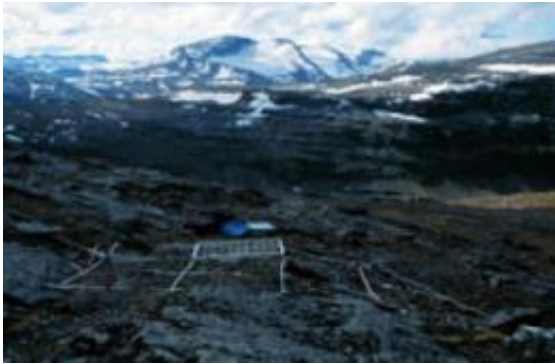


# Plants disappear as a result of climate changes: study

May 8 2012

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Climate changes mean that species are disappearing from European mountain regions. Credit: Photo: University of Gothenburg

Climate changes mean that species are disappearing from European mountain regions. This is shown by new research involving biologists from the University of Gothenburg, the results of which are now being publishing in the journals *Nature* and *Science*.

Within the framework of the GLORIA project, researchers from all over Europe have gathered information about [alpine plants](#) from all European mountain ranges.

## Alpine plants are disappearing

GLORIA, which started as an EU project examining [biodiversity](#) and

changes in all European mountain ranges, has studied summits from the [Sierra Nevada](#) in the south to the Scandinavian mountain range in the north, and from [Scotland](#) in the west to the Urals and the [Caucasus](#) in the east. The results show that species which prefer a colder environment are disappearing from the mountain ranges in Southern Europe. Since many of these species have small distribution areas, they are now threatened with [extinction](#).

"These species have migrated upwards, but sooner or later the mountain reaches its summit," explains researcher and biologist Ulf Molau. "Many alpine plant species are disappearing from mountain ranges in Southern Europe, and for some of them – those that are only found in a single mountain range – the outlook is extremely bleak."

## Mapping the mountain ranges



"Every research square is digitally photographed so that we can find our way back to the exact same position after ten years or more, with centimeter precision," continues Professor Molau. "And by rolling out an analysis network, small 10 x 10 cm squares can be re-mapped." Credit: Photo: University of Gothenburg

Over a period of ten years, researchers around Europe have gathered samples from 13 different mountain regions. Using digital technology and intensive on-site field work, they have been able to study a grid pattern of square metres, carefully selected on different high mountain summits, from the tree line up to the highest peaks. The digital photographs provide a detailed picture of which species have disappeared between 2001 and the present day.

"Every research square is digitally photographed so that we can find our way back to the exact same position after ten years or more, with centimetre precision," continues Professor Molau. "And by rolling out an analysis network, small 10 x 10 cm squares can be re-mapped."

Today, the researchers are able to note that species are migrating upwards and that the variety of species in Southern European mountain regions has declined during the ten years in which samples have been taken.

## **Woodland species are climbing**

In our Scandinavian mountain range, the changes are taking place at a slower rate.

"Here, alpine [plant species](#) generally have a much wider distribution, often across the entire Arctic, when compared with species in mountain ranges such the Alps, the Pyrenees and the Caucasus. What we are seeing in Sweden is increased upward migration of woodland species, which in the long term may start to outcompete the alpine 'specialists'."

Professor Molau has studied both plants and animals in Sweden, at Latnjajaure in Abisko close to the Norwegian border.

"By analysing small networks of squares, we can see what has appeared

and what has disappeared."

Today, GLORIA is a mega-network covering all the world's mountain regions, but it is the original European arm of GLORIA that has reached a stage where researchers have started to observe changes.

**More information:** Find out more about GLORIA at [www.gloria.ac.at/res/gloria\\_europe/default.cfm](http://www.gloria.ac.at/res/gloria_europe/default.cfm)

Provided by University of Gothenburg

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