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By Email: Fiona.McGuiness@Ontario.ca

Re: Draft Government Response Statement for the
Recovery Strategy for the American Eel in Ontario
Endangered Species Act, 2007
EBR-013-1476

Dear Ms. McGuiness:

The Ontario Rivers Alliance (ORA) is a Not-for-Profit grassroots organization acting as a voice for several stewardships, associations, private and First Nation citizens, who have come together to protect, conserve and restore Ontario riverine ecosystems.

First, I wish to express our deep disappointment that the ORA, a registered stakeholder, was not invited to the November workshop hosted by the Ministry of Natural Resources and Forestry (MNRF). The Draft Government Response Statement to the Recovery Strategy for the American Eel in Ontario (GRS) stated that "*decisions must be made in a collaborative and prioritized manner… and is inclusive of Indigenous communities and interested and involved stakeholders*". It is crucial that all interested stakeholders are given equal opportunity to take part in key discussions/meetings surrounding the development of this important GRS.

ORA is pleased to provide our comments as follows (all underlined text is to indicate emphasis):

Lack of Transparency:

ORA has serious concern over the lack of transparency and rigor surrounding the exemption for hydroelectric generating stations under Ontario Regulation 242/08, sec. 23.12 of the Endangered Species Act, 2007. The GRS states that

> *American Eel is listed as an endangered species under the ESA, which protects both the animal and its habitat. The ESA prohibits harm or harassment of the species and damage or destruction of its habitat without authorization. Such authorization would require that conditions established by the Ministry be met. (GRS, P-2, 43-44)*

The GRS is very vague in this area and does not mention what would qualify or disqualify a facility to receive an exemption, or what conditions must be met. Upon review of the ESA regulation, the exemption appears to be so easily obtained that it begs the question of, what is the point of the GRS, especially since hydroelectric is known to be one of the largest contributing factors leading to the decline of the American Eel.

> **Recommendation 1:**
> Set out clearly in the GRS what qualifies a hydroelectric facility for an ESA exemption authorization, and what conditions must be met.

The GRS also reports that,

> *As a transition species under the ESA, the development of a habitat regulation is not necessarily required for American Eel. Eels are habitat generalists, and at their current level of abundance, sufficient habitat is available for growth and maturation in Ontario. As a result, a habitat regulation will not be developed for the species. (GRS, 374-377)*

The purpose of the *Endangered Species Act, 2007* (ESA) is a commitment to protect and recover species at risk and their habitats. The purpose of the GRS is to prepare a recovery strategy that provides science-based advice to government on what is required to achieve the purpose of the ESA. That is, to protect and recover the species and their habitats. The American Eel Recovery Strategy[1] (Recovery Strategy) points out that

> *Habitat use by eels appears to be extremely diverse and access to a diverse array of habitats is fundamental to the resilience of eels in future environmental or other anthropogenic changes (Secor 2007, 2010, Secor and Kerr 2009, MacGregor et al. 2009). In addition, there may be important micro-habitat requirements that have not been considered. For example, eels typically overwinter in soft substrates where they burrow into the upper layers of sediment (Jessop et al. 2009). These wintering grounds may be quite specific and need to be located and evaluated in Ontario waters where eels are still present. (RS, P-28-29)*

Currently, access to historic habitat is blocked by numerous hydroelectric facilities, when clearly one of the goals is to open up access to Eels' historic habitat. Therefore, ORA seriously questions the decision in the GRS that development of a habitat regulation is not required.

> **Recommendation 2:**
> A Habitat Regulation be established to specifically address the protection of access to all historic habitat for the American Eel in Ontario.

There is also a lack of transparency in regard to what has been done or will be done by hydroelectric proponents to reduce Eel mortality, and ORA has concern over the private nature of mitigation plans and efforts. The GRS indicates that a number of organizations are involved in efforts to minimize and monitor the adverse effects of dams and hydro-electric facilities on the American Eel; however, there is no specific information regarding what has been done, by who, and whether these efforts are effective. Or, whether this information will be made available to stakeholders in the future.

Proponents must be required to submit Annual Reports to MNRF detailing all mitigation plans and efforts, including data to measure/determine success or failure. These reports must be made available to all stakeholders and the public, either through a central website or by email to a list of registered stakeholders.

> **Recommendation 3:**
> Any and all mitigation plans and efforts, including their effectiveness, must be made available to the public, stakeholders and Indigenous communities in an Annual Report to MNRF.

Goals and Objectives:

The GRS goal is so weak and lacking in quantitative criteria/targets, effective timelines and scope, that the entire recovery strategy is doomed to fail in achieving any meaningful increase in Eel populations in Ontario.

Additionally, the GRS fails to meet the goals and objectives as set out in the Recovery Strategy,

> *to re-establish the species in a wide variety of waters throughout its historical range in Ontario by the year 2150, at abundance levels that: (1) restore cultural relationships and natural heritage values, (2) are consistent with ecosystems of high integrity and function, (3) strengthen the biodiversity of the province's watersheds, and (4) provide valued ecological services. (RS, P-iv)*

The Recovery Strategy also recommends that

> *present and future changes in abundance should be monitored in a quantitative fashion in support of the recovery strategy. (RS, P-47, 1)*

However, the words quantitative and criteria, or the concept, doesn't even appear in this GSR. Without measured objectives, established by the MNRF, there is no meaningful strategy to increase Eel populations.

> **Recommendation 4:**
> It is essential that quantitative targets and timelines be defined for all mitigation measures in the GRS. More specifically, Actions 7 and 8 must include quantitatively measured outcome requirements within defined timelines.

Upstream and Downstream Passage:

The GRS took the position that there is uncertainty about the risks associated with providing upstream passage where safe downstream passage is not assured. Whereas, the Recovery Strategy made a strong case for enhancing access to tributary habitat and improving headwater connectivity by improving access through strategic provision of enhanced, adequate and safe upstream and downstream passage.

> *There is sufficient technology and science to justify beginning the strategic, effective and adaptive implementation of improvements to upstream and downstream passage in both the St. Lawrence River and Ottawa River watersheds (the two principal migratory corridors for eels recruiting to and leaving Ontario). (RS, P-55)*

The negative impacts of mainstem dams and hydroelectric facilities on biodiversity and diadromous fish species like eels are well documented (e.g., Larinier 2008, McCarthy 2008, Vorosmarty et al. 2010, Brown et al. 2012, Liermann et al. 2012). In Ontario, waterpower facilities form the first and only major obstacles on the main stems of the two principal migratory routes for eels in the province. The benefits of removing or effectively alleviating the impacts of dams and waterpower facilities on eels are clearly illustrated by McCleave (2001), Hitt et al. (2012) and Howard (2012). Restoring passage on the mainstems lowest in the watershed, will provide the most immediate and significant benefits (McCleave 2001). (RS, P-55)

The most effective actions in the short term are likely to be rapid, strategic improvements to upstream passage, restoring some level of connectivity within watersheds. Early provision of upstream passage is a widely adopted strategy in numerous North American jurisdictions (Elmer and Murphy 2007, GMCME 2007, PFBC 2007, PRRT 2009), as it is highly feasible and provides numerous benefits (McCleave 2001, Briand et al. 2005, Machut et al. 2007). It is especially effective and important where large females predominate (McCleave 2001, Hitt et al. 2012), despite ongoing turbine mortalities (McCleave 2001). However, Brown et al. (2012) note that a more effective option would be to consider removing mainstem dams and we agree that if for instance, some of the older facilities on the Ottawa River are nearing the end of their lifespan, removal of such facilities in the lower reaches would be a very effective option to consider. (RS, P-56)

Enhancing access to tributary habitat and improving headwater connectivity by improving access may increase the carrying capacity of the entire watershed (Machut et al. 2007), and increase the relative abundance of females which tend to be more common in upstream areas of low density (Krueger and Oliveira 1999, Oliveira and McCleave 2000, Schmidt et al. 2009, Hitt et al. 2012). Consequently, improving upstream passage will enable improvement in production from a diversity of inland watersheds, enhancing over time biodiversity, ecosystem services and resilience to future anthropogenic perturbations in Ontario and elsewhere. (RS, P-56)

Eel passage plans should be developed and implemented for all existing waterpower facilities that currently kill or otherwise harm eels. These plans should be ongoing and incorporate adaptive management approaches to improve overall effectiveness over time. (RS, P-57)

ORA agrees that the necessary alterations to provide improved passage at dams and hydroelectric facilities will likely require significant financial investment, and it would be more convenient to wait until other upgrades or re-development are taking place; however, the American Eel is clearly threatened across its range - now. Therefore, it's long-term protection, recovery and management will require immediate implementation of upstream and downstream passage at strategic locations clearly identified in the Recovery Strategy and its supporting narrative.

Given the geographic and temporal scope of the strategy, the need for immediate actions and the need to deal with both upstream and downstream passage, an ongoing planning framework, (implemented through watershed-based implementation plans (WIPs)), will be needed to guide implementation. In this regard, we recommend that a strategic watershed approach be used to guide implementation of recovery actions (see

> *page 72 and Appendix 3). If adopted, WIPs will guide the sequencing of recovery actions across the various sub-watersheds within the eels' current and historical range in Ontario. Because of the panmictic nature of eels, it is also important that Ontario continue its strong participation in international and interjurisdictional coordination efforts to manage eels sustainably. (RS, P-57)*

Of course, the key to ensuring everything possible is being done by proponents of hydroelectric facilities to provide safe and effective upstream and downstream passage, is through strict regulation and proper monitoring by MNRF to ensure compliance. It is only through oversight and effective adaptive management that goals can be achieved.

The six immediate high priority actions to be undertaken by 2020 fall short of what should be done immediately by hydroelectric facilities. Chaudière Falls and R.H. Saunders are the only facilities that have upstream passage. Assigning additional locations for safe upstream and downstream passage of Eel must not wait until 2020, but must begin immediately. Both actions 7 and 8 must be added to this highest priority list. There is no acceptable reason why modifications to hydroelectric stations should wait until strategic opportunities arise. With the premium rates being paid today to power generators, it is time proponents paid some of their profits back to repair the damage that has been inflicted upon Eel and fish populations over the last century.

> **Recommendation 5:**
> Highest priority be given to t*he strategic, effective and adaptive implementation of improvements to upstream and downstream passage in both the St. Lawrence River and Ottawa River watersheds.*

ORA is also concerned about the long plan review time proposed in the GRS. Since the 1970s, the American Eel population has decreased by 99% in Ontario; therefore, it is imperative that a review take place much sooner than 10 years if we are serious about Eel recovery. A review every 3 years would be more appropriate to ensure mitigation measures are effective.

> **Recommendation 6:**
> Undertake actions identified in the passage implementation plan, evaluate the plan's implementation and effectiveness **every 3 years**, and update actions and targets as needed.

Hydroelectric Considerations:

The GRS reported that,

> *while threats associated with dams and hydro-electric turbines must be addressed to support American Eel recovery, hydro-electricity continues to be an important electricity source for Ontario. Hydro-electric power plays a critical role in the reliability of the provincial electricity system, and is valued for its role in achieving provincial renewable energy and climate change commitments. The implementation of actions to reduce greenhouse gas emissions within Ontario will help to fight global climate change, and the impact of changes in global climate on American Eel. (GRS, P-11)*

ORA questions how well hydroelectric really fights global climate change. Hydroelectric power generation is often described as "clean" and "green", and hence a preferred alternative to "dirty"

energy produced by other means such as coal-fired power plants that produce greenhouse gases (GHGs). However, it is important to note that dams and hydroelectric facilities harm the environment[2] and, when headponds or reservoirs are flooded, can produce carbon dioxide and methane for decades, and possibly centuries.[3,4] Environment Canada's own reports even acknowledged that,

> *In contrast to the widespread assumption (e.g., in Intergovernmental Panel on Climate Change scenarios) that GHGs emitted from reservoirs are negligible, measurements made in boreal and tropical regions indicate they can be substantial* [5,6,7].

The effect of damming on methane emissions conducted in a central European impounded river revealed that reservoir reaches are a major source of methane emissions and that areal emission rates far exceed previous estimates for temperate reservoirs or rivers. It showed that sediment accumulation correlates with methane production and subsequent ebullitive release rates. Results suggested that sedimentation-driven methane emissions from dammed river hot spot sites can potentially increase global freshwater emissions by up to 7%.[8]

> **Recommendation 7:**
> Recognize the significant contribution that hydroelectric facilities which hold water back in reservoirs make to the generation of greenhouse gas emissions.

Additionally, the lucrative incentives being offered to hydroelectric power producers to generate power during peak demand hours, has resulted in some facilities using seasonal operating water level bands to produce power on a daily basis. This results in extreme daily swings in water levels and flows, which create harsh environments for water quality and aquatic life. Many older facilities are using this operating strategy without the benefit of an environmental assessment to determine the impacts.

There is an urgent need to integrate climate change considerations into waterpower strategies and policies. Healthy rivers and their ecosystems are the key to successful adaptation and resilience to the extremes of climate change. It is essential that we pursue sustainable forms of power generation in order to protect and conserve riverine ecosystems.

> **Recommendation 8:**
> Hydroelectric operating strategies within historic Eel habitat be reviewed to determine potential mitigation measures to enhance protection and recovery of the American Eel.

Conclusion:

Cumulatively, hydroelectric facilities have had major negative impacts on the abundance of the American Eel in Ontario, through the blocking of adequate access to important historical habitat, and the killing of significant quantities of eel passing through turbines as they attempt to migrate back to the Sargasso Sea to spawn. As stated in the Recovery Strategy,

> *"The cumulative effects of eel mortality during downstream migration due to hydro-electric turbines, reduced access to habitat imposed by man-made barriers to upstream migration, commercial harvesting in jurisdictions other than Ontario, contaminants, and habitat destruction, alteration and disruption are among the most significant threats to the survival and recovery of the American Eel in Ontario." (RS, P-45)*

As the Recovery Strategy reported, "*addressing the most immediate and largest known sources of mortality are obvious priorities if recovery is to proceed effectively*" and *"when the impacts to upstream migration are considered together with significant mortalities due to turbines, hydro-electric facilities by far pose the most immediate, serious and biggest threat to the continued survival and recovery of eels". (RS, P-72)*

Solutions must be found where it is not an all or nothing approach, but where dam operators are required to modify their hydroelectric facilities and water management practices to support the GRS and its recovery strategy. This means it will be necessary to use an approach where power generation needs and profits are more in balance with other ecological factors such as healthy Eel populations and healthy rivers.

ORA urges you to incorporate our recommendations into the final version of the GRS. Thank you for this opportunity to comment!

Respectfully,

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References

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