



United States
Department
of Agriculture
Forest Service
Rocky Mountain
Research Station
Research Note
RMRS-RN-21-15-WWW
September 2006

Fuels Planning: Science Synthesis and Integration

Social Issues Fact Sheet: 15

Landscape Change and Aesthetics



Rocky Mountain
Research Station



Pacific Northwest
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*Synthesizing
Scientific
Information
for Fire and Fuels
Project Managers*

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Public Perception

How the public perceives a forest's scenic beauty often affects how it perceives the quality of the forest's management. If people do not consider a forest to be scenic, they may think that the low scenic quality is a result of poor management or ecological health. Fuels management produces changes in the landscape that can impact scenic beauty. Understanding how people view changes in the landscape can help inform management decisions.

It is not surprising that members of the general public perceive natural forest disturbances that result in extensive areas of dead or dying trees negatively. However, natural disturbance that is less severe, such as less intense fires that burn the understory but do not kill mature trees, can result in more preferred forests, especially over time.

Development

Like natural landscape disturbances, human development in more natural forested settings receives mixed reactions. Smaller buildings and other improvements, such as boardwalks, that people consider compatible with the natural setting actually increase visual preference in many natural areas.

On the other hand, the public views new roads that are part of timber management operations or other construction negatively, especially in hilly topography, where road cuts are more visible. However, scenic forest roads designed to fit into the natural topography and landscape are often highly rated, depending on the visual quality of the adjacent landscape.

Forest Management

Studies of the effects of timber harvesting are relevant for fuels management because many fuels reduction projects result in the removal of trees, including thinning, removing ladder fuels, salvage logging, and harvesting to create fire breaks.

Clear Cuts

Not surprisingly, most studies have found that clear cuts lower scenic beauty, especially when compared to more natural areas. The visual impacts of clear cutting vary by the size, shape, and location of the forestry activities. For instance, people preferred mid-sized clear cuts (10–14 acres) to large clear cuts and to smaller, concentrated ones. They perceive straight-edged harvest units more negatively than those with more naturalistic edges. Harvest units that blend into adjacent natural areas and mimic natural clearings are perceived much more positively by the public.

Recent clear cuts are perceived more negatively than areas with new tree growth. In some instances, once a cutover area has greened-up with new grass and shrub revegetation, visual appreciation increases, especially if the new growth is seen as a meadow or other natural condition.

Thinning

In contrast to clear cutting, tree thinning has a much more positive impact on scenic beauty, especially when smaller trees are removed to lower stand density. Brush clearing can also improve scenic beauty ratings. A key question is how much thinning and clearing can occur before compromising scenic beauty.

In general, research suggests that thinning up to 25 percent to 30 percent of dispersed basal area has moderate impacts on scenic beauty ratings. It may be possible to thin up to 50 percent of a stand area, especially if larger trees remain.

Studies suggest that people prefer managed forests where trees have been thinned over unmanaged, densely stocked forests. The visual impacts are strongly affected by the type and extent of timber harvesting, tree regeneration, and ecosystem type.



This shaded fuel break near Roslyn, Washington, shows how tree thinning can positively impact scenic beauty. Photo: L. Kruger

Removing Slash

The public's perceptions of thinning, pruning, and other fuels management activities are negatively affected by residual woody debris. Often, one of the most significant predictors

of negative scenic ratings of forest scenes is the amount of such material, regardless of whether it is caused by human or natural forces. The greater the volume of large downed wood, the greater the impact on scenic beauty. People also dislike visible tree stumps from timber harvesting. Forest managers should consider post-harvest cleanup essential in visually sensitive areas.

It is important to remember that scenic impacts of timber slash are only temporary and must be weighed against other management objectives. Early negative impacts of thinning caused by accumulated downed wood, for instance, can be offset by later positive scenic results of the decrease in stand density. Removing slash through chipping, mulching, or piling and burning can be an effective way to reduce woody debris.

Prescribed Fire

Prescribed fire, whether pile burning or broadcast burning through a stand, can have a significant impact on scenic beauty. For more information on prescribed fire and visual quality see *Prescribed Fire and Visual Quality*, Social Issues Fact Sheet 16 (RMRS RN-21-16-WWW).

Source

Ryan, Robert L. 2005. Social science to improve fuels management: a synthesis of research on aesthetics and fuels management. Gen. Tech. Rep. NC-261. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 58 p. Available online at <http://ncrs.fs.fed.us/pubs/viewpub.asp?key=3514> [2006, August 25]. For a hard copy, contact Pamela Jakes at pjakes@fs.fed.us.

Additional Aesthetics Fact Sheets

Landscape Change and Aesthetics is one of a series of four fact sheets on the topic of aesthetics and fuels management. See also *Strategies for Managing Fuels and Visual Quality*, Social Issues Fact Sheet 13 (RMRS RN-21-13-WWW); *Landscape Preference in Forested Ecosystems*, Social Issues Fact Sheet 14 (RMRS RN-21-14-WWW); and *Prescribed Fire and Visual Quality*, Social Issues Fact Sheet 16 (RMRS RN-21-16-WWW).

Social Science Team Fact Sheets

Look for fact sheet topics from the Social Science Team including information on developing personal responsibility for fuels reduction, communicating fire hazard, topics for community fire plans, guidelines for community education, collaboration, and the "golden rule" for communicating fire hazard to people.

Fuels Planning: Science Synthesis and Integration is an inter-agency research/management partnership to support the Ten-Year Fire Plan, led by Russell T. Graham, RMRS, and Sarah M. McCaffrey, NCRS.

Fuels Planning: Synthesis and Integration

This fact sheet is one in a series being produced as part of a larger project supported by the USDA Forest Service to synthesize new knowledge and information relevant to fire and fuels management. Fact sheets address topics related to stand structure, environmental impacts, economics, and human responses to these factors. Information in the fact sheets is targeted for the dry forests of the Inland West, but is often applicable across broad regions of the country. For more information, please visit our Web site at: www.fs.fed.us/fire/tech_transfer/synthesis/synthesis_index