

Hooked on Mille Lacs Lake



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Well camouflaged, this sculpin lies in wait for whatever crosses its path; most likely a scud or insect larva. Sometimes sculpin are mis-identified as round goby. While goby are an invasive species in the Great Lakes, sculpin are native creatures, common in areas with good water quality and are a favorite food for many species of fish.

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Fall Assessment

DNR fisheries staff recently completed the field work associated with the annual large lake survey of Mille Lacs Lake. This annual assessment entails conducting index netting using assessment gill nets, electrofishing, trawling, and fine-mesh vertical forage gill nets. While a considerable amount of analysis is yet to come, overall assessments went as expected.

Here is a by-species breakdown of what we observed:

Walleye

- Total catches were 7.1/net in inshore nets, and 13.6 in the offshore nets.
- Very good numbers of yearlings in all gear types.
- While lower than last year, young-of-the-year were again abundant in the electrofishing and forage gill net surveys. They were a bit smaller, so they were not caught in large numbers in the standard gill nets.
- In the inshore nets, adult walleye numbers were about the same as the last two years. In the offshore nets numbers were lower.
- Condition of large fish was considerably heavier than the last several years, with a fair amount of body fat. Smaller fish were closer to average weight for their length.



From Left, DNR Fisheries Specialists Greg Berg and Brian Beyerl retrieve an assessment gill net off the east side, as Large Lake Specialist Eric Jensen mans the helm.

Northern Pike

- Standard gill net catches were again very high at 2.7/net.
- No young-of-the-year pike were observed.
- Very abundant 2012 and 2013 year classes. About half of the catch was 23-28 inches long, with a good number of larger fish from 30-39.8 inches long.
- Pike gill net assessment numbers increased slightly from 8.1 to 9.6/net.

Yellow Perch

- Abundance was about the same as last year at 28/net.
- More smaller fish (6-7.9 inchers).
- Numbers of fish over 9 inches less than last year.
- Yearling numbers (about 4 inches) still looked pretty good in forage gill nets.
- Young-of-the-year were relatively low in abundance.

See **Fall Assessment**, page 2

Current Mille Lacs Fishing Regulations:

<http://www.mndnr.gov/fishing/millelacs.html>



Hennepin Island—Pic courtesy of USFWS

Population estimate update



A walleye tagged to estimate population size at Mille Lacs.

The DNR has invested a lot of effort into the tagging studies in the last two years. This information will be used to tune our models used to estimate annual abundance levels. The following are very preliminary estimates that will likely change somewhat based on continued analyses.

Northern pike: The estimate was slightly higher than last year at about 60,000 fish. There are still a lot of smaller fish that were not included in this estimate because they were too small to spawn or too small to be captured in the recap gill-netting.

Smallmouth Bass: Not enough fish were marked or

recaptured to provide a good estimate. This will likely be a separate future project down the line, rather than one coinciding with walleye and pike.

Muskie: Genetic analysis is not yet complete so a new estimate is still coming. We should have the information needed sometime this winter.

Walleye: Similar to northern pike, the smaller fish were not sampled well in either the marking or the recapture phases. Therefore, the population estimates were adjusted to just only include males over 17 inches, and females over 19 inches. With these adjustments, the estimate totaled about 200,000 walleye that were over those sizes. This is similar to what we observed in 2013, and about 1/2 the number of fish of those sizes in 2008. While it is relatively easy to make adjustments for the size of the fish, we are still working on issues relating to mixing of the stock throughout the lake. These preliminary estimates may change as data analyses are completed.



Fisheries Specialist Alisha Hallam works up a pike, while Assistant Area Supervisor Kevin Mott records data.

Field work in 2014

Just about everything is completed. Open-water creel survey ends October 31, and then the winter creel begins sometime in December, dependent upon ice conditions.

Right now staff are busy examining scales and otoliths, to estimate the ages of fish in our fall assessment.

Let's hope we get the cold weather *without* the snow to get those fish houses moving at a more normal pace this season.

Fall Assessment, continued Tullibee

- Numbers increased in inshore (7.8/net) and offshore gill nets (28.2/net).
- Much of the increase was due to high number of yearlings, which were mostly 6-8.5 inches long.
- These yearlings, as well as the young-of-the-year tullibee, were the highest we've observed in the forage gill nets.

Smallmouth Bass

- Gill net catches dropped to 0.8/net, which is still 5th highest in the 32-year record.
- Some young-of-the-year were still evident in the short run electrofishing survey.
- Numbers in offshore nets were higher than last year but still very low overall at 0.4/net.
- Numbers caught in pike nets was down from last year's high of 2.6/net to 1.1/net.

Other species:

Burbot—three burbot were sampled in the gill nets this year. These are the first in three years. A far cry from what it used to be, though.

Rock Bass—slightly less than last year at 0.75/net.

White sucker—very similar numbers to last year at 1.13/net.



Aitkin Area Fisheries staff sort through a forage gill net filled mostly with small tullibee. Forty-five of these small (12.5 ft long) fine mesh nets (1/4" thru 3/4" mesh) are fished throughout Mille Lacs during the first two weeks of September.

The Winter Bite



"Flaaaaagg!!!!" Few experiences are more exciting than chasing down a tripped tip-up in the early winter.

December 2014 marks the beginning of the new season at Mille Lacs. Generally speaking, the fall bite is a pretty good predictor of what to expect this coming ice season. So...how've your catches been? Given the relatively high numbers of yearling walleye (2013 year class), which are around 10 inches long now, I'd suggest there's going to be pretty fast action for these smaller fish, so bring plenty of bait!

Bigger fish might be a bit more challenging. They are in excellent condition and seem to have plenty to eat with abundant young-of-the-year (about 3 inches) and yearling tullibee (about 7 inches), plus reasonable numbers of age 1 and 2 perch available for them to snack on.

Pike action should also be pretty fast for those under 30 inch fish. Spearers will get their first crack at these fish since 1982. There are plenty of them to go

around so both spearers and anglers should both have a great season.

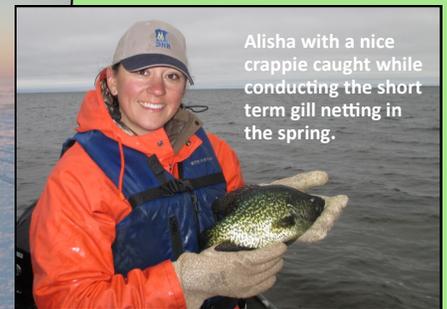
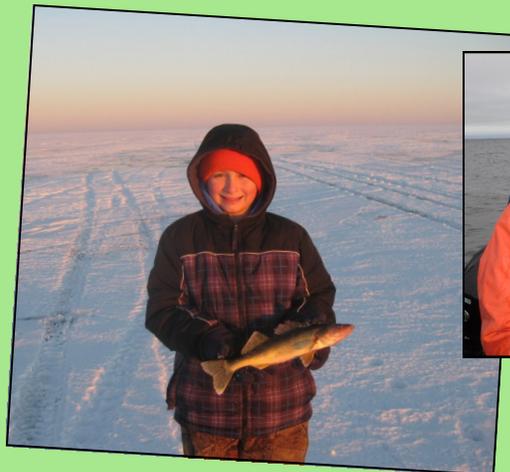
Keeper sized perch are still a little low in abundance, but I suspect there were be a few more 6-7 inch bait stealers than what we've seen in the past few years. Perch from 2012 (about 6 inches) and from 2013 (about 4 inches) are fairly abundant and likely will keep the rattle reels jingling.

Larger tullibee were still looking pretty good in the offshore nets so if they bite, it could get pretty exciting with good numbers of fish up to 17 inches. As mentioned above, there were tons of little ones too, but I suspect they won't yet be caught too well by angling.

Don't forget those other species. Crappie have become a pretty popular target in Isle over the last ten years or so. A few more bluegill have been taken in recent years, too.

Whatever you decide to chase this winter, just remember to be safe and be smart about the ice. It can be a lot of fun, but also turn treacherous in a heartbeat. Take care and have fun.

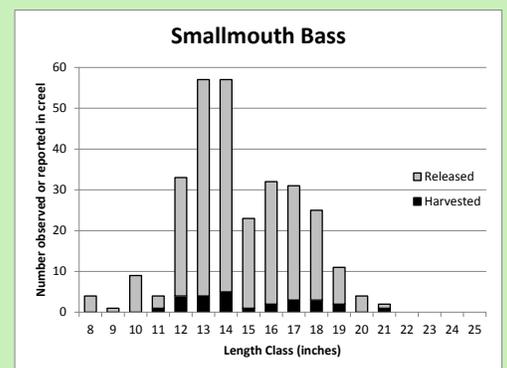
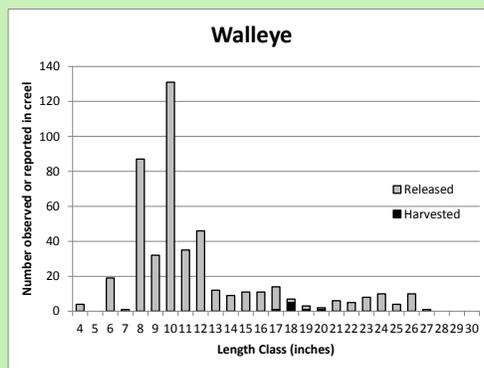
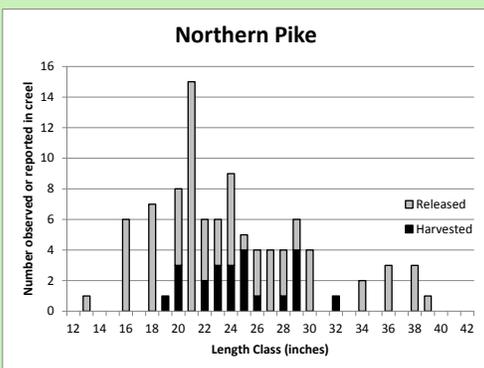
For more info on ice safety, click here:



Alisha with a nice crappie caught while conducting the short term gill netting in the spring.

Left: There's nothing like having a lot of space for fishing! This young angler holds a keeper from a few years ago in the middle of the "flats" area.

Length distribution charts of harvested and released walleye, smallmouth bass, and northern pike caught by anglers and observed by or reported to our creel clerks between August 16 and September 30.



Myths and Facts surrounding Mille Lacs

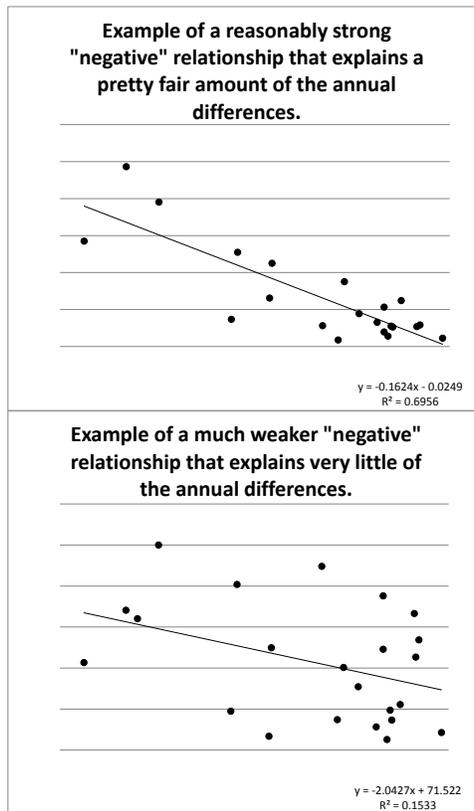
With the strong 2013 year class of walleye beginning to enter the fishery as 10-inchers, there has been a lot of speculation as to why the year class turned out so strong, and why many recent year classes failed.

Myth 4: One idea speculated by some anglers to be the reason for the stronger 2013 year class is that because there was little tribal netting on the spawning grounds the walleyes “could” get off a good year class. Then they conclude that it has been fishing during spawning that is the reason for the poor recruitment in recent years simply because “you can’t take spawners without affecting the spawn”. Meaning, of course, that reproduction would decrease with an increase in tribal fishing. The old research scientist in me (*Rick B*) believes this is a pretty reasonable hypotheses to test using the good old scientific method, and the data we have on hand.

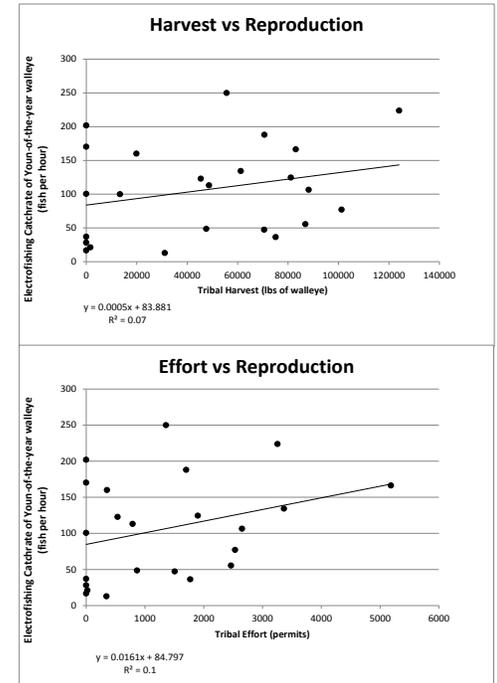
Fact 4: So how do we determine if this is true, or not? If it were true then we should see more young-of-the-year walleye in years with less tribal fishing harvest (if it is removal of spawners that affects the reproduction), or less tribal effort (if it is disturbance that is affecting reproduction).

To test this we can simply plot tribal harvest or effort versus our indices of reproduction (electrofishing

catch rates of young-of-the-year) in the same year as the tribal fishing. Since the hypothesis states that reproduction goes down when tribal effort or catch rate goes up, we would expect a negative slope (line goes from top left to bottom right) for a line fit to the data, and it would look something like one of the following example charts.



However, instead we get these.



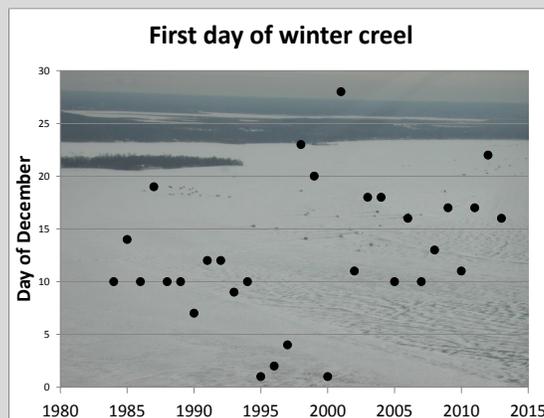
When I look at these charts, the first thing that pops out at me is that the fit line has a positive slope (bottom left to top right—opposite of what was expected). The second thing I see is that the fit of the lines is very poor—the little “R²” number in the equation at the bottom is very low—which means that even if there really was a *positive* relationship, it just can’t explain much of the year-to-year changes in reproduction. In whole, this suggests that the hypotheses that reproduction will decrease with an increase in tribal fishing should be rejected.

There is nothing in this data that suggests tribal fishing is affecting reproduction.

Ice On

While only recently have we begun keeping better tabs of ice-on at Mille Lacs, we can get a glimpse of things in the past just by looking at starting dates for our winter creel. It has certainly been later in recent years than in the 80s and 90s.

While this shows the starting dates, it doesn’t show ice conditions. Last year was certainly the worst that we’ve seen with bad slush and thin ice that extended well into January. Cold before snow, this year, please! Another tough one was 2002. It was the second of January before there were 300 houses on the lake!



Next issue (February):

- More Myths and Facts
- Early winter bite
- Bioenergetics
- Zebra mussels
- Modeling results

Please send your suggested topics for future issues to:
aitkin.fisheries@state.mn.us

Water Birds at Mille Lacs National Wildlife Refuge



Spirit Island

By Walt Ford, US Fish and Wildlife Service, Refuge Manager at Rice Lake & Mille Lacs National Wildlife Refuges.

For anyone that has spent much time fishing on the southern end of the lake, you probably have spied the ghostly “white ships” way off in the distance. They are in fact two very small islands that many colonial water birds call home. The eerie white color is of course caused by the bird droppings that cover all exposed surfaces.

Hennepin Island (pictured at the bottom of the front page) is located near the Cedar Creek Public Boat Access and Spirit Island is approximately six miles WSW from there. Both islands together make up the Mille Lacs National Wildlife Refuge (NWR), which at less than one acre in size is the smallest of the 560 refuges in the U.S. Fish and Wildlife Service’s National Wildlife Refuge System. While Spirit Island has been under federal protection since 1915, in 1920, Hennepin Island

was also given protection as a “preserve and breeding ground for native birds.” Staff from Rice Lake NWR, located five miles south of McGregor, is tasked with managing the islands for the benefit of native birds. Most of the effort is directed at activities to help the not-so-common common tern at Hennepin Island.



There are only five known colonies of common tern in the state with the colony at Hennepin Island generally having slightly more than 200 nesting pairs. In the early 1930’s there were an estimated 2,600 nesting pairs scattered through much of the state, but by 1988 the statewide number of breeding pairs had dropped to slightly more than 600. Now there are thought to be approximately 960 breeding pairs in the state thanks to efforts by tribal, state and federal partners.

The method of fishing for a common tern is to hover briefly before plunging head first into the lake and seizing a small fish with its pointy bill. They prefer to eat shiners, chubs or minnows, but will also eat an occasional insect or crayfish.

As common terns are ground nesting birds, the threats to their nests and young come in many forms, both from the air



and from the ground. As Hennepin Island lies nearly two miles west of shore it is too far for mammalian predators to swim. The primary predator on Hennepin Island is the ring-billed gull. Not only will the gulls eat newly hatched common tern chicks, they will force the adult terns to leave their nesting grounds simply due to the gull’s much larger size. We reduce that threat by constructing a string grid (see pic to left) over the southern half of the island, the tern’s preferred nesting area. The closeness of the strings deter most gulls from landing while still allowing the smaller terns to fly between the strings.

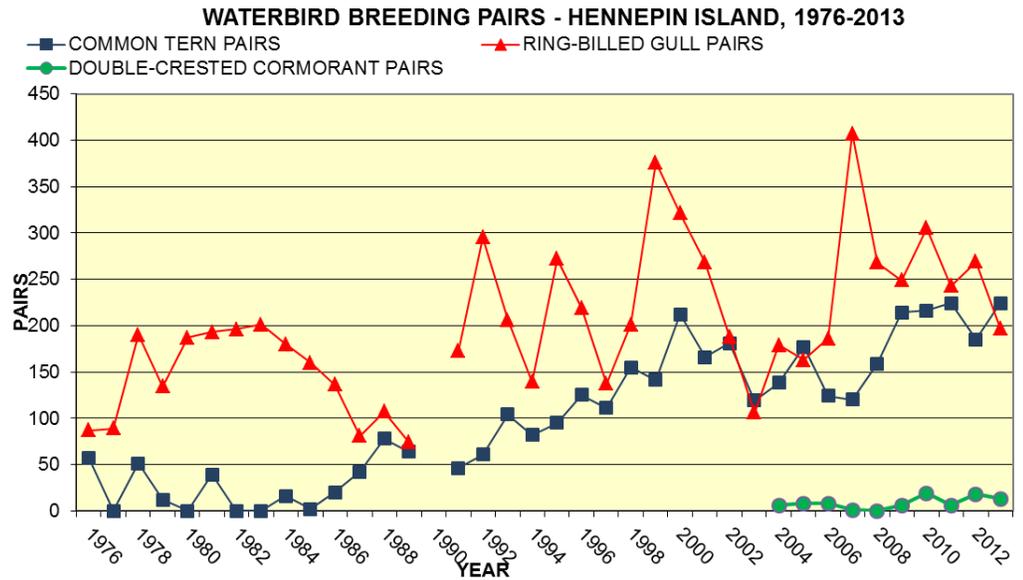
In spite of all our efforts to provide a safe sanctuary for the common tern, there is one destructive force that we have no control over, the weather. Strong winds cause waves to crash over much of the low lying island washing away eggs and drowning the young. After a severe storm, the string grid is often in shambles, as are the once neatly spaced nests, and the many eggs just randomly scattered about amongst the few nests still remaining intact. Like many birds, terns will usually re-nest if their eggs are destroyed, but are less likely to re-nest if their chicks are lost. It is not unusual to still find newly hatched chicks at the end of August. One has to wonder if these late hatching chicks will be ready to migrate when the weather turns cold. Common terns from Minnesota will spend the winter along the Atlantic coast, from South Carolina to as far south as Brazil.

Water Birds, continued

Other management actions taken on behalf of the common tern are aimed at reducing competition for nesting space from ring-billed gulls and double-crested cormorants. For ring-billed gulls we employ a method of forced birth control by rubbing vegetable oil on all their eggs that occupy nests on the north half of the island. The few gull nests we find inside the string grid (south half of island only) are destroyed as a way of encouraging them to re-nest on the north side of the island. The oil essentially smothers the egg and halts any further development of the embryo. The gulls will continue to sit on the nest as long as eggs remain. If we were to simply destroy all the gull nests on the island the gulls would likely re-nest in a less favorable location, especially less favorable from the lakeshore residents' points of view.

To control the population of double-crested cormorants at Hennepin Island we destroy the nest and thereby encourage them to return to Spirit Island. We can do this much easier than with gulls as the cormorant population is much smaller, only 25 cormorant nests on Hennepin Island compared to 317 ring-billed gull nests in 2013. Cormorants were first observed trying to nest on Hennepin Island in 2003 and we have consistently discouraged them from occupying Hennepin Island by way of nest destruction.

Rice Lake NWR staff, assisted by the Mille Lacs Band of Ojibwe, Department of Natural Resources, monitors the common tern colony on a weekly basis, usually from the last week of May through August of each year. Weekly visits are essential to maintaining the string grid and determining tern nesting success while reminding the gulls and cormorants



that they are not welcome.

Spirit Island is of course another story. At Spirit Island we have allowed the cormorant population to grow from two pair in 1998 to an estimated 500 pair in 2014. Due to the physical structure of the island, i.e., large jumbled boulders creating deep crevices and sheer rock face, we believe that Spirit Island has reached its carrying capacity, in other words, all suitable nesting space is being used. Annual surveys tend to support this theory as there were approximately 482 nesting pairs in 2011, roughly equal to the 2014 estimate.

In 1972, the population of cormorants reached an all-time low across this country, due to the devastating effects of DDT and indiscriminate shooting. However things took a positive turn that year, Congress banned the use of DDT and cormorants were finally given protection by way of a revision to the Migratory Bird Treaty Act, giving them federal protection. Cormorants remained mostly absent from the state until the mid-1990s.

Some people concerned with the walleye fishery at Lake Mille Lacs, looking for a simple and convenient answer as to why the walleye population has tumbled, have placed blame on the double-crested cormorant. Unfortunately for the cormorant, with a face only its mother could love, they make a convenient scapegoat for the walleye's decline. Yes they eat fish, including walleye, but they do not search out walleye exclusively. They are opportunistic feeders and will readily consume most any species of fish that is available, including black bullhead. They

feed mostly in shallow water where schools of small fish can be found, and are also known to occasionally eat frogs, crayfish and insects.

Dietary studies done of cormorants on Leech Lake from 2005 – 2007 have shown that for every one pound of walleye consumed by cormorants nearly twelve pounds of other fish species are also eaten. But that number is only a tiny fraction to the pounds of fish that are consumed by other fish.

Some folks have advocated for scaring away the cormorants so that common tern could also nest on Spirit Island. That is not considered an option. Prior to the cormorants arriving there in 1998 there were only three to four nesting tern pairs per year. The island structure with its large rocks is not suitable nesting habitat for the tern.

We will continue to look for management strategies that will allow all three bird species I've mentioned; common tern, double-crested cormorants and ring-billed gulls, to co-exist on Lake Mille Lacs. Wildlife management is a non-stop quest for an appropriate response for human caused problems, i.e., loss of habitat, habitat alteration, introduction of invasive species, or favoring one species over another. The best response is one that preserves our natural world and all its species while still allowing for human activity to continue. The trick is finding a workable solution in all the complexities of nature that doesn't upset the apple-cart...