Restoration or Exploitation?

Post-Fire Salvage Logging in America's National Forests

A Report by American Lands Alliance

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Front Cover: *Before (insert bottom-left) and after photo of a post-fire salvage logging project in the O'Brien Creek watershed on the Kootenai National Forest, Montana. O'Brien Creek is one of the last streams used by threatened bull trout for spawning in the lower stretch of the Kootenai River system. The watershed also provides important habitat for grizzly bears. Photos by Jeff Juel.*

Back Cover: *In August 2003, a log truck hauls trees through Hamilton, Montana that were cut down as part of the Bitterroot National Forest's Burned Area Recovery Plan. Photo by Matthew Koehler.*

EXECUTIVE SUMMARY

Forests are among the most precious and beloved places on our continent, providing pure air, clean water, climate control and other ecosystem services that are vital to our quality of life and the survival of fish and wildlife. Regrettably, over a century of industrial logging and road-building have fundamentally altered many of America's forests, resulting in loss of habitat, mature and old growth forests and degraded water quality, as well as economic and social harm to communities and workers.

Post-fire salvage logging and associated road building are some of the most ecologically damaging management practices occurring on America's National Forests today. Despite this fact, post-fire salvage logging is currently being proposed in nearly every western state, and includes some of the largest logging operations ever proposed by the U.S. Forest Service. These salvage timber sale proposals make up nearly half the total logging volume planned for the entire National Forest System in 2003.

The report ***Restoration or Exploitation? Post-fire Salvage Logging in America's National Forests*** sheds light on the myriad of ecological impacts this damaging form of logging causes to our natural forest heritage, as well as the significant economic costs to American taxpayer's. This timely report provides current examples of ten of the most devastating salvage timber sale proposals being developed by the U.S. Forest Service following the Bitterroot, Biscuit, Hayman, McNally, Missionary Ridge, Red Star, Rodeo-Chediski, Tiller/Apple, and Toolbox fires. Other significant findings contained in the report include:

- Post-fire salvage logging causes extreme damage and often irrecoverable loss of sensitive forest soils, pollutes watersheds, destroys wildlife habitat, reduces the ability of forests to naturally regenerate, kills or damages surviving vegetation, creates significant future restoration costs, and increases fuel hazards and wildfire risks.

- Although post-fire salvage logging is often billed as a restoration or hazardous fuels reduction management practice, credible scientific evidence suggests the contrary. There is ample research, including research reviewed by the U.S. Forest Service *(see McIver and Starr, 2000)* that concludes post-fire salvage logging itself may actually increase the rate of spread, intensity, and severity of fires while there is little evidence in the scientific literature to support claims that salvage logging is necessary for restoration.

- Post-fire salvage logging has been almost exclusively focused on narrow, short-term economic motives to extract the maximum commodity timber value from burned forests as quickly as possible. Despite these economic incentives, most salvage timber sales result in a net loss to taxpayers.

- Due to global market forces that have produced a current "timber glut" in the U.S., the Forest Service is having increasing difficulties attracting willing buyers for salvage sales. In 2002, the Forest Service could only sell 69% of the salvage timber it offered for bid. In response, the agency often changed the sale terms in order to attract potential bidders, such as reducing minimum bid prices by up to 80%, and increasing the extraction of large-diameter trees. The net effect is to further increase the costs to taxpayers through additional planning expenses and reduced bid revenues, as well as an increase in the extraction of larger, more fire-resistant and ecologically valuable trees. When federal treasury costs are added to environmental costs, salvage logging adds up to an unacceptable loss to the American taxpayer.

PART ONE: INTRODUCTION

After the dramatic wildfire seasons of 2000 and 2002, the U.S Forest Service is proposing post-fire commercial "salvage" logging on sensitive landscapes at a scale that is unprecedented in recent history. Post-fire logging is proposed in nearly every western state. These logging proposals often dwarf regular "green tree" timber sales in volume, scale, and intensity of logging, sometimes offering tens of millions of board feet of trees in a single project. With these massive proposals come equally large environmental problems, such as damaging severely burned and highly erosive soils, and producing increased sediment that threatens sensitive aquatic species and habitats. And even though the Forest Service has done post-fire logging for nearly 100 years, the damage cannot be avoided as scientific evidence is pouring in that points to this kind of logging as one of the most pervasive threats to the long-term health of forest ecosystems:

"Although post-burn soil conditions may vary depending upon fire severity, steepness of slopes, inherent erodibility, and others, soils are particularly vulnerable in a burned landscape. Soil and soil productivity are irreplaceable in human timescales" (Beschta 1995)

Salvage logging is driven primarily by incentives found in law establishing a Salvage Sale Fund, which allows Forest Service managers to keep logging receipts to fund more salvage logging proposals, fund other related activities such as logging damage mitigation, road-building, and even salaries at local Forest Service offices. Post-fire salvage has been almost exclusively focused on narrow, short-term economic motives, namely, to extract the maximum commodity timber value from burned forests as quickly as possible. Current post-fire salvage proposals make up nearly half the total logging volume proposed for 2003 in the entire National Forest System. This includes some of the largest logging proposals ever conceived of in the National Forest System. Several proposals, such as the Biscuit Fire Recovery Project in the Siskiyou National Forest, even propose logging in "protected" roadless areas.

Since the passage of the National Environmental Policy Act (NEPA) and its mandate for public disclosure of the environmental impacts of land management activities, proponents of salvage logging have claimed that post-fire logging has benign or even beneficial environmental effects. For example, see "The Biscuit Fire: Management Options for Forests Regeneration, Fire and Insect Risk Reduction, and Timber Salvage," (Sessions and others, 2003). However, in recent years scientific assessments are informing us that, far from having "no significant effects," post-fire salvage logging is one of the most destructive forms of commercial logging. Beginning in the 1990s, proponents even started claiming that salvage logging rehabilitates, recovers and restores burned forests, and may even protect them from future "catastrophic" wildfires. These claims, however, do not stand up to evidence that is revealing the destructive nature of post-fire salvage logging, documented in Part II of this report. In fact, post-fire logging increases the short-term, and sometimes long-term, risk of another fire by leaving the most flammable debris on the forest floor, limbs and tree tops. Studies have also shown that post-fire logging significantly reduces the productivity of an area from soil erosion, compaction and a reduction of soil nutrients.

This report, *Restoration or Exploitation? Post-Fire Salvage Logging in America's National Forests,* provides a short introduction to the historical, ecological, economic and political issues affecting post-fire logging. Included are short descriptions of ten of the most significant post-fire logging proposals and a list of approximately fifty more proposals from public forests across the western United States. The purpose of this report is twofold: 1) to raise awareness among policymakers about the short- and long-term adverse ecological and economic impacts caused by this type commercial logging; and 2) to empower concerned citizens with the information needed to monitor, analyze and critique post-fire logging proposals on our national forests.

Historical Rationalizations for Post-Fire Salvage Logging

For most of the past century, post-fire logging was presented as a purely economic venture to extract the most commercially-valuable charred trees as quickly as possible before insects and decay processes reduce the quality of the wood for lumber products. Many Congressional policymakers and Forest Service officials still believe that a fire-killed tree is useful only if it is logged, and to leave it in the forest is "wasteful." Yet, this perspective ignores the vital role that large-diameter dead, dying, or damaged trees play as some of the most ecologically valuable components in the forest for wildlife, soils, and watersheds. Part Two of this report will discuss the beneficial functions of fire-killed trees and the adverse ecological effects of salvage logging in more detail.

Claiming that burned forests are already "lost" to wildfire, and taking advantage of a crisis-mode atmosphere to push for "haste against waste," logging proponents allege that the environmental impacts of salvage logging are relatively insignificant. Environmental analyses and public review processes required by the NEPA are often short-circuited for salvage logging in order to get the timber

out quickly. For example, in order to expedite timber sales, in July 2003 the Bush Administration finalized new regulations for Categorical Exclusions (CEs), allowing salvage logging of up to 250 acres of dead and/or dying trees, and including "incidental" removal of green trees for logging roads, landings and skid trails, without public notification or opportunities for comments. However, these economic-based excuses have waned in persuasive power because most salvage logging operations result in a net loss to the federal government. This fact, along with growing citizen opposition to commercial logging on public lands, has forced logging proponents to come up with new justifications for salvage logging.

Beginning in the early 1990s, one of these new justifications was the claim that both pre-fire and post-fire salvage logging helped restore "forest health." Logging interests narrowly defined this concept to refer only to tree health, rather than all components of forest ecosystems, such as wildlife, water, soil, and other non-tree vegetation. The Forest Service's explanation was that salvage or sanitation logging of dead, diseased, or damaged trees would help reinvigorate existing or future stands of live trees. The timber industry and Forest Service embarked on a decade-long public relations campaign to scare the public about a looming forest health crisis in which the only cure proposed was massive pre-fire and post-fire salvage logging. Logging proponents in the administration and Congress have used, and continue to use these concepts in several legislative proposals governing forest management in the National Forests.

While some claim that post-fire salvage logging is needed to reduce the risk of future fires, an exhaustive literature review by the Forest Service found no scientific support for this claim. The reason is simple: post-fire logging operations cut down the large, commercially valuable trees while leaving logging "slash" on the ground, thereby actually increasing the risk of wildfire in the short-term. *Photo of post-fire salvage logging on the Bitterroot National Forest in Montana by Larry Campbell.*

In the mid-1990s, the agency resurrected an old forester's myth that claimed the mere presence of fire-killed trees (both standing snags and downed logs) increased the risk of future high-intensity wildfires. Accordingly, logging proponents argued that removing snags and logs would help prevent future "catastrophic" wildfires. In effect, the forest health crisis evolved into a fire hazard crisis in which commercial timber extraction is promoted as the cure-all for nearly every forest health issue. An exhaustive literature review by the Forest Service (McIver and Starr, 2000), however, failed to find any support in scientific literature for this claim, dubbed the "reburn hypothesis." Recognizing this lack of scientific evidence, two recent federal court decisions concluded the exact opposite: that the logging and the resulting "slash" of limbs and tree tops actually increases the short-term risk of another fire (Sierra Club v. Bosworth, Six Rivers National Forest, 2001; Earth Island Institute v. USDA, Tahoe National Forest, 2003). Regardless, logging proponents continue to capitalize on the public's socially-conditioned fear of forest fires with an aggressive public relations campaign that illegitimately promotes post-fire salvage logging as a means of fuels reduction for fire prevention and forest restoration.

The timber industry and other proponents of expanded fuel reduction proposals also ignore the fact that most of the acreage annually burned from wildfires does not occur on federal forested lands. According to scientific studies conducted by the Pacific Biodiversity Institute (PBI), most of the burned acreage resulting from wildfires in the 2001 and 2002 seasons was located on grasslands, shrublands, and sparsely-forested rather than densely-forested areas. For example, five of the eight largest wildfires during the 2001 season burned primarily through shrub and grasslands, and two out of the three fires that did occur in forestlands burned primarily through heavily logged and roaded areas. Furthermore, the PBI's study revealed that most wildfires do not burn in National Forests. Over the last ten years, only 17% of the area burned by wildfires was located in National Forests; the majority of the burned acreage was located on private, State, or Tribal-owned lands.[1]

Another flawed assumption promoted by logging proponents is that every wildfire is "catastrophic." Although fires can kill large numbers of trees, in general, high-severity areas constitute only a minor fraction of burned areas, and most wildfires result in low-to-moderate severity; moreover, there can be huge unburned portions within the perimeter of wildfires—not every acre is "consumed." Of the ten wildfires featured in this report, on average over 52% of the acres burned experienced low severity, and 24% had moderate severity; just 21% burned with high severity. The related assumption that even high-severity wildfires require salvage logging for restoration purposes is contradicted by cases such as the 1988 Yellowstone National Park fires and the 1991 Warner Creek Fire on the Willamette National Forest. Post-fire salvage logging and tree planting did not occur on these fires, yet these burned forests are now thriving with native wildlife and vegetation. Most wildfires—even the "megafires" sensationalized in the news media—are not catastrophes nor do they require aggressive post-fire management, especially logging, to fully recover from fire disturbances that have affected forest ecosystems for millennia.

Socioeconomic Effects of Post-Fire Salvage Logging

Despite many of the newer pretexts offered by logging proponents, post-fire salvage logging is almost exclusively an economically motivated activity, seeking commodity timber extraction. However, this timber-centric perspective ignores the many ecosystem services that intact forests provide that translate into broader regional or community-wide socioeconomic benefits. For example, a conservative estimate of water resource values originating from our national forests is $27 billion per year, and the value of recreational uses is estimated at $7.5 billion per year, and climbing. Post-fire salvage logging jobs offer a few people some short-term employment in a classic "boom and bust" cycle, but when municipal water supplies are polluted, or outdoor recreational opportunities are degraded, these extensive and long-term impacts constitute a degradation of these non-timber values that have real economic consequences. It is unclear at this point whether any purported forest health benefits of salvage sales exceed the environmental costs.[2] The environmental and economic costs are further compounded when salvage logging occurs in the same areas that expensive Burned Area Emergency Rehabilitation treatments have been conducted. When federal treasury costs are added to environmental costs, salvage logging adds up to an unacceptable loss to the American taxpayer.

Post-fire salvage logging is generally not economical since it costs more to plan and administer these sales than the revenues they generate. Post-fire timber sales often sell at much less than green timber sales. For example, the Forest Service spent $800,000 preparing a salvage sale on the Santa Fe National Forest in 2003, including paying a private contractor for environmental analysis services. The salvage timber was sold to an out-of-state company for $35,610 at a loss of over three quarters of a million dollars. This out-of-state contractor paid $1 per 100 cubic feet of wood, while local residents are required to pay 10-20 times that price for the same amount of wood for home heating. Historically, salvage sales cost the federal treasury up to $153 per thousands board feet; thus, a 10 million board foot salvage sale might cost the American taxpayer approximately $1.53 million.

Despite the many justifications offered, post-fire salvage logging is almost exclusively an economically motivated activity, which targets large trees. However, post-fire logging may also destroy economically valuable ecosystem services such as air and water purification and wildlife habitat. *Photo of post-fire salvage logging on the Bitterroot National Forest by Wild Rockies Earth First!.*

Ironically, the Forest Service is having increasing difficulties attracting willing buyers for salvage sales in the face of global market forces that have produced a "timber glut" in the U.S, resulting in "no-bids" for the timber sale. In 2002, the Forest Service could only sell 69% of the salvage timber it offered for bid. In response, the Forest Service often changes the terms of the sale in order to attract potential bidders. For example, when a salvage sale on the Boise National Forest originally received no bids, the agency reduced the minimum bid price by 80%, from $1.8 million to $330,000. When the Wenatchee National Forest received no bids for a 22.4 million board foot salvage sale, the agency increased the minimum size of the trees to be logged, and reduced the purchaser's deposit for brush removal from $8.44 to $0.16 per hundred cubic feet of brush.[3] The net effect is to further increase the costs to taxpayers through additional planning expenses and reduced bid revenues, as well as an increase in the extraction of larger, more fire-resistant and ecologically valuable trees.

These socioeconomic losses from salvage logging further compound the problem that the Federal timber sale program as a whole operates at a huge deficit, costing taxpayers roughly $1 billion in net losses each year, calculated as the difference between appropriations for logging and timber sale receipts deposited in the U.S. Treasury. Whatever minimal revenues are garnered from salvage logging usually do not even make it into the federal treasury, but instead, most sale receipts are held by local Forest Service units in a special Salvage Sale Fund that goes to plan additional timber sales and to pay for local administrative unit expenses and even salaries. These kinds of perverse economic incentives have been institutionalized to motivate Forest Service managers to plan more and more logging—under whatever pretext—in order to generate funds that pay directly into local bureaucratic units.

Salvage Logging Politics

Allies of the timber industry in Congress have used the forest health "crisis" and now the wildfire "crisis" to clear the way for post-fire salvage logging by attaching "riders" designed to restrict public input and legal accountability of salvage timber sales onto must-pass spending bills. Congress and the Administration have also used a variety of means, such as increasing taxpayer funding, offering various loopholes from compliance with environmental regulations, and even suspending bedrock environmental protection laws in order to get the salvage cut out.

The forerunner of the Bush Administration's misnamed "Healthy Forests Initiative" (HFI) and kindred Congressional bills like the House-passed "Healthy Forests Restoration Act" (H.R. 1904) was the "Emergency" Salvage Sale Program that passed as a legislative rider tacked onto the Emergency Supplemental Appropriations and Rescissions Act (Public Law 104-19). Known as the infamous "Salvage Rider," the Washington Post editorial page called it "...arguably the worst piece of public lands legislation ever." The 1995 Salvage Rider suspended the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), the National Forest Management Act (NFMA), and "all other applicable Federal environmental and natural resource laws" for salvage timber sales. The Salvage Rider eliminated citizen appeals and legal accountability of all salvage logging and many ancient forests timbers sales for 18 months, from 1995-1996.

In 1994, the Summit Creek area – an ancient old-growth forest on BLM land in Oregon – was protected from logging as a Late Successional Reserve for the endangered northern spotted owl. Then in 1995, the infamous "Salvage Rider" was signed into the law. In 1996, 125 acres of Summit Creek were clearcut. *Photo by Francis Eatherington.*

Former timber industry lobbyist Mark Rey, the current Bush Administration's politically appointed overseer of the U.S. Forest Service, was one of the principal authors of the Salvage Rider while working as a Republican staffer for the Senate Committee on Energy and Natural Resources. Both the HFI and H.R. 1904 bear Rey's Salvage Rider handiwork, but they extend the legislative maneuvers against citizen involvement and judicial oversight to include pre-fire "thinning" projects as well as post-fire salvage timber sales under the pretext of reducing hazardous fuels on National Forests. Missing from these administrative and legislative proposals to increase logging under the pretense of fuels reduction or fire recovery is a scientific understanding of their significant long-term adverse ecological effects, the topic of the next section of this report.

PART TWO: THE ECOLOGICAL EFFECTS OF POST-FIRE SALVAGE LOGGING

Most native species of plants and animals inhabiting forest ecosystems evolved with natural adaptations to the patterns and processes of fire disturbance and recovery.[4] One of the effects of fire disturbances is the creation of dead trees, both standing "snags" and downed logs. Fire-killed snags and logs serve vital roles in the structure and function of healthy forest ecosystems in general, and are especially important as "legacy" stand components that help to "lifeboat" forests through recovery processes following fire disturbance events.[5] They provide food and shelter to wildlife, fish, and numerous insects, microbes, and fungi that are vital to post-fire recovery and long-term site productivity. They help retard surface water runoff and help retain and build soil, they help cycle nutrients and water to plants and soil, they provide shade from intense solar radiation and serve as nurse logs for seedlings, and snags that fall across streams provide links between terrestrial and aquatic ecosystems.[6] Indeed, a forest ecologist could argue that for the sake of healthy wildlife and plant populations, fertile soil, and clean water, large-diameter snags and logs are some of the most valuable trees in the forest.

Forest managers and elected officials have been capitalizing on the public's socially-conditioned fear of forest fires to promote salvage logging in the name of "preventing future catastrophic wildfires." This "reburn hypothesis" suggests that fire-killed trees pose an extreme fuel hazard and fire risk, and removing dead and dying trees via salvage logging, can reduce the probability of a future high-intensity wildfire. Currently there is no support in scientific literature for the theory that the probability for high-intensity fires is greater for areas with abundant fire-killed snags and logs compared to salvage logged areas.[7] Thus, there simply is not a strong scientific or ecological basis justifying post-fire salvage logging for fire risk reduction or ecosystem "recovery" objectives.[8] On the contrary, a review of the effects of wildfire and salvage (Beschta et al. 1995) concludes:

"Human intervention on the post-fire landscape may substantially or completely delay recovery, remove the elements of recovery, or accentuate the damage…In this light, there is little reason to believe that post-fire salvage logging has any positive ecological benefits, particularly for aquatic ecosystems. There is considerable evidence that persistent, significant adverse environmental impacts are likely to result from salvage logging."[9]

They further indicated that, "There is no ecological need for immediate intervention on the post-fire landscape," and advocated that "Human intervention should not be permitted unless and until it is determined that natural recovery processes are not occurring."[10] The misguided promotion of post-fire salvage logging for the sake of future wildfire prevention fails to acknowledge the significant adverse effects on a wide range of species, functions and processes in forest ecosystems. Some of these impacts are briefly outlined on the following pages.

Salvage Logging Causes Significant Adverse Effects on Forest Soils

Protection of the topsoil is a primary requisite for aiding post-fire recovery and maintaining long-term forest ecosystem health. Burned soils are naturally more prone to erosion, especially on steep slopes, because surface vegetation, litter and duff layers have been reduced by fire, thus exposing soils to increased rainsplash and sheetwash erosion. Post-fire salvage logging increases soil erosion in the following ways:

While the logging industry claims that post-fire salvage logging has a relatively insignificant – or even beneficial – ecological impact, it's one of the most ecologically-destructive forms of logging. Here, citizen's monitor a post-fire logging project on the Bitterroot National Forest in Montana that has cut down the largest trees and resulted in significant damage to the sensitive soil. Photo by Matthew Koehler.

- Displaces soil through felling trees and dragging logs across burned slopes, resulting in increased potential for soil erosion and stream sedimentation. Helicopter logging or high-lead cable yarding systems can reduce but cannot eliminate displacement and erosion of severely burned soils on step slopes.

- Facilitates erosion through removal of potential downed logs and coarse woody debris that would have served as natural check-dams slowing water runoff and retaining soil. This function is especially important on steep slopes.

- Causes soil compaction, especially if logging is done by ground-based heavy equipment that crushes soil pore spaces which naturally retain air and water, and facilitate the spread of fine roots. This results in reduced site productivity, reduced water infiltration and retention, and leads to an increase in surface runoff, erosion and sedimentation.

- Degrades long-term soil fertility and site-productivity. Although most nutrients are stored in foliage and limbs, large logs also function as an important source of soil organic matter and a long-lasting nutrient reservoir for microorganisms, plants, and animals.

It can take several centuries, even millennia, for forest soil to develop and become productive. Thus, the problem with soil displacement, compaction, and erosion is that once topsoil has been removed from the ecosystem, it constitutes an irreplaceable loss of fertility and productivity, at least in human timescales.

Salvage Logging Causes Significant Adverse Effects on Forest Streams

Fires can affect stream systems through removal of forest litter and duff layers which increases erosion and sedimentation, and through changes in peak flows and water yields. In the short-term, the adverse effects of high-severity fires—decreased infiltration, increased overland flow, and excess sedimentation in streams—can be greatly exacerbated by the soil disturbance caused by salvage logging in the following ways:

Fires have helped recharge native fisheries for millennia. What native fish (such as the westslope cutthroat trout above) find following a fire is a stream much richer in insects and aquatic life, thanks to the addition of nature's fertilizers—ash and nutrients from the burned trees that topple into the waters. However, post-fire salvage logging causes increased soil sedimentation and erosion, which harm native fisheries.

- Causes increased sedimentation through increased soil compaction and erosion from logging operations, and decreased interception of surface runoff from removing logs and potential coarse woody debris.

- Causes increased turbidity from removing potential in-stream logs. When logs fall into or across streams, they create check-dams and backwater pools that trap sediment, dissipate the energy of flowing water (even on high gradient slopes), and help maintain clean water and resting, feeding, and spawning habitat for fish and other aquatic species.

Snags and logs provide critical watershed structures that help stabilize slopes, retain water on steep slopes, cleanse streams of sediment and debris, increase the water and nutrient capacity of soils, and enrich the habitat quality of streams for aquatic wildlife.

Salvage Logging Causes Significant Adverse Effects on Forest Vegetation

High-intensity fires can kill trees and surface vegetation, but natural recovery processes are fully capable of revegetating burned stands, and several plant species even require fire for regeneration or maintenance. Salvage logging can reduce natural regeneration and kill or damage surviving vegetation in the following ways:

- Causes mechanical damage of surviving trees and surface vegetation from felling and dragging logs across the ground surface. Broadcast burning and pile-burning of logging slash causes additional mortality of surface vegetation.

- Adversely alters the microclimate through removal of residual shade provided by large-diameter snags and logs. This results in higher site temperature and lower relative humidity during the day, increased heat loss at night, and more extreme temperature fluctuations overall. Soils and vegetation are also more exposed to the drying effects of increased surface winds.

- Removes an important source of moisture stored in the interior of large-diameter logs. The water held in downed decayed wood is released slowly into soil over time. This "time-release" function aids the establishment of pioneering plants following fire, and maintains adjacent vegetation during drought periods when soil moisture would otherwise be low.

Since post-fire salvage logging operations, such as this one on the Kootenai National Forest in Montana, cut down the large-diameter snags and trees that were providing much-needed shade, the local microclimate of the forest is dramatically altered. This results in higher site temperature and lower relative humidity during the day, increased heat loss at night, and more extreme temperature fluctuations overall. Soils and vegetation are also more exposed to the drying effects of increased surface winds. Photo by Jeff Juel.

The microclimates and moisture reservoirs provided by snags and logs are critical components of burned landscapes that aid post-fire natural recovery of native vegetation.

Salvage Logging Causes Significant Adverse Effects on Wildlife

Although fires can cause mortality of individual animals, in general, wildlife populations often respond positively to fires and in fact are attracted to burns for the flush of nutrients and new vegetation, snags and logs that result from fires. At least 62 species of birds and mammals use snags, broken-topped, diseased or otherwise "defective" trees for roosting, denning, foraging, or other life functions (See Bate, et al., 1999: 1) Salvage logging degrades or destroys wildlife habitat in the following ways:

- Eliminates habitat snags for cavity-nesting species such as woodpeckers that excavate cavities essential for non-excavating species such as bats and squirrels. Logging larger diameter trees (e.g. 20 inches DBH or greater) removes the snags that stand longest, and have capacity for bigger cavities needed by larger animals.

- Eliminates potential habitat logs that are also utilized for feeding, shelter, and reproduction by a number of mammals, reptiles, amphibians, and insects.

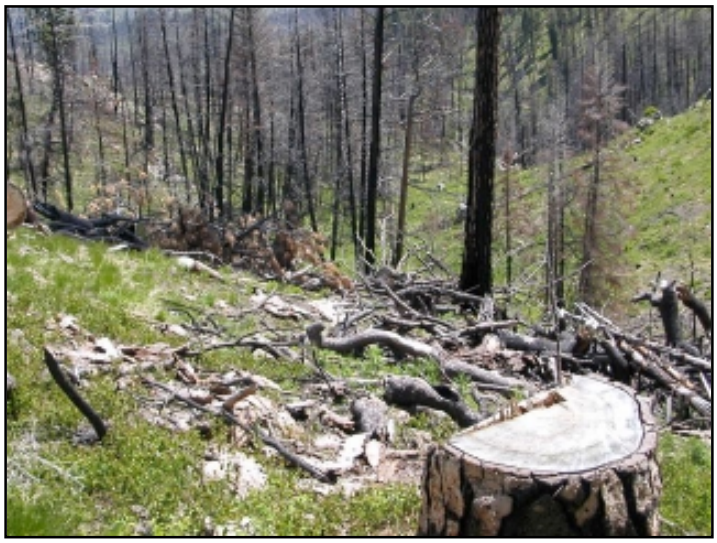
- Destroys refugia and legacy stand components. In the event of a wildfire, the natural insulating effect of wood coupled with high interior moisture serves as a kind of "fire shelter" allowing small mammals, reptiles and amphibians to survive the fire.

Far from being a "wasted resource" if left to decay, large-diameter snags and logs play critical structural and functional roles in maintaining healthy, diverse wildlife populations.[11]

The black-backed woodpecker is uniquely adapted to thrive in recently burned forests. Black-backed woodpeckers feed almost exclusively on the larvae of wood-boring beetles and may consume over 13,000 annually, helping to naturally control the spread of insects. Forest Service researchers have also found that black-backs prefer burned forests that have not been salvage logged.

Salvage Logging Can Increase Fire Risks and Fuel Hazards

Large snags are important ignition sources during lightning storms, and can contribute embers that initiate spotfires, but it is predominately the fine or small diameter fuels such as grass, needles or small limbs that ignite and spread fire, not large dead woody material. From the standpoint of the physics of combustion, it is the fine fuels such as grass, needles, and small limbs that carry fire, not large dead woody material. Large diameter trees—even snags and logs—have a naturally low flammability because they have a low surface-area-to-volume ratio (SAVR) and this limits the amount of oxygen available for combustion.[12] As previously noted, there are no scientific studies demonstrating that large-diameter fire-killed snags pose an increased risk of high-intensity reburns, or that salvage logging effectively reduces fire risk.[13] Salvage logging typically removes the larger diameter trees that have the most commercial value but least flammability, and yet leaves behind the smaller diameter trees and logging slash that have little to no commercial value but are the most flammable fuels. There is growing scientific evidence that post-fire salvage logging itself may actually increase the rate of spread, intensity, and severity of fires in the following ways:



There is growing scientific evidence that post-fire salvage logging may actually increase the rate of spread, intensity, and severity of fires. Post-fire salvage logging typically removes the larger diameter trees that have the most commercial value but least flammability, and yet leaves behind the smaller diameter trees and logging slash that have little to no commercial value but are the most flammable fuels. Photo of post-fire salvage logging on the Bitterroot National Forest by Larry Campbell.

- Alters the microclimate by removing snags and logs that shield surface fuels and vegetation from the sun and wind. This raises temperatures and wind speeds, and lowers fuel moisture levels. In the event of a fire, these hotter, drier, windier conditions function to increase fireline intensities and rates of spread, and cause more erratic fire behavior.

- Eliminates the "heat sink" effect of large fuels that takes heat energy out of flames and slows their rate of spread. The low flammability of large-diameter downed logs is further mitigated by their interior water content that increases with the length of time they are on the forest floor and their subsequent stage of decay.[14]

- Increases the surface fuel loads from logging slash, which become immediately available for ignition. Salvage logging operations that leave the slash untreated produce the highest fireline intensity, heat per unit area, rate of spread, area burned, and scorch height of all other fuels method treatments because they increase the flammable surface fuel load.[15]

Conclusion

Fire-created snags and logs serve many vital ecological functions for forest soils, streams, vegetation, and wildlife. Yet, post-fire salvage logging in the western U.S. is generally based on economic goals, not ecological ones. Consequently, the term "salvage" is perhaps solely appropriate for logging operations in which the primary management objective is extraction of commodity timber values, not rehabilitation, recovery, or restoration of forest ecosystems. For a more detailed report on the ecological effects of post-fire salvage logging, please visit: www.fire-ecology.org/research/salvage_impacts.html.

PART THREE: CASE STUDIES OF CURRENT POST-FIRE SALVAGE TIMBER SALES

The following section presents brief description of ten of the most significant post-fire salvage timber sale proposals currently threatening America's National Forests. Cumulatively, these ten timber sales will log over 788 million board feet across 110,000 acres—the equivalent of 172 square miles of public lands. This is enough trees to fill 157,600 log trucks lined up bumper-to-bumper for over 1,500 miles, the equivalent of the distance from Washington, D.C. to Denver, Colorado! At the end of this report is a comprehensive list of nearly 60 current post-fire salvage timber sale proposals at various stages of development in planning. Information is current as this report goes to press (November 2003), but exact figures of timber volume and acreage are changing as these salvage timber sale proposals move forward.

Bitterroot Fires: Burned Area Recovery Project

Bitterroot National Forest, Montana

FIRE STATS
Size: 356,000 acres
Source: lightning and human-caused
Severity: 31% high; 19% moderate; 50% low
Costs: $80 million for suppression

In the summer of 2000, several lightning and human-caused fires ignited on the Bitterroot National Forest, and burned cumulatively across 356,000 acres in a landscape that had been heavily logged and roaded during the past forty years. By spring 2001 the Bitterroot had proposed a "Burned Area Recovery Plan" for the Bitterroot that included logging of up to 280 million board feet of trees from over 79,000 acres—all of it under the guise of "fuels reduction" or "restoration." This would have logged enough trees to fill 56,000 log trucks lined up bumper-to-bumper for nearly 500 miles! In Fall 2001 the Bitterroot released their final "recovery" plan that called for salvage logging 181 million board feet of trees from 46,239 acres—making it one of the largest timber sales in Forest Service history. Ironically, the Forest Service admitted that the logging would increase fire hazards for up to eight years due to the logging slash.

Bitterroot National Forest Supervisor Dave Bull defends the Forest Service's approach to "fuel reduction" and "restoration" following the 2000 wildfires to a local TV station – despite a backdrop that clearly demonstrates otherwise. *Photo by Matthew Koehler.*

Fire Salvage Sales

The Bitterroot's final salvage sale plan was taken to court, where the presiding federal judge imposed an injunction on the timber sale because the Forest Service had illegally circumvented the public appeals process. However, a controversial out-of-court settlement reached in February 2002 allowed salvage logging of 60 million board feet of trees to proceed across 14,000 acres.

Ecological Impacts

For the most part, the logging is occurring outside of unroaded wildlands and core habitat areas for endangered bull trout and threatened cutthroat trout; nevertheless, heavy erosion, sedimentation and siltation is occurring in Bitterroot streams which were already degraded from past logging and road-building. The Bitterroot is allowing the logging companies to select which trees they want to take; consequently, the largest trees – many of them mature, fire resistant ponderosa pines that were barely burned—are systematically being cut down, while smaller, more flammable trees and logging slash are being left behind.

Project Status

All NEPA documentation has been completed, and salvage logging is proceeding. According to the Forest Service, 70% of the commercial logging was completed as of December 2, 2002. However, $18.3 million slated for non-logging restoration and rehabilitation activities was taken away from the recovery project in order to pay for firefighting costs of the 2002 fire season. While the logging has continued, less than 3% of planned watershed and road restoration work has been completed, and barely 12% of the reforestation work finished.

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While the Bush Administration and Forest Service talk about restoring forests, reality on the Bitterroot tells a different story. Here, the fire risk has been increased, the biggest trees have been cut down and the bona-fide restoration work simply is not getting done. *Photo by Matthew Koehler.*

Biscuit Fire: Fire Recovery Project

Siskiyou National Forest, Oregon

FIRE STATS
Size: 499,965 acres, the largest wildfire in Oregon history
Source: lightning
Severity: 16% high; 23% moderate; 41% low; 20% unburned
Costs: $155 million for suppression alone

This mosaic burn in the Illinois River Canyon is typical within the Biscuit fire area, where over 80% of the fire area was unburned or burned at low to moderate intensity. *Photo by Barbara Ullian*

The Biscuit Fire began on July 13, 2002 when over 12,000 dry lightning strikes ignited fires during record-breaking heat and drought conditions. Through backburning (controlled burning of vegetation to remove fuels in advance or wildfires) tens of thousands of acres, several smaller fires were merged into the Biscuit Fire. The fire burned just short of half a million acres. Over 82% of the fire occurred within designated wilderness or inventoried roadless areas. Within the logged and roaded matrix area, 11,000 acres of young plantations burned intensely and severely, requiring an expensive second planting of nursery-grown conifers. The Biscuit Fire burned for four months until rain and snow fell. With the labor of thousands of firefighters and an armada of dozers, engines, aircraft, and equipment, at a cost of $155 million the Biscuit Fire was the most expensive suppression incident in U.S. history.

Fire Salvage Sales

The Biscuit Fire Recovery Project is becoming the largest timber sale proposal on federal lands in modern history. Originally, the proposal was to log 90 million board feet of burned trees across 7,000 acres within matrix lands (matrix lands are designated by the Northwest Forest Plan as open to logging). But the original proposal has been revised with the release of a report in July, 2003 headed by John Sessions, professor of forest engineering at Oregon State University, that calls for salvage logging, herbicide spraying, and conifer replanting everything outside of designated wilderness. Under pressure from the Bush Administration, the Siskiyou National Forest has now developed two new alternatives that would implement the Sessions proposal. Information has leaked to the press that the agency's preferred alternative will propose salvage logging 518 million board feet across 30,000 acres, including many units within the North and South Kalmiopsis Inventoried Roadless Areas. This makes the Biscuit Fire Recovery Project the largest roadless area logging assault in all 50 states! Another undetermined amount of commercial thinning and salvage logging is going to occur in order to create "fuel management zones" (i.e. fuelbreaks) for future fire suppression or large-scale prescribed burning activities. Most controversial, the Forest Service intends to permanently maintain the Biscuit Fire's 400 mile long perimeter fireline as a fuelbreak.

Ecological Impacts

The Biscuit Fire burned one of the largest expanses of roadless wildlands left along the West coast, and it is a hotspot of biodiversity recently proposed as a World Heritage site and a National Monument. In addition to the habitat fragmentation and scenic degradation that would occur from cutting fuelbreaks inside roadless areas, salvage logging may occur within Late-Successional (old-growth) and Riparian Reserves, and Wild and Scenic River corridors. Soil erosion including landslides and its subsequent stream sedimentation will result from salvage logging the highly-erosive soils and steep slopes of the wild Siskiyou Mountains. Close to 300 wildlife species inhabit the Siskiyou National Forest, including Northern spotted owls, Chinook and steelhead salmon, and a host of rare, sensitive, endemic plants found nowhere else on Earth.

Private land salvage logging in the Biscuit fire area near the Wild and Scenic Illinois River shows how the fragile soils easily erode. *Photo by Rolf Skar.*

Project Status

Scoping has been completed. The Draft EIS was originally scheduled for release in August 2003, but Bush Administration officials have ordered the inclusion of new alternatives that will increase salvage timber volume and delay release of the DEIS until November 2003.

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Hayman Fire: Hayman Fire-Upper South Platte Watershed Protection and Restoration Project

Pike and San Isabel National Forests, CO

FIRE STATS
Size: 137,760 acres, including 21,200 acres within perimeter that did not burn. It was the largest wildfire in Colorado history.
Source: arson
Severity: 35% high; 16% moderate; 34% low; 15% unburned
Costs: $39 million for suppression, including $14.7 million for rehabilitation

The arson-caused Hayman Fire was ignited by a U.S. Forest Service fire prevention technician on June 8, 2002, and was finally contained on July 2, 2002. At 137,760 acres, the Hayman Fire was the largest wildfire in Colorado state history. Almost 600 structures were destroyed in the blaze, including 133 homes. Due to drought conditions and strong winds, the fire spread fast and burned severely in a couple of major runs. Parts of the area had been commercially logged and other areas were thinned, but neither of these management treatments affected the spread of the fire, as it roared right through them. The fire did stop when it hit two recent burns, a wildfire that had burned the previous month, and a prescribed fire that had been conducted the previous fall.

An example of so-called "hazard trees" cut along a roadside within the Hayman Fire area. Such logging will take place along 250 miles of Forest Service roads and trails. In addition, post-fire salvage logging will take place on over 15 1/2 square miles of forest in the Pike National Forest using convention ground-based heavy equipment. *Photo by Rocky Smith.*

Fire Salvage Sales

Salvage logging with conventional ground-based heavy equipment has been approved for 10,000 acres on the Pike National Forest near Woodland Park. Up to nine miles of "temporary" new road will be constructed in order to extract approximately 25 million board feet of trees. Additionally, so-called "hazard trees" will be cut along 250 miles of Forest Service roads and trails. The main purpose for salvage logging is to "recover value in the wood…for beneficial use in the local and regional communities." A so-called "side benefit" of the salvage logging is the claim that it will help scarify water-repellant or "hydrophobic" soil layers, thereby reducing erosion and sedimentation. Finally, the agency argues that leaving logging slash behind will provide a layer of mulch to help protect the soil.

Ecological Impacts

Salvage logging could impact habitat for two threatened species: Pawnee montane skipper and Preble's meadow jumping mouse. Logging could also impact habitat for some sensitive species, including tiger salamander and pygmy nuthatch. Soil erosion and stream sedimentation will also result from use of ground-based heavy equipment used to cut trees and deliver them to landings, where they would be loaded onto trucks.

Project Status

Scoping period ended on December 23, 2002. Comment on the Environmental Assessment was received from March 28 through April 28, 2003. The Decision Notice was signed on May 30, 2002.

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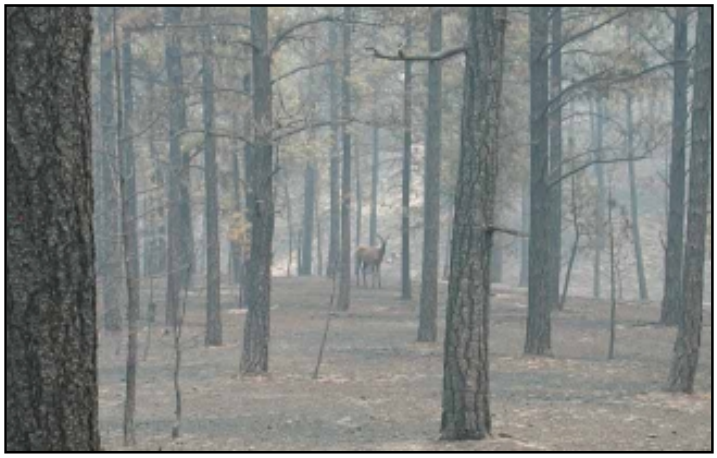

In the early days of the Hayman Fire a deer browses through a recently burned stand of trees. Overall, 65% of the Hayman Fire was unburned or burned at low to moderate intensity. *Photo by Nolan Llyod.*

McNally Fire: Sherman Pass Restoration Project, Roadless Restoration Project, Burnt Ridge Restoration Project and the Hazard Tree Abatement Project

Sequoia and Inyo National Forests, CA

FIRE STATS
Size: 150,969 acres, the largest wildfire in the history of the Sequoia National Forest
Source: escaped campfire
Severity: 8% high; 39% moderate; 53% low
Costs: $60 million for suppression

The McNally Fire was a major news story during the summer of 2002 because of its close proximity to some of the ancient groves of giant Sequoias. The fire burned across 150,969 acres, making it the largest wildfire in the history of the Sequoia National Forest; however, the fire never did enter the giant Sequoia groves. Even if the fire had burned in the groves, those old-growth trees have survived untold fires over several millennia. In fact, the giant Sequoia is a fire-dependent species that actually requires fire for natural regeneration, but due to Forest Service fire exclusion policies, there are missing cohorts of young Sequoias. The understory (undergrowth of young trees and other vegetation) is rapidly being replaced by other conifer species thriving in the absence of fire. With plenty of sensationalistic news media coverage putting pressure on federal fire managers, $60 million was spent on the McNally fire suppression incident.

While only 8% of the McNally Fire burned at high severity, staunchly anti-environmental Rep. Richard Pombo (R-CA) – chair of the U.S. House Resources Committee – has used the McNally Fire and its close proximity to ancient groves of giant Sequoias *as part of a misleading propaganda campaign to increase logging on national forests. Despite the facts, the Committee's website claims, "the unnatural heat and ferocity of this fire, stoked by heavy fuel loads, would have doomed these natural antiquities."* *Photo by Quaker Meadow Christian Camp.*

Fire Salvage Sales

The Forest Service has divided up the McNally Fire area into four separate salvage logging projects: the Sherman Pass (3,500 acres), Burnt Ridge (238 acres; 1.2 MMBF), and Roadless "Restoration" Projects (7,351 acres), and the Hazard Tree Abatement Project (1,570 acres; 17,800 trees will be cut). The Sherman Pass Project invokes a passage from the 1988 Sequoia National Forest Plan that states "production of sawtimber volume will be emphasized" in order to justify salvage logging the fire-affected area. The Sherman Pass and Burnt Ridge Projects claim salvage logging is necessary to prepare sites for planting new conifer seedlings, to prevent insect infestations, to reduce the risk of future catastrophic fire, and to generate funds needed to finance restoration activities. Logging slash will be left as ground cover allegedly to minimize short-term erosion and maintain long-term site productivity.

Ecological Impacts

By removing large-diameter snags, the Sherman Pass, Burnt Ridge, and Roadless projects will degrade Old Forest Emphasis Areas that provide habitat for the fisher, marten, goshawk, and California spotted owl—a species whose population is declining at an annual rate of 7-10%. The Roadless Project will degrade portions of the Rincon, Chico, and Cannell Roadless Areas.

Project Status

The four projects have undergone scoping. The Hazard Tree Abatement Project has issued an Environmental Assessment and the project has been appealed. A decision notice and Categorical Exclusion (CE) has been issues for the Burnt Ridge Restoration Project. Dividing up the single fire area into separate projects and separate analyses likely violates NEPA.

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Missionary Ridge Fire: Burned Area Timber Salvage Project

San Juan National Forest, Colorado

FIRE STATS
Size: 72,964 acres
Source: human-caused, ignited along road by sparks from an automobile or cigarette
Severity: 23% high; 22% moderate; 14% low; 15% unburned
Costs: $40.4 million for suppression

The Missionary Ridge Fire was ignited along a road by sparks from an automobile or cigarette along Missionary Ridge Road on June 9, 2002. On that day, temperatures were in the 90s, relative humidity was in the single digits, and there were brisk hot, dry winds. One firefighter was killed, and more than 50 structures were destroyed. The fire burned across 72,964 acres and threatened the community of Durango and numerous other dispersed residences in the intermix zone. The fire was contained on July 14th and controlled on August 7, 2002.

The human-caused Missionary Ridge Fire burned around the city of Durango and numerous other dispersed residences in the intermix zone. Photo by FEMA.

Fire Salvage Sales

The Project's stated intention is to maximize output of salvaged timber, and simultaneously implement the Bush Administration's so-called "Healthy Forests Initiative." The Project proposes to commercially extract 13.4 million board feet of trees from 3,000 acres, *all in clearcuts*. Other secondary rationale for this salvage logging includes reducing the threat of future fires, and logging burned but living trees to prevent bark beetle infestations.

Ecological Impacts

Over 188 miles of Forest Service roads are located within the burn perimeter, and increased sedimentation from existing roads is already degrading the water supply for Durango and other communities, yet the agency proposes to construct 3 miles of new "temporary" roads and reconstruct between 76 miles of existing roads in order to facilitate log truck hauling of salvage timber. According to the DEIS, over 30% of the proposed salvage logging (1,221 acres) will occur on high-to-severe landslide hazard areas, and the agency admits that 60% of the planned 110 logging units will increase erosion. The San Juan National Forest argues that the remaining 40% of logging units will help prevent erosion by breaking up hydrophobic soil layers from skidding logs across slopes, and lopping-and-scattering slash to cover denuded soils, even though these methods have never been demonstrated to be effective. Finally, the agency claims that the short-term economic benefits of salvage logging outweigh the long-term economic interests of Durango, a community economically dependent on tourism, mountain-biking, hunting, and other recreation in the San Juan National Forest.

Project Status

Scoping was completed on October 25, 2002. Scoping comments from numerous conservation groups and concerned citizens were received by the deadline of May 5, 2003. A Draft EIS was issued on March 17, 2003, and the majority of public comments on the DEIS were highly critical of the agency's logging proposal. The FEIS was issued in September, 2003.

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The Missionary Ridge Fire burned in a mosaic pattern on the San Juan National Forest. The Forest Service admits that 60% of the planned logging in their proposed salvage logging project will increase erosion. Photo by FEMA.

Star Fire: Red Star Fire Restoration Project

Tahoe and Eldorado National Forests, California

FIRE STATS
Size: 17,500 acres
Source: human-caused, still under investigation
Severity: variable fire effects, ranging from low to high severity
Costs: Over $24 million for suppression

The Star Fire started on previously logged lands owned by Sierra Pacific Industries in deep slash debris, and was first detected on August 25, 2001. It spread across 17,500 acres of the Tahoe and Eldorado National Forests and private industrial timberlands until it was contained on September 13, 2001. It burned with a range of severity within mixed conifer stands, with the majority of acres experiencing a moderate understory (surface) burn. The fire burned 4,300 acres within the Duncan Canyon Inventoried Roadless Area, which was the site of a large burnout operation ignited by firefighters. Less than 15% of the roadless area burned severely. Over $24 million was spent on fire suppression.

Prior to a court injunction, these living, partially-burned trees within California spotted owl habitat on the Eldorado National Forest were slated to be logged. Photo by Chad Hanson.

Fire Salvage Sales

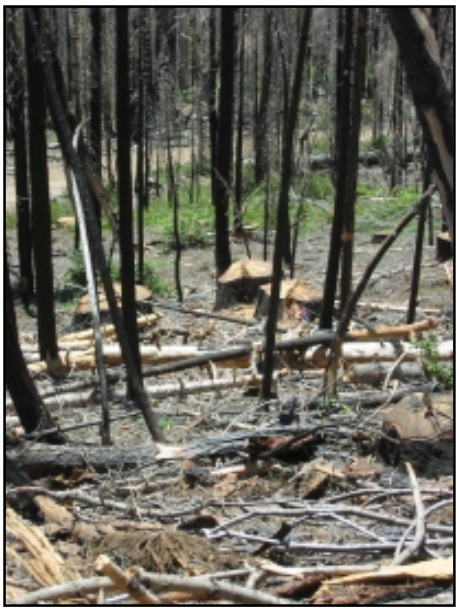
Approximately 2,000 acres of fire-killed trees are planned for salvage logging, and more areas could be logged if additional mortality occurs. Some of the reasons the Forest Service claims it wants to offer salvage timber sales include: 1) capture merchantable value of trees for revenue for restoration activities; 2) prepare sites for conifer replanting in order to quickly restore old forest characteristics and habitat for associated old forest dependent wildlife species; 3) reduce future fuel accumulations of fire-killed trees in order to reestablish conditions consistent with the natural fire regime. Sierra Pacific Industries won most of the timber sale bids.

Ecological Impacts

The timber sales will essentially "high grade" the Roadless Area, extracting commercially valuable snags over 10 inches DBH while leaving behind 85 tons per acre of logging slash and all snags under 10 inches DBH (the Forest Service's own science states that slash debris in excess of 30 tons per acre represents "extreme" fire hazard). Duncan Canyon Roadless Area stands as a veritable old-growth "oasis" amidst a heavily roaded and logged landscape. Salvage logging will also degrade Old Forest Emphasis Areas, Riparian Conservation Areas, California Spotted Owl Protected Activity Centers, as well as habitat for imperiled woodpecker species that depend upon stand-replacing fires. The project actively violates the Sierra Nevada Forest Plan Amendment and the Roadless Area Conservation Rule.

Project Status

Record of Decision for sales on the Tahoe was signed on November 15, 2002. A separate Record of Decision was signed for the Roadless Area on March 12, 2003. Lawsuits were filed by the John Muir Project (JMP) and Sierra Club on May 22 and June 23, 2003. The JMP sued the Forest Service in early fall of 2002 over the Eldorado National Forest's portion of the Red Star fire salvage project, and won a "stay pending appeal" from the Ninth Circuit Court of Appeals, which halted all logging of live, partially-burned trees. The Forest Service had arbitrarily claimed that the trees were "dying" as a result of their burns, but in fact, nearly all of such trees are still alive. The JMP and Center for Biological Diversity won a temporary restraining order in July 2003 on the Duncan Canyon old-growth portion of the salvage sale in the Tahoe National Forest, successfully arguing that the logging would increase fire hazards.



Outside of the roadless area "fire risk reduction" logging is taking place following the Red Star Fire on the Tahoe National Forest. The largest trees are cut down while small trees and logging slash remain. Photo by Rachel Fazio.

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Rodeo-Chediski Fire: Fire Salvage and Rehabilitation Project

Tonto and Apache-Sitgreaves National Forests, Arizona

FIRE STATS
Size: 462,614 acres, largest wildfire in Arizona history
Source: arsonist seeking firefighting employment and a lost hiker's signal flare
Severity: 26% high; 28% moderate; 40% low; 6% unburned
Costs: $30 million for suppression, $12 million for rehabilitation

The Rodeo and Chediski were originally two fires, ignited by an arsonist and a lost hiker, in a heavily logged and densely roaded portion of the White Mountain Apache Reservation. Burning under extreme drought conditions, the two fires merged and burned up steep canyons leading onto the Mogollon Rim. The fire quickly spread onto the Apache-Sitgreaves National Forest, perhaps the most extensively logged and roaded Forest in the Southwest. At 462,614 acres, it was the largest wildfire in Arizona State history, but nearly 60% of the fire area occurred on Reservation lands, while 38% occurred on National Forest lands. The fire destroyed 465 homes and forced an estimated 50,000 people to be evacuated during the course of the fire. The suppression incident cost $30 million to control plus another $12 million for emergency fire rehabilitation.

Three out of four acres within the Rodeo-Chediski fire area were either unburned or burned at low to moderate intensity. Habitat for raptors such as northern goshawks, Mexican spotted owls and bald eagles is especially threatened by the proposed post-fire salvage logging. Additionally, logging along the edge of the Mogollon Rim, which forms the headwaters of the Salt River – the domestic water supply for Phoenix – will cause increased erosion and sedimentation. *Photo by Brian Segee.*

Fire Salvage Sales

The Forest Service is currently conducting two separate NEPA processes. The first plan is to use Categorical Exclusions (CEs) to allow commercial salvage logging on 24,700 acres identified by the agency as the wildland/urban interface (WUI), along roads, trails, and utility corridors, or adjacent to high-use recreational sites. Ground-truthing by staff from the Center for Biological Diversity discovered that one alleged WUI site was a 6,000 square foot mansion surrounded by 10 acres of manicured lawns, resulting in a low risk of fire, and no validity for proposed timber extraction. Logging projects under CEs are currently being logged and will cut an estimated 25 million board feet of trees. In addition, in October 2003 the Forest Service released a DEIS proposing to log 84 million board feet of trees from 45,109 acres, including 2,259 acres of logging on slopes greater than 40%.

Ecological Impacts

Habitat for raptors such as Northern Goshawks, Mexican Spotted Owls, and Bald Eagles is especially threatened by the proposed salvage logging. Additionally, logging along the edge of the Mogollon Rim, which forms the headwaters of the Salt River—the domestic water supply for Phoenix and surrounding communities—will cause increased soil erosion and stream sedimentation.

Project Status

The three salvage sales utilizing CEs are currently being logged. Comment period for the DEIS ends December 1, 2003 and a final decision is expected early in 2004.

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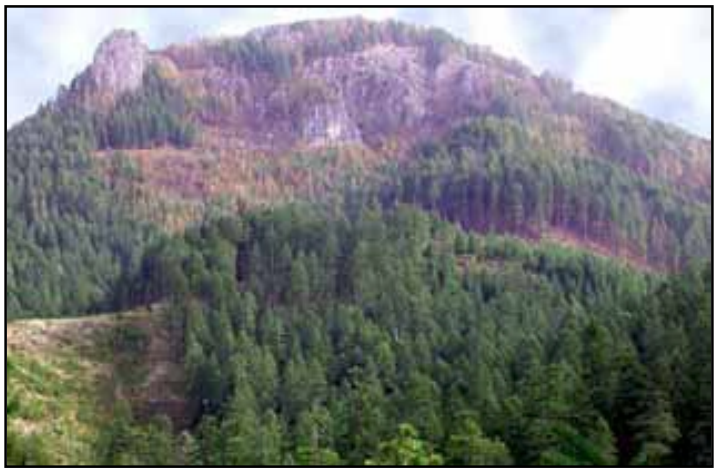
Photo by Brian Segee

Tiller and Apple Fires: Baked Apple, Apple Seed CE, Tiller Roadside, Ash Creek and Acker Fire Salvage Timber Sale Projects

Umpqua National Forest, Oregon

TILLER FIRE STATS
Size: 69,818 acres
Source: lightning
Severity: 5% high; 12% moderate; 82% low and unburned. Over 2,000 acres of plantations burned with high severity
Costs: $58.1 million for suppression

BAKED APPLE FIRE STATS
Size: 18,868 acres
Source: arson
Severity: 9.3% high; 7.9% moderate; 83% low. There was 60% high severity in the watershed where the arsonist ignited the fire
Costs: $18 million for suppression



This photo of Black Butte in the Umpqua National Forest is indicative of the Tiller Fire where 82% of the fire area was unburned or burned with a low severity. Meanwhile, over 2,000 acres of plantations, that were former clearcuts, burned with a high severity. *Photo by Francis Eatherington.*

The lightning-caused Tiller Fire Complex burned mostly in a Late-Successional Reserve (LSR), although part of the fire spread into some Matrix areas, and briefly threatened one of the few communities inside the Umpqua National Forest boundaries. Most of the 69,818 acre Tiller fire was a cool understory fire while it burned in old-growth stands inside the LSR, but the fire burned hot in old clearcuts and plantations. After the Tiller Fire had burned for a month inside the LSR with low mortality of old-growth, suspected arsonists started the Apple fire a few miles away in Matrix lands that still contained large amounts of old-growth. The suspected arson fire was started on one of the hottest, windiest days of the year, and the fire inevitably blew up, spreading across thousands of acres in a single day. The largest salvage sale on the Umpqua is now a result of the arson-caused Apple Fire. Combined, the Tiller and Apple Fires cost over $76 million to suppress.

Fire Salvage Sales

There are several salvage logging projects being planned: the Baked Apple (1,432 acres; 56.8 MMBF), Apple Seed (45 acres; .5 MMBF), Tiller Roadside (scattered acres; 1 MMBF), Ash Creek (250 acres; 3.5 MMBF), and Acker (112 acres) Fire Salvage Timber Sale Projects. Rationale for the salvage sales offer combinations of recovering commodity timber value/volume, removing hazard trees, and/or reducing future fire severity. Rationale for the Acker sale strikes almost a patriotic tone: “These trees represent a substantial economic value to nearby communities and ecological value to species that depend on large wood. If we fail to capture these values for people and nature, we will have not fulfilled our responsibilities as land stewards.”

Ecological Impacts

All salvage units proposed (sofar) are in Matrix lands; however, all salvage logging will clearcut mature and old-growth trees. The Apple Fire projects will leave 6 to 12 trees per acre (TPA) after logging, and the Tiller Fire projects will leave only 2 to 6 TPA. Salvage clearcut logging on burnt soils will remove large woody debris needed for soil stability, retention, and nutrients. Endangered Coho Salmon, Steelhead Salmon and Umpqua Cutthroat Trout live downstream from these projects. Silt from logging the Baked Apple sale area could affect the fish, and impact the large recreational fisheries economy of this area.

Project Status

Scoping has ended for all projects except the Acker Fire Salvage. The Baked Apple DEIS was issued in October 2003 and the comment period will close on December 15, 2003. The Acker and Apple Seed will be Categorical Exclusions (CE).

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Toolbox Fire: Fire Recovery Project

Fremont National Forest, Oregon

FIRE STATS
Size: 85,000 acres for the Toolbox Fire Complex (includes Toolbox, Silver, and Winter Fires)
Source: lightning
Severity: high 36%; moderate 46%; low 18%
Costs: $15 million for suppression

Over 67 fires were sparked by a severe lightning storm on July 12, 2002, creating a complex of fires that burned in this remote region until late August. Historically, 78% of the area had contained Late-Successional, old-growth stands, but by the mid-1990s less than 9% of the area still contained old-growth. The fire burned through stands of remnant old pines with dense understories of white fir (the result of past fire suppression) interspersed with young plantations. The Toolbox fire cost $15 million for suppression.

The Toolbox Fire Complex, as viewed from the air, burns in a remote region of Oregon on the Fremont National Forest. Historically, 78% of the area had contained Late-Successional, old-growth forests, but by the mid-1990s less than 9% of the area still contained old-growth due to excessive logging.

Fire Salvage Sales

Out of the 49,500 acres of the Fremont National Forest affected by the fire, the agency plans to salvage log 73 million board feet of trees on 14,419 acres with 95% of the area to be logged with ground-based systems. Ponderosa pine trees with less than 20% green crown will be treated as "dead" and logged. There are no diameter limits on trees to be cut. Some of the reasons stated for salvage logging include: 1) recovery of burned timber while it retains merchantable value; 2) reduce the likelihood of future loss or damage from reburn; 3) protect remaining live stands from insect infestations associated with fire-killed trees; 4) remove hazard trees along open roads and recreational facilities. The project will require reconstruction of 21 miles of existing roads, and construction of 16 miles of "temporary" new roads. The timber sale will result in a net loss of $6 million to U.S. taxpayers.

Ecological Impacts

Logging will occur in Bald Eagle habitat. Salvage logging will remove the few remaining large-diameter trees in the Fremont National Forest. Logging will also occur within Riparian Habitat Conservation Areas. Portions of the Fremont National Recreation Trail will need to be rerouted following salvage logging.

Project Status

Scoping deadline was December 16, 2002, and the Draft EIS was issued on September 12, 2003 with comments due on November 17, 2003. Alternative G, the maximum timber extraction alternative, was selected as the Forest Service's preferred alternative.

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The Fremont National Forest is planning to log over 22 square miles of the forest affected by the Toolbox Fire Complex. There are no diameter limits on trees to be cut and the project will require reconstruction of 21 miles of existing roads, and construction of 16 miles of "temporary" new roads. The timber sale will result in a net loss of $6 million to U.S. taxpayers.

Conclusion

As this report goes to press in November 2003, the House of Representatives passed H.R. 1904, the misnamed "Healthy Forests Restoration Act of 2003" and the Senate passed its own, very similar, version. Both bills seek to reduce public participation, environmental analysis, and legal accountability in order to promote commercial thinning and logging projects across millions of acres of public lands. Although the words "post-fire salvage" do not appear in either bill's language, it is clear that the main beneficiary of the bill's mandated significantly weakened and "expedited" ecological impact analysis under the National Environmental Policy Act and limitations on judicial review will be post-fire salvage sales. Post-fire salvage sales are the kind of timber sales where profits for logging companies are most dependent upon getting large fire resilient trees out of the public's forests as quickly as possible, regardless of the ecological impacts. But as illustrated in this report, these profits for logging companies come at great cost to the public, our environment and future generations.

Salvage logging impedes natural post-fire recovery processes in forest ecosystems that evolved with periodic fire disturbances, and depend on dead and dying trees for maintenance of ecosystem functions and forest health. In sum, post-fire salvage logging offers no environmental or economic benefits to ecosystems or taxpayers, but instead, entails huge risks of irreversible loss of soils, and great harm to water quality, native vegetation, and wildlife habitat. The information provided in this report, and the overview of the ecological values at stake in current salvage logging proposals, will hopefully inspire members of Congress and the public they serve to end this most destructive and exploitative form of commercial logging on public lands.

The information provided in this report, and the overview of the ecological values at stake and taxpayer losses in current salvage logging proposals, will hopefully inspire members of Congress and the public they serve to end this most destructive and exploitative form of commercial logging on public lands.

Recommendations

1. **In general, natural post-fire recovery processes must be allowed to proceed without human intervention.** Active management in burned landscapes should not be permitted unless and until it is determined through monitoring that natural recovery processes are not occurring. Most native species evolved with wildfires. These disturbance and recovery processes are natural in the landscape. Therefore, the best path to regional ecological recovery is to prevent additional human disturbance and to reduce the effects of past management including logging and roadbuilding.

2. **Post-fire management projects with the purpose of "salvaging" commercial-grade timber should be prohibited.** Instead, all management projects whose purpose and need involve post-fire recovery, hazardous fuels reduction, or forest ecosystem restoration must be based on the best available science and motivated by the needs to recover ecological integrity and restore native ecosystem structure, function, composition, and processes as their objectives.

3. **Protect large intact burned areas for future scientific value.** Large roadless area burns should become candidates for protective status as Fire Process Research Natural Areas in order to preserve scientific values for long-term ecological research and monitoring, and conserve natural ecological and evolutionary processes creating biological diversity.

4. **Congress should eliminate the salvage timber fund.** The U.S. Forest Service is allowed to deposit the receipts from timber sold from post-fire logging projects into an account with no Congressional or public oversight. The salvage timber sale "slush" fund creates perverse incentives for the Forest Service to continue to log the largest, most fire resilient trees in order to fund additional salvage logging projects. This "slush" fund creates a never-ending cycle of increasing fire risks on our forests and escalating ecological restoration needs that future generations will have to pay for.

5. **Funding for restoration projects should not be dependent on or driven by commercial timber extraction.** If monitoring determines that natural recovery processes are not occurring, post-fire recovery or post-fire restoration projects must fully meet all of the following management objectives:

   - Large-diameter mature and old-growth trees must be protected. In general, the only trees that may be suitable to be removed after a wildfire should be small-diameter, understory trees.

   - Soil integrity must be protected. No logging on steep slopes above 30%, or slopes above 20% which are geologically unstable or have fragile soils prone to erosion, slumping, or landslides.

   - Conventional ground-based yarding systems or use of other heavy equipment, which causes soil compaction or erosion, should be prohibited.

   - Water quality must be protected. No logging within riparian areas including rivers, creeks, streams, ephemeral drainages, seeps and springs, or seasonal bogs. Riparian buffers should be widened on steep or unstable slopes.

   - Wildlife habitat must be protected. Site-specific surveys for all species, which utilize project areas must be conducted during project planning, and all habitat requirements and components for old-growth forest dependent species must be retained.

   - Roadless areas must be protected. No commercial timber extraction within inventoried roadless areas or unroaded areas greater than 1,000 acres in size.

   - No new road construction of any kind is permitted, including temporary roads, re-opening of closed roads, or reconstruction of decommissioned roads. Where applicable, a program of road obliteration should accompany fire recovery, fuels reduction or forest restoration projects

   - Site-specific post-fire recovery or fuels reduction projects must conform to the strategic restoration objectives provided by Fire Management Plans (FMPs). Given the significant ecological risks associated with post fire salvage logging, FMPs that comply with the National Environmental Policy Act and implement the Federal Wildland Fire Policy must be completed before management activities occur in burned landscapes.

Current Post-Fire Salvage Logging Projects in the West

Region	State	Project Name	Forest	MMBF*	Acres**	Special Threats
1	MT	Mussigbrod and Middle Fork Salvage	Beaverhead/Deerlodge NF	9.6	881	Canada Lynx
1	MT	Moose Fire Salvage	Flathead NF	14.6	2,015	Grizzly Bears
1	MT	Purdy Fire Salvage	Gallatin NF	1.5	300	
1	MT	Cave Gulch Post-Fire Salvage	Helena NF	2.4	490	
1	MT	Pink Stone Fire Salvage	Kootenai NF	30.0	2,871	
1	MT	Gold-Boulder-Sullivan Fire Salvage	Kootenai NF	29.0	3,900	
1	MT	Kelsey-Beaver Fire Salvage	Kootenai NF	13.8	1,430	
1	MT	Lolo NF Fire Salvage	Lolo NF	35.0	16,000	Large Unroaded Areas
1	MT	Bitterroot Burned Area Recovery Plan	Bitterroot NF	60.0	14,000	
2	CO	Hayman Fire Salvage	Pike NF	25.0	10,000	Citizen Inventoried RA
2	CO	Million Fire Salvage	Rio Grande NF	3.0	800	
2	CO	Missionary Ridge Fire Salvage	San Juan NF	13.4	3,153	Roadless Areas Affected
2	CO	Burn Canyon/Bucktail Fire Salvage	Uncompahgre NF	4.4	2,501	Old Growth
2	CO	Spring Creek Fire Salvage	White River NF	1.1	665	
3	AZ	Rodeo-Chediski CE Hazard Salvage	Apache-Sit & Tonto NFs	24.9	24,700	
3	AZ	Rodeo-Chediski Fire Salvage	Apache-Sit & Tonto NFs	60.0	100,000	
3	NM	Borrego Fire Salvage	Santa Fe NF	11.2	1,208	Owls, Rio Grande Cutthroat
3	NM	Lakes & BMG Fire Salvage	Santa Fe NF	4.0	890	
5	CA	Star Fire Salvage	Eldorado NF	14.0	900	
5	CA	Blue Fire Recovery	Modoc NF	82.1	9,275	
5	CA	Modoc Fire Complex Salvage	Modoc NF	0.8	332	
5	CA	Stream Fire Salvage	Plumas NF	7.0	2,300	
5	CA	McNally Burnt Ridge Fire Salvage	Sequoia NF	1.2	238	Categorical Exclusion
5	CA	McNally Sherman Pass Fire Salvage	Sequoia NF	30.0***	3,500	
5	CA	McNally Roadless Fire Salvage	Sequoia NF	60.0***	7,351	3 Roadless Areas
5	CA	McNally Hazard Tree Abatement Project	Sequoia NF	NA	1,570	Sequoia National Monument
5	CA	Denny Fuels Fire Salvage	Shasta-Trinity NF	6.0	4,500	Old Growth, owls, salmon
5	CA	Hyampom Fuels Reduction Salvage	Shasta-Trinity NF	4.0	800	
5	CA	Oregon Fire Community Protection	Shasta-Trinity NF	1.6	400	
5	CA	Clear Creek LSR Recovery Project	Shasta-Trinity NF	1.5	1,980	LSR, mature forest
5	CA	Journey Fire Salvage and Comm. Thin.	Six Rivers NF	1.8	97	Big green trees
5	CA	North Fork Fire Salvage	Sierra NF	6.0	600	
5	CA	Darby Fire Salvage	Stanislaus NF	6.2	2,500	
5	CA	Red Star Fire Salvage	Tahoe NF	12.0	900	
6	OR	Eyerly Fire Salvage	Deschutes NF	23.0	4,952	
6	OR	Skunk Fire Salvage	Fremont/Winema NF	4.7	900	
6	OR	Winter Fire Salvage	Fremont/Winema NF	15.7	2,997	
6	OR	Tool Box/Silver Fire Salvage	Fremont NF	73.0	14,419	
6	OR	Cub Fire Salvage	Fremont/Winema NF	12.3	1,600	
6	OR	Flagtail Fire Road Hazard Salvage CE	Malheur NF	1.7	NA	
6	OR	Flagtail Fire Salvage	Malheur NF	33.0	5,200	
6	OR	Monument Fire Salvage	Malheur NF	38.0	4,800	
6	OR	Easy Fire Salvage	Malheur NF	16.0	3,700	
6	OR	Bandit II Timber Sale and Fire Salvage	Ochoco NF	13.3	2,375	
6	OR	Murray Fire Salvage	Ochoco NF	0.7	129	
6	OR	Biscuit Hazard CE Fire Salvage	Siskiyou NF	5.0	NA	
6	OR	Biscuit Fire Salvage	Siskiyou NF	518.0	30,000	Many Roadless Areas
6	OR	Roadside Fire Salvages	Umpqua NF	1.0	NA	Late Successional Reserve

6	OR	Baked Apple Fire Salvage	Umpqua NF	56.8	1,432	Old-growth
6	OR	Ash Creek Fire Salvage	Umpqua NF	3.5	250	All old-growth/mature
6	OR	Apple CE Salvage	Umpqua NF	.5	45	Some old growth logging
6	OR	Acker Fire Salvage	Umpqua NF	NA	112	All old-growth/mature
6	OR	Tiller Roadside Salvage	Umpqua NF	1.0	NA	
6	OR	Kelsay Mountain Fire Salvage	Umpqua NF	NA	250	
6	OR	Molasses Salvage	Umpqua NF	NA	40	Old-growth forest
6	OR	Kelsay Roadside Salvage	Umpqua NF	.2	NA	
6	OR	Monument Fire Salvage	Wallowa-Whitman NF	9.0	780	
6	WA	Mt. Leona Salvage CE	Collville NF	2.8	520	
6	WA	Bailey Fire Salvage	Okanogan-Wenachee NF	7.7	1,189	
6	WA	Deer Point Fire Salvage	Okanogan-Wenachee NF	8.0	2,500	
BLM	OR	Timbered Rock Fire Salvage	Medford BLM	30.0	4,000	Late Successional Reserve
Total Post-Fire Salvage Logging Projects in the West				**1,476.0**	**250,346**	

*Board foot figures are based on the proposed action or final decision. MMBF = Million Board Feet. **Acreages are based on treatment acres for all commercial units (salvage and green). ***Estimates based on similar post-fire salvage logging projects in the Sierras.

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