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Modern extinction - my journey with the plants we have lost forever

Rafaël Govaerts describes how his passion for the natural world evolved into the creation of the first extensive list documenting modern plant extinction.



BY [RAFAËL H A GOVAERTS](#)



Plants are essential parts of ecosystems with many animals and fungi, as well as humans, depending on them. Remove the plant and an entire ecosystem starts to unravel, possibly leading to other animals or fungi becoming extinct.

Proving an absence is near impossible, so it's not surprising that estimates of extinct plants vary widely. Over the past 30 years, I have been focused on getting an accurate picture of the number of documented extinct plants.

In our recent paper, we have published the first rigorously researched list of all documented plant extinction. We found that 571 plant species are currently recognised as being extinct. The real figure is undoubtedly higher, and a continued effort is underway to assess the threat status of each plant species. The current rate of extinction is much higher than background extinction levels, with the highest rates on islands, in the tropics and for shrubs, trees or species with narrow ranges.

We gathered data from over the last three decades through screening all publications on plant extinctions, visits to herbaria and visiting the areas of assumed extinct plants, which I did on many of my own holidays.

Making lists to save plants

My fascination with plants first began when I was a young child, but it wasn't until the 1980s, when biodiversity threats were being discussed more widely in the media, and Sting was in the spotlight for trying to save the rainforest, that I was inspired to do something to help save plants from extinction.

I first went about getting a list of all the plants in the world to assess which ones were in imminent danger of becoming extinct. To my surprise, there was no such list of all the plants in the world. Not easily deterred, I decided to start making one myself using my first computer. I then went on to make a list of all the plants that were already documented to be extinct and fully assess them. Looking at my list, it was clear that some of the species that were acknowledged as extinct were unlikely to survive in the wild, but there was a chance that others could be rediscovered and protected.



Researcher Rafaël Govaerts.



Rafaël Govaerts' fascination with plants began when he was a child. Credit RBG Kew/Rafaël Govaerts.

Holidays of rediscovery

I decided to organise our annual holidays to locations where I could go and look for a species that was allegedly extinct.

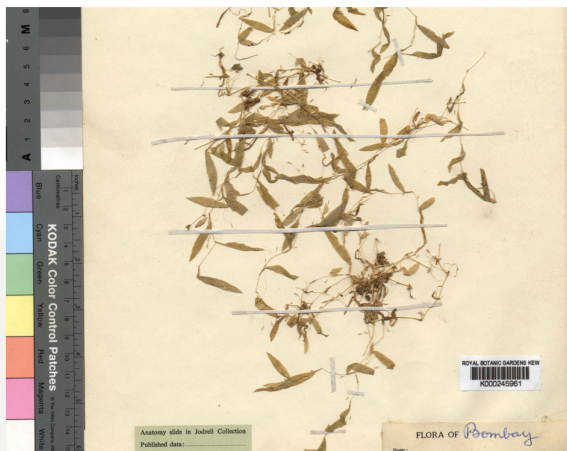
Argentina was one of my first trips as I always wanted to see the temperate plants on the other side of the world. Patagonia certainly did not disappoint and it's still one of the most wonderful places with the most helpful people I have ever met. I searched for a small bulbous plant, *Ipheion tweedieanum*. After many hours of wading through the mud of the Uruguay river near Concepción del Uruguay, I found some plants growing in grassy clearings.

On the rock of Gibraltar, I searched the east side for the Gibraltar campion (*Silene tomentosa*) Large parts of the rock had been covered in concrete to create water catchments at the beginning of the 20th century and there seemed little hope for

this cliff dweller. Miraculously the species was rediscovered in 1994 on the west side of the rock, a location where it had never been reported before. Seeds have since been stored within Kew's Millennium Seed Bank and plants are now grown in some botanic gardens worldwide.

In Portugal, I searched for two species of thrift, flowering plants that produce bright pink flowers. *Armeria arcuata* had only been collected once in 1850 near the coastal town of Vila Nova de Milfontes. Even though there was still much of the plant's habitat in the area, I was unable to find it. *A. neglecta*, too, was only collected once near the town of Beja. This area now seems to have been largely replaced with new intensive Olive plantations and it seems unlikely that the species survives here.

My travels in India took me to Jog falls, a popular local tourist attraction, to search for a grass *Hubbardia heptaneuron*. It's a very delicate annual plant that had only been found in the spray zone of that one waterfall, which had been disrupted by the building of a hydroelectric power station. The species was later thought to be discovered near a waterfall further north, but that plant turned out to be a new species, now named *H. diandra*. Although I was unable to locate *H. heptaneuron* myself, it was eventually rediscovered on 18 January 2010 at the original location and, thankfully, conservation measures are now in place to protect the species.



Specimen of *Hubbardia heptaneuron* from Kew's Herbarium. Credit: RBG Kew.



Specimen of *Ipheion tweedeanum* specimen from Kew's Herbarium. Credit RBG Kew.

Continuing to protect

Many of the places I have visited have now changed so radically there seems little hope for the rediscovery of the numerous plants declared extinct. Others had remaining intact habitats and, with continued searches and a great deal of luck, some have been rediscovered.

While some species have been rediscovered and safeguarded, currently the list contains 571 documented plant extinctions, most of which are now unlikely to be rediscovered. Many of the plants that have gone extinct could have offered solutions for food security or medicines but unfortunately, we will never know of their value.

The true figure of plant extinction is of course much higher as the list I compiled are only those species scientists have documented and searched for. Many more plants are only known from their original collection or historic specimens. All need to be searched for again to document surviving populations and protect them from the continued destruction of wild places and devastation to ecosystems.

Documenting and assessing plants are vital to protect them and, at Kew, we continue to play an important role in this, as well as safeguarding those plants that are extinct in the wild but still survive in cultivation.

Humphreys, A.M., Govaerts, R., Ficinski, S.Z., Nic Lughadha E. & Vorontsova, M.S. (2019). [Global dataset shows geography and life form predict modern plant extinction and rediscovery](#). *Nature Ecology & Evolution*

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