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Natural Reforestation in Southern Pyrenees Favours Orchid

A 13-year study has been key to understanding how and why an orchid species (Cypripedium calceolus), which is endangered in some countries in Europe, is surviving and recovering in the Pyrenees. The results suggest that the abandonment of farming and grazing, which is enabling reforestation to take place, is benefiting this orchid.

Populations of species at the edges of their distribution areas, as is the case with the 'lady's slipper' orchid (*Cypripedium calceolus*) on the southern side of the Pyrenees, have always been considered to be more vulnerable than those at the centre of their range.

This is what led to researchers from the Pyrenean Institute of Ecology (CSIC) publishing the first ever count-based plant demographic model to find out whether populations of this rare Euro-Asian orchid are in a worse situation than those in countries such as Poland or Estonia.

"The populations on the southern edges of the Pyrenees are similar in size, reproduce better, and are as stable or even growing at a faster pace than those in Central Europe," says María B. García, Lead Author of the study and a Researcher at the Pyrenean Institute of Ecology (CSIC).

According to the study, published in the journal *Conservation Biology*, this "unusual" result seems to be related to reforestation in the areas of the Pyrenees studied. The ending of traditional practices such as farming and grazing could help some endangered forest plants to recover.

"For a plant that is used to colder temperatures (such as in Central and Northern Europe), reforestation in more southerly areas could represent an improvement to its habitat, thereby leading to an increase in the population

growth rate," says García, who confirmed that the highest such rate found to date is in the Pyrenees.

The research also highlights the fact that landscape changes and the expansion of forests over the past 50 years in mountainous regions are providing "new opportunities" and giving "hope for the recovery of forest species at the edge of their range against a future backdrop dominated by biodiversity loss."

The duration of the study (from 1997 to 2010) was of key importance in arriving at these conclusions. Before now "there have not been any similar studies over such a long time," the researcher explains.

The resurgence of an endangered plant

Cypripedium calceolus is classified as 'endangered' in the whole of Europe and "represents almost 100 forest plants that are at the limits of their range on the southern slopes of the Pyrenees," the researcher points out. Climate change and global warming are threat factors that could have dramatic implications for orchids, as well as other plant species. "However, at this time of global warming, the increase in forest area along this mountain range could be benefiting this group of species," the biologist says.

In the absence of severe manmade alterations to the environment, the immediate future for these orchid populations in the Pyrenees "seems to be favourable," the study concludes.