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Vegetation May Be Able To Recover At Sierra Nevada Ski Station In Spain

ScienceDaily (Dec. 4, 2008) — Preparation work on the ski slopes in Spain’s Sierra Nevada destroys a large number of plant species. In their efforts to develop new methods to restore plant cover, researchers from the University of Granada have now successfully grown the area’s two native shrub species in the laboratory. They hope to use these to guarantee the biodiversity of the Sierra Nevada National Park.

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The plant species of the Sierra Nevada account for 30% of Spain's total flora, but are suffering degradation as a result of maintenance work carried out by heavy machinery on the ski slopes. Soil erosion and the loss of biodiversity are getting worse, particularly as 80 out of the 2,000 vascular plants growing in the area are endemic to these mountains.

This new experiment, the results of which will be published in the next issue of the Central European Journal of Biology, will allow “the restoration of degraded areas, fine-tuning of the current methodologies used to restore plant cover and

ensure integration with the landscape, and also promote the maintenance of biodiversity in the fragile area of the Sierra Nevada”, Francisco Serrano Bernardo, lead author of the study and a researcher in the Environmental Technologies Department at the University of Granada, told SINC.

The scientists studied two shrub species native to the Sierra Nevada, along with other taxa: *Genista versicolor* Boiss (Leguminous) and *Reseda*

complicata Bory (Resedaceous), which occupy an ecological niche found primarily in and around the ski station.

In order to ensure their successful relocation to their natural environment, the researchers wanted to understand “some of the environmental requirements of these plants in order to optimise germination and growth”. The main problem for these shrubs over the short term is that “they cannot self-regulate naturally in order to recover their biodiversity”.

Seeds that grow in the laboratory

The study used samples of three different soils from the ski station. The objective was to see whether they could grow in different experimental conditions. The soils were not randomly selected: they were chosen according to orientation, slope, height and proximity to the ski station slopes, etc.

Various treatments containing plant growth regulators were applied to the seeds (auxins, giberelines, citoquinines and ethylene), “in order to improve the germination rate and growth of the seeds in the laboratory, and to make it easier to subsequently transfer and plant them at the ski station”, said the researcher.

The seeds germinated and grew successfully in the laboratory. Serrano said the effectiveness of the regulators could be seen in aspects such as formation of the root system, length of the stalk, size of the cotyledons (simple leaves that feed the plant) and leaf production.

The experts hope that, when the results are applied in the field, the treatments will “help the plant cover to recover within a markedly shorter time period than that needed without any intervention”.

Journal reference:



Ski runs at the Sierra Nevada ski station in the low season. (Credit: Francisco Serrano / SINC)

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