

Monitoring the health of Ontario's inland lakes

Recreational fishing is enjoyed annually by over 1.3 million anglers, and contributes nearly \$2.5 billion to the Ontario economy. The Ministry of Natural Resources (MNR) is working to maintain healthy fish stocks as they are an important environmental indicator. Healthy fish stocks ensure that present and future generations continue to enjoy high-quality fishing and the associated social and economic benefits.

In 2004, MNR introduced the Ecological Framework for Fisheries Management to enhance fisheries management in Ontario. This new framework helps the ministry manage fisheries for the future by simplifying regulations and providing more public involvement. Increasing our understanding of inland lakes and their fisheries is an important part of this approach.

Broad-scale monitoring

In 2008, MNR began a long-term program to monitor the health of Ontario's lakes. The broad-scale fisheries monitoring program is improving the ministry's understanding of the current and changing state of fisheries and other aquatic resources, identifying stresses on the resources, and reporting on changes over time such as angling pressure. Lakes are randomly selected in each fisheries management zone for species like lake trout, walleye and brook trout, although the program monitors all species in the lake. Some lakes will be re-surveyed every five years for trend through time analysis.

Fisheries management zones

In January 2008, 20 fisheries management zones (FMZs) replaced the former 37 fishing divisions. These zones are now the unit of management for most lakes in Ontario. Fishing regulations, such as catch limits and seasons, are based on these zones. Fish will also be monitored and assessed at the zone level. In addition, aerial surveys are flown over selected lakes during the summer, and sometimes again in the winter. The total estimated angling pressure is calculated for each zone.

A crew measuring and recording fish length and weight (as well as other characteristics not shown). In 2012, MNR science staff completed the first five-year cycle of the broad-scale monitoring program. Nearly 630 lakes were sampled across the province. Approximately 140 lakes will be sampled in 2014, which is year two of the second cycle. Some lakes that were sampled in the first cycle will be re-sampled, and new lakes will be added to the program.

During these lake surveys, science staff sample fish to estimate abundance, and record characteristics such as length, weight, and age. Some fish are tested for contaminants. See the Guide to Eating Ontario Sport Fish at www.ontario.ca/fishguide; MOE is responsible for publishing this information.

Water temperatures, oxygen levels, and water clarity are also recorded. Samples from selected lakes are sent to the Ministry of the Environment (MOE) for water-quality analysis.

Certain lakes are examined for invasive species like spiny water-flea and rusty crayfish. Invasive species were found in a number of additional lakes in the first cycle by an MNR science crew pulling in a gill net during a lake survey. Each lake is surveyed with two types of nets: large mesh that captures game fish, and

small mesh that captures forage fish. The relative density (fish/net) of each species is calculated by lake and compared with other lakes in the zone.

Fish caught include lake trout, brook trout, walleye, northern pike, common white suckers, yellow perch, rock bass, red-horse sucker, whitefish, cisco, emerald shiner, spot-tail shiner, mimic shiner, and trout-perch.

Science staff working for the broad-scale fisheries monitoring program across Ontario include postsecondary students. They spend their summer conducting fieldwork travelling from lake to lake netting and sampling fish. They are helping Ontario to put science to work managing our fisheries more effectively.

Science staff across Ontario

Broad-scale crews preparing to begin last summer's lake survey work. Most inland lakes can be reached by road or an ATV, but many remote inland lakes require flying in. For more information on the broad-scale program, contact:

Northeastern Ontario

Jeff Amos, Ministry of Natural Resources, Northeast Biodiversity and Monitoring Unit, P.O. Box 3020, Hwy 101 East, South Porcupine, ON P0N 1H0, (705) 235-1214, jeff.amos@ontario.ca

Kevin Leblond, Ministry of Natural Resources, Northeast Biodiversity and Monitoring Unit, P.O. Box 3020, Hwy 101 East, South Porcupine, ON P0N 1H0, (705) 235-1137, kevin.leblond@ontario.ca

Northwestern Ontario

Kim Armstrong, Ministry of Natural Resources, Northwest Biodiversity and Monitoring Unit, 173 25th Side Road, Rosslyn, ON P7K 0B9, (807) 939-2501, kim.armstrong@ontario.ca

Jay Wright, Ministry of Natural Resources, Northwest Biodiversity and Monitoring Unit, 173 25th Side Road, Rosslyn, ON P7K 0B9, (807) 939-2501, jay.wright@ontario.ca

Southern Ontario

Steve Vandermeer, Ministry of Natural Resources, Southern Biodiversity and Monitoring Unit, 322 Kent Street West, Lindsay, ON K9V 4T7, (705) 324-5851, steve.vandermeer@ontario.ca

Monitoring highlights... Broad-scale lake surveys

Lakes sampled across the province in the first cycle of the broad-scale fisheries monitoring program