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CALIFORNIA – ALBANY-ARCATA-DAVIS-FRESNO-PLACERVILLE-REDDING-RIVERSIDE – HAWAII-HILO

SCIENCE THAT MAKES A DIFFERENCE

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New Study Shows that Fuel Reduction Treatments Pose Little Risk to Forest Ecology

ALBANY, Calif.—During the last century, fire suppression and the removal of large trees, among other factors, have increased forest fuels and changed overall forest conditions leading to larger and more severe wildfires in some forests. To reduce the risk and severity of wildfires, fuels treatments, such as prescribed fire and mechanical thinning, are now commonly used to treat stands in order to increase their resiliency to wildfires.

A recent paper in *Bioscience* co-authored by USDA Forest Service Pacific Southwest Research Station researcher Dr. Chris Fettig and scientists from six universities in the U.S. and Australia have shown that these fuels treatments can, indeed, be implemented with few unintended consequences. The scientists analyzed a broad spectrum of ecological markers, detailing the effects of fuel-reduction treatments on vegetation, soils, wildlife, bark beetles and carbon sequestration, while relying heavily on data from the U.S. Fire and Fire Surrogates Study, in addition to other research.

Key findings include:

- Both prescribed fire and its mechanical “surrogates” are generally successful in meeting short-term fuel-reduction objectives with few unintended consequences.
- Most ecosystem components (vegetation, soils, wildlife, bark beetles, carbon sequestration) exhibit very subtle effects or no measurable effects at all.
- For the first five years after treatment, some birds and small mammals that prefer shady, dense habitat move out of treated areas, while others that prefer more open environments thrive.
- Fuels treatments tend to increase the overall diversity of vegetation.
- An increase in bark beetles, insects that prey on fire-damaged trees, was short-lived and concentrated in the smaller diameter trees. Researchers noted that thinning a dense forest stand improves tree vigor and ultimately increases its resilience to other forest pests.

As a fuel reduction practice, prescribed fire is a useful alternative to wildfire because it is thought to best emulate the natural process it is designed to replace. However, the use of prescribed fire has been constrained by social concerns in many locations, particularly in the western U.S. As a result, fuel reduction “surrogates,” such as forest thinning and mastication, have become attractive, especially if forest managers can use such treatments to accomplish similar stand structure goals as those obtained by prescribed fire.

“A combination of thinning and prescribed fire has been shown to be highly effective for reducing the severity of wildfires in treated stands” says Dr. Fettig. “Furthermore, designing more fire resilient forests will increase their resiliency to changes imposed on them by climate change.”

To read the full report, “The Effects of Forest Fuel-Reduction Treatments in the United States,” go to: <http://treearch.fs.fed.us/pubs/40902>.

Headquartered in Albany, Calif., the Pacific Southwest Research Station develops and communicates science needed to sustain forest ecosystems and other benefits to society. It has research facilities in California, Hawaii and the U.S.-affiliated Pacific Islands. For more information, visit www.fs.fed.us/psw/.

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