


# The New Forest Act

## Protecting Communities and Nature

**BACKGROUNDER**

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## Preface to the Expanded Backgrounder

The New Forest Act Proposal and Backgrounder have been expanded as of October 2025, following feedback from people across the province.

Key additions include:

- The **3-Zone Forest Management Framework** has been **renamed to** the **Protect–Restore–Harvest (P.R.H.) Framework** to reflect its emphasis on ecological integrity, restoration, and responsible harvesting - and to clearly differentiate it from other "three-zone" frameworks that use very different principles and standards.
- We have clarified how **the outcomes of Nature-Directed Stewardship (NDS) forestry differ from industrial forestry,** showing how P.R.H. Zoning under Nature-Directed Stewardship produces healthier ecosystems, safer communities, and more stable jobs.
- A section describing **what NDS is and how it works** has been added to ensure the concept is fully understood.
- A new section now describes **what logging looks like under NDS,** providing clear examples to reassure supporters and address critics who fear the proposal eliminates logging altogether.
- The proposal now explicitly frames **forests as critical public infrastructure**, essential for flood and fire protection, clean water, carbon storage, and community resilience.
- A new section outlines **how foresters will learn** and be accredited in NDS - starting with paradigm-first training and a ready-to-implement pathway (course, field practicum, supervised project/sign-off) built on existing skills.

These additions strengthen the proposal by making Nature-Directed Stewardship and the P.R.H. Zoning more transparent and more practically explained to demonstrate their alignment with the needs of BC's people, forests, and communities.

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# APPENDIX 1

## EXAMPLES OF THE NEGATIVE IMPACTS OF INDUSTRIAL FORESTRY

### BC Fires and the Link to Industrial Forestry

In 2023, Canada faced record-breaking wildfires that were fueled by record high temperatures and widespread drought conditions across the country. [1]

According to the BC Wildfire Service, the 2023 wildfire season was the most destructive in BC's recorded history:

- More than 2.84 million hectares of forest and land burned.
- Tens of thousands of people forced to evacuate.
- Hundreds of homes and structures were lost or damaged.
- Indirect economic impacts to agriculture, tourism, and other weather-dependent businesses.
- Unquantifiable impacts to people's health and wellbeing.

There has been a massive increase in fires in all areas of BC (except Vancouver Island) **over the past 10 years.** The escalation in the southern interior and the northeast of BC is particularly shocking. All the big fires in the southern interior burned thousands of hectares of clearcuts and plantations.[2]

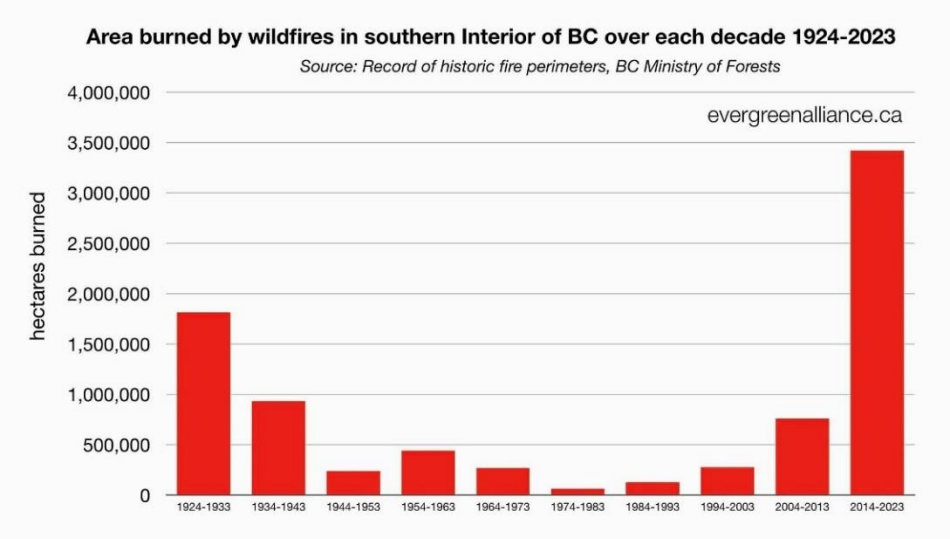



*Figure 1 Graph courtesy David Broadland https://www.evergreenalliance.ca/forest-trends/37/ NOTE: A significant portion of the southern interior of BC consists of clearcuts and monoculture young plantations where older trees and deciduous species are eradicated.*

[1] Government of Canada, Canada's record-breaking wildfires in 2023: A fiery wake-up call, (19, August 2024) Retrieved from: https://natural-resources.canada.ca/simply-science/canadas-record-breaking-wildfires-2023-fiery-wake-call/25303

[2] Broadland, D, Clearcut logging increases forest fire risk, The Evergreen Alliance, (14, October 2021) Retrieved from: https://www.evergreenalliance.ca/portal-increase-in-forest-fire-hazard/1/

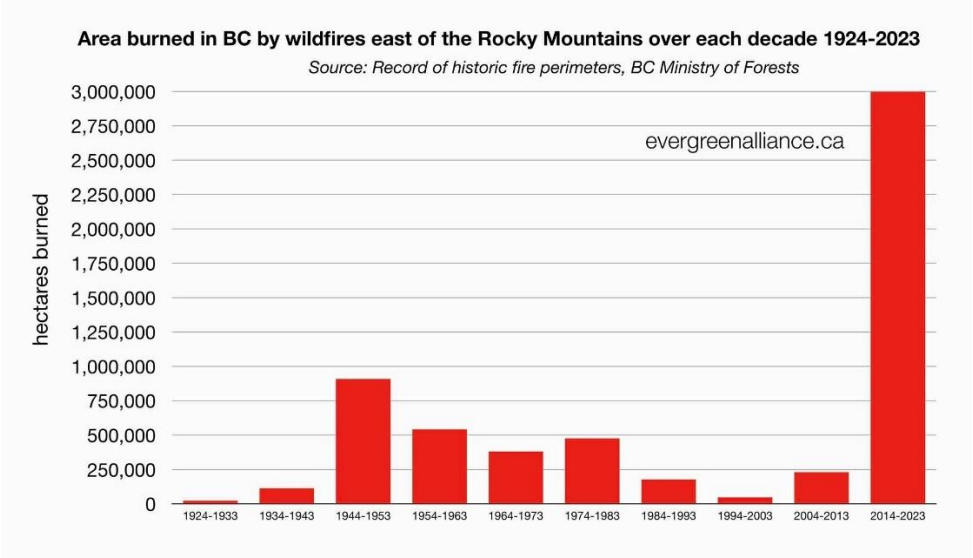



*Figure 2 Graph Courtesy David Broadland https://www.evergreenalliance.ca/forest-trends/37/.*

## Logging activities are increasing fires

- A study of 1500 wildfires in the western US found that while weather and climate can be primary factors in fire intensity and spread, forest management is a significant secondary factor.[3]
- "The forests with the most logging, of both live and dead trees, typically burn in the hottest fires, especially when extreme fire weather[4] interacts with heavily logged landscapes. Yes, there are exceptions, but when we look at the data on a larger scale, the pattern holds: the more trees pulled out of a forest, the more quickly and intensely a fire burns."[5]
- Tree plantations, overstocked with young trees and fine fuels, increase fire risks.
- Logging converts primary forests into open areas filled with flammable weeds and combustible logging debris like twigs, needles, and bark.
- Clearcuts allow drying winds and higher temperatures to more easily penetrate the edges of adjacent forest.
- Clearcut logging followed by replanting, creates fuel conditions that make fires easier to ignite and harder to control.[6]

[3] Bradley, C.M., Hanson, C.T., DellaSala, D.A., Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States? 2016. Ecosphere 7(10):e01492. 10.1002/ecos2.1492 Retrieved from: https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/ecs2.1492

[4] Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape, Dunn, C.J., Zald, H.S.J., Retrieved from: https://www.researchgate.net/publication/324786837_Severe_fire_weather_and_intensive_forest_management_increase_fire_severity_in_a_multi-ownership_landscape

[5] Handon, C.T., Logging in disguise: How forest thinning is making wildfires worse, Fix Solutions Lab, (4, August 2021), Retrieved from: https://grist.org/fix/opinion/forest-thinning-logging-makes-wildfires-worse/

[6] Broadland, D, Clearcut logging increases forest fire risk, The Evergreen Alliance, (14, October 2021) Retrieved from: https://www.evergreenalliance.ca/portal-increase-in-forest-fire-hazard/1/

- Salvage logging raises fuels and fire risks because forest legacies, like mature trees and downed logs, are converted into large and fine fuels all at once.[7] There has been a 100-fold increase in salvage logging in BC over the past 10 years.[8]
- Several of BC's largest fires in 2021 were ignited in a clearcut or plantation and then quickly grew out of control. [9]

Thinning programs designed to generate timber volume may also be contributing to fires in BC. "… forest thinning, and other fuel treatment strategies can take many different forms, some of which can do more harm than good when considered with other factors that influence wildfire behavior, such as weather and terrain."[10] Any thinning being done to increase profits places BC's rural communities and firefighters at risk.

"Dense, mature forests tend to burn less intensely than those that have been logged because they have higher canopy cover and more shade, which creates a cooler, more moist microclimate. The higher density of trees of all sizes can act as a windbreak, buffering gust-driven flames." [11]

Natural forests, meaning those which have never been logged, manage their own fire risk by having:

- A complex, multi-layered canopy.
- A relatively cool and moist understory.
- Dead wood that retains moisture.
- Cooler, wetter microclimates.
- Typically, greater overstory tree diversity, including less flammable species.
- Tree genetic diversity conferring resistance to drought.

## Floods & Landslides and the Link to Industrial Forestry

In November 2021, a state of emergency was declared as southern BC was hit by horrific floods and landslides that resulted in numerous highway washouts, thousands of people displaced from their damaged or destroyed homes, dikes and sewage treatment plants overwhelmed, thousands of farm animals killed, contaminated farmland, and farm buildings and machinery destroyed. Worst of all, a lethal landslide killed five people on Duffey Lake Road near Lillooet. [12]

Dr. Younes Alila, Professor of Hydrology, UBC Faculty of Forestry states, "In B.C. alone, the flood risk is escalating as we continue to lose forest cover due to ongoing large-scale logging and wildfires. If we want to mitigate the costs of disasters like the 2021 flooding in the Fraser Valley or the 2018 flooding in Grand Forks, we need to change the way we manage our forest cover. Regenerative

[7] DellaSala, Dominick, Dr. Gaming the Ecosystem: The Truth About Salvage Logging. Video. July 23, 2024. Viewed at: https://www.youtube.com/watch?v=CUEISPw__Nk
[8] Yunker, Z., Logging after wildfires is a hot industry in B.C. Could it do more harm than good? The Narwhal, (14, August 2024), Retrieved from: https://thenarwhal.ca/bc-wildfires-salvage-logging-investigation/
[9] Broadland, D, Clearcut logging increases forest fire risk, The Evergreen Alliance, (14, October 2021) Retrieved from: https://www.evergreenalliance.ca/portal-increase-in-forest-fire-hazard/1/
[10] Stone, C., Hudak, A., Morgan, P., Forest Harvest Can Increase Subsequent Forest Fire Severity, General Technical Report, (April 2004), Retrieved from: https://nrfirescience.org/sites/default/files/2023-07/psw_gtr208en_525-534_stone.pdf
[11] Handon, C.T., Logging in disguise: How forest thinning is making wildfires worse, Fix Solutions Lab, (4, August 2021), Retrieved from: https://grist.org/fix/opinion/forest-thinning-logging-makes-wildfires-worse/
[12] Parfitt, B. Opening the floodgates, (2, June 2022) Retrieved from https://www.focusonvictoria.ca/forests/115/

practices such as selective logging, small patch cutting, and other alternatives to clear-cutting are an important way forward."[13]

Although many, including the provincial government have pointed to climate change as the cause of the 2021 flooding, professional hydrologist Allen Chapman, former head of the BC River Forecast Centre pointed to logging as among the causes. "Other major and similar storms appear in the record in October 2003, November 1990, and a few other years. The data lead to the conclusion that although the rainfall on November 14 and 15 was certainly large, it was not unprecedented and should not have been unanticipated."[14] In his report he implicated logging, forest fires, and snowpack in the nearby Coldwater River watershed, including extensive logging and logging roads in key river valleys for 'potentially augmenting the rapid movement of storm rainfall into stream channels, causing peak flows to be increased.'[15]

Rainstorms are not unusual in BC. What we are now faced with are the cumulative impacts of decades of industrial logging and extensive road networks. 'It is again well understood that clear-cut logging and forest road construction can alter the hydrology of a watershed and, in some situations, can cause peak flow to increase in magnitude. In particular, for flooding associated with rainstorms, forest roads are of particular concern, as they intercept subsurface flow and route it into ditches, and their impervious surfaces transport rainfall quickly and directly into streams (Wemple et. al., 1996). When the density of forest roads is sufficiently high in a watershed, increased peak flows can result. (Wemple and Jones, 2003)'[16]

A long-term Pacific Northwest study of landslides, clear-cutting timber and building roads shows that a forest's management history has a greater impact on how often landslides occur and how severe they are compared to how much water is coursing through a watershed.[17]

Forests can help to mitigate flooding, but they must be left intact. Tree plantations do not offer the same mitigating power, neither do flood works such as dikes and berms. "In the first 20 years after replanting a forest in the interior dry snow environment, there is no more than a 20% recovery of its hydrologic capacity," Dr. Alila explains. "It can take 60 to 80 years before its full hydrologic function – ability to absorb rainfall and runoff, and slow snowmelt – can be reached."[18] According to Dr. Alila, "Downstream engineering solutions are treating the symptoms and not the root cause

[13] Bosshart, L. UBC researchers advocate for sustainable logging to safeguard against global flood risks, (24, January 2024) Retrieved from https://news.ubc.ca/2024/01/sustainable-logging-advocacy-flood-risks/

[14] Parfitt, B. Opening the floodgates, (2, June 2022) Retrieved from https://www.focusonvictoria.ca/forests/115/

[15] Parfitt, B. Opening the floodgates, (2, June 2022) Retrieved from https://www.focusonvictoria.ca/forests/115/
British Columbia. Unpublished Report, Chapman Geoscience Ltd., Victoria B.C. 25pp.Retrieved from https://www.policynote.ca/wp-content/uploads/2022/05/Chapman_Flood_Report_2022.pdf

[16] As cited in: Chapman, A.R., 2022. Some Factors Associated with the November 13-15, 2021, Catastrophic Flooding in South-West British Columbia. Unpublished Report, Chapman Geoscience Ltd., Victoria B.C. 25pp. Retrieved from https://www.policynote.ca/wp-content/uploads/2022/05/Chapman_Flood_Report_2022.pdf

[17] Lundeberg, S. & Segura, C. Forest landslides' frequency, size influenced more by road building, logging than heavy rain, Oregon State University, (17, January 2023) retrieved from https://today.oregonstate.edu/news/forest-landslides%E2%80%99-frequency-size-influenced-more-road-building-logging-heavy-rain?fbclid=IwY2xjawExjo9leHRuA2FlbQIxMQABHXy6QtWqXj6aLDDKvQlIPbUiZgdh-Gv2ncObM3PyTQGMu5QatvBZaPWkiA_aem_goASmSqjsRL2MusAwwJpxw

[18] UBC Forestry, Fires, and Floods: Future-Proofing Forestry Against Climate Catastrophes, (29, June 2022) As quoted here https://forestry.ubc.ca/alumni/profiles/fires-floods-future-proofing-against-climate-catastrophes/

of an increase in flood risk, which actually happens in the headwaters. This is why relying solely on engineering solutions will never be adequate for managing flood risk."[19]
BC will suffer flooding from clearcuts for at least 70-100 years, as tree plantations slowly regrow to the point that they can intercept and store water as well as the forests that were removed from logging.

## Drought and the Link to Industrial Forestry

There is a feedback loop between logging and drought. Droughts can lead to deforestation and substantial deforestation can lead to long-term droughts in a given area. Droughts cause tree mortality under changing climatic conditions, making it nearly impossible for forests to expand and thrive.[20]

- In 2023, 80% of regions in BC had severe drought[21] and two thirds of B.C.'s water basins were at drought level 4 or 5 — the most extreme rating — by the end of July. In April 2024, average snowpack was at an all-time low. [22]

- As of July 2024, approximately 48% (471,244 square kilometers) of British Columbia was under drought conditions and 30% (296,101 square kilometers) was Abnormally dry.[23] The province headed into summer 2024 with "multi-year" precipitation deficits.[24]

- According to ClimateReadyBC (a branch of the BC government), as British Columbia's climate continues to warm, drought and resulting water scarcity will increase in duration and severity.[25]

### *Climate and Forestry*

Federal and provincial governments frequently talk about the considerable threats posed by climate change but rarely refer to the substantial contribution industrial forestry makes to climate change. The province may not be able to control the global climate, but it can certainly control logging on public land in BC. One of the most effective actions the BC government can take is to preserve what is left of primary forests.

"Climate scientists generally agree that maintaining intact, natural forest ecosystems is an important way to mitigate the impacts of global warming/climate change." (Hammond, 2014)[26]

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[19] Partnership of Water Sustainability in British Columbia, (21, May 2024), Landscapes and Watersheds in BC are at a Heightened Risk, as quoted here: https://waterbucket.ca/cfa/2024/05/21/landscapes-and-watersheds-in-bc-are-at-a-heightened-risk
[20] Marsh, J. Deforestation and droughts tend to worsen one another, (4, January 2023) retrieved from https://www.sustainability-times.com/environmental-protection/deforestation-and-droughts-tend-to-worsen-one-another/
[21] Government of British Columbia, Drought preparation and response (17, June 2024) retrieved from https://www2.gov.bc.ca/gov/content/drought
[22] Government of British Columbia, Drought preparation and response (17, June 2024) retrieved from https://www2.gov.bc.ca/gov/content/drought
[23] Plantmaps, Current Drought Conditions for British Columbia (August 2024). Retrieved from https://www.plantmaps.com/en/ca/province/british-columbia/current-drought-conditions#google_vignette
[24] Dave Campbell, Head of BC's River Forecast Centre, as reported in https://www.cbc.ca/news/canada/british-columbia/drought-unfamiliar-territory-1.7199512
[25] ClimateReadyBC, Drought and water scarcity (2024). Retrieved from https://climatereadybc.gov.bc.ca/pages/drought-water-scarcity
[26] Hammond H. Working Paper- Good Jobs Require Healthy Ecosystems and Healthy Communities

Scientists across the globe have been sounding the alarm about the devastating consequences of continuing to cut down primary forests. “Logging of primary forests, which have unique climate value,
incurs a carbon debt that persists for centuries, long past the timeframe for averting catastrophic climate impacts.” [27] Forests remove carbon from the atmosphere and store it as above- and below-ground organic matter (living and dead). Older forests do this best.

The older and less disturbed a forest is, the more carbon it accumulates. Logging activity is removing the old forests that are needed to absorb carbon. BC’s area of boreal forest alone, at 299,000 km², [28] stores 5 billion tonnes of carbon in its soils, peat and forests – equivalent to around 25 years' worth of Canada’s GHG emissions in CO2 equivalent at 2014 levels. [29]

Replacing old forests with young tree farms reduces the amount of old forest that is critical for holding carbon. This multiplies the negative impacts of logging on climate warming greenhouse gasses.

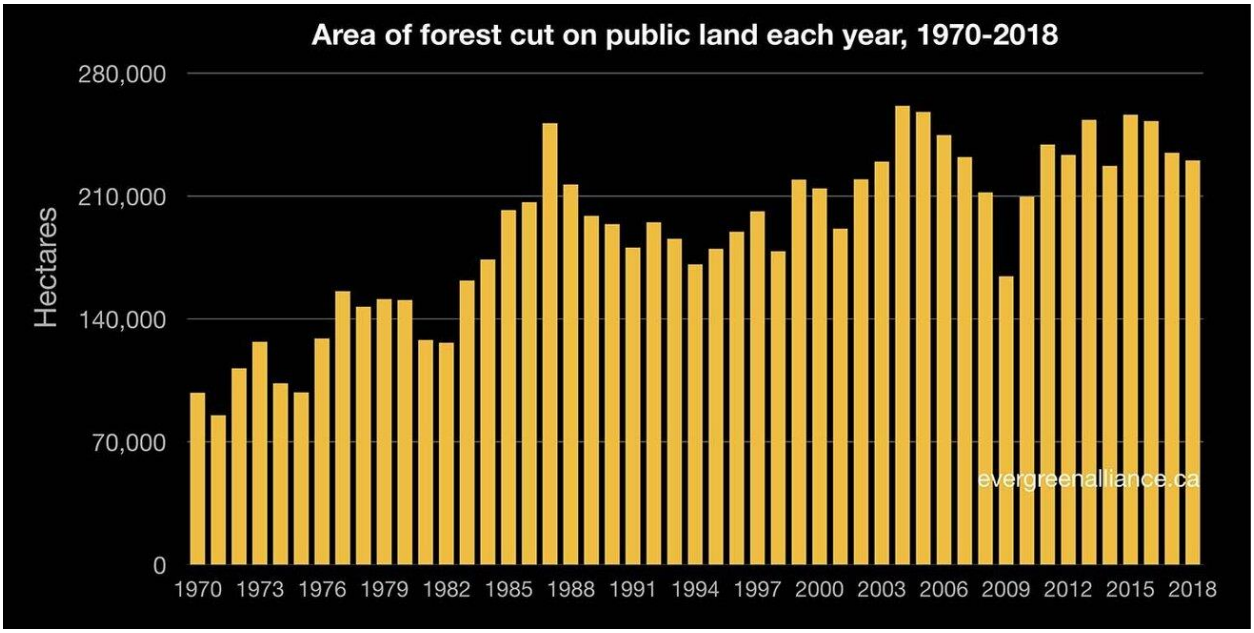



*Figure 3 Data crunching by David Leversee, based on the ministry of forests’ RESULTS Openings and Consolidated Cutblocks.* [30]

[Conference] // Good Jobs Economy in B.C. - Vancouver: Policy Alternatives, 2014. - Draft 3A.

[27] Polanyi, M., Skene, J., Nature Canada, NRDC, Lost in the Woods: Canada’s Hidden Logging Emissions Are Equivalent to Those from Oil Sands Operations, (October 2022), Retrieved from: https://naturecanada.ca/wp-content/uploads/2022/10/Lost-in-the-Woods-Report.pdf

[28] Canadian Boreal Initiative. 2003. Canada's Boreal Region

[29] Tarnocai, C. and Lacelle, B. 1996. Soil Organic Carbon Digital Database of Canada. Eastern Cereal and Oilseed Research Center, Research Branch, Agriculture and Agri-Food Canada, Ottawa, Canada Retrieved from: https://www.borealbirds.org/province-territory-boreal-forest-facts/BritishColumbia#:~:text=British%20Columbia's%20Boreal%20Forest%3A,larger%20than%20the%20United%20Kingdom.&text=comprises%205%25%20of%20Canada's%20Boreal%20Forest.

[30] Clearcut logging increases fire risk, Broadland, D. Evergreen Alliance. Oct 2021.

## Canada's Logging Industry is a High Greenhouse Gas Emitter

Over the past 10 years, logging emissions from Canada's managed forests add up to over 1,200 million tonnes of CO2 (MtCO2).[31] Annual carbon emissions from forest management in BC are nearly three times higher than all the Canadian oil sands projects combined.[32] This information is little known because Canada does not clearly report the logging sector's emissions.[33]

### Impact of Logging on Biodiversity, Wildlife, and Fish

After commercial logging, companies are planting a limited number of species that grow quickly rather than a biodiverse variety of native species. The focus is on maximizing wood production and this has a negative impact on biodiversity.

A BC study by Simard et al, quantifies the losses as tree retention in logging operations declines from 100% retention to 60% to 30% to 10% down to 0% retention (a clearcut). In logging operations, when it comes to trees, biodiversity decreases as tree retention declines. Conversely, the more trees that are retained, the more biodiversity there is. In a study done in Douglas-fir forests in BC, an average of 10 species disappeared with clearcutting and 5–7 with partial cutting.[34]

Logging threats to wildlife include:

- A decline in biodiversity.
- Decline in breeding opportunities.
- Isolation of some species.
- An increase in predation.
- Reduction in available food.

As of 2020, there were 1,680 species in BC that were red or blue listed. Red means they are endangered or threatened, and blue means special concern.[35]

A 2017 a study on 9,432 vertebrate species worldwide found that deforestation substantially increased the odds of a species being listed as threatened, undergoing recent upgrading to a higher threat category, and exhibiting declining populations. Even minimal deforestation has had severe consequences for vertebrate biodiversity.[36]

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[31] (Barry Saxifrage. Using data from National Inventory Reports from 2019 and 2020, with some values from Environment Canada,)
[32] Broadland D. Forestry Isn't Sustainable Folks [Online] // Focus on Victoria. - August 26, 2020. Retrieved from: https://www.focusonvictoria.ca/forests/26
[33] Polanyi, M., Skene, J., Nature Canada, NRDC, Lost in the Woods: Canada's Hidden Logging Emissions Are Equivalent to Those from Oil Sands Operations, (October 2022), Retrieved from: https://naturecanada.ca/wp-content/uploads/2022/10/Lost-in-the-Woods-Report.pdf
[34] Simard, S. et al, Harvest Intensity Effects on Carbon Stocks and Biodiversity Are Dependent on Regional Climate in Douglas-Fir Forests of British Columbia, Frontiers in Forests and Global Change, Vol. 3, 2020. Retrieved here: https://www.frontiersin.org/journals/forests-and-global-change/articles/10.3389/ffgc.2020.00088/full
[35] BC Conservation and Data Centre
[36] Betts MG, et al. Global forest loss disproportionately erodes biodiversity in intact landscapes. Nature. 2017;547:441–444. doi: 10.1038/nature23285. [PubMed] [CrossRef] [Google Scholar]

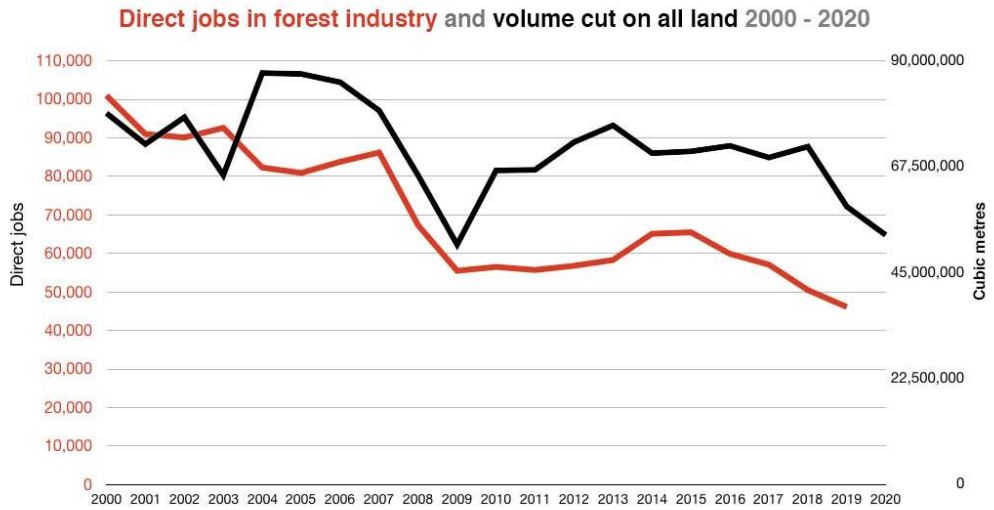
### *Impacts of Logging on Fish*

In 2020, there were approximately 58,000 kilometres of Forest Service Roads in British Columbia.[37] Government estimates that there are approximately 370,000 stream crossings in the province, of which about 76,000 are culverts on fish streams.[38] According to the Forest Practices Board, "There is a serious impediment to fish passage in many watersheds in BC. Much of the risk is from forestry road crossings that use closed bottom structures." These road crossings cut off access to significant amounts of valuable fish habitat.[39]

The other critical issue for aquatic populations is that elevated levels of sediment from forest roads flow into streams and rivers. Sediment makes fish more susceptible to infection and disease, reduces survival rates of adult fish, and can suffocate fish eggs. The sediment can also carry toxic agricultural and industrial compounds which can kill fish.[40]

## Lack of Stable Local Economies and Declining Jobs

In BC, between 2000 and 2019, direct jobs (logging, manufacturing, and related work) in forestry fell from just over 100,000 to 46,000. In that same period, the volume of forest logged declined by only 25 percent.[41] The industry's only argument in support of the vast scale of logging in BC forests is that it produces jobs. But from these numbers we can see that there is no power to this argument.




Graph courtesy Evergreen Alliance: Relationship between direct forest industry jobs and volume harvested on all land in BC 2000-2020, Evergreen Alliance Staff, May 29, 2021

[37] Auditor General of British Columbia, Management of Forest Service Roads, November 2020, Retrieved from: https://www.bcauditor.com/sites/default/files/publications/reports/OAGBC_Management-Forest-Service-Roads_RPT.pdf
[38] Forest Practices Board, Fish Passage at Stream Crossings (January 2009), Retrieved from: https://www.bcfpb.ca/wp-content/uploads/2016/04/SIR25-Fish-Passage-at-Stream-Crossings.pdf
[39] Forest Practices Board, Fish Passage at Stream Crossings (January 2009), Retrieved from: https://www.bcfpb.ca/wp-content/uploads/2016/04/SIR25-Fish-Passage-at-Stream-Crossings.pdf
[40] Government of Canada, Water Pollution: erosion and sedimentation, (7, January 2016), Retrieved from: https://www.canada.ca/en/environment-climate-change/services/water-overview/pollution-causes-effects/erosion-sedimentation.html
[41] Relationship between direct forest industry jobs and volume harvested on all land in BC 2000-2020, Evergreen Alliance Staff, May 29, 2021, Retrieved here: https://www.evergreenalliance.ca/forest-trends/relationship-between-direct-forest-industry-jobs-and-volume-harvested-on-all-land-in-bc-2000-2020-r15/

Government and industry have attributed the decline in the volume of logs cut to Mountain Pine Beetle, fires, and more land being protected. However, logging has removed more volume than both beetle and fires combined.[42] Very little land has been set aside for conservation.[43] More likely, the ministry has overestimated growth and yield over a long period of time, overestimated the size of the timber harvesting land base, underestimated the impact of climate change, and allowed overcutting. As old forest continues to be liquidated, younger, lower-volume second-growth forests have become a larger portion of the harvest. The result is that volumes have declined.

Industry overharvested without thought for future harvests. Even if the new tree plantations were left unlogged for centuries, climate disruption makes the likelihood of BC forest ecosystems ever matching their former condition extremely low. The outcome is that timber yields from original mature and old forests have not and will not be repeated for a thousand years in terms of volume, quality, or economic value.

## Other problems:

- BC has shifted from the economic and job benefits of numerous small-to-medium sized local mills to huge, highly mechanized super-mills that employ fewer people. In 2004 there were 194 large, medium, and small sawmills in BC. By 2020, that number was almost halved to just 111 mills.[44]
- Government subsidizes low-value products such as wood pellets, raw logs, and dimension lumber. There are no long-term revenue flows to local economies that result from managing for quality and specialty wood products (value-added).[45]
- There are no regional log markets to ensure the full value of public timber is realized and paid to the province.
- There are few opportunities for small- to medium-sized forestry operators to operate on public land.

Economic downturns, unsustainable cut levels, monopoly control of forests, and a lack of economic diversification make forest dependent communities vulnerable.

[42] Volume of logs cut on public land 2000-2022. https://www.evergreenalliance.ca/forest-trends/volume-of-logs-cut-on-public-land-2000-2022-r12/

[43] Even if all the old-growth deferrals had been implemented, they would only have resulted in a six percent decline in the overall land base currently considered available to log. According to Dave Daust, a scientist who was part of the Old Growth Advisory Panel, Parfitt, B., Focus on Victoria, The last of the green gold, (14, April 2022), retrieved from https://www.focusonvictoria.ca/forests/114/

[44] Parfitt, B., Houston Falling: Super-sized mills lead to super-sized problems for BC Forests and workers, Policy Note (2, March 2023), Retrieved from: https://www.policynote.ca/super-sized-mills/

[45] Herb Hammond, Forest Tenure: Private Control of Public Forests—Revised 9, April 19, 2022

Despite having "world class" forests, British Columbia has failed to maintain forestry jobs. Relying on private profit-focused companies to care for public resources and community jobs has clearly been a mistake.

Forestry jobs per 1000 $m^3$ board feet

| | |
|---|---|
| Newfoundland and Labrador: 0.34 | Prince Edward Island: 1.75 |
| Alberta: .58 | Quebec: 2.08 |
| British Columbia .81 | Saskatchewan: 2.29 |
| New Brunswick: 1.12 | Ontario: 2.63 |
| Nova Scotia: 1.23 | Manitoba: 3.57[1] |

The takeaway is that BC has the highest quality forests in Canada and does the least with their timber compared to other provinces. While BC produces more jobs per 1000$mm^3$ than Alberta and Newfoundland, there are reasons: Newfoundland is very low volume/ha and Labrador is mostly inaccessible. In Alberta forestry and milling is highly mechanized.

## EXAMPLES OF GOVERNMENT SUBSIDIES TO THE FOREST INDUSTRY

For decades, private timber companies have been receiving various types of bonuses that essentially amount to subsidies at the expense of BC taxpayers. Here are just a few:

- Low stumpage rates that do not reflect a credible market value for timber and are effectively determined by a few large timber companies.[46]
- Government programs that provide public monies to private timber companies to carry out forest management on public lands. For example, over $1 million dollars was supplied in 2019 to Weyerhaeuser Canada for fertilization in "their" Tree Farm License 59 (FESBC Accomplishments Report, January 2019, p. 24). Here a private corporation profits from logging on public land plus gets taxpayer subsidies to produce lower quality wood.[47]
- 'Cut control crediting' aka Grade 4 Crediting System[48] has been used for years to allow logging companies that truck lower-value trees to pellet mills and pulp mills to receive credits from the government that allow them to go back into the forest and log the same amount of trees again (including old growth). The logging of these lower-value trees does not get attributed to a tenure holder's AAC count.[49] So it appears that this double-dipping is off-the-books. Perhaps this is one reason industry is 'running out of timber.' The

[47] Herb Hammond, Forest Tenure: Private Control of Public Forests—Revised 9, April 19, 2022
[48] Government of British Columbia, Forest Tenures Branch, Sustainable Volume Grade 4 Credit Limit Guidebook, (1, June 2015), retrieved from: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/timber-tenures/cut-control/sustainable_vol_grade4_credit_limit_guidebook.pdf
[49] Government of British Columbia, Modernizing Forest Policy in British Columbia: Setting the Intention and Leading the Forest Sector Transition, Retrieved from: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/competitive-forest-industry/modernizing_forestry_in_bc_report.pdf

government itself warned last year that its crediting scheme may be accelerating depletion[50] of the province's forests.[51]

[50] Government of British Columbia, Modernizing Forest Policy in British Columbia: Setting the Intention and Leading the Forest Sector Transition, Retrieved from: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/competitive-forest-industry/modernizing_forestry_in_bc_report.pdf

[51] Parfitt, B., Focus on Victoria, The last of the green gold, (14, April 2022), retrieved from https://www.focusonvictoria.ca/forests/114/

# APPENDIX 2

## DETAILS OF THE PROTECT-RESTORE-HARVEST STEWARDSHIP MODEL UNDER NATURE-DIRECTED STEWARDSHIP

The Protect–Restore–Harvest (P.R.H.) Framework, grounded in the principles of Nature-Directed Stewardship (NDS), defines where logging can occur, where it cannot, and how it must be done. It meets ecological, cultural, and economic needs by designating forests into three categories: Protected, Restoration, and Harvest Forests.

Our Protect–Restore–Harvest (P.R.H.) Forest Zones keep primary forests intact, restore damaged landscapes, and manage Harvest Forests with selective, nature-aligned harvesting. It's a clear, balanced system that protects communities from fires, floods, and drought while keeping people employed in all three zones.

Under this system, human uses - including logging - are designed to prevent damage to ecosystems. This shifts forestry from liquidation to care, ensuring that jobs, products, and practices align with ecological integrity. The P.R.H. system provides a clear path to transition from today's industrial liquidation model to a balanced, resilient economy that protects ecosystems while creating long-term community stability.

This is not industrial zoning. This is ecological zoning for long-term survival and rural prosperity.

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## THE THREE P.R.H. ZONES

### Protection Zone – Primary Forests

- Primary forests are fully protected from industrial logging, road building, and other extractive uses.
- Removed from the Timber Harvesting Landbase.
- Conserves forests with the highest biodiversity, climate resilience, and that produce the highest quality water in moderate flows throughout the year.
- Global conservation science tells us that conserving half the land area will safeguard about 70% of the species, [52] so the Protection Zone and Restoration Zones should add up to this proportion of every landscape.
- Natural disturbances (fire, insects, disease) are allowed to proceed.
- Traditional and eco-cultural practices are encouraged.

**Definition of Primary Forests:** Primary forests are forests that have never been industrially logged and that still retain their natural composition, structure, and ecological processes. This includes old-

[52] Dinerstein, E., et al, An Ecoregion-Based Approach to Protecting Half the Terrestrial Realm, BioScience, Volume 67, Issue 6, June 2017, Pages 534–545. Retrieved here: https://academic.oup.com/bioscience/article/67/6/534/3102935. Also see: https://natureneedshalf.org/why-50/

growth stands and younger natural stands that have not been subject to large-scale industrial disturbance. It includes stands that have been affected by fire, disease, or insects.

### *Rationale for Protecting Primary Forests*

Due to the massive loss of primary forest across the province and the resulting effects on wildlife, plants, hydrological function, fire risk, flood risk, and drought, it is essential to prevent logging in all remaining primary forests, whether those primary forests are in fragments on the landscape or in areas that are intact (large in area).

Many of BC's wildlife and plant populations require large intact landscapes where the effects of fragmentation are removed and where healthy foodwebs and predator-prey relations are restored. Restoration Zones must be spatially oriented to support and strengthen adjacent Protection Zones. To safeguard against further biodiversity loss, Restoration Zone locations must be chosen for their value to functioning ecosystems (primary forests) rather than for convenience.

Most of BC's valley bottom primary forests are in the process of losing their biodiversity because they are embedded in industrial landscapes. In those cases, the Restoration Zones need to become the glue that holds those broken pieces together.

### *Jobs Within the Protection Zone*

Protection of primary forests generates steady, long-term employment in conservation science, ecological monitoring/planning/management, watershed management[53], eco- and cultural tourism, guiding services, subsistence economies, and Indigenous Guardians and other stewardship programs.

## Restoration Zone – Secondary Forests

- Lands degraded by past logging and road building, aka *secondary forests.*
- Removed from the Timber Harvesting Land Base.
- No logging occurs here; post-disturbance "salvage logging" is prohibited.
- Restoration methods include but are not limited to:

    - Road removal – the most direct and proven restoration activity, with immediate benefits for water flow, slope stability, and ecosystem health.

[53] Because protecting primary forests also means safeguarding and managing the watersheds they anchor, strengthened watershed management is fully aligned with the New Forest Act. A 2021 report predicted that strengthening BC's watershed sector could generate 17,300 new jobs by 2030, building on the existing 27,200 direct jobs and $5 billion GDP contribution in 2019. The Delphi Group. (2021, May). *Working for watersheds: Opportunities for growth in British Columbia's watershed sector* [Report commissioned by the BC Water Funders Collaborative, the BC Freshwater Legacy Initiative, and the POLIS Water Sustainability Project] https://delphi.ca/wp-content/uploads/2023/03/Working-for-Watersheds-Full-Report-web.pdf

    - Proforestation – allowing planted forests to self-thin and naturally develop into more complex, resilient ecosystems over time. [54]
    - Ecological (variable- spaced) thinning and gap creation – carefully altering dense monoculture plantations to diversify structure and species. Trees cut in these projects must remain on site or nearby to provide wildlife habitat.

- Restoration Forests include:

    - Watersheds with cumulative risks to water supplies, fish habitat, human habitation, and hydrogeological function.
    - Lands necessary to act as 'corridors' between 'islands' of primary forest that may be improved for wildlife cover, safe movement, migration, and gene flow.
- Extensive levels of restoration are needed over extended time periods. This will require long-term commitments by governments to fund restoration treatments.
- Requires Traditional Ecological Knowledge, restoration ecology, biology, natural history, and reclamation forestry.

### *Jobs Within the Restoration Zone*

Restoration generates steady, long-term employment in road rehabilitation, slope stabilization, stream restoration, planting diverse native species, invasive species removal, watershed restoration[55], and monitoring ecosystem recovery.

## Harvest Zone – Managed Secondary Forests

- Previously logged and roaded lands designated for timber extraction under NDS.
- Timber Extraction:
    - involves a commitment to implement partial-cutting to NDS principles and standards. Partial-cutting employs science-based alternatives to conventional forestry, including no clearcutting or use of herbicides.
    - includes leaving full-cycle trees to provide continuous forest cover.
- At least 30% of the largest, most resilient trees are left as full-cycle trees to provide seed, shade, habitat, and carbon storage.
- Supplies local mills and value-added businesses, not foreign raw log exports.
- Road building is limited to stable terrain; low-impact or aerial systems are used otherwise.
- Requires planning and administration by foresters trained in NDS and includes appropriate identification of ecological limits to logging.

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[54] Moomaw, W.R., Masino, S.A., Faison, E.K., Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good, Front. For. Glob. Change, 10 June 2019, Sec. Tropical Forests, Volume 2 – 2019. Retrieved from: https://www.frontiersin.org/journals/forests-and-global-change/articles/10.3389/ffgc.2019.00027/full

[55] Because protecting primary forests also means safeguarding and managing the watersheds they anchor, strengthened watershed management is fully aligned with the New Forest Act. A 2021 report predicted that strengthening BC's watershed sector could generate 17,300 new jobs by 2030, building on the existing 27,200 direct jobs and $5 billion GDP contribution in 2019. The Delphi Group. (2021, May). *Working for watersheds: Opportunities for growth in British Columbia's watershed sector* [Report commissioned by the BC Water Funders Collaborative, the BC Freshwater Legacy Initiative, and the POLIS Water Sustainability Project] https://delphi.ca/wp-content/uploads/2023/03/Working-for-Watersheds-Full-Report-web.pdf

### *Jobs Within the Harvest Zone*

The Harvest Zone generates steady, long-term employment in selection and partial cutting, trucking, regional log sort yards, local sawmills, value-added wood manufacturing, forest planning, surveying, silviculture, and compliance monitoring.

These jobs that last come from outcomes that last. NDS shifts work toward selection/partial cutting, monitoring, restoration, local mills, and value-added manufacturing - creating more jobs per cubic metre than clearcuts and stabilizing local economies. Opening access for small/medium operators and restoring regional log markets turns public timber into public value, not raw-log exports.

**How P.R.H. and NDS fit together**

P.R.H. is the land-use framework that implements NDS. NDS sets the outcomes and limits (protect first, restore function, log only within ecological thresholds); P.R.H. turns that into space and sequence: Protect establishes the permanent reserve network, Restore rebuilds degraded areas, and Harvest permits selection-based forestry only where the first two conditions are met.

# APPENDIX 3

## DETAILS ABOUT NATURE-DIRECTED STEWARDSHIP

**Managing forests the way nature does - so they keep working for wildlife, water, and people for generations.**

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### What is Nature-Directed Stewardship (NDS)?

Nature-Directed Stewardship is forest management that follows nature's lead. It manages forests in ways that maintain their natural patterns, processes, and life-supporting functions - instead of forcing them into short, profit-driven production cycles.

It's the opposite of "maximum-yield" forestry. Instead of cutting for volume, we work within the limits of what the ecosystem can handle - and what it actually needs to stay functioning over centuries.

In some reports, NDS is called *Nature-Based Planning* or *Ecosystem-Based Conservation Planning* - but the principles are the same:

- Protect the most ecologically important areas first.
- Log only where and when the forest can absorb the disturbance.
- Keep the forest functioning as a living system during and after any logging.

For details and an example of a Nature-Directed Stewardship plan for a British Columbia site see Preliminary Nature-Directed Stewardship Plans for Glade and Laird Watersheds (West Kootenay Eco-Society, 2022).

***Nature sets the rules. We follow them.***

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### Core Ecological Principles of NDS

- **Protect the best parts first:** Decide which areas will always stay protected - like wildlife paths, streambanks, and untouched old forests - before choosing where logging can happen.
- **Work like nature does:** Plan logging so it follows the natural changes (called natural disturbances - see below) that happen in that type of forest. For example, in Interior Cedar–Hemlock forests, the natural changes are usually small gaps from wind or disease, not huge clearcuts or extensive road networks. NDS logging copies those smaller patterns.
- **Keep the forest connected:** Make sure tree cover stays linked together - from small patches in one area, to whole watersheds, to big stretches of forest across the region.

- **Plan for the long haul:** Think in centuries, not decades. It takes generations for a forest to fully recover after it's disturbed by humans, and NDS plans respect that.
- **Choose trees for their role, not their price:** Keep old trees, trees that provide homes for animals, trees with hollows, and trees that improve the soil and provide fire-breaks.
- **Safeguard water and soil:** Maintain wide, intact riparian buffers along all streams, wetlands, and lakes; avoid soil compaction and erosion.
- **Keep carbon in the system:** Minimize disturbance, avoid slash burning, and allow large woody debris to stay on site where it feeds soil life and locks up carbon.
- **Science-led and monitored:** Follow the latest ecological research and carry out thorough monitoring before, during, and after activities. Use accurate data on soils, water, and species to guide every step, so actions fit real on-the-ground conditions.

**First protect, then carefully choose what - if anything - to take.**

**Examples of natural disturbance:**

- Small canopy gaps from wind or the fall of a single large tree.
- Localized insect or disease outbreaks.
- Fires.
- Periodic flooding along river flats that deposits new soils and creates habitat.
- Ice storms or heavy snow that break branches or topple a few trees at a time.

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## What Logging Looks Like Under NDS

Under the P.R.H. system, NDS forestry continues logging in the Harvest Zone. But it looks very different and produces different outcomes than industrial volume-based logging. The emphasis is on **selection logging**: carefully planned partial-cutting designed to achieve ecological and community goals. This is not the same as "selective logging," which often means high-grading (taking only the best trees and leaving degraded stands).

### *Key features of NDS logging in Harvest Forests:*

- **Selection Logging/partial cutting:** Can maintain 80–90% of canopy cover, compared to 0% after a clearcut.[56] Remove individual or small groups of trees based on site-specific plans, leaving most canopy intact. This keeps shade, moisture, and habitat while allowing limited logging.

[56] Hammond, Herb. 2024. Presentation: Forests for biodiversity and ecosystem health not timber extraction. Boundary Forest Watershed Stewardship Society. https://youtu.be/MZOFiHsHooE?si=ASroToug6CvDP2ET

- **Logging that matches the forest:** In areas where nature usually changes in small patches, only small clearings are made, spread out in ways and sizes similar to what happens naturally.
- **Continuous cover forestry:** no clearcutting, no broadcast spraying of herbicides
- **Retain structure and maximize diversity:** Always leave a mix of tree species, ages, standing dead trees (snags), fallen logs, and understory plants - because they're important for wildlife, biodiversity, and the health of the ecosystem.
- **Full-cycle trees:** At least 30% of the largest, healthiest trees are left for their entire lifespan, providing seed, shade, habitat, and carbon storage. [57]
- **Minimal road networks**: Build as few permanent roads as possible. Place them away from fragile soils and streams, and when they're no longer needed, remove them and replant so the forest stays connected. Where there are ecological or hydrological risks from roads, use low-impact or aerial systems.
- **Leave the 'mess':** Fallen trees, branches, and organic debris are left to feed soil organisms and store carbon, instead of being piled and burned.
- **Biological legacies:** Defined by Franklin et al. (1998, p.52) as "organisms (including reproductive structures), organic materials, and biologically derived patterns in soil and vegetation from the pre-disturbance ecosystem into the post-disturbance environment." [58] These are retained on site, not "cleaned up."
- **Riparian networks:** Maintained even in logged areas, wide, intact buffers (30–100m) keep streams shaded and cool, reducing flood and drought risk.
- **Minimal footprint** - Roads and machinery are small-scale.
- **Permanent No-Cut Areas:** Wildlife corridors, key habitats, steep slopes, culturally significant areas, high elevation zones, and riparian zones are left undisturbed - forever, not just until the next rotation (the *Protection Zone*).
    - **Riparian networks:** Continuous strips of intact forest along streams - far wider than current regulations - to keep water cool, prevent sediment, and protect aquatic species.
    - **Wildlife corridors:** Connected forest strips linking habitats so species can move freely across the landscape.

[57] Hammond, Herb. 2024. Presentation: Forests for biodiversity and ecosystem health not timber extraction. Boundary Forest Watershed Stewardship Society. https://youtu.be/MZOFiHsHooE?si=ASroToug6CvDP2ET

[58] Franklin J., Johnson N. and Johnson D.L. 1998. Ecological Forest Management. [Report]. - [s.l.] : Waveland Press Inc.

*Example:* In the West Boundary in the 1990s, clumps of trees were left during selection logging to provide shelter for deer. Twenty-five years later, those sites support food, cover, and habitat - proof that this kind of forestry keeps ecosystems functioning while supporting jobs (Photo courtesy Jennifer Houghton, 2020)



## Restoring Degraded Forests under NDS

NDS doesn't treat restoration as just "planting trees." It means re-building the structure, species mix, and ecological processes that make a forest function. Here are just some examples of possible methods (which are customized to each site):

- **Natural Regeneration first:** Let nature lead recovery; plant only where recovery is blocked or too slow.
- **Reconnecting fragmented areas:** Plant or encourage native species to link isolated patches so animals and plants can move and mix.
- **Bring Back Missing Species:** Re-introduce conifers, nitrogen-fixing species, or broadleaf trees that improve soil health.
- **Rebuild Soil Function:** Add or leave coarse woody debris, break up compacted areas, restore thick organic layers.
- **Restore hydrological function** by replacing, removing, or altering ditches and culverts that interfere with hydrological function.
- **Remove Industrial Scars:** Rehabilitate and replant roads. Restore streambanks so they look and work like they did before logging - leading to restored hydrological function.

**The goal is not just more trees - it's a living, self-sustaining forest that supports wildlife, stores carbon, and regulates water flow.**

## How NDS Keeps Forests Functioning

- **Living Shade System:** Keeps canopy cover to regulate stream and ground temperatures.
- **Moisture Sponge:** Retains deep forest soils and organic layers that absorb rain and release it slowly, reducing floods and droughts.

- **Wildlife Highways:** Maintains continuous cover so wildlife can move freely for feeding, mating, and seasonal migration.
- **Seed Banks:** Protects genetic diversity needed for regeneration and adaptation to climate change.
- **Natural Pest Control:** Maintains predator–prey balances to prevent insect and disease outbreaks.
- **Carbon Vaults:** Maintains the massive carbon storage of old and mature forests, including deep soils - the thick, rich layers of soil that have built up over centuries in undisturbed forests - often with lots of organic matter, roots, fungi, and moisture all the way down.
    - **These soils:**
        - Hold huge amounts of carbon - sometimes more than the trees themselves.
        - Are slow to form and can't be quickly replaced once damaged.
        - Are easily disturbed by clearcutting, heavy machinery, or drying after tree removal.

**Functioning forests protect themselves - and us.**

*Why Post-Disturbance Logging Is Not Restoration*

Disturbances such as fire, insects, and disease are natural processes that sustain ecosystems. They create snags, fallen logs, nutrient cycling, and habitat that enrich biodiversity and connect successional phases.

By contrast, salvage logging:

- Removes biological legacies needed for recovery.
- Increases fire risk by converting intact snags and logs into fine fuels.
- Disrupts hydrology through road building.

Depresses native species richness and slows natural regeneration (as explained by Dr. Dominick DellaSala, Conservation North. 2024. *Gaming the ecosystem: The truth about salvage logging* [Video]. YouTube. https://youtu.be/CUElSPw__Nk?si=czh5FiiA-t0Hwylx)

Outbreaks of bark beetles, diseases, and wildfires are natural processes in forests. Insects and disease organisms are essential components of ecosystems. Many organisms (plants, fungi, insects, animals) depend on or benefit from patches of snags and dead wood. These must be left on the land to ensure natural succession, and all its benefits are allowed to continue after outbreaks.

**Salvage logging is not restoration.** It will not occur in the Protection or Restoration Zones, and only in limited, carefully defined cases in the Harvest Zone.

## "Multiple Spatial Scales" - In Plain Language

NDS plans protection and logging at nested levels **- f***rom the size of a beaver pond to the size of a province level. Each gets customized treatment.*[59]

1. **Site** (less than 250 ha)**:** Small, critical patches like wetlands, rare plant sites, or wildlife dens.
2. **Watershed** (250–100,000 ha)**:** All the land feeding a creek, river, or lake, including headwaters and slopes.
3. **Small Landscape** (100,000–250,000 ha)**:** Large zones like a cluster of connected watersheds.
4. **Large Landscape** (250,000 ha–1.6 million+ ha)**:** Entire regions where wildlife moves, water flows, and weather patterns connect.

**Keep the forest working as a whole - from the soil microbes under one tree to the migration path of a caribou herd.**

Diagram of the NDS design process:

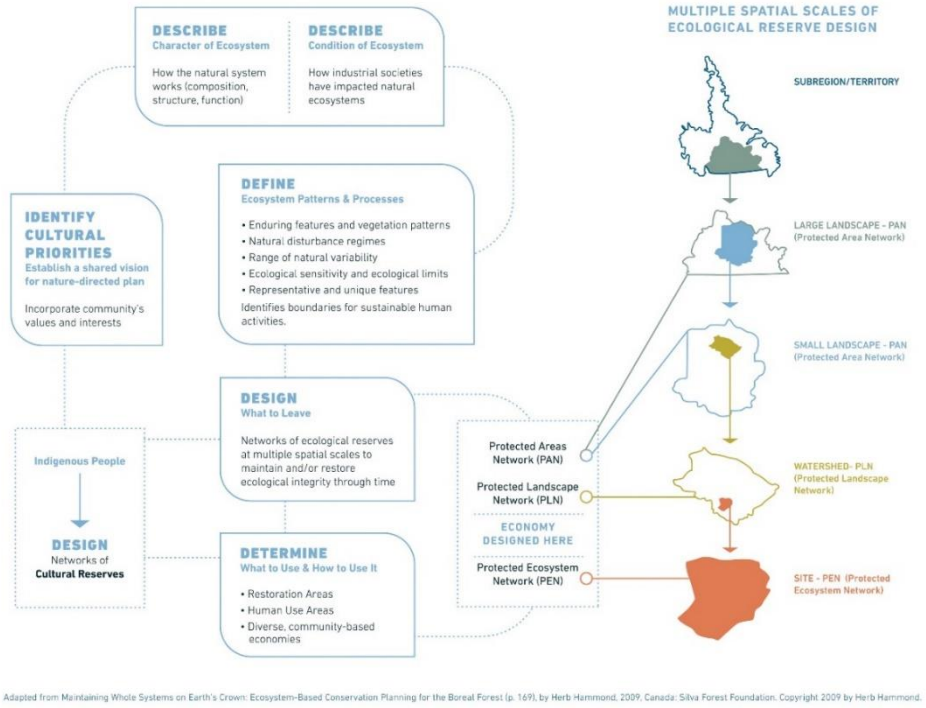



Image courtesy Herb Hammond. From Maintaining Whole Systems on Earth's Crown: Ecosystem Based Conservation Planning for the Boreal Forest. P. 1691 by Herb Hammond. 2009 Canada Silva Forest Foundation. Copyright Herb Hammond.

[59] For details see West Kootenay Community EcoSociety. 2022. P. 11. Preliminary Nature-Directed Stewardship Plans for Glade and Laird Watersheds. https://neighboursunited.org/wp-content/uploads/2022/04/Nature-Directed-Stewardship-Plans-for-Glade-and-Laird.pdf

## The Payoff: Better Outcomes

### *How NDS Differs from Industrial Forestry*

Industrial forestry often claims to practice "ecosystem management" or to improve "forest health," but these terms mask practices that simplify ecosystems for volume extraction. Industrial clearcutting, broadcast herbicide spraying, and short-rotation plantations break the very processes that forests depend on to function.

***The Payoff: Better Outcomes Chart** makes these contrasts explicit: carbon storage, biodiversity, water security, fire risk, resilience, and pest control.*

| **How NDS Reverses Industrial Forestry Damage & Keeps Forests Functioning** | | |
|---|---|---|
| | **Nature-Directed Stewardship (NDS)** | **Industrial Forestry** |
| **Carbon** | Avoids the huge initial emissions from clearcuts, keeps soil carbon locked in. Maintains long-term forest carbon storage. | Clearcuts cause massive carbon releases from felled trees, rotting slash, and disturbed soils. Plantations rarely store as much carbon before being logged again. |
| **Biodiversity** | Maintains continuous habitat and migration routes instead of creating fragmented islands. Good for songbirds to grizzlies. | Fragments habitats into isolated patches. Cuts off migration routes. Many species decline or disappear from logged landscapes. |
| **Water** | Keeps streams shaded and cold. Reduces flood and drought risk by preserving the sponge-like forest floor and deep soils. | Removes shade and compacts soils. Heats streams. Reduces water storage. Increases both flood and drought risk. |
| **Fire risk** | Maintains cool, damp microclimates and reduces flammable slash loads, lowering ignition and spread potential. | Leaves hot, dry landscapes full of fine fuels. Increases ignition risk and accelerates fire spread. |
| **Resilience** | Supports natural regeneration, genetic diversity, and adaptive capacity in a changing climate. | Relies on uniform, single-species plantations with low genetic diversity. More vulnerable to pests, drought, and extreme weather. |
| **Natural pest control** | Maintains predator–prey balances that keep insects and disease in check without chemicals. | Removes habitat for predators that control pests. Simplified forests allow insect and disease outbreaks to spread faster. |

NDS judges forestry by results - water security, biodiversity, carbon stability, lower risk - not by volume removed. Methods only matter insofar as they deliver these outcomes across landscapes and over centuries.

**Functioning, connected forests are the best infrastructure we have.**

*Comparison of Forest Management Paradigms (Industrial vs. NDS under the New Forest Act)*

| **Comparison of forest management paradigms** | | |
|---|---|---|
| Feature | Out-dated Paradigm | New Forest Act Paradigm |
| Paradigm | Industrial | Nature/ecosystem, community |
| Dominant value | Timber supply | Ecological values (nature's needs) |
| Policy influencer | Private interests | Public interest/citizens |
| Business model | Large corporations | Small and Medium Sized Businesses |
| Market | Monopolistic | Competitive, open market |
| Objective | Uninterrupted timber supply | Ecological integrity and resilience |
| Objective | Corporate profits | Stable community economies |
| Outcome | High volume of production | High value of products |
| Products | Raw logs,<br>dimension lumber | Value-added products |
| Decision-making | Centralized | Decentralized – community-based |
| Planning method | Timber-volume based | Base planning on nature's needs and community needs |
| Silviculture focus | Tree farms | Biodiverse species, conserve old and mature forests |
| Logging method | Clearcut/<br>remove all the pieces | Selection logging (constrained by nature's limits) |

**Remember This**

- **Restoration takes generations and humans don't yet fully understand how to do it - protect what's left first.**
- **Landscapes are more than timber - they are living infrastructure.**
- **Small-scale, careful logging can support people without collapsing ecosystems.**

## Why NDS Matters for Policy

NDS is not only ecological - it is economic and cultural.

1. **Economies within cultures within ecosystems:** NDS recognizes the hierarchy: ecosystems → cultures → economies. Unlike "sustainable development," which treats environment, society, and economy as equals, NDS constrains economic activity within ecological limits.[60]
2. **Community-based economies:** NDS supports diverse, local, steady-state economies rather than boom-bust extraction.[61]
3. **Indigenous leadership:** Indigenous land use and knowledge guide ecological reserve design, cultural protection, and reciprocal stewardship.[62]

**Sustainability test:** ecological, economic, social, and cultural outcomes must meet or exceed recovery rates; if they don't, adjust or stop (precautionary principle).

NDS does not eliminate forestry work. It creates better, more stable employment by changing forestry's outcomes. The New Forest Act translates these principles into law ensuring that the rules of forestry follow the rules of nature.

This framework is critical for policy-makers: it defines the legal and planning foundation for forestry reform in BC.

[60] For details see West Kootenay Community EcoSociety. 2022. P. 15. Preliminary Nature-Directed Stewardship Plans for Glade and Laird Watersheds. https://neighboursunited.org/wp-content/uploads/2022/04/Nature-Directed-Stewardship-Plans-for-Glade-and-Laird.pdf

[61] Hammond, Herb. 2009. Maintaining Whole Systems on Earth's Crown: Ecosystem Based Conservation Planning for the Boreal Forest. Silva Forest Foundation.

[62] Hammond, Herb. 2009. Maintaining Whole Systems on Earth's Crown: Ecosystem Based Conservation Planning for the Boreal Forest. Silva Forest Foundation.

# APPENDIX 4

## HOW FORESTERS WILL LEARN (AND BE ACCREDITED) TO USE NATURE-DIRECTED STEWARDSHIP (NDS)

### *It Starts with Paradigm Education (the worldview reset)*

NDS training starts by changing the frame - not just adding techniques. Foresters are re-oriented to treat forests as living infrastructure where protection comes first, ecological limits are hard stop-lines, water and slope stability lead layout decisions, and plans are measured in centuries, not rotations.

The core question shifts from "How much volume can we take?" to "What outcomes must we guarantee - water security, biodiversity, carbon stability, lower risk - and what, if anything, can we remove without breaking them?"

Only after this mindset is anchored do methods (selection marking, legacy retention, hydrology-led layout) make sense. The NDS sign-off should test this outcomes-first judgment (e.g., reserve-first design, saying "no" when limits are hit), not just technique. (See NDS planning lineage in BC-based Glade & Laird Plans, built on Silva Forest Foundation methods and adaptive management.)

### *Where training already exists (we reuse it)*

Many NDS skills are already taught under adjacent names and can be adapted quickly:

- **Close-to-Nature / Continuous-Cover Forestry (CCF)**: long-running professional field days, marking courses, and webinars through Pro Silva (25-country network) and the Continuous Cover Forestry Group (CCFG, UK)**.**
- **EU policy guidance:** the EU "Closer-to-Nature" Guidelines standardize biodiversity-forward, selection-based practice for public and private managers - useful as a template for provincial roll-out.
- **University upskilling:** UBC Forestry's 8-week Forest Management Planning micro-certificate teaches tools to compare management options on ecosystem services. This provides an immediate base to adapt toward NDS.
- **Public-sector practice:** jurisdictions like Slovenia have institutionalized close-to-nature forestry across state services and education, showing public foresters can be trained at scale.
- **BC's professional structure: Forest Professionals BC** already requires 30 hours of annual professional development **-** a ready vehicle to accredit NDS training hours.

### *The NDS "extra pieces" (what gets added)*

On top of existing skills (selection/CCF, riparian design, terrain stability, variable retention, light-touch roads, monitor-and-adjust), NDS adds:

- **Reserve-first planning across scales:** site → watershed → sub-region; design the protected network first, then decide if and where logging fits.
- **Ecological limits:** clear "do-not-cross" thresholds for soils, slopes, hydrology, and habitat.
- **Hydrology-first layout:** access and harvest follow water and stability—not the other way around.
- **Indigenous knowledge and shared decision roles:** process, protocols, and decision scope are defined up front.
- **Long timeframes:** plan for 250–500 years and tie monitoring results to automatic adjustments.
  (These principles are reflected in the Glade & Laird NDS Plans and Silva Forest Foundation's ecosystem-based planning.)

*Training & accreditation pathway*

- **What:** An NDS course + certificate, a field practicum and a supervised project, then sign-off**.**
- **Who:** Delivered by a university/college + Indigenous partner + public land manager**.**
- **Where:** In designated demo forests; then in regular operations.
- **When:** Launch in 6 months (course + demo sites ready); train the first cohort in the next 6–12 months**.**
- **Why:** Uses skills foresters already have; adds clear limits and long-term rules**;** protects water, reduces risk**,** and keeps forests functioning while allowing careful logging.

*How government makes this real*

- **Name the partners:** pick universities and colleges, Indigenous partners, and public land managers to co-deliver.
- **Designate demo forests:** pilot areas (watersheds/community forests) for field practicums.
- **Require the sign-off:** on public land, NDS projects must be designed/signed by an NDS-signed forester**.**
- **Tie to annual education hours:** the course + practicum count toward the annual training foresters already need.
- **Audit and improve:** annual checkups on NDS projects; update the course based on what we learn.

*Why this is policy-ready*

- Methods are established
- Training infrastructure exists
- Easy to slot into regulation

# APPENDIX 5

## DETAILS ON THE GOVERNMENT STRUCTURE UNDER THE NEW FOREST ACT

The new Forest Act takes control of public forests out of the hands of corporations (who are not directly impacted by the negative effects of their decisions) and puts it into the hands of local people.

Those impacted by decisions are empowered with the ability to learn from their decisions, stop doing what is not working, and to improve the planning. This involves monitoring, evaluating, trial and error, data analysis, data collection, continual adaptation, and readjusting. It includes a willingness to learn from mistakes. The idea is to produce results, not just measure outputs. This will serve the interests of the people of the BC better than what is happening now.

Community Forest Boards (CFBs) will be under the administration of the new Ministry of Ecosystem Integrity that administers the Forest Act and policies, both of which are based on NDS.

At the outset, methods for public participation in the development of CFBs must be created. The concept of community, and thus who is included on the boards, must be defined at the initial stages of the planning. Considerations for creating this definition include: the place or ecosystems involved, the diversity of interests, a determination of who is accountable for consequences, and who is affected by the decisions.

Monitoring once again becomes a public sector function. Evaluations are done regularly to allow learning from outcomes. Monitoring determines whether implementation achieves its objectives and whether assumptions are correct. This information can then be used to reassess, alter decisions, change implementation, or maintain current management direction. The entire system will become more nimble, flexible, and able to respond to potential threats, like floods and fire, more quickly and effectively than the current centralized system.

Nature-directed Stewardship is the foundation for the New Forest Act. The New Forest Act policies will be administered by a publicly accountable government agency, the **Ministry of Ecosystem Integrity (MOEI)**, which is jointly controlled by a collaborative of Indigenous Nations and non-indigenous politicians and bureaucrats. This ministry would evolve out of the current Ministry of Forests.

**Forest Research Branch**, a division of the MOEI, is expanded to manage and provide information and data to the MOEI and the regions.

**Local Ranger Stations** are reinstituted for monitoring and compliance to NDS standards and to support and implement plans of CFBs.

New entities are also created, including (see below for descriptions):

- Office of the Forester General
- Regional Committees
- Community Forest Boards (CFB)
- Indigenous Knowledge Panels
- Regional Log Sort Yards
- Regional Science Panels

All the work done by these entities is based in the philosophy, principles, and standards of NDS and centred around Community Forest Boards (CFB).

**The Forester General** is an independent, non-partisan office of the Legislature that is accountable to and reports to the Legislature annually. This office is guided by the new Forest Act and is similar to other independent offices like the Auditor General. This office ensures the Legislature is informed on the state of BC forest ecosystems.[63] The Forester General monitors and reports on the application of NDS at all levels. These reports are discussed directly with MOEI, the Research Branch, CFBs, Indigenous Knowledge Panels, log sort yards, science panels, and ranger stations. Reports are shared with the general public and Indigenous Nations. Both are given the opportunity to respond to the Forester General reports, who is required to transmit the responses, with recommendations for changes that support NDS, to the Legislature and all other bodies in the structure. Every year the Forester General's report will evaluate whether last year's changes have been implemented.

**Regional Committees** will be composed of elected members of macro-regions, such as the Kootenays, Central Interior, the Northern Interior, Vancouver Island, and the Coast, and representatives of regional Indigenous Nations, who would participate in planning processes as equal partners with their non-Indigenous neighbors. Regional Committees would play an advisory role for CFBs and facilitate cooperation and information sharing between regions. They receive feedback from and report to the Forester General. They support CFBS and ensure they have the support they need from the Ministry.

**Community Forest Boards (CFBs)** will be under the administration of the new MOEI that administers the Forest Act and policies, both of which are based on NDS. The MOEI provides support through legislation that mandates and provides standards for NDS that flow directly to CFBs through Regional Committees. The MOEI also supports CFBs through the findings of the Forest Research Branch. CFBs design plans for their region and enable local innovation, adaptation, entrepreneurship, and small business development.

**Indigenous Knowledge Panels** – comprised of representatives of regional Indigenous Nations. They inform, support, and advise the CFBs on practices that reflect the unique cultures, languages, values, and histories of their people regarding ecosystems. They share information regarding the needs of their people around food sovereignty and subsistence economic activities, such as gathering, fishing, trapping, and hunting.

[63] The Forester General and Regional Committee concepts are based on a model put forward by Bob Williams in Restoring Forestry in BC. Williams, B., Restoring Forestry in BC (2018),

**Regional Log Sort Yards** are a key to making the system work economically. Log sort yards are centrally located sites where logs harvested by contract loggers are unloaded, cut to length, hand scaled, graded, and sorted into bins. They make publicly owned timber available to the public through log auctions, thus providing the basis for an open log market. Without regional log sort yards, large timber corporations control the availability of logs and suppress their value by producing a narrow range of primary manufactured products. Regional Log Sort yards encourage the development of value-added, small-to-medium-sized businesses and help to stimulate and sustain community-based economies. The log sort yards collaborate with and support CFBs.

**Regional Science Panels** provide advice to CFBs based on current scientific literature and application of the precautionary principle. The panels consist of government-employed scientists and field technicians that synthesize current scientific literature and carry out applied research that focuses on the ecological characteristics of their region. Results of research are used to support and refine the plans and operations of CFBs. Scientists can play the role of identifying uncertainties and pointing out complexities of systems to managers, rather than helping managers use fertilizers and pesticides to
temporarily increase production at a significant and increasing cost. Science will also regularly test the hypotheses we use to make forestry decisions.

**Where local forest offices and ranger stations** are still in public ownership, the Forest Rangers, CFBs, and Science Panels will be housed in former local Forest District and Ranger Station buildings. New facilities will be provided in regions where they are absent.

The system is built with checks and balances. Power is not concentrated either with the bureaucracy or with the elected representatives. Accountability of all entities is ensured through regular reporting to and feedback from the legislature (elected representatives), the public, and Indigenous Nations. There will be a requirement for regular audits of all entities to evaluate accountability and ensure that feedback is being acted upon.

# APPENDIX 6 – CALCULATIONS

## CALCULATING THE VALUE OF SUBSISTENCE ECONOMIES

In 2023, Nunavut's Inuit country food economy was valued at more than $200 million a year[64]. The Nunavut Inuit population in 2021 was 30,865[65] while the BC Indigenous population in rural and small population areas was 143,074 (see calculation below). This makes the potential of the BC subsistence economy 4 to 5 times higher than the Nunavut value: between $800 million to $1 billion annually.

Calculation: In 2021, there were 290,210 Indigenous people in British Columbia, making up 5.9% of the population.[66] With 29% living rurally and 20.3% living in a small population area.[5]
29% of 290,210 = 84,161, 290,210x 20.3% = 58,913
84161+58913= 143,074 Indigenous population of BC living in rural or small population areas in 2021.

## ECONOMIC VALUE OF INDIGENOUS GUARDIANS & STEWARDSHIP PROGRAMS

To date, 160 Guardians programs have been launched in Canada. In 2021, Canada invested $200 million that went directly to Indigenous Nations to support Guardians and Indigenous Protected and Conserved Areas.[67] In 2023/2024, the federal government invested $4,212,750 in British Columbia Guardians programs.[68]

An analysis of two Indigenous Guardians programs in the Northwest Territories found that for every dollar invested by government, Nations, and donations (via NGOs) they create about $2.50 of social, economic, cultural, and environmental value for the stakeholders in the programs. The report concluded that this analysis is likely to represent a conservative estimate of the value that was created because not all those affected were assessed.[69]

[64] Awan, T., Twigg, M., Sushant, and Desrochers, C. (2023). Inuit-led Economic Development: An Overview of Nunavut's Blue Conservation Economy. Smart Prosperity Institute. https://institute.smartprosperity.ca/sites/default/files/SPI_Nunavut_BlueConservationEconomy.pdf
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[68] Government of Canada, List of 90 Indigenous Guardians projects 2023-2024, Backgrounder, Retrieved from: https://www.canada.ca/en/environment-climate-change/news/2023/09/list-of-90-indigenous-guardians-projects-2023-2024.html
[69] Analysis of the Current and Future Value of Indigenous Guardian Work in Canada's Northwest Territories Dehcho First Nations, Lutsel K'e Dene First Nation, Indigenous Leadership Initiative, Tides Canada, (November 2016), Retrieved from: https://static1.squarespace.com/static/5f8367238502ed181766aaf0/t/5fb4067a20b4fb44c16568e1/1605633660632/value-in-indigenous-guardian-work-nwt.pdf

# DEFINITIONS

## HIGH GRADING

High Grading – "High grading refers to the selective harvesting of goods to keep only the most valuable items. In forestry, high grading, also sometimes referred to as selective logging, is a selective type of timber harvesting that removes the highest grade of timber (i.e. the most merchantable stems) in an area of forest. Over time, high grading gives rise to forest stands containing stems of lower timber quality. The reduced income from timber can make it harder to fund good silvicultural practices, thereby impacting the economy of non-timber forest products and other activities such as hunting, wildlife watching or hiking. The practice also has an ecological cost, with a direct impact in terms of biodiversity, genetic diversity and species mix. High grading can also be a form of fraud on the owner of the trees. Indeed, stumpage rates (the amount paid per a certain volume of wood) are based on the average quality of the wood. By taking only the best timber, the wood cutter obtains wood more valuable than average at the price of average wood." (https://en.wikipedia.org/wiki/High_grading).

## PARTIAL CUTTING

"The Canadian Forest Service defines partial cutting as 'any cutting in which only part of the stand is harvested' (CFS, 1999). In this sense, partial cutting is a generic term, which refers to a whole range of treatments from clear-cutting with sparse, dispersed retention in which a few merchantable stems are left on site, to single-tree selection systems where the very evidence of a harvesting treatment might be too subtle to be noticed by an untrained eye."[70]

Under NDS, partial cutting must follow ecologically responsible cutting rates and patterns.

"Ecologically responsible cutting rates and patterns are determined within the context of landscape character and condition, of maintaining permanent tree composition and structure, of protected stand networks, and of the natural disturbance and successional patterns (the natural process of change after trees die).

There are two general forms of ecologically responsible cutting patterns: Uniform Partial Cut, and Small Patch Cuts with Canopy Retention Areas. However, variations on these and other patterns may be acceptable, depending on the character and condition of the specific stand and landscape in question.

Regardless of cutting pattern employed:

- The frequency of entry must be lower where volume per cut is higher.
- Each cut must maintain, or if necessary, restore, the natural range of variability in tree species, tree size, tree age, and spatial distribution of trees.
- The cutting rate over any ten-year period must not exceed 75 percent of the total growth during that period.

[70] Arun K. Bose, Brian D. Harvey, Suzanne Brais, Marilou Beaudet, Alain Leduc, Constraints to partial cutting in the boreal forest of Canada in the context of natural disturbance-based management: a review, *Forestry: An International Journal of Forest Research*, Volume 87, Issue 1, January 2014, Pages 11–28, Retrieved from: https://academic.oup.com/forestry/article/87/1/11/600324

- Whole tree logging (the removal of the entire tree, including branches and crown, from the forest) must not occur.
- Extraction methods must limit the damage to trees left standing.

Generally, cutting must not remove more than 10-20 percent of the merchantable trees in any one entry.

Tree Age and Tree Selection

When choosing which trees to cut, emphasis must be placed more on successional patterns and forest history, than simply on tree age. The selection of trees to be cut needs to maintain or, where necessary, restore the natural range of variability in tree species, tree ages, and tree spatial distribution. High-grading must not occur.[71]

Some characteristics of acceptable partial cutting:

- Integrate natural stand dynamics.
- Maintain forest- and stand-level structural diversity.
- Leave live trees of various sizes, ages, and species
- Maintain biological legacies, including:
    - standing and down dead trees
    - organisms and structures from the pre-disturbance patch or stand
    - a carryover of dead and decaying wood from the previous forest.
- Leave trees to grow in excess of conventionally determined "rotation ages."
- Leave (and do not damage) below ground fungal & root networks.
- Leave habitat for wildlife.
- Leave habitat elements like moss and lichen.
- Use of light equipment.
- Minimal roads.

Cutting methods must leave "full cycle" trees, which remain on the cut area to live out their full lives, become snags, and eventually fall to the forest floor. Full cycle trees are an important way to maintain biological diversity and ecological integrity at the stand or patch scale.[72]

"Biological legacies are defined as the organisms (including reproductive structures), organic materials, and biological derived patterns in soil and vegetation from the pre-disturbance ecosystem into the post-disturbance environment." (p. 52, Franklin et al 1998)[73]

Employing forest sensitive timber removal methods provides additional jobs per tree cut compared to clear-cut and mechanized logging.

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[71] Summary of Silva Forest Foundation Standards for Ecologically Responsible Timber Management April 1999. Retrieved from: http://www.silvafor.org/assets/silva/PDF/Certification/ArchivesEcoCertSum.pdf.

[72] https://www.discoveryislandsforestconservationproject.ca/solutions/legendary-bc-forester-herb-hammond-explains-the-need-to-shift-from-a-timber-extraction-focussed-view-of-forests-to-a-relationship-founded-in-the-value-of-the-ecosystem-services-forests-provide-r2/

[73] Franklin J., Johnson N. and Johnson D.L. Ecological Forest Management. [Report]. - [s.l.]: Waveland Press Inc., 1998.

## PRIMARY FORESTS

Primary forests are forests that have never been industrially logged and that still retain their natural composition, structure, and ecological processes. This includes old-growth stands and younger natural stands that have not been subject to large-scale industrial disturbance.  It includes stands that have been affected by fire, disease, or insects.