Managing Mature and Old-Growth Forests

A Position of the Oregon Society of American Foresters

The Oregon Society of American Foresters recognizes the unique characteristics and values that mature and old-growth forests provide for society. Definitions for old-growth vary and none are exact; however, these forests can include large snags and downed logs, some patchiness/openings, trees of various sizes and ages, and some relatively large, old trees with single (dry forests) or multiple canopy (wet forests) layers. Not all forest land had or ever will achieve such conditions because of natural disturbance (e.g., wildfire, windstorms). Importantly, as living ecosystems, trees and other vegetation in these forests can change significantly or die, thereby impacting unique habitat and other desirable features and functions. ***OSAF supports policies that effectively reflect the diverse and dynamic nature of forest ecosystems, such as a targeted mix (e.g., percentages) of younger and older forests across the landscape rather than artificially fixed in specific locations.***

A common perception is that actively managing old-growth is inappropriate or incompatible with other values, which is reinforced by policies and proposals to designate specific locations where management is greatly or totally restricted. However, ***even where non-timber values are primary, OSAF believes that active management of mature and old-growth forests may be needed to promote and sustain ecological values over time.*** This need can be especially important for forests in drier, fire-prone landscapes (e.g., central, eastern and portions of southwest Oregon) and with climate change and related disturbances. Active management may include prescribed burning, tree thinning (e.g., to keep bigger trees vigorous with drought and climate change, insects or disease), and planting. Treatments may be needed periodically but these intervals can vary from years to decades in different ecosystems.

A “one-size-fits-all” approach to mature and old-growth forest management does not address the range of unique and dynamic forest conditions in Oregon both now and in the future. Research and management experience show that professionally prescribed, site-specific plans are most effective in achieving and maintaining desirable forest characteristics. These plans should carefully consider local ecological conditions and objectives, social concerns, and policy constraints of the owners or managers. ***OSAF supports appropriate management practices, planned by experienced forestry professionals for specific forest sites with consideration of the broader landscape, to help achieve and maintain desired conditions and values of mature and old-growth forests for current and future generations of Oregonians.***

Issues

Concerns about mature and old-growth forests raise many issues and challenges, which highlight important differences in perceptions, values and philosophies. These issues take on added complexity with the range of vital questions that have not been consistently addressed, including: 1) the definition of an old-growth forest; 2) the specific, desired uses and values of these forests; 3) the detailed objectives and allowances for their management. Disagreements about these forests have stemmed from widely varying perceptions and preferences, including: 1) the idea that nearly all pre-European settlement forests in Oregon were old-growth; 2) the idea that these forests and their benefits will persist indefinitely if left unmanaged; 3) the values are only obtained from old-growth forests; 4) contrasting views about the approach or philosophy for managing mature and old-growth forests, e.g., from no-touch “preservation” to multiple treatments to accelerate development of old-growth characteristics.

Current examples of old-growth management issues include policy directives or advocacy that limit the size of trees to be harvested irrespective of their age or species (e.g., no tree greater than 21 inches can be harvested) and age limits (e.g., 120 years), at or above which no trees can be removed. Such approaches greatly oversimplify the features of old-growth forests, do not address their dynamics as living ecosystems (i.e., with components that grow, compete for resources and eventually die), and increasingly restrict management that could help maintain the health and benefits of these forests over the long term.

Background

The definition of an old-growth forest is not exact (Helms 2004) and it can vary with forest type (dominant species). Old-growth forests often have trees of various sizes and some of very large size, some patchiness, and large snags and downed wood. However, no one single attribute, be it appearance, tree age, tree size, canopy structure (foliage layers), or species composition, can consistently define old-growth. The area or size of an old-growth forest is also important because small areas may not be effective habitat for some old-growth-dependent wildlife species, whereas they may provide aesthetic and educational benefits as well as desirable ecological diversity.

The term "late-successional[1]" is an ecological descriptor of old-growth forests that relates to the time after a disturbance (e.g., wildfire) that initiates the development of a new forest. Ecological definitions are useful in that they reflect key forest processes (e.g., succession and disturbance) and resulting forest structure and habitat. However, old-growth also is valued for its intrinsic features that can invoke awe, inspiration and spiritual fulfillment. This is reflected in common descriptors of these forests, such as cathedral, heritage, or ancient. Such labels can suggest some images that may not be accurate for all forest types. Lodgepole pine and aspen, for example, are not long-lived species and thus their forests may contain "old-growth" attributes that are far different from old-growth species with longer life spans (Spies 2004). A forest type and site-specific understanding of a particular forest and its associated values is more useful than an inexact label.

As a dynamic ecosystem with many natural influences, old-growth forests are constantly changing and all have a finite "lifespan," even in the absence of human influences. In northwest Oregon, the amount of old-growth prior to European settlement has been estimated to vary from about 30 to 70 percent over time and with shifts in location (Teensma et al. 1991, Wimberly et al. 2000, Wells and Anzinger 2001, USDA Forest Service 2003). Today, approximately 6.5 million acres of mature and old-growth forests exist in western Oregon and Washington (USDA Forest Service 2003). All forests, including old-growth, will eventually succumb to natural disturbances (e.g., wildfires, windstorms, insect infestations) and then regenerate over time. Although old-growth forests can be protected from some disturbances, indefinite protection from natural influences is impossible and thus maintenance of the key values of old-growth requires planning for the next cycle, extent and location of old-growth forests. And from an ecological perspective, old-growth (as well as early- and mid-successional forests) would not remain in fixed locations but would instead shift in the landscape over time and space.

Historically, large trees in old-growth forests had great commercial value and their harvest supported the development of many Oregon communities. Although large trees are still valuable and prized for lumber and some specialized uses, most mills now manufacture products from younger and smaller trees. Old-growth forests now are recognized for much broader values, including unique or rare wildlife habitat and complexity in forest landscapes, recreation, genetic reservoirs and natural heritage. Importantly, the diverse values of older forests, including economic benefits, are not necessarily incompatible with each other. Some state forest lands in the region, for example, are being actively managed to create habitat features of older forests for fish and wildlife diversity, while also generating mandated economic benefits to local communities. This approach has not satisfied all interests and significant pressure on both sides persists, including support for legislation, rule changes and ballot proposals for greater or lesser restrictions on harvest of older forests on state and private lands. However, a mix of forests ownerships

[1] Succession is the natural, gradual supplanting of one plant community type over another, with a "late-successional" community often considered as part of a final, long-term stage before a catastrophic event (e.g., wildfire) repeats the process, initiating "secondary" succession.

managed for a range of forest conditions (young to old) together produce a forest landscape with high overall ecological complexity and socioeconomic value.

Forests with older trees can be found in different ownerships, each managed with unique objectives and legal requirements including specific mandates for old-growth management on federal lands. Older and mature forests may not contain every feature of a fully developed old-growth forest, but many of them contain key elements such as large live and dead trees that provide the features important for wildlife habitat. Private landowners have significant leeway in setting their own management objectives and related actions, although Oregon law requires some snags and downed logs to be left in harvest areas. In general, as long as applicable regulations concerning fish and wildlife habitat protection are met, private landowners in Oregon may harvest trees in older forests on their property, some of which may meet an ecological definition of old growth.

Management strategies to promote or maintain old-growth forests depend on the specific ecological goals and the environment in which the forest occurs. Mature and old-growth forests often can benefit from active management (e.g., prescribed burning, thinning, patch harvest) to emulate natural processes (e.g., wildfire, windstorms), including those altered by human needs or activities. This is particularly true in dry, fire-prone forest types in eastern, central and southwestern Oregon, forests historically dependent on Native American burning (e.g., oak in western interior valley foothills), as well as in forest plantations with limited ecological diversity. There even can be instances where substantial tree harvesting may be appropriate, particularly if some down wood and large live and dead trees are left on site. With a blend of ecological, social and economic objectives, active management strategies such as long rotations with legacy wood retention can promote key old-growth features while also providing forest products.

Importantly, thinning smaller or younger trees in old-growth stands has been shown to improve tree health and vigor of older trees by reducing the competition (Stone et al. 1999, Latham and Tappeiner 2002, McDowell et al. 2003), thereby improving resistance to insect attacks and reducing the risk of stand-replacing wildfire. This can extend the life of existing old-growth trees and forests while other younger forests develop into an old-growth condition. Thinning in mature forests may hasten old-growth structural development (Bailey and Tappeiner 1998; Acker et al. 1998; Newton and Cole 2015) and large trees and old-growth character have been achieved over time after heavy thinning in younger forests (Newton and Cole 1987). Where stand-replacing wildfire has consumed old-growth forests, active restoration can help ensure the timely progression towards old-growth conditions. Without reforestation and vegetation management, restoration of conifer forests in some areas may take several decades longer to achieve mature forest characteristics, particularly in areas of severe wildfire and plant competition.

Conclusions

Oregon's forest owners and managers have a broad range of goals that lead to a broad range of management approaches that can promote diverse old and young forests with high ecological and social values. The overall pattern and distribution of forests is an important consideration in sustaining a broad range of values from our forests, and in providing for old-growth features and functions as forests change over time and space.

Misunderstandings and disagreements about the social and ecological roles and management of old-growth forests can be reduced by addressing key objectives and related considerations, including careful attention to local conditions and concerns. Like the management of other forests, decisions about old-growth forests will benefit from current knowledge and experience-based, site-specific management plans prepared by professional foresters and other specialists; that is, plans that carefully account for unique site and landscape conditions, detailed objectives, and important legal mandates and social concerns.

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