

Perspectives on Old-growth

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1. Old may be a misleading because old is relative is being old as important as the attributes—structure, species present, etc.
2. To what extent is extent or stand size important? A group of old trees is not necessarily an old growth stand or forest.
3. Old-growth stands have histories of development. Would stands that we call old growth today have been considered old growth in the past? For example, stands in southwest Oregon had a history of fire and tree establishment from 1700 to 1900, and then no fire from about 1900 until today. In 1900 these stands had large old trees in them, but in many cases not the understory that is often associated with old growth today. These old-growth Douglas-fir stands have trees with a wide range of ages suggesting that disturbance by fire was part of “old growth system.” Do we want fire in old growth forests today?
4. Is it better to focus on what the forest provides in the way of habitats, aesthetics, etc. rather than a definition of a kind of stand? For example an old growth stand is not needed for habitat for many species that are often found in old-growth stands. This is an important question because under the northwest forest plan the goal is to manage young stands to become old growth stands (or at least stands with old growth characteristic) to what extent can we manage for or do we need to manage for old growth? To what extent does society need old growth forests to maintain wildlife habitat, aesthetics, biodiversity sustainable forests, etc?

Following are perspectives on managing young forests to provide old-growth characteristics that may contribute to the discussion.

Silviculture for Ecological Goals

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Silviculture for ecological goals under the northwest forest plan has focused mainly on thinning young stands so that they might achieve old forest characteristics. Following are some results from recent research that address this question:

- Thinning enables trees to grow rapidly at young ages and thereby achieve large sizes. We found that large old-growth trees grew more rapidly when they were young (<100yr) than the largest trees in young-growth stands established after logging (the stands were quite productive and were accumulating biomass rapidly, but trees were growing slowly because of high stand density Tappeiner et al. 1997, Sensenig 2002). Similarly the size of large, old trees (> 1.0 m, over 200 to 350 yr) in old-growth stands was strongly related to their growth rate and size at 50 yr of age (Poage and Tappeiner 2002, Sensenig 2002).
- Thinning promotes tree and stand stability, resistance to windthrow and damage from snow and ice. Even the largest trees growing in dense stands are tall in relation to their diameters; (Wilson and Oliver 2000, Wonn and O’Hara 2001). Ratios of 70 and greater indicate potential instability. In young stands it would be ideal to have many of the trees with ratios of around 60. The ratio for old growth trees is frequently about 40 to 50 (Sensenig 2002).
- Thinning promotes large crowns and branches. Trees growing at wide spacing maintain long crowns, since adjacent trees do not shade their lower branches.
- Thinning promotes the development of seed production of overstory trees (Reukema 1982), establishment of conifer seedling and shrubs (Bailey and Tappeiner 1998) species diversity (Bailey et al. 1998), and the fruiting of understory shrubs (Wender, Harrington and Tappeiner 2004). It aids seedling establishment, understory density increases, providing habitat for a variety of species (See Muir et al. 2002) and beginning the potential development of a multistory stand.

- Thinning does not appear to harm old trees. Large old trees (> 1.0 m, 300+ yr) in old growth stands actually increased their growth when adjoining trees were removed about 30 yr previously (Latham and Tappeiner 2001). Thus removing fuel ladders and the for crown fires in old stands seems to be a good strategy.

Natural processes and disturbances such as windthrow fire and the effects of pathogens and insects are also part of old forest development that thinning does not mimic. Trees in old stands in western and southern Oregon had a range of ages and size classes indicating that disturbance was part of their development. Local conditions and past stand development must be evaluated. For example thinning over dense stands may lead to windthrow; on some sites thinning may lead to an overly dense understory of hemlock. Variable-density thinning focusing on leaving a variety of tree sizes and species is likely to be more effect than uniform thinning.

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