RMRScience

USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO

September 2006

Keeping it SIMPPLLE

Land management for the USDA Forest Service is a continuing evolution of designing and applying management practices in response to changing demands by society and an increased awareness of ecological concepts. This evolution has grown from an emphasis on the effects on individual plant communities, to a concern with the cumulative effects on many individual communities within landscapes at a range of spatial scales.

A landscape modeling system called SIMPPLLE (SIMulating Patterns and Processes at Landscape scaLEs), originally developed in 1993 by Forester Jim Chew (then with the Agency's Northern Region in Missoula, Montana), has gained widespread use during its 13-year history of testing and application. Developed for the Agency's Northern Region, resource specialists nationwide, and now internationally, are finding SIMPPLLE a tool of choice to help quantify and incorporate concepts that are often difficult to interpret for specific landscapes. Chew, now a scientist with the Rocky Mountain Research Station's Forestry Sciences Laboratory in Missoula, Montana, says, "SIMPPLLE helps define and evaluate desired future conditions at landscape scales, identifies what parts of a landscape are more prone to disturbance processes over a given period of time, and helps design and evaluate different strategies for achieving desired future conditions."

During its 13-year history, SIMPPLLE has had many applications. It is most fully developed for forests in the northern Rockies, and is being used by both the Forest Service and Bureau of Land Management for Forest Plan revision efforts, watershed assessments and fuel reduction and ecosystem restoration project planning. Outputs are used to measure current trends and historic conditions, and to design and evaluate management alternatives. The system is also operational in forests from Alaska to Montana, Idaho, Utah, New Mexico, California, and Colorado. Preliminary work has been done for the Lake States and the southeastern United States. It is used by federal land managers (Forest Service, Bureau of Land Management, and National Park Service), private consulting firms, nonprofit organizations, and academic researchers.

SIMPPLLE now incorporates bison grazing as an ecological process in grassland ecosystems.

Testing and Applications

SIMPPLLE has undergone continuous development and testing since its inception in 1993. The cost of development in recent years has been a combination of funding from the Forest Service, Bureau of Land Management, US Geological Survey, Montana State University, and the Forest Service's Ecosystem Management Research Institute. "It has been applied to priorities identified in Forest Service and Rocky Mountain Research Station strategic documents," says Chew, "including reducing the risk of catastrophic fire, reducing invasives impacts, improving watershed conditions, and resource management and use." Most recently, its testing and applications include:

- Identifying fuel treatment locations in the Colorado Front Range;
- Evaluating the protection of archeological resources in Mesa Verde National Park from natural disturbances. This work is part of a USGS initiative "FRAMES", Framing Research to support Adaptive Management, that include participation from Colorado State University, Prescott College, and the Merriam-Powell Center for Environmental Research;
- Testing the estimation of occurrence and spread of invasive species in the Northern Rockies and the Colorado Plateau;
- In watershed risk assessments on the Gallatin National Forest;

SIMPPLLE helps identify what parts of a landscape are more prone to disturbance by invasives such as spotted knapweed.

- Helping to develop a BLM Management Plan Revision in Butte, Montana;
- Supporting forest planning in the northern Rockies;
- Reviewing forest plans for the Black Hills and Big Horn National Forests;
- Communicating ecosystem concepts, and designing and evaluating alternatives among stakeholders in collaborative planning in Western Montana;
- The Ecosystem Management Research Institute (a nonprofit organization) is using SIMPPLLE in work with the Thunder Basin Grasslands Prairie Ecosystem Association and for wildlife assessments for the State of South Dakota.

SIMPPLLE was independently evaluated by a panel convened by the Forest Service's Inventory Monitoring Institute, and compared to other landscape dynamic modeling systems. "It fared well in this comparison," said Chew, "eliciting comments such as 'is particularly good at capturing different vegetation patterns and then projecting them over time. It can clearly display the interaction between different processes and the effect of management activities and Plan alternatives over time.'" The panel found advantages and disadvantages to each model, praising SIMPPLLE "because it contained the most biological detail on the systems it was designed to simulate and it has good documentation, including a user manual."

SIMPPLLE version 2.2, its user's guide, and examples of its use are readily available on the Internet at: http://www.fs.fed.us/rm/missoula/4151/SIMPPLLE.

Publication Reviews

Two-aged Silvicultural Treatments in Lodgepole Pine Stands Can Be Economically Viable

(RMRS-RN-29)

Economically viable silvicultural options are critical for management activities that provide wood products, reduce forest fuels, improve forest health, and enhance wildlife habitat. The Tenderfoot Research Project was developed in the late 1990's to evaluate and quantify ecological and biological effects of two-aged silvicultural treatments, including prescribed fire in lodgepole pine forests. Research treatments were designed and installed on the Tenderfoot Creek Experimental Forest, Montana, to create reserve stand structures that emulate stands created by natural fires, and to evaluate hydrologic and vegetative response. Timber products extracted through this research project included sawlogs, stud logs, posts, rails, firewood, and pulpwood. There was a net profit from the sale of products removed from the 649 acres treated. Research Note RMRS-RN-29 is available from the Rocky Mountain Research Station or online at http://www.fs.fed.us/rm/pubs/rmrs_rn029.html.

Forest Health Through Silviculture

(RMRS-GTR-267)

Includes 32 papers documenting presentations at the 1995 Forest Service National Silviculture Workshop. The workshop's purpose was to review, discuss, and share silvicultural research information and management experience critical to forest health on National Forest System lands and other Federal and private forest lands. Papers focus on the role of natural disturbances, assessment and monitoring, partnerships, and the role of silviculture in forest health. General Technical Report RMRS-GTR-267 is available from the Rocky Mountain Research Station or online at http://www.fs.fed.us/rm/pubs_rm/rm_gtr267.html.

RMRScience is a biannual report from the USDA Forest Service's Rocky Mountain Research Station. Each issue highlights on-going or recently completed research, and features findings useful to land managers and other natural resource specialists. To be added to the mailing list, free-of-charge, write *RMRScience*, Rocky Mountain Research Station, 2150A Centre Ave., Fort Collins, CO 80526; or e-mail rfletcher@fs.fed.us; or fax (970) 295-5927. Comments and suggestions are always welcome.

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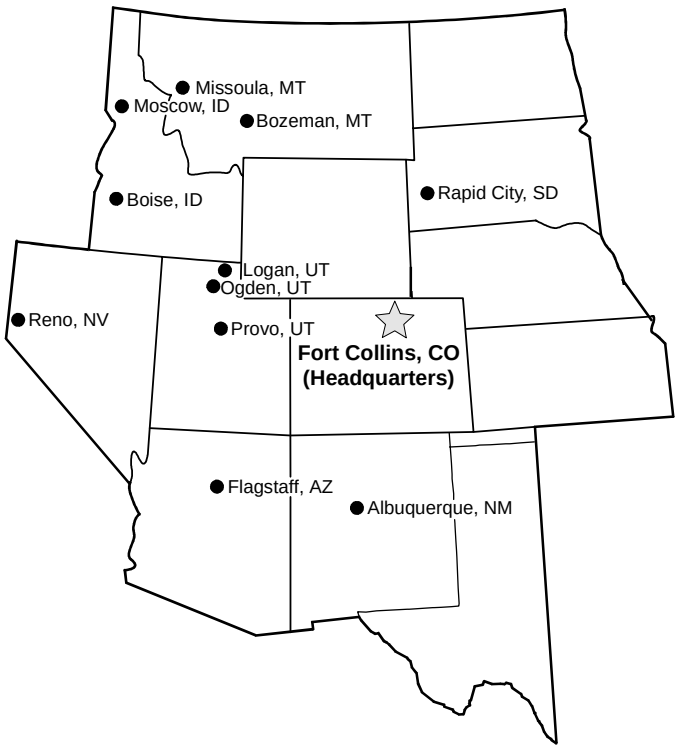

The USDA Forest Service's Rocky Mountain Research Station is one of seven units nationwide that make up the most extensive natural resource research organization in the world. Headquartered at the foot of the Rockies in Fort Collins, CO, the Station maintains 12 laboratories within a 14 state territory (see map). Scientists conduct studies nationwide, with emphasis on the Rocky Mountains, Great Basin, Great Plains, and Southwest. Research serves the Forest Service, as well as other federal agencies, international organizations, private groups, and individuals. For more information, visit our website at http://www.fs.fed.us/rm.

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