



## Climate Change and Forest Fires

The October fires in California have so far burned 750,000 acres, taken 20 lives and destroyed more than 3,400 homes. This enormous event (dubbed “the worst in California’s history”) may be an indication of fires of the future, with our national forests rendered increasingly vulnerable by climate change and the accompanying extremes due to fossil fuel combustion and carbon dioxide emissions.

A primary culprit in the California fires was bark beetle infestations. The Western bark beetle (*Dendroctonus brevicomis*) has killed up to 80% of pine trees in some areas of Southern California, including San Diego county (United States Department of Agriculture, 2002). This infestation has been encouraged by rising temperatures and drought.

Since 1994, mild winters have cut winter mortality of bark beetle larvae. In Wyoming, for example, winter temperatures now kill under 10% of larvae, down from an average of 80% (COFI Mountain Pine Beetle Task Force). In Alaska, spruce bark beetles populations exploded due to mild winter temperatures (USDA, 2002) and have stripped four million acres in the Kenai Peninsula (Alaska Division of Forestry, 2002). In British Columbia, nearly 22 million acres of lodgepole pine have become infested – enough timber to build 3.3 million homes or supply the entire U.S. housing market for two years (The Economist 9 Aug).

Droughts, which have become more prolonged in the last two decades (IPCC 2001; WMO 2003), compound the problem by weakening natural tree defenses. Normally, trees use resin to physically drown pest larvae, but in dry conditions the resin dissipates, paving the way for hundreds of thousands



of pest eggs to hatch into larvae, then into adults.

Warming is also expanding the range of beetles. Lodgepole pines are the preferred target for many beetles, but evidence is growing that these same beetles are increasing their ranges to include high elevation whitebark pines that provide crucial ecosystem functions for watershed integrity (USDA, 2002).

The consequences of such fires pose huge economic burdens. According to the Reinsurance Association of America, the California tally is estimated to be over \$1 billion, not including fire suppression costs. They also cause serious health problems well. Particles and wind-carried hazes lead to respiratory problems and can contribute to cardiac illness. Major fires significantly increase hospital visits for asthma, respiratory problems, and chest pain. The long-term carcinogenic potential of chemicals released from fires involving houses, plastics, etc. have not been adequately studied.

Continued oil dependence, carbon dioxide emissions and warming will likely increase the stresses facing our Nation’s forests. A long-sighted view tar-

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geted at reducing the emissions significantly (60-70%, according to the IPCC), not simply short-term measures of forest-thinning, will help protect our future homes and health.

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