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File Code: 3420 **Date:** February 15, 2002
Route To:
Subject: Evaluation of Pillsbury Lake Summer Home Tract and Sunset Campground (FHP Report No. N02-04)
To: Jim Fenwood, Forest Supervisor, Mendocino National Forest
Blaine Baker, District Ranger, Upper Lake Ranger District

At the request of Nancy Gard, on January 28, 2002, Dave Schultz (Entomologist) and I visited the Middle Lake Ranger District. The purpose of the visit was to provide an update on the forest insect and disease conditions at Sunset Campground and the Summer Home Tract at Pillsbury Lake. We last visited the area in March, 2000. Although no new report was written on that visit, a detailed evaluation report on the Summer Home Tract was written by Greg DeNitto on June 4, 1993 and a similar report on Sunset Campground was written by Dave Schultz on March 9, 1989. Following are our observations on the two areas:

Summer Home Tract

The Summer Home Tract contains approximately 70 lots spread out over 3 loops. During our short visit, we drove around all of the loops and walked through several individual sites, including sites 7, 14 and 52. There appeared to be little change from the conditions described in the 1993 report. Vegetation consists primarily of a mix of California black oak and Douglas-fir with a scattering of ponderosa and sugar pines. The oak and pine tended to be large and in the overstory. The Douglas-fir were even-aged (approx. 70-90 years old) and mostly sapling to pole-sized. Very little understory vegetation exists, except for grasses. My first impression on entering the area was that there are far too many trees. It is evident that with the lack of fire, Douglas-fir has encroached on what was historically a low-density oak/pine stand. The resulting stand is overstocked and stagnating. Observation of tree rings from increment cores taken from several Douglas-fir show that competition and stress levels are high.

Several insect and diseases were noted. Fruiting bodies (conks) of *Phellinus pini,* which causes a heart rot known as red ring rot, were found on many of the Douglas-fir. This disease, causes bole and branch decay, resulting in breakage which can harm people, houses, cars, etc.

Scattered pockets of thinning, chlorotic, dead and dying oak and Douglas-fir were found. Most of these patches of mortality were centered on old oak stumps. On closer inspection, we found mycelial fans of *Armillaria sp.* under the bark of the roots and lower boles of dead and thinning, chlorotic trees. *Armillaria* rhizomorphs ("shoestrings") were also found on the outer surfaces of several roots and in decayed wood and stumps. The species of *Armillaria* that is common to this area, *Armillaria mellea,* commonly invades stressed conifers after becoming established on hardwoods. Stress and the amount of inoculum, which builds up in stumps, are significant factors in determining the degree of mortality that will occur in a particular area. As was stated in the previous report, it is likely that the fungus built up in the oaks after being overtopped and stressed by the Douglas-fir. Fungal inoculum built up in the remaining oak stumps, which allowed the infection process to proceed in the increasingly stressed Douglas-fir.

Black stain root disease, which was found in 1993 in single and clumps of Douglas-fir at seven home sites, was only identified in a pole-sized Douglas-fir behind the cabin at homesite 52. There is little doubt that more of the disease, which is vectored by several species of root-feeding insects that thrive in highly disturbed areas, is present in the home tract.

The only insect of particular concern that was noted was the fir flatheaded borer (*Melanophila drummondi*), which was found in several weakened and dying Douglas-fir.

The insect and disease conditions that were found were similar to those that were reported in 1993. At that time, it was predicted that without treatment, continued mortality would result as root diseases and insects impact the site, and that the black oaks will be overtopped by the conifers and will slowly decline and die. Nothing has occurred during the past nine years to take the vegetation off of this track. If anything, the situation has only gotten worse.

Our recommendations for the area are much the same as those offered nine years ago. Most of the problems stem from the stress accociated with overcrowding. Thinning to reduce stand stocking would alleviate much of the stress. A target basal area of about 200 square feet of basal area would do much to improve tree health and reduce the effects of insects and disease. The thin should discriminate against the Douglas-fir while retaining as many of the oaks and pines as possible. The overall objective if the treatment should be to keep the best of the best. Almost all of the suppressed sapling and pole-sized Douglas-fir should be removed, as well as any dying or poorly-formed oaks. About half of the larger Douglas-fir ahould also be removed, especially those that are thinning or dying and are near a declining oak or an old oak stump. Douglas-fir with *Phellinus pini* conks may also be discriminated against, but individuals may be retained if, after checking with an increment borer, they have more than one-third of their diameter in sound wood or if no targets (houses, cars, etc.) would be hit in the event of tree failure. Ponderosa and sugar pine should retained wherever possible, and should only be removed if they are heavily infested with dwarf mistletoe and are close enough to to infect other pines of the same species. Because annosus root disease is present in the general area (though we did not encounter it in the home tract during this visit), it would be prudent to treat all conifer stumps with borax immediately after cutting to prevent potential introduction of the disease through the stumps.

Sunset Campground

The overstory vegetation at Sunset Campground is similar to that of the Summer Home Tract, with the exception that in addition to the Douglas-fir, black oak, ponderosa and sugar pine, minor components of scattered grey and knobcone pine are also present. Significant amounts of western dwarf mistletoe (*Arceuthobium campylopodum*) are present in the ponderosa pine, particularly near the campground entrance. Infection levels on some pines are heavy, with a dwarf mistletoe rating (DMR) of 4 out of a potential score of 6. As with the Home Tract, most of the forest health problems in Sunset Campground stem the fact that fire exclusion has allowed Douglas-fir to invade the site, resulting in overcrowding and tree stress. Once again, thinning from below is recommended to remove most of the Douglas-fir, along with the worst of the black oak and pines. Some of the more heavily dwarf mistletoe-infected ponderosa pines should be removed, particularly in locations where the the infected trees overtop uninfected or lightly infected ponderosa pine. With careful selection it should be possible to remove the most heavily infected

ponderosa pine while still maintaining stand diversity. Again, in order to prevent the establishment of annosus root disease, the stumps of all cut conifers should be boraxed immediately after cutting.

In some cases, it may be desirable to prune lightly infected pines. Guidelines for pruning depend on whether the objective is to increase the vigor of individual trees (so as to retain them on the site for as long as possible) or to eradicate dwarf mistletoe from the tree. If the objective is to increase tree vigor, then the approach is to remove at the bole all branches with dwarf mistletoe witches brooms. Other infected branches should be left alone except when needed to improve pruning comnditions. This treatment should not be attempted on heavily infected trees (DMR of 5 or 6), and should only be done if the tree will have at least 30% live crown after removal broom removal. If the objective is to eliminate dwarf mistletoe from the tree, then the pruning is done by removing all lower branches, both healthy and diseased, at the bole up to and including one or two whorls of branches above the highest visible infection. This treatment should only be attempted on trees with a DMR of 3 or less, or on trees with a DMR of 4 with no dwarf mistletoe in the upper third of the crown. This should not be attempted if pruning under these guidelines results in the removal of more than 50% of the live crown or if the tree will be exposed to continued infection from adjacent infected trees. Because it is difficult to completely eliminate dwarf mistletoe from a tree, plan to reenter and retreat if needed at least twice after the first entry.

If you have any questions of comments regarding the recommendations in this report, please feel free to give me a call. As Always, Dave and I are available to assist in any way that we can.

/s/ Peter A. Angwin
Plant Pathologist
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cc: Nancy Gard
Mike Ramsey