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"Science affects the way we think together."

Lewis Thomas

What People Value: An Ecosystem Services Approach to Managing Public Lands

Tania Ellersick

Community members, Forest Service staff, and representatives from the Nature Conservancy tour Big Marsh in the Deschutes National Forest. The Marsh Project integrated the ecosystem services concept with restoration planning, which proved to be an effective way to communicate the tradeoffs and benefits of management actions to stakeholders.

IN SUMMARY

Since 1960, the Forest Service has been guided by the multiple-use concept, which recognizes five major uses for public lands—timber, water, range, recreation, and fish and wildlife habitat—and mandates that all five should be equally considered in management plans. In recent decades, however, it has become evident that people also value many other benefits offered by the natural world, such as support for indigenous cultures and sustainable communities, protection for endangered species, and carbon sequestration. The "ecosystem services" concept has emerged as a way to describe a much broader suite of goods and services, including those that are more difficult to quantify than the traditionally recognized major uses.

The 2012 Forest Service planning rule requires that ecosystem services be addressed in assessment and planning. Researchers at the Pacific Northwest Research Station are working nationally and with individual forests to apply ecosystem services approaches to operations and management decisions. They are working to characterize commonly overlooked values, provide incentives for sustainable practices, and encourage inclusive, collaborative policymaking methods to ensure that input from stakeholder groups and individuals is considered prior to implementing management actions. In a recent general technical report produced by station scientists, the Deschutes National Forest is used as a case study to explore the application of the ecosystem services concept as described here.

All of us have to share the Earth's fragile ecosystems and precious resources, and each of us has a role to play in preserving them.

~ Kofi Annan

To secure favorable conditions of waterflows and furnish a continuous supply of timber—these were the goals stated in the 1897 Organic Act for the Nation's forest reserves, later renamed national forests. But during the building boom that followed World War II, extensive logging in national forests degraded the land and put fragile ecosystems at risk. Foresters and citizens alike became increasingly concerned about compromised waterflows and the loss of high-quality fish and wildlife habitat.

Beginning in the 1960s, the Forest Service began implementing the concept of "multiple use" as a guiding principle for planning and managing in national forests. The multiple-use idea broadened the scope of valued activities in publicly owned forests and rangelands by recognizing and managing for five major uses instead of two—timber, water, range, recreation, and fish and wildlife habitat—and all five were to be equally considered in assessments and planning. The mandate

ensured that planning was framed more in terms of ecosystem health, and it enabled restoration activities and wildlife habitat protections.

As it turned out, however, the multiple-use concept didn't satisfy everyone. Other concerns surfaced—sometimes through the court system. American Indians fought to protect historically sacred lands and cultural practices, and old-growth advocates stalled timber harvests. As tourism and outdoor recreation developed into burgeoning industries, people expressed the desire to preserve the aesthetic appeal of certain areas. In these and many other ways, it became clear that people wanted much more from their national forests than was officially recognized through the concept of multiple use.

"Multiple use really changed the way the agency did the work, but there was still a strong emphasis on commodities and timber," says Robert Deal, a research forester with the Pacific Northwest Research Station. "We weren't fully valuing all the other services that come from public lands."

Add to this reality a mix of concerns about a warming climate, extreme weather events, increased wildfire risk, insect infestations, excess atmospheric carbon, population growth, and a host of other threats to natural resources, and it becomes clear that new ways of framing management objectives are necessary. The concept of "ecosystem services" helps land managers address the many valued benefits forests provide in the agency's planning processes.

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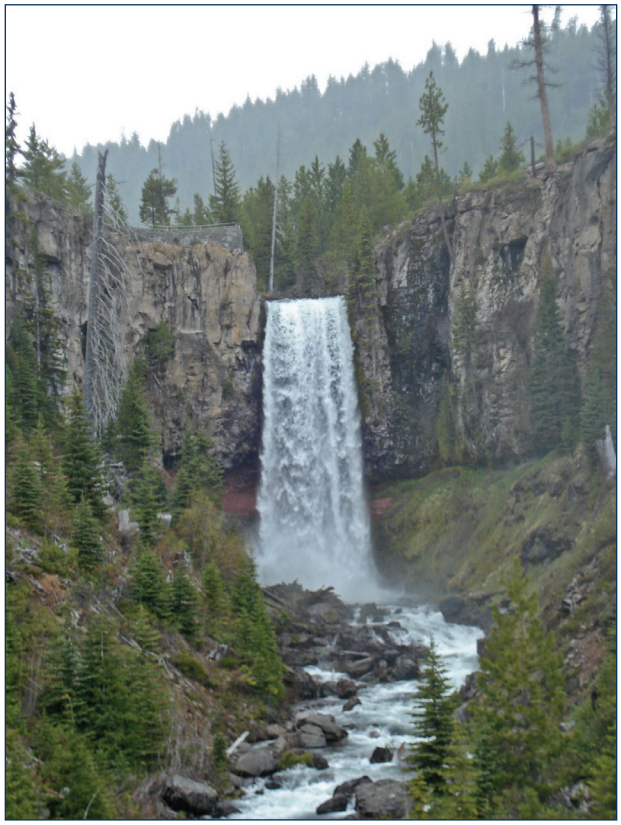
KEY FINDINGS

- Current agency accounting systems define management accomplishments in terms of output-oriented targets that do not account for the full suite of services provided by public lands. An ecosystem services approach can be used to characterize management and performance measures for these other services.
- Goods and services coming from the Deschutes National Forest include the general categories used in the United Nation's Millennium Ecosystem Assessment, but community members and forest staff also identified benefits in other categories. Forest management activities could significantly affect these ecosystem services.
- The Forest Service is integrating ecosystem services into national policy and operations, related to decisionmaking, prioritizing, measuring, reporting, communicating, and investing in forest management.

CATEGORIZING ECOSYSTEM SERVICES

Ecosystem services is a term that refers to a much broader range of valued benefits and services available from nature (in this case, specifically from public lands) than has been acknowledged through the multiple-use concept as it was implemented by the Forest Service. The Millennium Ecosystem Assessment, requested by the United Nations in 2000, offers a classification system for ecosystem services:

- *Provisioning services*, such as food, fresh water, timber, fiber, and pharmaceuticals.
- *Supporting services*, such as nutrient cycling and soil formation.
- *Regulating services*, such as flood and disease control, water purification, climate stabilization, and crop pollination.
- *Cultural services*, such as recreational, spiritual, educational, and aesthetic benefits that enrich and revitalize the human experience.



Svetlana Schroder

The water supply for the city of Bend, Oregon, originates on the Deschutes National Forest. The forest is valued for many other reasons as well, including recreational opportunities, wildlife habitat, timber, and scenery—such as this view of Tumalo Falls.

"Essentially, ecosystem services is a way to understand how people value forests or landscapes," says Dale Blahna, a research social scientist with the station who has studied the intersection of human benefits and forest management planning. "And it goes beyond simply putting monetary values on those services."

Blahna, Deal, Nikola Smith, and Jeff Kline recently coauthored a general technical report titled *Ecosystem Services as a Framework for Forest Stewardship* that uses the Deschutes National Forest as a case study to explore the application of the ecosystem services concept.

Application of the ecosystem services approach can be used as a conflict management tool, primarily when community engagement is sought during the landscape assessment process.

"The Forest Service's traditional way to approach planning is for an interdisciplinary team to come up with a proposed action and then analyze certain alternatives to meet the objectives of that proposed action," says

John Allen, forest supervisor for the Deschutes National Forest in central Oregon. "A couple of significant changes with the ecosystem services approach is that we're doing a pre-decisional assessment of all the values and resources on a landscape in the context of their current conditions and their future potential conditions without any management activities proposed, and then using that initial assessment to develop a proposed action for that landscape—optimized for the ecosystem services available from that particular landscape."

The 2012 Forest Service planning rule has added the ecosystem services concept to its guiding principles at the national level. However, given that the rule is less than 4 years old, current management accomplishments are still largely framed in output-oriented terms that don't account for the less quantifiable or monetized services. The recent report shows how ecosystem services can be used to characterize management and performance measures for the broad scope of benefits gained from public lands. The researchers integrated concepts and methods from diverse disciplines, including ecology, economics, sociology, and forestry, to implement practical approaches to ecosystem services assessment that could enable national forests to meet the requirements of the new planning rule.

By integrating the concept of ecosystem services into assessment and planning methods, the Forest Service is currently seeking ways to restore, maintain, or enhance ecosystem health and achieve resilience and sustainability while acknowledging the value of the many diverse benefits public lands provide. Through its efforts, citizens and Forest Service employees are coming together to talk about how to move forward in achieving shared objectives.

A CASE STUDY: DESCHUTES NATIONAL FOREST MARSH PROJECT

The Marsh Project on the Deschutes National Forest was a pilot project for applying the ecosystem services concept to planning efforts. The project area, consisting of about 30,000 acres of forested land in the southwestern portion of the Crescent Ranger District, has been highly compromised by fire suppression and grazing. Big Marsh, one of the largest high-elevation wetland/marsh complexes in the continental United States, had been privately owned and converted to pastureland through a series of ditches and water diversions, which disrupted the ecosystem.

In general, the Marsh Project area is prized for its biological diversity, abundant recreational opportunities, matsutake mushroom gathering, big game and fish habitat, historical and prehistoric cultural resources, and quality fresh waterflows. It is home to the largest population of Oregon spotted frogs, which was recently listed as threatened under the Endangered Species Act, and its late-successional stands provide northern spotted owl habitat (a nesting pair was found during the assessment phase).

In other words, the area represents a perfect storm of "conflicting" values. It is also significantly at risk for severe wildfire, which puts all of these valued attributes and activities at risk.

"The district was considering management activities to reduce fuel loads and dense stands of lodgepole pine," says Nikola Smith, an ecologist and ecosystem services specialist. "But the team knew that if they framed the project just in terms of fuel reduction, that might raise some concerns with members of the public who really valued the marsh for aesthetic and cultural reasons."

Beginning in 2009, Smith and a small team worked with the Nature Conservancy to design a series of workshops and seminars to introduce the concept of ecosystem services to citizens interested in the Marsh Project area and gain their input about the values they derive from the area.

"We wanted to help them understand the condition of the landscape and also identify those key values and benefits that people associated with Big Marsh," says Smith.

She and her support team sought community input by facilitating several group brainstorming sessions. Participants listed the values and the potential or actual threats associated with each value to better understand the connections among them. They also reviewed the condition of the ecosystem that generates those benefits.

Values identified for the Marsh Project area were organized into six general categories: wildlife and botany resources and habitat; forest products or extractive uses for cultural or economic reasons (such as mushroom

Carina Rosterolla

Big Marsh, the focal point of the Marsh Project, is the headwaters of the Deschutes River. It provides habitat for many wildlife species including beaver, river otter, elk, marten, Oregon spotted frog, migratory birds, and many more. The water is used downstream for irrigation. Matsutake mushrooms, a cultural and commercially valued species, grow in the uplands of the project area.

Carina Rosterolla

A cyclist crosses Big Marsh Creek where a bridge was recently removed. The Marsh Project has included restoring the hydrology of the marsh by filling in irrigation ditches and installing check dams to slow waterflow. Native sedges and rushes have been planted, and fire has been reintroduced in the upland forest.

harvesting); water quality, quantity, and timing of flow; cultural values, including aesthetics; recreation opportunities and activities; and uniqueness of the area.

With input from the community in hand, the district painstakingly looked at ecosystem components (for example, soils, canopy cover, tree species and composition, tree age and size, managed fire risk) for each value and how each might be affected—positively or negatively—by a list of potential management actions.

Forest Service planners then prioritized and narrowed the list of ecosystem services most valued by Marsh Project stakeholders. The list of management objectives became (1) maintain and enhance a clean and free-flowing water source, (2) provide high-quality mushroom habitat, (3) provide opportunities for timber harvesting and firewood gathering to support the local community, (4) maintain high-quality plant and animal habitat, (5) maintain diverse recreation opportunities, and (6) restore and enhance scenic views. This process led planners to a short list of four management activities that they believed would best support these objectives while maintaining and enhancing valued ecosystem services.

COMMUNICATING TRADEOFFS AND BENEFITS

As observed in the report, implicit in the ecosystem services approach is developing an awareness of, accounting for, and communicating the tradeoffs and benefits of particular management actions. The researchers use road management as an example of how this might be framed: "Roads are one of the greatest sources of erosion on the forest, but are used for recreation," their report notes. "Analyzing the costs and benefits of a road on a given site from the perspective of a suite of ecosystem services could provide a rationale for its decommissioning or continued use."

Using the ecosystem services approach in the Marsh Project not only helped Forest Service staff gain a better understanding of the diverse ways the area is treasured, but it helped community members who would not normally be involved in the planning process understand the tradeoffs inherent in the absence of management or the implementation of proposed management actions. It is hoped that this mutual understanding and appreciation for the complexity of the task will increase buy-in from stakeholders throughout the area, and perhaps reduce appeals and litigations over time.

"Involving the public even before a project is designed helps us to understand public values and landscape conditions, how those two things relate to one another, and how, from an interdisciplinary perspective, a project can be designed to meet diverse outcomes," says Smith.

Blahna points out that when forest planners don't communicate with stakeholders, misunderstandings can lead to uncertainty and lack of trust. "When you understand how people view the services and you can use the type of terminology that regular people use instead of scientific jargon, it's easier to explain the benefits and tradeoffs of different management actions," he says. "So a wilderness advocate may begin to understand that a rancher is not just feeding cows, but that the family is engaged in a lifestyle choice and carrying on a tradition of use."

Forest Service staff and community members in the Deschutes National Forest area identified ecosystem services that were not included in the Millennium Ecosystem Assessment—volunteering/stewardship, urban sprawl regulation, and three different forms of "sense of place"—perhaps suggesting that discovery sessions might continue to unearth place-centric values or even new categories of values over time, and highlighting the dynamic nature of this type of public engagement.

Svetlana Schroder

This stand in the Deschutes National Forest is a fire hazard. By using the ecosystem services concept to frame discussion, community members were able to participate in the planning process and discuss the tradeoffs among different management options, including no management.

Svetlana Schroder

This thinning project on the Deschutes reduced fuel and benefits the remaining trees by reducing competition for water and nutrients.

PARTNERSHIPS AND COLLABORATIVES

Much of the recent work accomplished on the Deschutes National Forest thus far would not have been possible without the support of nongovernmental agencies. For instance, the National Forest Foundation contributed $1.7 million to restore steelhead salmon habitat on Whychus Creek. The Deschutes River Conservancy and the Deschutes Land Trust are working together with Deschutes National Forest staff to restore the original creek channel, replant native vegetation, and remove obstacles to fish passage. Irrigation districts also are involved.

Collaboratives that include environmental and conservation organizations, recreation groups, timber industry representatives, private landowners, tribes, and municipal governments have been essential to restoration and maintenance activities on public lands throughout the Nation, and are becoming more actively engaged with ecosystem services and restoration efforts.

LAND MANAGEMENT IMPLICATIONS

- Public forest managers contend with increasingly complex social, economic, and ecological objectives. Incorporation of the ecosystem services concept into forest planning and project implementation could aid in designing and implementing management actions that meet a broader range of stakeholder values while supporting sustainability and resilience.
- By using an ecosystem services approach on the Deschutes National Forest, forest managers were able to implement projects that otherwise would likely have been contested. Collaboration with other agencies, private landowners, tribes, and conservation groups has fostered greater support for agency decisions.
- Overcoming current institutional challenges within the Forest Service to fully implement the ecosystem services approach nationally depends on addressing the continued focus on output targets and ensuring that national forests have the capacity and tools necessary for adequately assessing ecosystem services for planning and project implementation.

"The forest collaboratives have really been an effective way of getting environmental groups, the timber industry, watershed councils, economic developers, and others to work together to develop a project that people agree with and can get implemented," says Deal. "It's been an extremely effective way of getting work done."

Field crew go electrofishing in Whychus Creek in the Deschutes National Forest to learn which fish species are present. A restoration effort, supported by the National Forest Foundation, Deschutes River Conservancy, and Deschutes Land Trust, among others, is underway to restore steelhead salmon habitat in the creek.

"Coming together is a beginning, keeping together is progress, working together is success."

—Henry Ford

FOR FURTHER READING

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WRITER'S PROFILE

Marie Oliver specializes in science writing and developmental editing. She can be reached through her website at http://claritywriting.com.

Science
FINDINGS

U.S. Department of Agriculture
Pacific Northwest Research Station
1220 SW Third Avenue
P.O. Box 3890
Portland, OR 97208-3890

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SCIENTIST PROFILES

ROBERT DEAL, a research forester, focuses on ecosystem services and applied silviculture for sustainable forest management. He develops new directions for incorporating ecosystem services into a framework for managing public lands. He is also co-lead for the National Ecosystem Services Strategy Team.

Deal can be reached at:

USDA Forest Service
Pacific Northwest Research Station
620 SW Main Street, Suite 400
Portland, OR 97205

Phone: (503) 808-2015
E-mail: rdeal@fs.fed.us

NIKOLA SMITH is an ecosystem services specialist working with Pacific Northwest Region and Research Station. She assists national forests in applying ecosystem services concepts to land management and is involved with developing markets and payment incentive programs for forest conservation and restoration.

Smith can be reached at:

USDA Forest Service
Pacific Northwest Region
1220 SW 3rd Avenue
Portland, OR 97204

Phone: (503) 808-2270
E-mail: nmsmith@fs.fed.us

DALE BLAHNA is a research social scientist and co-leader for the Green Cities Research Alliance. His current research focuses on the locations and activities of stewardship, motivations of participants, and implications for environmental sustainability and social well-being.

Blahna can be reached at:

USDA Forest Service
Pacific Northwest Research Station
400 N. 34th St., Suite 201
Seattle, WA 98103

Phone: (206) 732-7833
E-mail: dblahna@fs.fed.us

JEFF KLINE, a research forester and economist, examines the effects of population growth and land-use change on forests and their management, and changes in how the public uses and values forests. Regarding ecosystem services, he is devising ways that natural resource management agencies can address ecosystem services in landscape management.

Kline can be reached at:

USDA Forest Service
Pacific Northwest Research Station
3200 SW Jefferson Way
Corvallis, OR 97331

Phone: (541) 758-7776
E-mail: jkline@fs.fed.us

COLLABORATORS

National Ecosystem Services Strategy Team, Deschutes National Forest, University of Washington, Oregon State University, Oregon Solutions, Freshwater Trust, Portland State University, Willamette Partnership, The Nature Conservancy, Forest Service Pacific Northwest Region, Willamette National Forest, Defenders of Wildlife