Fishing Pressure

“As anglers fish more often, the big walleyes get quickly cropped, and the mid-sized ones are caught before they ever reach trophy size. About all that remains are those abundant 14-inchers.”

—Mark Cook, DNR Fisheries research biologist, Bemidji

What does this indicator tell us?
Sport fishing may affect fish populations, particularly populations of fish like walleye that are highly prized. Fishing pressure is a measure of the intensity of sport fishing and a means to estimate the effect of human angling on fish populations, an important part of the equation when we look at the health of lake ecosystems. Recently, some Minnesota lake anglers noticed that their fishing seemed less successful than twenty or thirty years ago: it seemed to take longer to catch fish, and the ones they did catch seemed smaller. Were Minnesota’s lakes getting “fished out?”

How is fishing pressure measured?
General trends in fishing pressure can be seen in the number of fishing licenses issued annually, or the number of boats or ice houses registered each year. More direct measures come from creel counts and interviews with anglers that record the number of hours spent fishing, the number of fish caught per angler-hour, and pounds of fish harvested per visit. These metrics can describe fishing pressure on individual lakes and be combined to view the situation statewide. Similarly, these metrics can describe fishing pressure on individual species and combined into a general view of fishing pressure on all species.

Can we use this indicator now?
Yes. The Minnesota DNR has conducted creel surveys since the 1930’s, interviewing anglers as they exit lakes about the size, species, and number of fish they’ve taken. These surveys provide excellent, long-term data for 924 Minnesota lakes, including most of the state’s largest and most popular fishing lakes.

Recent analysis of these data suggest that fishing pressure is making significant changes in the size and age structure of many popular species. Total harvest of fish has been relatively stable over the last few decades, but a typical angler of today does indeed spend more time to catch fewer, smaller fish than a typical angler several decades ago.
**Why is this so?**

Analysis of fishing pressure metrics shows, first of all, a substantial increase in the total number of anglers since World War II. There have also been big increases in the number of days an average angler fishes.

New technology, such as depth finders, has helped anglers become more effective at locating and catching fish. And more people are now ice fishing, so some lakes get more pressure year-round.

All in all, this increase in fishing pressure means that older, larger fish are disappearing from many lakes. There are often plenty of small fish in the population, but more and more anglers are competing for them. The increase in total fishing pressure means that today's individual angler, on average, fishes more hours and is less likely to catch a trophy-sized fish than an angler years ago.

**What are the limitations of using fishing pressure as an indicator?**

Good long-term data are only available for certain lakes—usually Minnesota’s largest and most popular fishing lakes, such as Lake Winnibigoshish. While Minnesota’s large lakes and hardwater walleye lakes are well-covered by this data, fishing pressure on other lakes is not as well documented.

While creel count data are relatively easy to collect, estimates of fishing pressure and fish harvest are based partially on estimate and extrapolation. For instance, anglers are asked to estimate the size and weight of fish they have caught and released. Data from a small portion of all Minnesota anglers is used to characterize the fishing activities for many. Creel count data may need to be combined with systematic population sampling to provide the most accurate view of changes in fish populations.

**REFERENCES**


