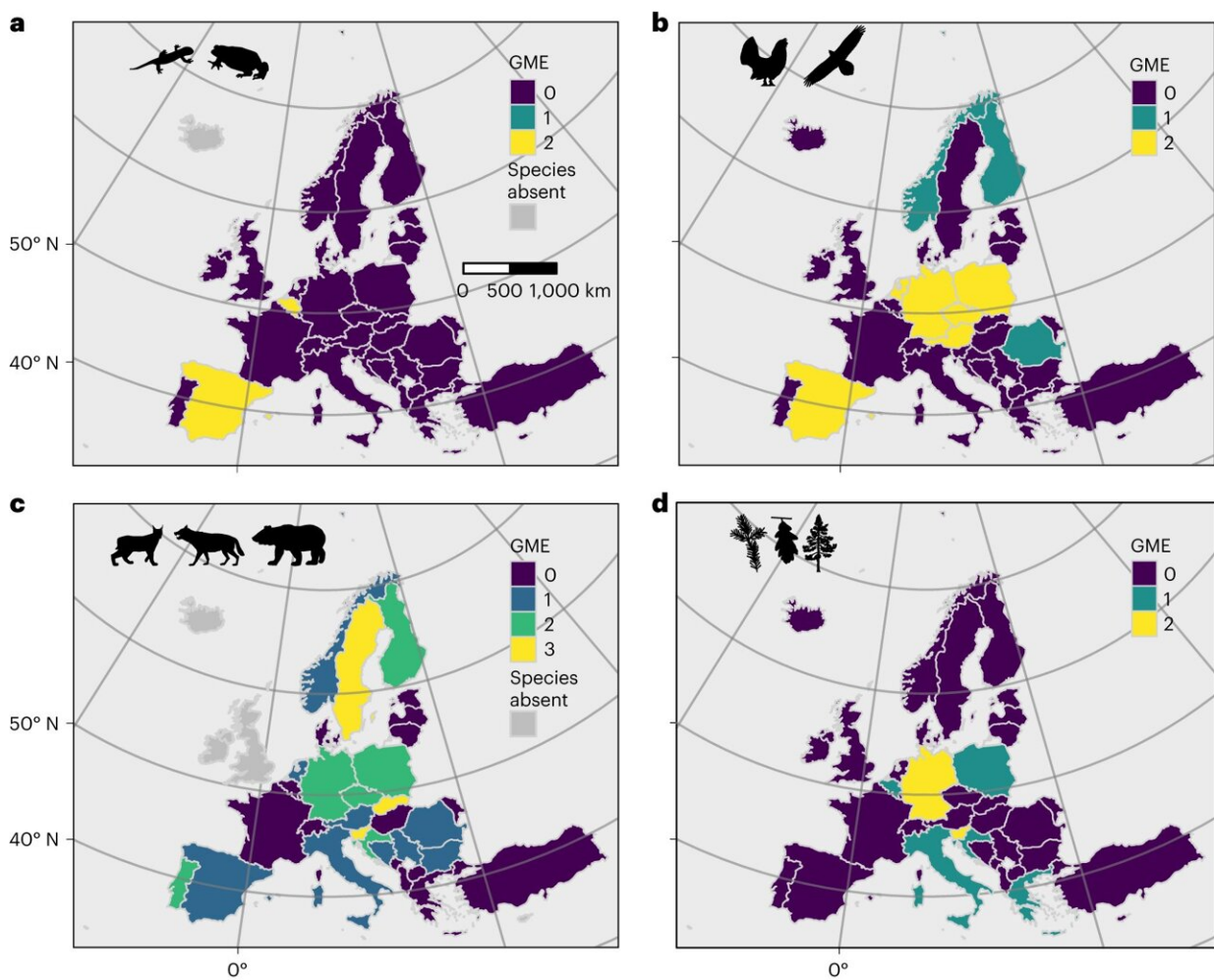


# Study proposes new approach for monitoring genetic diversity in Europe to help species adapt to climate change

January 15 2024



Geographic distribution of effort to monitor population genetic diversity (GME), for purposes of conservation or management, among COST full-member countries. a–d, The tally of genetic monitoring programs for amphibians (a),

birds (b), carnivorans (c) and forest trees (d). Credit: *Nature Ecology & Evolution* (2024). DOI: 10.1038/s41559-023-02260-0

Genetic diversity is crucial if species are to adapt to climate change. An international study [published](#) in *Nature Ecology & Evolution* that includes researchers from the University of Helsinki shows that current efforts to monitor genetic diversity in Europe are incomplete and insufficient.

The study proposes a novel approach for identifying and pinpointing important geographical areas on which to focus.

Every living thing on our planet is distinguished from its fellow creatures by small differences in its hereditary material. So, when the environment changes and becomes unfavorable to populations of species, such as plants and animals, this [genetic variability](#) can enable them to adapt to the new conditions, rather than becoming extinct or having to migrate to other habitats.

In simple terms, gene diversity is one of the keys to species survival. In 2022, the International Convention on Biological Diversity (CBD) placed increased emphasis on the need to protect the genetic diversity found in [wild species](#), a fundamental component of [biological diversity](#) and one that has been generally neglected previously.

"This is particularly the case in Finland, where relatively few species have genetic diversity monitoring programs, an exception being, for example, wolves," says Professor Craig Primmer from the Faculty of Biological and Environmental Sciences and the Institute of Biotechnology, University of Helsinki.

Global warming is already putting a great deal of pressure on many

species in Europe, particularly those having populations at the climatic limits of their range. The ability of species to resist greater heat or drought, as well as new species colonizing their environment, therefore determines their survival. It is in these borderline situations that it is most urgent to measure genetic diversity, in order to assess the ability of the species in question to persist.

The *Nature Ecology & Evolution* study examines the monitoring of genetic diversity in Europe. Professor Primmer coordinated the collection of information about genetic monitoring programs that are ongoing in Finland. He has also been involved in genetic monitoring of Finnish salmonid fish populations.

By analyzing all genetic monitoring programs in Europe, the study showed the geographic areas in which greater monitoring efforts are needed. "Unfortunately, Finland was identified as a country having fewer genetic diversity monitoring programs than expected compared to other European countries, given its size and GDP," Primmer says.

"Without better European monitoring of genetic diversity, we risk losing important genetic variants," says Peter Pearman, lead author of the study.

Improved monitoring would make it possible to detect areas favorable to these variants, and to protect them in order to maintain the [genetic diversity](#) that is essential to the long-term survival of species. Some of these [threatened species](#) also provide invaluable services to humans, such as crop pollination, pest control, water purification and climate regulation.

**More information:** Peter B. Pearman et al, Monitoring of species' genetic diversity in Europe varies greatly and overlooks potential climate change impacts, *Nature Ecology & Evolution* (2024). [DOI:](#)

[10.1038/s41559-023-02260-0](https://doi.org/10.1038/s41559-023-02260-0)

Provided by University of Helsinki

Citation: Study proposes new approach for monitoring genetic diversity in Europe to help species adapt to climate change (2024, January 15) retrieved 27 April 2024 from <https://phys.org/news/2024-01-approach-genetic-diversity-europe-species.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.