

# Expedition to Antarctica finds signs of life—researchers investigating if it still exists

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Credit: University of South Florida

An astonishing discovery is made by a research team including Brad Rosenheim, Ph.D., associate professor of geological oceanography in the USF College of Marine Science. He just returned from a six-week expedition to Antarctica where he lived in a tent under constant sunlight in a remote field camp roughly 500 miles from the South Pole.

Rosenheim is a principal investigator of the SALSA (Subglacial

Antarctic Lakes Scientific Access) project, which became first to explore Mercer Subglacial Lake. The body of water is twice the size of Manhattan and had previously been identified only via satellite.

The team, successful in all aspects of their sampling, found [signs of life: microbial life](#) as well as skeletal remains of tiny crustaceans and even the carcass of an eight-legged tardigrade. Researchers are now taking environmental RNA and DNA samples to see which of the creatures were alive at the time of discovery and which are ancient fossil remains.

Rosenheim and his Ph.D. student Ryan Venturelli are helping solve that mystery by using sophisticated radiocarbon dating methods pioneered at USF to put into context how the ecosystem flourishes. They gathered samples by coring six feet below the lake, some 4000 feet below the [ice surface](#) where their remote camp was located, to obtain a very rare subglacial sediment core. They hypothesize that the ice above Mercer Subglacial Lake melted at some point during the last 60,000 years, allowing [ocean water](#) and sunlight-driven photosynthetic products to be deposited in what is now fresh water Lake Mercer. Testing for the presence (or absence) of  $^{14}\text{C}$  in this system will support (or refute) their hypothesis.

"Finding life in such a remote, untouched place is astonishing," said Rosenheim. "We now have to figure out the structure of the ecosystem, specifically how relict carbon could be driving it energetically. Our techniques will also tell us about the history of the ice sheet over the last Ice Age, which is of significant importance to Floridians because of the threat of sea level rise. These sediments will generate much more interest when we are finished working on them because they are so rare and unique."

Fifty scientists, support and technical staff from eleven institutions participated in the SALSA project, which is funded by the National

Science Foundation. They'll now begin interdisciplinary analysis of water and sediment samples taken from the lake. More information will come from the skeletal remains in the [lake](#) and what was most recently alive. This research not only represents exploration of little-known parts of our own planet, but also provides a template for finding life in similar environments on other planets and moons.



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Provided by University of South Florida

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