

## LAKE MANAGEMENT PLAN - Bay Lake

**Various Surveys:** Test nettings were done in 1948, 1971, 1982, 1987, 1992, 1997, 2002 and 2008. The lake map was done in 1957. A water quality evaluation was done by a private firm in 1973. A five-year aquatic vegetation management plan was done in 2005.

**Past management:** In the 1950's and 1960's, management consisted primarily of the removal of panfish, perch, bullheads and dogfish by DJ crews. Northern pike were stocked in the 1960's and 1970's. Walleye fingerling stocking was done in the 1980's and 1990's. A water quality study was done in 1973. A great deal of effort has been expended to try to control Eurasian water milfoil since its discovery in 1992. Hybrid water lilies are also present in the lake, presumably from water gardens and intentional plantings by local riparian owners. Efforts to eradicate them by the DNR Exotic Species Specialist have taken place in recent years.

**Social considerations:** There is a great deal of interest on the part of riparian landowners and sportsmans club members in walleye management. Bay Lake is the destination of a huge transient human population from metropolitan locations and, as a result, there is an enormous pressure on the lake's resources. Additionally, many of the seasonal homes are being upgraded to year-round residency, with huge homes replacing cottages. The tax driven system has obviously encouraged riparian owners to subdivide further and develop second and third tiers around the lake. There is also a great deal of interest by riparian owners to improve lake water quality and conditions in the watershed. The lake association should be encouraged to take advantage of the Clean Water Legacy Grant Program for funding for water quality improvement initiatives. The lake association has also applied a great deal of pressure on the Area Fisheries Office to stock walleye fingerlings, maintain a fishable walleye fishery, and reduce the number of northern pike in the lake.

**Present limiting factors:** Extremely high populations of northern pike and largemouth bass have severely depressed the abundance of yellow perch, an important forage source for walleyes. The demand for aquatic plant control permits is high, and near-shore plant communities have been negatively impacted. The presence of Eurasian water milfoil and its attempted control could well become another negative impact on native plant communities in the future.

**Survey needs:** Test netting should be done on a six-year rotation and should include spring electrofishing to monitor the largemouth bass population. Full surveys should be done every other netting. The next netting should be a full survey in 2014, followed by an assessment netting in 2020.

**Land acquisition:** Acquisition of an AMA by fee title or conservation easement should be pursued as opportunities arise.

**Habitat development and protection:** Habitat protection should be done by use of aquatic plant management, DOW and WCA programs. Riparian habitat restoration projects and use of BMPs by riparian landowners should be encouraged.

**Commercial fishery:** No appreciable commercial fishery exists at the present time. In addition, the lake is classified as infested by the exotic Eurasian water milfoil, thus complicating commercial fishing in the lake.

**Stocking plans:** Fry stocking was discontinued after 2003. The lake was declared a core lake for walleye fingerling stocking in 2005 and will be stocked with the equivalent of one pound of fingerlings per year. The lake will be stocked in even numbered years with two pounds of fingerlings per littoral acre (2,010 lbs.) Stocking under this program began in fall of 2006. The current stocking program should be evaluated following the 2014 netting. If walleye numbers have not increased to at least 5/GN, walleye stocking should be discontinued.

**Other management tools:** Consider establishing experimental regulations for northern pike as an attempt to control their abundance if requested by local anglers. The process of implementing a 24"-36" protected slot length limit with 1 over 36" for northern pike will be initiated during the winter of 2010.

**Evaluation plans:** Walleye stocking success will be monitored by periodic test nettings. Spring electrofishing will be used to monitor largemouth bass abundance. The northern pike population can be monitored using ice-out netting when time and manpower constraints allow.

Bay Lake (18-34) netting summary			Lake Class 22							
Species	Gear	Q1-Q3	1948	1971	1982	1987	1992	1997	2002	2008
northern pike	G	3.00-7.89	1.82	6.07	15.00	15.00	8.25	15.58	16.60	17.40
walleye	G	4.01-9.63		0.53	1.13	2.13	3.67	2.83	2.07	1.87
yellow perch	G	7.06-33.87	1.45	0.80	0.25	0	0.67	0	0.20	0.07
tullibee	G	0.50-5.20	10.55	1.40	12.88	7.00	0.25	0.33	0.13	0.07
largemouth bass	T	0.37-1.38		5.15	1.60	0.40	1.17	1.08	0.80	1.40
largemouth bass	E	none							90.67	
black crappie	G	0.22-1.14	3.91	0.87	1.00	1.00	1.83	0.17	1.67	1.33
black crappie	T	0.25-1.74		1.38	2.10	1.50	0.50	3.58	1.27	1.67
bluegill	T	3.73-42.85		157.0	118.90	40.80	43.92	38.17	50.73	39.27
				7						

STATE  
AVERAGE  
3.0-7.9  
4.0-9.6

G=gill net=fish/net

T=trap net=fish/net

E= electrofishing=fish/hour

## LAKE MANAGEMENT PLAN

Region	Area F212	D.O.W Number	County	D.O.W. Lake Name	Acreage
2	Brainerd	18-34	Crow Wing	Bay	2,392

**Long Range Goal:** Increase the walleye abundance to 5.0/gill net. Maintain a largemouth bass electrofishing catch rate of 50 fish/hour with a PSD value of 50.

**Operational Plan:**

1. Stock walleye fingerlings averaging roughly 20/pound in even numbered years at a rate of two pounds per littoral acre (2,010 lbs.). If this stocking regime is not successful in attaining the long range goal of 5.0/gill net by the time 3 nettings have sampled 3 vulnerable year classes, walleye stocking will be discontinued. (5.0/gill net) → *currently 17.9*
2. Test net on a six year rotation, with every second netting being a full survey. The next netting should be a full survey in 2014, followed by an assessment netting in 2020.
3. Conduct spring electrofishing in netting years to assess the largemouth bass population and maintain a database of sampling results.
4. Encourage the lake association to embrace riparian habitat restoration and aquatic best management practices and to help educate their membership to the benefits it can provide.
5. Acquire Aquatic management areas by fee title or easement, as opportunities arise.
6. Implement a toolbox special regulation, preferably 24"-36" protected slot length limit with 1 over 36" on northern pike, beginning the process during the winter of 2010. *22*
7. Continue to monitor and maintain the Bay Lake Island AMA Conservation Easement. *(Church Island)*

**Midrange Objective:**

Determine the success of enhanced walleye fingerling stocking. Determine the success of maintenance of the AMA Conservation Easement.

**Potential Plan:**

Creel survey	25,000.
Aquatic management area	500,000.
Consider Bay Lake for Muskellunge Management	2,000.
<b>TOTAL \$ 527,000.</b>	

**NARRATIVE:** (Historical perspectives - various surveys; past management; social considerations; present limiting factors; survey needs; land acquisition; habitat development and protection; commercial fishery; stocking plans; other management tools; and evaluation plans)

*-STOP Fingerling → FRY Every other year*

Check the appropriate boxes below:

- BWCAW
- Superior National Forest
- Chippewa National Forest
- Leech Lake Indian Reservation
- 1854 Ceded Territory
- 1837 Ceded Territory
- Fond du Lac Indian Reservation
- Voyageurs National Park

<b>Primary Species Management:</b> Walleye, Largemouth bass	<b>Secondary Species Management:</b> Northern pike	
<b>Area Supervisor Signature:</b>	<b>Date:</b>	<b>Date sent from DNR Area Fisheries to USFS District Ranger:</b>
<b>Regional Manager Signature:</b>	<b>Date:</b>	<b>Date sent from DNR Regional Fisheries to USFS Forest Supervisor:</b>

*L.T. Acre 4/15<sup>th</sup> Deep*

*1,000,000 FRY*

*1005 LIT Acre = 2010 Fingerling, Every other year PAT 10-15 per lb.*