

Focused Science Delivery Program Report

Pacific Northwest Research Station Mission

Our mission is to generate and communicate scientific knowledge that helps people understand and make informed choices about people, natural resources, and the environment.

Program Mission

The mission of the Focused Sciences Delivery Program is to develop and communicate science products that synthesize and integrate existing research knowledge across disciplinary areas and spatial or temporal scales, to proactively inform policy and decisionmaking processes.

Research Problem Statements

Problem 1: Develop conceptual frameworks, methods, and tools needed to compile and display scientific information in ways that support formulation of natural resource management policy and facilitate the use of science in land management decisions.

Problem 2: Conduct analyses, identify key results, and deliver scientific findings related to current and emerging high-priority topics in natural resource management.

Key Findings in 2011

Lessons learned from past wood-to-energy project may help current effort

As oil prices climb, rural communities struggle, and forests accumulate fuel, the pressure to address these challenges becomes more insistent. An interagency wood-to-energy program could provide a solution that would benefit the American people in several ways, including reducing or completely offsetting costs of forest restoration and fire-risk-reduction activities; reducing the use of fossil fuels for production of electricity, thermal energy, and liquid fuels; and helping to stabilize the economies of rural communities. Recognizing this, Department of Agriculture Secretary Thomas Vilsack stated a goal of advancing forest restoration efforts through woody biomass utilization.

A station scientist was asked to contribute to this effort by developing a comprehensive report on lessons learned from previous wood-to-energy projects. The

report yielded recommendations that will help the Department of Agriculture form new partnerships and maximize opportunities to pursue development of wood to energy.

Contact: Jamie Barbour, jbarbour01@fs.fed.us, Focused Science Delivery Program

Amount of historical sage-grouse habitat differs slightly from current recommendations

Sagebrush ecosystems in the Western United States face several threats, including invasive grasses, which lead to different fire regimes, and development. As this habitat has declined, species such as the sage grouse that depend on sagebrush ecosystems have become a management concern. Researchers analyzed how much sage-grouse habitat might have existed prior to 1850 and how that amount compares to current management recommendations. By using the Vegetation Dynamics Development Tool, researchers identified reference conditions for the Malheur High Plateau in eastern Oregon and estimated historical breeding, brood-rearing, and wintering habitat. Their models showed that the median amount of sage-grouse breeding habitat may have been slightly more abundant than levels currently recommended, but wintering habitat may have been less abundant. These results suggest that either sage grouse do not need as much winter habitat as sage-grouse biologists recommend or that the amount of winter habitat may have constrained sage-grouse populations.

Contact: Miles Hemstrom, mhemstrom@fs.fed.us, Focused Science Delivery Program

Partners: Oregon State University, USDI Bureau of Land Management

Encroaching juniper and exotic grasses threaten shrub steppe in southeast Oregon

Many threats are jeopardizing the shrub steppe of the Columbia Basin, including the spread of invasive species such as cheatgrass and expansion of western juniper into shrub steppe beyond its historical range. Native shrub steppe provides important habitat for many wildlife species and is valued for its biodiversity. Land managers have asked for tools to assess risk of shrub steppe conversion and management options for maintaining native shrub steppe. The Integrated Landscape Assessment Project used a state-and-transition modeling approach to project changes in shrub steppe vegetation over time. Without aggressive management, cheatgrass is expected to increase in many warm, dry Wyoming big sagebrush communities, and juniper invasion is likely to expand throughout much of the cool, moist mountain big sagebrush habitat where seed sources are readily available. In transitional

communities between Wyoming big sagebrush and mountain big sagebrush zones, researchers expect much of the landscape to convert to either cheatgrass or juniper woodland.

Contact: Miles Hemstrom, mhemstrom@fs.fed.us, Focused Science Delivery Program

Partners: Institute for Natural Resources, Oregon State University

Evaluation of NEPA processes finds team harmony, empowered leaders lead to success

The Forest Service has struggled to understand why its planning procedures associated with the National Environmental Policy Act (NEPA) are sometimes inefficient, perform poorly in the eyes of the public, and fail to deliver outputs that advance agency mission. Looking for solutions, researchers examined a representative sample of NEPA processes conducted by the agency between 2007 and 2009. They examined interdisciplinary team leaders’ perceptions of the following outcomes: achievement of agency goals and NEPA mandates, process efficiency, public relations, and team outcomes. The most consistent predictors of positive outcomes in meeting NEPA requirements were team harmony and a team leader who felt empowered. The results suggest the importance of genuine concern and respect for participating members of the public, as well as effective interagency coordination.

Forest Service leadership and others who regularly work with NEPA planning are using this information to develop new training sessions for managing interdisciplinary teams.

Contact: David Seesholtz, dseesholtz@fs.fed.us, Focused Science Delivery Program

Partner: Virginia Tech

Use: Forest Service develops new NEPA training based on findings.

NEPA processes influenced by external social pressures

The National Environmental Policy Act (NEPA) requires an environmental assessment (EA) or a more involved environmental impact statement (EIS) to be completed before federal action can occur, if there is potential for the activity to negatively affect the environment

Researchers found that the reasons for preparing an environmental impact statement (EIS) were in many cases not clearly related to the environmental focus of NEPA and its regulations. The NEPA for the 21st Century Initiative found that practitioners followed several themes for preferring an EIS over an EA that went beyond the considerations outlined in official regulations. These themes included

threat of litigation and ability to withstand legal challenges, level of public controversy, and the ability to incur a significant impact.

The possibility that a NEPA practitioner may consider these factors is being built into a risk-management framework under development. This framework will help practitioners determine an appropriate course of action for accomplishing their NEPA responsibilities.

Contact: David Seesholtz, dseesholtz@fs.fed.us, Focused Science Delivery Program

Partners: State University of New York, Virginia Tech

Initial reduction in carbon pools following fuel treatment is likely temporary

Station scientists applied species-specific regional equations for tree volume and aboveground live tree biomass estimations to a landscape in central Oregon. They demonstrated how outputs from vegetation simulation models can be used for a variety of landscape analyses, including timber products, biomass supply, and carbon accounting under an active fuel treatment management scenario.

The simulations suggest that an active fuel-treatment management approach might initially reduce the amount of carbon stored in trees. After the first 50 years of the 300-year simulation, aboveground carbon pools in forests less susceptible to severe wildfire or insect outbreaks were increasing steadily and approaching what they had been prior to fuel treatments.

Contact: Xiaoping Zhou, xzhou@fs.fed.us, Focused Science Delivery Program

Thinning and slash treatments dramatically increase deer forage in older even-aged stands in Alaska

To improve the management of young-growth stands for multiple values, the station and Tongass National Forest established four operational-scale, widely replicated adaptive management experiments known as the Tongass-Wide Young-Growth Studies (TWYGS). A key goal of TWYGS is to assess the effectiveness of silvicultural treatments for improving forage availability for Sitka black-tailed deer, which is highly valued for sport and subsistence hunting and as prey for wolves and bears. In the fourth TWYGS experiment, thinning and slash treatments were applied to even-aged stands more than 35 years old. Five years after treatment, forage biomass in treated stands was four to six times greater than in untreated stands. Analysis of the biomass data with the FRESH-Deer forage availability model showed that treatments increased deer-days of forage availability by five times in summer and three to four times in winter, depending on the treatment.

The TWYGS experiments are the primary means for effectiveness monitoring of young-growth management under the Tongass land and resource management

plan. The vegetation response data and outputs from the FRESH-Deer forage model are being used by the Tongass National Forest to develop a new deer habitat model for southeast Alaska. This new model will be used for project- and landscape-level planning.

Contact: Michael McClellan, mmccllellan@fs.fed.us, Focused Science Delivery Program

Partner: USDA Forest Service Tongass National Forest

Use: Tongass National Forest uses vegetation data in new deer habitat model.

Symposia, Workshops, and Tours

Experimental Forest and Range Network (EFRN) Science Delivery Webinar:

The station and the National Council for Air and Stream Improvement, Inc., organized this Webinar to learn what would make the nationwide EFRN long-term databases more useful to state and federal water quality regulatory agencies. There were 24 participants.

Integrated Landscape Assessment Project (ILAP) Webinar Series: The ILAP team has completed Webinars on all 10 study modules, including Fuels Characteristics, Decision Support, Climate Change and Vegetation, and many others. These presentations provide viewers with a summary of progress to date and are available at <http://oregonstate.edu/inr/ilap-webinars>.

Honors

Exemplary Case Study

The Integrated Landscape Assessment Project, led by **Miles Hemstrom** with the Focused Science Delivery Program, won recognition as one of eight “exemplary case studies” by the Farm Foundation, and selected for presentation at the Agriculture, Food, Nutrition, and Natural Resources Research and Development roundtable in Washington, DC.

Focused Science Delivery, Program Manager

R. James Barbour

Forestry Sciences Laboratory

P.O. Box 3890

Portland, OR 97208-3890

Phone: 503-808-2542

E-mail: jbarbour01@fs.fed.us