

## Post-fire Salvage Logging: To Cut or Not to Cut



## Definition

- "Removal of trees that are dead, damaged, or imminently threatened with death or damage in order to use the wood before it is rendered valueless by natural decay agents."
- Economic return decreases with time
  - When Washington DNR salvaged timber from the 2005 School fire, timber sold for \$99/mbf
  - When USFS salvaged similar timber a year later, the timber sold for \$16/mbf

EPA

## Post-Fire Treatments

Roadside Hazard Tree Removal and Salvage Harvest (proposed)



Post-fire timber salvage on the School Fire that burned about 50,000 acres south of Pomeroy, WA. Photos by Leigh Lentile, University of Idaho.

## Methods of Salvage Logging

- Ground-Based
  - Tractor logging can cause the most soil disturbance
- Mechanized
- Cable = Line (fully or partially suspends logs)
  - Steep ground
- Helicopter
  - Expensive
  - Less environmental impact
- See Dykstra 1976, McIver and Starr 2001, Rice et al. 1972 for more information



## To Salvage or Not to Salvage?

### Arguments For...

- Stabilize burned areas
- Remove hazardous materials
- Make room for new trees to be planted
- Jobs and income

### Arguments Against...

- Environmental Degradation
- Soil compaction
- Dead trees as habitat for birds
- Cost and impact of new roads for hauling logs to market
- High cost

## A hotly debated topic

- Debates about post-fire logging are often highly charged politically
- Multiple scientific studies
- Recent syntheses (e.g. Peterson et al. 2009)



## Legalities

Federal timber sale procedures under the National Environmental Planning Act (National Environmental Act of 1969) often take 2 or more years to move from initiation to implementation (Abdullah, 2006).

## Ecological effects

- Fire severity
- Mgt activities determine
  - ground disturbance by logging and roads
  - # living and dead trees, their condition and spatial pattern following harvest
  - postharvest fuel treatment
  - Rehabilitation after fire and after logging , and
- Scale

## Biscuit fire study by Donato et al. (2006)

- Biscuit fire burned in 2002
- They sampled before (2004) and after (2005) post-fire salvage
- More seedling regeneration and less fuel on burned areas not salvaged than on those areas burned and salvaged

From: Donato et al. 2006. Science 311: 352.

## Reburns and salvage

- Thompson et al. (2007) sampled burn severity in 2002 Biscuit fire
- Areas (re)burned severely in 2002 also burned severely in 1987 Silver fire
- Low severity where not previously burned
- Areas salvaged and planted after 1987 Silver fire burned more severely in 2002 Biscuit fires than areas that weren't salvaged and planted

From: Thompson et al. 2007 Proceedings of National Academy of Science 104(25):10743-1after 0748

## Salvage effects

From Peterson et al. 2009

## My opinion

- Salvage should be justified (or not) based upon economics, not ecology
- Impacts of logging, including roads, soil compaction, etc. apply
- No simple answer – make decisions case by case



## Literature Cited

- Donato, D.C., J.B. Fontaine, J.L. Campbell, W.D. Robinson, J.B. Kauffman, and B.E. Law. 2006. Post-wildfire logging hinders regeneration and increases fire risk. *Science* 311: 352.
- Durbin, Kathie. 2006. Massive logging plan shakes Northwest. *High Country News*. Accessed 23 October 2006: <[http://www.hcn.org/servlets/hcn.Article?article\\_id=14453](http://www.hcn.org/servlets/hcn.Article?article_id=14453)>.
- Longley, Robert. 2006. US Government Info/Resources. [Forest Fires Impacts and Information](#). Accessed 25 Oct 2006: <<http://usgovinfo.about.com/b/fire.htm>>.
- Thompson, J.R., T.A. Spies, and L.M. Ganio. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. *Proceedings of the National Academy of Sciences* 104(25):10743-10748.



## Some additional resources

- Karr, James R., Jonathan J. Rhodes, G. Wayne Minshall, F. Richard Hauer, Robert L. Beschta, Christopher A. Frissell, and David A. Perry. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American west. *BioScience* 54(11): 1029-1033.
- McIver, James D. , and Lynn Starr. 2001. A literature review on the environmental effects of postfire logging. *Western Journal of Applied Forestry*. 16 (4): 159-168.
- Peterson, D.L., J.K. Agee, G.H. Aplet, D.P. Dykstra, R.T. Graham, J.F. Lehmkuhl, D.S. Pilliod, D.F. Potts, R.F. Powers, J.D. Stuart. 2009. Effects of timber harvest following wildfire in western North America. Gen. Tech. Rep. PNW-GTR-776. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 51 p



## Questions?