

# SON/OMNRF Fish Stocking Literature Review Call for Applications

## 1.0 Purpose

The purpose of this project is to conduct a literature review on the potential impacts of fish stocking in the Ontario waters of Lake Huron and Georgian Bay with a specific focus on the Saugeen Ojibway Nation (SON) traditional territory. By compiling and reviewing the relevant literature, we seek to gain an understanding of what is known, identify gaps, and provide recommendations for future research.

This literature review will provide important information on existing science and knowledge. Along with community-based interviews and workshops, this knowledge will help to inform the creation of the SON's Goals and Objectives for the Fishery and the subsequent development of recommendations through a joint SON and Ontario Ministry of Natural Resources and Forestry (OMNRF) action plan. These products will contribute to the OMNRF's lake-wide initiatives such as the development of a non-native salmonid stocking plan and the finalization of the lake trout rehabilitation plan for the Ontario waters of Lake Huron.

We have divided the literature review into four chapters. These include **Ecosystem (APPENDIX I)**; **Food Security and Health (APPENDIX II)**; **Culture, Spirituality, and Social (APPENDIX III)**; and **Economics (APPENDIX IV)**.

We anticipate a different reviewer for each chapter, however, the applicant may submit a proposal for several chapters. This work may lead to future academic publications.

## 1.1 Background

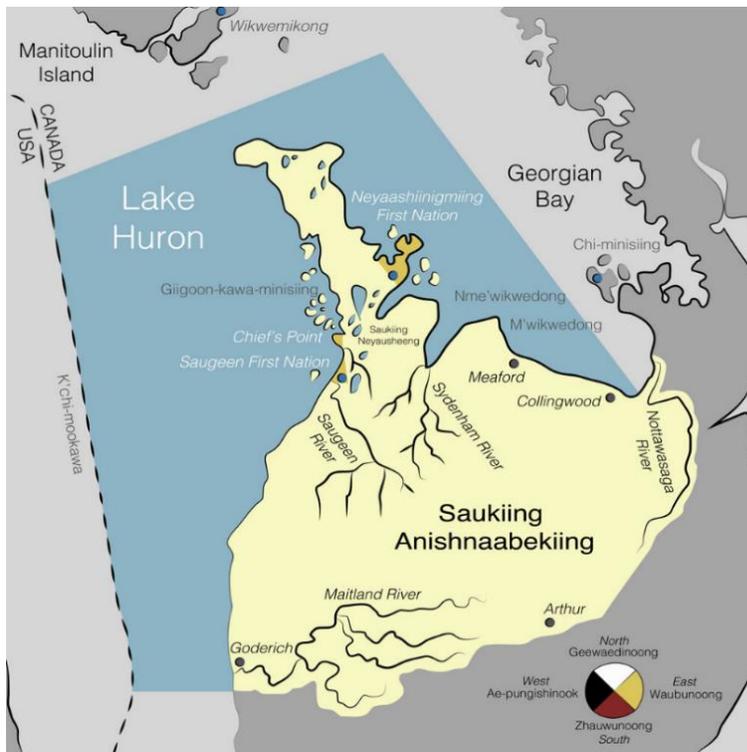


Figure 1. SON traditional territory (Saugeen Peninsula)

The SON is an amalgamation of two First Nations in southwestern Ontario: the Chippewas of Nawash Unceded First Nation and the Chippewas of Saugeen First Nation. Since time immemorial, the SON people have fished in their traditional territory for food, commerce, and ceremony. The SON holds rights to harvest fish commercially which was reaffirmed through the Ontario Provincial Court (*R v Jones, 1993*). The SON collaboratively governs their traditional territory and oversees their commercial fishery.

Currently, the SON commercial fishery is managed through a Substantive Commercial Fishing Agreement (2013) and a Framework Agreement (2011) between the SON and Her Majesty the Queen in Right of Ontario as represented by the Minister of Natural Resources and Forestry. The SON and the OMNRF have made a mutual commitment (Section D of the Framework Agreement) to discuss and consider the impacts of stocking programs in the SON territorial waters. Stocking of non-native salmonids to support a recreational fishery is undertaken by sports fishing clubs and permitted through the OMNRF. Lake trout are stocked within SON's traditional territory as a part of the OMNRF lake trout rehabilitation program.

Both the OMNRF and the SON have agreed to work together to address the topic of stocking through a collaborative process and we have developed principles to guide our work together. These principles include mutual respect, mutual understanding, equity in decision making, and the importance of timeliness in addressing this topic.

The literature review questions were developed based on input received from community engagement with the SON and the OMNRF (see appendices for chapter-specific questions).

## **1.2 Objectives for the Literature Review**

- Provide an overview of the existing knowledge about fish stocking in Lake Huron and the SON's traditional territory by reviewing existing academic literature from peer-reviewed sources, books, grey literature, and existing material from both the OMNRF and the SON.
- Identify key gaps and uncertainties in the literature that have yet to be addressed by the scientific or research community.

## **2.0 Scope of Work for Literature Review**

### **2.1 Review of Applicable Literature to Identify Research Gaps.**

The main research process is to identify what information exists, summarize information, and identify key gaps including recommendations for future research. This will include a broad search of academic resources as well as selected resources provided from the project team from OMNRF and SON.

#### **Scope of Review:**

- Literature should focus on studies relevant to the Great Lakes Ecosystem with a focus where possible on the Lake Huron ecosystem.
- Priority should be given to academic or peer reviewed publications in addition to the provided material from SON and OMNRF.
- The species of stocked species that are of interest to the SON/OMNRF Fish Stocking Working Group are lake trout and non-native salmonids (rainbow trout, splake, chinook salmon, coho salmon, pink salmon).
- The scope for academic published material should be within the last 5-10 years although previous material will be considered where relevant.

### **3.0 Summary of Project Deliverables**

The main deliverables are corresponding with the research objectives:

- Presentation to SON/OMNRF Fish Stocking Working Group about proposed methodology of the literature review and workplan.
- Draft literature review report.
- Final literature review report and presentation of findings.

### **4.0 Methodology**

The details of the methodology will be outlined in the applicant's proposal. Please consider the following:

- The reviewer will be supervised by SON and OMNRF staff.
- We expect the methodology to be a standard and credible literature review process.
- We are seeking proposals that outline methodology such as search strategy, selection criteria, and summary approach. For example, the reviewer may provide an overview of criteria such as selecting articles, search terms used, the statistical relevance of the article, and a summary of the number of articles found relevant to each question.
- The key insights from the review should be summarized in a way that is easily understood by both technical and non-technical audiences. Each research question will require a summary page outlining key information that exists, knowledge gaps, and the work that has been done by the academic community to address the topic.
- It is expected that the reviewer will have access to journal subscriptions. The research team may provide a list of recommended literature.
- The SON and OMNRF will provide internal publications and literature to the reviewer.
- Writing and citations must follow the APA format.
- List of priority questions will be important to help the review develop a detailed approach and methodology.

## 5.0 Timeline and Financial Compensation

The literature review will be conducted over a 4-month period beginning in December 2020 with the submission deadline of March 14<sup>th</sup>, 2021.

### 5.1 Financial Compensation

The rate includes time for reviewing literature, report writing and research. We expect in the proposal that the applicant will provide an outline on how each question will be addressed in the 4-month time period.

Chapter	Compensation
Ecosystem	\$10,000
Food Security and Health	\$2,000
Cultural, Spiritual, and Social	\$1,000
Economics	\$2,000

We have allocated the budget based on the anticipated number of peer-reviewed articles and grey literature to review in each subject area.

### 5.2 Payment Based on Deliverables

Payment will be based on key deliverables being achieved for the project. These include:

Deliverable	Percentage of Payment
Presentation of the successful project proposal.	20%
Draft literature review report.	30%
Final literature review report and presentation of findings.	50%

## 6.0 Expression of Interest

Potential reviewers are encouraged to express interest in the SON/OMNRF Fish Stocking Working Group via Ryan Lauzon and Kaitlin Almack by November 16<sup>th</sup>, 2020.

*Ryan Lauzon (Chippewas of Nawash Fisheries Biologist): [nawash.fisheries@gmail.com](mailto:nawash.fisheries@gmail.com)*

*Kaitlin Almack (OMNRF Indigenous Liaison): [kaitlin.almack@ontario.ca](mailto:kaitlin.almack@ontario.ca)*

Please provide:

- 1) Curriculum Vitae.
- 2) Cover letter.
- 3) Proposed draft methodology and draft workplan to develop deliverables in the time outlined.
- 4) A writing example.

Upon reviewing the initial expression of interest submissions, the SON/OMNRF Fish Stocking Working Group will screen potential candidates and develop a shortlist of candidates who will be asked to complete a formal proposal template. At this point, there may be minor adjustments to the scoping document and literature review questions.

The SON/OMNRF Fish Stocking Working Group will notify successful applicants after formal review.

## Appendix I - Ecosystem Chapter

How has fish stocking in Lake Huron and Georgian Bay altered the ecosystem and native fish populations? The review should address whether there is available information on how stocking has affected ecosystem and fish population sustainability and resiliency. The review should also consider cumulative effects. Specific topics to be addressed include the following:

1. What information is available on whether stocking has contributed to the introduction and/or distribution of diseases and parasites? Are there any studies of how such introduced diseases or parasites have affected native species and/or ecosystem function?
2. Is there any available research on predation effects to native and introduced species as a result of stocking? This should include both direct effects of predation by stocked fish on lake whitefish and other native species as well as changes in predation of prey species (native and non-native) that have occurred as a result of stocking.
3. What is known about the impacts of stocking with respect to competition for resources (e.g. spawning habitat, food) with other species (native/non-native) as well as with the resident population of the species being stocked?
4. Is there any information on how stocking has caused genetic changes in fish populations? This should consider not just genetic changes in the resident populations of the species being stocked, but also the genetic changes in other species (native and non-native) as a consequence of stocking.
5. What is known about the effects of fish stocking on the environment? (e.g. water quality changes caused by the addition of nutrients from non-native salmonids).
6. What is known about the impact of stocking on the food web and whether stocking has more generally affected the dynamics of invasive species, their impacts and their control?
7. What is known about historical Lake Whitefish/Lake Trout interactions (pre-lake-trout collapse) in Lake Huron (diet, habitat, population ratios, etc.)?
8. Is there any available information on whether stocking has influenced the resilience of the ecosystem and native fish populations in the face of future changes such as climate change?
9. What is known about the impacts of increased recreational fishing boat traffic on fish?

## **APPENDIX II - Food Security and Health Chapter**

### Background

1. What is food security?
2. What is food sovereignty?
3. What has been the historical importance of fish for food security, food sovereignty and health within the SON community?

### Key questions

What is known about the impact of fish stocking in Lake Huron and Georgian Bay on changes in food security within the SON community as a result of any of the following factors? Specific topics to be addressed include the following:

1. Access to affordable and nutritious foods.
2. Food sovereignty.
3. Human health within SON.

## **APPENDIX III - Culture, Spirituality, and Social Chapter**

### Background

What is known about the history of SON's relationship with fish, waters and fishery from the distant past until current times? This includes the following:

1. Oral history.
2. Stories.
3. Traditional knowledge.
4. Natural law.
5. Cultural and spiritual identity.
6. Ceremonies and feasts.

### Key questions

What is known about the potential impact of fish stocking in Lake Huron and Georgian Bay on the culture and spirituality of SON members. Specific topics to be addressed include the following:

1. SON's relationship and responsibility to fish and waters.
2. Role of fish in ceremonies and feasts.
3. Role of fish in identity e.g., dodem system.
4. Increased conflict from angler groups, etc. including racism, violence, vandalism and theft.
5. Ability to maintain fishing lifestyle.
6. The "Right" to a fishery.

## **APPENDIX IV - Economics Chapter**

### Background

1. What is the current economic value of the commercial fishery in the SON community? (employment)
2. What is the historical context? (harvest change overtime)

### Key Questions

What is known about the potential impact of fish stocking on the economy and livelihoods of SON fishermen and membership? Specific topics to be addressed include the following:

1. Ability of SON fishermen and membership to derive a moderate income from commercial fishing?
  - a. Ability to access the fishery (not fishing in certain areas because of recreational interests).
  - b. Economic impact of broken/damaged nets (e.g., lake trout).
  - c. Ability to access markets.
  - d. Altered harvest.
2. Ability of SON membership to derive an economic benefit from non-native salmonid or recreational industry?
  - a. Ability to participate in the economy (e.g., tourism)?