The big difference with small islands

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Islands hold a special place in conservation, both as crucibles of evolution where unique species arise in isolation and as living museums where ancient lineages persist. Despite covering just 6.7% of the land surface, these refuges hold at least 20% of Earth's biodiversity. They also account for 75% of extinctions recorded since 1500, and 36% of terrestrial vertebrates on islands are Critically Endangered, compared to 4% on the mainland (Lacher et al., 2025). Conservation on islands thus presents many challenges but also exciting prospects for innovation and success, and warrants more attention and support.

This issue of *Oryx* highlights a range of topics in island conservation. Three articles focus on Critically Endangered species, all endemic to their respective islands (Barbados leaf-toed gecko *Phyllodactylus pulcher*, Blades et al., 2025; Sardinian long-eared bat *Plecotus sardus,* Fichera et al., 2025; Manapany day gecko *Phelsuma inexpectata* of Réunion, Sanchez et al., 2025). Auguste et al. (2025) highlight the vulnerability of amphibians on tropical oceanic islands, Brown & Wishart Chu Foon (2025) examine the impacts of Covid-19 on conservation in Trinidad and Tobago, and Sharp & Gray (2025) draw our attention to the importance of micro-refugia for island-endemic arthropods.

Most challenges of island conservation arise directly or indirectly from anthropogenic influences. Many islands have suffered high levels of deforestation, and island flora and fauna are famously ill-equipped to cope with introduced alien species such as rats, domestic cats, goats and mongooses: at least 90% of extinctions on islands are attributed in part or full to this cause (IPBES, 2023). Island species are also accidentally transported to other islands; a single shipping container or tourist's bag can undo millions of years of evolution. I am writing this from Saint Lucia, where the endemic lizard *Anolis luciae*, once found perching on every tree and post, is now Endangered because of unthinking introductions of more competitive *Anolis* species from Barbados, Antigua and Cuba.

Islands are also highly vulnerable to climate change. Rising sea levels threaten to submerge hundreds of low-lying islands during our lifetimes (Bellard et al., 2014) and weather systems are being disrupted, causing arid islands to become hotter and more desiccated. The Intergovernmental Panel on Climate Change forecasts increased windspeeds of tropical cyclones in the Atlantic and Pacific; a terrifying prospect, not least for the island nations that are still reeling from recent hurricanes. Three-quarters of the strongest cyclones strike biodiversity hotspots comprising islands, and 95% of these repeatedly batter Japan, Polynesia–Micronesia, the Philippines, Madagascar and the Indian Ocean islands, and the Caribbean islands (Valle et al., 2025).

Island ecosystems are often severely degraded, having been subjected to centuries of habitat conversion, invasions of aliens and extinctions of keystone native species. They need not just protection but active rehabilitation. However, although c. 25% of nations and territories are islands, they do not readily fit with much of the global framework for biodiversity conservation. For example, the World Bank Group's income classification scheme takes Gross National Income per capita as a measure of development, to determine eligibility for development assistance and concessional financing—including funding for conservation. Per capita income is largely irrelevant, however, for small islands that have too few taxpayers to address the disproportionate pressures and costs they face. Most island nations have fewer than one million citizens, and many fewer than 100,000. If we modified the World's Bank Group's index with, say, the number of endemic or threatened species per capita, the picture would look very different. Nor can small islands compete when applying to the many funding agencies and big international NGOs that measure their influence in millions of hectares. Carbon schemes, too, are put off by the inherently small land areas and high operating costs. This at least partly explains the focus of investment on protecting relatively large marine zones around islands, ignoring those little pieces of land where people live alongside unique and highly threatened species.

Having a small population also means fewer human resources to carry out conservation. Local NGOs and government agencies are typically tiny—in some cases they have only two or three staff—and often overstretched. Although they welcome opportunities to build capacity, it is important to tailor training and resources to the context. A common complaint I hear in small island nations is that the same few individuals are called upon to do everything, including frequent trips abroad to undertake workshops and represent their countries at conventions of multilateral environmental agreements. What they really need are the resources to employ more pairs of hands.

Islands do, however, have some notable advantages that can be harnessed for improved conservation. Not least of these is the pronounced community-led governance on many island nations (Bambridge et al., 2021). Residents are often fiercely proud of their islands,

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accustomed to self-reliance, and well aware of their changing environment and its finite resources. Witnessing problems such as increasing pollution and declining fish stocks has spurred the formation of numerous community-driven environmental initiatives. One example is the Union Island Environmental Alliance on the 9 km² Union Island in St Vincent and the Grenadines. Created by concerned local citizens, the group tackles waste, water shortages and poaching, among many other issues, finding solutions fit for their small island context. Among their successes are reversing the decline of the endemic Critically Endangered Union Island gecko *Gonatodes daudini*.

Cognizant of climate change, communities living on islands may also be more aware of the importance of healthy natural ecosystems to buffer them from shocks. As weather patterns shift towards more intense droughts and storms, the role that inland forests play in regulating waterflow and stabilizing slopes has become more important than ever. Recent modelling of storm surges and flooding associated with hurricanes in the UK Overseas Territories has highlighted the extraordinary power of sand dunes, reefs, mangroves, seagrass meadows, lagoons and offshore islands to protect coastal communities and infrastructure. These natural ecosystems arguably provide more affordable and persistent defences than concrete dams and sea walls.

This leads me to another advantage known to those who work on islands: the ecosystems are typically easier to study and understand than continental systems, and efforts to counter threats are often rewarded with rapid, measurable results. Island species such as the Mauritius kestrel *Falco punctatus*, Pemba flying fox *Pteropus voeltzkowi*, Saint Lucia amazon *Amazona versicolor* and, a personal favourite, the Antiguan racer *Alsophis antiguae,* have been pulled back from the edge of extinction in relatively short periods. Many species conservation programmes are making good progress thanks to the effective identification and removal of specific threats. Even more exciting are the cases of entire island ecosystems being restored towards a more natural state, such as Nonsuch Island (Bermuda), Round Island (Mauritius), Fregate Island (Seychelles) and hundreds of islands around New Zealand. Some of these restoration initiatives date back more than 60 years, making them pioneers of the global rewilding movement.

With over 340,000 islands scattered across the globe and many thousands of island species at risk of extinction, it is easy to despair. But we know conservation does work, and home-grown island conservation practitioners are resourceful and growing in number and expertise, bolstered by support from networks such as the Global Island Partnership. If the global community can improve access to funding for island nations more commensurate with their high vulnerability and global importance for biodiversity, facilitate exchanges and collaborations across neighbouring islands to increase their collective capacity, and bridge the divide between marine conservation and island conservation, more nations will have a chance of being able to save unique species, restore degraded ecosystems, and improve the lives and prospects of millions of vulnerable people.

Islands are microcosms of our planet and barometers of our future. They are the first to feel the impacts of climate change, to see their native biodiversity replaced by aliens, to run out of space for waste, and to realise that resources are finite. As the crucibles and laboratories for conservation actions and adaptation, they can also show the way for the rest of the world.

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