

How we improve your fishing

Gather INFORMATION

If two anglers go out and catch their limit, does that mean the lake is packed with fish—and that it doesn't need stocking or experimental regulations? Of course not—no more than getting blanked would mean the lake was empty of fish.

Just as the world isn't flat despite the horizon appearing to be straight, a single observation by a few people isn't an accurate indication of a fish population's status. Their good fishing may be due to a hot bite, extraordinary skill, or just good luck rather than an abundance of game fish.

The shortcomings of anecdotal evidence and casual observations are the main reasons we invest so much time and money gathering information using scientific, comprehensive lake and stream surveys.

That's not to say firsthand accounts aren't valuable. But such information must be balanced with methodical, consistent surveys of fish populations, fish habitat, and fishing activity.

Information from lake and stream surveys forms the foundation of every DNR fisheries management activity we do to improve fishing—from stocking fish to restoring aquatic plant habitat. Fisheries managers conduct these surveys by netting, seining, trawling, electrofishing, and analyzing water. This gives us long-term information on fish population size structure, fish reproductive success, species abundance, fish growth and movement, and habitat conditions. Added to this is information about angling success and preferences we get from creel surveys (interviews with anglers).

Along with public input, survey information helps us decide

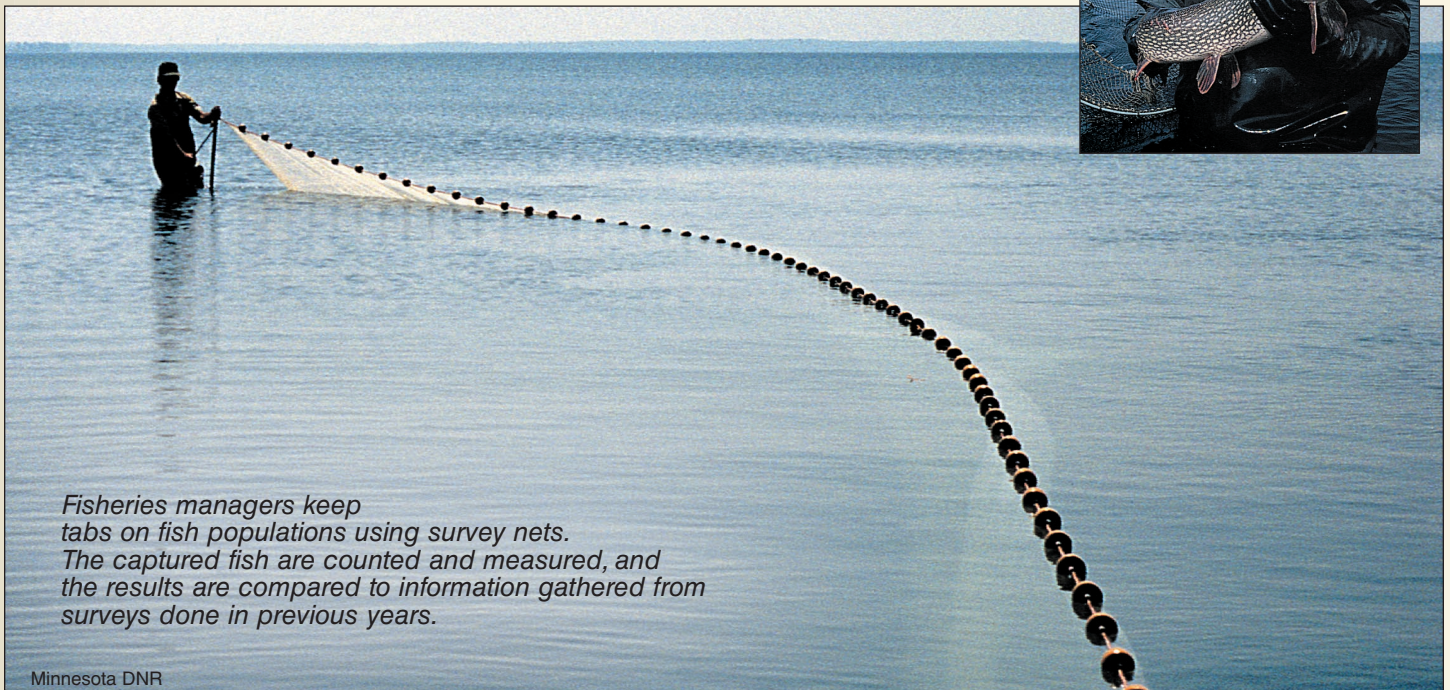
when stocking is needed, whether experimental regulations are necessary, and how environmental conditions affect fish populations. Follow-up sampling and angler surveys determine if specific management techniques such as fingerling stocking or a slot limit are having the desired effect on a particular lake.

As one fisheries manager puts it: "Without the lake and stream surveys, everything we did would be guesswork."

Lake and stream surveys

So important are lake and stream surveys that one-fourth of our \$22 million yearly budget goes towards this work. Each year, field crews around the state survey several hundred lakes and several dozen streams or rivers. Most lakes are surveyed every three to five years, although Rainy Lake, Lake Mille Lacs, and other large lakes are monitored yearly. We now have a database of survey information for 4,500 lakes and streams—more than any other state—and biologists are adding new information each year.

In the short term, surveys show the relative proportion of big and small fish, and whether each year's new generation of fish, called a *year class*, is relatively weak or strong. By accumulating many years of this information, we can see long-term trends and patterns, such as how quickly fish grow in various lakes or the gradual loss of important spawning habitat.



Fisheries managers keep tabs on fish populations using survey nets. The captured fish are counted and measured, and the results are compared to information gathered from surveys done in previous years.

Minnesota DNR

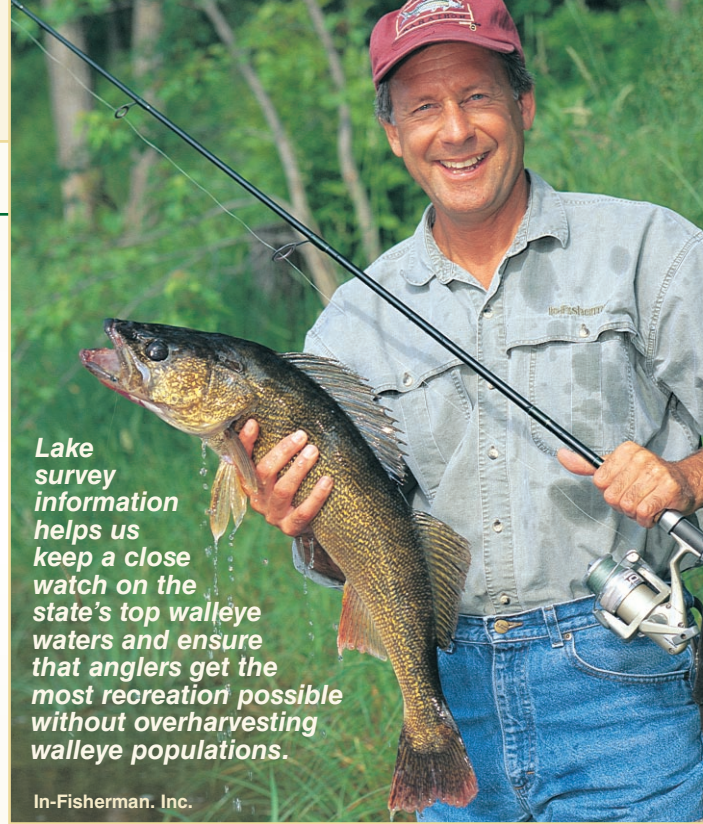
Success Story

Managing the Large Walleye Lakes

Information from ongoing lake surveys on Minnesota's largest lakes tells us how much harvest these waters can withstand and the level of angling pressure they receive. These big waters—which include Leech, Lake of the Woods, Winnibigoshish, Rainy, and Mille Lacs—account for half the state's yearly walleye harvest. With so much at stake, these lakes get special scrutiny.

How do lake surveys help increase fishing opportunities on these lakes? On Mille Lacs, precise survey information allows us to provide more recreational angling opportunities than we could if the data were “fuzzy” and we had to further tighten harvest restrictions to protect the walleye population from overharvest.

And on Rainy Lake, survey information is telling us that portions of the lake's booming walleye fishery are in danger of overharvest and will require stricter harvest regulations to keep the good times rolling.



Lake survey information helps us keep a close watch on the state's top walleye waters and ensure that anglers get the most recreation possible without overharvesting walleye populations.

In-Fisherman, Inc.

Survey techniques

Fisheries managers and their crews use various survey techniques appropriate for various fish species or sizes.

Gills nets: Usually 250 feet long, these nets are used to capture walleyes, northern pike, and yellow perch. Live fish are released after workers take measurements and samples of scales (to be analyzed later to determine fish age). Dead fish are further analyzed for sex, stomach contents, and parasites.

Trap nets: These smaller nets capture bluegills and other small fish.

Trawls and shoreline seines: These small-meshed nets are used to capture young fish.

Electrofishing equipment: Used in streams and rivers, this equipment uses an electrical charge to temporarily stun fish so they can be measured and weighed. It also is used in lakes to survey bass, crappies, and young walleyes.

Trotlines and angling: These methods are used to survey catfish and other species that often can't be captured efficiently any other way.

Water analysis: This is used to determine the percentage of dissolved oxygen in water as well as water fertility and clarity.

Creel surveys

Creel surveys help assess the effectiveness of fisheries management techniques by measuring angler success. “Creel” is an old term describing a basket, often made of wicker, that anglers once used to hold their catch.

Throughout the summer on lakes across the state, DNR creel clerks ask anglers what time they started and stopped fishing, the number of people in their party, the species of fish they sought, and the weight, length, and number of fish they either kept or released. Sometimes anglers are asked what type of equipment they use, which is how we learned that the percentage of boats with depth finders has more than tripled since the 1970s.

All this creel survey information helps fisheries managers determine fishing pressure, the size and number of fish harvested on a particular lake, and angler catch rates. That information, in turn, helps us determine how best to manage fish populations.

Value of surveys

Ongoing creel, lake, and stream surveys are used to evaluate the effectiveness of management work. For example, if the number of big brown trout found in a stream increases after underwater hiding areas are built there, then that habitat improvement was likely a success and may work elsewhere. Or, if walleye size on a lake increases after a particular experimental regulation is put in place, then that regulation may work on other, similar lakes.

Surveys also show if water chemistry or habitat conditions are changing. And they are an essential part of the DNR's Accelerated Walleye Program for helping us evaluate which lakes need additional stocking and whether that stocking boost is working to improve fishing.

