Annual Tahoe Report Says Asian Clam Invasion Is Growing Fast

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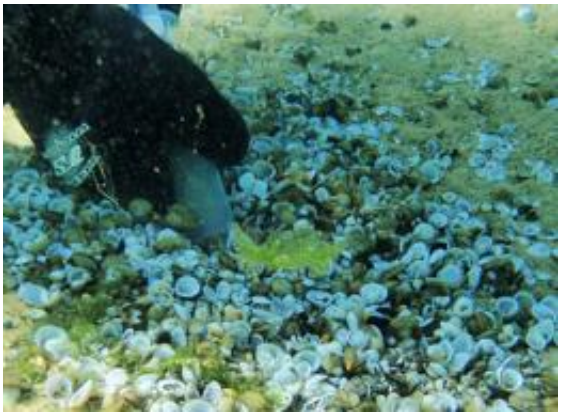

UC Davis senior researcher Scott Hackley collects water samples from a clam bed in Lake Tahoe.

(PhysOrg.com) -- Released today, UC Davis' annual Lake Tahoe health report describes a spreading Asian clam population that could put sharp shells and rotting algae on the spectacular mountain lake's popular beaches, possibly aid an invasion of quagga and zebra mussels, and even affect lake clarity and ecology.

"Our collaborative UC Davis and University of Nevada, Reno, science team found up to 3,000 Asian clams per square meter at locations between Zephyr Point and Elk Point in the southeastern portion of the lake," said John Reuter, associate director of the UC Davis Tahoe Environmental Research Center.

"Those are high numbers, especially when compared to the few isolated, dead shells we found back in 2002 when the Asian clam was first reported. We already see associated environmental effects from the clams today, and we are concerned that they might spread."

Issued annually since 2007, the "Tahoe: State of the Lake Report" is intended to give the public a better understanding of the changes occurring in Lake Tahoe on a year-to-year basis and to place current conditions within a historical perspective. It summarizes tens of thousands of scientific observations of lake weather, water conditions and aquatic life made since 1900. It is compiled by the research scientists of the UC Davis Tahoe Environmental Research Center.

The dime-sized Asian clam (Corbicula fluminea) that is the researchers' top concern this year probably has been in the lake for only 10 years, but it is already replacing native pea clams in lake sediments. In the areas where they are most numerous, Asian clams comprise almost half of the benthic, or sediment-dwelling, organisms, the report says.

What's more, in the beds of Asian clams, a green filamentous alga, Zygnema, is thriving. The report says the algae probably are being nourished by the high concentrations of nutrients excreted by the clams. Dead Zygnema clumps become a nuisance when they wash onto beaches and decompose. "This moves Lake Tahoe further away from its desired pristine condition," Reuter said.

Another worry: UC Davis and UNR researchers say accumulations of Asian clams might foster the invasion of two other damaging species: quagga and zebra mussels, which radically alter ecosystems by consuming enormous amounts of the tiny algae that are the base of lake food chains and outcompeting the native bottom-dwelling species. The mussels are also feared for their ability to encrust piers and boat hulls, and have already caused millions of dollars in damage in the Great Lakes

by blocking intake pipes at water and power plants.

Zebra and quagga mussels are spreading west by hitchhiking on boat hulls, and a comprehensive program of public education and boat inspections has been established by resource managers to try to keep them out of Lake Tahoe. While Asian clams are not expected to become the colonizing monster that quagga and zebra mussels are, they may make lake waters more hospitable to the problem mussels by concentrating calcium, an essential nutrient.

In addition to the Asian clam concerns, many other trends and observations are described in the 64-page State of the Lake Report. They include:

• The lake's clarity was unchanged from the previous year: The Secchi depth was 69.6 feet.

• The long-term warming trend seen since 1970 continued, with warmer nights and lake waters, fewer cold days and less precipitation falling as snow. However, 2008 was a cold year, with the greatest number of freezing days since the early 1990s.

• It was another dry year -- the 12th driest year on record. While the historical average annual precipitation is 31.6 inches, in 2008 only 19.3 inches of precipitation fell.

• In 2008, Lake Tahoe mixed all the way to the bottom at the mid-lake station. This was the second successive year of deep mixing. Complete mixing during two or more successive years has only occurred three times since 1973. Mixing matters because it circulates nutrients and other material from the lake's depths to the surface water and returns oxygen to the deep water.

The "Tahoe: State of the Lake Report 2009" is free and available online at terc.ucdavis.edu .

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