

DNA from fossils reveal the origin of the Norwegian lemming

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The Norwegian lemming is an iconic small mammal that is unique to the Fennoscandian mountain tundra.

A new ancient DNA study shows that the Norwegian lemming has a unique history. In contrast to other mammals in Fennoscandia, the Norwegian lemming may have survived the last Ice Age in the far north, sealed off from the rest of the world by gigantic ice sheets. This conclusion is drawn by an international team of researchers in an article

published this week in the journal *Molecular Ecology*.

The Norwegian lemming is an iconic small mammal that is unique to the Fennoscandian mountain tundra. Known for its dramatic fluctuations in population size, it is a keystone species in the mountain tundra ecosystem. But its origin has until now remained somewhat of a mystery.

Twenty thousand years ago, Fennoscandia was covered by a thick ice sheet. Animals and plants in the region are therefore thought to originate from populations that lived to the south or east of the ice sheet, and colonised Fennoscandia as the ice melted. With this in mind, and international team of scientists, led by researchers at the Swedish Museum of Natural History, set out to investigate from where the Norwegian lemming originated at the end of the last Ice Age. To do this, the researchers retrieved and analysed ancient DNA from lemming populations that surrounded the ice sheet during the last Ice Age.

"We found that even though the populations surrounding the ice sheet were closely related to modern day lemmings, none of them were similar enough to be the direct ancestor of the Norwegian lemming," says Love Dalén, Associate Professor at the Swedish Museum of Natural History.

After eliminating these populations as potential sources, the researchers concluded that the only remaining explanation was that the Norwegian lemming originates from a population that survived the last glaciation somewhere locally in Fennoscandia. The exact location where the Norwegian lemming could have survived the last glaciation is not clear, but likely places include coastal areas or mountain plateaus sticking out from the [ice sheet](#).

"The Norwegian lemming is the only endemic mammal in Fennoscandia, and its unusual origin is probably the reason why", says Vendela

Lagerholm, lead author on the study.

More information: Vendela K. Lagerholm, Edson Sandoval-Castellanos, Dorothee Ehrich, Natalia I. Abramson, Adam Nadachowski, Daniela C. Kalthoff, Mietje Germonpré, Anders Angerbjörn, John R. Stewart and Love Dalén. *Molecular Ecology*. Article first published online : 24 MAR 2014, [DOI: 10.1111/mec.12698](https://doi.org/10.1111/mec.12698)

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