

Melting glaciers leave exposed a bounty of knowledge on developing ecosystems and soil microbial communities

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Glacier retreat areas provide an excellent window into the evolution of microbial communities, an ideal opportunity for scientists to study how quickly soil biological functions become established and how ecosystems begin to form. Soils are not static in the landscape, but instead evolve with time under the influence of multiple environmental factors – understanding how these factors interact can lead to advancements in the science and management of soils.

Aria Hahn and Dr. Sylvie Quideau, researchers at the University of Alberta, conducted their research in Mount Robson Provincial Park along the Robson Glacier in British Columbia. Standing 3954 m tall, Mount Robson is the highest point in the Canadian Rocky Mountains and supports a large ice- and snowfield. Their study was published today in the *Canadian Journal of Soil Science*.

"We are excited to present some of the first data documenting microbial community diversity, biomass and function along a 100-year-old soil chronosequence in a Canadian glacier retreat area," says Dr. Quideau. "These beautiful natural wonders provide an excellent opportunity to study the development of soils and the [microbial communities](#) that live within them."

Hahn and Quideau measured soil microbial community composition and functional diversity, and determined the influence of Engelmann spruce

(*Picea engelmannii* Parry) and yellow mountain avens (*Dryas drummondii* Rich.) on soil microbial community succession along the glacier chronosequence. They found that while soil microbial composition remained relatively stable, total biomass and fungal activity of the community responded to changes in the soil environment and increased as the soil aged.

Correlations between microbial respiration of carbon substrates with the [soil nitrogen](#) content indicated that the soil microbial community was influencing changes in the soil environment. Yellow mountain avens, a plant known to support [nitrogen fixation](#), increased soil [microbial biomass](#), although this effect took 40 years after deglaciation to emerge.

"Soils and their inhabiting microbes differ greatly among glacier sites around the Earth. We believe that by understanding the natural phenomena in glaciers here at home, we can not only advance the management of Canadian ecosystems but also contribute valuable knowledge to the global community."

More information: *Canadian Journal of Soil Science*, [Doi: 10.4141/cjss2012-133](#)

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