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300 Water Street, Peterborough, ON, K9J 8M5

October 29, 2015

Re: *Wetland Conservation in Ontario: A Discussion Paper* (EBR No. 012-4464)

Dear Ms. McIntosh,

Thank you for this opportunity to comment on *Wetland Conservation in Ontario: A Discussion Paper*, and for this opportunity to help shape the Strategic Plan for Wetland Conservation in Ontario. I am submitting my comments and recommendations, with input from my colleague Dr. Cheryl Chetkiewicz, in our respective capacities as freshwater and landscape conservation scientists in Ontario (see Appendix 1).

I am pleased that Ontario is developing a Strategic Plan for Wetland Conservation. An effective strategy has the potential to be a powerful tool in stemming current wetland losses, and ensuring that wetland ecosystems in Ontario are valued and conserved for future generations.

However, I do have some concerns about the mitigation/compensation hierarchy approach suggested in *Wetland Conservation in Ontario: A Discussion Paper*. I recommend that the mitigation/compensation hierarchy approach be considered only as a component of the Strategic Plan, within a framework that focuses on proactive evaluation and land-use planning, and explicitly includes wetland protection, in order to more effectively ensure that wetland area and wetland ecosystem function are conserved in Ontario. Further, if the mitigation/compensation hierarchy is adopted, then I recommend policies be structured in a way that avoidance and minimization are emphasized, and compensation is considered only as a last resort. These recommendations are particularly relevant for Ontario's Far North, where there is potential for wetland loss due to land-use changes, and no options for wetland restoration. Finally, climate change is predicted to significantly impact wetlands and peatlands in Ontario in the coming decades. Given the planning horizon of the Strategic Plan for Wetland Conservation, climate change should be explicitly considered in land-use planning.

As well as providing these recommendations, I provide responses to the questions put forward in *Wetland Conservation in Ontario: A Discussion Paper*. These responses are listed following the recommendations, below.

Recommendation 1: The mitigation/compensation hierarchy should be considered only as a component within a broader policy that focuses on proactive wetland valuation and land-use planning, and explicitly includes wetland protection.

The first concern with *Wetland Conservation in Ontario: A Discussion Paper* is the focus on the mitigation/compensation hierarchy to achieve to no net loss. Although policies based on the mitigation/compensation hierarchy are widely applied, these policies have consistently failed to conserve wetland area, function, or biodiversity [1-5]. The primary issues identified with no net loss policies are:

- 1) There are conceptual issues with no net loss, including ambiguity over how ecosystem function should be measured, or what timescale should be permitted for mitigation or compensation to occur [6].
- 2) There is a lack of compliance, follow-up monitoring, and enforcement [1, 6-7].
- 3) Even if a relevant currency for ecosystem value is established, and compliance is high, the policies and guidelines as to what constitutes ‘avoidance’ and ‘minimization’ within the mitigation hierarchy are consistently unclear. As a result, there is little effort to avoid or minimize impacts, and in practice, no net loss policies wind up relying solely on mitigation and offsetting [8-9].
- 4) Wetlands tend to be chronically undervalued [6], and wetland restoration is not effective in creating wetlands that have the same level of ecosystem function and biodiversity as natural, intact wetlands [2-3]. Therefore, mitigation and compensation, even with higher ratios of compensation to loss, consistently lead to a net loss of ecosystem function and biodiversity [1-5].
- 5) There is a lack of proactive planning or classification of high-priority wetlands with no net loss policies, and the cumulative impacts of piecemeal decision-making about land use leads to incremental losses [10].

Given these identified concerns with no net loss policies, I recommend that the Ontario Ministry of Natural Resources and Forestry (OMNRF) consider the mitigation/compensation hierarchy only as one component of a Strategic Plan that emphasizes proactive approaches to wetland conservation in Ontario.

Proactive approaches to wetland conservation include the comprehensive valuation of wetlands in Ontario, watershed-level planning that includes the explicit protection of wetlands, and the establishment of long-term monitoring programs that include contributions from government agencies, non-governmental organizations, academic institutions, First Nations, and private citizens [9, 11-12].

Proactive valuation of wetlands and land-use planning that explicitly includes wetland protection will benefit wetlands across Ontario. However, this framework is particularly relevant for Ontario’s Far North. The wetlands and peatlands in Ontario’s Far North are globally significant, and irreplaceable [13-15], which makes them a high priority for conservation, and a poor candidate for compensation. Given the pressure for development in Ontario’s Far North [16], and especially in the Ring of Fire [17], these intact areas that have the potential to see significant land-use changes in the next few decades. A strong focus on proactive collaborative approaches for watershed-level planning is necessary to ensure that the ecosystem function of these wetlands and peatlands is maintained.

Recommendation 2: Within the mitigation/compensation hierarchy, compensation should be considered only as a last resort.

As mentioned above, one of the reasons that policies based on the mitigation/compensation hierarchy fail so consistently in achieving wetland conservation is that guidelines and incentives are typically structured in such a way that that little effort is taken to avoid or minimize impacts, and no net loss policies wind up relying solely on mitigation and offsetting rather than avoidance and minimization [8-9]. Since wetland restoration is not typically

effective in matching the ecosystem function and biodiversity as intact wetlands [2-4], mitigation and compensation consistently leads to a net loss [1-5].

Given these identified issues with no net loss policies, I recommend that if Ontario adopts a no net loss policy, the policy includes: 1) Protection of wetlands; 2) Clear guidelines as to what constitutes avoidance and minimization; and 3) Incentives to focus on avoidance and minimization, and the use of mitigation and compensation only as a last resort.

Recommendation 3: Climate changes should be considered in land-use planning and wetland protection policies.

While *Wetland Conservation in Ontario: A Discussion Paper* identifies climate change as a threat to wetlands, it does not address how climate change could be incorporated into wetland conservation or land-use planning in Ontario. Climate change will likely be a significant driver of change in Ontario's wetlands through the planning horizon of the Strategic Plan for Wetland Conservation in Ontario, and should be considered alongside other cumulative impacts during proactive wetland valuation, land-use planning, and wetland protection.

Further, peatlands and wetlands play a significant role in carbon sequestration, and the loss of peatlands and wetlands can accelerate climate change [18]. Therefore, it is important that the Strategy for Wetland Conservation in Ontario acknowledges and accounts for the value of ecosystem services (e.g., carbon sequestration, climate regulation) provided by intact peatlands and wetlands, particularly in Ontario's Far North [13].

Responses to the questions outlined in *Wetland Conservation in Ontario: A Discussion Paper*.

1. Do you think there are current challenges related to wetland conservation in Ontario? If so, what are the challenges?

The current challenges related to wetland conservation across Ontario include: 1) A lack of wetland evaluation for many regions across Ontario; 2) Insufficient protection for wetlands; and 3) A lack of clear policy and guidance that considers wetland in land-use planning processes at municipal, community, and regional scales.

Challenges specific to wetland conservation in southern Ontario include: 1) Extensive historical loss of wetlands. Some regions of southern Ontario have lost between 85-100% of wetlands, primarily as a result of land-use conversion for urbanization and agriculture [19]. In these areas, restoration and net gain of wetlands will be necessary in order for wetlands to provide valuable ecosystem services, such as water filtration and flood control [20]; and 2) Continued human population growth and the expansion of urban centres, which will continue to place pressure on wetlands. Ongoing land conversion necessitates that Ontario produce clear policies and guidelines to ensure that wetlands are protected during development, including a consensus among landowners and various agencies and ministries over 'who pays' for wetland conservation and restoration.

Challenges specific to Ontario's Far North include: 1) Climate change. Given the more rapid warming of northern regions relative to southern regions, and given the documented and predicted impacts of climate change on northern wetlands and peatlands [21], climate change will likely be a major driver of change in Ontario's Far North wetlands, and the cumulative effects of climate change should be considered alongside other more localized impacts during land-use planning; 2) Land use changes due to remote mining and infrastructure development within wetlands and peatlands [16-17], which could lead to significant wetland losses and increase Ontario's greenhouse gas emissions; 3) A lack of baseline data on wetlands [13-15] and the ecosystem services they provide, which means that wetlands are not appropriately considered in land-use planning; and 4) A lack of watershed-level, proactive planning to consider the value of wetlands and establish thresholds or targets for protection in advance of new development [22-23].

2. Three priority areas of focus for wetland conservation in Ontario are proposed: strengthen policy, encourage partnership, and improve knowledge. What do you think of these three focus areas? Do you have other ideas for additional focus areas?

Strengthen policy, encourage partnership, and improve knowledge are relevant focus areas for wetland conservation in Ontario. However, there should be an additional priority area of focus on proactive planning and protection of wetlands and peatlands, particularly in the Far North.

3. Considering the three priority areas of focus, what are some actions and activities that government, organizations, and individuals could take to improve wetland conservation in Ontario? What partnerships should the Ontario government explore to stop wetland loss?

Within the policy priority area, I suggest that a comprehensive review of all current policy pertaining to wetland conservation in Ontario is necessary, including an identification of the key policy gaps, particularly in the Far North. For example, the Far North Land Use Strategy, emerging under the *Far North Act, 2010* [24], is currently the only source of information on conserving wetlands and peatlands for planning in Ontario's Far North, but it remains to be seen how this guidance will translate into protected areas for wetlands and peatlands under community-based land-use planning with First Nations. Similarly, while the approved terms of reference for a new mine in the Ring of Fire [25] include wetlands and peatlands as criteria for assessing impacts, this requirement is at the discretion of the Minister, and is not required in legislation. This review should also consider the future of wetland conservation by explicitly addressing the role of wetlands and peatlands in climate regulation [26] and the ongoing role of the Ministry of the Environment and Climate Change (MOECC) to address climate change adaptation and mitigation in Ontario [27]. Following from a comprehensive review, a cohesive policy for wetland conservation in Ontario could be introduced, which complements other federal, provincial, and municipal policies, addresses current policy gaps, and focuses on proactive approaches in both the Far North and southern wetlands.

In terms of encouraging partnerships and improving knowledge, proactive watershed-level planning for wetland conservation is recommended [9, 11-12, 22-23]. Such approaches require the proactive valuation of wetlands (i.e., improving current baseline knowledge), and the establishment of long-term monitoring programs to ensure the success of systematic proactive planning as development occurs. Both the valuation of wetlands and long-term monitoring programs encourage partnerships, including contributions from government agencies, as well as non-governmental organizations, academic institutions, First Nations (e.g., through community-based land-use planning, and community-based monitoring programs) and private citizens (e.g., citizen science programs) [9].

However, it is important to note that a Strategic Plan for Wetland Conservation in Ontario should also explicitly include protection of existing wetlands. Particularly in the Far North, there is little scope for compensation of lost wetlands, and protected area planning for wetlands and peatlands is emerging through processes that are piecemeal at both spatial and temporal scales.

5. Should targets be considered to help achieve wetland conservation in Ontario? If so, what form should these targets take?

Targets should be considered to achieve wetland conservation in Ontario. A key step for effective wetland conservation is the proactive valuation of wetlands, the most important of which may include carbon cycling, freshwater supply, protein production, and maintenance of biodiversity, in order to establish minimum targets to maintain wetland ecosystem biodiversity and function at various spatial scales, including the global scale.

In terms of valuation, there are several established approaches to the valuation of wetland ecosystem function, which are based on the ecosystem services provided by wetlands [28-29], and consider the overall context of the watershed [30].

In terms of specific targets, the most popular target for conservation is a 50% target of biodiversity [31] and the maintenance of ecosystem function at the landscape scale. However, these targets need to be assessed on a landscape-by-landscape basis.

In southern Ontario, extensive historical loss of wetlands mean that in order to meet targets efforts will need to include restoration and net gain of wetland habitat area and function. Ontario's *Far North Act, 2010* mandates a 50% conservation target in the Far North, and includes an objective to maintain ecosystems functions and processes such as carbon sequestration [24]. However, given that maintaining intactness is one way to address resilience in high-latitude landscapes, and given that the largest wetlands in North America are located in the Far North, a 50% target for protection is likely not sufficient to maintain ecosystem functions and processes in this landscape. In fact, these large wetlands require their own class of conservation planning focused a basin-wide sustainable management strategy [32].

6. The Ontario government is considering approaches to achieve no net loss of wetlands.

a. What do you think of the establishment of a mitigation/compensation hierarchy to achieve no net loss? Are there other approaches?

b. What tools (e.g., policy) could be used to implement approaches to achieve no net loss?

c. What might the role of government, partners, private landowners and other be if no net loss approaches are implemented?

As outlined above (Recommendations 1 and 2), Ontario should learn from past failures of the mitigation/compensation hierarchy, and adopt a proactive approach to wetland conservation that includes the valuation of wetlands, watershed-level planning with wetland protection, and long-term monitoring. Incorporating watershed-level proactive planning into a mitigation/compensation hierarchy can greatly improve conservation outcomes [11]. The Far North, in particular, is an appropriate region for adopting this broad-scale approach.

Further, implementing a no net loss policy requires: 1) Explicit regulations regarding the valuation of wetlands and timescales for mitigation and compensation to occur; 2) Appropriate monitoring programs to ensure compliance as well as penalties for failures to comply; 3) Explicit guidance as to what constitutes reasonable attempts to avoid and minimize wetland loss, and 4) Incentives for avoidance and minimization of wetland loss, rather than focusing solely on mitigation and compensation.

d. Should no net loss approaches be applied uniformly across Ontario? Or, only where the risk of wetland loss is the greatest?

Although I recommend that the diverse challenges to wetland conservation due to the landscape context and history of wetland loss across Ontario be considered, I am extremely wary of Ontario adopting a 'no net loss approach applied only where the risk of wetland loss is greatest'.

For over two decades, Alberta has had an interim no net loss wetlands policy that applied only to settled areas of the province, where the risk of wetland loss was greatest [33]. Under this policy, the province has seen consistent and increasing rate of wetland loss within the settled regions where the policy applied, with unclear estimates of how much wetland area and function was lost in the other areas of the province where significant development also occurred, including the oil sands [34]. Given the past failures in Alberta, this model seems inappropriate for Ontario.

I recommend that if a no net loss policy is implemented in Ontario, it is implemented within the framework of a proactive valuation, planning, and alongside a monitoring program across the province, and adapted at the

watershed level, such that the varied and diverse challenges faced by each watershed can be considered. For example, in areas of southern Ontario, which have already seen significant losses of wetlands, it will be necessary in many cases to restore wetlands to a target level, and a net gain policy may be necessary. For areas of northern Ontario, any mitigation and compensation will occur over extremely long timescales, and in most cases (e.g., new mines, all-weather roads) there will be no way to compensate or offset for the loss of these globally significant wetlands. Therefore, it is absolutely critical to take a proactive approach to wetland conservation in Ontario's Far North, focused on proactive valuation of wetlands, thresholds for development, watershed-level planning including wetland protection, and long-term monitoring, with clear targets for the maintenance of wetland area and ecosystem function.

Thank you for taking the time to consider these recommendations and responses, and thank you again for this opportunity to comment. I value this chance to help shape the Strategy for Wetland Conservation in Ontario.

I would be happy to discuss these comments further, and so please feel free to contact me at coconnor@wcs.org if you have any follow-up questions or comments.

Sincerely,

A handwritten signature in grey ink that reads "Constance O'Connor". The signature is written in a cursive, flowing style.

Constance O'Connor, Ph.D.
Freshwater Conservation Scientist

cc: Ellen Schwartzel, Acting Environmental Commissioner of Ontario
cc: Erling Armson, Ducks Unlimited Canada
cc: Anne Bell, Ontario Nature

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Appendix 1. Information on the author and contributors.

WCS Canada (www.wcscanada.org) was established in May 2004 as a Canadian non-government organization with a mission to conserve wildlife and wildlands by improving our understanding of and seeking solutions to critical problems that threaten key species and large wild ecosystems throughout Canada. WCS Canada generates knowledge through research and tools for conservation of the northern boreal's fish and wildlife species and ecosystems and the services they support. WCS Canada provides this information to Government and First Nations' decision makers to create policies and governance systems that support conservation, sustainable use of biological resources, and best practices for industrial development.

Dr. Constance O'Connor is an Associate Conservation Scientist with WCS Canada, and focuses on freshwater conservation science in Ontario's Northern Boreal landscape. She is using individual-level data on freshwater fish to understand population and community-level processes, and is using this information to develop better tools for monitoring and predictive modelling for policy, management and planning decisions that affect freshwater ecosystems.

Dr. Cheryl Chetkiewicz is an Associate Conservation Scientist and the Lead Scientist for WCS Canada's research and conservation efforts in Ontario's Northern Boreal landscape. She is focused on regional scale research and planning in Ontario's Far North, specifically wildlife research and monitoring, cumulative effects assessment, regional strategic environmental assessment, and protected area planning.