



**ONTARIO
RIVERS
ALLIANCE**

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Christopher G. Lledo
Environmental Advisor
RGPM – Programs, Environment
By email: Christopher.Lledo@OPG.com

Re: Mattagami River – Little Long Dam Safety Project

Dear Sirs:

The Ontario Rivers Alliance (ORA) is a Not-for-Profit grassroots organization acting as a voice for a diverse membership that has come together to protect, conserve and restore riverine ecosystems.

Ontario Power Generation (OPG) is improving its dam infrastructure resilience in accordance with the Ministry of Natural Resources and Forestry (MNRF) Ontario Dam Safety Guidelines, to protect the Lower Mattagami River Hydroelectric Complex and its four hydroelectric generating stations. Consequently, OPG is increasing the discharge capacity at the Adam Creek Sluiceway from passing 6,090 m³/s to 8,680 m³/s by adding two additional sluice gates on each side of its sluiceway structure. OPG also indicates there will be no changes to water levels and flows as outlined in the Mattagami River System Water Management Plan.

ORA agrees that this is an opportune time to mitigate the long-standing impacts and risk of direct mortality to Lake Sturgeon when passing downstream through the turbines and sluiceways at the Little Long Generating Complex.

We are pleased to hear that the large rock downstream of the sluiceway structure, that has caused injury to Lake Sturgeon during spilling operations, will be removed. However, as was noted by Laurent Robichaud, we are also concerned about the long-standing issue of Lake Sturgeon entrainment and impingement.

Turbine and entrainment mortality, although poorly documented, are recognized threats to Lake Sturgeon subpopulations within fragmented rivers and are at risk from extreme changes in water flow velocity and pressure, cavitation, shear, turbulence, mechanical injuries, entrainment and impingement.

On the Mattagami River in northern Ontario, variable numbers of adult Lake Sturgeon are entrained each spring, within a diversion channel of the river. The number of individuals



entrained is dependent on the timing and duration of spills, relative to post-spawning movement (Seyler et al. 1996). Intakes of most hydroelectric facilities are covered by grates or angled bar racks spaced such that they would prevent passage of adult Lake Sturgeon through turbines, but not the passage of larval or juvenile fish. Fish survival through turbines is generally dependent on the size of fish being entrained, with higher survival in smaller fishes (EPRI 1997).¹

Ideally, fishways should provide safe passage for all migratory species inhabiting the river. However, ORA is recommending that OPG consider an upstream graduated electronic barrier designed to develop a fright zone in a large segment of the waterway where the fish can respond to an electronic field and can swim away to safety.

David Luneke, Project Engineer for [Solutions for Aquatic Conservation](#), in Washington, USA., specializes in electronic barrier/guidance systems. Each application is designed to achieve a specific barrier objective. Although they have not dealt with Lake Sturgeon, they have installed multiple barriers that are focused on larger migratory fish like Coho and Chinook salmon that have a very strong genetic drive, with a great deal of success. He is confident they could design a barrier that would be successful with the containment of both juvenile and adult-sized Lake Sturgeon.

Once an electronic barrier is in place and working, then all Lake Sturgeon in the reservoir between the dam and the electronic barrier must be captured and relocated upstream of the migration barrier.

ORA recommends the following:

1. Install a 500m wide electronic migration barrier at an appropriate distance upstream of the dam to prevent Lake Sturgeon from entering into the vicinity of the dam.
2. Once the electronic barrier is in place, all Lake Sturgeon trapped between the dam and the electronic migration barrier must be collected and relocated upstream of the barrier.
3. Amend the Lower Mattagami System Water Management Plan's Operating Strategy to reflect the protection and mitigation of Lake Sturgeon during periods of high risk of entrainment.

It is important to mention that Laurent (Larry) Robichaud is one of several founding members of the ORA, and his recent letter and input demonstrates his sincere commitment to the care of Lake Sturgeon. We can vouch for his many years of work towards the protection and restoration of Lake Sturgeon populations and habitat in Ontario, and especially within the Mattagami River Watershed.

Thank you for this opportunity to comment!

Respectfully,

Linda Heron
Chair, Ontario Rivers Alliance
(705) 866-1677

Cc: Laurent Robichaud – capnavur@gmail.com



¹ Golder Associates Ltd. 2011. Recovery Strategy for Lake Sturgeon (*Acipenser fulvescens*) – Northwestern Ontario, Great Lakes-Upper St. Lawrence River and Southern Hudson Bay-James Bay populations in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vii + 77 pp.