

Museum samples of extinct butterfly populations show how populations rise and fall

February 22 2016



Museum samples of now extinct *Glanville fritillary* populations reveal that in an extremely fragmented environment even the fast evolution is not enough to save populations from extinction. Credit: Niclas Fritzen

Researchers at the University of Helsinki have analysed genetic variation in the now extinct populations of the *Glanville fritillary* butterfly in south-west Finland using old museum samples. The populations used to live in highly fragmented habitat where local populations went frequently extinct and new ones were established by dispersing butterflies.

The new results show that such extinction-colonisation dynamics, called metapopulation dynamics, increased the rate of dispersal and colonisation of butterflies, an example of rapid contemporary evolutionary change.

Rapid environmental change continues to cause unprecedented losses in biodiversity. The new results show that [species](#) may become adapted to increasingly fragmented environments through natural selection on dispersal. In the present case, however, so much habitat was lost in the 20th century on the research area that the evolutionary change was not sufficient to rescue the species from extinction.

The study highlights the value of old museum collections as a resource for studying how populations and species respond to a rapidly changing world.

"Using museum samples allows us to go back in time to see how rapid environmental change affects the evolution of populations. This is particularly important for populations that have now gone extinct," says the lead author, Dr Toby Fountain from the Metapopulation Research Centre, Faculty of Biological and Environmental Sciences.

More information: Predictable allele frequency changes due to habitat fragmentation in the Glanville fritillary butterfly, *PNAS*, www.pnas.org/cgi/doi/10.1073/pnas.1600951113

Provided by University of Helsinki

Citation: Museum samples of extinct butterfly populations show how populations rise and fall (2016, February 22) retrieved 9 April 2024 from <https://phys.org/news/2016-02-museum-samples-extinct-butterfly-populations.html>

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