

REGAINING LOST GROUND

ECOLOGICAL RESTORATION

SPRING 2000

NEWS

Steps Toward Stewardship, Leaps in Restoration

When researchers and community members in Colorado's Montezuma County asked the question, *What would a healthier forest look like?* the answer they came up with was this: *It would look a whole lot different from what we're seeing on the ground.*

That was 1993. "Something proactive needed to be done," says Carla Harper, Montezuma County Federal Lands Program assistant director. "We had many acres in the pine zone in need of some kind of treatment. There were serious insect problems and the forest was so crowded with small diameter trees that you couldn't see through it. Grasses and forbs were almost nonexistent, and the overcrowded conditions had weakened the older trees and put the forest at high risk for catastrophic fire."

Like those in Montezuma County, foresters, researchers, and practitioners across the Southwest are facing similar situations—unhealthy and vulnerable ponderosa pine forests. Like Harper, many are applying prescriptions on test plots of 100 acres or less, and are eager to share what they are finding.

April 25-27, a national conference at Northern Arizona University co-sponsored by the School of Forestry Ecological Restoration Institute and the Grand Canyon Forests Partnership, will create a forum for professionals and students to exchange stories and examine the scientific, social, political, economic, and cultural issues associated with ecological restoration.

Among those expected to attend the Steps Toward Stewardship: Ponderosa Pine Ecosystems Restoration and Conservation Conference is U.S. Interior Department Secretary Bruce Babbitt.

"The Southwest is at a critical juncture regarding forest health in its ponderosa pine ecosystems, and the results of this conference will play a significant role in future efforts to restore forests to a more stable and resilient condition," says NAU Ecological Restoration Program Director W. Wallace Covington.

continued, see "Steps"



Vanishing Act

In the ecological restoration field, remnants of the past often guide visions for the future. When it comes to reconstructing the forest floor, though, finding those remnants can be a challenging task.

But Matt Hurteau, junior forestry major and Ecological Restoration Program student assistant, has spent the past year tackling the job—and his efforts are paying off.

“I’m using archaeological and ethnobotanical records to determine past species compositions in different ecosystem types across the Greater Grand Canyon Region,” he says. In the spring of 1998, Hurteau started browsing around the university library and Museum of Northern Arizona for historical documentation of understory makeup in sagebrush grasslands, pinyon-juniper and ponderosa pine ecosystems in northern Arizona and southern Utah.

What he found was a huge pile of ethnobotanical records from archaeological digs conducted in the region around the 1950s. Researchers had collected pollen grains and other fossilized remnants and identified them. The information was then stashed away—that is, until Hurteau got his hands on it.

“The information has always been there,” he says. Hurteau says most tribes have ethnobotanical records that list both scientific and common names, as well as the traditional use of the plant. He is specifically looking at the records from Navajo, Kayenta Navajo, Southern Paiute, and Hopi tribes.

“If humans used it, there are records of it,” he says. “And there’s only a small percentage of plants they didn’t use.”

Hurteau said the most profound implications of his research are that restorationists may be able to identify which species are locally extinct and can determine which species are truly native.

So far, Hurteau said he has documented close to 400 plants, 30 of which may be extinct.

“This is really valuable information for restorationists because you can’t go out in the field and see what’s missing,” he says. “If we know what was there, then maybe we can find a seed source and reintroduce the species to recreate a true presettlement composition.”

Ecological Restoration Institute Established

Endorsing a recommendation by NAU President Clara M. Lovett, the Arizona Board of Regents has established the Ecological Restoration Institute on the NAU campus. The Institute, under the direction of School of Forestry Professor W. Wallace Covington, will focus on reversing the ecological, economic, and social degradation of the nation’s wildlands.

“The Institute will be designed to take an interdisciplinary approach to identify and apply ecologically based solutions to complex forest problems in order to achieve the goal of sustainable ecosystems,” says Covington.



Winged Creatures Give Flight to New Insights

Songbirds and butterflies are helping to change long held conceptions about life on the edge.

Land managers have often focused on the size of patches of wildlife habitat when planning forest activities such as timber sales or developed recreation sites. It is generally believed that as long as fairly large areas of critical habitat remained, animals would find what they need to survive in their fragmented environment. But Tom Sisk, assistant professor of ecology in NAU's Center for Environmental Sciences and Education, says that way of thinking is too simplistic in fragmented landscapes and has proven to be detrimental to some forest creatures.

"A lot of ecological theory ignores the habitat surrounding these patches—what conservation biologists often refer to as the matrix," he says. "Too often we assume that habitat fragmentation affects only the area of available habitat and the isolation of remaining patches. For example, forested patches are often treated as if they were a series of islands surrounded by an ocean of non-habitat and that the 'ocean' had no impact on the 'islands.' It turns out, in almost all cases, that the intervening habitat has an influence on which species will thrive and which will suffer, and this influence occurs most often near the edge."

To illustrate this "edge effect," Sisk offers the example of a clear-cut parcel in the woods. In the forested area adjacent to the cleared area, more sunlight reaches the ground, temperatures tend to be higher and humidity lower. The forest environment is different near the edge, and in fragmented landscapes, a lot of the remaining habitat is near an edge.

"We'll often see a large variety of species at the edge. From this, some researchers have concluded that edges are good and more edges are better. But that generalization isn't accurate



because what's often not taken into consideration is which species are there and what's happening to the ecological relationships," Sisk says.

"As far as diversity goes, the mixing of common, widespread species from each habitat may counterbalance the loss of rare or sensitive species that are of greater conservation interest. And if new predators, parasites and competitors penetrate that edge, a lot of forest species may disappear from the patches altogether."

But to say that edges are all bad isn't accurate either, he says, as some recent studies in the mountain West have shown that some predators that go after eggs or young birds in nests strike at higher rates in continuous forests.

"The desire to have some general rule, some one-size-fits-all philosophy, has led us to make unfounded assumptions," says Sisk. "We are now taking a more landscape-based approach. This requires integrating what we know about landscape patterns with detailed knowledge at the species level."

To learn more about how species are responding to fragmented habitat and how they interact with surrounding landscapes, Sisk studies songbirds and butterflies.

"We use these as model groups because they represent very different evolutionary pathways in the animal kingdom—both the vertebrate and invertebrate. But songbirds and butterflies also have remarkable similarities. They both fly, and they move at similar spatial scales. A strong butterfly can move as readily as a small

continued, see "Winged"



Wood Warms Homes

When Charyse Harvick, a junior anthropology student at NAU, first heard about the large-scale restoration project happening in her town, she never imagined she would have the chance to participate.

That is until last October, when the student-run environmental club she joined decided to help the Grand Canyon Forests Partnership with its fall community wood project. Harvick, along with 20 other student volunteers, loaded wood from a local restoration site and delivered it to the Navajo reservation. The group received a grant from the Volunteer Associates to rent a 15-foot-long moving truck to transport the logs to elder residents living on Black Mesa.

"This project was great because not only were we helping provide a Native American community with a much needed resource—we were also helping the forests," she says. "Furthermore, I've learned a lot about restoration, and I feel more in tune with the restoration activities happening around Flagstaff."

That is exactly what the Grand Canyon Forests Partnership's public involvement team is hoping to achieve. The team is a special arm of the partnership—a coalition of 18 agencies, organizations and businesses working to restore nearly 100,000 acres of ponderosa pine surrounding Flagstaff. The team is responsible for informing,

involving and investing the community in the partnership's restoration efforts, and the volunteer program is one way of reaching that goal.

"Our volunteer projects are at the heart of our success in restoring the forests around Flagstaff," says Liz Taylor, the team's facilitator. "Our restoration efforts can only succeed if we have the support of the community. To garner that support, we need to provide residents with an opportunity to get involved."

Already, the public involvement team has coordinated four volunteer activities in its effort to engage residents in local restoration activities. Last April, the team kicked off its volunteer program with a wood delivery to the Navajo and Hopi reservations. Students from NAU's Forestry Club, the Society of Environmental Communicators, and members of the Omega Delta Phi fraternity, helped cut, load, and deliver wood to Tuba City, some 80 miles north of Flagstaff.

The success of that first project led to two more community wood projects in the summer and fall. In August, the team also coordinated a weed pull, which was co-sponsored by the Northern Arizona Weed Council. Joining the effort were local Boy Scouts who donned gloves and sunblock to pull spotted knapweed from a site identified for upcoming restoration treatments.



Steps continued

Covington says that the time to take action on large-scale forest landscapes is now. "Old growth mortality continues to increase in the overcrowded forests, droughts and extended fire seasons are on the rise, and the risk for catastrophic wildfire has never before been so high."

Wrapped around the conference will be The Grand Canyon Forests Festival 2000, offering a number of activities from Earth Day to Arbor Day, April 22-29. Events will include a concert by acoustic guitar virtuoso Leo Kottke, American Indian ceremonies, fireside storytelling that will bring naturalists John Muir and Everett Ruess back to life, community restoration projects, a watercolor workshop, cooking demonstrations, children's crafts, including paper making activities, an environmental film series, and a book festival featuring outdoor writers.



"Most of the events will be free and geared toward the whole family," says Festival Steering Committee Chair Brett KenCairn. "We are hoping people will use this week as an opportunity to reconnect with nature, celebrate what they love about the forests, and explore ways of restoring ecosystems."

Those interested in attending the Steps Toward Stewardship conference can learn more by visiting the conference web site www.nau.edu/ecorest/conf, or by calling NAU Personal and Professional Development Programs at (520) 523-8063. Registration is \$100 per person, \$50 for students. Scholarships are available.

For more information about other events during the Grand Canyon Forests Festival 2000, contact the Flagstaff Visitor Center, (800) 842-7293.

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ECOLOGICAL RESTORATION NEWS *Regaining Lost Ground*

is a newsletter from NAU's Ecological Restoration Institute. The intent of this publication is to share information, discoveries, and successes in the work being done to restore Southwestern forests.



Winged continued

bird. Monarchs, for example, migrate as far as Mexico. Both groups can adjust rapidly to habitat changes, making them good indicators of edge effects.”

Sisk's lab group is studying habitat selection and behavior of birds and butterflies near edges, and combining these data with dynamic landscape maps created by the geographic information system. Their efforts are generating a new type of predictive ecological model that

they call the Effective Area Model. They hope that the EAM will provide wildlife biologists and land managers with a new tool to help them make accurate predictions about the impacts of different management activities on biodiversity.

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