

A botanical mystery solved by phylogenetic testing

January 8 2018

Missouri Botanical Garden researchers used DNA testing to rediscover *Dracaena umbraculifera*, which was thought to be extinct. The methods and results were published in *Oryx*. The authors include Garden researchers in both St. Louis and Madagascar.

Dracaena umbraculifera was described in 1797 from a cultivated plant attributed to Mauritius. However, repeated attempts to locate the plant in Mauritius were unsuccessful. As a result, it was categorized as Extinct on the International Union for Conservation of Nature (IUCN) Red List. There were a number of individuals labeled as *D. umbraculifera* growing in botanical gardens around the world including the Missouri Botanical Garden. This suggested the status might be inaccurate and that Extinct in the Wild was the correct categorization.

The goal of the authors was to understand where *D. umbraculifera* actually originated, which species are its close relatives, if it was truly extinct, and to clarify the identity of the individuals growing in botanical gardens. DNA testing indicated *D. umbraculifera* is more closely related to *Dracaena reflexa* from Madagascar than to *Mauritian Dracaena*. Armed with that information, a number of the authors conducted field expeditions in Madagascar, ultimately discovering five wild populations. They concluded that the species' IUCN status should be critically endangered rather than extinct.

This study highlights the importance of living collections in botanical gardens, even those that are centuries old and might lack information

about origin. The genetic analysis of these plants can play an important role in making new discoveries particularly about poorly known species. *D. umbraculifera*, for example, was likely overlooked by botanists during field work because its origin was assumed to be Mauritius rather than Madagascar. The findings further confirm the importance of additional work in the flora-rich Madagascar and other islands of the western Indian Ocean. Nearly 90 percent of plants in this region are endemic, but are threatened due to ongoing deforestation. There is an urgent need to document and conserve this biodiversity.

Dr. Christine Edwards, Dr. Burgund Bassuner, Dr. Porter Lowry, Senior Vice President Dr. James Miller, Senior Vice President Andrew Wyatt and Garden President Dr. Peter Wyse Jackson, Dr. Chris Birkinshaw, Christian Camara and Adolphe Lehavana served as authors.

"This project is a great example of how DNA analysis can be used to both bring new value to botanical [garden](#) collections and to make [new discoveries](#). It is particularly exciting because it is rare to have the opportunity to rediscover a species that hasn't been seen in the wild for 200 years," said Edwards.

More information: Christine E. Edwards et al, A botanical mystery solved by phylogenetic analysis of botanical garden collections: the rediscovery of the presumed-extinct *Dracaena umbraculifera*, *Oryx* (2018). [DOI: 10.1017/S0030605317001570](https://doi.org/10.1017/S0030605317001570)

Provided by Missouri Botanical Garden

Citation: A botanical mystery solved by phylogenetic testing (2018, January 8) retrieved 7 May 2024 from <https://phys.org/news/2018-01-botanical-mystery-phylogenetic.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.