

April 5, 2023

Canadian Council of Forest Ministers

Re: Definition of “forest degradation”

To whom it may concern:

Thank you for the opportunity to provide input on the definition of the term “forest degradation”. We appreciate the importance of defining this term to myriad policies and the continued monitoring of forests, both globally and in Canada.

We provide these comments in our capacities as Wildlife Conservation Society (WCS) Canada scientists lead research and policy development related to species and ecosystems to inform conservation decisions. Our expertise relevant to forest degradation is in land use planning, impact assessment, and conservation and scientific research focused on biodiversity, ecological integrity, forests and peatlands, and climate. We are affiliated with global WCS programs in more than 60 countries in the world and active at the science-policy interface in Canada and internationally. Each of the three of us has recently published papers in the peer-reviewed literature directly relevant to this subject.¹

We are commenting here on both documents as a package: the “science policy note” and the “engagement material” document that lists principles and key elements. Because we learned about the process only a few days ago and it was not a public consultation, we have only had time to provide a number of high-level points in this letter. As such, we sincerely hope there will be further opportunities for a more in-depth conversation on this topic prior to any decisions on the definition.

Here, we present several key issues, all of which relate to our overarching concern that the documents present a perspective on forest degradation too limited or constrained to be useful for its stated purpose at this point.

1) The sustainable forest management framing is too narrow in scope, thereby placing far too limiting a lens on the concept of forest degradation. The baseline is articulated as “initial non-degraded condition” and the converse of degradation as “sustainability”, defined as “sustainably managed forests”. This, in addition to a sole focus of the monitoring framework on SFM, means that degradation is pretty much viewed exclusively from a lens of forest management, which not only limits the geographic scope of the definition (excluding unmanaged forests in Canada), but assumes that the baseline against which degradation is measured is a forest that has already been managed.

In the case of forests that are already degraded via human activities, it is unclear if the baseline, “non-degraded condition” will be the present state of the forest, with the goal of preventing further

¹ Grantham, H. et al. (2020). Anthropogenic modification of forests means only 40% of remaining forests have high ecosystem integrity. *Nature Communications* 11:5978 <https://doi.org/10.1038/s41467-020-19493-3> Harris, L.I. et al. (2021). The essential carbon service provided by northern peatlands. *ESA Frontiers in Ecology and the Environment*. doi:10.1002/fee.2437; Poley, L. G., et al. (2022). Identifying differences in roadless areas in Canada based on global, national, and regional road datasets. *Conservation Science and Practice*. E12656. <https://doi.org/10.1111/csp2.12656>; Watson, J.E.M. (2018). The exceptional value of intact forest ecosystems. *Nature Ecology and Evolution*. <https://doi.org/10.1038/s41559-018-0490-x>.

degradation from that state, or a past state before human-caused degradation, with the goal of restoring the forest to this state.

The focus on managed forests and sustainable forest management also excludes the fact that mitigating the crises of biodiversity loss and climate change requires preventing anthropogenic degradation in forests that are currently unmanaged and maintain large undisturbed tracts with high ecological integrity. Avoiding development and allowing natural processes to predominate in these areas will make a significant contribution to global climate change resilience. The importance of preserving non-degraded forests should be made clear, especially given that Canada holds a large proportion of the world's intact forests.

- 2) Ecological integrity as a benchmark and corollary of degradation is overlooked.** A forest has high ecological integrity when its composition, structure, and function are all within the natural/characteristic range of variation for that ecosystem. While the documents do certainly allude to structure, function and composition, the scope is too narrow and ecological integrity is not explicitly mentioned. . This is evident in the table of “elements”, with factors wherein structure, function and composition are presented as elements that are discrete from biodiversity, carbon etc., which are displayed as separate elements. The proposed framework would be stronger if all of these factors were integrated under the umbrella of ecological integrity as indicated through metrics of ecosystem structure, composition and function.

The concept of degradation could be better explained through ecosystem integrity, resilience, and tipping points for each resulting in ecosystem shifts to a collapsed state. All ecosystems have a range of conditions in which they are resilient to changes and can maintain high ecological integrity, despite external forces. The need to understand this range of conditions and the tipping point at which ecosystem collapse is inevitable, rather than a simple baseline, is important for determining 'degradation'.

We also point out that forest degradation should not be considered as a “degraded/non-degraded” binary, as is implied in Figure 2, but a continuum ranging from non-degraded to ecosystem collapse as indicated by metrics of ecosystem resilience and integrity.

- 3) There is too much emphasis on the severe side of degradation (i.e., long-term or permanent).** Degradation is described in the documents as a long-term or permanent loss of the ecosystem (to another land use) and inability to recover - such as you might see in the forests of the Eastern US where the American chestnut is never coming back. That certainly is one kind of degradation, but to limit the idea of degradation only to severe cases means we need another word for all the forms of damage which could, in principle, be reversed if pressures decrease or stop and the system is left alone. Degradation by direct human disturbance can be short term (e.g. drainage alterations over a few years - the forest is degraded during this time, but it can recover, or a moderately severe human-caused fire - the forest is degraded but can recover). We suggest a scale of degradation (e.g., moderate degradation, severe degradation, irreversible degradation) would be more appropriate to capture the full range of impacts to forests and temporal and spatial effects.

The IPCC recently defined land degradation as a “negative trend in land condition, caused by direct or indirect human-induced processes including anthropogenic climate change, expressed as

long-term reduction or loss of at least one of the following: biological productivity, ecological integrity, or value to humans. Forest degradation is land degradation that occurs in forest land.”²

4) Drivers and consequences of forest degradation in Canada are presented in too limited a fashion.

While we understand the need for a shorter briefing, the document does not display sufficient understanding of drivers and consequences of forest degradation across Canada, both of which are necessary to ensure accurate monitoring indicators and remedies/actions. Many factors can act to reduce integrity, often synergistically, and often associated with industrial-scale activities and associated access (including growth-inducing infrastructure, like roads and transmission lines). Degradation also tends to happen through piecemeal processes/decision making. While cumulative effects is mentioned once in the document, it is too limited.

The list of examples of forest degradation in Canada are narrowly conceived to be about trees and pests. It is important to mention others, for which there is available evidence, such as biodiversity (caribou, bird communities, vegetation communities, particularly bryophytes and lichens), degradation of forest soils and soil function, degradation of carbon stores and sinks, and impacts of drainage or over-abstraction of groundwater and surface waters for human use (drinking water, agriculture) on forest ecosystems.

5) International alignment needs strengthening. The principles mention international alignment, but much more can be done to align with CBD or UNFCCC, both of which are highly relevant to degradation and/or ecological integrity. For example, Targets 1 and 2 of the Kunming-Montreal Global Biodiversity Framework focus explicitly on effective management, spatial planning, and restoration of areas with high ecological integrity, a term which is not mentioned at all in either document. Forest degradation is also part of the Paris Agreement of the UNFCCC. **Proposed**

6) The monitoring and metrics for forest degradation are limited in scope. With more time, we would be pleased to discuss this element of the documentation in more detail. Instead, we make the following high-level observations:

- The document lacks any details of the role of forest soils (including peat soils and peatlands) in maintaining, and as a component of, ecosystem integrity and function. This is obviously important for carbon but also a range of other things (biodiversity, hydrology, nutrients, etc.).
- There is also a need for more emphasis on hydrological changes within forest ecosystems as linked to climate change and direct human-caused disturbances
- Figure 2 could be better explained by a diagram of ecosystem resilience (structure and function for a certain type of forest ecosystem) and tipping points that lead to ecosystem shifts, rather than a wiggly line over time.
- Table 1 needs to include soil carbon.

7) The list of references in the “sources/bibliography” section is incomplete and not linked to the documentation. There are many relevant references missing altogether, and several of the

² <https://www.ipcc.ch/srccl/chapter/chapter-4/#:~:text=In%20this%20report%2C%20land%20degradation,integrity%2C%20or%20value%20to%20humans>

references have no relationship to the policy brief (e.g., Betts et al. 2022; Cyr et al. 2009). As such, selected bibliography with no explanation, is not helpful and indicates a certain bias.

Finally, although we were not able to spend nearly enough time on this letter, we recognize the importance of this topic and would be very interested in engaging in further discussions.

Sincerely yours (in alphabetical order)

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