Conserving rare species for the maintenance of Mediterranean forests

September 11 2019

A study led by researchers from the Department of Plant Biology and Ecology at the University of Seville has shown the importance of conserving rare species for the maintenance of complex ecosystems like Mediterranean forests. Therefore, for these species, it becomes essential to understand the factors that make conservation successful. This research has been published in the review *Forest Ecology and Management*, an important publication in the field of forestry management.

Specifically, this work focused on the pine forests in the Iberian Peninsula. Currently, these forests are exposed to threats that will worsen in the future, including the consequences of climate change (which are severe in this area of the Mediterranean) and disturbances caused by human beings (forest exploitation, expansion of farming, etc.)

In the case study, the start of mining activity made it necessary to manage a pine forest, situated in Niebla (Huelva), near to the Doñana National Park. One of the species present in this forest system is a woodland carnation, Dianthus inoxianus. "It is not a very common plant, and is only present in this and other pine forests near the provinces of Huelva and Seville. It is always found in sandy soil. This carnation is officially catalogued as an endangered species and its uniqueness in numerous characteristics has been shown in previous studies. Due to this uniqueness, it probably has a key role in the ecosystem that it lives in, so it should be considered in any local conservation and restoration plan," says the University of Seville teacher Francisco Balao. For that reason,

he adds, an experiment was carried out in a fenced-off area within the pine forest in the study, with the aim of understanding the best conditions for "translocating" it, that's to say, for planting it somewhere else as a means of conservation for this species of carnation.

This study indicated that the success of translocation is limited by two periods of stress: the phase immediately after planting and the first summer. To survive these stages, the experts have shown that various factors are important, like having a mild climate during the first weeks and being properly watered until the end of the first summer. As for climate, radiation and temperature influenced the success of translocation. Also, the method of translocation had an effect on the results that were obtained. So, the situation is different if the plant is transported directly from its natural habitat or if it is brought from a greenhouse. Due to all this and evaluating the economic cost, the best options according to this University of Seville research group is to translocate plants in winter that have been picked directly from their habitat (without the need for watering) or, in spring, to translocate plants grown in a greenhouse and to water them until the end of the first summer.

More information: Javier López-Jurado et al. Conditions for translocation of a key threatened species, Dianthus inoxianus Gallego, in the southwestern Iberian Mediterranean forest, *Forest Ecology and Management* (2019). DOI: 10.1016/j.foreco.2019.05.008

Provided by University of Seville