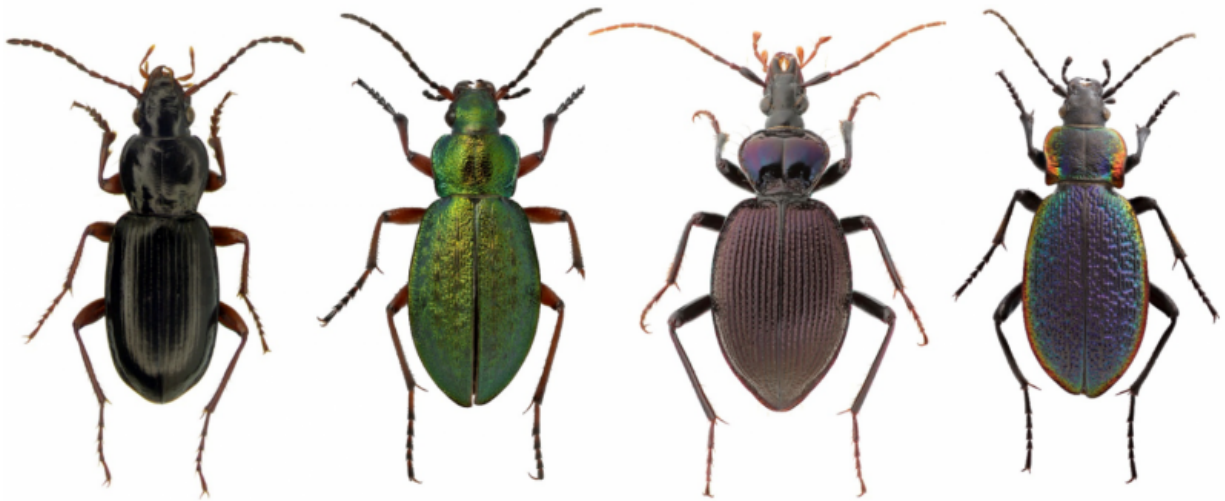


Arctic beetles may be ideal marker of climate change

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Ask a beetle. How fast is climate change?

Temperature-sensitive beetle populations in the Arctic will help researchers study climate.



McGill researchers believe that Arctic beetles may prove to be ideal markers of climate change, since any changes in climate that affect the soil, plants and animals on which the beetles depend are likely to be quickly reflected in changes in the beetle communities. Credit: Henri Goulet

Wanna know about climate change? Ask a beetle.

Scientists have been logging changes in [weather patterns](#) and temperatures in the Arctic for some time. Now they need to find ways to measure how these changes in climate are affecting biodiversity. One of the best places to look may be down at our feet, at beetles. That's because, as a McGill research team discovered after doing the first large-scale survey of Arctic beetles, these six-legged critters are not only abundant in number but also diverse in feeding habits and what they eat is closely linked to the latitude in which they are found.

As a result, McGill researchers believe that Arctic beetles may prove to be ideal markers of [climate change](#), since any changes in climate that affect the soil, plants and animals on which the beetles depend are likely to be quickly reflected in changes in the beetle communities.

Where you live is what you eat

A team of researchers led by Prof. Chris Buddle and Dr. Crystal Ernst of McGill's Dept. of Natural Resource Sciences, were able to identify more than 460 different species of Arctic beetles in locations ranging from the edge of the boreal forest in Northern Ontario to Ellesmere Island in the far north. More significantly, they found that there were clear differences in what beetles are found where along this north-south gradient, and the ecological roles they fulfilled differed depending on the latitude in which they lived.

"Depending on the latitude and the temperature, Arctic beetles perform a range of ecological functions such as pollinating or feeding on plants, preying on other insects, and breaking down decaying matter," says Ernst, who is the first author on the study published today in *PLOS ONE*. "In the far north, there are generally very high numbers of predators and far fewer beetles which eat plants, while further south the reverse is generally true."

Beetles are sensitive types

The discovery that Arctic beetles may be especially sensitive to temperature has implications for future climate change monitoring.

"As temperatures in northern regions rise or become more variable, there is a strong possibility that the beetle communities will undergo significant changes in response," says Buddle, the lead researcher.

"Whether these changes will have positive or negative effects on Arctic ecosystems and the other animals and plants living there remains to be seen, but it is clear that beetles' sensitivity to climate make them ideal targets for long-term biodiversity monitoring in the far north."

More information: *PLOS ONE*:

[dx.plos.org/10.1371/journal.pone.0122163](https://doi.org/10.1371/journal.pone.0122163)

Provided by McGill University

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