

Learn at Lunch Webinar: Forest Management Affects how Beetle Outbreaks and Wildfire alter Ecosystems: Lessons from Northern Colorado and the Fraser Experimental Forest

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Overstory mortality (red trees) caused by mountain pine beetle and strips of younger, live trees (green) in the Fool Creek watershed at the Fraser Experimental Forest, Colorado. The aerial photo demonstrates how beetle-related tree mortality responded to historic forest management activities. Photo by C. Rhoades.

Chuck Rhoades, Rocky Mountain Research Station
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Unlike the predictable vegetation and ecosystem changes typical after wildfire or timber harvesting, the outcomes of insect outbreaks remain poorly understood. Historic forest management alters stand structure, species composition and tree susceptibility during beetle outbreaks. For example, forest mortality and stream N export are lower in multiple-age stands compared to old-growth watersheds with proportionally more, large lodgepole pine trees. Tree regeneration and nutrient cycling following combined bark beetle and wildfire disturbances are also modified by historic harvesting. These current studies underscore the legacy of forest management and how it contributes to post-disturbance responses.

Chuck Rhoades studies the biogeochemical processes that regulate delivery of clean water and that sustain productive soils and forests. His current research involves

soil and water responses to fuel reduction treatments, post-fire rehabilitation activities, and wild and prescribed fires. For the past decade, much of his research has related to the watershed effects of extensive bark beetle outbreaks and associated forest management activities.