

## **Antarctic Lake's Secret Water**

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A five-kilometre-long ice-sealed super-concentrated saltwater lake has been discovered by scientists working in Antarctica.

*This is beyond what scientists thought a few decades ago* - Dominic Hodgson, Bas

Researchers uncovered the extreme lake, called Lake Vida, along with 2,800-year-old microbes, under 19 metres of ice.

Because the body of water has been cut off from the rest of the world for millennia, the scientists say it could represent a previously unknown type of ecosystem.

This might make it an important template for the search for evidence of microbial life on other worlds, including Mars, they argue.

### **Frozen lakes**

It had been thought Lake Vida was one of several Antarctic lakes that are frozen to their beds all year-round. But this new research shows otherwise.

A team of US scientists extracted two ice cores above Lake Vida, which lies in a cold desert region of Antarctica known as the McMurdo Dry Valleys.

They also used ground-penetrating radar to find liquid water below the lake's ice cap.

The water remains liquid because it is seven times saltier than seawater and so will not freeze even at minus 10 Celsius - the temperature below the ice cover.

The team did not drill directly into the lake for fear of contaminating it.

### **Ancient DNA**

Using radiocarbon dating, the scientists analysed sediments found in the ice cores and dated them back 2,800 years.

When the sediments were thawed, the scientists discovered micro-organisms which they successfully revived.

This suggests that despite a complete lack of light, cold temperatures and hyper salinity, the lake itself may also contain life.

John Prisco, from Montana State University, was one of the researchers who extracted the cores.

He said: "The ice cover of these lakes represents an oasis for life in an environment previously thought to be inhospitable.

"Importantly, the cold temperature preserves DNA extremely well making them perfect 'ice museums' for the study of ancient DNA."

## **Red Planet**

This research could help scientists find out more about possible life in Lake Vostok, the largest of over 70 sub-glacial lakes on the White Continent, which lies more than four km beneath the East Antarctic Ice Sheet.

Commenting on the latest findings, Dr Dominic Hodgson, an Antarctic lakes expert from the British Antarctic Survey (Bas) in Cambridge, said the research raised the possibility that there was life on Mars.

He told BBC News Online: "Life can be locked up in ice for many thousands of years and cells can survive these low temperatures, and once conditions are right they snap out of their frozen states and start photosynthesizing again.

"This is beyond what scientists thought a few decades ago."

Peter Doran, a co-researcher on the project from the University of Illinois at Chicago, said: "Mars is believed to have a water-rich past, and if life developed, a Lake Vida-type ecosystem may have been the final niche for life on Mars before the water bodies froze solid."

The research was carried out by scientists at the University of Illinois at Chicago, the Desert Research Institute in Reno, Nevada; Nasa's Ames Research Center in Moffett Field, California; and Montana State University in Bozeman.

It was published in the Proceedings of the National Academy of Sciences.

<http://news.bbc.co.uk/2/hi/science/nature/2581485.stm>