

Future of Lake Tahoe clarity in question as wildfires worsen

September 16 2021, by Sam Metz



In this Aug. 20, 2019, file photo, Freya Mayo, left, and her sister Evie, of London, try out a paddle board on Lake Tahoe near South Lake Tahoe, Calif. With wildfire no longer threatening Lake Tahoe, residents, tourists and scientists drawn to its clean alpine air, clear blue waters and fragrant pine trees now wonder about the long-term effects that will remain after wildfire season ends. Credit: AP Photo/Rich Pedroncelli, File

When a wildfire crested the mountains near North America's largest alpine lake, embers and ash that zipped across a smoky sky pierced Lake Tahoe's clear blue waters.

The evacuation order for thousands to flee their homes has been lifted, but those who returned have found black stripes of ash building up on the shoreline—a reminder that success fighting the Caldor Fire won't insulate the resort region on the California-Nevada line from effects that outlast [wildfire](#) season.

Scientists say it's too soon to draw conclusions about the lasting damage that record-setting wildfires will have on Lake Tahoe. But they're not wasting time. Many expect to bring their research plans to the Tahoe Science Advisory Council at a meeting Thursday.

Scientists funded by California, Nevada and the League to Save Lake Tahoe are researching [lake](#) clarity and biodiversity during and after wildfires. They're using collection buckets—some loaded with glass marbles—to capture and measure the size and quantity of particles and pollutants from wildfires that have sullied the normally crystal-clear waters. They're studying how particles enter the lake, how they move around it and the effect on [algae production](#).



In this Aug. 8, 2017 file photo, boats ply the waters of Emerald Bay of Lake Tahoe, near South Lake Tahoe, Calif. With wildfire no longer threatening Lake Tahoe, residents, tourists and scientists drawn to its clean alpine air, clear blue waters and fragrant pine trees now wonder about the long-term effects that will remain after wildfire season ends. Credit: AP Photo/Rich Pedroncelli, File

The clarity of the iconic alpine lake can vary even without catastrophic wildfires. On average, Lake Tahoe is clear 65 feet (20 meters) below the water's surface. Through wildfire season, scientists stationed near the lake's center have only been able to see 50 feet (15 meters) below the surface—a reduction they aren't sure is due to particles, algae or simply lack of sunlight, said Geoff Schladow, professor of civil and [environmental engineering](#) and director of the University of California, Davis' Tahoe Environmental Research Center.

"My feeling is, in some ways, it may look worse than it is," Schladow said. "What smoke in the basin actually does, particularly when it lasts for months, is something we don't really know. We're finding that out as we speak."

Smoke from Northern California wildfires has cloaked the Lake Tahoe basin in some past years. But as blazes have grown in size and intensity—partially due to [climate change](#), scientists say—smoke from wildfires inside and outside the basin that has sat atop the lake for two to three months in the past two wildfire seasons has exceeded the expectations of many residents and tourists who flock to the deep blue lake for its clean alpine air and fragrant pine trees.



In this Sept. 6, 2021, file photo, smoke shrouds parts of Lake Tahoe visible from Ski Run Marina in downtown South Lake Tahoe, Calif. With wildfire no longer

threatening Lake Tahoe, residents, tourists and scientists drawn to its clean alpine air, clear blue waters and fragrant pine trees now wonder about the long-term effects that will remain after wildfire season ends. Credit: AP Photo/Samuel Metz,File

It's also concerned scientists, who have spent years studying how algae, erosion and air pollution from vehicles that 15 million tourists drive in each year affect clarity. They say the sheer amount of wildfire smoke that has lingered could harm lake clarity in ways that weren't previously considered.

"Our bread-and-butter sources of declining lake clarity are pretty well understood," said Allison Oliver, an ecologist at the Skeena Fisheries Commission in western Canada who studied how rivers and creeks delivered murky sediment to Lake Tahoe after the 2007 Angora Fire.

"This new phenomenon where we're getting these big shifts in climate regimes and this pattern of big summer fires," she said of the Sierra Nevada mountains, "that's not something that was on people's radar as much 15 or 20 years ago. Now, it's routine."



This photo provided by UC Davis shows Brandon Berry, a researcher at the University of California Davis Tahoe Environmental Research Center, collects on a research vessel in Lake Tahoe, Calif. on Aug. 23, 2021. Scientists say it's too soon to draw definite conclusions about the lasting damage that record-setting wildfires will have on Lake Tahoe. But they're not wasting time. Many plan to bring their research plans to the Tahoe Science Advisory Council when it convenes for a scheduled meeting Thursday Sept. 16, 2021. Credit: Katie Senft/UC Davis via AP

On many days, smoke has blotted out views of the mountains that wrap the lake's pristine waters and left an inescapable campfire stench on clothes, in cars and beneath fingernails.

"It's really apparent that we need to be concerned about not only fires burning in the basin that cause erosion and burn scars, but the smoke generated from massive fires outside the basin," said Jesse Patterson, the League to Save Lake Tahoe's chief strategy officer. "We need to think bigger, if we want to keep Tahoe blue decades to come."

The league, best known for its "Keep Tahoe Blue" bumper stickers, has aggressively pursued environmental restoration projects to maintain the lake's clarity, prevent erosion and replant burn scars. But amid accelerating climate change, Patterson fears local land management efforts may no longer be enough to protect the lake.



In this Aug. 31, 2021 file photo boats float in the water away from a dock in South Lake Tahoe, Calif., as the Caldor Fire approaches Lake Tahoe. With wildfire no longer threatening Lake Tahoe, residents, tourists and scientists

drawn to its clean alpine air, clear blue waters and fragrant pine trees now wonder about the long-term effects that will remain after wildfire season ends. Credit: AP Photo/Jae C. Hong,File



This photo provided by UC Davis shows Brandon Berry, a researcher at the University of California Davis Tahoe Environmental Research Center, examines a collection bucket that scientists are using to measure particles and gauge wildfire's effect on the clarity of Lake Tahoe in Lake Tahoe, Calif., on Aug. 25, 2021. Scientists say it's too soon to draw definite conclusions about the lasting damage that record-setting wildfires will have on Lake Tahoe. But they're not wasting time. Many plan to bring their research plans to the Tahoe Science Advisory Council when it convenes for a scheduled meeting Thursday Sept. 16, 2021. Credit: Brant Allen, UC Davis via AP



This photo provided by University of Nevada Reno shows Dr. Facundo Scordo of University of Nevada, Reno's Global Water Center analyzes ash deposits floating to the eastern shore Lake Tahoe, Nev. on Sept. 3, 2021. Scientists say it's too soon to draw definite conclusions about the lasting damage that record-setting wildfires will have on Lake Tahoe. But they're not wasting time. Credit: Sudeep Chandra/University of Nevada Reno via AP



This photo provided by UC Davis shows a buoy in Lake Tahoe keeps a collection bucket in place that researchers have positioned to measure particles and gauge wildfire's effect on the clarity of Lake Tahoe in Lake Tahoe, Calif.,

on Aug.23, 2021. Scientists say it's too soon to draw definite conclusions about the lasting damage that record-setting wildfires will have on Lake Tahoe. Credit: Brandon Berry/UC Davis via AP

Scientists fear alpine lakes can act as "sponges," soaking up the microscopic particles in wildfire smoke, said Sudeep Chandra, a biology professor and director of the Global Water Center at the University of Nevada, Reno. Regardless of whether studies end up showing smoke obscures algae-fighting sunlight or increases the flow of pollutants into the lake, he believes the challenge for scientists will be expanding the scope of research into factors affecting Lake Tahoe.

Chandra applauded efforts to maintain lake clarity through restoring rivers, preventing erosion and encouraging responsible development. But after he saw how much smoke from California's Dixie Fire further north in the Sierra Nevada ended up in the basin, he said questions about the lake's future need to reckon with broader climate change trends.

"We're clearly regionally connected. That's going to be a new way of thinking about managing the Lake Tahoe basin," he said.

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