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*Advancing research, conservation, and education
through scientific plant collections.*

EXPEDITION REPORT

Panama 2008 Expedition Chiriquí & Wargandí Provinces | January 7-27, 2008



Michael Calonje with *Zamia cunaria* (Wargandí)

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SUMMARY

Montgomery Botanical Center's (MBC) Panama 2008 expedition to the Chiriquí and Wargandí provinces successfully obtained conservation material and new phytogeographic information for *Zamia fairchildiana* and *Z. cunaria*. Supported through MBC's Zane B. Carothers Memorial Fund, novel populations of *Z. fairchildiana* and *Z. cunaria* were discovered, documented, and collected.

Expedition objectives were accomplished through close collaboration with the University of Panama and the Kuna indigenous communities of Wargandí Province. This expedition advanced phytogeographic understanding and *ex situ* conservation for these rare and endangered cycad populations.

Cycad Conservation Expedition

The Montgomery Botanical Center (MBC) Panama 2008 expedition, generously funded by the Zane B. Carothers Memorial Fund, took place in two provinces on opposite sides of Panama. One leg of the expedition took place before the *8th International Conference on Cycad Biology, Cycad 2008* hosted in Panama City by Montgomery Botanical Research Fellow and cycad researcher Dr. Alberto Taylor; the other leg took place after the conference.

CHIRIQUÍ PROVINCE

The first leg of the expedition took place January 7-12 in Chiriquí Province located on the Pacific



Male cone, *Z. fairchildiana*, at pollen release stage

slope of Western Panama bordering Costa Rica. I was particularly interested in this area of Panama, as I had explored some of the adjacent areas in Costa Rica in 2004 during an MBC-sponsored expedition and had visited several populations of *Zamia fairchildiana* and *Z. pseudomonticola*. Those two species are both arborescent plants up to two meters tall and have long been controversial, with many authors considering them to be synonymous. In addition, while there are

known locations for *Z. pseudomonticola* in Panama, the true *Z. fairchildiana* had never been collected there. I suspected it would be found in Panama, as, during the 2004 expedition to Costa Rica, I had observed it growing just 10 km away from the Panamanian border.

During Dr. Taylor's visit to MBC in December of 2007, I explained the differences between the two species with photographs. He remembered one of his students, who was studying populations of *Zamia pseudomonticola*, had sent him pictures of a male cone from one population quite unlike the cones of *Z. pseudomonticola* he had seen. However, it looked very similar to the larger male cones of *Z. fairchildiana* I had shown him. He put me in



Immature female cone, *Z. fairchildiana*

touch with his student, María Félix de Iglesias, and we set up a short trip to explore this population and others occurring in Chiriquí Province.

We visited a population of *Zamia chigua* and two populations of *Z. pseudomonticola* during this trip. The population Dr. Taylor and I were questioning, in fact, turned out to be the first recorded occurrence of *Z. fairchildiana* for Panama. The photographs and data collected during this trip helped clarify the differences between these two species more than ever. The same



characteristics I had observed for these species in Costa Rica, still held true for them in Panama. Seeds from two mother plants of Panamanian *Z. fairchildiana* are now being germinated by Dr. Taylor at the University of Panama and at the MBC greenhouse.

WARGANDÍ PROVINCE

The second leg of the expedition took place January 19-27 and built on the collaborative relationships developed with members of the Kuna tribe during MBC's 2007 expedition to Kuna Yala. Kuna environ-



Zamia cunaria with bronze emergent leaf flush typical of this population (Wargandí)

mentalist, Domingo Díaz, who had participated in the Kuna Yala expedition, had heard that zamias were found in botanically unexplored Wargandí Province, a landlocked Kuna Province bordering Darien Province. His previous work in the province, and contact with the local community leaders, allowed us to obtain permission from the communities to explore this area.

Just as in Kuna Yala, we found large populations of *Zamia cunaria*, extending its known range further, toward the Colombian border. A large mountain range separates Wargandí Province from adjacent Kuna Yala, and this geographic boundary may have played

an important role in the way these populations have evolved. The *Z. cunaria* populations from Wargandí Province had an interesting distinction when compared to all other populations known to date, including those found in Kuna Yala: the plants had bronze emergent leaves, unlike the green emergent leaves found in other populations.

This five-day visit to Wargandí Province secured a very complete collection of seeds, herbarium vouchers, and valuable data for this species. Montgomery Botanical Center's Panama 2008 expedition helped clarify the taxonomy and biogeographic knowledge of Panamanian zamias and secured valuable germplasm for *ex situ* conservation at Montgomery Botanical Center and the University of Panama.

I would like to acknowledge Iris Correa and Edgar Restrepo for providing valuable field assistance; Florencio Domínguez for providing transportation services in Chiriquí; Vielka Murillo for providing support at the PMA herbarium; and Layl Marie García for depositing herbarium specimens at PMA.



María Félix de Iglesias (foreground) with Lucas Hernández and Iris Correa in Chiriquí Province