Arctic soil study turns up surprising results

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Across the globe, the diversity of plant and animal species generally increases from the North and South Poles towards the Equator but surprisingly that rule isn't true for soil bacteria, according to a new study by Queen's University biology professor Paul Grogan.

"It appears that the rules determining the patterns for plant and animal diversity are different than the rules for bacteria," says Professor Grogan.

The finding is important because one of the goals in ecology is to explain patterns in the distribution of species and understand the biological and environmental factors that determine why species occur where they do.

Researchers examined the composition and genetic difference of soil bacterial communities from 29 remote arctic locations scattered across Canada, Alaska, Iceland, Greenland and Sweden.

The report also had a second surprising finding. The researchers expected that soil samples taken 20 metres apart would be more similar in terms of bacterial diversity than soil samples taken 5,500 kilometres apart because, in theory, plant or animal communities from nearby locations are likely to be more genetically similar than those from distant locations.

Generally, they found that each soil sample contained thousands of bacterial types, about 50 per cent of which were unique to each sample.

"It turns out that there is no similarity pattern in relation to distance at all, even in comparing side-by-side samples with samples taken from either side of a continent - this really amazed me," says Professor Grogan.

More information: The findings have been accepted for publication in the journal *Environmental Microbiology*.

Provided by Queen's University