

NW Montana

Lake stewards compare notes, talk climate change

Inaugural Montana Lakes Conference in Whitefish

By **DUNCAN ADAMS**
Daily Inter Lake

Limnologist Jim Elser teased the water quality crowd assembled Thursday at The Lodge at Whitefish Lake by playfully declaring that Flathead Lake is the region's best and most important lake.

He joked that Whitefish Lake devotees need not lament a second-place showing, a ranking he said is akin to taking a silver medal behind Olympics champion Michael Phelps.

More seriously, Elser said that although lakes across the United States seem to be getting murkier and browner, that trend is not playing out at Flathead Lake or other regional lakes.

"That's something to be real proud of as a community," said Elser, director of the Flathead Lake Biological Station at Yellow Bay.

He said wastewater treatment improvements, along with other measures, have helped reduce levels in Flathead Lake of phosphorous, a nutrient that can stir algal growth. He said, though, that nitrogen levels haven't changed and that the companion shift in the phosphorous/nitrogen ratio can have a negative impact on zooplankton.

Still, Elser said, lakes in Western Montana, generally speaking, have retained high water quality.

Limnologists like Elser study freshwater lakes and streams.

On Thursday and Friday, they gathered in abundant numbers - though not as plentiful as mysis shrimp - for the inaugural Montana Lakes Conference in Whitefish.

The Whitefish Lake Institute organized the conference to provide a forum focused on "improving the health of Montana's lakes through science and monitoring advances, watershed restoration practices, policy innovation and collaborative stakeholder involvement."

Topics on the agenda included aquatic invasive species, climate change, restoration of native species of trout and efforts to provide them ecological refuge, leachate from septic systems and much more.

Where else would a luncheon panel focus on pollution from septic systems?

Thursday morning's speakers included, among others, Elser and Geoffrey Schladow, director of the Tahoe Environmental Research Center.

Elser has studied lakes in Montana, the Midwest, Canada, China and the Patagonia region of South America.

Schladow's presentation provided a history of efforts to protect Lake Tahoe's water quality and an assessment of the impacts of climate change, whose effects are already being documented at the lake.

Lake Tahoe, set in the Sierra Nevada Mountains, is famous for its clarity. But the Lake Tahoe basin, like the Flathead Lake basin, has experienced increased human development during recent decades.

Schladow said the 1960 Olympics at Squaw Valley alerted the world to the beauty of Lake Tahoe and the Sierra Nevada Mountains, a reality that spurred develop-

ment. According to the Tahoe Environmental Research Center, "the lake has responded to increased nutrient loading from the streams, atmosphere and groundwater with steadily increasing algal growth and a progressive reduction of clarity."

As a result, the lake has lost about 33 feet of its famous transparency and "thick growths of attached algae now coat the shoreline rocks in the spring," the research center said.

One goal of the center has been to present Lake Tahoe as a model for studying a fragile ecosystem under severe development pressure.

Schladow described campaigns to protect the lake from septic field pollution by developing a sewer system and wastewater treatment plant, as well as by addressing nutrient and sediment loading and tackling other measures.

During the 1960s, mysis shrimp were intentionally introduced to Lake Tahoe, based on the belief they would provide a food source for kokanee salmon and lake trout.

Schladow said research is trying to determine what effect mysis shrimp have had on lake zooplankton and clarity. He said the temporary absence of the shrimp in the Emerald Bay area of Lake Tahoe seemed linked to both the return of certain species of zooplankton and a dramatic improvement in that area of water clarity.

The absence of the tiny crustaceans apparently allowed zooplankton to rebound that consumed fine particles and algae from the water column, thereby improving water clarity.

In 2018, the Tahoe Environmental Research Center, with funding from the California Tahoe Conservancy,

the Nevada Division of Environmental Protection and private donors, began trawling at night for mysis shrimp in Lake Tahoe.

The crustaceans were also intentionally introduced decades ago in lakes upstream of Flathead Lake and eventually reached Flathead Lake, resulting in a crash of the population of kokanee salmon, a decline of bull trout and the dominance of non-native lake trout.

Meanwhile, Schladow said the effects of climate change, both emerging and anticipated, could have dramatic effects on Lake Tahoe.

He said a rise in average lake temperatures, a decline in days below freezing, a lengthening summer and other effects of climate change are affecting the lake. Among other impacts is an apparently growing internal resistance to mixing of the lake's layers from top to bottom, which can decrease oxygen levels in the lake.

On Friday, Clint Muhlfeld, a research aquatic ecologist for the U.S. Geological Survey, talked about the vulnerability of native trout species, which need cold water to thrive, to climate change. He discussed efforts underway to protect and establish refuges for native trout in the region.

The conference focused both on challenges to lakes in the region and potential responses.

Schladow playfully likened the fate of future limnologists to Sisyphus, the king in Greek mythology who was condemned for eternity to rolling a huge stone uphill only to have it roll down again.

Reporter Duncan Adams may be reached at dadams@dailyinterlake.com or 758-4407.