

Gift Lake Fall Index Netting Summary, 2023

Background

A healthy fish population and fish community means we can all enjoy the benefits of sustainable fisheries and healthy ecosystems. A common question biologists receive is “how are the fish in my lake doing?” This is an important question to answer to set appropriate fishing regulations, understand and correct any problems with fish habitat, and guard against invasive species.

Fall Index Netting (FIN)

Environment and Protected Areas (EPA) uses an accepted standard of index netting for assessing walleye and Northern pike in lake fisheries (Morgan, 2002). This method provides the necessary data on fish abundance, biological data, and species diversity to assess the sustainability of these fish and fisheries. It also allows for comparisons at a lake over time and to other lakes.

Fall index netting occurs during late summer and fall when water temperatures are 10-15 °C. Standardized multi-mesh gill nets are set at random locations between two and 15 metres deep, set for 21-27 hours (i.e., a net-night), and then reset in new random locations.

Information from yellow perch, lake whitefish, burbot, minnow, and sucker species are also collected. The information collected from each fish includes length, weight, age, gender, and maturity. After sampling, if fish are appropriate for human consumption, EPA provides the fish to local Indigenous peoples or to persons on approved subsistence lists. Typically, a very small proportion of the lake’s fish population (less than 1 or 2%) are killed in this sampling.

How is this information used?

Catch rates (i.e., number of fish captured per net-night) of walleye and Northern pike are an index of the populations’ abundance, with higher catch rates meaning there are more fish in the lake. The abundance of adult fish is compared to the standardized thresholds for five broad categories of risk to the long-term sustainability of the fish population, with higher densities of fish having lower risk (Table 1). The sizes and age of fish also tell us if problems with overharvest (e.g., too few large and old fish) or habitat (e.g., poor spawning success results in too few small and young fish) are a concern. Biologists use this information, as well as a variety of data on water quality, access, development, and habitat threats as part of Alberta’s Fish Sustainability Index (FSI).

The management goal for most Alberta fisheries is long-term sustainability, shown by the red lines on the graphs below. In support of achieving this goal netting data is collected to determine the FSI, which helps determine the most appropriate regulations for a lake. This landscape-level assessment allows for consistent, broad temporal comparisons of fish sustainability and status. For more information, please see [Alberta’s Fall Index Netting website](#) and [Fish Sustainability Index website](#).

Table 1 – Alberta’s Fish Sustainability Index risk thresholds for walleye and Northern pike using the standardized Fall Index Net (FIN) method. Note: Thresholds align with species management frameworks.

Mature Walleyes/net	Mature Pike/net	Risk to Sustainability
>29.0	>21.8	Very Low
20.3-29.0	15.3-21.8	Low
14.5-20.2	10.9-15.2	Moderate
5.8-14.4	4.4-10.8	High
<5.8	<4.4	Very High

Results of the 2023 FIN at Gift Lake

Gift Lake (732 ha) is located at the Gift Lake Metis Settlement, 90 km northwest of the town of Slave Lake. From September 14 to 15, 2023, 6 nets captured 66 Northern pike, 2 spottail shiners, 2 ciscos, 77 walleyes, 31 white suckers, and 41 yellow perch.

Walleye

The mean catch rate of walleyes was 13.0/ net-night. The catch rates of mature (Figure 1) and immature walleyes were 8.8/ net-night and 4.0/ net-night, respectively. The corresponding FSI score for the current mature density of walleyes was assessed at **high risk**.

The length distribution shows limited recruitment, low abundances of 300 to 490 mm walleyes and moderate abundances of fish larger than 500 mm (Figure 2).

The 2023 FIN sample represented approximately 1.4% of the estimated mature walleye population size.

Northern Pike

The mean catch rate of mature Northern pike was 10.8/ net-night (Figure 3).

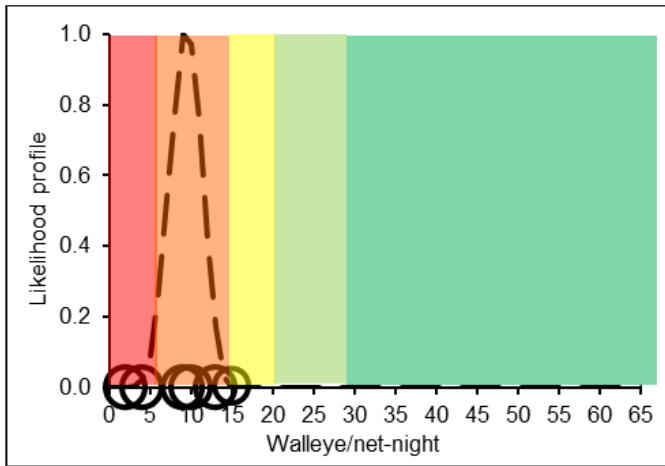


Figure 1 - The FIN catch rate of mature walleyes from Gift Lake, 2023. Dashed line is the mean catch rate (8.8 fish/ net-night), with individual net data as hollow circles (n=6 nets).

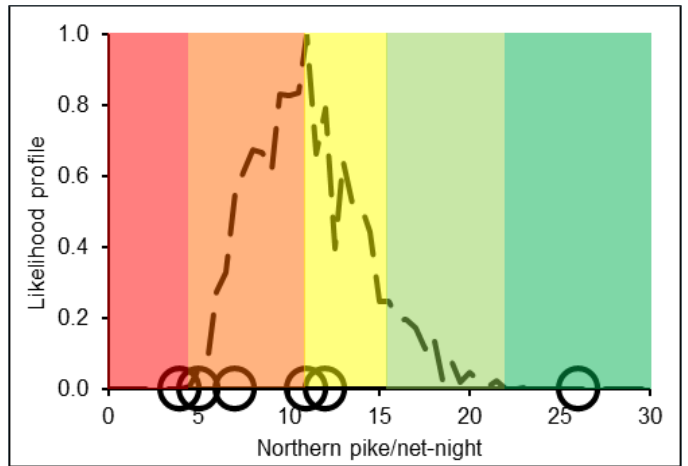


Figure 3 - The FIN catch rate of mature Northern pike from Gift Lake, 2023. Dashed line is the mean catch rate (10.8 fish/ net-night), with individual net data as hollow circles (n=6 nets).

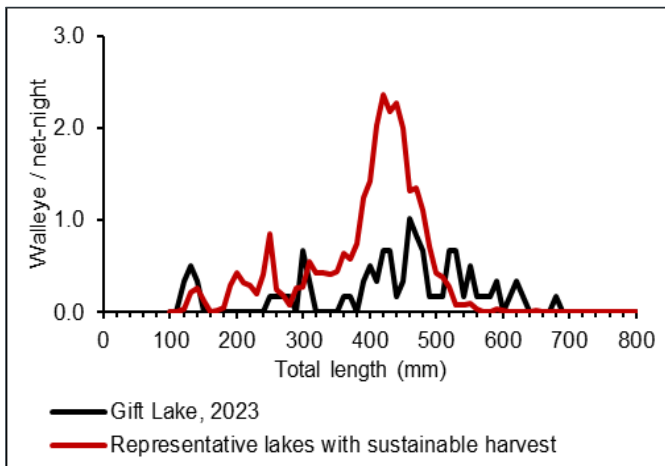


Figure 2 – FIN sample showing size of walleyes from Gift Lake, 2023. The red line indicates the average length distribution of walleye from 5 Alberta lakes supporting long-term sustainable harvests of walleye.

The corresponding FSI score for the current mature density of Northern pike was assessed at **moderate to high risk**.

The length distribution shows limited recruitment, a moderate abundance of 500 to 650 mm Northern pike, and no abundance of fish larger than 650 mm (Figure 4).

The 2023 FIN sample represented approximately 0.3% of the estimated Northern pike population size.

Summary

The 2023 FIN assessment indicated an adult abundance and FSI status of **high risk** for walleye. The objective for walleye population is to achieve a moderate risk status population. Based on the management objective, strict conservation-based management is necessary for this fish population and fishery to improve sustainability.

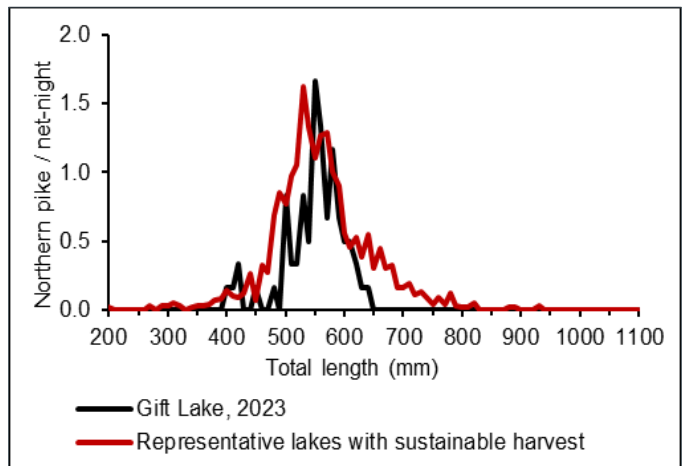


Figure 4 – FIN sample showing size of Northern pike from Gift Lake, 2023. The red line indicates the average length distribution of pike from 6 Alberta lakes supporting long-term sustainable harvests of pike.

The 2023 FIN assessment indicated the adult abundance and FSI status of **moderate to high risk** for Northern pike.

The objective for Northern pike population is to achieve a moderate risk status. Based on the management objective, conservation-minded management is necessary for this fish population and fishery.

Literature

Morgan, G.E. 2002. Manual of Instructions-Fall Walleye Index Netting. Percid Community Synthesis, Diagnostics and Sampling Standards Working Group. Laurentian University, Sudbury Ontario.