Western forests recover quickly from natural wildfires

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Lodgepole pine forests recover within a century following severe wildfires, according to a three-year study led by the University of Idaho in Colorado's Rocky Mountain National Park. The research gives a benchmark for better understanding the impacts of naturally occurring wildfires.

The results were published recently in *New Phytologist*, a peer-reviewed scientific journal published in Lancaster, England. The project was funded by the National Science Foundation and the University of Idaho.

"Understanding fire and its historic patterns is vital to sound resource management, particularly in the context of ongoing and future climate change," said Paul Dunnette, a University of Idaho graduate student who led the work.

Large wildfires can kill vast amounts of trees, changing familiar landscapes for a lifetime. That is often what humans respond to. By looking at patterns beyond the length of a human life, this study reveals that lodgepole pine forests have the ability to repeatedly recover from wildfires.

The research was unusual in that it documented the occurrence and ecological impacts of wildfires over the past 4,200 years. The lodgepole pine forests of the Rocky Mountains were used because they are prevalent and fire is a regular part of their life cycle. By taking core samples of sediment from the bottom of a mountain lake and looking for

charcoal fragments, Dunnette and his co-author and graduate advisor, Philip Higuera of the College of Natural Resources, were able to study when fires occurred in the distant past. By examining the sediments deposited immediately after past fires, Dunnette and colleagues studied how wildfires affected nutrient cycling and forest recovery.

"The lake is a passive recorder of history," Higuera said. "Sediment works much like rings of a tree, which tell a story of past environmental change. Because the sediments are underwater, the material that lands on a lake is well preserved, unlike material deposited in forest soils."

The goal of the study is to better understand the long-term pattern and effects of wildfires, and provide information for land managers and policy makers.

More information: Dunnette, P. V., Higuera, P. E., McLauchlan, K. K., Derr, K. M., Briles, C. E. and Keefe, M. H. (2014), "Biogeochemical impacts of wildfires over four millennia in a Rocky Mountain subalpine watershed." *New Phytologist*. DOI: 10.1111/nph.12828

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