

Seed conservation in the remote South Atlantic

June 6 2017, by Tom Heller And Phil Lambdon



Ascension Island, midway between Brazil and Angola. Credit: T. Heller

Islands have long held a fascination for scientists studying evolution and patterns of biodiversity, from Charles Darwin and Alfred Russell Wallace in the 19th century, to Robert MacArthur and E.O. Wilson in the 20th century, and continuing in the 21st century. Islands are often home to, for their size, a disproportionately large number of species with very narrow distributions, including single island endemics. They are

also particularly vulnerable to the changes affecting the environment globally: habitat loss, climate change, and invasive species. Several island species are known to have been driven to extinction by human activity, with more perilously close to following them. At Kew, a key area of our work concerns the plant diversity of islands (UK, Madagascar, and the UK Overseas Territories in particular), the threats they face, and how best to conserve this unique life.

Seed conservation in the remote South Atlantic islands

Of the 15 island groups of the South Atlantic Ocean and Antarctic region, five are territories of the United Kingdom (UKOTs): Ascension Island, Saint Helena, Tristan da Cunha, the Falkland Islands, and South Georgia and the South Sandwich Islands. Though all are situated in the same ocean, they encompass an incredibly diverse range of climates, from hot tropical (Ascension) to polar (South Georgia). Since at least 2004, Kew has been working to help bank the seeds of the native flora of the South Atlantic UKOTs. Ex-situ collections represent an important resource in the conservation of the plant life of these islands. To date, over 200 species from these islands have been banked at Kew's Millennium Seed Bank (MSB), which represents almost 70% of the native vascular flora.

In Saint Helena, a Darwin Initiative grant is enabling Kew to work with the Saint Helena government to ensure their extremely threatened flora is better represented in ex-situ collections, both on the island and at the MSB. With 10 species from the island reduced to fewer than 100 individuals in the wild, ex-situ collections represent a valuable resource in the race to save these plants from extinction - through propagation and their use in habitat restoration programmes. In many cases when genetic diversity is critically low, conserving what little is left from fragmented

populations is vital to the future survival of these species.



Mellissia begoniifolia (Saint Helena boxwood), reduced to a small handful of plants in the wild. Credit: T. Heller

Use of native seeds for habitat restoration

Since 2004, over 80% of the [native flora](#) of the Falkland Islands has been banked at the MSB, with all but one of the 14 endemic plants represented. Our partners, Falklands Conservation with the support of the Darwin Initiative, have run a very successful trial demonstrating the use of native seeds in restoring degraded habitats in the territory, with plans to increase the scale on which this is practiced.

To the ends of the earth

At more than 1,500 miles from the nearest continental land, the Tristan da Cunha group of [islands](#) is extremely isolated, even by South Atlantic standards. As such, opportunities to learn more about the flora, and to conduct conservation work there, are few and far between. I recently had such an opportunity to conduct field work on Gough Island, one of the Tristan group.



Transvaal Plain, Gough Island. Credit: Phil Lambdon

Gough's intimidating volcanic slopes are constantly buffeted by trade

winds and lashing rains. A tiny meteorological station, leased for the past 62 years by the South African Government, nestles in a corner of the only flat, lowland plain, feeding reports of impending north-bound weather systems to Cape Town. The station is staffed by a handful of technicians, but the expense of getting to the island makes it a job for the committed. South Africa's regular research vessel, the SA 'Aghulas', drops past once a year, offloading the new crew with enough provisions to see out the next twelve months.

A world where humans are outsiders

The extreme lengths required to reach Gough have rendered it a unique remnant of a quickly disappearing world. One of the few surviving examples of an almost pristine temperate ecosystem, it was declared a World Heritage Site in 1995. The lowlands are dotted with the graceful sweep of 'island trees' amidst impenetrable thickets of impossibly vivid green ferns. Yellow-nosed albatrosses nest in every sheltered hollow, and on dusky summer evenings, the sky blackens with millions of raucous shearwaters and petrels. The uplands are bleak and rugged, like the Central Highlands of Scotland. For those of us used to managed countryside, it takes some adjustment to a world where humans are outsiders. A hike through the cloying tangle of vegetation is slow and energy-sapping. During uphill slogs, each footstep sinks agonisingly backwards into two-foot thick mossy cushions, and the higher plateaus are a treacherous maze of deep bogs. Most of the precipitous valleys remain barely explored.

Yet the impression of paradise is not quite as complete as it seems at first glance. As has occurred all over the world, [invasive species](#) have left an indelible imprint on the landscape. Mice arrived over 100 years ago and make an easy meal of both island tree seedlings as well as Gough's unique flightless moths, which now both seem to be vanishingly scarce.



Deschampsia robusta on Gough Island. Credit: Phil Lambdon

Native species at risk from invasive plants

The gradual spread of invasive plants has also barely received a second

glance. Battles rage most intensely along open margins of the racing streams. Originally home to the greatest diversity of native species on the island, most suitable corridors of habitat are now suffocating under blankets of Yorkshire fog (*Holcus lanatus*) and creeping bent (*Agrostis stolonifera*). As a consequence, some original inhabitants appear to be on the decline, and a few grasses unique to Gough are now genuinely rare. The large, tussocky plumes of *Deschampsia robusta* are difficult to find, whereas the enigmatic *Agrostis goughensis* has only ever been seen three times, and is currently known from just one tiny patch.

Taking action to protect diversity

With few botanists ever seeing Gough, my visit offered a chance not to be missed. There are considerable challenges involved in reversing some of the deeply ingrained problems, but we can at least preserve the unique genetic diversity of the island for the future. The Millennium Seed Bank (MSB) was set-up to do exactly that – a high-tech ark with doors open to species in trouble from all over the world. Backed by the government of Tristan da Cunha and Kew, work has begun on a collection of specimens and seed samples from the island for long-term preservation. Of the 23 Tristanian endemics on the island, nearly half have now been harvested and housed at the MSB. Of course, more effort is needed. Detailed surveys, further collections and potential management options must all be considered. Through these actions, we at least know that another small part of the world's biodiversity will not entirely disappear in the way of the dodo.

Provided by Royal Botanic Gardens, Kew

Citation: Seed conservation in the remote South Atlantic (2017, June 6) retrieved 19 April 2024 from <https://phys.org/news/2017-06-seed-remote-south-atlantic.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.