

**Shuswap Waterfront Owners Association and
Ministry of Forests, Lands and Natural Resource Operations**

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DRAFT 4

Research Proposal

Shuswap and Mara Lakes

Influence of Docks and Beach Modifications on Fish Productivity

Shuswap, Mara and Little Shuswap Lakes are utilized by a variety of species (both anadromous and resident) that utilize both near-shore and pelagic habitats at differing times of the year. Additionally, in the past few decades there has been an increase in the number of recreational and permanent residences in various locations along the lake foreshore and associated local beach modifications and installation of docks. This has led to increased efforts to both restore beaches and regulate dock size, location and operation. These efforts could benefit from directed, lake specific, scientific research that would examine the potential interactions between the size, location and different designs of docks currently in use around the Lakes, and possible differences in fish use and aquatic productivity on modified and natural beaches. This research would provide a sound scientific basis that could be used to resolve concerns relating to the permitting of docks, maintenance of existing structures and beach modification.

Discussions to date have resulted in a desire by both SWOA and MFLNRO to jointly explore having researchers from Thompson Rivers University (TRU) undertake directed research projects to assist in resolving these issues by providing scientific evidence for Shuswap and Mara Lakes specific guidelines on these issues.

Research Proposals

The current working hypothesis for docks around Shuswap and Mara Lakes is that they provide overhead cover for juvenile fish but also act to concentrate these fish such that they are more vulnerable to predators. Additionally, the shade provided by docks can affect the productivity of aquatic invertebrates that are a source of food for juvenile fish species. Finally, operation and/or use of the docks may result in the grounding of docks and potentially affect benthic production in the nearshore areas.

As a further working hypothesis, is there a difference in fish use/production in areas where there have been beach modifications and undisturbed beaches.

Docks

It is proposed that site specific research be undertaken to determine if these working hypotheses are correct and whether there are size thresholds (in terms of both width and length and construction techniques) for docks or their operation (allowing for grounding).

The factors to be examined would include:

1. Is there a size threshold for docks at which productivity could be affected?
2. Is there a density (such as square meters of dock per 100 m of shoreline) at which productivity of both fish and invertebrates could be affected?
3. Are there other factors, such as the linkage between the shore and the dock (minimum gangplank length), or depth of water under the dock, that may affect the production from nearshore habitats?
4. Is there a statistically significant difference in the productivity from different designs for docks (such as using open mesh decking)?
5. Is there a difference in fish use/productivity between docks (near shore habitats) and open water habitats (controls)
6. Are different areas of the lake more/less sensitive to impacts.

There exist a wide range of both locations and sizes of docks around Shuswap and Mara Lakes. Additionally, juvenile fish of a number of species enter the lakes from the major tributaries at different ages and take up residence both nearshore and in the pelagic habitats. The research proposal will have to address for these factors as well as the size differential of docks around the lakes.

Beach Modifications

It is proposed that site specific research be undertaken to determine if there are differences in fish usage/production at modified and undisturbed beaches. As most beach modifications are likely associated with areas of recreational or residential use of the foreshore, data collection related to this issue could be undertaken as the same sample location and control sites as the dock issues thus achieving efficiencies. This is important, as noted above, juvenile fish of a number of species enter the lakes from the major tributaries at different ages and take up residence both nearshore and in the pelagic habitats. The research proposal will have to address these factors as well.