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Jessica Ernakovich, Assistant Professor in Natural Resources and the Environment (COLSA) travel to Sweden

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UNH Global

Jessica Ernakovich

**Assistant Professor in Natural Resources and the Environment (COLSA) ~
Sweden**

As a new faculty member at UNH, my main objective this past year has been to establish new research collaborations. This has included becoming part of UNH's Arctic Working Group, taking part in workshops (on and off campus), and saying "Yes!" to just about every proposal opportunity that came my way. And when a more established professor at UNH, Ruth Varner, suggested that I join her on her summer field campaign to Abisko, Sweden, it was a double "Yes!!". Abisko is a really interesting place because climate change is evident on the landscape, and I wanted to see it for myself.

In my research, I link the ecology of soil microorganisms with biogeochemistry and greenhouse gas flux. Permafrost-affected landscapes are a really interesting and important place for this work because permafrost is thawing rapidly in many locations. Permafrost is soil or peat in the Arctic, sub-Arctic, and alpine regions that is frozen year-round. Permafrost soils store twice as much carbon (in the form of non-decomposed organic matter) as the atmosphere. These soils are highly



Permafrost thaw has caused this landscape to slump approximately 1 meter, resulting in thaw ponds. UNH SURF Abroad student Katie Bennett (in photo), is working with Ruth Varner and the DOE-funded IsoGenie team to measure methane flux in thaw ponds.

vulnerable to climate change, and as a result of rapid warming at the poles. When permafrost thaws, there can be drastic changes to the landscape, as seen in the first photo where this ice-rich permafrost landscape has slumped.

Permafrost thaw not only causes a lumpy landscape, but this transition from below- to above-freezing changes the way energy flows through the system. Following on after previous work, I want to establish research in Abisko, Sweden to ask questions about how the microbial communities—microscopic organisms responsible for driving decomposition and nutrient cycling—in permafrost respond to thaw and what the implications are for greenhouse gas production and ecosystem carbon balance. I spent my time at Abisko meeting local and international researchers who may be potential research collaborators, helping out Ruth Varner’s team, and collecting a few samples of my own for preliminary work.



Professor Ernakovich at work--from pondering to success while extracting a permafrost core in Abisko, Sweden

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