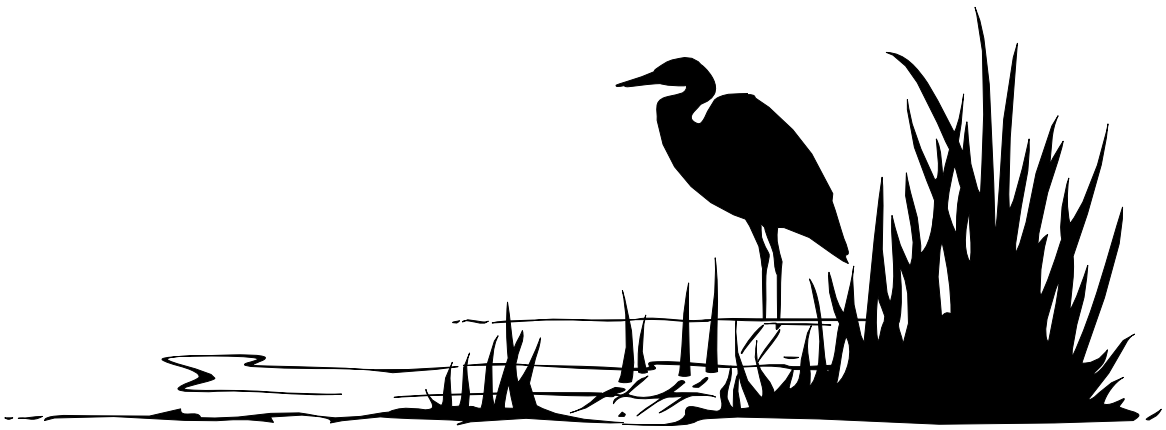
BONE LAKE
SENSITIVE AREA SURVEY REPORT
AND MANAGEMENT GUIDELINES



This document is to be used
with its companion document
"Guidelines for protecting, maintaining,
and understanding lake sensitive areas"

Bone Lake (Polk Co.)
Integrated Sensitive Area Survey Report

Date of Survey: 18 July 1988
26 July 1989

Number of Sensitive Areas: 11

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Lake Sensitive Area Survey results identified eleven areas that merit special protection of the aquatic habitat. These areas of aquatic vegetation on Bone Lake offer critical or unique fish and wildlife habitat. This habitat provides the necessary seasonal or life stage requirements of the associated fisheries while offering water quality or erosion control benefits to the body of water.

Wild rice (*Zizania sp.*) was documented in sensitive area "K" occurring on the northern shoreline of the lake. Wild rice holds very important niche in the lake ecosystem from both a human and wildlife standpoint. Care should be taken to allow for the proliferation of this rice stand.

During this survey there were no documented occurrences of Purple Loosestrife. However, the threat of Purple Loosestrife is always a concern and should be dealt with immediately. Methods for control are to remove the entire plant before it produces seeds or by cutting the flower head and spraying with an approved herbicide. You should contact the Department before any of these methods are implemented.

The reader should consider that any buffer that does not extend back from the waters edge at least 35' is not providing adequate protection for water quality and should be expanded to at least 35'. Local zoning ordinances and lakes classification systems have tried to provide better guidelines pertaining to buffer widths and set backs based on lake type. Landowners are encouraged to go beyond the minimum requirements laid out by zoning

and consider extending buffer widths to beyond 35' and integrating other innovative ways to capture and reduce the runoff flowing off from their property while improving critical shoreline habitat. Berms and low head retention areas can greatly increase the effective capture rate from developed portions in addition to that portion captured within the buffer.

Site conditions may dictate that a buffer has to be much wider than 35' to be effective at capturing the sediments and nutrients running off the developed portions of the shoreline. If the shoreline is steeply sloped (>7%slope) greater widths should definitely be used.

No mowing should take place within the buffer area (with the exception of a narrow access trail and small picnic area), and trees and shrubs should not be cut down even when they become old and die; because they provide important woody debris habitat within the buffer zone as well as aquatic habitat when they fall into the lake.

The following is a brief summary of the Bone Lake sensitive area sites and the management guidelines. Also, the "Guidelines for Protecting, Maintaining, and Understanding Sensitive Areas" provides management guidelines and considerations for different lake sensitive areas (Attached).

I. Aquatic Plant Sensitive Areas

The following sensitive areas contain aquatic plant communities, which provide important fish and wildlife habitat as well as important shoreline stabilization functional values. Sensitive areas provide important enough habitat for the Bone Lake ecosystem that conservation easements, deed restrictions, or zoning should be used to protect them. Management guidelines for aquatic plant sensitive areas are (unless otherwise specifically stated):

1. Limit aquatic vegetation removal to navigational channels no greater than 25 feet wide where necessary, the narrower the better. These channels should be kept as short in length as possible and it is recommended that people do not completely eliminate aquatic vegetation within the navigation channel; but instead only remove what is necessary to prevent fouling of

propellers to provide access to open water areas. Chemical treatments should be discouraged and if a navigational channel must be cleared, pulling by hand is preferable over mechanical harvesters where practical.

2. Prohibit littoral zone alterations covered by Wisconsin Statutes Chapter 30, unless there is clear evidence that such alterations would benefit the lake's ecosystem. Rock riprap permits should not be approved for areas that already have a healthy native plant community stabilizing the shoreline and property owners should not view riprap as an acceptable alternative in these situations.
3. Leave large woody debris, logs, trees, and stumps, in the littoral zone to provide habitat for fish, wildlife, and other aquatic organisms.
4. Leave an adequate shoreline buffer of un-mowed natural vegetative cover and keep access corridors as narrow as possible (preferable less than 30 feet or 30% of any developed lot which ever is less).
5. Prevent erosion, especially at construction sites. Support the development of effective county erosion control ordinances. The proper use of Best Management Practices (BMP's) will greatly reduce the potential of foreign materials entering the waterway (i.e. silt, nutrients).
6. Strictly enforce zoning ordinances and support development of new zoning regulations where needed.
7. Eliminate nutrient inputs to the lake caused by lawn fertilizers, failing septic systems, and other sources.
8. Control exotic species such as purple loosestrife.

Resource Value of Site A

Sensitive area A is located on the eastern shore at the northern end of Bone Lake. The area includes approximately 1,000 feet of shoreline and extends up to 150 feet from the shore.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant

upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The emergent and submergent plant community structure of Sensitive area A includes: **Emergent**; arrowhead (Sagittaria sp.). **Submergents;** muskgrass (Chara sp.), wild celery (*Vallisneria americana*), coontail (Ceratophyllum demersum), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water nymph (Najas flexis), clasping leaf pondweed (Potamogeton perfoliatus), flat stem pondweed (P. zosteriformis), large leaf pondweed (P. amplifolius), curly leaf pondweed (P. crispus) and white stem pondweed (P. praelongus).

Chemical treatments and mechanical harvesting should not be allowed in this area. Hand-pulling should be limited to dock areas.

Resource Value of Site B

Sensitive area B is located on the eastern shore at the northern half of Bone Lake, along the shore owned by E-Z Living Campgrounds. The area includes approximately 1,000 feet of shoreline and extends up to 150 feet from the shore.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The emergent, floating and submergent plant community structure of Sensitive area B includes: **Emergent**; arrowhead (Sagittaria sp.), spikerush (Eleocharis sp.) and bulrush (Scirpus sp.). **Floating**; white water lily (Nymphaea odorata). **Submergents;** muskgrass (Chara sp.), wild celery (*Vallisneria americana*), coontail (Ceratophyllum demersum), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water nymph (Najas flexis), clasping leaf pondweed (Potamogeton perfoliatus), flat stem pondweed (P. zosteriformis) and large leaf pondweed (P. amplifolius).

Chemical treatments and mechanical harvesting should not be allowed in this area. Hand-pulling should be limited to dock areas.

Resource Value of Site C

Sensitive area C is located at the midpoint of Bone Lake along the eastern shore. The area includes approximately 600 feet of shoreline.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The emergent, floating and submergent plant community structure of Sensitive area C includes: **Emergents**; cattails (Typha sp.), bur-reed (Sparganium sp.), bulrush (Scirpus sp.) and arrowhead (Sagittaria sp.). **Floating leafed**; yellow pond lily (*Nuphar advena*) and white water lily (*Nymphaea odorata*). **Submergents;** coontail (Ceratophyllum demersum), mud plantain (Heteranthera sp.), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water nymph (Najas flexis), clasping leaf pondweed (Potamogeton perfoliatus), flat stem pondweed (P. zosteriformis), large leaf pondweed (P. amplifolius) and curly leaf pondweed (P. crispus).

Chemical treatments should only be allowed for floating vegetation for navigational purposes. Mechanical harvesting should be limited to a 25' navigation channel at developed shorelines.

Resource Value of Site D

Sensitive area D is located along the small of two islands at the midpoint of Bone Lake. The specified area is a small bay at the northeast corner of the State owned island. The site is approximately 400 feet of shoreline and extends outward 100 feet.

This area provides important habitat for centrarchid (bass and panfish) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The floating and submergent plant community structure of Sensitive area D includes: **Floating leafed**; white water lily (*Nymphaea odorata*). **Submergents;** coontail (Ceratophyllum demersum), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water nymph (Najas flexis), saga pondweed (Potamogeton pectinatus), flat stem pondweed (P. zosteriformis) and large leaf pondweed (P. amplifolius).

Chemical treatments and mechanical harvesting should not be allowed.

Resource Value of Site E

Sensitive area E consists of a small bay located along the north shore of the larger of the two islands at the midpoint of Bone Lake. This island is privately owned. This area consists of approximately 650 feet of shoreline and extends 200 feet from the shore.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The submergent plant community structure of Sensitive area E includes: **Submergents;** musk grass (Chara sp.), wild celery (Vallisneria americana), bushy pondweed/slender water nymph (Najas flexilis), flat stem pondweed (Potamogeton zosteriformis), white stem pondweed (P. praelongus), curly leaf pondweed (P. crispus), large leaf pondweed (P. amplifolius), clasping leaf pondweed (P. richardsonii) and variable pondweed (P. diversifolius).

Chemical treatments and mechanical harvesting should not be allowed.

Resource Value of Site F

Sensitive area F is located in a large shallow bay along the eastern shore at the midpoint of Bone Lake. The area includes approximately 1100 feet of shoreline and extends up to 100 feet from the shore. The entire shoreline is developed with manicured lawns extending to the water's edge.

This area provides important habitat for centrarchid (bass and panfish) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Waterfowl, songbirds, turtles, and amphibians benefit from this valuable habitat.

The emergent, floating and submergent plant community structure of Sensitive area F includes: **Emergents;** spikerush (Eleocharis sp.), arrowhead (Sagittaria sp.), bulrush (Scirpus sp.) and cattails (Typha sp.). **Floating leafed**; yellow pond lily (*Nuphar advena*) and white water lily (*Nymphaea odorata*). **Submergents;** bushy pondweed/slender water nymph (Najas flexis), clasping leaf pondweed (Potamogeton perfoliatus) and white water buttercup (Ranunculus longirostris).

Chemical treatment and mechanical harvesting should not be allowed. Minimal hand-pulling can be allowed near docks.

Resource Value of Site G

Sensitive area G is located at the southeast corner of Bone Lake. Fox Creek flows out of Bone Lake in this area. The area includes approximately 2,000 feet of shoreline and extends up to 150 feet from the shore. The northern portion of this site has been developed with manicured lawns extending to the water's edge.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. Heavy use by muskellunge has been observed during spawning seasons in this area.

This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The emergent and submergent plant community structure of Sensitive area G includes: **Emergents;** bulrush (Scirpus sp.). **Submergents;** muskgrass (Chara sp.), wild celery (Vallisneria americana), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water nymph (Najas flexis), white water buttercup (Ranunculus longirostris), clasping leaf pondweed (Potamogeton perfoliatus), sago pondweed (P. pectinatus), white stem pondweed (P. praelongus), flat stem pondweed (P. zosteriformis), large leaf pondweed (P. amplifolius)

Chemical treatments and mechanical harvesting should not be allowed in this area.

Resource Value of Site H

Sensitive area H is located along the southwestern shoreline of Bone Lake. The area includes approximately 2,500 feet of shoreline and extends up to 200 feet from the shore. Portion of this shoreline have been developed with buffers less than 35' in width.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The emergent, floating and submergent plant community structure of Sensitive area H includes: **Emergents;** bulrush (Scirpus sp.), bur-reed (Sparganium sp.), arrowhead (Sagittaria sp.), spike rush (Eleocharis sp.), pickerelweed (Pontederia cordata) and cattails (Typha sp.). **Floating**; white water lily (Nymphaea odorata) and yellow pond lily (Nuphar advena). **Submergents;** muskgrass (Chara sp.), wild celery (Vallisneria americana), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water

nymph (Najas flexis), white water buttercup (Ranunculus longirostris), coontail (Ceratophyllum demersum), clasping leaf pondweed (Potamogeton perfoliatus), white stem pondweed (P. praelongus), flat stem pondweed (P. zosteriformis), large leaf pondweed (P. amplifolius).

Chemical treatment shall be limited to navigation channels, excluding spike rush and bulrush stands. Mechanical harvesting shall be limited to navigation channels, also excluding spike rush and bulrush stands.

Resource Value of Site I

Sensitive area I is located midway along the western shoreline of Bone Lake. The area includes approximately 5,200 feet of shoreline and extends up to 150 feet from the shore.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The emergent and submergent plant community structure of Sensitive area I includes: **Emergents;** bulrush (Scirpus sp.), bur-reed (Sparganium sp.), and spike rush (Eleocharis sp.). **Submergents;** muskgrass (Chara sp.), wild celery (Vallisneria americana), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water nymph (Najas flexis), white water buttercup (Ranunculus longirostris), coontail (Ceratophyllum demersum), clasping leaf pondweed (Potamogeton perfoliatus), white stem pondweed (P. praelongus), flat stem pondweed (P. zosteriformis), large leaf pondweed (P. amplifolius).

Chemical treatment should be limited to submergent vegetation only. Emergent aquatics shall not be treated. Mechanical harvesting is allowed.

Resource Value of Site J

Sensitive area J consists of a small 150 x 150 foot bulrush island located near the north end and approximately 1000 feet from the western shore.

This area provides important habitat for centrarchid (bass) and esocid (muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Great Blue Herons use this site for feeding

The emergent plant community structure of Sensitive area J includes: **Emergents;** bulrush (Scirpus sp.).

Chemical treatment and mechanical harvesting should not be allowed in this area.

Resource Value of Site K

Sensitive area K is located at the northern end of Bone Lake. The area includes approximately 3000 feet of shoreline and extends out to the 5 foot depth. This area receives drainage from a large farm land.

This area provides important habitat for centrarchid (bass and panfish) and esocid (northern pike and muskellunge) spawning and nursery areas. This area also provides important habitat for forage species. Wildlife also are reliant upon this area for habitat. Eagles, loons, herons, waterfowl, songbirds, furbearers, turtles, and amphibians benefit from this valuable habitat.

The emergent, floating and submergent plant community structure of Sensitive area K includes: **Emergents;** bulrush (Scirpus sp.), cattails, (Typha sp.), pickerel weed (Pontederia cordata), arrowhead (Sagittaria sp.), wild rice (Zizania sp.) and spike rush (Eleocharis sp.). **Floating**; white water lily (Nymphaea odorata) and yellow pond lily (Nuphar advena). **Submergents;** muskgrass (Chara sp.), wild celery (Vallisneria americana), northern milfoil (Myriophyllum sibiricum), bushy pondweed/slender water nymph (Najas flexis), white water buttercup (Ranunculus longirostris), coontail

(Ceratophyllum demersum), clasping leaf pondweed (Potamogeton perfoliatus), white stem pondweed (P. praelongus), flat stem pondweed (P. zosteriformis), large leaf pondweed (P. amplifolius).

Chemical treatment of submergent vegetation shall be limited to navigation channels only. Chemical treatment of emergent shall not be allowed. Mechanical harvesting shall be limited to navigation channels only.