

Is DNR's habitat conservation plan increasing forest complexity?

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Background: With DNR's implementation of the habitat conservation plan (HCP), there is an expectation that a significant portion of managed forest landscapes will become more complex with time. For example, most watersheds (i.e., spotted owl management units, or SOMUs) on the west side have an objective of reaching 40-50% of the landscape as sub-mature or older habitat as defined by the HCP (nesting, dispersal, movement, etc.). Although most SOMUs are well under this threshold currently, the goal is that the landscape is moving toward the prescribed levels by the term of the HCP. To date, the effectiveness of DNR's HCP has been determined only from model projections and examining individual HCP criteria in landscape subsets.

Problem: No quantitative analysis with empirical data has been conducted across broad areas of state trust lands to determine if DNR's HCP is achieving the objective of increasing coverage of mature or older forest with higher levels of structural complexity.

Objectives:

1. To examine trends in forest height, canopy cover, and structural complexity across several large, managed landscapes.
2. To determine if broad-scale trends in the above parameters over time appear to be meeting HCP intent.

Study area: All DNR managed HCP lands across western Washington.

Methods: The gradient nearest neighbor (GNN) approach is an imputation method that relates inventory plots and biophysical setting with satellite reflectance values. Developed by the LEMMA team at Oregon State University and Pacific Northwest Research Station (<http://lemma.forestry.oregonstate.edu/>), the resulting method assigns a forest inventory to every 30 meter pixel in a satellite image. Recently, the LEMMA team has created a 28 year record (1984-2012) of GNN data across all of Washington.

Summarizing the GNN data over time across different DNR management zones will allow us to examine trends during three management periods: Pre-HCP (1984-1990), a transition period where different state and federal policies were implemented (1991-1997), and post-HCP (1998-2012). We will examine trends in tree height and tree diameter, among other metrics. Trends will be summarized across the entire landscape, by DNR region, by SOMU, riparian zones, and by other to-be-determined stratifications. To determine the accuracy of GNN data we will also examine 2012 GNN height data against 2013 LiDAR data where both datasets overlap (~1 million acres).