

TAHOE:
**STATE
OF THE
LAKE**
REPORT
2020

CURRENT DIRECTIONS

Plastics in Lake Tahoe

Microplastics, tiny pieces of plastic smaller than five millimeters, are impacting ecosystems worldwide. Microplastics have also been found at Lake Tahoe, despite efforts to clean up beaches and prevent litter.

TERC has been studying the location and extent of microplastic pollution in the lake and has launched efforts to educate visitors and change local consumers' plastic habits as part of the Drink Tahoe Tap® and Take Care Tahoe campaigns. With funding from the Nevada Division of Environmental Protection, the microplastics work is a collaboration between TERC researchers, educators, and several local partners.



A day at the beach (top) goes awry when plastic that is left behind ends up in the lake. Many of those plastics are broken apart and become microplastics. Photos: A. Toy



Photo: B. Wynne

Plastics in Lake Tahoe

Research

In 2016, TERC researchers began sampling the shoreline of Lake Tahoe to search for microplastics. The surprising quantity of microplastics found at all the beaches sampled has led researchers to begin sampling the lake itself.

For the deep (pelagic) waters, representative water samples are taken at multiple depths every three months. A specialized net (a manta trawl) is also towed across the lake surface and at a depth of 100 feet. Bottom sediment samples are collected with a box core sampler to capture denser plastics that have settled out of the water column. As drinking water comes directly from the Lake, water samples are collected quarterly from drinking water treatment facilities operated by Incline Village General Improvement District on the north shore and by Edgewood Water Company on the south shore.

Bioindicators are also an important part of this research. Asian clams, an invasive, filter feeding organism from the south shore and kokanee salmon stomachs provided by fishing guides will also be collected. These samples are sent to the Gjeltema Lab at UC Davis for Raman analysis using microspectroscopy. This provides data on particle size, chemical composition, and possible sources of the identified polymers. Our goal is not just determining where the Tahoe environment is impacted but knowing how we as a community contribute to microplastic pollution, and what actions can be taken to eliminate this self-inflicted harm.



Manta net trawling for microplastics in 2020 while researcher Katie Senft reviews some of the macroplastics found in a trawl sample (inset).

Photos: B. Allen and K. Senft

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Education and Outreach

In winter of 2019, TERC educators launched a campaign to reduce reliance on single-use plastics in the Tahoe basin. This campaign includes an exhibit, direct classroom programming, a community forum, and development of an outreach campaign to sell reusable water bottles at local Raley's grocery stores.

The exhibit on display at the Tahoe Science Center was also intended as an installation in the "Below the Blue: Lake Tahoe's Litter Crisis" art exhibition. The exhibit features a five-panel wall display, three tables of hands-on activities, and demonstrates how plastic items such as water bottles, straws, zip-top plastic bags, and plastic utensils go from just "a day at the beach" to impacting the entire ecosystem.

In collaboration with the Tahoe Water Suppliers Association (TWSA) and Sierra Watershed Education Partnership (SWEP), TERC has developed curricula to teach Tahoe students about the plastic problem facing Lake Tahoe. TERC educators met with Incline High School's Roots and Shoots Club and AP Environmental Science class

to encourage students to investigate and discuss solutions to their school's plastic consumption and to eventually participate in broader local efforts to reduce usage of single-use plastic.

TERC organized a free online viewing of the documentary "The Story of Plastic." This was followed by an open forum where community members engaged with expert panelists from UC Davis TERC, UC Davis Gjeltema Lab, Desert Research Institute, League to Save Lake Tahoe, TWSA, Clean up the Lake, and California State Parks.

In partnership with Take Care Tahoe, Tahoe Fund, and Raley's grocery stores in Incline Village, TERC is encouraging residents and visitors to purchase Drink Tahoe Tap®-branded reusable water bottles. These bottles are displayed next to educational signage in Raley's stores. By using the Tap App we can all find locations in the Lake Tahoe Basin to refill reusable water bottles with the best tasting tap water in the world and avoid purchasing single-use plastic water bottles.



High school students sort through mesoplastics as a part of TERC's in-class laboratory session.
Photo: H. Segale



AmeriCorps member Anne Graham working on a portion of the hands-on microplastics exhibits.
Photo: H. Segale



AmeriCorps member Elise Matera teaching about the different types of microplastics and their sources.
Photo: H. Segale