

Small wildlife surveys can produce 'big picture' results

May 9 2023



Researchers gathering data on ecological communities. Credit: University of Exeter

Small-scale wildlife surveys can reveal the health of entire ecosystems, new research shows.

Monitoring wildlife is one of the most costly and difficult aspects of [conservation](#), and often depends on long-term observations in [individual species](#).

But the study reveals a new and effective method.

It focuses on "[interactions](#)" between species, such as insects pollinating flowers or birds feeding on plants.

The results show that a small snapshot of interactions is a reliable indicator of the health of an entire community of species. Specifically, the study looked at whether these communities are "persistent" or not—meaning whether all species are fine or if any are declining to extinction.

The study was carried out by the University of Exeter, McGill University, the University of Toronto, Princeton University and MIT.

"All communities of plants and animals are supported by an underlying network of interactions between species," said Dr. Christopher Kaiser-Bunbury, from the Centre for Ecology and Conservation at Exeter's Penryn Campus in Cornwall.

"Our study—which combines theory, statistics and real-world data—shows that examining a few of these interactions can provide 'big picture' conclusions about ecosystem health.

"This information is essential for policymakers, scientists and societies, as we try to tackle the global biodiversity crisis."

When environmental conditions change, interactions between [species](#) often change too—providing an early indicator of wider problems.

As such, the study's method can identify patterns more quickly than some traditional conservation monitoring—which is vital given the rapid changes being caused by [human activity](#).

"Using minimal resources, we can rapidly assess both the persistence of entire ecological networks and the expected success of restoration," said Dr. Benno Simmons, also from Exeter's Centre for Ecology and Conservation.

"Our method is especially effective at identifying when an ecological community is not persistent—allowing for rapid detection of extinction risk."

The [paper](#), published in the journal *Proceedings of the National Academy of Sciences*, is entitled: "Rapid monitoring of ecological persistence."

More information: Chuliang Song et al, Rapid monitoring of ecological persistence, *Proceedings of the National Academy of Sciences* (2023). [DOI: 10.1073/pnas.2211288120](https://doi.org/10.1073/pnas.2211288120)

Provided by University of Exeter

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