

Researchers find 'needle in a haystack' as lakebed yields microscopic clues about submerged archeological sites

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After drilling for clues under the bed of a lake in south-eastern Ontario, a McMaster researcher has turned up evidence of human activity that has been submerged since water covered it thousands of years ago.

Lisa Sonnenburg, an instructor in the School of Geography & Earth Sciences, led a team that found tiny flakes of stone left behind in tool making that took place on land that now forms part of the bottom of Rice Lake, near Peterborough, Ontario.

The discovery is significant because it represents the first use of such accumulations of stone chips, called microdebitage, to pinpoint underwater archeological sites.

I was excited when I first saw it under the microscope, but of course I had to make sure I was seeing what I was actually seeing, says Sonnenburg. Everyone had told me, Youre not going to find anything. Youre looking for a needle in a haystack. Lo and behold, we found the needle in the haystack.

Sonnenburg collaborated with colleagues Joe Boyce and Ed Reinhardt, also of the School of [Geography](#) and Earth Sciences. Their research, is published online in the journal *Geology*.

Water levels at Rice Lake have fallen and risen in the 10,000 years since

the glaciers receded, Sonnenburg explains. Once the ice was gone, the lake became a magnet for human settlement, and today its shores are rich in archeological evidence.

Sonnenburg said researchers at nearby dry-land sites such as Serpent Mounds had suggested it was possible that settlements had existed on adjacent land that was later flooded.

She and her team first mapped out the lakebed using scanning technology to search for likely sites.

Then they drilled out and carefully examined 16 core samples taken from selected points around a 10 km section of the lake.

In three of the core samples, they discovered small flakes of stone -- tiny deposits with large implications. Under an electron microscope, the fragments showed the marks of being worked by humans, suggesting the flakes had come from tool making, and establishing microdebitage as a new source of evidence in underwater archeology.

This summer, Sonnenburg is using similar methods as she participates in a larger project that is mapping underwater structures in [Lake Huron](#), also believed to have been used by humans before they were submerged.

McMaster University, one of four Canadian universities listed among the Top 100 universities in the world, is renowned for its innovation in both learning and discovery. It has a student population of 23,000, and more than 140,000 alumni in 128 countries.

Provided by McMaster University

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