, peat, sand, silt and mixtures thereof. 6% of the shore is wooded; 20% is native herbaceous cover. The balance of the short is bare sand, cultivated lawn and hard structure. There is a shallow marsh area along this shoreline. Large woody cover is present for habitat.

Photo of Vegetated Area in JO1

The results of an October 2006 fish shocking survey indicated that Jordan Lake has a good panfish population of substantial size, including bluegills, black crappie and perch. More scarce were largemouth bass and northern pike, although they were present. Brown trout, cisco, bullheads, walleyes and white suckers have also been found in Jordan Lake. No exotic aquatic wildlife was noted in this area, i.e, no carp, smelt or rusty crayfish were seen.

Seen during the field survey were various types of songbirds. Frogs and salamanders are known to use this area for shelter/cover, nesting and feeding. Upland wildlife feed and nest here as well. Since human disturbance is fairly high in JO1, habitat for wildlife is somewhat limited.

Maximum rooting depth of aquatic vegetation in JO1 was 19 feet. Seven types of emergent aquatic plants were found in this area: *Carex* (Sedge); *Sagittaria* (Arrowhead); *Salix* (Willow); *Scirpus* (Bulrush); *Solidago* (Goldenrod); *Solanum* (Nightshade); and *Typha* (Cattail). Emergents provide important fish habitat and spawning areas, as well as food and cover for wildlife.

Free-floating plants were limited to *Lemna minor* (Small Duckweed). *Brasenia schreberi* (Watershield), *Nymphaea odorata* (White Water Lily) and *Polygonum amphibium* (Water Smartweed) were the rooted floating-leaf plants found. Floating-leaf vegetation provides cover and dampens waves, protecting the shore. Filamentous algae were present at this site, but not abundant.

Submergents found were *Ceratophyllum demersum* (Coontail); *Chara* spp (Muskgrass); *Myriophyllum sibiricum* (Northern Milfoil); *Myriophyllum spicatum* (Eurasian Watermilfoil); *Najas flexilis* (Bushy Pondweed); *Nitella spp* (Stonewort); *Potamogeton amplifolius* (Large-Leaf Pondweed); *Potamogeton folisous* (Leafy Pondweed); *Potamogeton gramineus* (Grass-Leaf Pondweed); *Potamogeton illinoensis* (Illinois Pondweed); *Potamogeton natans* (Floating-Leaf Pondweed); *Potamgeton nodusus* (Long-Leaf Pondweed); *Potamogeton pectinatus* (Sago Pondweed); *Potamogeton praelongus* (White-Stem Pondweed); *Potamogeton pusillus* (Small Pondweed); *Potamogeton richardsonii* (Clasping-Leaf Pondweed); *Potamogeton zosteriformis* (Flat-Stem Pondweed); *Vallisneria americana* (Water Celery) and *Zosterella dubia* (Water Stargrass). Such a diverse submergent community provides many benefits.

One exotic invasive plant, *Myriophyllum spicatum*, was found in this area. Most of the aquatic vegetation in this area has multiple uses for fish and wildlife (see Table 1). This area of all three plant structure-types provide more diversity.

Table 1: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Brasenia schreberi	I,C,S	F,I,C	-	-			
Carex spp		F	F,I	-			
Ceratophyllum demersum	F,I,C,S	F,I,C			F		
Chara spp	F,S	F,I,C					
Elodea canadensis	F,I,C	F,I			F,I		
Lemna minor	F,I,C,S	F	F		F	F	
Myriophyllum spp	F,I,C,S	F,I	F		F		
Najas spp	F,C,I	F	F	F	F		
Nuphar variegataa	F,I,C,S	F	F		F	F	F
Nymphaea odoratoa	F,I,C,S	F	F		F	F	
Polygonum amphibium	C,I	F,I	F,I	F,I	F		F
Potamogeton spp	F,I,C.S	F,I	F		F	F	F
Sagittaria spp	C,I	F,C,I	F,C,I	F,C,I	F	FF	
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	
Vallisneria americana	F,I,C	F,I	F,I		F	F	F
Zosterella dubia	F,I,C	F					

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

Photo Showing Development in JO1

RECOMMENDATIONS FOR AREA JO1

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove fallen trees along the shoreline.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain snag/cavity trees for nesting.
(6) Install nest boxes.
(7) Maintain or increase wildlife corridor.
(8) Designate this area as a no-wake zone.
(9) Protect emergent vegetation and floating-leaf vegetation.
(10) Minimize aquatic plant and shore plant removal to maximum 30' wide viewing/access corridor or for navigational purposes. Leave as much vegetation as possible to protect water quality and habitat.
(11) Use best management practices.
(12) No use of lawn products.
(14) No bank grading or grading of adjacent land.
(15) No additional pier placement, boat landings, development or other shoreline disturbance in the shore area of the wetland corridor.
(16) No additional pier or boardwalk construction or other activity except by permit using a case-by-case evaluation and using light-penetrating materials.
(17) No installation of pea gravel or sand blankets.
(18) No bank restoration unless the erosion index scores moderate or high.
(19) 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.
(20) Placement of swimming rafts or other recreational floating devices only by permit.
(21) Maintain buffer of shoreline vegetation.
(22) Maintain aquatic vegetation in undisturbed condition for wildlife habitat, fish use and water quality protection.
(23) Maintain exotics alert sign at boat landing.

Critical Habitat Area JO2

This area extends along approximately 1800 feet of the shoreline on the far east end of the lake, up to the ordinary high water mark. Average water depth here is about 15', with a steep dropoff. Sediment includes peat, sand, silt and mixtures thereof. 11% of the shore is wooded; 6% has shrubs; 23% is native herbaceous cover. The remaining shore is bare sand, cultivated lawn and hard structures, which tend to be concentrated at the edges of this area. The middle area is almost entirely undeveloped and contains some shallow marsh. Large woody cover is present for habitat. With minimal human disturbance along this shoreline, the area has natural scenic beauty.

This area of some large woody cover, emergent aquatic vegetation, submergent and floating vegetation provides spawning and nursery areas for many types of fish: northern pike; largemouth bass; bluegill; pumpkinseed; yellow perch; crappie; bullhead; suckers, and other panfish. Walleye, cisco and trout are also known in this lake. 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. Shore development present in JO2 was confined to the ends.

Seen during the field survey were various types of waterfowl and songbirds. It appeared that all these took cover or shelter in this area, as well as nested and fed in this area. Downed logs serving as habitat were also seen. Muskrat and mink are known to use JO2 for cover, reproduction and feeding. Frogs and salamanders are known to use this area for shelter/cover, nesting and feeding. Turtles and snakes also use this area for cover or shelter in this area, as well as nested and fed in this area. Upland wildlife feed and nest here as well. Since human disturbance is relatively minimal in JO2, it provides high-quality habitat for many types of wildlife.

Maximum rooting depth in JO2 was 19 feet. No threatened or endangered species were found in this area. Two exotic invasives, *Myriophyllum spicatum* (Eurasian watermilfoil) and *Potamogeton crispus* (Curly-Leaf Pondweed), were found in this area. Filamentous algae were present, but not common. Five emergent species: *Carex* spp (Sedge), *Sagittaria latifolia* (Arrowhead); *Salix* spp (Willow); *Scirpus validus* (Soft-Stem Bulrush) and *Typha latifolia*. Emergents provide important fish habitat and spawning areas, as well as food and cover for wildlife.

Parts of Area JO2

One free-floating plant, *Lemna* minor was found at this site. Two floating-leaf rooted plants were present, *Brasenia schreberi* (Watershield) and *Nymphaea odorata* (White Water Lily). Floating-leaf vegetation provides cover and dampens waves, protecting the shore. The remaining plants were submergent: *Ceratophyllum demersum, Chara*, *Elodea canadensis, Myriophyllum sibiricum, Myriophyllum spicatum, Najas flexilis, Potamogeton crispus, Potamogeton foliosus, Potamogeton gramineus*, *Potamogeton illinoensis Potamogeton pectinatus, Potamogeton richardsonii, Potamogeton zosteriformis, Ranunculus longirostris* (Beaked Buttercup); and *Vallisneria americana.* Such a diverse submergent community provides many benefits.

Most of these plants are used by wildlife and fish for multiple purposes (see Table 2). Because this site provides all three structural types of vegetation, the community has a diversity of structure and species that supports even more diversity of fish and wildlife.

Table 2: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Brasenia schreberi	I,C,S	F,I,C					
Carex spp		F	F,I				
Ceratophyllum demersum	F,I,C,S	F,I,C			F		
Chara	F,S	F,I,C					
Elodea canadensis	F,I,C	F,I			F,I		
Lemna minor	F,I,C,S	F	F		F	F	
Myriophyllum spp	F,I,C,S	F,I	F		F		
Najas spp	F,C,I	F	F	F	F		
Nymphaea odoratoa	F,I,C,S	F	F		F	F	
Potamogeton spp	F,I,C.S	F,I	F		F	F	F
Ranunculus longirostris	F,I,C	F,I		F			
Sagittaria spp	C,I	F,C,I	F,C,I	F,C,I	F	FF	
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	
Vallisneria americana	F,I,C	F,I	F,I		F	F	F

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

RECOMMENDATIONS FOR JO2

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove fallen trees along the shoreline.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain snag/cavity trees for nesting.
(6) Install nest boxes.
(7) Maintain or increase wildlife corridor.
(8) Designate the area as a no-wake zone.
(9) Consider purchase of easement covering this area to prevent further development.
(10) Protect emergent vegetation and floating-leaf vegetation.
(11) Minimize aquatic plant and shore plant removal to maximum 30' wide viewing/access corridor or for navigational purposes. Leave as much vegetation as possible to protect water quality and habitat.
(12) Use best management practices.
(13) No use of lawn products.
(14) No bank grading or grading of adjacent land.
(15) No additional pier placement, boat landings, development or other shoreline disturbance in the shore area of the wetland corridor.
(16) No additional pier or boardwalk construction or other activity except by permit using a case-by-case evaluation and using light-penetrating materials.
(17) No installation of pea gravel or sand blankets.
(18) No bank restoration unless the erosion index scores moderate or high.
(19) 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.
(20) Placement of swimming rafts or other recreational floating devices only by permit.
(21) Maintain buffer of shoreline vegetation.
(22) Maintain aquatic vegetation in undisturbed condition for wildlife habitat, fish use and water quality protection.
(23) Maintain exotics alert sign at boat landing.