

Government of Nova Scotia
Department of Environment &
Department of Natural Resources and Renewables
ecologicalforestry@novascotia.ca

December 8, 2021

To whom it may concern,

Enclosed past this covering letter are recommendations for consideration by the Government of Nova Scotia, including the Department of Environment and Department of Natural Resources and Renewables, regarding the Revised Old Growth Forest Policy. This policy has been posted for public comment, with commentary accepted until December 8, 2021.

The recommendations herein were prepared by graduate students enrolled in the class ENVI5050: Special Topics – Forest Ecology & Management. The recommendations were prepared on a voluntary basis over and above coursework and reflect the group's collective professional and academic experience. Collectively, we provide commentary and suggestions for revision and expansion regarding the content and technical aspects of the proposed policy.

All coauthors consent to the public release of our work. Dr. A. Westwood, as the principal investigator and course instructor, certifies the technical soundness of the analysis and recommendations herein. This item may be cited as:

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We hope our recommendations can support a stronger *Revised Old Growth Forest Policy for Nova Scotia*. Thank you for this opportunity and for your consideration.

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ENVI5050: Special Topics – Forest Ecology & Management
class submission to the Government of Nova Scotia regarding
the *Revised Old Growth Forest Policy*

Submitted by:

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December 8, 2021

EXECUTIVE SUMMARY

We provide comments and recommendations on the Government of Nova Scotia (henceforth ‘the Government’)’s draft *Revised Policy on Old Growth*. Our comments are organized by topic and, where applicable, by page number for ease of incorporation during revisions. Thank you for the opportunity to participate in the revision of this important document which will drive many of the actions required to steward old growth forests in Nova Scotia as well as the biodiversity and human values they contribute.

Our full comments are given in the submission below, however, we would like to bring to your attention several key areas that were identified as of high concern by the authors:

- **Justification for the 1 ha minimum size for an old growth forest stand.** Given the extensive history of commercial forestry and landscape alteration in this province, it is likely that stands meeting the criteria for and serving the functions of old growth forest may be found in smaller sizes. We urge the Government reconsider this minimum size criterion, or, at least, provide scientific justification for its selection.
- **Inclusion of Indigenous knowledge and peoples.** The revised policy does seem to apply under the provincial Duty of Consult the Mi’kmaq of Nova Scotia, however, no information is given regarding consultation of Mi’kmaq communities, governments, organizations, or individuals. The next version of the policy must engage the Mi’kmaq of Nova Scotia and reflect their views, definitions, perspectives, and language as they wish for it to be included.

- **Removing old-growth forest areas when deemed in the public interest.** Under section 5.3.1 (a), the Minister can remove old growth forest area protected under this policy if deemed it is in the “public interest”. We recommend defining ‘the public’ and providing factors and provisions by which the Minister must determine what is in the public interest. We also recommend decisions for removal be made by a panel or council and involve consultation of the public and rights-holders.
- **Provide more details about the application of the policy to private lands.** This includes specifications for how the province can work with landowners to establish 100m buffers around old-growth areas as well as use stronger wording than “explore” with regard to mechanism for protecting old growth on private land.
- **More specificity is needed about recreational and educational opportunities** in terms of timelines by which materials will be available, how often they will be updated, and how the Coordinator may collaborate with other related ongoing provincial initiatives.
- **Be more specific about timelines and mechanisms for restoring old growth.** In particular, the “foreseeable future” needs to be given a year designation (we recommend 25 years).
- **Provide monitoring plans and protocols** either within the policy or as an appendix for public scrutiny and to ensure that the creation of these documents is not deferred indefinitely. If these and other companion documents cannot be provided in the next version of the policy, specify when they will be available and ensure provisions for public comment.
- **A thorough edit is needed to make the Revised Policy appealing and accessible to a broad public audience.** We identify a number of specific issues with grammar, formatting, referencing, and presentation in the draft Revised Policy.

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INTRODUCTION, PURPOSE, AND OBJECTIVES

p.4

- Paragraph 2 states: "Over the past 20 years, much of the old forest that was originally identified in non-protected Crown lands through the 1999 Interim Old Forest Policy have subsequently been incorporated into legally protected areas." Detail how much of the old forest was incorporated exactly, both in terms of hectares and as a percentage of total amount (hectares) of legally protected areas.

p. 5

- The introduction states that an 8% minimum target for old growth protection was reached for the province in 2020. This would be benefited by a map to depict these areas.
- As written, the section *2.1 Purpose* is only a single sentence. We suggest the Government integrate the purpose with the objectives section to make a single section.
- Under section *2.2 Objectives*, the term "legally protected areas" is used. Please clarify if 'legally protected areas' includes provincial and federal protected areas. If so, are there applications from other statutes, like the federal *Species at Risk Act (2002)* or the provincial *Biodiversity Act (2021)*.

OLD GROWTH DEFINITION CRITERIA

p.7

- We suggest that the definition of old growth forest be provided much earlier and written in bullet points or in a box/sidebar to be easily spotted by readers.
- In addition to forestry and forest ecology, we recommend the definition of old growth to include ecosystem values such as flora and fauna that rely on these forests.
- The policy does not mention the ecological characteristics concerning the understory, such as the typical pit-and-mound microtopography that is characteristic of old growth forests (Plotkin et al., 2017). This microtopography is not only a normal occurrence of these areas, but also encourages species diversity within the stands. We recommend that these characteristics be included in the policy.
- We recommend retaining the statement, "*Old growth forests are not static museum pieces...*" which is a compelling visual emphasizing that old growth forests are alive and continually reshaping and developing themselves.

p.8

- Justification is lacking for the one-hectare minimum size for an old growth forest stand. Given the extensive history of commercial forestry and landscape alteration in this province, it is likely that stands meeting the criteria for and serving the functions of old growth forest may be found in smaller sizes. As written, the qualification implies that any forest area smaller than one-hectare will not be considered old growth, regardless of the forest age, structure, dynamics, and habitat attributes. This is particularly important in cases where stands less than one-hectare provide habitat to species dependent on old growth

forest characteristics (e.g. fungi, lichens, birds, etc.). We urge the Government to reconsider this minimum size criterion, or, at least, provide scientific justification for its selection.

p. 14

- ‘Ecological continuity’ is a key element of the definition of old growth forest. Where ‘ecological continuity’ is defined in the appendices, it includes the statement that this state is often marked by “...a unique community of lichens and fungi that are sensitive to disturbance and require specialized microhabitats.” This statement around indicator lichen species has not yet been scientifically validated. There have been several proposed indicator lichen species for old-growth forest (e.g. *Sphaerophorus globosus*, for coniferous old-growth in Nova Scotia, Cameron & Bondrup-Nielsen, 2012; a suite of calicioid lichen species for New Brunswick, Maine, and Cape Breton, Selva, 1994), these indices have not been robustly tested. In one instance in which they were, they did not successfully apply to Southwestern Nova Scotia (McMullin et al. 2008). Given the importance of the concept of ecological continuity to defining old growth forests according to the policy, funding and research will be necessary to develop ecodistrict-appropriate indicator species lists.

p.17

- The old growth forest reference ages are given in the appendices. This table states that “local knowledge” was used in the development of the tables but only academic literature and government reports are cited. Explanation is needed as to how local knowledge was included in these tables.
- Further clarification is also needed on the purpose of comparing other jurisdictions, given the unique context of Nova Scotia’s ecosystems.

INDIGENOUS KNOWLEDGE

It should be noted that this document does not include information about Indigenous knowledge in relation to the definition of old growth forest. It also does not indicate whether the Mi’kmaq communities, governments, rights-holders, and/or organizations, located in what is now Nova Scotia, were consulted in the development of the revised policy. As original stewards of these lands, the Mi’kmaq offer invaluable perspectives that should be reflected in the policy and its implementation. As per the [Duty to Consult](#), the policy should report if and how consultation has occurred. We recommend that the policy not be finalized until consultation has been conducted and reported upon.

In the policy scope, it states the types of government decisions that may trigger Indigenous consultation include:

- decisions affecting Crown and other provincially owned land

- policies, permits, approvals, licences, initiatives, plans, and procedures related to managing or using natural resources (environment, fish, wildlife, forests, water, minerals, petroleum, or other resources).

A section of this report should be dedicated to Indigenous consultation and collaboration on the policy, and it should be clearly stated how Mi'kmaq communities have been part of the policy and how their knowledge will lead the direction of old growth forest policy in Nova Scotia.

We also encourage (if desired by the Mi'kmaq of Nova Scotia) the policy to include a Mi'kmaq-led definition for old growth forest and to use words for relevant components in L'nui'suti (the Mi'kmaq language).

PUBLIC INTEREST

p.9

- Under section 5.3.1 (a), the Minister can remove old growth forest area protected under this policy if deemed it is in the “public interest”. However, public interest is not defined. In general, a “public interest test” as related to law and policy in natural resources and infrastructure often lacks specificity (Goodday et al. 2020). We recommend, along with Goodday et al. (2020) that at minimum, clear factors and guidance be given for the Minister to determine what is in the public interest. This will include defining the relevant public, and the means by which the decision will be made (e.g. cost-benefit, justice-oriented approach, etc), and a written notice to the public explaining the rationale for the decision. Ideally, requirements will be made for engagement of the public and Mi'kmaq and report these results publicly and for a panel or council to be engaged in decision-making rather than solely the Minister.
- Although the subsequent provision for 5:1 protection if a proponent proposes to remove old growth forest is strong, the prior provision utilizing public interest as a rationale for removal also covers developments. It is unclear when each provision would apply, and seriously compromises the integrity of this policy.
- When the provision is used whereby a proponent must engage in old-growth scoring and 5:1 protection, this information should be made available to the public via a report posted on the Government's website and news briefs and be subject to a public comment period prior to approval by the Coordinator.

APPLICATION OF THE POLICY TO PRIVATE LAND

p.11

- Section 5.5 would benefit from more details. Considering that 63% of the land base is in private hands, mentioning of other conservation tools for protecting old growth that may apply on private land in this section would have been beneficial; for example, specifically

referencing ss. 16(1) and 16(2) of the Biodiversity Act, and discussing how it could be applied, as this statute was only briefly mentioned on pg. 4 of the policy.

- Rather than stating the Department, “commits to working with private landowners to explore mechanisms of support and encouragement for the conservation of old-growth forest on private land”, the policy should take a more proactive approach and state that they will implement mechanisms. Wording such as "explore" does not hold the province accountable to actually applying these mechanisms with private landowners.
- Given that the definition of old growth proposed requires the forest display interior forest character, this will require buffer zones to maintain these areas (as stated in Section 5.4 for areas on Crown Land). However, a buffer is not specified for private lands. Information needs to be given here as to how the province will work with landowners to establish 100m buffers on private land when adjacent to designated old-growth areas on Crown Land

RECREATIONAL AND LEARNING OPPORTUNITIES

This section is very vague. Additions such as the importance of these spaces for recreational use and access to nature, what the interactive online tools might consist of, and how these resources can be accessed by the public would all be helpful to include in this section.

The section could be further improved on by providing specific examples of what the online tools and interactive material would look like, what collaborations might be undertaken, and would benefit from explicit discussion of if and how this will be integrated with education efforts being conducted by Nova Scotia Parks and the Department of Education and Early Childhood Development.

Timelines are needed in terms of when these materials will be available and how often they will be updated.

RESTORATION OF FOREST TO OLD GROWTH CONDITION

p. 10

- Define ‘foreseeable future’ with specific years. We recommend an upper limit of 25 years.
- For old-growth restoration opportunities, prioritize riparian forests that are present in watersheds with important aquatic or riparian species. Currently, forestry operators may select harvest timber within 20 m of watercourses, given that the slope is <20%, and they do not cause any sedimentation into the watercourse (s. 6 of the Wildlife Habitat and Watercourses Protection Regulations, made under s. 40 of the Forests Act, R.S.N.S. 1989, c.179). The habitat features, functions, and attributes provided by riparian old growth or possible old growth restoration forests are essential for riparian and aquatic wildlife. With increasing water temperatures associated with climate change, it is critical to conserve high connectivity riparian forests to help mitigate climate change impacts on wildlife, drinking water supplies, and recreationally-valued community watersheds.

- While natural disturbances are briefly mentioned throughout the policy, there is no explicit reference to how invasive pests like Hemlock Woolly Adelgid may change the designation of many of the currently protected old hemlock forests. We recommend including provisions for how treatment and protection with regard to invasive forest pests will factor into restoration planning and activities.

MONITORING, REPORTING, AND ACCOUNTABILITY

p.11

- The policy states “Monitoring programs and protocols will be designed and implemented to detect violations of the provisions of this Policy. A monitoring program will also be designed and implemented to track the condition of old-growth forest areas identified in the Old Forest Policy Layer”. Monitoring is an important tool that can be used to assess where resources need to be allocated and where management needs to be focused (McDonald-Madden et al., 2011) and should therefore be a detailed part of this policy. These programs and protocols should be provided in detail including procedures and timelines and the authorities responsible. These can be provided either within the policy or as an appendix to the draft Revised Policy for public scrutiny. Please provide these in the next iteration.

p.12

- While the inclusion of a publicly-available Implementation Status Report on Old-Growth Forest Conservation in Nova Scotia is a good provision, please specify the timeline associated with ‘periodically available’. We recommend biannually (every two years).
- We recommend the supporting documents ‘to be developed’ be provided with this draft for public scrutiny. If this is not possible, a specific timeline for their release needs to be given as well as specifications for a public comment period on each.

In this section, we recommend including the roles of provincial conservation and environmental officers within the shared authorities. Including resource enforcement and accountability setting is necessary for public trust in the Government’s ability to manage and protect our environment and natural resources.

Given that the Revised Policy does not have legal authority to protect old-growth areas, this should be more clearly stated. The current revision does speak to this, but not in a straight-forward manner. By including a definitive statement within the policy, public expectations can be better managed.

FORMATTING, LAYOUT, AND TECHNICAL WRITING

In general, the policy could benefit from a more modern visual design to encourage readability and public engagement. This would include additional photos, full-page justification, headers including logos and titles, line spacing of minimum 1.15, coloured tables, differentiating fonts of

headings and subheadings. However, ensure photos support the adjacent content and that credit is given to the photographer.

The table of contents should include page numbers. Formatting of tables, figures, and headers should be consistent. Author information, organization logos, and a guide to citation should be provided. Consistent bold heading should be used for all tables. References and citations should be formatted consistently with all appearing in the references section. We recommend drawing from the style guide for provincial public documentation (e.g. as on display in [this report](#)).

p. 2

- The table of contents does not currently include page numbers and should ideally be hyperlinked. There are also discrepancies between the headings in the table of contents and the headings in the document.

p. 4

- This page refers to two approaches to conserving old-growth forests for ecological and societal values: 1) protect them on Crown land that resides in and outside of protected areas 2) restoration opportunities on Crown land that reside in and outside of protected areas. This information should be summarized in a figure to enhance the digestibility of the policy.

p. 5

- Include subsections to improve readability. From page 5 onward, there are several instances where the document starts off with an italicized line and then continues into the corresponding subject matter. The recommendation to the editor is to instead create subsections within the content. For example, The Biodiversity Act of 2021... should appear as 1.1.1 The Biodiversity Act of 2021, followed by the subject's content paragraph.

p.7

- Instead of writing “Old-growth forest areas are herein defined according to the vegetation types, and the old-growth ages in the table below...”, reference the table number here instead.

p.8

- The table on this page is missing a title.
- Add unit (years) to Old-Growth Age in table.

p. 9

- Consolidate the two Old-Growth Restoration Opportunities subsections on pages 9 and 10 into one subsection. There are two instances where the same title is used for different subsections, one being subsection 5.2.2 and the other located within the 5.3.2 subsection. Duplication of the title seems unnecessary, suggesting the need for a title change at minimum.

p.10

- Define OHV (and all acronyms) on first use.

p. 12

- Remove hyperlink underlining in references.

We recommend that an appendix be provided which includes summaries of provincial Acts that provide 'protection' to the different categories of Crown land within the policy (ie. policy-protected conservation areas (Crown Lands Act), legally protected areas (ie. Wilderness Protected Areas Act). This will also improve the digestibility of the policy.

REFERENCES

- Barker Plotkin, A., Schoonmaker, P., Leon, B., & Foster, D. (2017). Microtopography and ecology of pit-mound structures in second-growth versus old-growth forests. *Forest Ecology and Management*, 404, 14–23. <https://doi.org/10.1016/j.foreco.2017.08.012c>
- Cameron, Rr. & Bondrup-Nielsen, S. (2012). Coral Lichen (*Sphaerophorus globosus* (Huds.) Vain) as an Indicator of Coniferous Old-Growth Forest in Nova Scotia. *Northeastern Naturalist*. 19. 535-540. 10.2307/41810141.
- Goodday, V., Winter, J., & Westwood, A.R. (2020). Public-interest determination for infrastructure development: A review of guidance and practice in Canada. Knowledge Synthesis Report submitted to the Social Sciences and Humanities Research Council. 45 pp. Available at https://www.sshrc-crsh.gc.ca/society-societe/community-communitite/ifca-iac/evidence_briefs-donnees_probantes/environmental_and_impact_assessments-evaluations_envirnementales_et_impacts/winter_goodday_westwood-eng.aspx
- McDonald-Madden, E., Baxter, P., Fuller, R., Martin, T., Game, E., Montambault, J., & Possingham, H. (2011) Should we implement monitoring or research for conservation?. *Trends In Ecology & Evolution*, 26(3), 108-109. doi: 10.1016/j.tree.2010.12.005
- McMullin, R. T., Duinker, P. N., Cameron, R. P., Richardson, D. H. S., & Brodo, I. M. (2008). Lichens of Coniferous Old-Growth Forests of Southwestern Nova Scotia, Canada: Diversity and Present Status. *The Bryologist*, 111(4), 620–637. <http://www.jstor.org/stable/20485755>

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speakers from a variety of organizations related to forests and forestry in Nova Scotia with whom we were able to discuss the Revised Policy and generate ideas.