

On the Move: Recent Happenings in Vegetation Research

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Scientists either directly or indirectly associated with previous Bitterroot Ecosystem Research Management Project (BEMRP) vegetation studies continue to pursue both fundamental and applied vegetation research projects in the interior West. Most of the “recent happenings” in vegetation research relate to restoration of forested ecosystems, including activities in whitebark pine, lodgepole pine, old growth ponderosa pine, mixed conifer canyons, and fir-dominated riparian areas (figure 1).

Whitebark pine—Two RMRS scientists are currently working in the high elevation whitebark pine forest type. Ward McCaughey, Research Forester at the Bozeman Forestry Sciences Laboratory, has several studies evaluating regeneration and plantation success of whitebark pine on high elevation sites in the Greater Yellowstone Area ecosystem. Research Ecologist Bob Keane (Missoula Fire Sciences Laboratory) is investigating silvicultural and prescribed fire methods to restore declining whitebark pine ecosystems in the northern Rockies. Keane’s current research effort involves six sites in western Montana and central Idaho.

Lodgepole pine—McCaughey and Research Forester Colin Hardy (Missoula Fire Sciences Laboratory) are co-principals for an extensive, multiple treatment study on the Tenderfoot Creek Experimental Forest in central Montana. Various combinations of four treatment regimens are being imposed among eighteen separate blocks: prescribed fire only, a silvicultural cutting design called “shelterwood with reserves” with both even and grouped retention

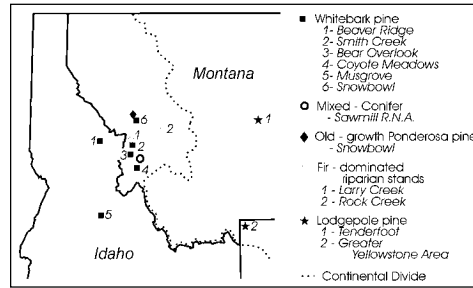


Figure 1—Vegetation research is taking place in five different vegetation types in the interior Northwest.

tional Forest, where small diameter Douglas-fir have been cut and piled for burning beneath old growth and younger ponderosa pine. Some larger firs were also girdled to relieve competition. Invasive weeds have been treated, and subsequent tree and understory response to the integrated treatments will be monitored.

Riparian area restoration—A comparison of vegetation response to cutting and burning of grand fir thickets is being made by Harrington along two streams in western Montana. Final, 2nd-year post-treatment measurements have recently been completed.

(figure 2), harvesting followed by prescribed underburning, and no-treatment controls.

Old-growth ponderosa pine—Mick Harrington, Research Forester from the Missoula Fire Sciences Laboratory, is conducting a restoration project in stressed, 320 year-old ponderosa pine and larch near Missoula. He is comparing five treatments, including cutting and several burning options in Douglas-fir thickets as well as removal of some old trees to allow pine and larch regeneration (see article on page 13).

Restoration of mixed-conifer forests—Harrington is also the principal investigator for a restoration project at the Sawmill Research Natural Area on the Bitterroot National Forest, where small diameter Douglas-fir have been cut and piled for burning beneath old growth and younger ponderosa pine.

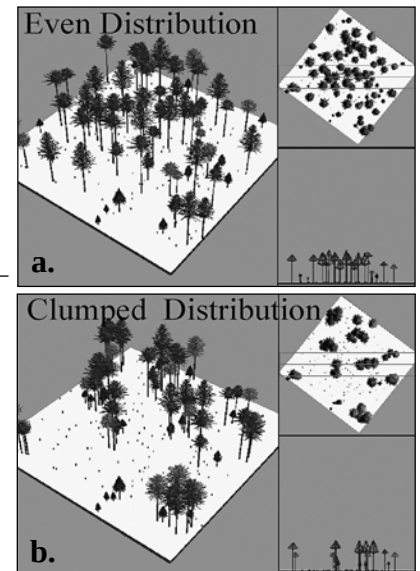


Figure 2—The two-aged silvicultural prescription, called “shelterwood with reserves,” will retain 50 percent of the basal area in two different distributions— even (a) and grouped (b).

Fire and Silviculture to the Rescue

For some it might appear strange that fire and silviculture are used to return altered forest ecosystems to healthy presettlement conditions. We have been conditioned to believe these processes assault forest ecosystems rather restore their health. However, research forester Mick Harrington (RMRS, Missoula Fire Sciences Lab) and his colleagues assert both constitute a valid approach to system restoration and sustainability.

Because fire was historically a key disturbance factor in Northern Rockies forest ecosystems, its 20th century exclusion has produced unnatural conditions, including massive fuels buildup, loss of habitat, and extreme site stocking. Currently, fuel conditions prevent fire alone from returning these ecosystems to their desired presettlement conditions. How then does one obtain a healthier forest ecosystem and a reduction of fire hazard? Research has shown that one way to mitigate forest health problems is to use some form of mechanical treatment followed by prescription fire.



Researchers use prescribed underburning to restore riparian vegetation at Larry Creek. Photo by Mick Harrington.

Mick Harrington and his associates have conducted forest health restoration projects for more than 12 years. Usually, these involve some form of harvesting to prepare sites for fire treatments.

“We have broken new ground and are working in controversial areas people have avoided in the past because of the controversies,” said Harrington.

For example, he and others are conducting riparian restoration treatments, applying mechanical activities (cutting), and then fire. Harrington explained that fire has been an historic disturbance in riparian as well as in upland areas. Because of fire’s exclusion in riparian areas, a species shift has occurred which is detrimental to riparian ecosystems in general. Researchers aim to study ways of restoring riparian areas to a more sustainable condition for the vegetation and wildlife that live there. However, they want to be sensitive to the fragile nature of stream-side ecosystems.

Harrington explained that often researchers apply a treatment and measure the first or second year effects, never to return to examine the more subtle, important changes, which occur during the next decade such as new plants, tree mortality and growth release, soil changes, and the like. Since few long-term forest restoration studies have been published, Harrington plans to maintain his monitoring studies for the long-term. Fire and silviculture to the rescue!