Christine Bacon Studies Rare Palms in Hawaii

In 2010, Montgomery Botanical Center, the National Science Foundation, the National Tropical Botanical Garden, and the Plant Extinction Prevention Programs in Maui and Oahu supported an important 12-day palm conservation project in the Hawaiian archipelago.

Ongoing Research

This research aimed at understanding phylogenetic relationships and conservation genetics of the threatened and endangered *Pritchardia* palms, and contributed to the Ph.D. dissertation that I am completing at Colorado State University. As a Research Associate of MBC, my fieldwork also helps contribute to the living collection of palms at Montgomery.

On my second trip to the Hawaiian Islands, I focused on two particularly interesting regions of the archipelago—the Koolau Mountains of Oahu and the Makaleha Mountains of Kauai. Both of these areas have numerous *Pritchardia* species growing in close proximity, a distribution pattern known as 'sympatry.' In the Koolaus, *Pritchardia bakeri*, *P. kahukuensis* and *P. martii* are found in close proximity and in the Makalehas, *P. hardyii*, *P. limahuliensis*, *P. minor* and *P. napaliensis* grow sympatrically.

A common explanation for so many distinct species in such a small geographic area is that they evolved separately and then came into contact with each other after reproductive barriers had been formed. I aim to test this hypothesis using genetic information. DNA material, herbarium vouchers and seeds will help elucidate genetic and biogeographic patterns that cause these interesting distributions.

Fieldwork Outcomes

Twelve days of fieldwork provided MBC with seeds for *ex situ* conservation of five very rare palm species—*P. bakeri*, *P. kahukuensis*, *P. limahuliensis*, *P. minor*, and *P. napaliensis*—and also provided an extensive DNA collection to study these endemic palms. This fieldwork was performed at three sites across two islands: Kahuku Army Training Site, Koolau Mountains (Oahu), along the Powerline Trail, Makaleha Mountains (Kauai), and in the Kokee State Park (Kauai). Herbarium specimens were deposited at the Bishop Museum in Hawaii, and the palms were also extensively documented via photography and GPS data. Morphological data was also collected from herbarium specimens at the Bishop Museum to help shed light on species boundaries in the genus, especially in these two mountain ranges.

Montgomery Botanical Center (MBC) obtained important conservation material of many Hawaiian palms, and helped support collaborative studies in support of palm research through this work.

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Pritchardia kahukuensis fruit

Christine Bacon with *P. bakeri*

Pritchardia bakeri

Prichardia kahukuensis in habitat