Lake Trout Working Group for Cold Lake

Summary Report

In September 2022, a working group of community stakeholders was assembled to support Environment and Protected Areas (EPA) fisheries biologists in the development of sportfishing regulation options for lake trout in Cold Lake. The purpose of the working group was to provide advice, ideas, input, expertise and feedback to EPA to develop new lake trout harvest regulation options for Cold Lake. The working group met four times throughout the fall to learn about the lake trout population, discuss fisheries management objectives for the fishery, model sportfishing regulation changes and make recommendations for proposed sportfishing regulations for lake trout. Through this process, the working group developed three recommendations to take to the 2023-2024 sportfishing engagement. The meeting summary for this working group is outlined below.

Meeting one

Working group members agreed to a Terms of Reference, which outlined the purpose of the working group, the time commitment, communication guidelines and the overall goal of the working group.

The regional fisheries biologists provided a history of the lake trout population in Cold Lake and an update about the current status of the lake trout population in Cold Lake. The members learned that the current sportfishing regulation (one fish over 75cm) was set for recovery of the population, which has now been achieved. Learn more about the current status through the Cold Lake Fact Sheet.

Meeting two

Fisheries biologists presented a computer model program which was developed by the Government of Alberta specifically to model lake trout populations. They described how models are used in fisheries management, what the inputs to the model were and what to expect as outputs from the model.

A key consideration when using models is that they are just one tool in fisheries management, and the information that you get out of them is only as good as the information that you put in them. The group recognized that having angler effort data from 2012 could be a barrier to using the model. This was addressed by modeling at various levels of angling hours.

Model Inputs	Model Outputs
• Fish parameters - Current numbers of fish - How fast fish grow and when they mature - how many eggs fish produce (spawning potential) - How many fish die naturally • Fishery parameters - Regulation proposals (sizes, bag limits, etc.) - Angling effort - Hooking mortality	• How many fish are left? • Are they producing enough babies to support the population?

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After this presentation, working group members were asked what their desired characteristics for the fishery were – ranging from larger trophy fish to increased harvest opportunities. They then brought forward ideas for sportfishing regulation options that would meet their desired characteristics. The following options were brought forward by the working group:

- Three fish any size for the year (with no draw for purchases of the tags – all anglers are allowed three fish)
- Season closures for winter and summer
- Winter regulation different than summer regulation
- Keep the current regulation: 1 over 75cm
- Zero retention (catch and release)
- Zero retention (catch and release) for 5 years, then allow harvest
- Tag system
  - 5 tags 60-65cm
  - 3 tags 70-75cm
- Slot and sizes limits
  - Under <60cm
  - 1 over 70cm, 1 under 45cm
  - 70 to 75cm
  - Over 85cm

The fisheries biologists reviewed these regulation suggestions and discussed which options could be modeled and which could not. They committed to running the model on the regulation suggestions except for the options that were unenforceable or could not be implemented on the interprovincial lake. The most common barrier to some of the suggestions is that the rules must apply in both provinces, and since Saskatchewan does not have a special harvest licence (tag system) in place, tags are not currently an option at Cold Lake.

Meeting three:

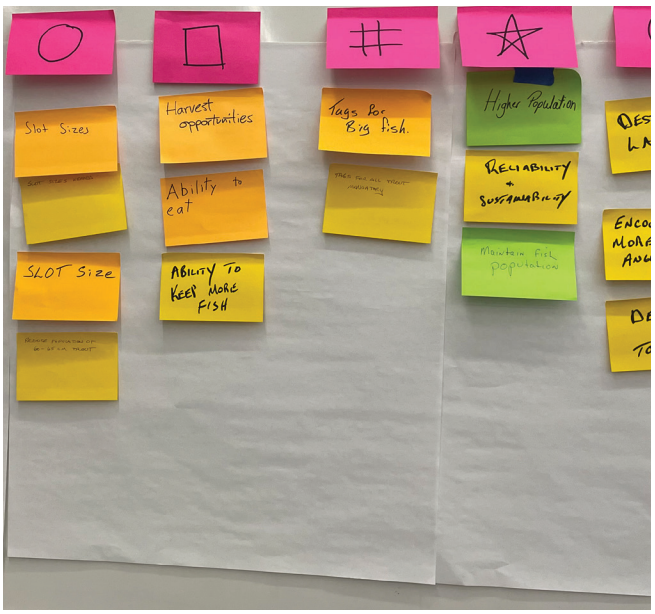
Fisheries biologists presented the model outputs for all the sportfishing regulations developed by the working group. Graphs depicted the lake trout population over 20 years, and the spawning potential ratio.

Spawning potential ratio is the number of eggs produced by a fish stock over its lifespan under a specific fishing regulation, relative to the spawn that would have been produced over the fish stock's lifespan if there were no fishing. It is a measure of the impact that fishing has on the ability of a fish stock to contribute to spawning.

Fisheries biologists used a spawning potential ratio of 0.4 as the lower threshold for sustainable population management. This threshold is well supported in literature.

Working group members were given the results of the model and asked to speak to their organizations (as applicable) and come prepared to vote on their suggestions at meeting four. The results of the model are listed in Appendix A. In meeting three, working group members were concerned that the 250,000 hours of angling effort modeled was not enough given the likelihood of increased angling and harvest on Cold Lake. Between meeting three and four, the model was run again with 380,000 angling hours to demonstrate how increased angling effort would impact the lake trout sustainability. These results were emailed to working group members in advance of meeting four.

After discussions amongst Alberta and Saskatchewan biologists, additional regulation options were added to the suite of options (See Appendix A). These were also modelled at both angling effort hours and shared in advance of meeting four.



Meeting four:

The working group reviewed all of the model results of each option at the different angling effort levels and took time to discuss the trade-offs, so that everyone understood the results.

A voting method was employed to have the working group members choose which three recommendations would proceed to the sportfishing engagement. Working group members were all given three voting stickers which they could use on any regulation they supported (including using all three on one regulation, or to spread them around) for two rounds of voting. Three options were selected after two rounds of voting:

- Status quo – One fish, 75 cm minimum size limit
- Harvest slot: One fish, 65–70 cm
- Harvest slot: One fish, 70–75 cm

These three lake trout sportfishing regulations will be presented in the Government of Alberta's annual sportfishing regulation engagement for 2023-2024. Any member of the public will be able to complete the engagement survey to cast their vote for which regulation becomes the recommendation.

The working group members also suggested a bait ban be considered at Cold Lake as part of the conservation efforts for lake trout and other species. This question will also be part of the sportfishing engagement webinar and survey.

Working Group Evaluation

The working group members were given opportunity to evaluate the process via a survey sent out after the last meeting. Of the 12 working group members, nine completed the survey.

The majority of respondents agreed that they were given the opportunity to provide advice, ideas, input, expertise, and feedback during this working group. Respondents agreed that the Terms of Reference were clear, the timeline of the working group was appropriate and the resources provided helped them understand the content. Some comments were provided about the make-up of the working group members and the need for more diversity. There were also many comments that participants appreciated being part of the group and enjoyed the in-person workshops.

Next Steps

The working group was disbanded in December 2022, after completing the recommendations. The sportfishing regulation options will be used in Alberta's annual sportfishing engagement in January 2023. The Government of Saskatchewan will be completing public engagement on the outcomes from this engagement in summer of 2023. It is expected that the sportfishing regulations will be changed in 2024 for lake trout in Cold Lake.

Thank you

Working group members dedicated many hours of their personal time to this working group and we'd like to thank them for their participation and knowledge contribution throughout this process. Having local stakeholder insights regarding the current popularity of the fishery, members' catch rates and local interests were important components for consideration while working together to develop the sportfishing regulation options.

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Classification: Public

Appendix A

Regulation	250,000 hours		380,000 hours		Additional Comments
	FSI Risk 	Recruitment (Are enough babies being made?)	FSI Risk 	Recruitment (Are enough babies being made?)	
Zero Harvest	Stays Green (Low Risk)	Yes	Stays Green (Low Risk)	Yes	• Will allow fish to grow bigger, but will take a number of years to see higher numbers of big fish
Zero Harvest for 5 years	Stays Green (Low Risk)	Yes	Stays Green (Low Risk)	Yes	• 5 years of protection would result in a population increase, but isn't really a long enough period to generate large numbers of big fish
NEW **1 Fish, 85 cm minimum size**	Stays Green (Low Risk)	Yes	Drops to Yellow (Moderate Risk)	Yes	• Fewer harvest opportunities than current regulation
1 Fish, 75 cm minimum size	Stays Green (Low Risk)	Yes	Drops to Yellow (Moderate Risk)	Yes	• Maintains current regulation • At lower angling effort, fish population should continue to increase, but won't result in significant numbers of fish over 75cm
1 Fish, 65 cm minimum size	Drops to Yellow (Moderate Risk)	Lower, but yes	Drops to Yellow (Moderate Risk)	No	• Drops into the yellow FSI category. Stronger decline with high angling effort • Recruitment collapses under high effort

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Regulation	250,000 hours		380,000 hours		Additional Comments
	FSI Risk 	Recruitment (Are enough babies being made?)	FSI Risk 	Recruitment (Are enough babies being made?)	
1 Fish, 60 cm maximum size	Drops to Yellow (Moderate Risk)	No	Drops to Orange (High Risk)	No	• At low effort, population drops steeply into the yellow FSI category, recruitment fails • At high effort, high risk to sustainability
55-65 cm Harvest Slot	Drops to Yellow (Moderate Risk)	Yes	Drops to Yellow (Moderate Risk)	No	• Wider slot means fish are at risk of harvest for a longer period • Recruitment failure at high effort levels
60-65 cm Harvest Slot	Stays Green (Low Risk)	Yes	Drops to Yellow (Moderate Risk)	No	• Recruitment failure at high effort levels
***NEW* 65-70 cm Harvest Slot**	Stays Green (Low Risk)	Yes	Drops to Yellow (Moderate Risk)	Yes	• Fish have more years to reproduce before entering the harvest slot
70-75 cm Harvest Slot	Stays Green (Low Risk)	Yes	Drops to Yellow (Moderate Risk)	Yes	• Fish have more years to reproduce before entering the harvest slot • Fish will remain in harvest slot longer

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Regulation	250,000 hours		380,000 hours		Additional Comments
	FSI Risk 	Recruitment (Are enough babies being made?)	FSI Risk 	Recruitment (Are enough babies being made?)	
1 under 45 cm, 1 over 70 cm	Drops to Yellow (Moderate Risk)	Lower, but yes	Drops to Yellow (Moderate Risk)	No	• Drops steeply into the yellow FSI category, more so under high angling effort • Poor recruitment (lower effort) and recruitment failure (high effort)
Tags	Stays Green (Low Risk)	Yes			• Would be sustainable, tags for size classes could be issued based on abundance of those size classes. Requires regular population monitoring to adjust tag allocations over time. Not compatible as an interprovincial regulation
Seasonal Closures					• Effect of shortened season would be minimal • Cutting out one season likely would not be supported by the general public
3 fish any size for the year, unlimited participants					• Approaches recruitment failure at around 8,300 anglers • Couldn't be enforced without a tag or punch card of some kind, so not compatible as an interprovincial regulation