Revisiting New Cycad Discoveries in Belize

Collecting *Zamia decumbens*

October 30, 2010

November 4, 2010

Gathering data

This past fall, MBC undertook research and conservation fieldwork in collaboration with Belize Botanic Gardens (BBG) and Gemini Botanical Garden (GBG). This project builds on MBC fieldwork from 2008 that led to two new *Zamia* species descriptions. Each of these species grows in an unusual habitat: The primary habitat of *Zamia decumbens* is in two deep sinkholes in the Maya Mountains of southern Belize, whereas *Z. meermanii* grows on the steep sides of limestone outcrops in central Belize. *Zamia decumbens* is unique among cycads in its preference for a sinkhole habitat and *Z. meermanii* is one of only three known *Zamia* species that normally live on cliffs. Despite the many differences between their habitats, both species prefer a dry well-drained environment for their roots. The primary goal of this fieldwork was to gain detailed knowledge of the size and genetic diversity of the sinkhole populations of *Z. decumbens*.

October 29: MBC Cycad Biologist Michael Calonje and Collections Manager Chad Husby arrived in Belize on Friday, met Cristina Perez of GBG and proceeded south to the Toledo District. Along the way, the expedition team examined a key site where *Zamia meermanii* was studied and collected in 2008. Mature seed cones were observed on two plants, an exciting discovery because no female cones had been found during extensive surveys in 2008. Arrangements were made to return to the site to collect the cones. The team continued south and met with Paul Craft of GBG and Rudi Aguilar and Freddy Salvador of BBG.

October 30: the team set out for Western Toledo to survey the nearest sinkhole population of *Zamia decumbens*. There they met with Valentino, who had provided key assistance in 2008. Michael, Chad, Rudy, Freddy and Valentino set out to survey this population, while Paul and Cristina remained behind to collect ferns and other flora. Careful survey revealed approximately 200 plants in the population. The team was able to label 150 plants in the population, measure their size, sample leaflets for genetic diversity, and collect seeds for *ex situ* conservation.

October 31: the team returned to Valentino's home to set out for a more distant sinkhole, which required a day's walk and overnight camping in the rainforest.

November 1: the team measured and sampled 183 plants of the approximately 200 plants in the population and collected seeds. In order to save time for collecting the *Z. meermanii* cones, the team decided to hike back to Valentino's place during the night rather than spend a second night at camp.

November 2 and 3: MBC and BBG staff drove to Belmopan to process leaflets, visit the Belize Forest Department to complete the permitting and make preparations to collect *Z. meermanii*. At the Forest Department, Michael and Chad met with ecologist and long-time MBC collaborator Jan Meerman, the namesake of *Zamia meermanii*.

November 4: Michael and Chad proceeded to the *Z. meermanii* site and met there with BBG staff Rudy, Freddy and Sinead McCormick. Although the *Z. meermanii* with cones were growing on steep limestone cliffs, the team was able to cut sufficiently long *Cecropia* trunks to use as tools to dislodge the cones. After collecting, seeds of *Z. meermanii* and *Z. decumbens* were shared with BBG. Michael and Chad stayed up all night on November 4 preserving leaflets in silica gel, cleaning seeds and packing.

November 5: Chad and Michael headed to the Agriculture Station to obtain a phytosanitary certificate in the morning before heading for the airport.

The expedition was a great success, exceeding initial expectations through the synergistic partnership of the gardens—and some sleepless nights hiking and working! Many seeds of both *Z. decumbens* and *Z. meermanii* are currently germinating in the MBC nursery.

Dr. Chad Husby, Collections Manager
chad@montgomerybotanical.org