

GETTING BURNED BY LOGGING

Forest Service Abuse of the National Fire Plan in the Sierra Nevada

By Chad Hanson



Manter post-fire salvage logging project, Sequoia National Forest. The Forest Service Claimed this area was totally consumed by the Manter fire. They proposed to remove most of the trees, despite occupancy by imperiled Pacific Fishers. Substantial modifications were later made to this project as a result of public pressure.

Photo: Rachel Fazio, JMP

John Muir Project, P.O. Box 697, Cedar Ridge, CA 95924
(ph) 530-273-9290 (fax) 530-273-9260
chadhanson@juno.com
www.johnmuirproject.org

Special thanks to Simon Flory who, as an intern at the John Muir Project, helped gather information for this report.
Designing and produced by: Patagonia and René Voss, JMP

**THE JOHN MUIR PROJECT
OF EARTH ISLAND INSTITUTE**



Report author Chad Hanson doing forest monitoring in the Sierra Nevada.
Photo: René Voss, JMP

Introduction & Background

In the aftermath of the fire season of 2000, during which about seven million acres burned, the Clinton administration requested that the Agriculture Department, which houses the U.S. Forest Service, and the Interior Department produce a report on how to approach wildland fire management. That report, "Managing the Impact of Wildfires on Communities and the Environment," also known as the "National Fire Plan," was issued on September 8, 2000. The focus was on fire-management practices on Western federal lands.

Some members of Congress wished to use the 2000 fire season as a political tool to push for increased commercial logging on national forests, supposedly to reduce severe fires. The National Fire Plan (NFP), however, was quite clear on this point. It warned that the Forest Service should "not rely on commercial logging or new road building to reduce fire risks," because the "removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk." The NFP further noted that "in the most recent period (1980 through 1999), the data indicate that fewer acres burned in areas where logging activity was limited." It concluded that logging removes the larger, more fire-resistant trees, and leaves behind flammable twigs, branches and needles ("slash debris"). It further concluded that, based upon existing science, "logging and clearcutting can cause rapid regeneration of shrubs and trees that can create highly flammable fuel conditions within a few years of cutting." See National Fire Plan, pp. 11-12. Commercial logging necessarily focuses on the removal of economically valuable mature trees, generally between 12 and 30 inches in diameter. This reduces forest canopy cover, causing far more sunlight to reach the forest floor, which results in rapid growth of flammable brush and creates hotter, drier conditions.

The NFP argued against using timber sale operations (i.e., commercial logging), to reduce severe fire incidence. Instead, it urged the reduction of flammable "undergrowth"

- shrubs, weeds, twigs and saplings - through prescribed burning and where necessary through manual reduction. (This small-diameter undergrowth is also described by the NFP as "hazardous fuels.") See National Fire Plan, p. 11, 14. The NFP specifically directed that the top priority must be to reduce risk of severe fires "adjacent to, and within, communities." *Id.*, p. 17. It recommended that Congress appropriate funds for such activities and to rehabilitate severely burned landscapes adjacent to communities by planting trees and stabilizing soils by placing bundles of straw where erosion is most likely. *Id.*, p. 23.

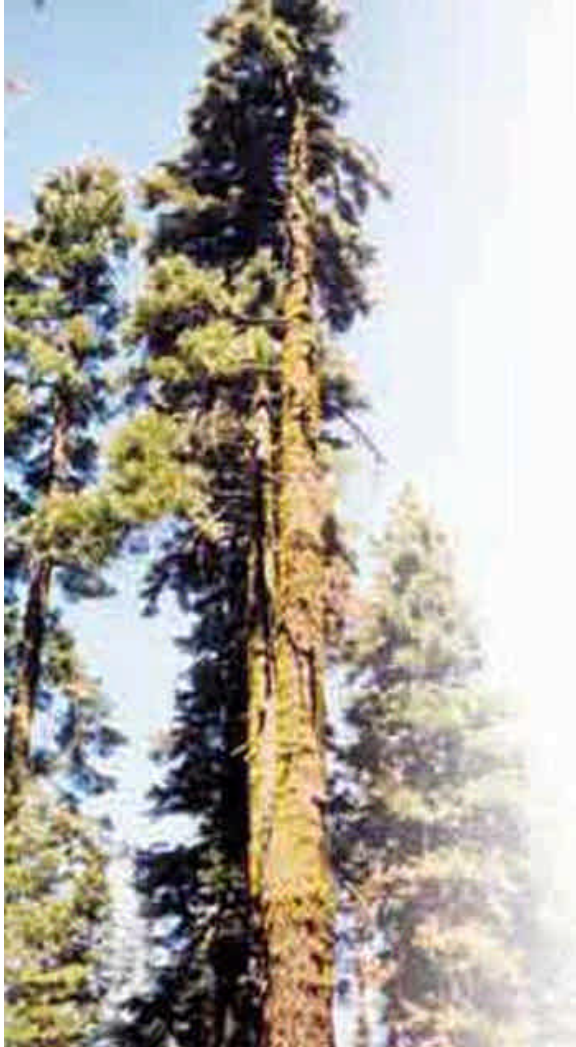
Shortly thereafter, Congress appropriated \$120 million for "emergency hazardous fuels reduction" (Title IV of the Appropriations bill), and \$142 million for "rehabilitation and restoration of burned areas." An additional \$86 million was appropriated for "non-emergency hazardous fuels" reduction (Title II of the Appropriations bill). The appropriations language made clear that these funds were to be spent on activities within and adjacent to communities. However, as the analysis that follows demonstrates, the Forest Service has used these funds primarily to finance large commercial logging projects in the Sierra Nevada that focus on the removal of mature trees miles from the nearest towns.

Answers to Frequently Asked Questions

Does more acreage burn annually now vs. historically in the U.S.?

No. According to the web site of the National Interagency Fire Center, in the early 1900s, before the era of full-scale fire suppression, far more acres burned than do currently. For instance, between 1919 and 1929, a total of 26,004,567 acres in the U.S. burned, and in the 1930s, 39,143,195 acres burned. Thus, despite all of the rhetoric about the 2000 fire season, in reality the seven million acres that burned that year comprised just one-fourth or one-fifth of the acreage

burned annually in the early 20th century. What's more, according to Forest Service data compiled by the Pacific Biodiversity Institute (www.pacificbio.org), only about 15% of the acres burned were on national forest lands. Most of the area burned in the West is not forest at all, but rather grasslands and chaparral.



Storrie post-fire salvage logging project, Lassen National Forest. The Forest Service proposes to virtually clear-cut this old-growth stand claiming it was totally consumed in a fire.
Photo: Rachel Fazio

Does logging or "thinning" reduce the incidence of severe fires?

No. As the National Fire Plan points out, logging increases the risk of severe fires. "Thinning" is a term used by the Forest Service to describe commercial logging projects, which focus on the removal of mature trees generally between 12 and 30 inches in diameter. Thinning is a badly misused and misunderstood term. Many people mistakenly believe that thinning is synonymous with "undergrowth reduction," but nothing could be further from the truth. "Thinning" projects are timber sales, and logging corporations have no interest in shrubs, saplings and twigs. They want to remove economically valuable mature trees

on national forests - an activity that increases the incidence of severe fires, according to the government's own science.

A Forest Service study that investigated the impact of various types of commercial logging projects - including thinning timber sales - on fire behavior concluded that, "All harvest techniques were associated with increasing rate of spread and flame length... Logged areas generally showed a strong See "Fire Weather," U.S. Forest Service, Agriculture Handbook 360 (1970). In addition, forest scientists, such as Dr. Steven Radosevich of Oregon State University, have concluded that reduction in forest canopy caused by logging activities increases the amount of sunlight that reaches the forest floor, which causes a marked increase in growth of flammable weeds, shrubs and saplings. See Comments of Dr. Radosevich on the Draft Supplemental EIS for the Quincy Library Group logging plan (12/2001).

Denny Truesdale, a fire expert in charge of implementing the National Fire Plan for the Forest Service, stated repeatedly in an August 10, 2000 interview on the C-SPAN program "Washington Journal" that mature trees should not be removed to reduce fire risk. Truesdale stated several times that what is needed is to reduce small diameter undergrowth - material that is generally less than three inches in diameter. It is telling that the Forest Service's model for predicting fire spread, known as the BEHAVE model, does not even account for material larger than three inches in diameter.

Finally, it must be noted that logging equipment itself is a major cause of wildland fires, since this equipment generates tremendous heat and throws sparks. The web site for the Plumas National Forest states that individuals are prohibited from cutting firewood between June 28th and the end of summer in order to prevent fires caused by chainsaws. Yet large-scale commercial logging operations are not prohibited during this period. On the contrary, summer is when most timber sales are logged.

How far from homes must hazardous fuels be reduced in order to protect structures?

About 150 to 200 feet. The so-called "Urban/Wildland Intermix Zone: is a misnomer because it misleadingly implies a large area. The Forest Service has taken advantage of this in the Sierra Nevada by arbitrarily defining the Urban/Wildland Intermix Zone as a 1.5-mile-wide area around virtually any structure or road, regardless of whether people actually live nearby. The Forest Service's own expert on this issue, Jack Cohen, has produced scientific reports concluding that a zone no greater than 40 meters is actually needed to protect homes from even the most severe fires, and that larger zones are ineffective. (See "Reducing the Wildland Fire Threat to Homes: Where and How Much?" Jack D. Cohen, U.S. Forest Service, Research Physical Scientist, Fire Sciences Laboratory, Rocky Mountain Research Station, 1999.)

According to Cohen, it is best to reduce the flammability of the home itself, along with its immediate surroundings - an area within roughly 200 feet of the home. This, Cohen refers to as the "Home Ignition Zone." Specifically, homeowners should replace wood-shingle roofs with fire-retardant material, clean needles out of gutters and reduce

flammable brush and saplings near the home. The Forest Service can and should assist this process, both with technical support and/or grants. But most Home Ignition Zones do not extend onto national forest land, or if they do, generally extend less than 100 feet, depending upon where the home is situated. Thus "thinning" projects miles into the national forest system are not really about protecting homes at all despite what the Forest Service may claim. The National Forest Protection and Restoration Act (HR 1494) protects forest habitat and homes, reducing the incidence of severe fires by ending the timber sales program on national forests nationwide. The bill redirects current logging expenditures into a science-based ecological restoration jobs program to reduce unnaturally excessive undergrowth, where appropriate, through prescribed burning and manual means. The bill also allocates funds to provide technical assistance and grants to homeowners who live near the forest to help them fireproof their homes and the property adjacent to their homes.

Are Sierra Nevada forests more "dense" now than they were in presettlement times?

No. The timber industry and its supporters often misrepresent historical data and claim that Sierra Nevada forests were less dense, or "open and parklike" in "presettlement" times. Logging corporations and the U.S. Forest Service make this claim to advance their self-serving goal of increased logging on national forests. The Sierra Nevada Ecosystem Project Report, however, points out the following:

"J. Goldsborough Bruff, a forty-niner who traveled the western slopes of the Feather River drainage between 1849 and 1851, kept a detailed diary. He clearly distinguished between open and dense forest conditions and recorded the dense condition six times more frequently than the open. Many other accounts of early explorers (e.g., John C. Fremont, Peter Decker, William Brewer), identify dark or impenetrable forest; the presettlement forest was far from a continuum of open, parklike stands." (Sierra Nevada Ecosystem Project Report, Vol. 1, p. 63, 1996.)

Some areas would naturally have been more open, due to earlier wildland fires, but such conditions were not predominant. Most scientists do, however, tend to agree that in some areas there is a greater accumulation of undergrowth now than in previous years, due primarily to logging activities and fire suppression. Yet this is not a situation that could or should be remedied by logging corporations, as this flammable underbrush is very small in diameter (generally less than a few inches), and has no commercial value. Besides, the involvement of logging corporations in efforts to implement science-based ecological restoration is questionable at best. Such restoration should be directly funded by Congress and carried out by scientists and experts, not the timber industry.

A recent book commissioned and funded by California timber interests shows numerous historical photographs of Sierra Nevada forests contrasted to recent photos of the same areas. The author claims these images show that Sierra forests were less dense in "presettlement" times, and predictably calls for increased commercial logging. (See

George E. Gruell, *Fire in Sierra Nevada Forests*, 2001.) Despite its suppositions, the book does not support its author's conclusions. Most of the present-day photos show no significant difference in forest density compared to the photos of yesteryear. Also, every one of the historical photos was actually taken decades after settlement and logging had begun. Therefore the "openness" shown in some of the historical photos is the result of logging and grazing by settlers, mining companies and railroads. In many of the historical pictures, stumps and logging trails are clearly visible, as are log cabins and corrals cut from surrounding trees.

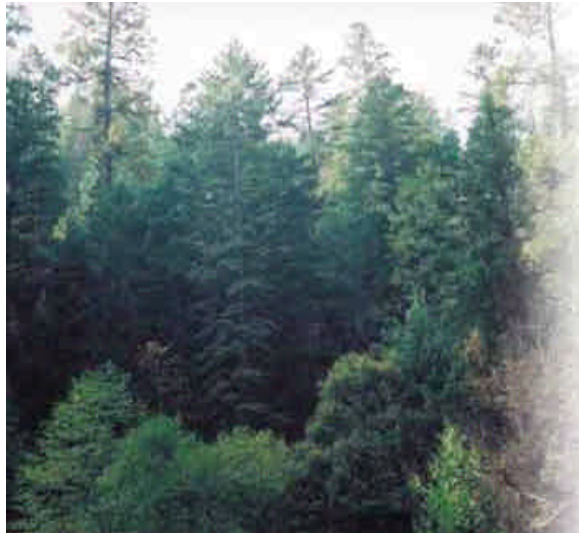
A few of the photos do show present-day forest stands that were sparsely forested or unforested due to earlier fires that killed some of the trees. In these cases the author has done nothing more than capture the natural cycle of fire and forest regeneration. Interestingly, he does not include any photos of areas once densely forested that are now sparsely forested or unforested due to recent fires. The book also conveniently leaves out the many before-and-after photos that would show areas once densely forested that are now clearcuts or sparsely forested due to intensive commercial thinning. Neither does it explain how Sierra forests could have been predominantly "open," given the fact that countless native Sierra Nevada bird and animal species require dense, closed-canopy forest conditions for some or all of their lifecycles. These species have been in Sierra forests for millennia, which by itself indicates that Sierra forests were once largely dense with heavy canopy cover.

Jo Ann Fites, a forest ecologist with the Tahoe National Forest who helped to author the Sierra Nevada Ecosystem Project Report, has stated the evidence indicates that between 30% and 80% of presettlement Sierra forests were old-growth. (She noted that actual old-growth percentages could have been even higher, due to the fact that these figures are based upon data collected in the 1880s, after logging had already begun.) She pointed out that today, only 10% of Sierra forests are old-growth due to extensive logging. Fites made clear that both surface fires and crown fires occurred naturally in presettlement Sierran forests, and that these forests had 40 to 60% canopy cover in drier sites and 50 to 90% canopy cover in wetter sites, with dense understories in some areas and more open understories in others. "Very few openings" occurred historically in Sierra mixed-conifer forests, she noted. Forest Conference, panel presentation, Grass Valley, CA, 1/26/02.

Does fire "destroy" forests in the West?

No. As the Sierra Nevada Ecosystem Project Report points out, wildland fire is a natural and necessary part of forest ecology in Sierra Nevada forests. Biodiversity, plant reproduction, vegetation development, wildlife habitat relationships, soil function, nutrient cycling and gene flow depend on wildland fire. See Sierra Nevada Ecosystem Project Report, Vol. 1 (1996). In most cases, wildland fires merely scorch, but do not kill, mature trees. Larger trees have thick, fire-resistant bark and are adapted to periodic fires. Where fires do kill larger trees, these dead trees, or "snags," provide critically important habitat for sensitive bird and animal species. When snags fall, they provide denning habitat for small mammals and other species. They also allow small animals, such as the imperiled Pacific

fisher (a mink-like mammal, of which only 100 to 500 remain in the Sierra Nevada), to avoid predation by traveling through the forest alongside these large logs. The Forest Service typically claims that a given fire has "destroyed" the forest in order to justify "salvage" timber sales and downplay the environmental impacts of such logging. However, in case after case where environmental advocates have conducted field surveys on these sites, the agency's claims have turned out to be wildly exaggerated. Usually the forest is quite healthy and alive, and the fire did little more than reduce undergrowth and create a few snags for wildlife. (Keep reading for a more detailed discussion on this.)



Storrie post-fire salvage logging project, Plumas National Forest. The Forest Service has categorized this forest as an area that experienced a "high-intensity" burn, and is proposing intensive salvage logging.
Photo: Rachel Fazio, JMP

Review of "Hazardous Fuels" Projects in the Sierra Nevada

Methodology

The John Muir Project (JMP) requested from the Forest Service a list of all projects funded by National Fire Plan monies on national forests in the state of California. JMP received a list of projects funded through the "emergency hazardous fuels" (Title IV) appropriation for the NFP. Despite repeated requests, the Forest Service refused to send information on the use of their "non-emergency hazardous fuels" (Title II) NFP funds.

The list sent to JMP included the following information for each NFP-funded project: 1) name of the project; 2) national forest involved; 3) project status (i.e., whether it is in the planning stage "proposed," intermediate stage in which a final decision has been made but implementation had not yet begun, "planned," or the implementation stage

"active"; and 4) the amount of money proposed or allocated for the project. JMP focused its review only on new projects - those in the "proposed" stage in FY 2001 - which the Forest Service will seek to implement in 2002. JMP's review looked at Lassen, Plumas, Tahoe, Eldorado, Stanislaus, Sierra, and Sequoia national forests.

The goal was twofold: 1) to determine whether NFP funds were being used to prepare commercial logging projects on these national forests despite the NFP's explicit admonition that these funds should not be used for such a purpose; and 2) to find out if these projects were being conducted within or immediately adjacent to communities as the NFP directed. JMP identified several dozen commercial logging projects funded with NFP monies on these forests, and requested the relevant environmental documents and maps for each. In several cases the documents were never received, though in most cases they were. Some of the environmental documents covered three or four distinct commercial logging projects in a single analysis.

In all, JMP received 16 different sets of documents - most of them on the Lassen and Plumas national forests. In every case on these two forests, projects were being prepared pursuant to the Quincy Library Group Plan (QLG). The QLG is a logging plan that covers management activities on the Lassen and Plumas national forests, as well as a portion of the Tahoe National Forest. The environmental documents analyzed for this review include the Treatment Unit 1, Cone/Crater, Mineral, North Coble, and Pegleg A-21 projects on the Lassen National Forest; the Cold, Crystal Adams, Humbug, Jura, Poison, Stony Ridge, Upper Slate, Waters, and Last Chance projects on the Plumas National Forest; the Hazel project on the Eldorado National Forest; and the Jose Basin project on the Sierra National Forest. Generally, each of these projects would affect several thousand acres of national forest land.

Seven distinct questions were asked with respect to each project. The answers to these questions follow, in some cases accompanied by a brief discussion.

The Results

What portion of all new NFP-funded projects on Sierra Nevada national forests are commercial logging projects (i.e., timber sales)?

Answer: 83%

What portion of all new NFP-funded commercial logging projects on Sierra Nevada national forests focus on the removal of flammable undergrowth?

Answer: none

What portion of all new NFP-funded commercial logging projects on Sierra Nevada national forests focus on the removal of "large" trees, as defined in the Fire and Fuels section of the new Sierra Nevada Forest Plan?

Answer: 75%

For fire/fuel purposes, the Sierra Nevada Forest Plan defines "large trees" as being at least 12 to 24 inches in diameter. See Sierra Nevada Forest Plan FEIS, Vol. 4, App. G-14 (2001).

What portion of all new NFP-funded commercial logging projects on Sierra Nevada national forests are in mature or old-growth forest suitable for imperiled species such as the California spotted owl or Pacific fisher?

Answer: 94%



The Forest Service creatively defines "undergrowth" to include large, mature trees, such as the one marked for removal. Such practices are the rule, not the exception.

Photo: Rachel Fazio, JMP

The most shocking abuse of NFP funds is occurring with regard to the Quincy Library Group "Administrative Study." Through this enormous logging project, 70,000 acres of intensive commercial thinning zones known as "Defensible Fuel Profile Zones" (DFPZs) will be created in the first three years alone within suitable habitat for the California spotted owl on northern Sierra national forests. Trees up to 34 inches in diameter would be removed, and forest canopy cover would be reduced to as little as 40% in areas that generally have between 50% and 90% canopy cover. See QLG Administrative Study Draft Plan, pp. 14-15, Tables 3, 4 (Sept. 12, 2001).

Amazingly, the QLG Administrative Study Draft Plan claims the reason for this "study" is to see if large levels of further habitat destruction and degradation will harm populations of the California spotted owl. See QLG Admin. Study Draft Plan, p. 1. This pretext is particularly

outrageous in light of the fact that according to the Forest Service's own recent scientific studies California spotted owl populations are now declining by roughly 7% to 10% each year, due in large part to habitat degradation and loss caused by logging. See Gutierrez et al, "Population Ecology of the California Spotted Owl in the Central Sierra Nevada: Annual Results 1998," U.S. Forest Service, pp. 1, 12 (1999). One pair of Forest Service scientists found that spotted owls were declining by nearly 8% per year in the northern Sierra due in large part to logging. See Noon & Blakesley, "Demographic Parameters of the California Spotted Owl on the Lassen National Forest," U.S. Forest Service, pp. 1, 15 (1999). They expressed particular concern over the QLG logging plan, noting that "large diameter trees will be the obvious targets during these harvest operations." Id., p. 16. They suggested that the Fish and Wildlife Service should seriously consider listing the owl as a threatened species under the Endangered Species Act in order to protect it from such logging. Id.

The Forest Service has thus far refused to prepare an environmental impact statement on the entire QLG "Administrative Study" Plan, choosing instead to compartmentalize the analysis into 12 separate units covering different portions of the area to be logged - a practice that the National Environmental Policy Act explicitly forbids. Thus, the full extent of the environmental impacts will not be disclosed to the public. The first portion of the plan would be implemented through "Treatment Unit 1" on the Lassen National Forest - a project that was analyzed as part of this report.

What portion of all new NFP-funded commercial logging projects are primarily within 200 feet of homes? (i.e., within the "Home Ignition Zone" described by Forest Service researcher Jack Cohen - see discussion page 3.)

Answer: none

For all new NFP-funded commercial logging projects on Sierra Nevada national forests, what is the average distance from the project to the nearest town?

Answer: About six or seven miles

Only three of the 16 projects analyzed had any portion of their project area within a mile or so of the nearest town of any size. Even with these three, the vast majority of the project area was several miles from the nearest town. Overall, nearly all of the management activity proposed (mostly commercial logging), was deep in the forest, far from even the smallest towns. One of these logging projects is planned within a roadless area.

The Forest Service claims all of these projects are entirely within the "Urban/Wildland Intermix Zone," due to the fact the agency cleverly (and deceptively) defines this zone as a 1.5-mile radius around virtually any human structure. Remote roads, outhouses, picnic benches and backcountry camps are all defined as "urban," thus allowing the Forest Service to draw a 1.5-mile radius around such structures and propose so-called "hazardous fuel reduction" projects within the boundaries. In nearly every case, these projects are commercial logging plans that focus on the removal of

large, merchantable trees. They degrade the forest canopy cover in mature forests that are home to imperiled species like the California spotted owl.

What portion of all funds proposed for new NFP projects on Sierra Nevada national forests are being used for commercial logging projects?

Answer: 97%

A total of \$15,482,218 was proposed for new NFP projects on Sierra Nevada national forests - \$15,022,218 of that for commercial logging projects. Most of these projects do contain some minor component not directly related to commercial logging, such as prescribed burning. Yet the vast majority of NFP project funds are intended for logging. More exact estimates are not possible given the Forest Service's poor accounting methods.

Review of Post-Fire "Restoration" Projects

When wildland fires burned on national forest lands in the Sierra in 2000 and 2001, without exception, the Forest Service proposed so-called "restoration" projects, which turned out to be large timber sales focusing on the removal of mature and old-growth trees in remote areas. In these cases, the Forest Service claims that: 1) the best way to rehabilitate these areas is to remove nearly all of the large, merchantable trees that were supposedly killed by fire (the Forest Service refers to this as "salvage" logging); and 2) burned trees must be removed ostensibly in order to prevent a severe "reburn" of fire-killed trees in the future.

Though the NFP clearly did not envision its funds being used for timber sales, in some cases its "burned area restoration and rehabilitation" monies are employed for exactly that purpose. Rehabilitation funds were supposed to pay for such things as planting trees in severely burned areas and stabilizing slopes to prevent erosion near homes. Yet at least two of the large post-fire timber sales discussed in this document are inappropriately using NFP rehabilitation funds for salvage logging of mature and old-growth trees: The Gap Fire Project on the Tahoe National Forest (\$980,000 of NFP rehabilitation funds proposed for salvage logging); and the Star Fire project on the Eldorado National Forest (\$750,000 of NFP rehabilitation funds proposed for salvage logging, with an additional \$50,000 for planning). In addition, JMP's on-the-ground site inspections of these post-fire salvage logging projects revealed that in case after case the Forest Service has been vastly overstating the effects of these fires and the number of trees killed. In every case the JMP investigated, the majority of the area proposed for logging contained an insignificant number of dead trees.

Forest Service Caught Marking Live Trees "Dead"

For example, on the Lassen National Forest, the deceptively-named "Storrie Post-Fire Restoration Project" (Storrie Project), proposed to remove 50 to 100% of the

mature and ancient trees from 1,000 acres of old-growth forest the Forest Service classified as "high intensity" burn areas. The Forest Service claimed that virtually all of the trees in these areas were killed by the fire, and that they were only going to remove "dead" trees. In addition, they proposed to remove a large number of supposedly "dead" trees on an additional 2,500 acres of "low intensity" burn areas, as well as construct four miles of logging roads. See Storrie Project Environmental Assessment, Ch. 2, pp. 2-7, Ch. 1, pp. 1-9 (2001). All told, the Forest Service proposed to remove approximately 69 million board feet of old-growth timber - enough to fill log trucks bumper to bumper in a continuous chain stretching over 200 miles. See *Id.*, Ch. 3, p. 57, Table 3-15 (see Alt. 4). It is one of the largest timber sales ever proposed in the history of Sierra Nevada national forests, one that would affect eight nesting sites of imperiled California spotted owls. About 90% of the logging would occur within a designated "Old Forest Emphasis Area."



Storrie post-fire salvage logging, Plumas National Forest. The Forest Service Claims that virtually all of the trees in this stand were killed by fire.
Photo: Rachel Fazio

Along with activists from the Sierra Club's Lassen Forest Preservation Group, the John Muir Project visited the site of the Storrie Project and found that many areas marked as "high intensity burn areas" on the sale maps did not even appear to have been burned at all. The other areas marked as "high intensity burn" generally showed some scorching on the trunks and/or crowns of the trees, but the vast majority of the trees were alive, and very, very few were burned so badly that their death could be accurately predicted. Nevertheless, the Forest Service issued a decision notice to remove most of the trees in these areas. Many areas would be virtually clearcut. Fortunately, environmental groups submitted administrative appeals against this project and their appeals were upheld. However, the Forest Service has now announced that it will bring this project back for a second attempt and that it will be essentially the same project as before.

A similar situation was found on the Plumas National Forest, where a large salvage logging project was proposed

after a portion of the Storrie fire burned into that area. The Forest Service proposed to remove all "dead" trees over 12 inches in diameter. (Smaller trees were not deemed to be "merchantable.") JMP's site inspection revealed that some areas were indeed severely burned, but that these areas generally contained no trees over 12 inches in diameter. Some severely burned areas contained four or five trees per acre over 12 inches in diameter, but this number of dead trees is required to be left for wildlife under current regulations. The remaining areas - where the vast majority of the logging was obviously planned to occur - were mature and old-growth forests that contained many large trees but evidenced little if any actual tree mortality. These areas were generally burned very mildly or not at all. This project was also successfully appealed in 2001 by JMP, Forest Conservation Council and other environmental groups. But the Forest Service likely intends to bring it back as well.

In the Sequoia National Forest, the Forest Service proposed in 2001 to salvage log more than 1,300 acres of mature and old-growth forest in the wake of the Manter fire, claiming that this area was "consumed" by the fire. The area proposed for logging is one of the last homes of the severely imperiled Pacific fisher, all of which reside in the southern portion of the range. The Forest Service claimed the area was so severely and completely burned that it would make no difference to the fisher whether it was logged, despite the fact that its own documents acknowledged that live fishers had twice been confirmed within the project area after the fire. See Manter "Restoration" Project Environmental Assessment (2001).

JMP twice visited the Manter project area and found that the vast majority of the area proposed for salvage logging was either mildly burned or unburned. A few small pockets comprised of smaller trees did show high mortality. Interestingly, the largest of these areas were the result of Forest Service "backburning" during the fire. (As a means of fire control, the Forest Service will often deliberately burn and kill all of the trees in the path of the fire to prevent the fire from growing, and will later salvage log the "backburned" areas.) Most other pockets of high mortality were only a few acres in size, often in areas that had been commercially thinned in the recent past. Confronted with the evidence, the Forest Service was forced to make some adjustments resulting in a substantial reduction of salvage logging in the area.

In response to the Gap Fire of 2001, the Tahoe National Forest is now proposing to salvage log 1,000 acres of mature forest to remove "dead trees." JMP's site inspection found that much of the project area is green and healthy, with no significant evidence of fire. Only a small portion of the area had been severely burned.

Great concern has also arisen around plans by the Tahoe and the Eldorado national forests to conduct a massive salvage logging plan in the old-growth forest burned by the Star Fire. The logging would occur in forest that is home to several nesting pairs of California spotted owls. The Forest Service is also considering salvage logging within roadless areas.



Storrie post-fire salvage logging project, Plumas National Forest. High mortality rates from fire are found more frequently in stands comprised of very small, unsalable trees, and infrequently found in old-growth forest. However, the Forest Service proposes to salvage log only large trees in mature stands.

Photo: Rachel Fazio, JMP

"They're Dead, They Just Don't Know It Yet," Says the Forest Service

With the exception of the Manter project, these post-fire salvage logging projects all use the tree mortality guidelines developed by Forest Service entomologist Sheri Lee Smith on November 8, 2001. In order to justify large salvage logging projects, these guidelines allow living trees to be considered "dead" if they experience more than 65% crown scorch. However, mature conifers generally survive significantly greater crown scorch than this. For example, one study concluded that for Douglas fir, western red cedar, lodgepole pine and western larch, between 45% and two-thirds of the trees could be expected to survive 60% crown scorch if they had bark between two and three centimeters thick. (The authors stated that bark thickness over three centimeters is found in Douglas fir and western larch, but is uncommon in western red cedar or lodgepole pine.) See Ryan, Kevin C. and Reinhardt, Elizabeth D., "Predicting postfire mortality of seven western conifers," U.S. Forest Service, Intermountain Fire Sciences Laboratory, Intermountain Forest and Range Experiment Station, p. 1294, Fig. 2, published in *Can. J. For. Res.* Vol. 18 (1988). Even with more than 80% crown scorch, roughly one-third of such trees could be expected to survive. Id. Slightly higher mortality was found for western hemlock. Id. For Douglas fir and western larch with bark between four-and-a-half and five centimeters thick, more than half of the trees could be expected to survive even at 80% crown scorch. Id.



Storie post-fire salvage logging project, Lassen National Forest. John Muir Project staff and Sierra Club members confront Forest Service personnel on their plans to salvage log this stand.

Photo: Rachel Fazio, JMP

Another study by the same authors concluded that Douglas fir 35 centimeters in diameter at breast height (about 14 inches dbh), have a 30% chance of survival with roughly 83% crown scorch, and have a 50% chance of survival with roughly 63% crown scorch. The scale is linear, with increasing degrees of crown scorch necessary to predict the same probability of mortality as tree diameter increases. Continuing along their linear scale, most Douglas fir 50 centimeters in diameter (about 20 inches dbh), would be expected to survive 80% crown scorch. See Ryan, K., Peterson, D., and Reinhardt, E., "Modeling Long-Term Fire-Caused Mortality of Douglas-Fir," *Forest Science*, Vol. 34, No. 1, p. 197, Fig. 1 (1988).

Yet another study by Forest Service scientists developed a mortality model with general applicability for Western conifers. Their preliminary results indicated that in the absence of any significant cambial damage (cambium is the vascular system of the tree, and is located beneath the bark), a conifer with 90% crown scorch has about a 50% chance of surviving. David L. Peterson, U.S. Forest Service, Kevin C. Ryan, U.S. Forest Service, "Modeling Postfire Conifer Mortality for Long-range Planning," *Environmental Management*, Vol. 10, No. 6, p. 801-802, Fig. 5 (1986). Even with 50% cambial kill and 80% crown scorch, a Western conifer still has a better than 20% chance of survival, according to their model. Id. Yet the Forest Service's mortality guidelines consider mature conifers to be "dead" if they have as little as 65% crown scorch alone, even if there is no cambial damage at all. (The Sequoia National Forest stands as an exception, as it recently adopted mortality guidelines under which trees cannot be considered dead unless firs have at least 90% crown scorch and pines have at least 95% crown scorch.)

Even more troubling is the fact that these guidelines apply this same standard to pine species, which are known to survive even greater crown scorch than fir species. For example, one Forest Service study recommended that in order to avoid marking errors (i.e., inappropriately marking

trees "dead" that would otherwise survive), ponderosa pines should not be marked "dead" unless they have at least 90% crown scorch because significant numbers of ponderosas survive lesser crown scorch. James M. Saveland, Research Forester, U.S. Forest Service, and Leon Neuenschwander, "A Signal Detection Framework to Evaluate Models of Tree Mortality Following Fire Damage," *Forest Science*, Vol. 36, No. 1, pp. 73 - 75 (1990). Indeed, it was recently noted by Forest Service personnel that some mature ponderosa pines on the Sierra National Forest that experienced 100% crown scorch in a fire during the summer of 2001, were resprouting green buds (i.e., generating new foliage), by early 2002. (Personal communication with Forest Service employee Ross Peckinpah, 12/7/00).

Disturbingly, the agency's mortality guidelines also allow live trees to be considered "dead" if as little as 50% of the cambium is scorched, even if no portion of the crown is scorched. Yet scientists have repeatedly concluded that "a tree must be completely girdled to die from cambial damage alone." Wyant et al, "Fire Induced Tree Mortality in a Colorado Ponderosa Pine/Douglas-fir Stand," *Forest Science*, Vol. 32, No. 1, pp. 55-56 (1986). One Forest Service study found that for very small Douglas fir trees (about seven inches in diameter), substantial girdling (56 to 74%) of the cambium in combination with an average of 39% crown scorch would result in mortality. Ryan et al, "Modeling Long-Term Fire-Caused Mortality of Douglas-Fir," *Forest Science*, Vol. 34, No. 1, p. 192, Table 1 (1988). The study also acknowledged that significantly more severe burning than this would be required to kill large trees.

However, there is no reliable way to determine cambial damage in the field. Some scientific studies have taken core samples to labs to determine whether the cambium for various trees is dead. Even this method was deemed by Forest Service researchers to be so "destructive" that they recommended not using cambial damage as a means to determine mortality, noting that it "may have little applicability in forest management." Id., p. 195. The Forest Service's typical process of using an axe to hack into the tree and visually determine whether the cambium is dead is totally unreliable and inadequate. In addition, scientists have commented that this method damages the portions of the cambium that weren't killed by the fire, significantly increasing the odds that the affected trees will die, and creating a self-fulfilling prophecy.

Finally, the Forest Service's mortality guidelines are fatally flawed because they do not take into account the fact that mortality has been found to be far lower for late summer and early fall fires than for fires occurring in spring, when buds are developing. See Id., pp. 192-193; see also Swezy & Agee, "Prescribed-fire effects on fine-root and tree mortality in old-growth ponderosa pine," *Can. Jour. of For. Res.*, Vol. 21, No. 5, (1991). Most of the recent fires the Forest Service now proposes to salvage log occurred late in the fire season.

No Evidence of "Reburn"

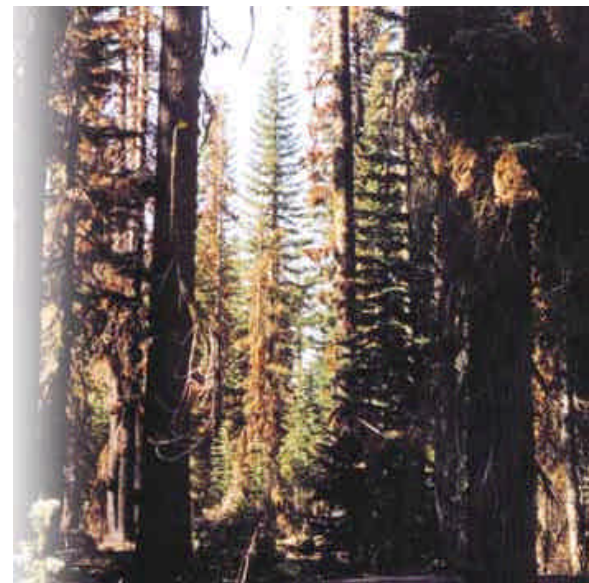
Even where these fires actually did kill some mature trees, however, the Forest Service's claim that fire-killed trees create increased risk of future severe fires is not supported by any scientific evidence whatsoever. Nor do the agency's

timber sale planners offer any empirical data to support this "reburn" hypothesis. Indeed, the U.S. Forest Service's own exhaustive scientific literature review on this subject concluded the following: "One of the ecological effects of post-fire logging most commonly mentioned as positive is reduction of large woody fuel, which is thought to reduce the intensity of a reburn occurring on that site in the intermediate term (Poff 1989). Following Beschta and others (1995) and Everett (1995), we found no studies documenting a reduction in the fire intensity in a stand that had previously burned and then been logged." McIver and Starr, "Environmental Effects of Post-fire Logging: Literature Review and Annotated Bibliography," U.S. Forest Service, PNW-GTR-486 (2000), p. 19; see also Beschta et al (1995), "Wildfire and Salvage Logging," Oregon State University ("no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn"); Everett, Richard (1995), Letter dated August 16, 1995 to John Lowe (Reviewing Beschta document and concurring with Beschta et al's conclusion that no scientific evidence supports the reburn hypothesis), on file with U.S. Forest Service, Pacific Northwest Research Station, Wenatchee, WA. The Forest Service is not bothering to collect any scientific data to address this question one way or another. Instead, the agency is conveniently assuming - in the complete absence of any data - that it must sell fire-killed trees to logging corporations who will cut them down and haul them away.

If anything, large down logs might mitigate fire severity. They soak up and store huge amounts of water (dead, fallen trees may hold two or more times their own dry weight in water). Fire Weather, U.S. Forest Service (1970), p. 185. In addition, they do not gradually dry out, but rather continue to store water. Even in a drought year, logs of 10 inches in diameter or so will only experience minimal drying. Very large logs take far longer to dry, especially where forest canopy has not been degraded and reduced by commercial thinning timber sales. Id., pp. 189-194. Ecological Benefits of Dead Trees Nor is there any credibility in the Forest Service's transparent, self-serving and absurd claim that salvage logging is the best way to "restore" the ecological integrity of the burned area. Burned and dead trees - particularly those over 15 inches in diameter - create important nesting/denning habitat for a host of old forest species, such as the California spotted owl and Pacific fisher. (The Sierra Nevada Forest Plan Record of Decision makes two references to the importance to wildlife of snags over 15 inches in diameter - see ROD, App. A-28, A-42). Bird and mammal species nest and den in cavities in large dead trees, or on the broken tops of such "snags." When dead trees fall over they create important denning habitat as well, since root fungus will create a large cavity inside the trunk of the fallen tree.

Numerous scientific studies have documented the beneficial ecological effects of fire and the importance of dead trees, as well as the ecological harm caused by salvage logging in burned areas. See Caton, Elaine Lisa (1996), "Effects of fire and salvage logging on the cavity-nesting bird community in northwestern Montana," Missoula, MT: Univ. of Montana (Ph.D. dissertation) (From Abstract: "Bird abundances and nest densities were lower in post-fire forest stands that were logged, and fewer sites in logged stands were suitable for nesting... Fire

maintains cavity nester diversity by providing plentiful foraging and nesting sites... Fire-created habitats that undergo little or no post-fire logging may become refugia for species facing rapidly dwindling sources of standing dead wood."); see also Hitchcox, Susan M. (1996), "Abundance and nesting success of cavity-nesting birds in unlogged and salvage-logged burned forest in northwestern Montana," Univ. of Montana (M.S. thesis) (From Abstract: "Unlogged areas had more cavity-nesting bird species nesting at significantly higher densities compared to salvage-logged areas."); McIver & Starr (2000), "Environmental Effects of Post-fire Logging: Literature Review and Annotated Bibliography," U.S. Forest Service, PNW-GTR-486, p. 18 ("Overall, despite some variation in the pattern of individual species response, many cavity-nesting birds are attracted to postfire environments and clearly are affected by the removal of large structure through logging activities.").



Storrie post-fire salvage logging project, Lassen National Forest. Another so-called "high-intensity" burn unit in an old-growth forest that the Forest Service seeks to nearly clearcut.
Photo: Rachel Fazio, JMP

Salvage Logging Destroys Soil, Causes Erosion

In addition, post-fire salvage logging - particularly tractor logging and logging road construction, which the Forest Service favors as methods for its salvage logging projects - causes erosion and serious damage to soil. Ironically, these are the exact things the NFP Rehabilitation funds were designed to prevent. See Beschta et al (1995), "Wildfire and Salvage Logging," Oregon State University; see also McIver and Starr (2000), pp. 11-12, 19-20; Swank et al (1989), "Effects of timber management practices on soil and water," U.S. Forest Service (erosion rates from logging are seven times higher than undisturbed sites, and erosion rates on landings and logging roads are 100 times those of undisturbed sites); Potts et al (1985), "Watershed modeling for fire management planning in northern Rocky Mountains," Res. Pap. PSW-177, U.S. Forest Service, Berkeley, CA, Pacific Southwest Forest and Range Experiment Station (sedimentation increases after large fires, but increases significantly more after post-fire

logging). This increased sedimentation caused by post-fire logging is particularly severe where high-intensity fires occurred. See Megahan and Molitor (1975), "Erosional Effects of Wildfire and Logging in Idaho," American Society of Civil Engineers. Erosion and resulting sedimentation is most severe with ground-based skidding systems. See Klock (1975), "Impact of Five Postfire Salvage Logging Systems on Soils and Vegetation," *Journal of Soil and Water Conservation*, 30(2):78-81. Most of the post-fire salvage logging proposed on Sierra Nevada national forests plan to primarily use ground-based skidding systems.

Post-Fire Salvage Logging Increases Fire Severity

Because the post-fire salvage logging projects described in this section would remove many living mature and old-growth trees, they would reduce forest canopy cover, creating hotter, drier conditions and increasing the growth rate of highly flammable weeds and shrubs. In addition, the removal of large dead trees would increase fire severity by creating large amounts of "activity fuels"(branches, twigs and needles), left behind by logging crews on the forest floor. Forest ecologist Jo Ann Fites recently pointed out that such surface fuels are the primary determinants of fire severity. Panel discussion, "A Conversation About the Forest," Jan. 26, 2002, Grass Valley, CA. In fact, during the January 17, 2002 public scoping meeting on the Gap Fire project at the Tahoe National Forest headquarters, the Forest Service's project leader for this timber sale reluctantly acknowledged that, "post-fire salvage increases fire danger for the first 20 years."

Conclusion

Based upon the results of this report, it is clear that in the first year of the Bush administration, the Forest Service has abused the policy and funding intent of the National Fire Plan rather dramatically. While the National Fire Plan wished the funds to be spent to reduce flammable undergrowth near homes, the Forest Service has overwhelmingly spent these funds on big commercial logging projects in the Sierra Nevada focused on removing large, mature trees miles from the nearest town. In addition, JMP's analysis of several post-fire projects showed that the Forest Service is taking National Fire Plan "rehabilitation" funds intended for tree planting and slope stabilization near communities, and instead using these funds to plan huge salvage logging timber sales in remote areas. Concern over this form of abuse is even greater in the near future in light of the Bush administration's recent appointment of Mark Rey, a former timber industry lobbyist, to the post of undersecretary of Agriculture - a position with responsibility for overseeing and managing the U.S. Forest Service. Rey and regional forester Jack Blackwell, who the Bush administration recently appointed to manage California's national forests, have already indicated they will substantially amend the new Sierra Nevada Forest Plan to allow far more logging.

Blackwell's memo on New Year's Eve of 2001 announced that the Sierra Plan may be amended to increase the size of trees that could be removed and to weaken the forest canopy retention requirements in so-called "hazardous fuels" projects (i.e., timber sales). His memo also stated that the Sierra Plan would definitely be amended to require full implementation of the QLG logging plan - a move that would increase logging levels on northern Sierra national forests at least twofold through construction of tens of thousands of acres of DFPZs. A federal court in California recently noted that based upon the existing scientific evidence, "DFPZ construction will result in increased growth of grasses, forbs and shrubs, including noxious and invasive weeds, because it involves thinning the stand of trees, which increases the amount of sunlight that reaches the forest floor... At some point, the amount of understory vegetation within a DFPZ cannot only compromise its efficacy as a fuel-break, but can result in greater fire risk than existed prior to the creation of the DFPZ." *Californians for Alternatives to Toxics v. Dombeck*, No. Civ. S-00-605 LKK/PAN (filed 6/12/01). Clearly, the Bush administration intends to violate the National Fire Plan even more severely in the future, promoting increased logging that will please timber industry campaign contributors, but will also destroy habitat and increase severe fire incidence.

The abuses detailed in this report are probably not limited to the Sierra Nevada region. It may well be that the Forest Service is guilty of similar misuse of National Fire Plan funds in other regions of the nation as well. Indeed, a recent investigation by the inspector general of the U.S. Department of Agriculture indicated that this is the case. See U.S. Dept. of Agriculture, Office of Inspector General, Western Region Audit Report, "Forest Service National Fire Plan Implementation," Rpt. No. 08601-26-SF, Nov. 2001. Among the several improprieties found by the inspector's office, was a situation on a national forest in Montana in which the Forest Service used nearly \$2 million of "NFP Rehabilitation and Restoration Program funds to prepare and administer projects involving commercial timber sales...." *Id.*, p. ii. The inspector general criticized this practice and deemed it to be an inappropriate use of funds.

It is clear at this point that as long as timber sales are legal on national forests, the Forest Service will use appropriated funds for commercial logging projects - regardless of the purpose for which the funds were intended. The consequences of this are degraded habitat on public lands and increased incidence of severe fires. Given this, perhaps Congress will recognize the wisdom of passing the National Forest Protection and Restoration Act. This legislation would end the timber sales program on national forests nationwide and redirect current logging program expenditures into an ecological restoration jobs program focused on habitat restoration and noncommercial reduction of flammable underbrush where unnatural accumulations occur due to past logging and fire suppression. As David Brower once said, "We are not so poor that we must log our national forests, nor so rich that we can afford to."