

# Utikuma Lake FIN Summary

## 2018

### Background

“How are the fish in my lake doing?” We need this answer to set appropriate fishing regulations, to understand and correct any problems with fish habitat, and to guard against invasive species. A healthy fish population and fish community means we can all enjoy the benefits of sustainable fisheries and healthy ecosystems. A standard method of assessing the status of fish populations is necessary to allow comparisons of fish sustainability across the years at a lake, and to compare to other lakes. In Alberta, we use an accepted standard of index netting for lake fisheries assessment. This method provides the necessary data on fish abundance, biological data (such as age and sex), and species diversity to assess sustainability.

### Fall Index Netting (FIN)

Alberta Environment and Parks monitor Walleye and Northern Pike populations using standardized index netting (Morgan, 2002). 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, Alberta biologists provide the fish to local Indigenous peoples or to persons on approved subsistence lists. Typically, a tiny proportion of the lake’s fish population (usually 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 5 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 fish living to old age) or habitat (e.g., poor spawning success) 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. Achieving this goal uses the netting data and the FSI to determine the most appropriate sport fishing 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 FIN and FSI websites:

- <https://www.alberta.ca/fall-index-netting.aspx>
- <https://www.alberta.ca/fish-sustainability-index.aspx>

**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

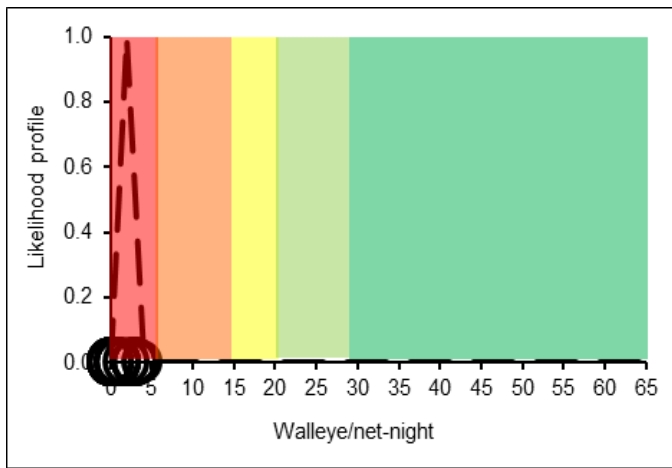
### Results of the 2018 FIN at Utikuma Lake

Utikuma Lake (30374 ha) is located 100 km north from the town of Slave Lake. From September 24 to 27, 2018, 18 nets captured 5 Cisco, 37 Lake Whitefish, 86 Northern Pike and 25 Walleyes.

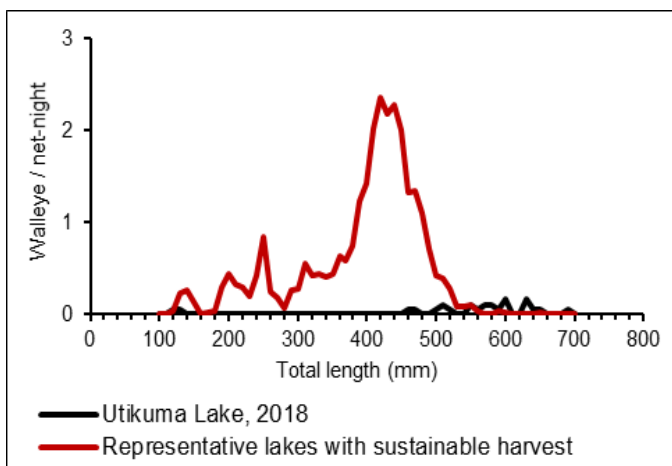
### Walleye

The mean catch rate of Walleyes was 1.4/ net-night. The catch rates of mature (Figure 1) and immature Walleyes were 1.3/ net-night and 0.1/ net-night, respectively. The corresponding FSI score for the current mature density of Walleyes was assessed at **very high risk**.

The length distribution shows very poor recruitment, an absence of Walleye between 130 to 450mm and low abundances of 460 to 510 mm Walleyes. There is a low but slightly above average abundance of fish larger than 560 mm (Figure 2).



**Figure 1** - The FIN catch rate of mature Walleyes from Utikuma Lake, 2018. Dashed line is the mean catch rate (1.3 fish/ net-night), with individual net data as hollow circles (n=18 nets).



**Figure 2** – FIN sample of showing size of Walleyes from Utikuma Lake, 2018. The red line indicates the average length distribution of Walleye from 5 Alberta lakes supporting long-term sustainable harvests of Walleye.

The 2018 FIN sample represented approximately 0.1% of the estimated mature Walleye population size.

## Northern Pike

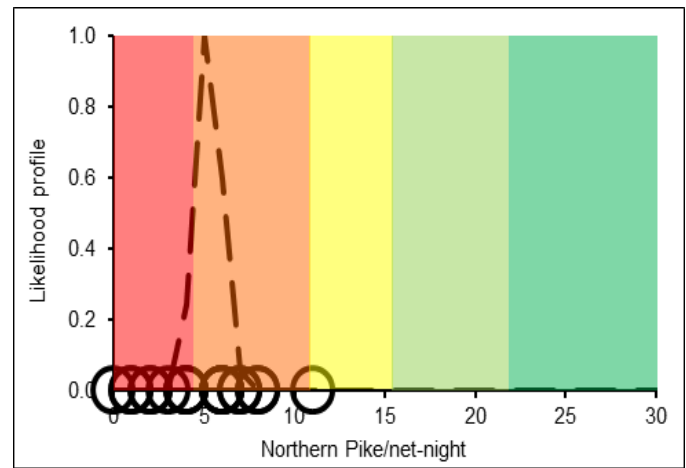
The mean catch rate of mature Northern Pike was 4.8/ net-night (Figure 3). The corresponding FSI score for the current mature density of Northern Pike was assessed at **high risk**.

The length distribution shows weak and sporadic recruitment, a modest, but below average abundance of 480 to 720 mm Northern Pike, and no fish larger than 720mm (Figure 4).

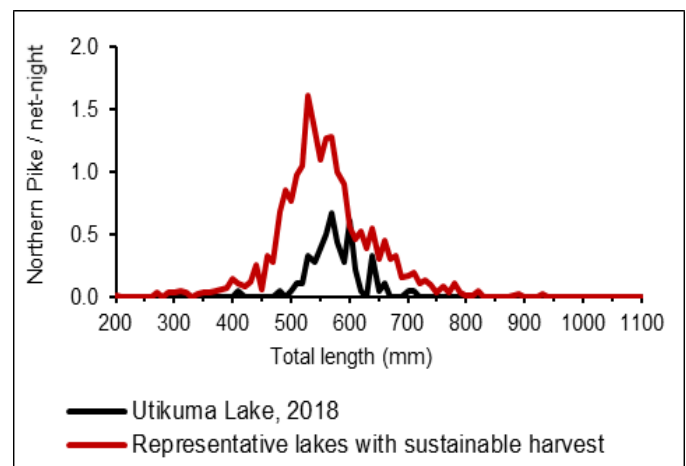
The 2018 FIN sample represented approximately <0.1% of the estimated mature Northern Pike population size.

## Summary

Since the 2013 FIN assessment, the corresponding FSI status of Walleye in Utikuma Lake has decreased from **high risk** to **very high risk** in 2018. To ensure the long-term sustainability of this fishery, stringent conservation efforts are necessary.



**Figure 3** - The FIN catch rate of mature Northern Pike from Utikuma Lake, 2018. Dashed line is the mean catch rate (4.8 fish/ net-night), with individual net data as hollow circles (n=18 nets).



**Figure 4** – FIN sample showing size of Northern Pike from Utikuma Lake, 2018. The red line indicates the average length distribution of pike from 6 Alberta lakes supporting long-term sustainable harvests of pike.

Since 2013, the Northern Pike population has declined significantly. The FSI status of Northern Pike has declined from **very low risk** to **high risk** in 2018. Periodic fish kills caused by low winter and summer dissolved oxygen levels add complexity and difficulty to sustaining these fish populations. Therefore, conservation-based management is required to support the long-term sustainability of this 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.