

Why the DNR is Wrong about Mille Lacs

By Dick Sternberg

(on behalf of Mille Lacs Lake landowners)

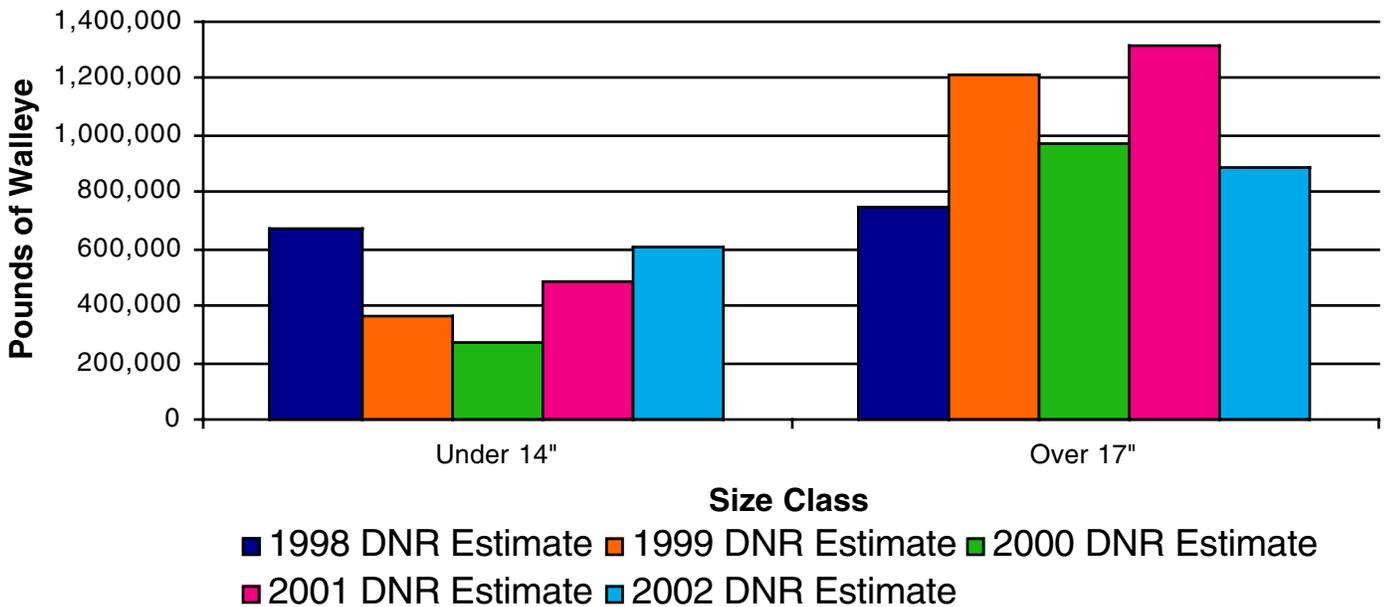
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Agency misrepresents its own data at Natural Resources Committee Hearing

In the recent hearing on Mille Lacs Lake management, I presented my report, “The Mille Lacs Lake Fish Management Plan: Threat to Minnesota’s Premier Walleye Fishery,” to a joint session of the House Natural Resources Policy and Finance Committees. DNR representatives took issue with the walleye harvest level proposed in the report, but disputed practically nothing else because the report was compiled using their data. But in defending their present management policies, the DNR used questionable tactics to cover up the facts, create false impressions and protect their own image. Here are a few of the more blatant examples:

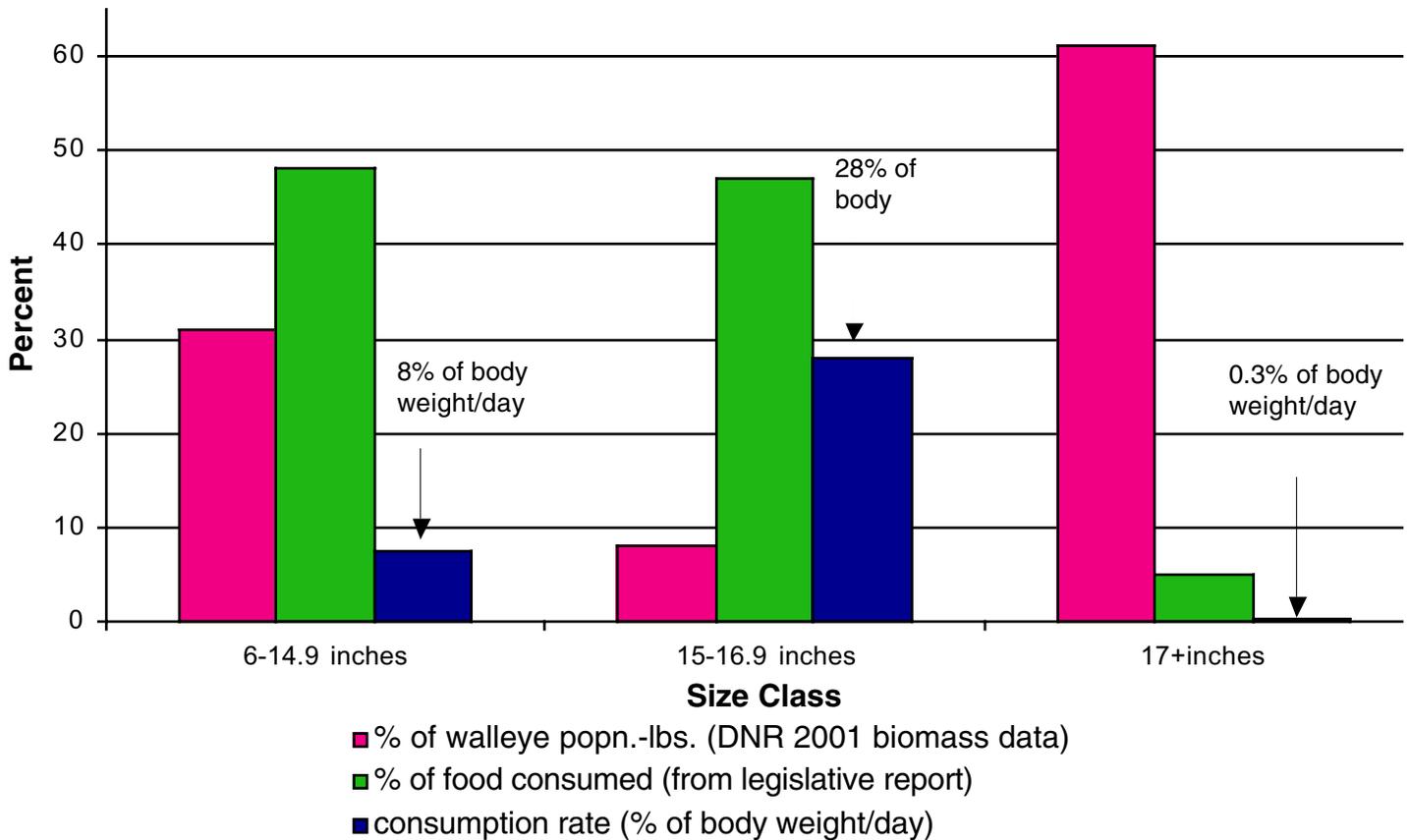
1) False Statistics. In his testimony to the Committee, Mr. Wingate stated, “There are as many pounds of walleyes in Mille Lacs that are under 14 inches as there are pounds of walleyes greater than 17 inches.” In making this contention, he is attempting to show that there really aren’t as many large walleyes in the lake as I’m saying, and that they are not the reason for the baitfish shortage. But this graph, made from treaty management biologist Rick Brusewitz’s report, “Evaluation of Mille Lacs Walleye Fishery for 2002,” shows otherwise. At the beginning of the post-treaty period, the poundage of walleyes under 14 inches was almost as great as those over 17, but since then the poundage of 17-inch-plus walleyes has far exceeded the under-14-inch class.

Post-Treaty DNR Biomass Statistics for Mille Lacs Walleyes



2) Erroneous Conclusions. The DNR also presented a graph showing that small and medium-size walleyes eat far more food than large ones, even though the DNR's biomass data shows that large walleyes make up the majority of the total weight. While it is true that small fish consume more food per pound of body weight than large fish, the difference is not nearly as great as the DNR data suggests. To prove that point, I calculated the food consumption rate using the DNR's figures on pounds of baitfish consumed and total walleye biomass (see graph below). The fact that the DNR's data shows that the consumption rate of small walleyes is lower than that of middle-size walleyes, and that the consumption rate of large walleyes is barely measurable (about 1/100th that of middle-size fish), means that their food consumption data is in error. It is scientifically impossible that more than 60 percent of the walleyes (the 17-inch-plus group) eat only 5 percent of the food, and that they eat 100 times less (as a percent of their body weight) than the 15- to 17-inchers.

Food Consumption Statistics for Mille Lacs Walleyes



3) Misrepresentation of Facts. In their presentation, the DNR stated that I was proposing a total walleye harvest of 600,000 pounds, which they say is much too liberal. In fact, their charts always depict my proposals in bright red, evidently signaling danger. But page 24 of my report clearly states, “Taking into account a Band harvest of 100,000 pounds, the guideline should be in the 400,000- to 450,000-pound range. That equates to a total harvest of 500,000 to 550,000 pounds. The 600,000 pound number is what has actually been harvested in the pre-treaty era, so my recommendation is more conservative than the historical production.

4) Rewriting History. While overstating my post-treaty harvest proposal, the DNR greatly understated their own. Their proposed safe harvest level (SHL) of 400,000 pounds per year is considerably below the 586,000-pound SHL recommendation generated by their own computer model. The problem is, they have given back more than 200,000 pounds per year after negotiations with the Band, although they have denied doing so. In his testimony and in a Star-Tribune interview, Mr. Wingate said, “In the five years we’ve negotiated a safe harvest level with the band, we got what we proposed in three years. In the other two, we negotiated downward in the neighborhood of 40,000 pounds each year.” But the SHL calculations from the DNR’s computer model (provided by field personnel) do not support his contention. The table below shows that the DNR never got the SHL that its computer model calculated in the first five years of treaty management and the “give-back” has averaged 207,000 pounds per year. If the DNR doesn’t trust its own computer model, then why aren’t they using the traditional population assessment tools I recommended?

Safe Harvest Levels vs. Actual Walleye Harvest

Year	DNR Safe Harvest (lbs.)*	Negotiated Safe Harvest (lbs.)	Difference (lbs.)	Actual Walleye Harvest (lbs.)	Exploitation Rate (DNR report)
1997	630,000	320,000	310,000	290,000	11%
1998	670,000	260,000	410,000	370,000	13%
1999	640,000	550,000	90,000	600,000	23%
2000	520,000	370,000	150,000	270,000	12%
2001	470,000	395,000	75,000	330,000	17%
Avg.	586,000	379,000	207,000	372,000	15%

*from DNR computer model

Because the DNR’s meetings with the Band are secret, it is difficult to prove what SHLs they actually proposed. Presumably, they would propose the SHLs their VPA model provides, because that is the purpose of doing the modeling in the first place. To prove the DNR has not been forthcoming about the SHLs they proposed in the secret meetings, I performed a simple back-calculation using their own numbers. Here is the formula:

$$\text{SHL} = \frac{\text{Actual Walleye Harvest} \times 24\% \text{ Exploitation Rate}}{\text{Actual Exploitation Rate (from DNR report)}}$$

Here’s what the formula shows for 1997, for example, using data in the above chart:

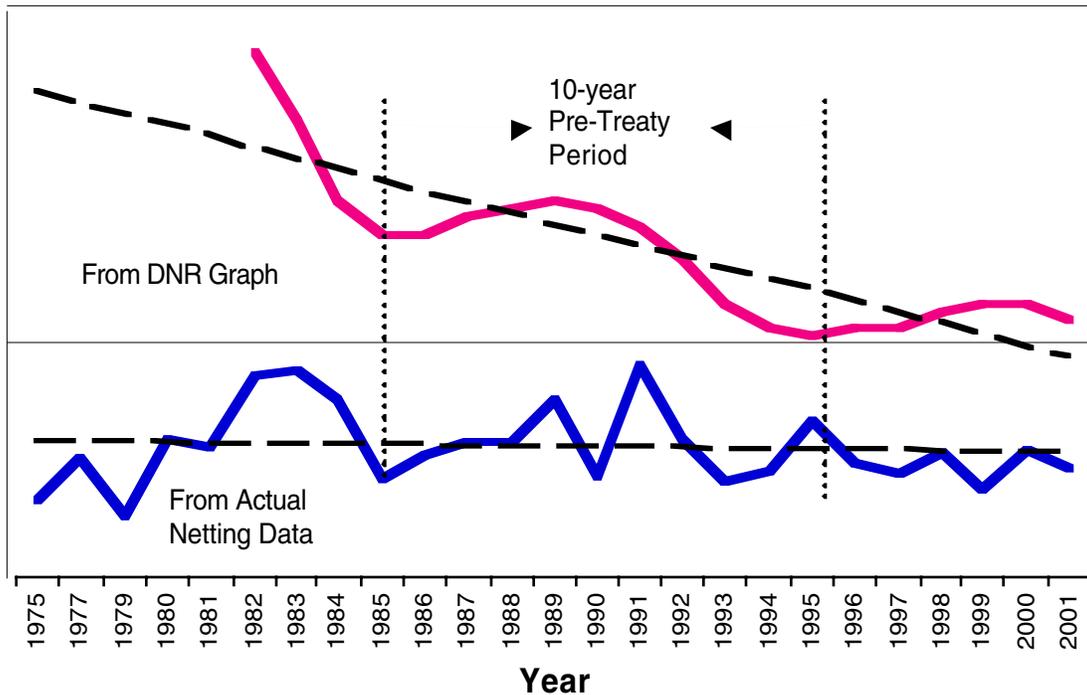
$$\text{SHL} = \frac{290,000 \times .24}{.11} = 632,727 \text{ pounds}$$

.11

The formula yields a SHL for 1997 of 632,727 pounds, almost identical to the 630,000 pounds shown in the table (the small discrepancy results from rounding off the actual exploitation rate). In fact, all of the numbers in the first column agree with the exploitation rates in the last column. This leaves only two possibilities: (1) the DNR proposed the SHL figures in the first column then lowered them to please the Band, or (2) they lowered the figures before they went into the meetings so there would be no argument. Either way, the DNR did not stand up for their numbers and has been untruthful in reporting what they were. Had they successfully defended their numbers, there would have been no need for the tight slot limits. Since the Band and DNR agreed upon a 24% exploitation rate (which is conservative) in the Court papers, why are they holding the exploitation rate at 15%, a 37.5% reduction?

4) Tricks with Numbers. The DNR presented a series of charts (dark blue background) depicting several important walleye statistics. But none of the charts have any scale on the vertical axis, so it is impossible to tell exactly what they are saying. By expanding or reducing the scale of one parameter in relation to the others, they can easily make it look like there has been a major change when, in fact, there was little change at all. In addition, they have taken the liberty of smoothing out the data points and, in some cases, misrepresenting them to create a false impression of what really is happening. For example, the charts include a “Gill Net Abundance” curve for 1982-2001 showing a steep pre-treaty downtrend, with a slight recovery in the post-treaty period, supposedly because the DNR came to the rescue and tightened regulations (top half of graph below).

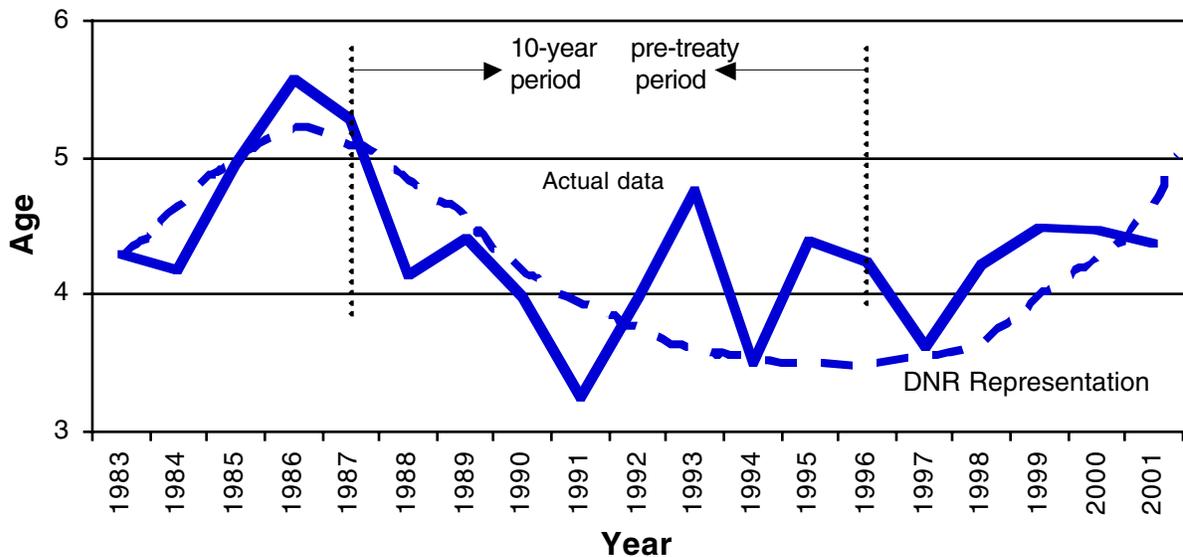
**Gill Net Abundance
True Depiction vs. DNR Representation**



But the line on the bottom half of the graph, which represents the actual data string going back to 1975, paints an entirely different picture. The trendline is almost flat, and there was practically no change in walleye abundance in the 10-year pre-treaty period.

The DNR also misrepresented the data on “Average Gill Net Age,” again to create the impression that the walleye population was over-exploited during the 10-year pre-treaty period. The solid line on the graph below is the actual age data; the dashed line, the DNR’s representation of that data. The dashed line in the last half of the pre-treaty period is much too low, and it is much too high at the end of the post-treaty period. And the decline that did take place starting in 1989 was the result of the 1988 year-class, one of the largest in the lake’s history. The average age of the walleyes plummeted as the young fish became large enough to be caught in the nets. In this case, declining gill net age was actually a very positive signal of good fishing to come. In fact, the 1992 walleye harvest of nearly 1.2 million pounds was the largest ever. The average age then began to increase and by the end of the pre-treaty period was higher than it was in the second year of the period. So what was really a very healthy situation was depicted by the DNR to be a big problem that could only be solved by tighter regulations.

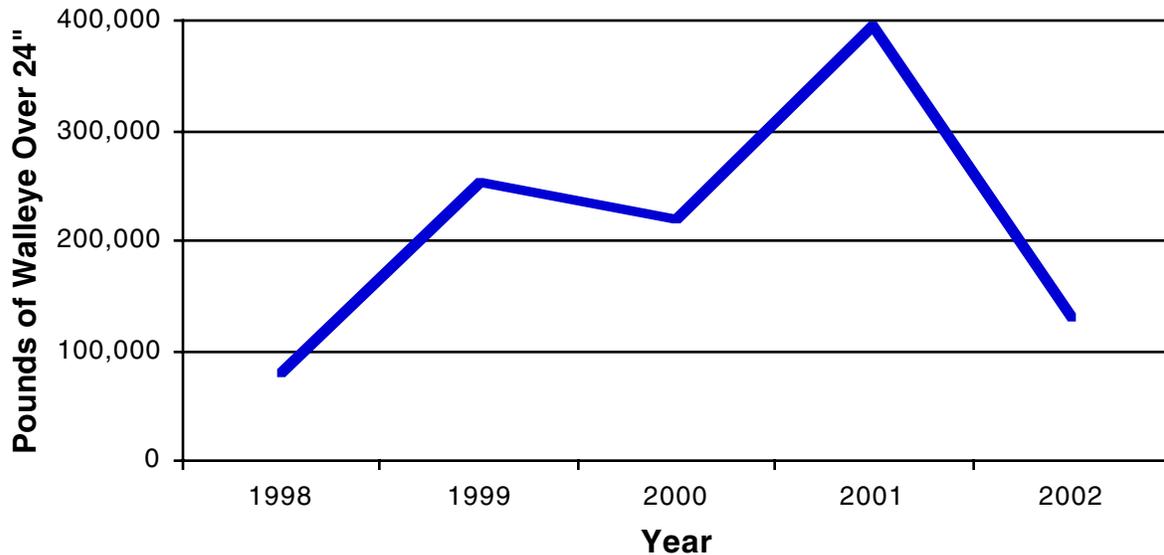
Average Gill Net Age



6) Downplaying a Serious Situation. The DNR says that they’re not too concerned about the low baitfish numbers because baitfish crops are highly variable. While that is true, the fact is that baitfish populations have never been as low as they are right now, and there has never been a time when so many species of baitfish have been decimated. The DNR is not willing to pin the baitfish decline on the predator fish; instead, they’re coming up with other causes such as warm water temperatures, spring die-offs, etc. While those causes could contribute to the decline of some bait species, they cannot account for the decline in so many species. With every major baitfish species being down at least 90%, we are either witnessing an unbelievable coincidence or the predators have nearly cleaned out the prey. The DNR is evidently banking on the former and keeping their fingers crossed for a bait rebound.

In examining the DNR’s biomass data, I noted a 5-fold increase in the number of large walleyes (24-inch-plus) from 1998 to 2001 followed by a steep plunge from 2001 to 2002 (see graph below). If Mille Lacs follows the same path as South Dakota’s Lake Oahe, the big fish will show the greatest decline should the population collapse. Could the collapse already be underway? We will soon know.

Post-Treaty DNR Biomass Statistics for Mille Lacs Walleyes



7) Convenient Data Interpretation. In an attempt to determine how many pounds of walleye Mille Lacs is capable of producing, I compiled a 10-year (1987-1996) pre-treaty harvest average which amounted to 592,000 pounds. I chose that time frame because it was the most current data prior to treaty management and it was a period of high fishing pressure. Of course, it's impossible to determine maximum production when fishing pressure is low. But the DNR criticized my calculation for two reasons: (a) it did not go back far enough in time (when fishing pressure was much lower), and (b) I used the average (mean) of the 10 years of data rather than the median.

In reacting to my harvest data in a Star-Tribune interview, Mr. Wingate said, "If he had gone back farther and included more years in his harvest sample, as we believe he should have, and if he had not averaged his subset of years, we believe he would have come to the same conclusion that we have: that the safe walleye harvest of the lake is between 400,000 and 450,000 pounds."

To address their first concern, I compiled creel survey information dating back to 1983, which is as far back as reliable creel data is available. The 14-year average resulting from that data is 528,000 pounds (table below), still much higher than the DNR's recommendation.

Their second concern (mean vs. median) is also addressed in the table below. Their reason for recommending the median (middle number) is to eliminate the high harvest (nearly 1.2 million pounds) that took place in 1992, thus bringing the harvest average down closer to the number they are recommending.

There are two ways to calculate a median: (a) If there are an odd number of values in your series, you list the numbers in numerical order, and the middle number is the median. (b) If there are an even number of values in your series, you sum the middle two numbers and calculate the average. Another way to treat highly variable data is to remove the high and the low, then calculate the average. The table below shows the walleye harvest calculations using all of these methods, as well as the mean (average).

Pre-Treaty Annual Walleye Harvest (using various methods of analysis)

Years of Data (pre-treaty)	Median	High/low	Mean
10	566,865	577,668	591,975
11	565,897	554,404	579,887
12	566,270	520,885	547,774
13	531,109	517,831	543,267
14	510,144	502,984	528,732

As the table clearly shows, the historic walleye harvest is considerably higher than what the DNR is now recommending, regardless of how the data is analyzed. And using the median to neutralize 1992 really doesn't make much difference. The only way the DNR could come up with a harvest level of 400,000 pounds is to carry their average back farther than where they have reliable data, and/or fail to add in some components of the walleye harvest, such as night fishing and hooking mortality.

Of course, the most commonly used method of analysis is to calculate the overall average (mean), which is what I did in my report. In fact, that is exactly what the DNR did in coming up with a 20-year harvest average of 450,000 pounds in their July 2001 report, "Lake Mille Lacs Walleye Regulations –Answers to Common Questions." Means are also commonly used in treating highly variable data in many DNR research papers. In order to come up with a 450,000-pound average, the DNR had to use creel data prior to 1983 (which they now refer to as "underestimates"). These figures come from an era when fishing pressure was much lower and are of no value in determining the maximum SHL of the lake, which is what we now need to know.

8) Less than the Whole Story. The DNR presented committee members a graph, "Walleye Harvest (pounds/acre)," showing that the walleye population in Lake Erie had been "overexploited," resulting in a harvest quota reduction of 55%. This information supports their argument that the safe harvest level in Mille Lacs should not be increased.

But here's how a recent article in the Detroit Free Press explained the problem. "The Canadian commercial catch accounts for more than 70 percent of all walleyes taken in the lake [Erie].....While anglers are convinced that the commercial catch is the cause of a 75 percent decrease in Lake Erie walleyes over the past 10 years, biologists aren't sure yet. The commercial fishing issue may prove a red herring that has masked some underlying ecological change responsible for the decline." The article went on to explain that the Ontario commercial quota would be cut by 94% and that there would be stricter enforcement because of commercial fishermen "going way over their quotas." There was no mention of overharvest by sport fishermen, but the DNR clearly wanted to leave that impression to make their point.

9) Invented Numbers. The DNR is required to estimate the number of walleyes that die after being released, because that number counts against the angling quota. But they have no idea what the number really is because they have never done a hooking mortality study on Mille Lacs. The hooking mortality estimates they use, which amount to about 7.5 percent of the walleyes released, are not realistic. One would expect hooking mortality to be much higher on Mille Lacs because of the widespread use of leeches, which the fish tend to swallow.

DNR staffers know that Mille Lacs hooking mortality is greater than 7.5% and have said so off the record. In fact, the DNR opposed a catch-and-release regulation on the Mississippi River because they said hooking mortality would be 25% and that the number of fish killed would negate the savings from the catch-and-release regulation. Now, when the DNR is attempting to justify a 2-inch slot and the resulting 93% release rate, their hooking mortality rate is less than one-third as high. Even so, the DNR estimated that 79,000 pounds of walleye were wasted in 2001, when a 2-inch slot was in effect for only part of the season. In 2002, the 2-inch slot may be in effect all year, so hooking mortality will be even higher.

The percentage of released walleye that die from hooking mortality is greatest in the summer, when the water is warm and the fish are being reeled up from the depths, causing their swim bladder to expand. Hooking mortality is not much of a problem in spring, when the water is cold and the fish are shallow. My report recommended that the DNR avoid tight slots during the summer months to minimize hooking mortality, but that is not being considered because it may put them over the artificial “negotiated safe harvest level.” Apparently the DNR would rather let the fish die and float up on the beach rather than let anglers take them. When more fish die from hooking loss than the Bands net or spear (by a factor of 2 and possibly 4), that is not sound resource management.

Summary of Main Points

- 1) The DNR contends that there aren't as many large walleyes in the lake as people are saying, so the big ones are not to blame for the bait shortage. But figures from their own biomass studies clearly show that is not the case and that the large fish (17+ inches) make up a much greater percentage of the population by weight.
- 2) As further proof that the bigger fish are not to blame for the bait shortage, the DNR provided a graph showing that the small fish eat far more food per pound than the medium-size fish and the big fish eat even less. But when you calculate the food consumption rate using the DNR's food consumption and biomass figures, the data makes no sense. It shows that the medium size fish eat three times more than the small fish and that the big ones eat practically nothing.
- 3) The DNR claimed that I was advocating a safe harvest level of 600,000 pounds, but my report clearly stated that I am in favor of a 500,000 to 550,000 SHL. The 600,000-pound figure is what Mille Lacs has produced on average before treaty management, and what the DNR's own computer model shows can be safely harvested.
- 4) The safe harvest level the DNR claims to have proposed in their secret meetings with the Band does not agree with the safe harvest level as calculated from their published exploitation rates. The low exploitation rates mean that the computer model recommended a safe harvest level much higher than they are admitting, and they lowered the SHL after negotiations with the Band.
- 5) The DNR presented several graphs (dark blue background) with serious flaws that made the information misleading (or just plain wrong). The graphs had no vertical scale, so what was a very small change could look like a huge one. In addition, the DNR took the liberty of “smoothing” the curves and, in doing so, misrepresented the data to show that the lake was being overharvested in the 10-year pre-treaty period, resulting in a big decline in the number and average age of the walleyes.
- 6) The DNR downplayed the baitfish shortage, attributing it to natural variation. But baitfish (all species) have never been as scarce as they are right now, and the walleyes have never been as

skinny. These are the precursors to a population collapse. In fact, the biomass data on walleyes over 24 inches shows that a collapse may already be in progress.

- 7) The DNR criticized me for using their pre-treaty walleye harvest data “selectively.” If I had looked at a time period of more than 10 years and used the “median” rather than the “mean,” they said, I would have arrived at the same long-term harvest level they did: about 400,000 pounds. I then took the harvest level going back 14 years (as far back as their data allows) and calculated the median, mean and the average without the high and low. Regardless of which statistic you use, the long-term walleye harvest exceeds 500,000 pounds. Incidentally, the DNR uses the mean when calculating the post-treaty safe harvest level to be 390,000 pounds. Had they used the median, it would be 339,000 pounds, far below their SHL target of 450,000 pounds.
- 8) The DNR misled Committee members with a graph showing how Lake Erie had been overharvested, requiring a drastic reduction in the walleye quota. The implication was that we shouldn’t make the same mistake on Mille Lacs. But they never mentioned that the overharvest was a result of a heavy commercial take (70% of the total harvest) along with numerous violations of the quota by the netters.
- 9) The tight slot limits have resulted in a great deal of hooking loss, but the DNR is covering up the problem by using an unrealistically low hooking mortality rate. If the true hooking loss was known, the pounds of walleyes “saved” by the tight slots would be greatly reduced if not eliminated.