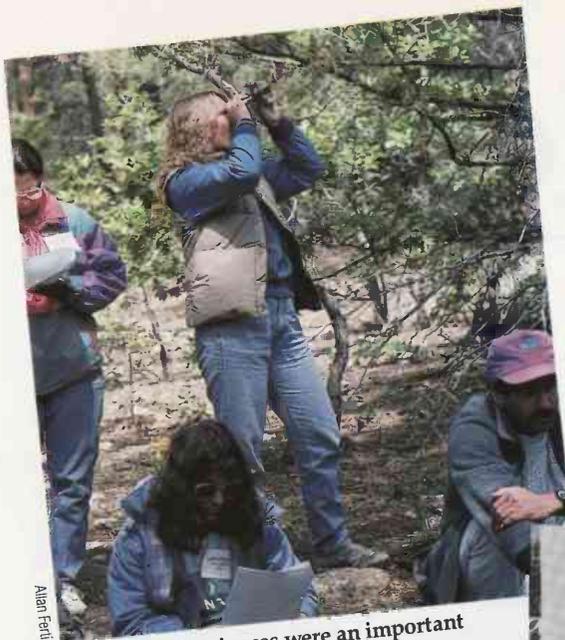


Natural Resources Workshop

Teaching the Teachers About the Environment

By Morgan Falkner



Alan Ferlin

Hands-on experiences were an important part of the workshop.

Clean water flowed through the river banks, indicating—among other things—a healthy ground water supply. Pollutants from a poorly situated landfill began to spill into the aquifer. The results were dramatic. Red toxins almost literally tumbled deep into the water table, eventually reaching—and polluting—the nearby river.

This scenario has been played out in reality many times before, but this time it was merely a simulation. Bruce Davis and Lucinda Chavez, two hydrologists with the Arizona Department of Water Resources, were using ground water flow models to illustrate the dynamics of water pollution. Observers were participants in the Natural Resources Conservation Workshop for Educators, a seven-day program held every June near Flagstaff. The workshop is sponsored by a variety of agencies and organizations interested in the environment, including the University of Arizona.

The workshop is an intensive camp for K-12 teachers, and others who work with children, to learn the basics of ecology, hydrology, soil science, range and wildlife management—and a great deal more.

"The workshop is designed to increase their knowledge base, and second to give them projects and activities they can adapt for their classrooms," says workshop organizer John Stair, a Cooperative Extension wildlife and range specialist in the UA School of Renewable Natural Resources. He is the prime mover behind the ten-year series of workshops who has handled all the set-up and operations. Stair and



Mal Zwolinski

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other organizers now have the drill down pat, including the logistics of arranging for more than a dozen guest lecturers, feeding more than 50 camp staff and participants, plus keeping the hectic dawn-till-dusk (actually closer to midnight) itinerary on schedule.

"We feel we serve a definite need," Stair says.

Camp Mardecor, the workshop site, is a 4-H youth program camp near Mormon Lake, about 25 miles southeast of Flagstaff. On opening day, soon after teachers drove in, they settled into orientation on Sunday afternoon. Inside the main hall—the camp's mess



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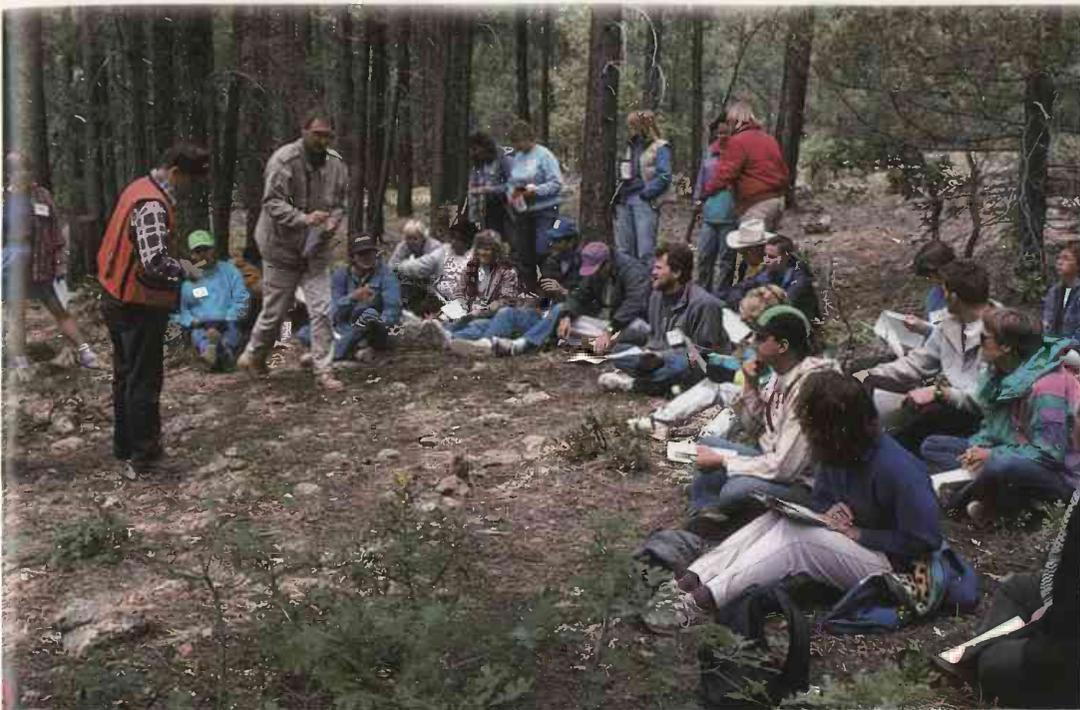
hall—the teachers were immediately given a taste of things to come. Organizers conducted an exercise designed to make for quick introductions. Exercises, the teachers soon realized, were the name of the game. Practical classroom exercises were given high priority. During the next six days, the participants were put through a rigorous schedule. Virtually every phase was imbued with techniques suitable for classroom instruction.

A previous workshop participant, Tucsonan Lorna Taylor made sure the 1991 class received classroom-ready material. An Amphitheater Public School teacher for more than 20 years, Taylor managed to lead a good part of the daily seminars although suffering with arthritis. For instance, on Sunday night, she split the teachers into groups to construct ecosystems. Using construction paper, glue, magazines—all common in classroom projects—each team re-created different types of ecosystems common to Arizona.

"I'm going to try to incorporate a lot of the content material from here into my teaching," says Dan Ryan who teaches grades 2-6 at Mountain View Elementary School in Prescott. "Activating prior knowledge," as Ryan puts it, was a critical element of the Environmental Camp. After years away from such basics as photosynthesis, teachers found the workshop a tool for re-learning.

Monday started early at Camp Mardecor. A bird walk, led by Elaine Morrall and Cindy Piez from the Northern Arizona Audubon Society, began at 5 a.m., two hours before breakfast. And the day ended with a

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star watch scheduled for 8 p.m. Daily lectures prepared teachers for the hands-on material and were designed to re-acquaint them with the building blocks of environmental education: water and soil science, ecology and photosynthesis. Often lectures were incorporated into planned activities. On Thursday, the group walked into a stand of Ponderosa pines. Mal Zwolinski, the UA professor of watershed management and associate director of the School of Renewable Natural Resources, gave a quick talk on basic forest survey methods. Then Taylor showed how to determine a tree's diameter with just a ball of thread. Perfect for the classroom.

"I think it's great because it's giving us hands-on experience to bring back into our classrooms," says Terri Browne, who will begin teaching 2nd grade this fall at Our Mother of Sorrows school in Tucson. "There are so many things you can use in the classroom."

"These are the kinds of things I teach," explains Taylor. "If it has any-

thing to do with the environment, I try to bring it in."

She led a field exercise to instill greater sensory awareness of the environment. She instructed the teachers to sit quietly, without moving, for five minutes to detect—as they did—such different living organisms as flies, ants and birds. It sounds simple enough, but often people really aren't aware of their surroundings. To emphasize her point, she had the group walk into the forest, searching for signs of wildlife. With careful examination, a seemingly empty forest came alive with the tracks of deer, elk and bear.

The following day, teachers learned basic soil principles from U.S. Soil Conservation Service staffers Chris Williams, who is an original workshop organizer, and Don Breckenfeld. Using simple techniques, they demonstrated how educators could convey the differences in soil types and the sorts of organisms prospering in the soils. Williams used a soil frame, involving long, cylindrical tubes to show how water permeates through the various soil types. The exercise would work equally well in the teachers' classrooms.

Meanwhile, Jack Watson, an Extension water quality specialist at the UA Maricopa Agricultural Center, used a simulator to demonstrate the complexities of managing water from its source to communities along a river. Teachers quickly discovered such issues as waste treatment, reservoir management and ground water tapping are far from simple.

On Tuesday, the group shuttled to the Bar-T-Bar ranch southeast of Flagstaff and found themselves in-



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Ground water flow models simulated real life pollution problems.

involved in a lively discussion of current range problems. Ranch managers Judy and Bob Prosser were having difficulties. The quality of part of their rangeland had deteriorated from the multitude of grasshoppers swarming around the day the teachers visited; or from an over-abundance of grazing elk; or the effects of a continuing drought? What ensued was a spirited go-around between the Prossers and Bob Barsch, a habitat specialist from the Arizona Game and Fish Department, about the probable cause of the range's decline.

"The ranch was real life," says workshop student Lee Kaplan. "People have to understand that there are no easy solutions."

The discussion produced no definite cause and effect explanation of the range problems, although everyone agreed that more study would be necessary. That agreement—the complexity of environmental issues—was perhaps the single greatest lesson offered by the range excursion. "Trust no easy, simple answers," was the message throughout the workshop.

"I've learned there are different ways to look at issues," says Denise Richards, an 8th grade teacher at Benson Middle School, about half-an-hour south of Tucson. "I think it's important to present both sides of environmental

issues. Let the kids make their own decisions."

Most of the suggestions offered by participants at the close of the workshop involved minor fine-tuning, Stair says. The teachers' response to the workshop was as varied as the itinerary, but for everyone the camp represented a crash course in science and application. Generally speaking, the teachers found the field exercises the most interesting components. They didn't complain about the fast-paced schedule.

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Over the past 10 years, the Camp has changed in structure, tone and pace, says Stair. Earlier, the schedule was more lecture-driven and—if possible—even more jampacked than it is now. Another—and very important—result

of the Environmental Workshop was the informal networking that took place among participants and with representatives from state, federal and private organizations.

Nor did this group leave empty-handed. With each discussion, field trip and exercise, organizers disseminated liberal quantities of pertinent literature. The main prize, as it were, was a thick, bound *Teachers Resource Guide to Arizona's Environment*, produced by the Arizona Department of Education. The guide includes discussions of water, geology, soil, plants, animals, climate and more. Classroom activities, a glossary and literature reference guide are part of the book, making it a virtual one-stop manual for teachers.

The conservation camp continues to attract the attention of teachers around the state.

"I think we're getting much more interest in the workshop," Stair says. "Teachers are much more in tune with what we're doing now than in past years. Word has gotten around. In addition, scholarships from schools and private foundations covering the \$175-per-person camp fee are a tremendous benefit for teachers, he says.

A number of past participants have contacted the UA camp organizers to say how much they've used the workshop's lessons.

"We have a good cadre of workshop students out there promoting us," Zwolinski says. "It's definitely nice to have people at a conference come over and tell us what they've learned—and what they're using in their classrooms. There's a real sense of accomplishment."

Williams, who is a public information officer with the U.S. Soil Conservation Service and a camp organizer, agrees that the week-long event serves a valuable function.

"I think it's a critical cog in our society," he says. "I think understanding our resources is basic to taking care of them. One of the problems I think we have is that elementary school teachers are required to take only one science course. That's why workshops like this are so important."

The UA offers one unit of graduate credit for attending the workshop and up to two additional credits through independent study for developing lesson plans. Continuing Education Units (CEU) also are available through the university.

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