

Northwest Forest Plan (NWFP) Interagency Regional Monitoring, 20 Year Report Status and Trend of Late-successional and Old-growth Forests

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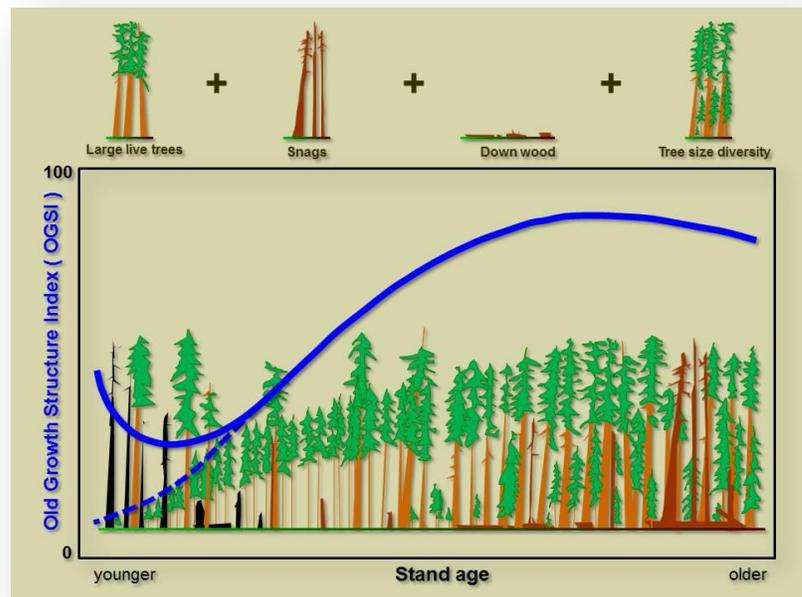
Objective

To periodically monitor the effectiveness of the Northwest Forest Plan (NWFP) in reaching desired amounts and distributions of older forests on federal lands. Monitoring focuses on three things: (1) the amount and distribution of older forest; (2) the spatial arrangement of older forest stands, interior areas, edges, and distance between stands; and (3) how these things have changed as a result of forest disturbances and ingrowth since the NWFP was implemented in 1994.

Methods and New Science

We developed a new definition for monitoring older forests called the “old growth structure index” (OGSI). This definition was first developed in 1980s by Drs. Jerry Franklin and Tom Spies. The OGSI is a continuous index from 0-100 that consists of four old-growth elements: (1) the density of large live trees; (2) the density of large snags; (3) the amount of down wood cover; and (4) the tree size diversity of the stand.

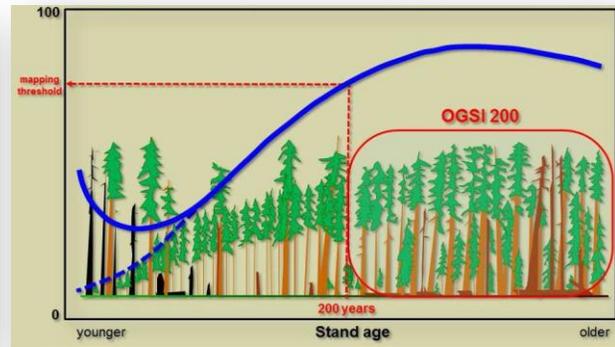
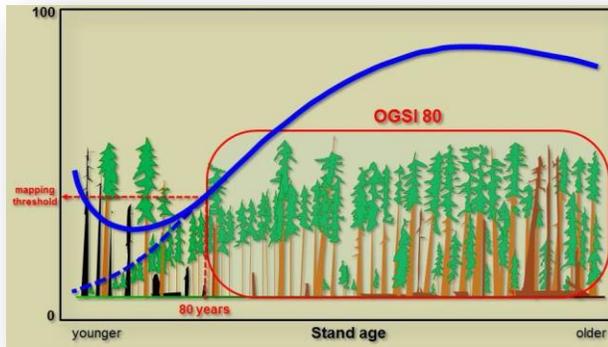
Index values closer to zero represent younger forests that lack one or more of these attributes and values closer to 100 represent older, more structurally complex forests where these elements are well represented.



The OGSI represents a structural continuum that best describes old-growth forest development. It replaces the old standard monitoring definition that was simply based on the average stand diameter. We found that the new definition bracketed the old definition when the OGSI mapping threshold was drawn at 80 years, which is about the time when Douglas-fir forests begin to mature into late-successional and old-growth forests, and 200 years, which is about the time the forest really begin to develop structural characteristics commonly associated with “old-growth” forests. The OGSI captures the essence of previous definitions that described old-growth as encompassing the later stages of forest stand development that are usually distinguished by the presence of larger, older trees and structural attributes such as multiple canopy layers, decadence in the form of standing dead trees (snags), and accumulations of fallen trees (logs). Many have noted that these characteristics differ by forest types, such that one definition would not fit all the different types of forest that occur within the NWFP area, such as western hemlock and grand fir. Therefore, we developed an OGSI for each major forest type.

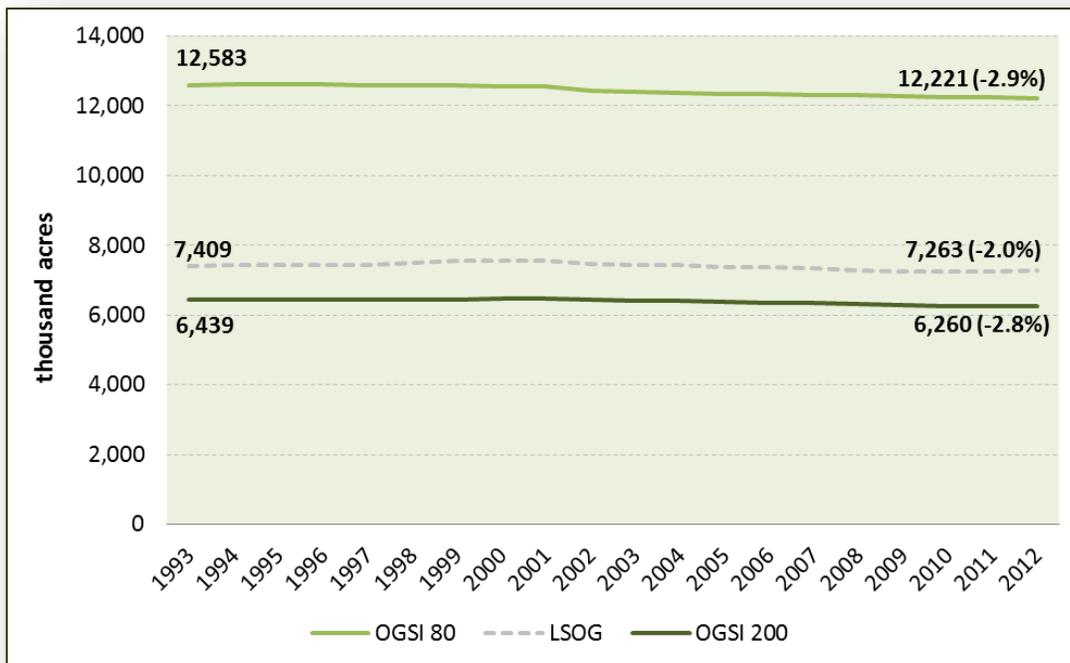
Key Results

While the OGSI represents a gradient of structural conditions, by necessity we are forced to choose thresholds along this gradient from which to make “old forest” maps. From these maps, we then estimate the amount and distribution of older forests across multiple spatial scales. The following results focus on the status and trend of older forests on federal lands at the NWFP scale for OGSI 80 and 200. We included the old monitoring definition for late-successional/old-growth (LSOG) forests in the results as a comparison.



OGSI 80—Represents a broader spectrum of old forest conditions that include both mature stands as well as established old-growth. These forests have decreased from about 12.6 million ac to 12.2 million ac (2.9%).

OGSI 200—Represents a narrower spectrum of old forest conditions that focuses more on old-growth stands. These forests have decreased from about 6.4 million ac to 6.3 million ac (2.8%).



Management Considerations and Next steps

The net changes on federal lands represented in the above graph occurred despite gross losses from wildfire (4.2–5.4%), timber harvest (1.2–1.3%), and from insects or other causes (0.7–0.9%), indicating that forest succession has compensated for losses from disturbance. The NWFP anticipated continued declines in older forests for the first few decades until the rate of forest succession exceeds the rate of losses. Losses of about 2.5% from wildfire and 2.5% from timber harvesting were expected each decade. Observed losses from wildfire were about what was expected (5% over two decades), but losses from timber harvesting were about one quarter of what was anticipated. Results are consistent with expectations for older forest abundance, diversity, and connectivity for this period of time. Nothing in the findings indicate that attainment of desired outcomes over the next few decades is not feasible; however, we noted some portions of the NWFP area have been setback by decades from achieving those outcomes particularly resulting from large wildfires in the fire-prone portions of the NWFP area.