

GO BIG OR GO HOME ?

TOOLS AND PROCESSES FOR SCALING UP COLLABORATIVE FOREST RESTORATION

LANDSCAPES 101

UNDERSTANDING LANDSCAPE APPROACHES TO FOREST RESTORATION AND MANAGEMENT

“Stands” or small (e.g. 1- 50 acres) relatively homogeneous areas of forest are the common management unit for forest landowners, and it is relatively easy to design a plan that potentially sustains desired conditions and values at the stand scale over time. We therefore often think of forest stands as discrete and the most important units for management. However, no stand exists in isolation, and an isolated perspective does not reveal how conditions and processes in the broader landscape may influence a stand development, or affect the spread of disturbance or organisms or changes in the quality and quantity of ecosystem services across many stands. Landscapes, which are large areas that are a mosaic of different stand or vegetation types, are also a critical scale for management. Without a landscape perspective, i.e. the bigger picture of how many stands are arranged and changing over time, it is difficult to know the cumulative effects of management, fire, and succession on wildlife habitat, wood, carbon, and clean air (ecosystem services). Fire and animals flow through landscapes, and actions to restore and manage forests at stand levels can accumulate over time subsequently affecting the pattern of the forest and ecosystem services. Landscapes that are large mosaics of different vegetation conditions can also achieve a suite of diverse land management goals that individual stands never will.

Landscape Terminology

Landscape Ecology – The study of landscape structure (*composition and pattern*), processes that change landscapes (*disturbance, succession, management*), and the function of landscapes (*wood, water, wildlife carbon storage*).

Configuration – Specific arrangement of spatial elements; often used synonymously with spatial structure or patch structure.

Connectivity – Spatial continuity of the habitat of a species or a vegetation cover type across a landscape.

Corridor – Relatively narrow strip of a particular ecosystem type that differs from the areas adjacent on both sides and may permit movement of animals, plants, or disturbance.

Core Habitat – An area of critical habitat for a species.

Cover Type – Category within a classification scheme defined by the user that distinguishes among the different habitats, ecosystems or vegetation types on a landscape.

Disturbance Regime – Describes the spatial disturbance pattern, frequency and intensity of disturbances, and resulting landscape pattern over space and time.



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Edge – Portion of an ecosystem or cover type near its perimeter and within which environmental conditions may differ from interior locations in the ecosystem; also used as measure of the length of adjacency between cover types on a landscape.

Extent – Size of the study area of the duration of time under consideration.

Fragmentation – Breaking up of a habitat or cover type into smaller, disconnected parcels.

Heterogeneity – Quality or state of consisting of dissimilar elements, as with mixed habitats or cover types occurring on a landscape; *opposite of homogeneity*, in which elements are the same.



Hierarchy – System of interconnections or organization wherein the higher levels constrain and control the lower levels.

Landscape – A large spatial area (typically 100s to many 1000s of acres) that is heterogeneous in at least one factor of interest.

Landscape Inertia – The temporal lag, delay or amount of time required for characteristics of landscapes to change in response to change in rate of disturbance or succession or some other process.

Matrix – General characteristic cover of the landscape, typically distinguished by its extensive area and high connectivity. May not be present in all landscapes.



Mosaic – The pattern of patches, corridors, and matrix that form a landscape in its entirety.



Patch – A place that differs in characteristics or appearance from its surroundings.

Pattern – The spatial characteristics and distribution of landscape elements.

Spatial Scale – Spatial dimension of an object or process, characterized by extent and grain (or the size of the smallest patches of the object or process).

Temporal Scale – Time dimension of a process or condition, characterized by fast and slow processes and may include time lags, where effects are not evident until a later time.

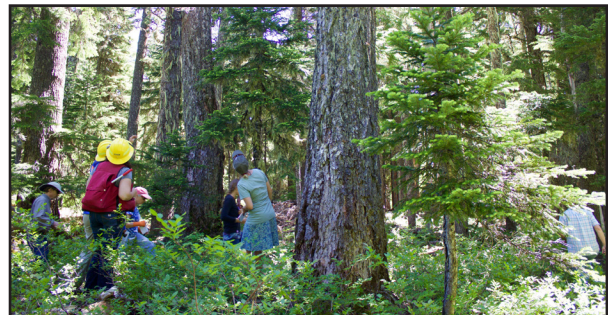


Source vs. Sink Habitats – A **source** is a high quality habitat that on average allows the population to increase and spread to other areas. A **sink** is a low quality habitat that, on its own, would not be able to support a population and organisms may only be present because of immigration from more productive habitats.

Succession – The process of change in species structure and composition of an ecological community over time.

References and Resources

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About Go Big or Go Home?: The goals of this research project were to analyze how public land managers and stakeholders in Oregon's east Cascades can plan and manage at landscape scales using scientific research and participatory simulation modeling (Envision). **To learn more, visit:** gbgh.forestry.oregonstate.edu

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