The New Mille Lacs Plan:
A Closer Look

By Dick Sternberg on behalf of PERM

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Most Mille Lacs anglers and business interests view the new management plan as a step in the right direction. The new regulations will allow fishermen to keep a larger percentage of the walleyes they catch, thereby reducing the hooking mortality that upset so many anglers during the 2002 season. But even though the plan is certainly more angler-friendly, many are wondering if it will help correct the fish population imbalances that currently exist. This report will evaluate the plan s pros and cons.

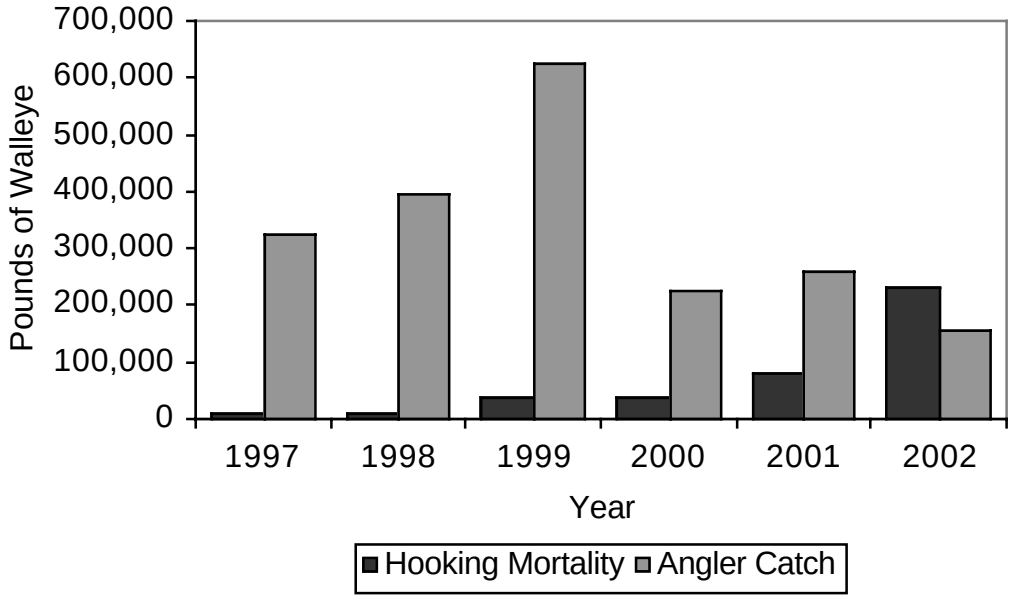
The Underlying Problem

During the 2002 fishing season, Mille Lacs anglers enjoyed the bite of a lifetime. With the lake s baitfish population at an all-time low, fishermen caught walleyes at ten times the normal rate, prompting the DNR to dub the phenomenon a 10X bite. But the lack of forage during the early part of the season left the walleyes in extremely poor condition. Most fish were 20 to 30 percent underweight and some of the larger fish were close to 50 percent underweight. Many of the 28-inch plus walleyes brought into fishing tournaments weighed 5 to 6 pounds and one 29-incher registered 4.73 pounds.

As the season progressed, it became apparent that there had been a good perch hatch, despite the scarcity of adult perch. The smaller walleyes soon regained much of the weight they had lost, but the larger ones showed little improvement. Evidently, the young perch were not enough to sustain the bigger walleyes and the larger perch and tullibees that they normally eat were in very short supply.

By late June, fishermen were reporting an alarming number of dead walleyes either floating or washed up on shore. Anglers using underwater cameras also saw large numbers of dead walleyes on the bottom. Because of the narrow slot and shortage of walleyes within that slot, anglers had to catch from 20 to 40 walleyes for every one they could keep. With the water warming and that many fish being released, hooking mortality was bound to be high. But with the fish being so hungry, they were taking the bait even deeper than normal, lowering the chances of a successful release. And the fact that many of the fish were in a weakened condition no doubt reduced the survival rate even more.

Figure 1 - Angler Catch (kept) vs. Hooking Loss



While there is no way to know what the true hooking loss was, the DNR estimated that anglers released 1.34 million walleyes weighing 3.81 million pounds, and 228,281 pounds of those fish were lost to hooking mortality (Figure 1). That compares with 153,779 pounds of walleye that anglers kept. The record hooking loss so angered fishermen and resorters that the DNR was forced to consider ways of converting floaters to fryers, thus the new management plan.

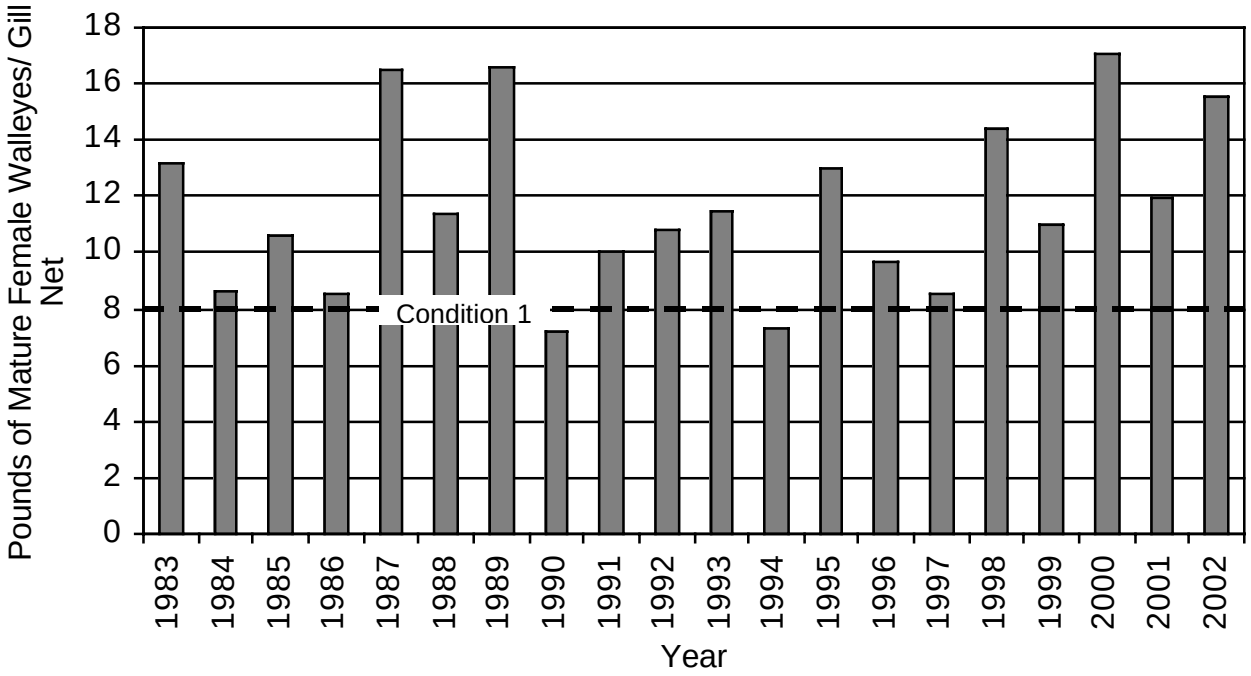
Components of the New Plan

Conditions. The new 5-year plan is conditional, meaning that the regulations will depend on the status of the walleye population the healthier the population, the more liberal the regulations. The population s health will be defined by the following criteria, as determined by the annual fall gill-net survey:

a) Spawning stock biomass (pounds of mature female walleye per gill net).
b) Number of mature female walleye year classes.
c) Pounds of walleye per gill net.

Based on these annual measurements, the overall health of the population will be rated as Condition 1 (all three criteria at 110% or more of historic lows), Condition 2 (any of the criteria are between 100 and 110% of historic lows) or Condition 3 (any of the criteria at historic lows). If history is any guide, it is likely that the population will be in Condition 1 most of the time.

Figure 2 - Spawning Stock Biomass

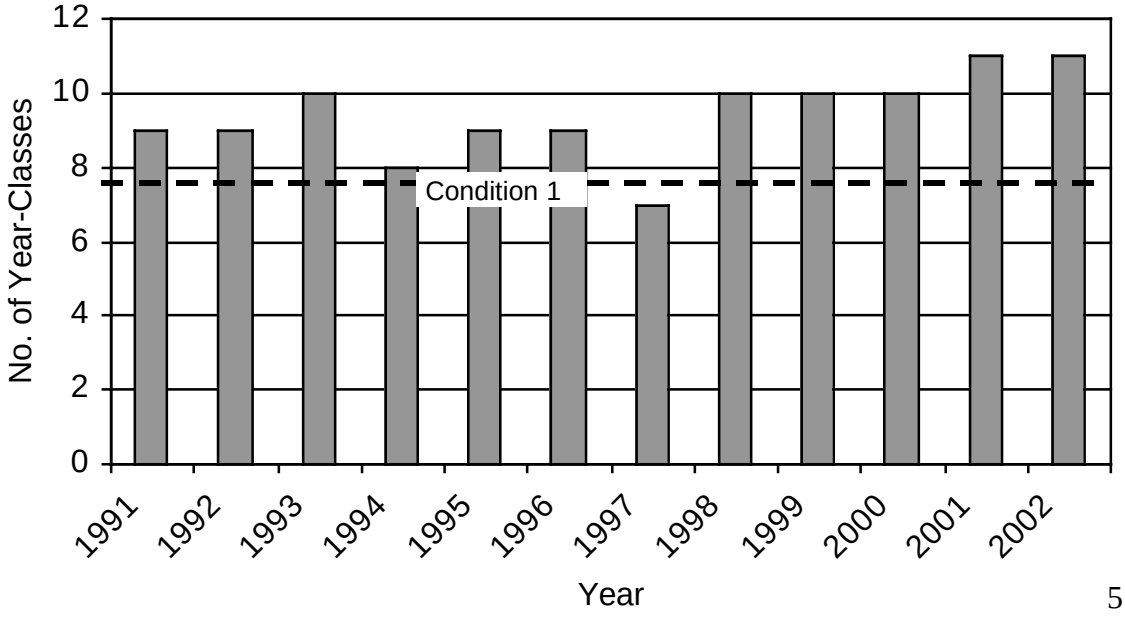


Condition 1; 7.9 lbs. or more; Condition 2: 7.2 to 7.9 lbs.; Condition 3: less than 7.2

Spawning stock biomass (Figure 2) has been in Condition 1 in all but 2 years out of the 20-year historic baseline period (1983-2002). The lowest biomass occurred in 1990, when there were only 7.2 pounds of mature females per gill net.

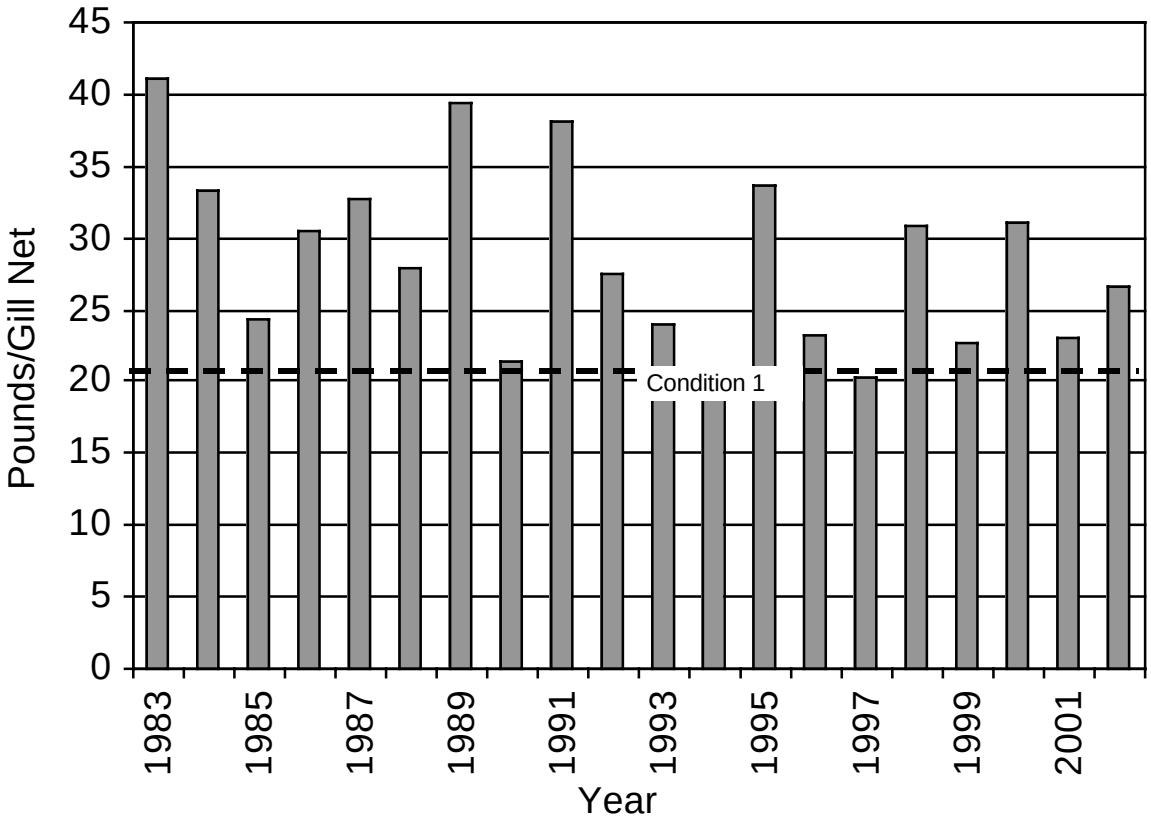
The number of mature female year classes (Figure 3) is now at 11, the highest on record and well above the Condition 1 level of 8. The Condition 2 level of 7 has been reached only once (1997). There is no reliable data on mature female year classes before 1991.

Figure 3 - Number of Mature Female Year-Classes



The poundage of walleye per gill net (Figure 4) is now at 26.5, well above the Condition 1 level of 20.8. Only twice in the 20-year historic base did the gill-net poundage drop below 20.8, with the lowest catch (18.9 pounds/net) in 1994.

Figure 4 - Gill Net Catch of Walleye



Condition 1: 20.8 lbs. or more; Condition 2: 18-9 to 20.8 lbs.; Condition 3: less than 18.9

Regulations. A 17- to 28-inch protected slot with one over 28 and a limit of four will go into effect on the 2003 opener (May 10) and will remain in effect through the 2007 season, assuming the walleye population remains in Condition 1 (Table 1). Should the walleye population slip into Condition 2 or 3, regulations will be adjusted accordingly as the table below explains.

Table 1 – Condition Levels vs. Regulations & Kill Limits

	Condition Level		
	Condition 1	**Condition 2**	**Condition 3**
Start of Season Regulations (Condition 3 regulations could be more severe if conditions persist for more than 1 year.)	17- to 28-inch protected slot, 1 over 28, limit 4	Same as Condition 1	14- to 16-inch harvest slot, 1 over 28, limit 2
Additional In-Season Regulations (Regulations shown are examples; other regulations that achieve the desired savings are possible.)	If end-of-May angling mortality exceeds 56% (52% in 2006-2007) of State quota, end-of-June mortality exceeds 93% (88% in 2006-2007) or mortality exceeds 108% (102% in 2006-2007) prior to August 15, more restrictive bag & size limits (e.g. 14- to 16-inch harvest slot, 1 over 28, limit 2) will be imposed.	If end-of-May angling mortality exceeds 47% of State quota, end-of-June mortality exceeds 79% or mortality exceeds 92% prior to August 15, more restrictive bag & size limits (e.g. 14- to 16-inch harvest slot, 1 over 28, limit 2) will be imposed.	If angling mortality is anticipated to exceed State quota, regulations will be imposed to prevent it.
Kill Limits	2003-2005: 130% of State quota 2006-2007: 122% of State's quota	2003-2007: 110% of State quota	2003-2007: Not to exceed State quota

Kill Limits. The new plan also has provisions (Table 1, bottom) for limiting annual fishing mortality or kill (angler harvest plus hooking loss). As in the past, the State s quota is 24 percent of the population of catchable-size walleyes minus the Band s declared harvest. For example, if the total harvestable surplus (safe harvest level) is 550,000 pounds and the Band s declared harvest is 100,000 pounds, the State s quota is 450,000 pounds.

Overage Plan. Although fishing mortality in a given year may exceed the quota, the total fishing mortality over the 5-year term of the plan may not exceed the State s total 5-year quota. There are three components to the overage plan:

1) The State s quota in each year from 2003 to 2007 shall be reduced by 20% of the difference between total mortalities in State and Band fisheries in 2002 and the total harvestable surplus for 2002. Here s how this provision would work:

   In 2002, the State exceeded its quota by about 82,000 pounds, but the Band underharvested by about 44,000 pounds. As a result, total mortalities were about 38,000 pounds over the total allowable harvest. This overage will be split among the five years of the plan (20% each year), meaning that the State s annual quota will be reduced by approximately 7,600 pounds.

2) If total mortalities in State and Band Fisheries in any year from 2003 to 2006 exceed the total harvestable surplus for that year (less any adjustments from item 1), the excess will be divided by the number of years remaining through 2007 and the State s quota in each remaining year will be reduced by that amount.

   For example, let s assume the total harvestable surplus for 2003 is 550,000 pounds with 100,000 going to the Band and 450,000 to the State. But State anglers kill 130% of their quota as allowed under Condition 1, which equates to 585,000 pounds, while Band members underharvest by 35,000. The 135,000-pound overage is partially offset by the 35,000-pound underage, leaving an overage of 100,000 pounds that must be eliminated over the next 4 years, so the State s quota in each year is reduced by 25,000 pounds. The State s quota will be further reduced by the 7,600 from the 2002 overage for a total reduction of 32,600 pounds for each of the years 2004 to 2007.

   If there is another overage in 2004, that overage will be prorated over the next 3 years (2005-2007) and added to the annual reduction that already exists.

3) If the total mortalities in State and Band Fisheries in any year from 2003 to 2006 are less than the total harvestable surplus for that year (less the adjustments described in items 1 and 2), the underage will be divided by the number of years remaining through 2007 and any reductions will be offset by that amount.

   For instance, assuming the State s quota in 2004 is 450,000 pounds but total fishing mortality is only 390,000 pounds, there is an underage of 60,000 pounds that would be split up over the next 3 years. The existing adjustment of 32,600 pounds would then be reduced by 20,000 pounds, leaving a reduction of 12,600 pounds for the years 2005 to 2007.

Positive Aspects of the New Plan

More Realistic Safe Harvest Level. The main conclusion of my 2002 report, The Mille Lacs Fish Management Plan: Threat to Minnesota s Premier Walleye Fishery, was that the DNR was keeping the safe harvest level (SHL) too low, thereby forcing regulations to be unnecessarily tight. I recommended a SHL in the range of 500,000 to 550,000 pounds, far above the 400,000-pound level of 2001 and 2002. This plan opens the door for new methods of assessing the walleye population and setting the SHL. The DNR recognized the fact that its existing computer model was consistently underestimating the walleye population and is now considering findings of its tagging study as well.

Although the tagging study is extremely complex and open to a variety of interpretations, it indicates that the present walleye population is at least 35 to 40 percent higher than the previous DNR estimate. At the January 2003 Technical Committee Meeting, the DNR proposed and successfully argued for a safe harvest level of 550,000 pounds for the 2003 season, an increase of 37.5 percent over the levels seen in 2001 and 2002.

The DNR has also agreed to investigate the issue of retrospective bias in the models utilized to evaluate the condition of the walleye population in Mille Lacs Lake, and to

adopt measures to minimize retrospective bias. The retro number, which is based on data gathered in subsequent years, has almost always been higher than their original number, but biologists were not sure why. Nevertheless, they continued to set the SHL based on the lower original number. If the SHL had been set according to retro numbers, anglers would have been able to harvest an average of 172,500 more pounds of walleye per year since treaty management began.

Reduced Hooking Mortality. The new 17- to 28-inch protected slot is a big improvement over the 14- to 16-inch harvest slot that resulted in hooking loss of more than 228,000 pounds in 2002. This was the first time that hooking loss exceeded the actual walleye harvest. Because anglers will now be able to keep a larger percentage of the walleyes they catch, hooking loss should be much lower.

Based on the present size distribution of Mille Lacs walleyes (as indicated by 2002 gill-netting results), the new regulations would allow anglers to keep about 1 out of every 4 catchable-size walleyes (12 +) they land, compared to 1 out of every 7 had the old regulations remained in effect. The actual proportion of keepers may be somewhat lower, however, because the gill nets underestimate the abundance of big walleyes.

In conjunction with the new plan, the DNR will conduct a hooking mortality study during the 2003 open-water season (from May to October). DNR personnel and volunteers will catch walleyes using standard Mille Lacs angling methods and handle them as they normally would. The fish will be placed in large water-filled coolers and then quickly picked up by DNR boats for transfer to nearby holding pens. Each fish will be tagged and data recorded on the specific conditions of the catch. The pen will be examined daily and any dead fish removed. After 5 days, the pen will be lifted and all dead fish recorded. Besides providing better information on hooking mortality in different seasons, the study will also evaluate mortality from different types of terminal tackle, including barbless and circle hooks, as well as different kinds of baits and lures.

In the past, the hooking mortality rate has been nothing more than a guesstimate, and the same mortality rate has been applied throughout the season, even though hooking loss is thought to be lower in cool water than in warm water. If the study bears this out, the DNR will be able to apply a lower hooking mortality rate to the early season catch, thereby reducing estimates of early season harvest that could trigger additional in-season restrictions, as they did during the 2001 season. Similarly, if the study shows that hooking loss is exceptionally high in July and August, there would be a good argument for reducing the size of the protected slot or eliminating it altogether during those months.

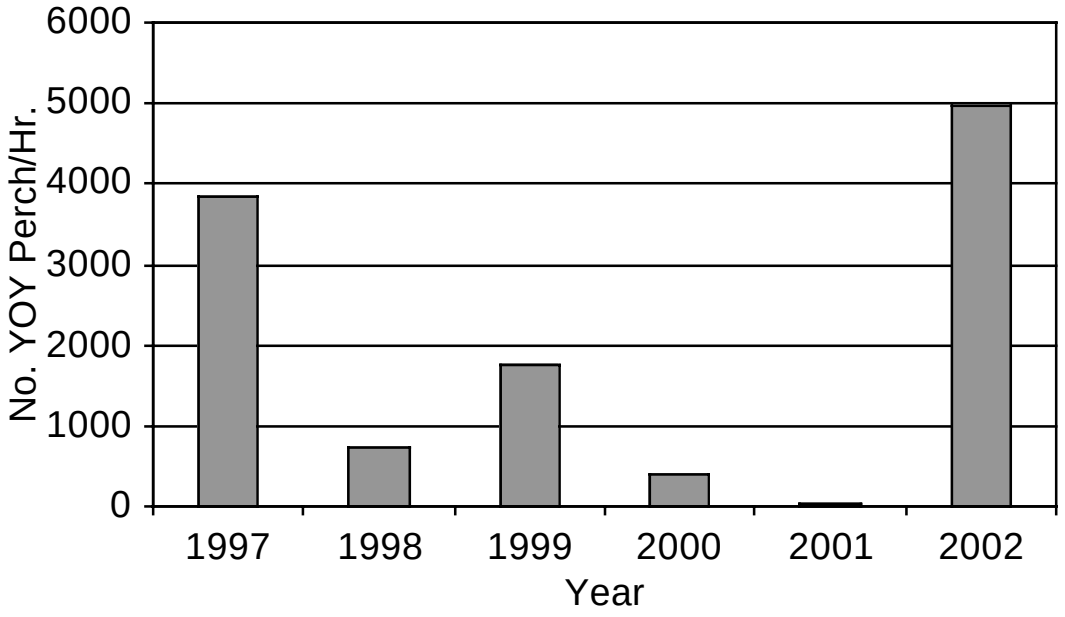
Use of Band Underages. In the past, the total annual harvest for the lake was determined by adding the angler harvest (actual harvest + hooking mortality) to the Band s allowable harvest. Even if the Band took only half of their allotment, the full allotment was included in the harvest total. Under the new plan, only the actual Band harvest will be included. This way, an underage by the Band may be used to offset that much overage by the State in a given year.

Shortcomings of the New Plan

Failure to Address Population Imbalances. The predator-prey imbalances that were noted in my 2002 report grew considerably worse during the 2002 season. Luckily, there was an excellent perch hatch in the spring of 2002 (Figure 5), so the walleyes (particularly the smaller ones) had a good supply of young-of-the-year (YOY) perch beginning in late July. This explains why fishing success slowed way down in the fall, has continued to be slow through the winter and will most likely remain slow at least through the early part of the 2003 open-water season.

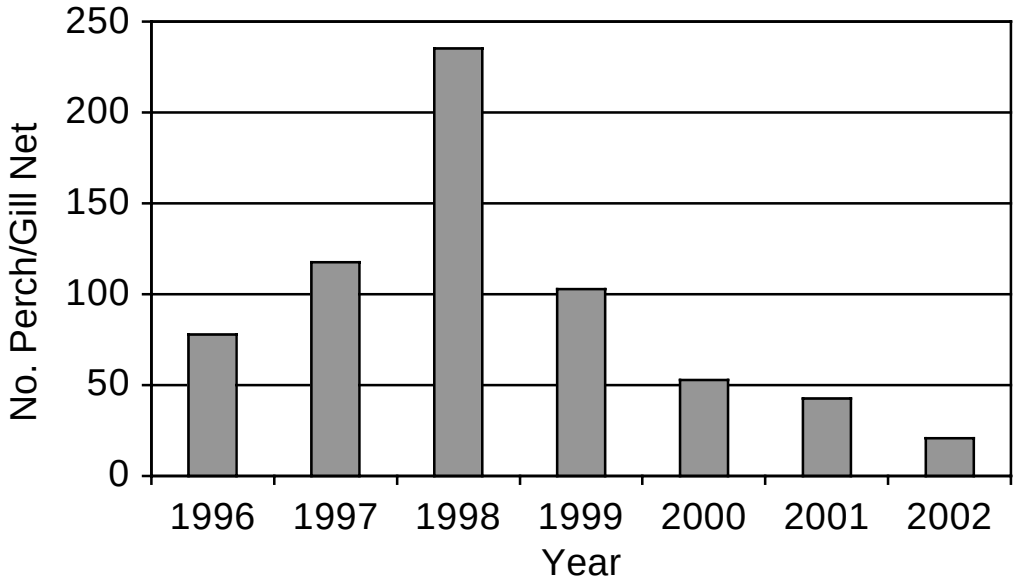
The big perch hatch in 2002 was a surprise to most longtime Mille Lacs observers in light of the cold spring and low abundance of adults. But with practically every kind of baitfish at historically low levels in 2002, there was an open niche and Mother Nature (as she usually does) attempted to fill it. Now the questions are: How long will it take the walleyes and other predators to thin out the perch? And will enough young perch survive to rebuild the population of adults?

Figure 5 - Trawl Catch of YOY Yellow Perch



The scarcity of adult perch (Figure 6) is an obvious problem for anglers, especially ice fishermen who rely on perch to fill in the slow times when walleyes aren t biting. But there is an even bigger problem: With the population of adult perch now at a 14-year low, the odds of producing strong year-classes of young perch have been greatly reduced.

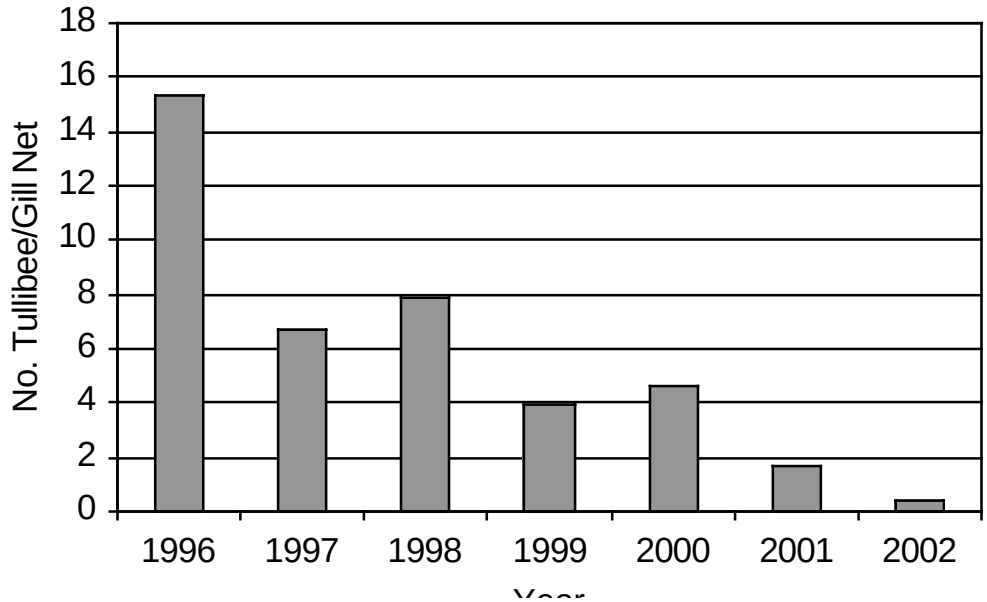
Figure 6 - Gill Net Catch of Yellow Perch



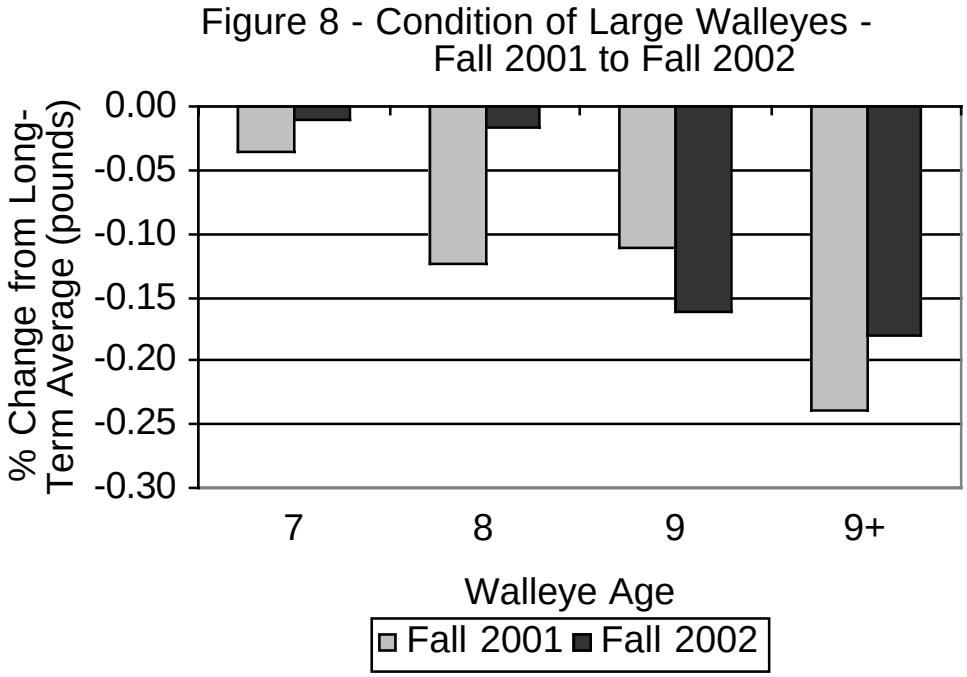
Young-of-the-year perch are the most important food for smaller walleyes and are also consumed by larger walleyes but, given a choice, the larger ones prefer bigger forage like older perch and tullibees. However, tullibees have continued to decline in Mille Lacs and are now at an all-time low (Figure 7).

The major declines in tullibee and older perch are most likely a result of tight post-treaty slot limits that have targeted the smaller segment of the walleye population while protecting practically all of the larger walleyes.

Figure 7 - Gill Net Catch of Tullibee



Poor Condition of Large Walleyes. The food shortage began to take its toll on Mille Lacs walleyes in 2001. In a 2002 report, Treaty Biologist Rick Bruesewitz noted that Overall condition of most sizes of walleye in the 2001 gill net assessment was poor. While the condition of smaller walleyes steadily improved as the 2002 season progressed and the young perch grew to edible size, the condition of larger walleyes (age 7 or more) remained below normal. As Figure 8 shows, age 7 and 8 walleyes regained most of the weight they had lost, but the age 9 and 9+ walleyes remained in poor condition. In fact, the condition of 9-year-olds actually worsened in 2002.

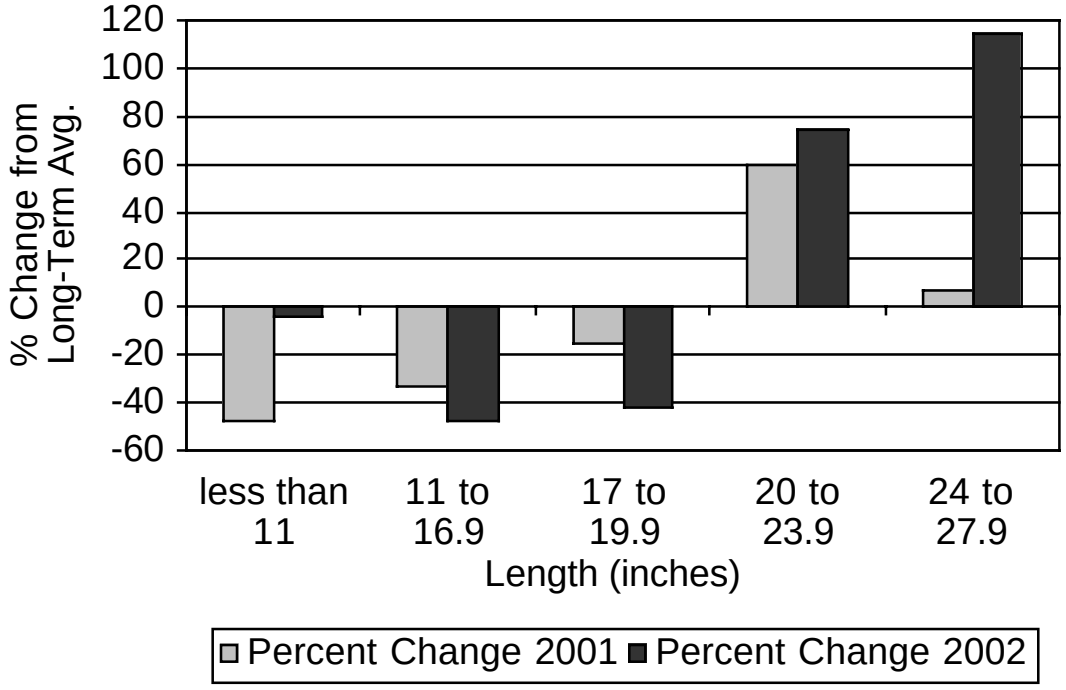


As many anglers noted during the 2002 season, there was great variability in the condition of large walleyes, with some being more than 40 percent underweight and others looking normal. With fish suffering that much weight loss, there is good reason to believe that some of the lake s biggest walleyes succumbed to the 2002 food shortage.

Scarcity of Keeper-size Walleyes. The 2002 gill-net data shows that the trend toward larger walleyes is accelerating. Figure 9, which compares the 2001 gill-net catch to the 2002 catch, portrays some bothersome statistics. The number of 11- to 17-inch walleyes, which will be targeted during the 2003 season, is 48 percent below the long-term average as compared to 33 percent below in 2001. The abundance of larger walleyes, on the other hand, has skyrocketed, with 20- to 24-inchers increasing from 60 percent above the long-term average in 2001 to 74 percent above in 2002. And 24- to 27-inchers jumped from 7 percent above in 2001 to an eye-popping 114 percent above in 2002.

While an aging walleye population gives anglers an opportunity to catch more large fish, it raises major concerns over the long-term health of the fishery. The big walleyes won t live forever and the question is: How many of the smaller fish will survive to replace them? DNR officials recognize the problem and assure us that they will be watching it closely.

Figure 9 - Size Composition of 2001-2002 Gill Net Catch



Potential Error in Evaluating Conditions. The three conditions that will be used to determine the overall health of the walleye population (p. 4) are all dependent on results of the annual fall gill-net survey. Only the results from the 32 original gill nets will be used in determining the conditions because that is the only set of data that has a long-term record. The DNR agrees that the original 32 nets do not accurately sample the larger segment of the walleye population, so they have added nets with a larger mesh size as well as mid-lake nets that will better sample the offshore areas where big walleyes spend much of their time. But these new sets do not yet have enough history to be used for comparison purposes.

The problem is, with the walleye population becoming more and more skewed toward larger fish, the accuracy of the gill-netting decreases and the chance of underestimating the abundance of large walleyes increases. It is possible, for example, that the nets could show less than 20.8 pounds of walleye per gill net (which would trigger more-restrictive

regulations) when there is an abundance of large walleyes that aren t being counted because of inadequate sampling.

If this situation arises, the DNR should make a common-sense adjustment based on other information including the new gill-net sets, the tagging study and creel results. It makes no sense to penalize anglers based on data that the DNR knows is in error, just because it is necessary for treaty-management purposes.

Insufficient Credit for Underages. While most of the overage plan makes sense and reflects good cooperation from the Band, there is one major element of unfairness. While the plan requires the State to fully reimburse any overages, it gives only partial credit for significant underages.

Let s say, for example, that fishing remains tough through the 2003 season and total fishing mortality is only 290,000 pounds compared to the State s quota of 450,000 pounds. That leaves an underage of 160,000 pounds. If the State s quota in 2004 is 450,000 pounds less 7,600 pounds for the 2002 overage, that overage would be offset by the 40,000-pound underage (1/4 of 160,000 pounds), restoring the quota to 450,000 pounds. But no credit is given for the remainder of the underage. If the underage was dealt with in the same manner as an overage, the State s quota would be increased to 482,400 pounds (450,000 — 7,600 + 40,000). There inevitably will be significant overages and significant underages, but with a full penalty for the overages and only a partial credit for the underages, anglers will most likely come out on the short end over the long term. If, on the other hand, overages and underages are dealt with in the same manner, the books will be balanced fairly and evenly between State and Tribal interests.

Conclusions and Recommendations

All things considered, the new plan is a positive step toward clearing the cloud of conflict that has hung over the Mille Lacs Lake fishing scene in recent years. From a fisherman s perspective, the plan is positive because you will now be able to keep a greater share of the fish you catch, and you ll release fewer fish that will be lost to hooking mortality. From the perspective of those that depend on the Mille Lacs fishery for their livelihood, the plan should minimize the adverse publicity that was keeping some anglers away.

It appears that the DNR s willingness to use new methods of assessing the walleye population will increase the safe harvest level and reduce the chances of significant harvest overages. In fact, the 2003 safe harvest level of 550,000 pounds is at the upper end of the recommendation in my 2002 report.

But the fact remains that Mille Lacs is still under a system of treaty management as opposed to sound biological management. The constraints of treaty management prevent State fisheries managers from setting regulations that would correct the biological imbalances that remain a threat to the long-term health of the fishery. The 2002 gill-net survey showed that the walleye population was even more skewed toward big fish than it was in 2001, while the population of adult perch and tullibee declined even farther.

Although the new plan has pacified most people, at least for the present, the DNR must keep a close eye on the size balance of the walleye population, as well as the abundance of adult and young baitfish. If the present trends do not reverse themselves soon, the agency should be prepared to take whatever management steps are necessary, even if they are not spelled out in the plan. Those steps could include changing the slot in order to start whittling down the number of large walleyes and/or to avoid decimating a particular size class.

The DNR should also consider changing the slot to allow harvest of some larger walleye in years when the quota is high and the bite is slow. We will probably be looking at that scenario during the coming season. Here s an example of how this idea might work: If the creel survey shows that the early season harvest has been below average when the night ban comes off, the regulation could change from a 17- to 28-inch protected slot with one over 28 inches, to a 17- to 22-inch protected slot with one over 22. Besides helping to correct the size imbalance, a regulation like this would have several other benefits:

- It would boost tourism by drawing more anglers to the lake during a time when fishing is tough.
- It would reduce hooking mortality because anglers wouldn t have to catch as many fish to get a keeper.
- It would help prevent a major underage for which the State may not receive full credit in the remaining years of the plan.

Questions remain as to what actions will be taken to curtail harvest should there be another 10x or even 5x bite? The State has pledged to stay within its 5-year harvest cap, but what will happen when we are nearing the end of the 5-year period and it appears that we will exceed that cap? Will portions of the lake be closed to fishing? Will there be a night ban, a tournament ban, a leech ban or a launch ban? And will the State try to modify the plan so anglers get credit for all of their underage rather than just a portion of it?

PERM is satisfied that the DNR listened to our arguments and acted on many of our recommendations. Over the course of the new plan, PERM will continue to monitor Mille Lacs fisheries management activities, keep the public informed and promote management changes that will benefit both anglers and the business community.