

Artificial refuges created to save the reptiles of Doñana

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This photo shows an artificial refuge created to save the reptiles of Doñana.
Credit: Juan M. Pleguezuelos.

The Aznalcóllar mining accident more than 11 years ago, which contaminated part of the Doñana National Park, also damaged reptile habitat there. Now a team of Spanish researchers, who have been studying the reptile community since 2000, have shown, by setting up artificial refuges, that the disappearance of natural refuges had a serious impact on lizard and snake numbers.

Nine years ago, researchers from the University of Granada (UGR) and the University of Barcelona (UB) started to study the reptile community in the Doñana ecological corridor. The scientists, who have published the results of this study in the journal *Restoration Ecology*, found the

population at that time to be "very impoverished", and were only able to find one of the 13 reptile species present in the surrounding areas - the European common gecko (*Tarentola mauritanica*).

"Despite all the landscape restoration work done after the disaster, the habitat had lost almost all the natural refuges for land fauna, so we came up with the theory that this was the reason behind the lack of reptiles", Juan Manuel Pleguezuelos, lead author of the study and a researcher at the Department of Animal Biology at the UGR, tells SINC.

The team carried out a five-year experiment in order to show the need for refuges that provide protection against predators, and microclimate conditions. They created artificial refuges (120 groups of tree trunks) on a 24-hectare experimental site. They could thus monitor any changes over time in the reptile community at this site and compare them with another, similarly-sized site without any such refuges.



This is an ocellated lizard (*Timon lepidus*) in the Doñana Corridor. Credit: Juan M. Pleguezuelos.

Tree trunks, a comfortable home

"The modified area with the artificial refuges showed faster recuperation

of the reptile community in terms of diversity and abundance of species than the control area that didn't have any artificial refuges", says Pleguezuelos.

After the new refuges were installed, the reptile community grew from just one species, the European common gecko, in 2000-2001, to six species in 2006. It also increased in abundance from one individual per unit effort to more than five.

The biologists also deduced that colonisation by reptiles of the Guadiamar Green Corridor was "transversal rather than linear, in other words it didn't actually act as a corridor for the reptiles, or at least not during the initial stages of colonisation". According to the researchers, the reptile populations colonising the Corridor came from areas immediately bordering it, not from the source areas that the Corridor is supposed to connect, these being the marshes of the Guadalquivir in the south and the Sierra Morena mountain range in the north.

"The results suggest that landscape rehabilitation programmes shouldn't overlook the availability of refuges for wildlife, a vital resource for Mediterranean [reptiles](#), and something that can be put into place using an system as inexpensive as waste tree trunks", concludes the biologist.

More information: Márquez-Ferrando, Rocío; Pleguezuelos, Juan Manuel; Santos, Xavier; Ontiveros, Diego; Fernández-Cardenete, Juan R. "Recovering the reptile community after the mine-tailing accident of Aznalcollar (Southwestern Spain)" *Restoration Ecology* 17(5): 660-667, Sept 2009.

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