Rock Island 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

<table>
<thead>
<tr>
<th>Mature Walleyes/net</th>
<th>Mature Pike/net</th>
<th>Risk to Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;29.0</td>
<td>&gt;21.8</td>
<td>Very Low</td>
</tr>
<tr>
<td>20.3-29.0</td>
<td>15.3-21.8</td>
<td>Low</td>
</tr>
<tr>
<td>14.5-20.2</td>
<td>10.9-15.2</td>
<td>Moderate</td>
</tr>
<tr>
<td>5.8-14.4</td>
<td>4.4-10.8</td>
<td>High</td>
</tr>
<tr>
<td>&lt;5.8</td>
<td>&lt;4.4</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Results of the 2018 FIN at Rock Island Lake

Rock Island Lake (1927 ha) is located 88 km of the town of Athabasca. From October 10 to 13, 2018, 12 nets captured 241 Ciscoes, 65 Lake Whitefish, 22 Longnose Suckers, 48 Northern Pike, 282 Walleyes, 30 White Suckers and 444 Yellow Perch.

Walleye

The mean catch rate of Walleyes was 23.5/ net-night. The catch rates of mature (Figure 1) and immature Walleyes were 13.8/ net-night and 9.8/ net-night, respectively. The corresponding FSI score for the current mature density of Walleyes was assessed at moderate-high risk.

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Figure 1 - The FIN catch rate of mature Walleyes from Rock Island Lake, 2018. Dashed line is the mean catch rate (13.8 fish/ net-night), with individual net data as hollow circles (n=12 nets).

Figure 2 – FIN sample of showing size of Walleyes from Rock Island Lake, 2018. 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 unstable yet strong recruitment, modest abundances of 330 to 520 mm Walleyes and high abundances of fish larger than 520 mm (Figure 2).

The 2018 FIN sample represented approximately 1.2% of the estimated mature Walleye population size.

Northern Pike

The mean catch rate of mature Northern Pike was 3.9/ net-night (Figure 3). The corresponding FSI score for the current mature density of Northern Pike was assessed at very high risk.

The length distribution shows unstable and weak recruitment and poor abundance of pike larger than 560 mm (Figure 4).

The 2018 FIN sample represented approximately 0.3% of the estimated Northern Pike population size.

Summary

The FIN assessments show the Walleye population has improved from a corresponding FSI status of high risk in 2017 to a moderate-high risk in 2018. Strong recruitment and abundances of larger fish contributes to the sustainability of this fishery. Conservation-based management is required to meet the long-term management goal of allowing for sustainable harvest.

The 2018 Northern Pike FIN assessment remains unchanged from the 2017 very high risk status assessment. Stringent conservation-based management is required to support the recovery of this population.

Literature