

Public's help necessary to keep Lake Tahoe blue



Sudeep Chandra, Darcie Goodman Collins, and Alan Heyvaert talk about Lake Tahoe issues. Photo/Linda Fine Conaboy

By Linda Fine Conaboy

RENO – Citizen scientist—maybe you're familiar with these two words. You may have even read about them in *Lake Tahoe News*. Maybe you are a citizen scientist.

At any rate, a citizen scientist is an individual who voluntarily contributes his or her time, effort, and resources toward scientific research in collaboration with professional scientists. They can work alone, but don't necessarily have a formal science background.

Turns out that this cadre of citizens is becoming more and more important to the health of Lake Tahoe as efforts heat up

to protect the lake from the harsh reality of climate change, increasing amounts of sediment making its way in the lake and just plain old human disregard for nature.

Because there are not enough classically trained scientists available to continually monitor the lake's health, citizen scientists are becoming the eyes and ears on the lake, reporting their findings regularly.

In an attempt to shed some light on Tahoe's declining health and the increasing importance of citizen scientists, representatives from Reno's Desert Research Institute, The League to Save Lake Tahoe and UNR teamed up to present an overview of the current state of Lake Tahoe at a seminar last week hosted by DRI and the Discovery in Reno with support from Patagonia Outlet Reno.

Alan Heyvaert, director of the Center for Watersheds and Environmental Sustainability at DRI, reminded the substantial crowd gathered at Patagonia in Reno that Lake Tahoe is 95 feet below the base of Carson City. It's a small watershed, he said, and stays clear because it's so small—the only lake clearer is Crater Lake in Oregon. It would take 650 years to refill it if it were drained.

Heyvaert described the Secchi disk, a plate-like object suspended into the water and used to determine the lake's clarity. He said monthly measurements prove that over the years, Lake Tahoe is losing its brilliance, which, he said, is caused mainly by suspended sediments floating in the water.

"We have lost a large amount of the clearness because of sediment," he said, saying that this sediment consists of fine particles from roads and urban areas that wash continually into the lake. Measurements of the near shore prove that there is far less clear water on the South Shore in the vicinity of Tahoe Keys than at other parts of the lake.

According to Heyvaert, Mark Twain, in his novel "Roughing It,"

written in 1870, estimated the lake's clarity close to 100 feet; today, it's less than 70. "Mark Twain actually gauged the details of the lake's size and depth very closely," Heyvaert said, giving a nod to Twain as perhaps the first citizen scientist. "He was a riverboat captain, this probably helped him gauge the measurements."

He also spoke about the Pipe Keepers program, the League to Save Lake Tahoe's project launched as a way for citizens to monitor 34 of the roughly 300 pipes continually spilling their contents into Tahoe's waters. "Pipe Keepers monitor and report on a particular pipe, collect samples and collect weather data," Heyvaert said.

Pipe Keepers are trained by the League to collect, among other data, stormwater samples from pipes located throughout the Tahoe basin. According to the League to Save Lake Tahoe's website, unchecked 20th century development paved over much of Tahoe's marshes and wetlands, which acted as natural pollution filters. Now, when rain hits the roads and parking lots, it washes off fine sediment pollution, which is drained into the Tahoe's waters via a series of pipes funneling directly in the lake.

Sudeep Chandra is the director of the Global Water Center at UNR, and as such heads up a team addressing the multi-faceted and complex issues facing, as he says, one of the most precious resources, water.

Chandra is also deeply concerned about the nutrients cascading into the lake as well as the non-native species which are now quite happy within their Lake Tahoe habitat, eating the food designated for the lake's original inhabitants.

"Even slight changes in clarity can alter big habitats," he said. "There is now almost no plant growth in the very deep bottom of the lake—only 4.5 acres of plants left. These plants feed the 10 species of invertebrates living at the bottom."

Chandra said crayfish (a non-native species) are in abundance in Lake Tahoe. "Crayfish are cattle grazers," he said. "They are eating the plants."

In addition to non-native crayfish, many other species have been introduced over the years for one reason or another. These introductions have resulted in the demise of native Lahontan cutthroat trout.

"In the last 20-25 years, most of the invasive species of fish and plants live and swim in the near shore—like bluegill bass and Eurasian watermilfoil. There are even goldfish, and in 2014, a freshwater skate was sighted," he said.

The League to Save Lake Tahoe was ably represented by Darcie Goodman Collins, its executive director.

"Citizen scientists are one of the best ways to monitor Lake Tahoe," she said. "Tahoe has 20 million visitors annually, but does not even have the protections offered to national parks."

Collins said the enormous amount of traffic within the basin contributes to a loss of clarity in the lake. Besides pipes feeding it pollutants, climate change makes the lake's waters warm and then becomes hospitable to invasive species.

The good news is, according to Collins, marshlands are being restored, especially in the Upper Truckee Meadows, and there are efforts to mitigate reliance on cars—think Lime Bikes. Presidential visits bring much needed money into the coffers.

Collins touted the importance of citizen scientists. "If you've participated in a beach clean-up, you're a citizen scientist," she said, adding that trash is a huge problem at Tahoe. "More than 16,000 pounds of trash has been accumulated since we started collecting data."

Consider that along with hundreds of thousands of plastic bottles, more than 60,000 cigarette butts have been accounted

for. "The Lake Tahoe shoreline is under assault," she said, introducing the League's Eyes on the Lake program that requests people protect the lake while they play at the lake and then report their findings.

In addition, Collins described Watershed Watchers where civilians can adopt a watershed, monitoring it over time.

It is evident that the assault on the lake is not being taken lightly by these three entities. Anyone interested in any of these programs, should contact the League to Save Lake Tahoe at 530.541.5388 or info@keeptahoebblue.org.