Old Growth Strategic Review
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Introduction

An effective old growth strategy is one important part of a long-term forest asset stewardship plan to ensure nature's endowment of forests best serve the public's interests in changing times.

Effective old growth forest conservation, protection and management will be regionally representative, ecologically representative, and well positioned to provide resilience and recovery to stress in all forests, in this time of climate change.

The one constant is the land itself.

The fundamental purpose of forestry is to secure the optimum long-term benefits from our public forests.

The strongest strategy will be based on the knowledge that forests are complex natural systems adapted to local conditions of climate, soil, genetics and topography. When human purposes, legislation, policies and practices are aligned with this knowledge, our forests will best serve citizen's needs.

Maintaining these outcomes will require exceptional forestry to perpetuate a diversity of forests, conserve fertile soil, maintain clean air, produce high quality water, grow high quality timber, ensure quality habitats for fish and wildlife and their populations, provide attractive outdoor recreation opportunities while generating income for citizens, in both short and long term.

A long-term old growth strategy will set direction for the future, based on accurate information on where we are now, while combining the best mix of forest assets in a plan that optimizes future opportunities.

II Two Basic Policy Questions:

1. What do BC citizens want for the present and future roles of old growth forests in our environment, economy and communities (ends)?

2. Once decided, what are the most effective means to achieve and sustain these outcomes (desires and benefits), for conserving, protecting and managing our old growth forests?

III What Biodiversity Looks Like

All forests change through time, and differentiate into predictable phases, as

illustrated in the following figure:

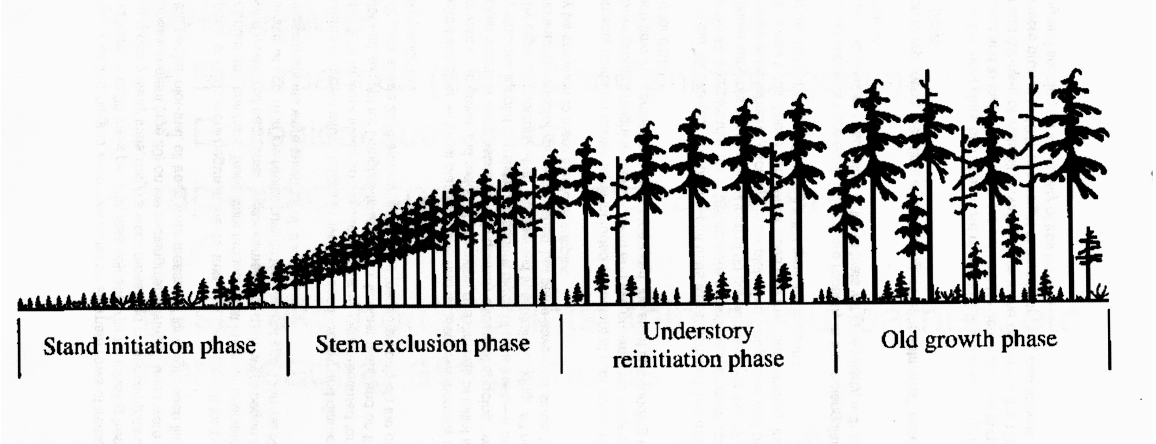

Figure 1: Stand Development (Successional) Phases in a Conifer Forest
Source: Chadwick Oliver

• Stand Initiation Phase: Young stands get established following disturbance by fire, insect outbreaks, wind, and logging. Good habitat is provided for generalist species like deer, rabbits, coyote, red tailed hawks etc.

• Stem Exclusion Phase: Young to mature stands occur with trees closely spaced and very little plant life on the forest floor. This phase is the least productive for wildlife.

• Understory Reinitiation Phase: Mature stands with trees of many sizes and many openings occur with openings in the forest canopy, that allow sunlight to reach the forest floor and stimulate establishment and growth of shade tolerant trees, with plant and animal species that require mature tree cover.

• Old Growth Phase: Old growth is largely undisturbed by humans, with trees over 100 years. This phase cannot be recreated in the short term. If old growth forests are to be present in the long term to provide human benefits, they must be conserved, protected and managed where they still exist. Old growth provides habitat for specialized wildlife species such as cavity-nesting birds, pacific salmon, mountain caribou and grizzly bears that depend on forests with a diversity of tree species and sizes, multilayered forest canopies, and an abundance of fallen dead and dying trees along streams and within the forest.

IV Old Growth Definitions

Three main approaches have been used to define old growth.

• mensurational (tree measurement) definitions using simple thresholds based on forest age estimates;

• ecological definitions based on structural or biological attributes within stands;

• ecological definitions based on stand dynamic theories (e.g. Oliver and Larson 1990).[1]

These authors noted in this footnote (Pojar et. al,) provide recommendations on how best these three approaches can be used to provide data to inform this issue. [2]

I favour ecological definitions of old growth, as they provide (in my opinion) a better knowledge of the relationship between old growth structure, function and ecological values, over space and over time.

V Developing an Old Growth Structural Index: "Old Growthedness",

Initial efforts to define old growth using an arbitrary set of criteria to categorize a stand as "old growth" or "not old growth" did not work well. [3] Researchers found that in many plots, old-growth stands do not display all the features that might be used by such a definition, such as densities of large trees, large snags, and large woody debris.

To overcome this problem, researchers developed indices of "old growthedness"; which is the quality of becoming old growth - a gradual process. An example is the Old Growth Structural Definition for Westside Forests in Washington State, known as the Weighted Old Growth Habitat Index (WOGHI).

The WOGHI integrates four key elements of old forests:

1. Large trees (number of trees per hectare > 100 cm dbh)

2. Large snags (number of standing dead trees per hectare > 50 cm dbh and > 15 m tall)

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[1] Pojar, J., Hamilton, E., Meidinger, D, and A. Nicholson. 1992. Old growth forests and biological diversity in British Columbia. Pp. 85 – 97 in Landscape Approaches to Wildlife and Ecosystem Management Proceedings (eds). Ingram, G.B. and Moss, M.R.). Polyscience Publications.

[2] https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/great-bear-rainforest/ei01b_old_growth_def.pdf

[3] Old Growth Definition Task Force. 1986. https://www.fs.fed.us/pnw/pubs/pnw_rn447.pdf

3.Volume of down woody debris (cubic meters per hectare)

4.Tree size diversity

Data for these four elements used in the WOGHI are usually available in forest inventory data. These elements are also generally correlated with the attributes of complex forest structure including spatial heterogeneity, broken-topped crowns, and presence of shade-tolerant tree species.

For the Washington State analysis, researchers did not include age and used a weighting scheme based on the strength of the correlation of the structural feature with time since last disturbance. This gave greater weight to large live trees and tree size diversity in the index. The index values range from 0 to 100 (high levels of old growth structure). [4]

VI How Much Old Growth is Enough?

This very important policy question was studied Dr. Ken Lertzman, Simon Fraser University. [5] This (and other) information will inform the answer:

• well defined goals and objectives;
• meaningful definitions;
• hierarchical ecological framework;
• risk management guidance;
• accurate data

VII Conclusion

Wise policies to conserve, protect and manage old growth will require legislation and practices that:

• identify the high-level policy outcomes, especially those provided by citizens in the public review;
• practice of prudent management;
• serve the best interests of all BC citizens;
• treat all citizens impartially;
• diversify where it is prudent to achieve the purposes for which the old growth is being managed;
• establish performance measures and asset stewardship benchmarks;
• search for win-win solutions. Win-win or no deal;

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[4] Sutherland, Doug, 2005. Definition and Inventory of Old Growth Forests on DNR-Managed State Lands. 2005. Washington State Department of Natural Resources. 15 Pp.
https://www.dnr.wa.gov/publications/lm_ess_westside_oldgrowth_rpt.pdf?hkhyxx
[5] Understanding Old Growth. Ken Lertzman. Simon Fraser University.
https://www.whistler.ca/sites/default/files/related/2012-11
06_cotw_lertzman_old_growth_ecology.pdf

• conserve, protect and manage all forests wisely, then pass them on to future generations: diverse, resilient and productive.

VIII Summary

Public concern over old growth conservation, protection and management goes well beyond longstanding conflicts about watersheds (including water quality) and habitat protection. Public concern now includes emerging issues such as the conservation of genetic resources and carbon capture and storage.

It would be a serious mistake to believe that concerns about the disappearance of old growth forests from our landscape are simply the preoccupation of a few people. It always was and now is an important issue with important implications for ecological and economic resilience, adaptation to climate change, long-term health of our forest economy, and maintaining our quality of life.

Old growth forests are natural reservoirs of genetic diversity and reproductive fitness for all forest tree species. This has important implications for the successful dispersal and adaptation of trees across increasingly fragmented forest landscapes, which will be subjected to the increasing stresses from rapid climatic change and the likely introduction of new pest and diseases.

It is past time for the entire forest sector to make conservation, protection and management of old growth, a policy priority. [6]

The best decision makers have foresight.

Best wishes in completing this important work

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[6]Mosseler A, I. Thompson, and B.A. Pendrel. 2003. Overview of old-growth forests in Canada from a science perspective Environ. Rev. **11**: S1–S7 (2003) doi: 10.1139/A03-018 © 2003 NRC Canada