



# UC DAVIS

## TAHOE ENVIRONMENTAL RESEARCH CENTER

THE TAHOE ENVIRONMENTAL RESEARCH CENTER (TERC) IS DEDICATED TO RESEARCH, EDUCATION AND PUBLIC OUTREACH ON LAKES AND THEIR SURROUNDING WATERSHEDS AND AIRSHEDS. LAKE ECOSYSTEMS INCLUDE THE PHYSICAL, BIOGEOCHEMICAL AND HUMAN ENVIRONMENTS, AND THE INTERACTIONS AMONG THEM. THE CENTER IS COMMITTED TO PROVIDING OBJECTIVE SCIENTIFIC INFORMATION FOR RESTORATION AND SUSTAINABLE USE OF THE LAKE TAHOE BASIN.

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## *Dedication of the UC Davis Tahoe City Field Station*

This summer marked the grand re-opening of the Tahoe City Field Station, formerly known as the Historic Fish Hatchery.

The historic hatchery was originally constructed in 1920 by the California Department of Fish and Game for raising native Lahontan cutthroat trout, eastern brook, brown trout, rainbow trout and Kokanee salmon and other fish desired for planting in the Lake Tahoe Basin. Dr. Charles Goldman and the UC Davis Tahoe Research Group occupied the building in 1975 to conduct research at Lake Tahoe. So many years later, the building's deteriorating state made it inadequate to handle the scientific research and experiments being conducted there.

The renovation was possible thanks to generous donor gifts, California ballot initiatives and other grants.

The historical renovation was sensitive to the

values and features of this historic building and now provides a field laboratory for UC Davis research staff near the research vessels and west shore research sites. The improved facility offers a field lab, SCUBA lockers, offices, conference space, and workrooms.

Other planned site improvements include re-introduction of native vegetation to create a community demonstration garden, restoration of the wetland and stream environment zone, and demonstration of innovative best management

practices (BMPs).

The site will soon serve as an interpretive education nature center (the Eriksson Education Center in Memory of Paul & Helen Eriksson), complete with an interpretive path and signage. Educational signs will give visitors information about simple environmental protection practices that can help keep Lake Tahoe clear and blue. We are currently working with exhibit design and video production consultants to develop indoor and outdoor interpretive panels and exhibits. The Educa-



Dr. Charles Goldman addresses a crowd of 180 at the Tahoe City Field Station Dedication event on August 13, 2008

## LETTER FROM THE DIRECTOR

The Dedication of our fully restored Tahoe City Field Station (former Fish Hatchery) in August was a time of great pride and joy for TERC. As well as an opportunity to reconnect with many friends and supporters, it signaled the completion of another phase of the rebuilding of the scientific infrastructure at Lake Tahoe. We now have a base from which to assemble and test the large-scale field equipment needed to study the lake and the watershed. We are also planning the first stage of a wonderful

new outreach center, the Eriksson Education Center (in Memory of Paul & Helen Eriksson), which will specifically focus on the role of the streams and wetlands in helping protect Lake Tahoe. To the many donors, agencies, volunteers and community groups who supported the restoration, as well as the many university staff who have worked on the restoration for over 20 years – thank you!

This year also marks the beginning of several new ventures by TERC in the international arena.

Working with our long-time collaborator Francisco Rueda at the University of Granada (Spain), TERC scientists have been invited to participate in NEMO, an EU-funded project looking at nutrient dynamics in a reservoir in Spain. Also in December, Monika Winder and I will depart for Patagonia, to launch a new monitoring program in a set of remote, glacier-fed lakes. This collaboration with EULA-Chile has been in development for several years and will hopefully be just the first step in a long and fruitful relationship.



Geoffrey Schladow, Ph.D., Director  
Tahoe Environmental Research Center

My very best wishes to you all for the holidays and the New Year.

A handwritten signature in black ink, appearing to read "Geoff".

## DEDICATION OF THE FIELD STATION

*Continued from Page 1*

tion Center is expected to open sometime during Summer 2009.

The interpretive kiosk located at the front of the building will be available to visitors year round. Signage along the interpretive path, exhibits, demonstrations, and seasonal educational brochures will also be available. Volunteer docents will be recruited to host site tours on Saturdays during the peak summer months. An annual wetlands celebra-

tion will also be held at the site.

The August dedication ceremony was followed by the ninth annual Children's Environmental Science Day and public Open House on August 14. Children's Environmental Science Day hosted over 100 kids and their families for hands-on science activities designed to create an awareness of the unique ecology of Lake Tahoe and teach about the various areas of environmental science.



Researchers share their expertise with youth to generate an interest in environmental science

The Open House featured tours of the renovated historic hatchery building and adjacent wetlands for community members. Community partners were

on hand to talk about Best Management Practices (BMPs), defensible space, native plants, invasive weeds and more.

## TERC FACILITIES

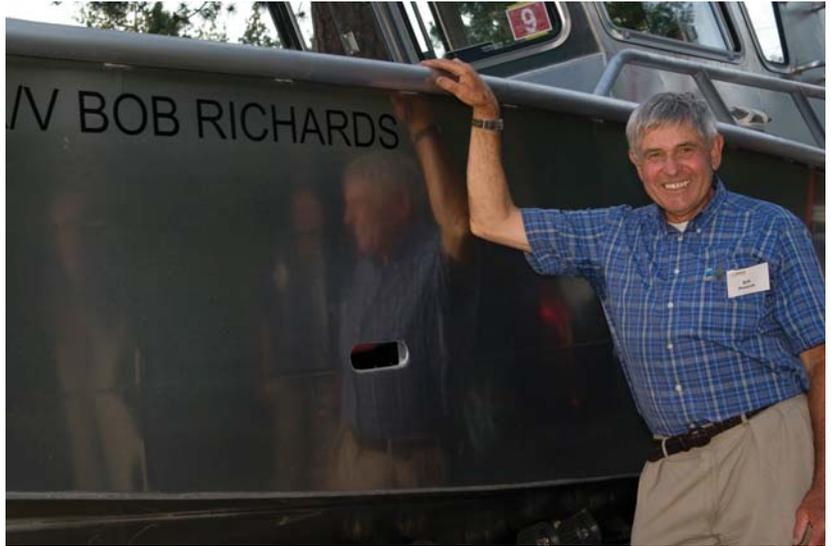
### Research Vessels on Lake Tahoe

A new high speed boat was acquired by UC Davis this summer to allow for extended research on Lake Tahoe. Funded by a National Science Foundation grant and made by the Munson Boat Company, this research vessel has twin outboard engines and can travel from North Shore to South Shore in as little as 20 minutes. The 28 feet long and 8 feet 6 inches wide boat works as a landing craft for shoreline research and contains a winch that can reach to the bottom of the lake (a pulley system that the Secchi disk is attached to). The boat will be used on Lake Tahoe as well as taken to other lakes for research purposes. It will allow us the opportunity to start monitoring Emerald Bay on a monthly basis, something that simply was impractical up till now.

The research vessel was christened the “R/V Bob Richards” at the Tahoe City Field Site Dedication in August. For 37 years, Bob Richards was the UC Davis Boat Captain and field lab research director at Tahoe. During this time, he gathered water quality

data, nutrient and biological samples, and monitored various lake sites every 10 days. Due to his diligence on the water, Lake Tahoe has one of the best long term data sets for any Western U.S. lake. Bob was completely taken by surprise when the name of the boat was announced. This distinction is in appreciation for his legendary service.

TERC also continues to operate the R/V John LeConte on Lake Tahoe, our “floating laboratory”. Just as the Field Station needed restoration, so do some of TERC’s on-water facilities. This flagship research vessel is 32 years old and still running on the same engine it was purchased with. Through matching grants from the Sacramento Metropolitan Air Quality Management District and Placer County Air Pollution Control District, we have been able to secure almost half of the \$75,000 needed to install a brand new, “green”, Tier 2 clean diesel engine.



Bob Richards honored for 37 years of service at Lake Tahoe with the new research vessel named after him

However, we urgently need to secure the remaining \$30,000 or risk losing those grants.

If you have sailed on the John LeConte in the past, or wish to in the future, now is the time to help us reach our goal by the end of the year. We are busily working to secure the

remaining contributions to take advantage of these matching grants.

The R/V John LeConte is a symbol of the research UC Davis has done for decades to help preserve Lake Tahoe. We invite you to help us reach our goal with your tax deductible contribution.



Guests aboard the UC Davis Research Vessel John LeConte

## RESEARCH

### *On-going Data Collection Systems*

A network of meteorological data collection sites was initiated in 1998 to provide a long-term record for the Lake Tahoe basin and to support the many research projects which rely on such data. By 2003 the network reached its current level of six sites around the perimeter of the lake and six sites on buoys on the lake (four of the buoys belong to NASA/JPL) and near real-time data began being published on the web for public use ([http://remote.ucdavis.edu/tahoe\\_location.asp](http://remote.ucdavis.edu/tahoe_location.asp)).

Efforts have been made to strategically locate the stations, although geography and availability have controlled some of the locations. The network enjoys the cooperation of the U.S. Coast Guard in Tahoe City, Nevada State Parks at Cave Rock, North Tahoe Marina in Tahoe Vista, Sunnyside Marina in Sunnyside, Timber Cove Marina in South Lake Tahoe, as well as private dock owners. Additional sites will be added along the north east shore of the lake when suitable sites and funds are found.

The data are routinely used for public safety by the U.S. Coast Guard, NASA/JPL, National Weather Service and various fire departments around the lake. Use by recreational users around the lake continues to increase as awareness of its availability spreads. While sites collect data at 10-minute intervals, currently the web site data are updated hourly.

Other more purely research data are collected as well. On the roof of the TERC building

is a dedicated data collection platform. Currently two very sophisticated UV and solar radiation sensors are in operation. A shadow-band spectroradiometer measures the global, direct, and diffuse components of solar spectral irradiance. An Ultraviolet Radiometer measures downwelling UV irradiance at 4 wavelengths along with Photosynthetically Active Radiation. The UV wavebands are critical for biological exposure studies. In addition,

there is one of several air quality monitoring systems located on the roof. Air quality sensors are located around the basin to help determine the atmospheric loading of nutrients and particles to the lake.

Visit the TERC website and click on “Real-time Data” to obtain information about current wind speed, wind direction, wind gust, air temperature, air pressure, radiation, precipitation, relative humidity, and water temperature.



Researcher Bill Fleenor on the roof of the Tahoe Center for Environmental Sciences with monitoring equipment

## FEATURED STAFF

### Marion Wittmann, Ph.D.

Invasive species are a hot topic at Lake Tahoe and Marion Wittmann is one of the researchers at the forefront of this issue. Marion joined the staff of TERC this spring as a post-doctoral researcher. She received her Ph.D. from UC Santa Barbara, where she studied recreational boater movements throughout the West and the spread of aquatic invasive species, especially Eurasian water milfoil in Lake Tahoe.

Recently, the discovery of large beds of *Corbicula*, or Asian clams, in Lake

Tahoe this summer have shifted Wittman's focus. Now, she is studying the population ecology of these non-native mollusks to determine what their impacts to water quality and native species in the lake might be. One of Marion's current projects involves determining the effect Asian clams might have on the introduction of other non-native, invasive species, like the quagga mussel. Quagga mussels from Lake Mead have been collected by Marion in collaboration with Sudeep Chandra from the



Post-doctoral researcher Marion Wittman with Asian Clams (*Corbicula Fluminea*)

University of Nevada, Reno (UNR). The mussels will live in tanks at UNR, while Lake Tahoe water and sediment will be ferried to Reno to see if the mussels can live under Tahoe conditions. Asian clams from Tahoe will also be added to some of the tanks

to study the interactions between the species.

Visit the TERC website at <http://terc.ucdavis.edu/research/aquaticinvasives.html> for information on the results of this study and Wittmann's other related work.

## EDUCATION AND OUTREACH:

### Youth Science Institute & Science Expo

This winter, we are again partnering with Space Science for Schools to host the Youth Science Institute. With the Youth Science Institute, high school students will work with scientists, conduct science experiments, take a ride on the UC Davis research vessel, experience our 3-D visualization lab, share science activities with other students and more. Last year, 12 high school students from the North Shore of Tahoe and

Truckee participated in the 15-week program. This year, we have 16 spots available for high school students interested in increasing their knowledge of space science, earth science, and environmental science.

We are also pleased to be hosting the Science Expo again on February 27, 2009, in partnership with Lake Tahoe School and Sierra Nevada College. The Science Expo event is part of the North Lake Tahoe Snow Festival. Our theme



AmeriCorps member Sarah Pitzer shows local students a dry ice experiment at the 2008 Science Expo

is "Snow, Water, Ice and Earth" and includes more than two dozen family-friendly, hands-on science activities including those related to climate change and weather. The event is

for kids ages 6 to 12 and their families.

Visit our website at <http://terc.ucdavis.edu> for more information on these upcoming programs.

## GIVING TO FRIENDS OF TAHOE

The Friends of Tahoe group provides funding to supplement research, education and engagement activities of the Tahoe Environmental Research

- YES, I wish to support the Tahoe Environmental Research Center with the gift amount shown below.
- Please contact me about how I can make a deferred or estate gift to UC Davis.
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The University is grateful for the support it receives from alumni and friends. One of the ways our thanks is expressed is through listing the names of donors in various

Center and promote understanding and conservation of the natural resources of the Lake Tahoe Basin and other lake systems.

*Enclosed is my tax-deductible contribution.*

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