

California Native Plant Society

1722 J Street, Suite 17 • Sacramento, CA 95814 • (916) 447-2677 • FAX (916) 447-2727

April 7, 1999

Brad Powell
Acting Regional Forester
USDA Forest Service
Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592

Re: Appeal of Decision notice and Finding of No Significant Impact for the Stormy Brush Control Environmental Assessment on the Hot Springs Ranger District, Sequoia National Forest.

Dear Mr. Powell:

Notice of Appeal

Notice is hereby given pursuant to 36 CFR §215 Subpart B that the California Native Plant Society (CNPS), 1722 J. St., Suite 17, Sacramento, CA 95445, 916 447 2677 or 510 649 0460 appeals District Ranger Del Pengilly's decision to implement Alternative 2 (the proposed action) in this matter.

This proposed action would apply herbicide to approximately 2,600 acres of the Stormy fire area in order to kill native brush and other species to facilitate reforestation of the area with timber species.

The District Ranger's decision is not in accordance with the legal requirements of the National Forest Management Act (NFMA), with Forest Service Ecosystem Management policy, or with the requirements for management of sensitive species in the Forest Service Manual (FSM). The proposed activities would result in degradation of native plant communities and rare plant habitat.

The mission of the California Native Plant Society is to increase the understanding and appreciation of California's native plants and to preserve them in their natural habitat through scientific activities, education, and conservation. The Stormy Project impacts members of the CNPS who use the project area for recreation, research, and educational activities.

We note that the current Decision Notice (DN) and Finding of No Significant Impact (FONSI) have been revised after appeals of the original DN/FONSI by CNPS and at least one other group. We were told at the time of that appeal that a new EA would be issued to provide additional opportunities for public comment and a new opportunity for the Forest Service to consider the issues raised in the appeals. This course of action seemed sensible because there is no urgency to the Stormy project and the receipt of multiple appeals by the Forest Service has demonstrated that the project is highly controversial. We were disappointed to find that rather than issuing a new EA, the EA,

DN and FONSI were instead amended. The amendments provide only minimal additional analysis. The amendments also make no changes to the proposed project to address issues in the CNPS appeal or other appeals. We hope that this appeal process will produce an outcome that is more responsive to public concerns.

Standing

Although the CNPS did not submit written comments on this project, I discussed this project extensively with and outlined our concerns to Sequoia Forest Botanist Linda Tanner-Sutton May 15, 1997. That conversation establishes standing under the Forest Service appeals regulations (36 CFR §215.14(5)).

Informal Disposition

CNPS would like to dispose of this appeal informally, if possible. Please contact me at any time to discuss the issues in this appeal.

Statement of Reasons

The Stormy project proposes to reduce competition in order to facilitate reforestation of a burned site. Fire, and post-fire succession, are natural, indeed essential processes in California plant communities. The post-fire plant community is unique and includes plants, soil organisms, and other species that improve soil fertility, reduce erosion, and actively facilitate development of later seral communities. The post-fire plant community also contributes significantly to the diversity of California's flora. The project area also includes important populations of a Forest Service - designated sensitive plant which may be adversely impacted by herbicide application and other reforestation activities. CNPS therefore asserts that the proposed action would adversely impact biological diversity, and would damage sensitive plants, soils and forest productivity in the project area, thus violating Forest Service ecosystem management policy as well as several sections of the NFMA and the FSM.

Soil productivity

NFMA requires (§219.27)

- “(a) *Resource protection*. All management prescriptions shall--
- (1) Conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land ...

[....]

- (b) *Vegetative manipulation*. Management prescriptions that involve vegetative manipulation of tree cover for any purpose shall—[...] Avoid permanent impairment of site productivity and ensure conservation of soil and water resources...”

The proposed action would compromise soil productivity in several ways. The area has burned, and parts have been salvage logged and prepared for tree planting. Total site nutrient levels are reduced following fire, salvage harvest, and site preparation due to removal of biomass and the nutrients contained in it. In addition, the disturbance associated with harvest and with site preparation exposes soil organic matter, an important nutrient reservoir, to increased rates of decomposition (e.g. Roberson *et al.*, 1991). Nutrients are then lost to the system through leaching. Increased decomposition and nutrient loss have often been documented following timber harvest (Binkley, 1986; Vitousek and Matson, 1984). Factors found to influence these process include higher soil temperatures associated with reduced canopy cover, and increased soil water content and soil solution nutrient content as plant water and nutrient uptake is reduced. Studies have found that, by removing vegetation, herbicide application can create conditions similar to those following harvest and also cause nutrient losses (see review by Swadener, 1993). In the Stormy project area, this effect would serve to compound the soil damage and nutrient losses that have already been caused by the fire, salvage logging, and site preparation activities.

The Stormy Environmental Assessment (EA) states (Appendix B) that the "competing" vegetation to be eradicated include *Lupinus*, *Ceanothus* and *Arctostaphylos* species. These genera are associated with symbiotic nitrogen fixing soil microorganisms. These associations add a growth limiting nutrient, nitrogen, to the soil, as well as carbon and other nutrients. The Region 5 Vegetation Management EIS (p. D-76) notes the probability that nitrogen added to the soil may offset any adverse effects of competition by *Ceanothus*. The fast-growing shrub community also affects site nutrient status by capturing nutrients released from decomposing soil organic matter, slash and other organic materials, and retaining these nutrients on site as biomass. Both nitrogen fixation and nutrient retention can be important factors in maintaining soil productivity following disturbances (Binkley, 1986). The Stormy Project would diminish these processes and would therefore reduce soil productivity.

These concerns were covered in my conversation with the Forest Botanist, but soil productivity is not addressed in the Stormy Brush Control Environmental Assessment (EA) other than in the context of surface soil erosion.

Forest productivity

The selection of the preferred alternative is based on a prediction of higher eventual timber yield. However, herbicide application may not have this effect. In addition to the impacts on soil productivity discussed above, herbicide application will disrupt normal post-disturbance succession. The early seral community, whose partial eradication is proposed, is of course an essential step in the plant community succession which normally leads to a mature forest. Indeed, the early seral vegetation may be essential to successful re-establishment of mature forest species. Studies suggest that among the species favored by early seral conditions are soil organisms which facilitate the successful establishment of conifer seedlings (Borchers and Perry, 1990; Amaranthus and Perry, 1989).

Reports to CNPS indicate that the Forest Service has had variable success in using herbicides to increase yield. Herbicides can in fact reduce the growth of the desired plant species, both through direct herbicidal effects on conifer vigor and through effects on nutrient cycling and disease organisms. The scientific literature contains many reports showing adverse effects of herbicides, including glyphosate, to mycorrhizal fungi (for reviews see e.g. Cox, 1995; Swadener, 1993). Mycorrhizae have been repeatedly shown to be important in successful conifer growth and survival, particularly in disturbed areas (Amaranthus and Perry, 1989). Herbicides may also increase conifer susceptibility to fungal and other diseases (Levesque and Rahe, 1992). Therefore, the assertion in the EA that conifer yield will be improved by this project is questionable.

The EA also notes that fire danger may be increased by the project, at least in the short term, because of the accumulation of dead fuels (p.10). Increased fire danger also poses a threat to the successful regeneration of the area. The preferred alternative may therefore have adverse consequences for short term regeneration as well as for long term site productivity.

Sensitive plants

The proposed action would violate Forest Service sensitive species management requirements. This is our most serious concern and was also discussed in my conversation with the Forest Botanist. The project area includes 1,277 acres of stands containing identified populations of *Calochortus westonii*, a Forest Service designated sensitive plant species (Biological Evaluation (BE), Table 2). *C. westonii* is also a CNPS list 1b species and was, until the category was eliminated, a C1 candidate for listing under the federal Endangered Species Act.

FSM direction for sensitive species includes the following mandates.

- “1. Develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions.
2. Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands.” (FSM 2670.22)

The 1,277 acres of *C. westonii* habitat impacted by the Stormy project represents a large proportion of the range of the species. The BE does not state exactly what fraction of the range the project covers, but it is substantial, possibly as high as 25% according to local experts. Spraying such a large area of sensitive species habitat with herbicide during its growing season certainly is inconsistent with the direction to maintain viable populations of species throughout their ranges.

C. westonii is an extremely rare plant. It is on CNPS' list 1b, which denotes the highest level of rarity and endangerment in the CNPS *Inventory*. It was also a C1 candidate for listing under the federal Endangered Species Act before the candidate categories were eliminated. C1 candidates, according to the Stormy BE, are species for which “enough

data are on file to support federal listing as threatened or endangered” (BE, p. 5). Applying herbicide to such a large area within the range of this extremely rare plant is inconsistent with FSM direction that the Forest Service ensure that species do not become threatened or endangered because of its actions.

The FSM also states that the Forest Service must

“Avoid or minimize impacts to species whose viability has been identified as a concern.” (FSM 2670.32)

FSM 2670.5 defines sensitive species as follows:

“Those plant and animal species identified by a Regional Forester for which population viability is a concern”

Therefore, by definition, the viability of *C. westonii* is a concern, and therefore under FSM 2670.32, impacts should be avoided or minimized to that species. The Stormy Project does not meet that mandate.

The BE states that herbicide will be applied during the growing season and would therefore

“carry a very high risk factor for detrimental and/or fatal effects on *Calochortus westonii* plants actively growing in or adjacent to treated stands...” (BE, p. 7)

Currently active *C. westonii* populations will be avoided during the project. However, populations from earlier surveys will not be avoided despite the fact that, as the BE acknowledges, “viable seed and bulbs may still exist” in areas where recent surveys have failed to detect visible *C. westonii* (BE, p. 6). CNPS acknowledges that the risk of harm to bulbs and seed from glyphosate is significantly less than the risk to actively growing individuals. However, risk does exist. There is a risk that surveyors may miss some actively growing individuals. *Calochortus* may, if conditions are not optimal, grow a leaf and no other above ground parts, making identification difficult, but allowing a pathway by which herbicide could be translocated to the bulb. There therefore is a risk that herbicide may adversely impact bulbs or seed.

There is also the possibility of error on the part of personnel who apply the herbicide. They may inadvertently apply herbicide to identified *C. westonii* sites. They may apply herbicide at higher rates or concentrations than directed, increasing the probability of translocation to non-target locations and plants. A recent study tested vegetation on three California National Forests for herbicide residues, including glyphosate, following applications similar to those proposed in this project. That study found residues in 3% of samples taken *outside* treated areas, while fifty percent of samples within treated areas tested positive (Segawa et al., 1997). The appearance of herbicide residues outside of treated areas,

albeit at a low frequency, implies either human error during application resulting in application outside of the target area or unexpected translocation of the herbicides.

According to FSM direction, impacts to sensitive species should be avoided or minimized, and, by applying herbicide in known sensitive plant habitat, this project does not adequately minimize or avoid impacts.

Diversity, Ecosystem Management Policy, and Fire Management Policy

The proposed action would violate NFMA direction and Forest Service policies regarding ecosystem management and the maintenance of biological diversity.

NFMA states

The NFMA sets forth several principles which govern the management of National Forests. These include:

“Recognition that the National Forests are ecosystems and their management for goods and services requires an awareness and consideration of the interrelationships among plants, animals, soil, water, air, and other environmental factors within such ecosystems...” (36CFR 219.1 (b) (3))

NFMA also states:

“Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species, so that it is at least as great as that which would be expected in a natural forest and the diversity of tree species similar to that existing in the planning area.” (36 CFR §219.27(g))

The Forest plans to apply herbicide to discourage competing vegetation in the planning area in the hopes of increasing the speed of conifer growth. By favoring conifers, the project underestimates the important values and resources associated with forest biological diversity and with normal forest succession. Forest Service policy and the NFMA both direct National Forests to consider biological diversity in their management planning. Elimination of the early successional community in order to reach later successional stages more quickly, eradication of certain native species in order to create a plant community dominated by a few desired species, are management actions designed to produce timber rather than maintain healthy diverse ecosystems as the NFMA and Forest Service ecosystem management policy direct.

Under ecosystem management, a watershed or landscape is analyzed as an ecosystem. The management goal is the sustainable, healthy functioning of that ecosystem and of the species and processes that comprise it. In this context, commodity production is a byproduct of ecosystem management, if commodity production occurs at all. This is not the approach taken in the Stormy Project,

which emphasizes timber production at the expense of other valuable common and rare species and resources in the planning area. While this approach was consistent with Forest Service policy in the past, it does not follow NFMA direction or the current policy emphasis on ecosystem management.

Post-fire plant communities are unique, ephemeral, and essential components of California's biological diversity. The CNPS *Inventory* (Skinner and Pavlik, 1994) lists 35 rare California plants whose rarity is due at least in part to changes in fire regimes in California, generally to fire exclusion. There are, of course, many more common plants that also depend on periodic fire for reproduction and survival (Chang, 1996; Agee, 1993). Post-fire plant communities also provide unique habitat for a variety of animal species which require the higher pH, nutritional value, and other characteristics of the rapidly growing herbaceous and hardwood species for survival. Studies have shown that, while some animals avoid burned areas, many wildlife species are attracted to burned sites (Chang, 1996; Wirtz, 1995; Agee, 1993). Scientists overwhelmingly agree that restoring and conserving California ecosystems requires restoring historical fire regimes (see e.g. Sierra Nevada Ecosystem Project Report, 1996).

For all of these reasons, the Federal Wildland Fire Management Policy and Program Review (1995) states that one of the guiding principles of federal wildland fire management include the incorporation into the planning process of the role of wildland fire as "an essential ecological process and natural change agent". Post-fire succession is an integral part of the ecological process of wildland fire. If the Forest Service intends to follow scientific recommendations and federal policy on wildland fire, post-fire succession should be allowed to proceed without tampering or disruption. This issue was also covered in my conversation with the Forest Botanist, but it also is not addressed in the EA.

When the adverse impacts to soils and to post-fire plant and animal communities are added to the risks of applying herbicide in identified sensitive plant habitat, the potential damage from this project clearly outweighs any potential benefits.

Relief Requested

We request that the project design be altered so that no herbicide is applied within stands including any identified *C. westonii* habitat, including populations that are not thought to be currently active. This would remove approximately 1,277 acres from the project area (BE, Table 2) where the plant may well be present and viable although not currently visible or obviously active. Reduction of the size of the treated area would also reduce the extent of the other potential adverse impacts to the post fire ecosystem and site productivity discussed above.

CNPS understands and acknowledges the Forest Service's mandate to produce timber in some areas. However, it is not clear to us that this 1,277 acres of rare plant habitat is essential to that mission. The EA itself implies that this site may be relatively unsuitable for timber production, noting that past reforestation efforts have failed and that the area

was lightly forested before the fire (p. 2). We suggest that this small area should be managed for the conservation of *C. westonii*, the post fire plant community generally, and any other rare and common plant and animal species which may inhabit it. Conservation of *C. westonii* may include measures such as prescribed fire or other vegetation management. However, herbicide use is clearly inappropriate in sensitive plant habitat.

We appreciate your consideration of this appeal.

Sincerely,

Emily B. Roberson, Ph.D.
Senior Land Management Analyst

CC. Del Pengilly, District Ranger, Hot Springs District.

References

- Agee, J.K. 1993. Fire Ecology of Pacific Northwest Forests. Ch. 6. Island Press, Washington, DC.
- Amaranthus, M.P. and D.A. Perry. 1989. Interaction effects of vegetation type and Pacific madrone soil inocula on survival, growth, and mycorrhiza formation of Douglas-fir. *Canadian Journal of Forestry Res.* 19: 550-6.
- Binkley, D. 1986. Forest Nutrition Management. John Wiley & Sons, New York.
- Borchers, S.L. and D.A. Perry. 1990. Growth and ectomycorrhiza formation of Douglas-fir seedlings grown in soils collected at different distances from pioneering hardwoods in southwest Oregon clear-cuts. *Canadian Journal of Forestry Res.* 20: 712-21.
- Chang, C-R. 1996. Ecosystem responses to fire and variations in fire regimes. In: Sierra Nevada Ecosystem Project, Final Report to Congress, Vol. II, Assessments and Scientific Basis for Management Options. University of California, Centers for Water and Wildland Resources, Davis, CA.
- Cox, C. 1995. Glyphosate, Part 2: Human exposure and ecological effects. *J. Pesticide Reform* 15(4): 14-20.
- Levesque, C. A. and J.E. Rahe. 1992. *Ann. Review Phytopathology* 30:579-602.

- Roberson, E.B., S. Sarig, and M.K. Firestone, 1991. Cover crop management of polysaccharide-mediated aggregation in an orchard soil. *Soil Science Society of America Journal* 55(3): 734-9.
- Segawa, R., A. Bradley, P. Lee, D. Tran, J. Hsu, J. White, and K.S. Goh. 1997. Residues of forestry herbicides in plants of importance to California Native Americans. *Bull. Environ. Contam. Toxicol.* 59: 556-563.
- Skinner and Pavlik, B.M. 1994. California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California. 5th Edition. California Native Plant Society, Sacramento, CA.
- Swadener, C. 1993. Triclopyr. *J. Pesticide Reform* 13(3): 29-35.
- U.S. Department of the Interior and U.S. Department of Agriculture. 1995. Federal Wildland Fire Management Policy and Program Review. National Interagency Fire Center, Boise, ID.
- U.S. Forest Service, 1988. Final Environmental Impact Statement Pacific Southwest Region Vegetation Management for Reforestation.
- Vitousek, P.M. and P.A. Matson. 1984. Mechanisms of nitrogen retention in forest ecosystems: a field experiment. *Science* 225: 51-2.
- Wirtz, W.O. 1995. Responses of rodent populations to wildfire and prescribed fire in southern California chaparral. In: J.E. Keeley and T.Scott, eds. *Brushfires in California Wildlands: Ecology and Resource Management*. International Association of Wildland Fire, Fairfield, WA.