

Old Growth Forest Questionnaire

1. What does the term “old growth” mean to you?

Silviculturally “old growth” (OG) are trees over 250 years old but OG has become to mean mostly big trees. Not all OG are big trees though, some OG on low & poor sites are that old, but within these site types there are a lot of areas with trees 90-250 or >250 years that have OG character and are not big trees. These areas may also contain trees over 250 years and sometimes these OG trees are a smaller diameter than either <90 or >90 year old trees.

Often these sites regenerated previous to the original partial logging in the area, but the trees were not considered of a size logable at the time of original harvest. These stands are now becoming marketable and are being harvested, yet they are original stands and now demonstrating OG character (whether mature or old-growth), even if they have been partially logged in the past. These sites may have gone through more than one pre-settlement wildfire. These stands have trees that contain stand history, climatic, and disturbance history that is becoming irretrievable as they are being cut, when this data is not analyzed and tree rings info stored somewhere. This is especially true in the CDF and dryer CWH ecosystems. The USDA wrote two papers (RMRS-GTR-109 & RMRS-GTR-110) about identifying and preserving OG ponderosa pines in another post-settlement forest environment.

2. What are the three main reasons you feel old growth forests are important?

- They contain real information about our past in their tree rings. The regeneration and growth information is different in different areas, so retaining information from one area does not mean that information for that ecosystem and site series is retained. This data can be different even in the same stand. It is often necessary to cut OG to find this information (rot, pitch, & other factors inhibit tree-coring) but there is no requirement to retain or analysis this information when OG or late mature trees are cut. Even fire scars are lost that might show the pre-settlement fire history.

In the CDF and CWH ecosystems there is a need to save tree “cookies” or partial cookies from many OG trees when they are cut for “workers compensation” safety reasons whether during logging, for highway safety, or any other reason they are cut down. We are losing historical data for research from all OG that are cut and tree ring records are not kept. Each area has had a different history behind the regeneration and growth pattern over the OG tree’s life. And more and more we are finding the information we thought we knew is not the whole picture. Often the rings differ within the circle of a tree (tree cookie) corresponding to other tree interactions and environmental factors, so taking one or two tree cores does not always tell the complete story. Tree “cookies” offer the best information for analysis.

I will use as an example the CDF and dry CWH ecosystems. Most people believe they are a stand replacement fire type ecosystem, but what does an updated thorough look at the data show. In the past, this was an obvious conclusion given the way research/data was presented. Around 1990-1995 research seemed to point the authors of the Biodiversity Guidebook, 1995 to NDT2 with stand replacement fires every 200 years. At that time mixed-severity fires were not recognized as major fire type in Canada. Also it seems older fire studies were used but not thoroughly examined as primary papers should be. So there are old studies that lean a certain way, but other studies that show something different. Unless more OG studies are conducted within different ecosystems there is no way to determine who was correct. Science needs updating because we are always learning more.

Two prime examples of older studies not thoroughly examined are: CD Howe, 1915 and Slavoi Eis, 1962.

CD Howe in 1913 did a field study about regeneration around the Gulf of Georgia. Howe made seven transects each 5 miles long between the coast and the elevation change of species. He discovered evidence of mixed severity fires along each transect. He reported both patches/stands and younger aged trees (including Douglas-fir) remaining after the older stands were logged. These younger trees were part of the matrix of ages within these harvested stands, but were not harvested because of smaller diameters at that time. He called these seed trees and recorded the average number of trees remaining by species along his regeneration transects. These younger trees were 30, 70, and 100 years old and were found in all seven transects. The only way both patches/stands and younger Douglas-firs trees mixed within older stands, along these 5 mile transects would be from low to mixed- severity fires that had occurred before 1893. Howe found fire evidence on stumps and trees for most of the disturbances (age groups of trees). He did find one disturbance without fire evidence, but wind is also a major disturbance in these ecosystems. It makes sense that if there were stands of these ages, they probably developed from flare-ups or higher intensity fire patches possibly within younger stands or patches in the matrix of ages. Though the 124, 170, 315, and older trees were logged (pre-1913), there were these younger tree ages (30, 70, and 100 years old) among these stands that were left standing. Probably the only conclusion is that the average fire and/or wind disturbance return was either a 34 to 52.5 year average between fires for the period 1913 to 1743 or 1913 to 1598 respectively. CD Howe's report does not support the type of OG in the 1995 Biodiversity Guidebook which has these ecosystems as NDT2 with stand replacement fires every 200+ years. Somehow something has been missed/forgotten since 1915 when CD Howe's report was written. (CD Howe wrote Part V in "Forest Protection in Canada 1913-1914" published in 1915)

Though some of Eis, Slavoj thesis written in 1962 supports the NDT2 type Ecosystem his data shown in the Fig.4 "Year Stand Establishment indicating Fire History" Fig. 4 does not support a NDT2, for either the CDF or most of the CWH ecosystems. These stand establishment graphs (Fig. 4) indicate a mixed severity fire regime. Eis states that "...fires have been widespread and frequent down through the ages (Munger,1940; Hansen, 1947)." "...fires in certain years evidently seem to have been widespread." In July 1941 there had been a total of 240 fires start from a single lightning storm in the Vancouver Forest District. *In 2018 there were > 30 fires on northern Vancouver Island in Aug of 2018 after one lightning storm, these fires were all in wetter CWH ecosystems and some burnt till the winter rains put them out.* Eis also says "Also shows that fires occurred periodically, damaging forests in certain years more severely than in others." "Likewise, a study of data from other localities indicates that fires were frequent occurrence throughout the region." He also wrote: "The majority of the plots contained tree layers of almost uniform age. It seems logical to assume that the oldest layer originated after a complete destruction of the previous stand and subsequent layers after disturbances of lesser intensity, when only some of the trees were destroyed and opened the stand sufficiently for subsequent regeneration."

So Howe in 1913 and Eis in 1962 produced data that indicated low to mixed-severity fires in the CDF and drier CWH ecosystems along with possible stand replacement fires (NDT2) at longer intervals. This is not the normal interpretation of their conclusions in most cited works or abstracts, I have read. Short quotes from both authors have given other researchers a misinterpretation of these papers. It was only after understanding low to mixed-severity fire data and going back and re-analyzing primary data provided in these papers, that I realized I had to overlook the normal citations/abstracts from other authors. (I want to point out it was

Parminter's abstract that pointed out I had overlooked these points in Howe's work. Parminter showed me I had to reread Howes's work many times to understand it better. It also took knowledge of mixed-severity fires regeneration and multiple fire scars to make the conclusions I have made. Then I started to research other old reports which included re-reading Eis thesis and his other CDF papers.) These mixed to low severity fire regimes cause very complex OG. It takes more research to understand this complexity of OG conditions that was present at pre-settlement. I have also found a few fire scar studies that show low to mixed severity fires in these ecosystems. (Wetzel & Fonda, 2000, Fire History of Douglas-fir Forests in the Morse Creek Drainage of Olympic National Park, Washington; Northwest Science Vol 74 No 4 p263-274 and Sprenger, Carson, 2006, Fire History of a Douglas-fir—Oregon White Oak Woodland, Waldron Island, Washington; University of Washington, MS thesis)(Carson's research is only one of multiple fire studies of this area.)

If the CDF and dryer CWH ecosystems can be so misinterpreted about fire history, how many other ecosystems are we generally incorrect about? We need a lot more research about OG that can best be done after harvest. But it is not being done after/during present harvesting.

Other areas where more recent papers have shown problems with the NDT are the Stein valley and Kootenays. Recently papers have been showing that that mixed-severity fires have been shaping OG ecosystems all across southern to central BC with dryer type ecosystems.

3. How important is it to weigh environmental, social, cultural, and economic interests together when managing old growth?

I think all of these are important, but I do not think they are all the values one needs to consider when considering OG management (mgt). OG mgt is more than just the forestry industry mgt. There are Parks and other preservation/conservation mgt that needs to be considered.

What is preservation in the face of known and unknown natural disturbances over history time? Is locking up areas of OG in Parks really showing sustainable preservation? What are the risks after years of fire suppression, What about the overly dense regrowth and/or infill around or about OG trees and or stands. What does an extreme winds storm do and then within a few years an extremely dry year with extreme fire hazard. I know it takes ignition, high winds, and fuel to create firestorms, but all these are more likely without considerable thought and planning on an ecosystem level as well as a stand level to protect OG trees and stands.

Where is sustainability of OG, especially with the danger of wildfire within that ecosystem.

4. What do you consider to be the THREE greatest risk(s) to old growth?

- Fire there are too many ladder fuels within OG patches today. This puts OGMA (even when these that are younger to mature ages) and even individual trees at a **high risk** when there

is a fire. This is whether fire return were (<68 years or <27 years, Howe) or <200 Biodiversity Handbook of 1995.

- Non-management (or leaving it natural) of Parks, OGMA, ecological reserves, any area planned to become OG, and individual trees because of the wildfire risks. There should be different management practices in different areas (Parks & etc.) but a substantial portion OG areas needs to be analysis for wildfire protection (an example is the Elaho Giant that was left in a wildlife tree patch yet was killed by the 2015 wildfire in that area.) Has there been an analysis of cause of death for this tree? What were the lessons learned about wildfire and this OG tree? This tree was attempted to be saved by fire crews as soon as they could get to the tree, water was used to cool down the roots and hopefully any ground and underground fires – a year later we found this effort was not successful.

This does not mean there does not need to be a written rational for any management decision. Even the decision to “do nothing” needs a written rational that has to contain the wildfire & other disturbance risks and sustainability issues to protect the OG that are trying to be preserved. The rational should also explain how that areas OG relates to other areas of OG nearby or within that ecosystem and site series.

- Presently accessible OG trees will be harvested for many reasonable conclusions in the future outside general forestry harvesting plans throughout our Provence. Some examples are: harvesting for worker safety, highways safety, and danger trees. When these trees are cut there is no requirement to preserve tree cookies or wedges, which would help preserve the data about accessible forests, such as locally the CDF and CWH ecosystems or any ecosystem that now is close to developed areas and were we live.

5. How important do you feel the following plans, policies and practices are in MANAGING old growth in British Columbia?

- Present policies and practices do not preserving the tree ring information or provide long term wildfire protection. Nor do they seem to allow or promote active management for a given outcome. Such as developing OG characters and lowering wildfire risks in younger OGMA or WMA's.

6. Are there any other plans, policies or practices you feel are important but that are not mentioned here? Please provide any thoughts.

Though I mostly discuss the CDF and drier CWH ecosystems, there needs to be a lot more information gathered for all OG within their ecosystem. If some of the published information is incorrect, misinterpreted, or lost we need to consider sponsoring better OG research.

I believe there needs to be a requirement for a written rationale for all management actions – even the action to do nothing to an OG patch, OG tree, OGMA, or Park. Currently no management (leave it natural) is the default action for most OGMA, Provincial Parks, and other preservation/conservation areas. This no management decision produces its own enhanced risk to an area from wildfire, often without the managers realizing it for many ecosystems.

What is the sustainability for an OG patch, OG tree, OGMA, or Park in relation to other OG patch, OG tree, OGMA, or Park nearby and for the ecosystem and site series. Probably to be sustainable the management should be different for different areas, because no one knows everything (all the risks). But most Parks have a similar light to no touch management policy for their “so-called” natural areas. What are the risks since wildfire protection started and how do the tree densities affect possible sustainability of the OG that are being “protected”?

7. Other than the provincial government and First Nations, who do you feel should be actively involved with decision making about the future of old growth forests in British Columbia?

8. Where do you learn about old growth forests and their management?

Through as much research as I can do. I have found looking at old papers/research to be very eye opening, when I consider recent research in many fields within and outside forestry. It takes an open/willing mind and lots of time to re-analyze normal beliefs within our field. I doubt many field RPFs feel they have the time and energy during their normal work. My research has been done “off the side of my desk” for over ten years, then I “sort of” retired and I am still working on my research of pre-contact forest conditions and disturbances in the CDF and dry CWH ecosystems’. I am still considering options around mgt of OG forests.

OG is a very complex subject. It will be interesting to see what you are told and how you compile all you are sent. Thank you for doing this report.

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