

# Want to save 41 percent of the planet's highly threatened vertebrates? Work on islands

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A small Fijian island. Credit: Remember/Wikipedia

New research discovers that nearly half the Earth's highly threatened vertebrates occur on islands. However, effective management of invasive species, a primary driver of extinctions on islands, could benefit 95 percent of the 1,189 threatened island species identified.

The paper, published in the journal *Science Advances*, describes the analysis of a database that maps the global distribution of highly threatened vertebrates and invasive [species](#) on [islands](#). It lays the fundamental groundwork for planning conservation actions to prevent extinctions.

To guide conservation planning to prevent island extinctions, conservation biologists from the Coastal and Conservation Action

Laboratory at the University of California at Santa Cruz (UCSC), Island Conservation, BirdLife International, and the International Union for the Conservation of Nature (IUCN) Species Survival Commission (SSC) Invasive Species Specialist Group created the [Threatened Island Biodiversity Database](#).

The Threatened Island Biodiversity Database is the first of its kind. The database is a culmination of an intensive systematic review of over 1,000 available datasets, publications and reports, as well as consultation with more than 500 experts worldwide with specialized knowledge about native and invasive species on islands.

From this investigation, researchers identified and mapped all 1,189 land-based amphibians, reptiles, birds, and mammals, listed as Critically Endangered or Endangered on The IUCN Red List of Threatened Species™ breeding on 1,288 islands. They then documented whether introduced, damaging (invasive) vertebrates, such as rats and cats, occurred on the same islands. The dataset also contains important social, political, and ecological information about each island, critical for informing conservation decision-making.

"The opportunities to prevent extinctions are now laid out right in front of us. This knowledge base of threatened island biodiversity can really empower more efficient and better-informed conservation planning efforts, which is exactly what our planet needs right now," commented Dr Dena Spatz, Conservation Biologist at Island Conservation and lead author on the paper who began this work at the UCSC Lab.

## **Why Islands?**

Islands are isolated landmasses surrounded by ocean that hold many of the most threatened species in the world. For example, the Floreana Mockingbird in the Galápagos Islands, Ecuador disappeared from its

island-namesake Floreana in the 19th century, mere decades after human colonization. The mockingbird was primarily driven extinct from the island (extirpated) by invasive species, including invasive rodents and feral cats which remain on Floreana and prevent its safe return. The few hundred individuals left of this Critically Endangered bird are now confined to tiny predator-free islets adjacent to Floreana.

Unfortunately, this is a common story for island wildlife, which suffer disproportionately from endangerment and [extinction](#) as compared with plants and animals on continental land-masses. Islands represent merely 5.3 percent of the world's land area, yet have hosted 61 percent of all recorded extinctions since 1500 . The majority of these extinctions were driven by invasive species, particularly rodents and cats, responsible at least in part for 44 percent of bird, mammal, and reptile extinctions in recent centuries.

## **There is hope on islands.**

For some islands it is possible to implement biosecurity—preventing invasive species from arriving and becoming a threat. And for many islands with invasive species, it is possible to completely remove the interlopers, which has led to remarkable native species recovery stories around the world . On Anacapa Island in the Channel Islands, California, the successful removal of invasive rats led to positive outcomes for the Vulnerable Scripps's Murrelet, and the recent discovery of the Endangered Ashy Storm-petrel.

To prevent extinctions, Dr. Spatz and colleagues realized the need to take this effective conservation strategy to scale and created The Threatened Island Biodiversity Database, a foundational tool to pinpoint which species to protect, and where.

Dr Stuart Butchart, Chief Scientist at Birdlife International and co-

author on the paper commented, "The datasets assembled for this paper support the most comprehensive assessment yet of the distribution of threatened species on islands, and where they occur with invasive alien vertebrates. The analysis underpins ongoing efforts to determine on which islands preventing invasions and controlling or eradicating [invasive species](#) would provide the greatest contribution to global biodiversity conservation."

While the species threatened by invasive vertebrates make up almost half of all highly threatened land vertebrates world-wide, they occur on a fraction of the Earth's landmass and on

Dr Piero Genovesi, co-author and Head of Wildlife Service - ISPRA Institute for Environmental Protection and Research and Chair of the IUCN SCC Invasive Species Specialist Group, commented, "The database validates the importance of islands globally for biodiversity conservation and lays the groundwork for pinpointing efficient and effective conservation action at global and regional scales."

The paper highlights a handful of these islands where conservation efforts would be important. For example, Gough Island, a UK Overseas Territory of the St. Helena and Tristan da Cunha island group in the Atlantic Ocean, is home to six species that are highly threatened, such as the Tristan Albatross. Invasive mice co-occur on the island as well, threatening the survival of the Albatross, and other threatened species.

"The global nature of the paper offers a comparative look at threats to biodiversity and conservation opportunities. Furthermore, it provides national and regional governments and NGOs with critical biodiversity information assembled on a global platform, which can inform and stimulate promotion, fundraising, and action to protect species from extinction," concluded Dr Spatz.

Next steps are to apply the information gathered from this dataset to key

conservation planning efforts at global and regional scales, combining other factors affecting the feasibility of implementing island [conservation](#) interventions to identify the most important islands where we should focus global efforts to prevent extinctions.

**More information:** Globally threatened vertebrates on islands with invasive species by Dena R. Spatz, Kelly M. Zilliacus, Nick D. Holmes, Stuart H. M. Butchart, Piero Genovesi, Gerardo Ceballos, Bernie R. Tershy, Donald A. Croll. *Science Advances*, Oct. 2017. [advances.sciencemag.org/content/3/10/e1603080](https://advances.sciencemag.org/content/3/10/e1603080)

Provided by Island Conservation

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