

UC's Sagehen reserve is California's newest experimental forest

Last November, the USDA Forest Service announced the designation of the 8,100-acre Sagehen Creek Watershed as an experimental forest. The announcement, made jointly with UC Berkeley, establishes Sagehen — located 8 miles north of Truckee — as the first new experimental forest in California in more than 40 years.

"Experimental forests have played a major role in improving the management of forest resources throughout the country," says Alex Glazer, director of the UC Natural Reserve System, which oversees Sagehen and 34 other UC-operated research reserves throughout California. "This collaborative research program brings together managers and scientists with distinctive viewpoints and skills, but the common goal of achieving important, practical outcomes."

The UC Natural Reserve System encompasses approximately 130,000 acres of protected natural land, which is available for university-level instruction, research and public outreach. The forest will be managed by the Tahoe National Forest, UC Berkeley and the Pacific Southwest Research Station.

Pioneering field research

UC Berkeley's Sagehen Creek Field Station, located on 452 acres within the Tahoe Basin, has been a center for pioneering field research for more than 50 years. In 1951, UC Berkeley professors A. Starker Leopold and Paul Needham first obtained permission from the Forest Service to establish a High Sierra facility for wildlife and fisheries studies.

Over the ensuing years, the professors and their graduate students literally built the station from the ground up. Each summer they would add new structures — laboratories, cabins, meeting rooms, a cookhouse — gradually creating a year-round research center.

Sagehen has proven to be an ideal area for study. Located at 6,380 feet on the eastern slope of the Sierra, the basin's complex topology and hydrology provide a mosaic of vegetation communities, including coniferous forests, montane chaparral, sagebrush steppe, wet and dry meadows, and spring-fed fens.

Initially, Needham and his students focused on fisheries while Leopold and his students studied wildlife, but succeeding generations of UC researchers expanded the focus to include the basin's fens, insects, flora, forests and hydrology.



Sierra-based studies

Several current projects will have important implications for the ecology of the Tahoe Basin. In one, UC Berkeley professors John Battles and Scott Stephens are heading up a Fuel Management National Pilot Project to evaluate the effectiveness of strategically placed area treatments (SPLATs) in reducing wildfire danger.

In another, UC Davis professor Peter Moyle and colleague Virginia Boucher are leading a study funded by the U.S. Fish and Wildlife Service on the restoration of native Lahontan cutthroat trout, using different strains of fish as well as different techniques for creating sustainable populations. "Sagehen is perfect for our study," Boucher says, "because we have the best baseline data set on fish in the Sierra. It is also right next door to Independence Lake, which has one of the last sustainable wild cutthroat populations."

A team of UC Berkeley researchers led by Inez Fong, with Sagehen faculty reserve manager Jim Kirchner, will focus on developing a deeper understanding of the life cycle of water on Earth. For example, small, automated "chemical laboratories" will be placed beside the streams to send back continuous chemical and isotopic measurements to identify the water's source.

"If we can relate the pattern through time as these chemical fingerprints change," Kirchner ex-

UC Davis professor Peter Moyle, an expert in fish ecology, works with a team of graduate students at Sagehen Creek Field Station.



A unique underwater observatory allows scientists to monitor fish activities at Sagehen.

plains, “we will be able to answer questions like whether streamflow during storms is coming from recent rainfall flowing into the stream quickly, or if it’s coming from shallow runoff moving down hill-sides and into the channel through the subsurface, or whether the new rainfall is pushing out old water from deep in the fissures between the rocks.”

Jeff Brown, manager of the station, is confident that Sagehen can play a complementary role to other Tahoe-based research. “Sagehen Creek and Lake Tahoe are both part of the Truckee River wa-

tershed,” he notes, “yet here researchers can do manipulative studies that often can’t be done within the Tahoe Basin itself. Research here will have impact throughout the Sierra and across the country.”

— Jerry Booth

For more info:

<http://sagehen.ucnrs.org/index.html>
<http://nrs.ucop.edu/Transect-Sagehen.htm>

Weed control helps prevent erosion into Lake Tahoe

Lake Tahoe is currently the focus of numerous projects aimed at halting further degradation of its famed water clarity and quality, but historically, invasive weeds have received little attention.

Current research suggests that growth of algae in the lake is fueled by inputs of phosphorus associated with sediment runoff. “The expansion of tap-rooted perennial weeds, especially in riparian areas, can accelerate erosion rates,” says Wendy West of UC Cooperative Extension in El Dorado County. “Weeds also have a deleterious effect on recreation, aesthetics and habitat.” West is co-coordinator of the Lake Tahoe Basin Weed Coordinating Group, a broad, inter-agency effort that began meeting in January 2002 to identify, map and control invasive weeds.

The Lake Tahoe Basin is a classic example of a region where weed spread pressure is high, due to its bistate border location, historical escaped ornamental populations, and the seasonal influx of tourists, West says. The lake spans two states and five counties, with differing regulations governing pesticide use.

In 1998, after locating a single perennial pepperweed (*Lepidium latifolium*) plant growing on a roadside in Incline Village, the University of Nevada Cooperative Extension (UNCE) mounted a public education campaign to identify and eradicate other populations.

To build bistate support for perennial pepperweed management, a series of meetings was convened that included major land-management agencies, the Tahoe Regional Planning Agency, the Lahontan Regional Water Quality Control Board (LRWQCB), city and county representatives, volunteers and others stakeholders. With approval from LRWQCB and private landowners, chlorsulfuron was applied to infestations away from water by certified pesticide applicators between 1999 and 2001, with excellent results.

By 2001, however, it was clear that perennial pepperweed was not the only invasive weed threat-



Kim Melody of the Lake Tahoe Basin Weed Coordinating Group (left) provides a resident of the Dollar Point area with alternate landscaping plants to replace invasive Scotch broom removed from her yard.

ening the Tahoe Basin. At the request of the U.S. Forest Service, the weed-coordinating group was formed in 2002 with a 5-year memorandum of understanding. More than 20 invasive species are currently on its “weeds of concern” list, including yellow starthistle (*Centaurea solstitialis*), Eurasian watermilfoil (*Myriophyllum spicatum*) and curly pondweed (*Potamogeton crispus*).

The group’s activities include monitoring, prevention and eradication campaigns, and public outreach and education. For example, in 2005 the group launched a campaign against Scotch broom (*Cytisus scoparius*), which has roots that fail to stabilize soil. Last summer, area residents traded in Scotch broom plants for free replacements of more acceptable noninvasive landscaping plants.

“The best way to eradicate and control weeds is to prevent their introduction and establishment,” says Susan Donaldson, UNCE water quality and weed specialist and co-coordinator of the weed group.

— Editors