Photo: USFS

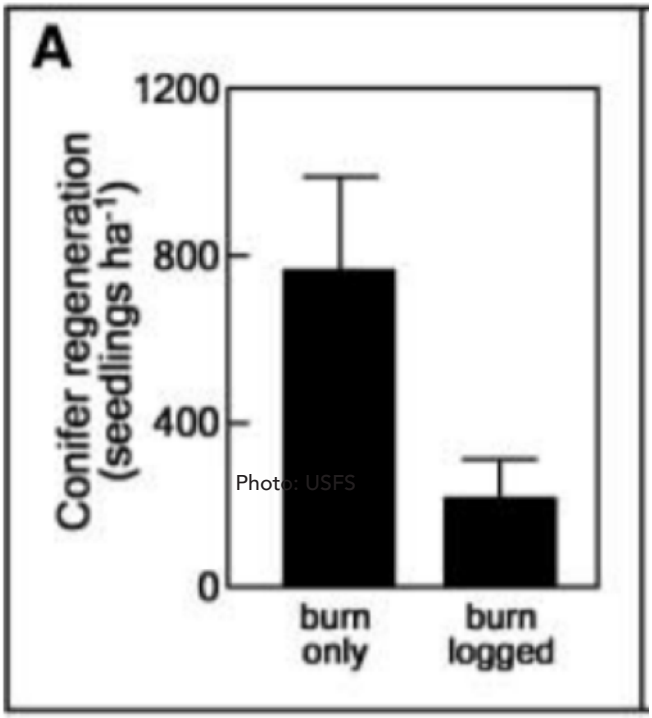


Photo: USFS

Donato, D. C., Fontaine, J. B., Campbell, J. L., Robinson, W. D., Kauffman, J. B., & Law, B. E. (2006). Post-wildfire logging hinders regeneration and increases fire risk. *Science*, 311(5759), 352-352.

# Consideration 1: Economics

Economic recovery of a resource:

- Trees that are killed by fire, but otherwise remain essentially intact, retain much of their economic value.
- The highest value timber is obtained within the first year following fire. Due to decomposition, most of the value is gone within 3 to 5 years after the fire.
- Logging companies have paid about $170 per million board feet for logs from National Forests over the past 20 years.

Costs to the Forest Service and taxpayers:

- The U.S. Forest Service receives revenue from salvage logging, which can be used for post-fire recovery and restoration, including planting seedlings and stabilizing soils.
- A study reviewing the monetary costs of logging on public lands after the Chetco Bar Fire found that the costs to the Forest Service and taxpayers would exceed the value of the logs removed by 2-to-1.

Local communities and economies:

- Positive impacts include increases in jobs and incomes, often in rural communities, for workers employed by salvage logging companies.
- Timber represents less that 3% of the national forests' total contribution to economic output. The other 97+ percent comes from outdoor recreation, fish and wildlife, water, minerals, roadless areas, and other goods and services.

Adverse impacts to recreation industry:

- In a recent study, the Bureau of Land Management estimated the negative effects of logging on recreation in western Oregon and found that for every $1 of logs produced, the negative effects on outdoor recreation results in a cost of $0.50.

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# Consideration 2: Restoring Living Trees

- Re-planting following salvage logging allows forest managers to establish desired species, especially those that are more economically viable for future harvest (often of a single, high value species such as Douglas fir). Meanwhile, natural forest regeneration leads to a variety of species – not all of which are desired for commercial benefits.

- A study following the 2002 Biscuit Fire Complex in southern Oregon found that post-fire logging reduced seedling densities by 71%. In this instance, logging and reforestation did not accelerate post-fire forest recovery.

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Photo: NPS

Photo: NPS

# Consideration 3: Forest Structure & Diversity

- Large snags (standing dead trees) and down logs are "biological legacies" that provide both land and aquatic habitats. These structures serve as nest sites for cavity-nesting birds, roosts for bats, and important sources of moisture and shelter for amphibians. When some of these logs end up in streams as log jams, they create essential spawning habitat for aquatic species including salmon.
- Removal of these trees hampers the ecological value of the forest by limiting the diversity of species found in the early stages of wildfire recovery.
- Higher levels of biodiversity (as measured by number of species) are often associated with recently burned areas that develop naturally after a disturbance compared to logged areas.

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# Consideration 4: Carbon emissions

- When soils are damaged by logging, they can release stored carbon into the atmosphere. Salvage logging also reduces the amount of carbon stored in dead and living trees while generating carbon emissions during the logging process.
- After a wildfire in the eastern Sierra Nevada, researchers reported that salvage logging increased the loss of stored carbon by 340 percent.
- Research conducted following the Biscuit Fire found that only 15 percent of killed trees' carbon was emitted into the atmosphere in the first 10 years following the fire, mostly from fire-killed leaves and fine roots. The rate of decomposition then slowed as the remaining large-diameter pieces of wood slowly decomposed.
- The Bureau of Land Management recently estimated the amount of carbon dioxide that would be released into the atmosphere from logging of its lands in western Oregon, as well as the economic loss and damage that would result from those emissions, such as extreme weather events, sea-level rise, etc. This research shows that the carbon-related damage would exceed the value of the logs produced by a ratio of 4.13-to-1.

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Photo: USGS

Photo: Oregon.gov

# Consideration 5: Impacts to Streams and Drinking Water

- Salvage logging results in more water runoff because trees are no longer absorbing and percolating water into the soil. Logging roads further increase runoff. High river flows with worse sediment loads (turbidity) is particularly harmful to aquatic species like salmon.
- Other possible impacts on streams due to removal of trees include increased stream temperature caused by forest canopy removal and loss of logs that stabilize stream ecosystems.
- Increased stream sediment generally generates economic costs to individuals, communities, and landowners downstream.

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# Consideration 6: Increases Spread of Exotic Species

- New road building and the movement of logging equipment brings exotic plant seeds into recently disturbed sites (often ideal conditions for establishment of potentially invasive species). This threatens the long-term health of public lands while potentially causing very costly future invasive species removal projects.

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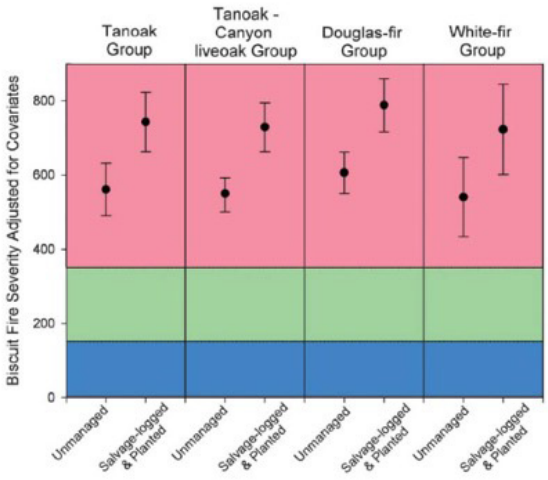
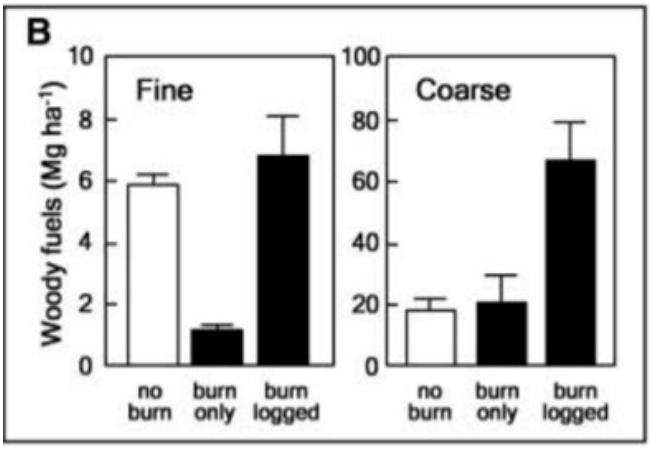



Thompson, J. R., Spies, T. A., & Ganio, L. M. (2007). Reburn severity in managed and unmanaged vegetation in a large wildfire. *Proceedings of the National Academy of Sciences*, 104(25), 10743-10748.

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# Consideration 7: Future Fires

- Logging operations can increase the risk of fire by leaving debris, such as treetops and limbs, that can cause a severe re-burn of the area

- When researchers compare woody fuels in areas that were not burned, areas that were burned, and areas that were burned and logged they found: fuel loads on the forest floor were increased by post-fire logging. The presence of these fuels increases short-term risk of re-burn. This finding suggests that the lowest fire risk strategy would be to leave dead trees standing as long as possible where they are less available to low intensity flames.

- This study also suggested that naturally regenerated forests are less prone to high burn severity, perhaps because regenerating trees are patchier, have open gaps and have more species diversity.

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