

Underground Plants

shed light on conservation

Conservation in a garden

Palms and cycads are living treasures! For DECADES Montgomery has carefully collected and stewarded these green gems in the service of conservation and research.

In the 1990s, MBC adopted a new way to grow these special plants, borrowing some strategies used for crop development – many plants from a single population grown together to preserve genetic diversity. Given the loss of wild plants around the world, this method is now more widely practiced in the botanic garden field.

Testing the theory

Our strategy is grounded in good theory, but we did not know if our method was really capturing and saving the diversity found in nature. Answering the question could be fairly straightforward: measure the garden gene pool and compare it to what grows afield! But while the study of *conservation genetics* has made great advances, very little attention has been given to plants specifically grown for conservation.

Thus, we were delighted to have the opportunity to test our collecting protocol with new genetic tools. Our friends at USDA Chapman Field have the machines and expertise to examine the DNA of wild Caribbean cycads. Accessing these powerful resources for our own plants was a logical step forward. All we needed was a good test case.

The right plant for the job

Of the many cycads at Montgomery, one species stood out as a prime candidate – The Sinkhole Cycad, *Zamia decumbens*. We had many seedlings onsite, of known origin, and our team had detailed firsthand knowledge of the wild populations (see pages 4 and 5). Since this plant is mainly known from two distinct “underground” sinkholes, it provides a neat, uncomplicated model to evaluate geographic considerations in collecting.

Sharing the insight

We hope our insight reaches those that can use it – it is too good to keep secret! So, we have worked to share the news. Upcoming papers in INTERNATIONAL JOURNAL OF PLANT SCIENCES and ENCEPHALARTOS, JOURNAL OF THE CYCAD SOCIETY OF SOUTH AFRICA will reach scientists and cycad lovers. For those of us at gardens, our friends at Botanic Gardens Conservation International (BGCI) adapted our work into an online guide to help any garden ramp up its genetic diversity. And, to reach anyone else who wants to know, we dedicated a webpage to this area of work (see below).

A team effort

As mentioned above, Montgomery could not have moved forward on this project without USDA and BGCI, our formal partners; we especially thank Alan Meerow, Abby Hird and Andrea Kramer. This innovative plant collections project was generously funded by the INSTITUTE OF MUSEUM AND LIBRARY SERVICES.

Please keep reading: our broader work – with this fascinating plant and with more of our great colleagues – is featured overleaf!

Download the guide:

Building living plant collections for conservation: a guide for public gardens.

See this guide and other resources at:

www.montgomerybotanical.org/Pages/Collection_Genetics.htm



Michael and Darius field-processing DNA specimens



Online Guide



Dayana, Michael, Alan and Kyoko at the USDA lab

