Thinning on Public Lands in Oregon

A Position of the Oregon Society of American Foresters

We support the use of thinning as a management tool on public lands in forests of all ages because it can effectively: reduce tree stress, increase forest health and vigor, reduce hazardous fuels, create unique forest structures that enhance biodiversity and wildlife and fish habitat, and provide useful products and public revenues. Research and management experience do not support the use of inflexible, arbitrarily prescriptive restrictions on thinning, such as fixed age or diameter limits. With a strong foundation of ecosystem science and ongoing observations of tree competition and other changing conditions, professional foresters and other specialists can prescribe thinning strategies that best achieve diverse, long-term objectives.

Issue

Thinning is a primary forest management tool used to achieve a variety of landowner objectives including wood-fiber production, wildfire risk reduction, and wildlife habitat enhancement. Thinning can be used to alter stand structure and accelerate stand development to achieve planned ecosystem objectives. However, concerns about timber harvest on public lands have led to attempts to restrict thinning by using arbitrary tree ages or diameter limits, despite a lack of supporting forest ecosystem science. Thinning prescriptions that reflect the dynamic nature of current and future desired forest structure and functions have a strong basis in research and experience, whereas management constrained by inflexible age or diameter limits can be expected to provide less effective results, especially over long time periods.

Background

Stands of trees continue to grow throughout the life of a forest, with ongoing competition for available resources. Prudent management of forest stands requires monitoring and some control of tree crowding (density) to promote good tree growth and health throughout the life of the stand (OSAF 2009). "Thinning is a cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality" (Helms 1998). More specifically, thinning can be used to:

- reduce tree stress due to crowding over the life of the forest. Stand density guidelines have been developed to help forest managers prescribe thinning treatments (e.g., Emmingham et al. 2005);
- remove sick, injured or poor quality trees, thus concentrating the available light, moisture, and nutrients towards the trees that are left;
- benefit wildlife species that require larger trees or more diverse forest structure; increase species richness of plants and animals, thus enhancing biodiversity (e.g., Bailey & Tappeiner 2002);
- provide periodic income to the public treasury, counties and agencies that manage forest resources; thinning can help agencies such as the BLM and the Oregon Dept. of Forestry meet their obligations (e.g., the O&C Act) to provide economic benefits to local counties and school funds (OSAF 2007);
- help protect against some damaging insects (e.g., bark beetles and defoliators) and diseases (e.g., Armillaria root rot and dwarf mistletoe);
- reduce ladder and crown fuels and the potential for severe, stand replacement wildfires;
- accelerate stand development towards mature or old-growth conditions; maintain or improve the health of old-growth trees (Bailey & Tappeiner 1998, Latham & Tappeiner 2002, OSAF 2005).
- maintain or enhance watershed and riparian functions and values;
- increase the resistance of forest stands to damage from wind, ice and snow;

Thinning differs from other partial cutting practices, such as shelterwood, seed-tree, sanitation-salvage harvesting (Barrett 1995). Typically, thinning removes fewer trees, and is not done with the intent of regenerating the forest. There are several ways to thin forests depending on goals and stand conditions;

detailed descriptions of these methods are in *The Dictionary of Forestry* (Helms 1998). Thinning may not be suitable for all sites or in all stand conditions, but it is most effective in achieving desired results when professionals are able to carefully consider and prescribe treatments at all stages of forest development.

Thinning treatments can be precommercial or commercial. Precommercial thinning (PCT) removes trees before they reach commercial size, to reduce stand density and concentrate growth on more desirable trees. Commercial thinning is any type that produces merchantable material at least equal in value to the direct costs of harvesting (Helms 1998). The materials removed in PCT and commercial thinning may be used for a wide variety of products, such as lumber, pulp chips (for making paper), biomass for municipal and commercial electrical plants and to produce bioethanol and other renewable fuels and chemicals.

Policy makers and some advocacy groups have attempted to restrict thinning with arbitrary limits on tree ages or diameters above which no trees can be cut. Current management directives on federal lands in central and eastern Oregon, for example, limit thinning to trees that are 21-inches or less in diameter. Some groups continue to lobby for lower diameter limits (e.g., 14 or 16 inches) due to concerns about commercial versus environmental objectives and their lack of trust in federal agencies. Where diameter limits are used, some trees smaller than the diameter limit usually are left. Experience shows that many of these uncut trees will grow above the diameter limit and, once that occurs, tree stocking no longer can be effectively controlled using that limit. The result is that all trees, both smaller and larger, experience increasing competition for moisture and other limited site resources, thus placing the entire stand at risk.

Tree or stand ages also have been proposed as a way to restrict thinning, but both age and diameter limits are inconsistent with forest ecosystem science. Prescriptions based on the desired stand structure have a much stronger science basis than those constrained by artificial limits that do not account for stand growth dynamics over time. Some proposed policies also assume that forests can be thinned indefinitely. However, at some point in the future, forests may require other harvest methods to ensure successful replacement of native species. Forests of Douglas-fir, for example, will not regenerate themselves unless management practices or natural disturbances create substantial openings that provide the full sunlight needed for seedlings to survive and grow (OSAF 2008).

In summary, thinning is a vital tool for managing young to mature forest stands for a broad array of benefits, both environmental and socioeconomic. Forest ecosystem science, as well as decades of management experience, has shown that thinning is most effective when prescribed in a site-specific manner, with due consideration of the complex, dynamic nature of forest growth and development over extended periods. For a given forest type and location, this means that thinning prescriptions must change significantly as the forest itself changes over time, and that it is most productive to focus on the trees and other conditions that remain and develop after thinning, rather than what is removed.

Selected References

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This position statement was adopted by the OSAF Executive Committee on August 13, 2009. The statement will expire on August 13, 2014 unless after thorough review it is renewed by the Committee.