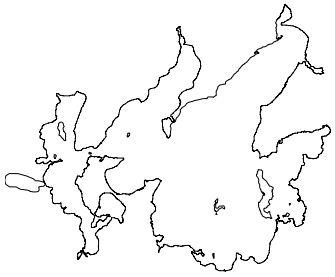
Minnesota
DEPARTMENT OF NATURAL RESOURCES

Leech Lake Update 8/31/2007

Walker Area Fisheries Office
07316 State Hwy. 371 NW
Walker, MN 56484
218-547-1683



Greetings!
This update is part of a series of reports the Minnesota Department of Natural Resources (DNR) is sending to Leech Lake area resorts, businesses and others interested in DNR activities on Leech Lake. The goal of these messages is to keep you up to date with our findings and current activities on the lake. All updates are available by visiting http://www.dnr.state.mn.us/areas/fisheries/walker/index.html. Feel free to contact our office if you have any questions or comments, or if you would like to be added to the mailing list.

Large Lake Survey

- The annual Leech Lake fisheries survey began in July and will extend until early October.
- Survey work uses the following gears during the listed approximate timeframes. All gears serve a unique purpose in that they are all most effective for sampling different sizes and species of fish. Regardless of which method is used, catch rates reflect changes in relative abundance and are therefore not intended to directly determine the population size.

1. Shoreline seining (July) – used to collect early information on young walleye growth and condition, relative abundance and sizes of forage species (yellow perch, shiners, etc.), and collection and examination of young-of-year (YOY) walleye otoliths for biochemical marks used during stocking evaluations.
2. Trawling (August) –the most effective gear for sampling age-0 walleyes and young perch in Leech Lake. A sub-sample of all fishes is measured and weighed from each haul and otoliths from age-0 walleyes are collected and examined for marks. Catch rates also provide an early estimate of walleye year class strength based on a 16-year relationship using the long-term sampling stations.
3. Experimental gillnets (September) – most effective gear for assessing adult yellow perch and walleye populations. However, valuable information on other species, such as northern pike, ciscoes, and lake whitefish, is also collected.
4. Fall electrofishing (October) – used to collect additional information on age-0 walleye before the first winter as well as abundance, sizes, and growth of other species, such as bass and panfish. Sampling using this gear is highly dependent on water temperature, water clarity, and weather.

Early Results

- We recently completed the summer portion of the Leech Lake survey (seining and trawling).
- The long-term trawling stations (Fivemile, Goose, and Whipholt) were trawled for a total effort of 100 minutes this year instead of the previous 60 minutes to improve sampling precision.
- Mean catch rate of young-of-year walleyes in bottom trawl hauls was below average at 32.1 fish/hour (Figure 1). We generally do not see large year classes establish during successive years on our large lakes, and high recruitment during three consecutive years is rare, due primarily to competition and predation among age classes.
- Mean length of age-0 walleyes captured in trawl hauls was almost 6 inches, which bodes well for winter survival and recruitment of these fish. Similarly, fish in the 2006 year class are also growing fast (some are already approaching 12 inches!) and should continue to provide great angling opportunities in the coming years.
- Catch rates of age-0 yellow perch (15,051 fish/hour) were well above the average of 9,505 fish/hour (Figure 1), and suggest a suitable forage base is available for walleyes this fall and winter.

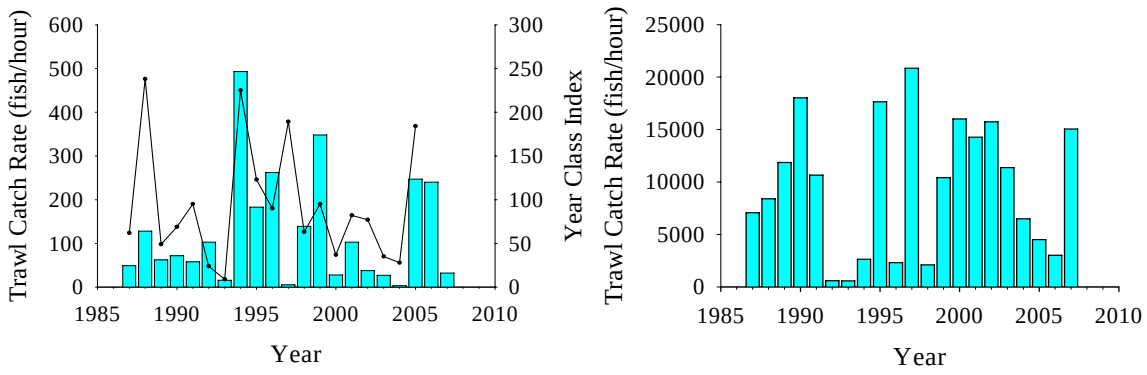


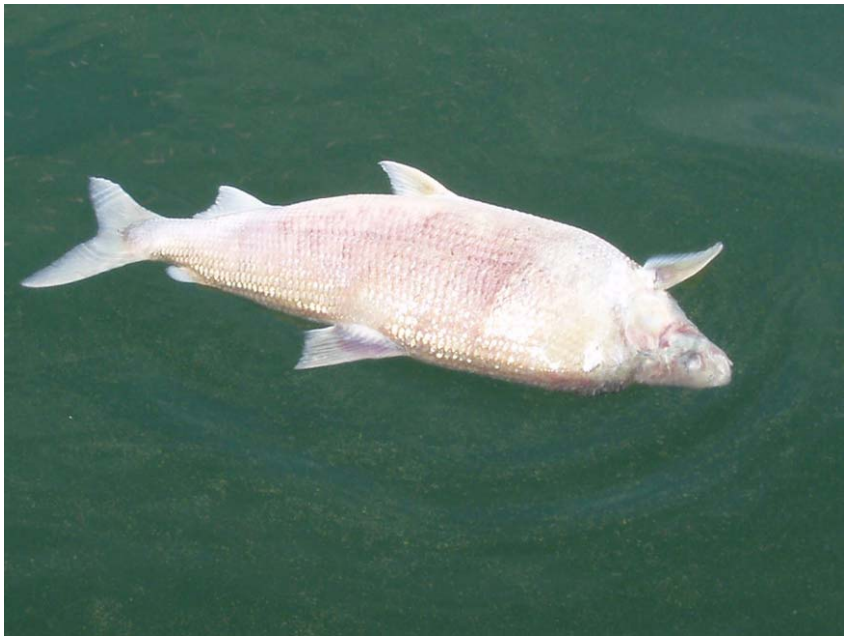
Figure 1. Mean annual catch rates of age-0 walleyes (top panel) and yellow perch (bottom panel) in bottom trawls at long term stations (bars) and indices of walleye year class strength (top panel; line) in Leech Lake, Minnesota from 1987-2007. Average catch rates during this period are 125 walleyes/hour and 9,505 yellow perch/hour; average walleye year class index is 100.

Review of the Young-of-Year Assessment Program

- Completed this summer was a review of the young-of-year walleye assessment program on Leech Lake.
- This review provided a statistical analysis of the sampling protocol used on Leech Lake from 1990-2006, assessed whether increased sampling effort could improve early estimates of walleye year class strength using bottom trawls, and evaluated the utility of other year class abundance metrics, such as catch-at-age in gillnets.
- Seining is not a reliable indicator of potential walleye year class strength on Leech Lake.
- Statistical analysis of historic data verified that appropriate decisions were made when the long-term trawling sites (Fivemile, Goose, and Whipholt) were selected. These sites consistently reflected age-0 walleye abundance with the least amount of annual variability. The addition of new or discontinued sites would change the current relationship between trawl catch rates and year class index and could compromise future walleye management actions.
- Total trawling effort was increased from 60 minutes to 100 minutes to reduce the confidence interval widths on trawl catch rates.
- Incorporation of catch-at-age in experimental gill nets can improve predictions of walleye year class strength, and should be included as collected when basing management decisions on recruitment indices.
- Year class strength is determined more by mortality processes, such as growth rates, food availability and competition, predation, and winter survival, than it is by abundance. As a result, what appears at first to be a “poor hatch” can result in a large year class if survival is high. Conversely, an initially large year class can quickly be reduced by high mortality.
- Fall electrofishing for age-0 walleyes has proven a useful tool on several other large lakes within the state. Use of this method began on Leech Lake in 2005. Its use will be continued and its utility as a complement to bottom trawling will be evaluated after several years of data have been collected. A total of 12 20-minute stations will be equally distributed among the following areas: Fivemile Point, south Bear Island and Brevik, Stoney Point, and Walker Bay. Fall weather will play a big factor in successfully completing all stations in a year.

Fish Kill in Walker Bay

- A whitefish kill occurred in Walker Bay during August 9-11.
- Lake whitefish (*Coregonus clupeaformis*) are found in many of the deep, cool-water lakes east of the prairie in the northern portions of the state, including Lake Superior. Whitefish require cool, well-oxygenated water in the summertime.
- Because of this requirement, whitefish spend most of their summers feeding on invertebrates and other small fish near the thermocline.
- The thermocline is a "barrier" dividing the epilimnion (less dense, warmer, well-oxygenated water) and the hypolimnion (more dense, colder water with low oxygen concentrations). The hypolimnion is low in oxygen because the thermocline is the extent of sunlight penetration into the water. Without sunlight, photosynthesis by aquatic plants and algae does not occur.
- Summer kills of whitefish (below) and ciscoes happen when fish become "pinched" between excessively warm temperatures in the epilimnion and low oxygen below the thermocline. In most cases the largest individuals are the most susceptible to this type of mortality.

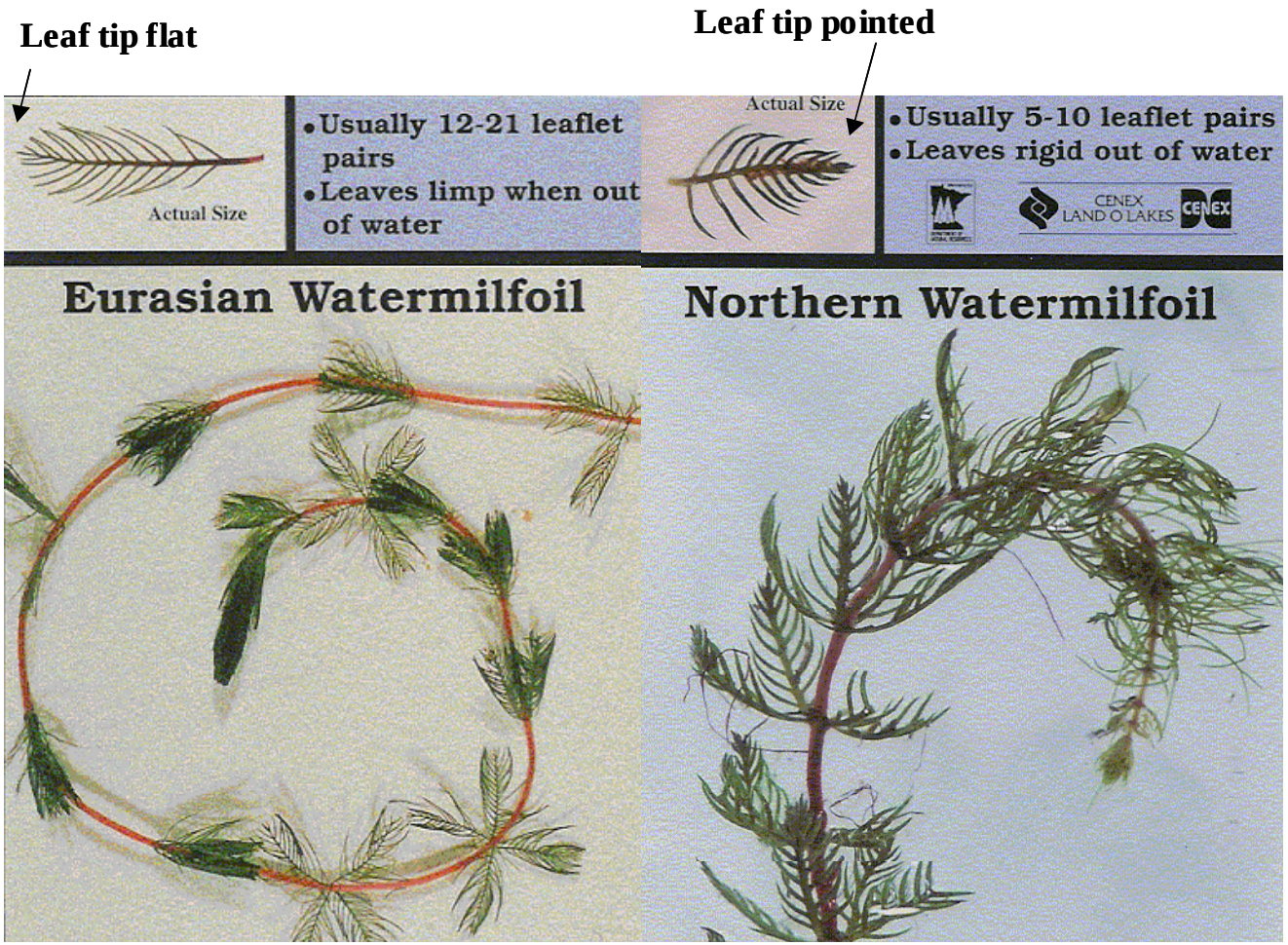


- Whitefish serve as an excellent forage species for walleyes, northern pike, and muskellunge, and also as table fare for human consumption.
- The presence of lake whitefish is an indication of excellent water quality.
- The current state record of 12 lbs. 4.5 oz. was caught in Leech Lake on March 21, 1999.
- For more information on lake whitefish and other Minnesota fishes, go to the Minnesota DNR website homepage (http://www.dnr.state.mn.us/index.html) and click on the "Fishing" icon.

Eurasian Watermilfoil Survey

- Earlier this summer Eurasian watermilfoil was found in two new locations on Leech Lake near Bear Island.
- With the assistance of Leech Lake Association, the DNR completed a survey of boat harbors in July to identify other infested areas in the lake. Only one was located at the north end of Sucker Bay. All infested areas were chemically treated.
- Please be sure to thank those individuals to assisted with the survey. Their efforts will go a long way towards maintaining the biological integrity and sustainability of the Leech Lake fishery.
- Remember that we are all stewards of our natural resources, not only for our present uses but also for those of future generations. With this in mind, please take an active role in stopping the spread of harmful exotic species across our state. Remove aquatic plants from your boat and trailer and drain all water from your livewell before leaving the boat ramp, and remind others to do the same. Together we can all make a difference!

Cut and keep this card on hand for quick identification of Eurasian watermilfoil in your lake.



If you have questions or comments, please contact:

Doug Schultz
(doug.schultz@dnr.state.mn.us)
or
Harlan Fierstine
(harlan.fierstine@dnr.state.mn.us)