
The dark side of the island rule or how traits acquired on islands make endemic species more vulnerable to extinction

José María Fernández-Palacios*¹

¹Universidad de La Laguna (ULL) – S/C de Tenerife Spain, Spain

Abstract

Islands contribute disproportionally for their area (5% of the emerged lands) to world biodiversity (25% are insular species), but even more disproportionally to the worldwide-endangered species lists (60%) or to the worldwide post-description extinctions (75%). The insular contribution to pre-description extinction is not yet quantified, although it is expected to be similar. But actually, which are the reasons behind this fact? Besides the genetic threats, such as inbreeding depression or loss of heterozygosity, unavoidable related to any founder event, the common demographic structure of insular species, i.e. few, genetically structured populations, largely confined to a single island (SIE = single island endemics), usually with a small number of individuals, add increasing vulnerability to the island biota. Furthermore, many of the characteristics that island species acquire through evolution in isolation -the so-called island rule or insular syndrome- yield to increased species vulnerability towards both natural -volcanic activity, gravitational landslips, tsunamis and cultural or anthropogenic related events. Such island-syndrome traits that make island species especially vulnerable, affect both insular animal (gigantism, dwarfism, flightlessness, tameness, diminution of clutch size, relaxation of defensive behavior, etc.) and plant species (loss of dispersibility, insular woodiness, loss of defense against herbivory, trend to sexual dimorphism, etc.). Human related impact on insular species, either direct habitat destruction, degradation or fragmentation, overexploitation, hunting, fishing, pollution, collecting introduction of alien species, including disease vectors and diseases, climate change or trophic cascades, have shifted the continental megafauna extinction towards an insular megafauna and megaflore extinction, whose onset coincides with the human colonization of oceanic islands and micro-continent, what happened during the last 3 millennia and is still ongoing. The result is the demise of many insular charismatic species that have vanished forever.

Keywords: animals, extinction, island syndrome traits, oceanic islands, plants

*Speaker