



Forest Health Protection Pacific Southwest Region



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To: District Ranger, Eagle Lake Ranger District, Lassen National Forest

Subject: Evaluation of the Homer and Deerheart Lakes Area
(FHP Report NE04-10)

At the request of Elizabeth Norton, Public Services Program Manager, I conducted a field evaluation of the Homer and Deerheart Lakes area on the Eagle Lake Ranger District on September 7, 2004. The objective of my visit was to evaluate the current forest health conditions adjacent to the lakes and the trail system and to provide management recommendations as appropriate. These recommendations can be used when planning future management activities in this recreation area.

Background

The Homer and Deerheart Lakes area is located on the Lassen National Forest, about 5 miles southeast of Westwood, CA, at an elevation of 6600 feet. The entire area lies on the upper northeast-facing slope of Keddie Ridge and receives an average of 40 inches of precipitation per year. There are approximately six undeveloped campsites around and between the lakes with foot trail access. Seasonal use occurs from early June to mid-October. The mostly forested area is an eastside mixed conifer type with rock outcroppings scattered throughout. Several lush riparian corridors, consisting of alder (*Alnus sp.*), willow (*Salix sp.*) and aspen (*Populus tremuloides*) drain the upper slopes. White fir (*Abies concolor*) and red fir (*Abies magnifica*) dominate the forested areas. Jeffrey pine (*Pinus jeffreyi*), western white pine (*Pinus monticola*), lodgepole pine (*Pinus contorta*) and sugar pine (*Pinus lambertiana*) are present in far fewer numbers and mostly in the overstory. Limited logging has occurred on these upper slopes and stands contain many mature trees greater than 30" dbh. Understories consist mostly of dense, small diameter white and red fir, although there are a few second growth, even-aged,

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stands and a few mature stands of white and red fir that are relatively open. More logging of overstory trees occurred in the past on the mid and lower slopes resulting in denser and younger stands at these elevations. Regeneration of all pine species is limited.

Observations

Current tree mortality in this area is low, however, insect and disease activity is observable and negatively affecting tree health and vigor. The presence of many standing dead and downed trees, primarily red and white fir, throughout the area is evidence of the mortality that occurred during the last prolonged drought (1987-1992).

White pine blister rust (*Cronartium ribicola*) was observed in sugar and western white pine mainly causing branch dieback in larger trees and top kill in smaller trees.

Fir engraver beetle (*Scolytus ventralis*) was observed in white and red fir causing top-kill and whole tree mortality.

Dwarf mistletoe (*Arceuthobium* sp.) is present in several tree species, including Jeffrey pine and white fir. Red fir had a relatively high amount of branch flagging caused by the canker-forming fungi *Cytospora abietis* in conjunction with fir dwarf mistletoe swellings.

There were some minor mechanical injuries observed on some of the trees within the camping areas resulting from people hammering nails and/or cutting into the boles of trees with hatchets or saws. A few of the mature aspen stems near the lakes and trails have also sustained injury from people carving initials into the bark.

High foot traffic is occurring in and around some of the campsites. This is evidenced by the lack of vegetation in many areas and is likely resulting in highly compacted soils around tree roots in addition to direct root damage. This condition is mostly found at campsites within the true fir stands.

Discussion and Recommendations

The forested stands in the Homer and Deerheart Lakes area of Keddie Ridge are typical for eastside mixed conifer stands that have had fire excluded for 100+ years; high accumulations of fuels, dense understories made up of shade tolerant species, such as red and white fir, mortality occurring from insects and disease, primarily in the larger trees, and limited regeneration of shade intolerant tree species such as pine and aspen and shrub species such as greenleaf manzanita (*Arctostaphylos patula*), snowbrush (*Ceanothus velutinus*), and willow.

Even though bark and engraver beetle caused mortality is currently at low levels in the Homer and Deerheart area, many nearby areas have experienced increasing mortality levels over the past 3 to 4 years. In some locations in northeastern California, precipitation levels have averaged below normal for four or five years in a row. These same areas are now experiencing very high rates of bark beetle caused mortality. If

stands in the Homer and Deerheart Lakes area remain in their current overstocked condition, future mortality from bark and engraver beetles can be expected.

The Keddie ridge area would benefit overall by forest management activities that reduce stand density, especially in the understory, and reduce fuel loads. The enlargement of existing openings where conifers have encroached in the absence of fire would also help to restore understory plant, shrub and deciduous tree communities including aspen. Mechanical and/or hand thinning of stands either alone or followed by prescribed fire would best accomplish these objectives. Prescribed fire alone under dense stand conditions may cause excessive tree mortality and actually increase the amount of fuels post treatment. Mature pines, including sugar and western white pines, are especially susceptible to mortality during prescribed burns because of the deep duff and litter that accumulates at their base. These duff mounds typically burn at a slow rate, while maintaining lethal temperatures, causing severe cambium damage. For this reason, it may be beneficial to rake the duff away from the bases of large pines.

Trees should be thinned to a basal area appropriate for the site in order to improve stand health and vigor. To reduce the susceptibility to future bark beetle related mortality, stands should be thinned to densities that are 80% or less of “normal”, effectively reducing tree competition for limited water and nutrients. Furthermore, selecting for more drought tolerant species such as Jeffrey pine and incense cedar over red and white fir will increase species diversity and make the stand more resilient to disturbance agents such as insects, disease, and fire. When selecting trees for removal, preference should be given to trees heavily infected with dwarf mistletoe and trees infested with bark beetles. Thinning can also decrease the need to enter stands to conduct salvage operations, decrease the amount of fuel loading and reduce the number of hazard trees. When planning such thinning, it should be recognized that this is an average to be applied across the landscape and some variability may be desired. Individual high value trees, such as mature pine, as well as pure stands of younger ponderosa and Jeffrey pine should benefit by having the stocking around them reduced to lower levels.

Special consideration needs to be given to the five-needle pines, sugar and western white pine, that exist on Keddie Ridge. White pine blister rust, a non-native pathogen, has continued to weaken and kill these species in the northern part of their range since its introduction into the Pacific Northwest in 1910. Identification and protection of local rust resistant stock for seed collection, if not already occurring, will aid in the future planting of rust resistant seedlings. Planting selected openings created through thinning operations with rust resistant stock would help insure these species persist in the area.

Aspen stands within the Homer and Deerheart Lakes area are few in number and exist as very small isolated clones. A couple of the stands are made up of only a few live stems. Aspen on the Eagle Lake RD is believed to have been significantly more abundant during the pre-fire exclusion and livestock-grazing era. Since then, aspen has declined an estimated 50% to its present abundance and distribution of scattered remnant stands. A recent survey and risk rating of aspen on Keddie Ridge by District wildlife personnel revealed the presence of 14 stands ranging from one half acre to five acres in size. Ten of

these stands rated out at a high risk of being lost and are listed as a high priority for some type of restorative treatment.

Conifer encroachment, according to the District survey, is the primary cause for the declining health of aspen stands and a lack of regeneration on Keddie Ridge, although other factors are occurring in selected stands such as trampling of shoots by humans, browsing by deer and livestock, and in a few cases, competition from shrubs. This lack of successful regeneration will lead to further reductions of aspen within the area, leading to a loss in biodiversity as well as aesthetic/visual qualities. To increase successful aspen regeneration it is recommended that all existing aspen stands that are at high risk be treated as per District recommendations. Depending on the condition of the stand, treatments may include conifer removal, prescribed fire and/or fencing. Current and future regeneration should be protected from browsing and trampling until stems reach a resistant height (at least 5 feet).

Trees within the camping areas and along the trails should be evaluated and potential hazards identified. To minimize the risks associated with hazard trees, they should be identified and removed before they fail. The current practice for campgrounds on the Lassen National Forest is to remove trees as they die. This eliminates the risk from dead trees but fails to address living trees that are infected with root disease, heart rot, and/or have a structural defect. These high-risk green trees are equally hazardous and should not be overlooked. Therefore, it is recommended that the Forest develop a hazard tree evaluation and monitoring plan for its recreational sites. At your request, Forest Health Protection can provide information and assist with the development of this plan. In the short-term, trees within the campsites that have obvious stem decay, dead tops and/or large dead branches should be carefully evaluated and hazards removed or pruned as soon as possible.

Conclusion

Any future modifications to the Homer and Deerheart Lake areas should incorporate a long-term vegetation management plan that includes a hazard tree evaluation and monitoring plan for campsites. The recommendations provided in this evaluation combined with input from the District and/or Forest silviculturist will help in the development of a management plan that emphasizes forest health and helps enhance and maintain visual/aesthetic qualities for these recreation areas.

Forest Health Protection can assist with the funding for thinning and removing green material from overstocked areas within and adjacent to the Homer and Deerheart Lake areas on a competitive basis. If you are interested in this funding please contact any of the Forest Health Protection entomology staff for assistance in developing and submitting a proposal.

If you have any questions regarding this report and/or need additional information please contact Danny Cluck at 530-252-6431 or dcluck@fs.fed.us.

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