Iosegun Lake Fall Index Netting Summary, 2022

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 2 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 2022 FIN at Iosegun Lake

Iosegun Lake (1337 ha) is located 235 km northwest of the city of Edmonton. From September 21 to 22, 2022, seven nets captured one burbot, 54 ciscoes, two lake whitefish, 49 Northern pike, 209 walleyes, four white suckers, and two yellow perch.

Walleye

The mean catch rate of walleyes was 29.9/ net-night. The catch rates of mature (Figure 1) and immature walleyes were 25.4/ net-night and 4.1/ net-night, respectively. The corresponding FSI score for the mature density of walleyes was assessed at **low risk**.

The length distribution shows intermittent yet strong recruitment, very abundant 360 to 520 mm walleyes, and a strong truncation and absence of walleye larger than 520 mm (Figure 2).

The 2022 FIN sample represented approximately 0.9% of the estimated mature walleye population size.

Northern Pike

The mean catch rate of mature Northern pike was 7.0/ net-night (Figure 3). The corresponding FSI score for the mature density of Northern Pike was assessed at **high risk**.
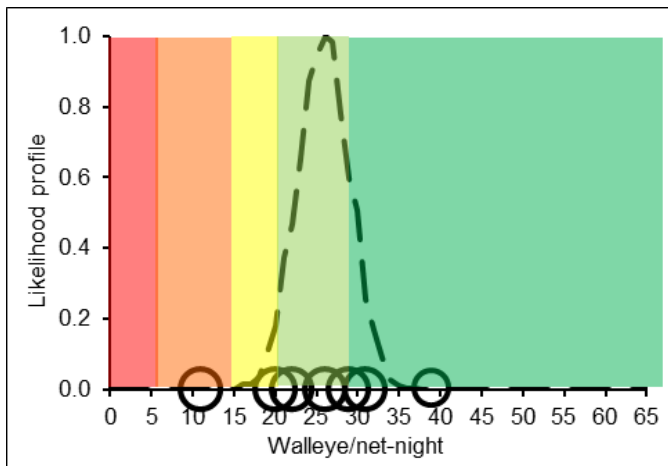
Figure 1 - The FIN catch rate of mature walleyes from Iosegun Lake, 2022. Dashed line is the mean catch rate (25.4 fish/ net-night), with individual net data as hollow circles (n=7 nets).
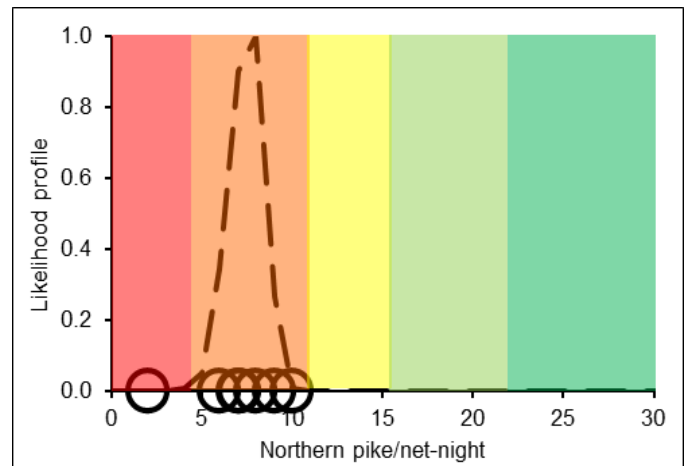

Figure 3 - The FIN catch rate of mature Northern pike from Iosegun Lake, 2022. Dashed line is the mean catch rate (7.0 fish/ net-night), with individual net data as hollow circles (n=7 nets).
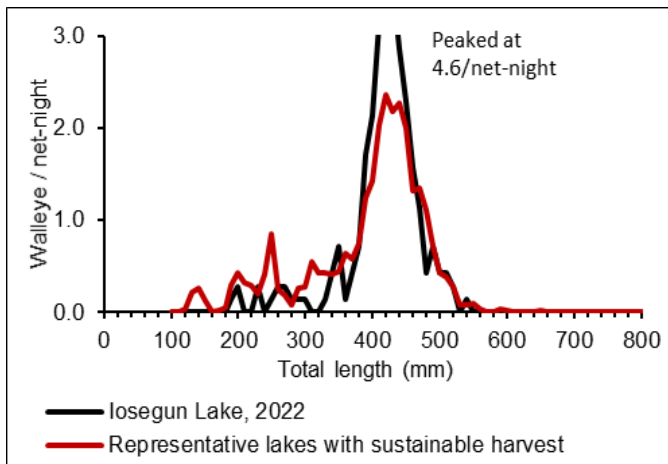

Figure 2 – FIN sample of showing size of walleyes from Iosegun Lake, 2022. The red line indicates the average length distribution of walleye from 5 Alberta lakes supporting long-term sustainable harvests of walleye.

The length distribution shows strong recruitment, a low abundance of 470 to 710 mm Northern pike, and a few large fish (Figure 4).

The 2022 FIN sample represented approximately 0.2% of the estimated mature Northern pike population size.

Figure 4 – FIN sample showing size of Northern pike from Iosegun Lake, 2022. The red line indicates the average length distribution of pike from 6 Alberta lakes supporting long-term sustainable harvests of pike.

The status of mature Northern Pike since the 2016 and 2020 assessment has remained at very high-high risk and is currently classified as **high risk**. Continued conservation-focused management is required to manage this population and fishery.

Summary

Since the 2016 and 2020 assessments, the status of mature walleyes has remained at low to moderate risk. The 2022 assessment determined the status of walleyes to be **low risk**. Continued monitoring is required to ensure the walleye population and fishery remains in a low to moderate risk state.

EPA is closely monitoring a recent regulation change for walleyes at Iosegun Lake to ensure the population and fishery continues to meet sustainability objectives.
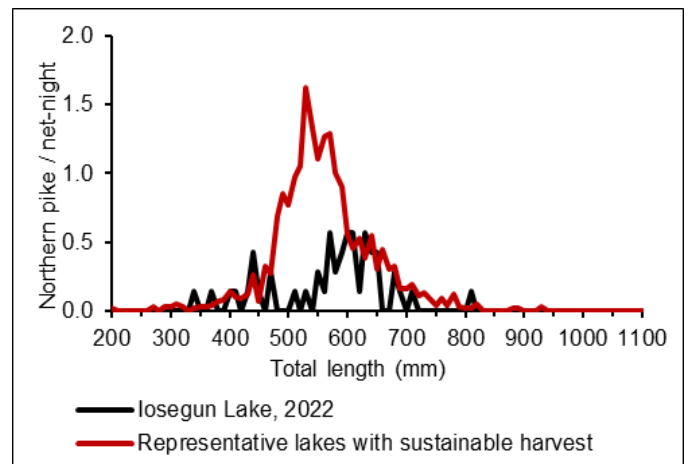
Literature

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