

Cascade effects of a fast-spreading predator on a Mediterranean island

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Abstract:

Biological invasions are one of the main causes of biodiversity loss on islands in the Anthropocene. The direct catastrophic effects of these invasions are frequently reported (for example, causing the extirpation of species on islands), but these extinctions can also alter the biota through indirect effects. At the beginning of the SXXI, the importation of ornamental trees to Ibiza introduced, among others, the horseshoe snake (*Hemorrhois hippocrepis*). This has been expanding across the island, eventually exterminating populations of Ibizan wall rock lizards (*Podarcis pityusensis*) locally. The disappearance of a key species for the ecosystem such as *P. pityusensis* could lead to cascading consequences affecting both arthropods (common prey of lizards) and the vegetation of the ecosystem. Throughout the year 2021, we defined 18 study areas with very similar characteristics: rainfed fields with extensive agriculture with dry stone walls and separated from each other by more than 2km. The study areas were grouped into three types based on the presence of only lizards, only snakes or with both species present, with six replicates each. Our samplings have revealed that the trophic cascade caused by the loss in density and extinction of native lizards has caused a significant increase in the abundance of arthropods. This has turned *H. hippocrepis* into a threat to this delicate Mediterranean island ecosystem since the increase of the arthropod's densities could become agricultural pests or vectors of pathogens.