

BEMRP: Conducting Research, Sharing Results

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A couple of years ago the Bitterroot National Forest began planning the Trapper Bunkhouse Land Stewardship Project (Trapper-Bunkhouse Project). This project includes fuels reduction, watershed improvements, noncommercial thinning in plantations to improve resiliency to insects and disease, and commercial timber harvest to provide economic value to the community and help fund project activities.

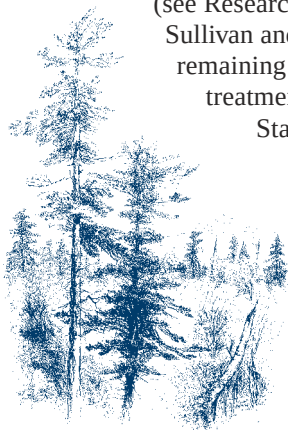
The Trapper-Bunkhouse Project shows the value of the partnership between managers and researchers that is at the core of BEMRP. Researchers and managers came together to ask what research questions could be addressed by a land stewardship project such as this. We found we needed an assessment of how landscape modeling could help managers with their decisions and a scientifically sound assessment of the effects of treatments. In the meantime, we're also continuing other research projects that address different needs expressed by managers.

As a first step in the researchers' involvement with this project, researchers and managers have been testing interaction of three types of landscape models to evaluate:

- 1) the wildland fire behavior expected spatially on the landscape given current vegetation and fuel patterns;
- 2) how current conditions are expected to change in the future in the absence of vegetation treatments;
- 3) where to place vegetation treatments over time to reduce likelihood of undesirable severe wildland fire and improve forest health given available budgets; and
- 4) evaluate effectiveness of treatment alternatives for reducing undesirable severe wildland fire as well as reducing associated losses from fire when it does occur.

These modeling tests are nearing completion (see Research Highlights written by Janet Sullivan and Ward McCaughey). The remaining modeling work is evaluating treatment alternatives. A forthcoming Station report will document results from these modeling tests.

A small portion of the Trapper-Bunkhouse Project is devoted to replicated tests of forest restoration/fuel reduction treatments designed for the frequent, low-intensity fire regime forests that are



Part of the Trapper-Bunkhouse Project area near Darby (background), with biomass stockpiles for use in the Darby school's biomass burner (foreground). The wildfire threat to this area, along with its importance to residents for work, recreation, and esthetics made it a high priority for fuel reduction treatments. (Photo by Betsy Ballard)

common in lower elevations of the Bitterroot Valley and elsewhere in the Northern Rockies. Research questions identified through BEMRP's interactions with managers include impacts of vegetation treatments on soil compaction and nutritional qualities, potential for weed invasion, health and vigor of resulting stands of trees, effectiveness in reducing the probability of severe wildfire, and others. We identified locations for the treatment replications, and the necessary environmental analysis of our proposed research is included in the draft Environment Impact Statement for the project. Researchers are collecting pre-treatment data in anticipation of treatments occurring in summer and fall 2008.

Other research undertaken by BEMRP's participating research units is addressing a number of topics important to managing Rocky Mountain ecosystems. We have learned, for example, that 13 years after applying forest restoration thinning in ponderosa pine stands, trees are continuing to respond positively, with less moisture stress and greater photosynthetic activity than unthinned stands. We've also learned that understory thinning and burning treatments in old-growth ponderosa pine and larch stands 6 years ago were effective in reducing competition for water and nutrients, resulting in preserving and improving the health of valuable old-growth trees. Other studies have documented that impacts of invasive plants can ripple through natural ecosystems from plants to insects to songbirds. The results of these and other studies were published in 53 research papers in 2006, making this valuable research available to land managers throughout the nation.

In other activities, BEMRP sponsored a well-attended

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Using Models to Provide a Virtual Test of Forest Treatments

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BEMRP's participation in the Bitterroot National Forest's proposed Trapper Bunkhouse Land Stewardship Project (Trapper-Bunkhouse Project) consists of two parts. One is the field study mentioned elsewhere in this ECO-Report that is looking into the effects of thinning and burning on various resources. The other part involves modeling to determine where treatments should take place both from a fuel reduction and economic standpoint.

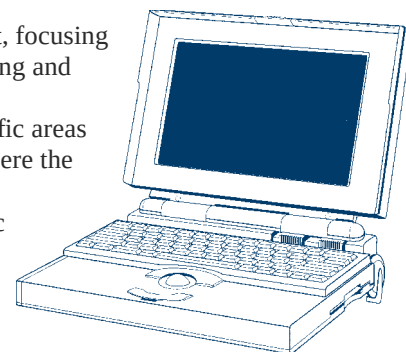
Through the course of the Trapper-Bunkhouse Project, researchers have worked with Forest personnel to integrate various types of computer models with the project planning process (see the 2005 ECO-Report article "Visualizing a Forest Landscape Today and Tomorrow" available at BEMRP's website: <http://www.fs.fed.us/rm/ecopartner>). Early on, we used broad-scale models of vegetation disturbance processes and fire behavior along the Bitterroot Front to help the Forest focus in on a particular project area. During the final phase of the planning process researchers worked with the Forest to test the utility and efficiency of MAGIS, a planning model that integrates vegetation information with fire hazard, economic, and other resource information.

The objective of MAGIS modeling was to assist development of scenarios that make the best use of budgets and reduce wildfire hazards while providing other significant resource benefits. During this process, researchers interacted with Forest planning team members to design model scenarios that included the issues outlined in the purpose-and-need

statements for the project, focusing primarily on fire-risk rating and economics. The modeled scenarios indicated specific areas (delineated as stands) where the combined benefits (fuel reduction AND economic efficiency) could increase the overall efficiency of the project.

These areas were further investigated on the ground to determine whether they should be included in the action alternatives. The "ground-truthed" treatments were compiled to build a model-assisted alternative to include with other alternatives in the draft Environmental Impact Statement.

Once the Forest defined alternatives to evaluate, additional fire behavior modeling provided a virtual test of how effectively proposed treatments may alter future fire behavior across the entire project area. The primary modeling tool for this step was FlamMap, a product of the Fire Sciences Lab. FlamMap is a fire behavior mapping and analysis program that computes potential fire behavior characteristics (spread rate, flame length, fireline intensity, etc.) over a landscape for constant weather and fuel moisture conditions. We compared proposed treatments under the action alternatives with the No Action alternative. While analyses of the results are still underway, preliminary results indicate that the model-assisted alternative may more effectively constrain future fire behavior than treatments defined and located using conventional planning processes.



Scientific Independence... (from page 2)

Scientists have a responsibility to society based on the confidence that is placed in credible scientific information. Indeed, as demonstrated by organizations like the National Academy of Sciences, science often represents the only social means by which complex problems can be solved. When issues like "spotted owl conservation and national economics" or "global warming" become highly politicized, the general public, and some politicians, turn to science for reliable information. In such cases, the preponderance of "scientific information" holds sway even when scientific consensus is beyond reach. For this reason alone, scientists must strive for independent, credible understandings worthy of "scientific stature" and the value placed on such stature by society. This highlights a significant difference between scientists who work *with* those who must consider political factors versus scientists who work *for* them.

Conducting Research... (from page 3)

half-day session at the Northern Region Training Academy that included presentations on: 1) biomass utilization opportunities from restoration treatments; 2) ecology and management of invasive species; 3) efficacy of herbicide for mitigation of ecological impacts of spotted knapweed invasion; and 4) fire history of riparian and upland zones in six headwater drainages of the Bitterroot National Forest.

We also helped with eight school field trips to local Forest sites and a public field trip to the Trapper-Bunkhouse Project area. An impressive Lick Creek Demonstration/Research Forest Interpretive Auto Tour brochure has been completed recently and is available at the Bitterroot National Forest Darby District office. Check out our updated website for more information on BEMRP research, activities, and publications (<http://www.fs.fed.us/rm/ecopartner>).