

Panamanian Paradise Found

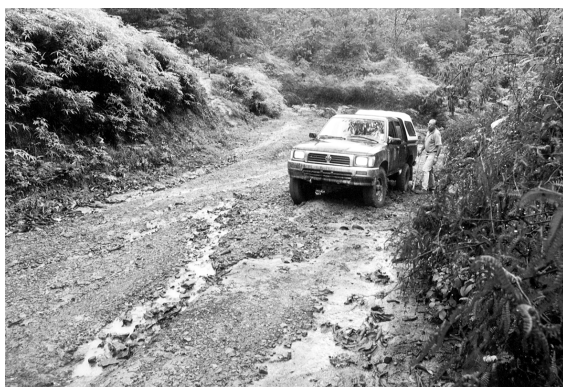
by Russell Adams, Gainesville Tree Farm

The isthmus of Panama rises out of warm tropical waters separating the Pacific Ocean from the Caribbean Sea. With its tropical environment and unique geological history, this land bridge between the Americas is one of the most diverse ecosystems on the planet. Diversity is especially evident in a group of plants near and dear to my heart—cycads, and more specifically, zamias. Nowhere else do the zamias exhibit such wide variations in morphology, with six arborescent species, five subterranean species, and one epiphyte. This diversity led to a recent 10-day collecting expedition sponsored by three institutions. I represented MBC and was joined by Dr. Dennis Stevenson of New York Botanical Garden (NYBG) and Dr. Alberto Taylor of the University of Panama (UP). Chris Hardy, a graduate student from Cornell University, traveled with us on several excursions.

Our first forays out of Panama City were in search of an undescribed species of *Zamia* common in central Panama. This truly beautiful cycad has arborescent trunks to three meters tall. The leaves, which are almost white as they emerge, turn a bright glossy green as the leaflets expand. Normally, this plant occurs at low elevations along rocky streams and rivers. However, we collected it near the top of its range, between 700–800 m ASL, at Cerro Azul. There, one female cone was observed in a population of about 80 individuals. At another site, an old military training camp with a much drier habitat, we found several hundred plants associated with limestone outcroppings. Some were actually growing on top of the rocks in small depressions that held only 1–2 inches of soil.

Days four and five were spent in the low mountains north of Panama City looking for *Zamia dresslerii*. This subterranean cycad usually has only one or two leaves at a time, but what leaves they are, measuring up to two meters long! The leaflets are thick and deeply grooved, giving them a corrugated appearance for which Panamanian zamias are famous. We found over 200 individuals. Although no cones were seen, we were able to collect seedlings for MBC, three mature plants for UP, herbarium specimens, and DNA samples.

On day six, we braved the El Llano-Carti Road east of Panama City (photo above). As it was the beginning of the rainy season, the condition of the muddy byway was deteriorating rapidly. We were only able to travel 16 km before the road became impassable. Negotiating the steep slippery hillsides on foot was not much easier than driving. After almost a full day of slipping and sliding



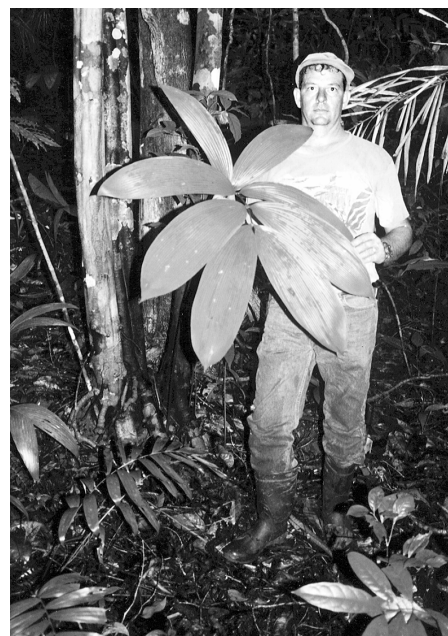
and hacking our way through the replanted teak forest, we still had not seen any zamias. Tired, muddy, and dejected, we met back at the vehicle to discuss our options, when a local farmer walked by. In desperation, we described to him the plant for which we were looking—*Z. cunaria*. Once he was certain he would be paid for his efforts, he smiled and pointed up the hill above us. Not 10 meters from where we were parked we could see a glossy green leaf of *Z. cunaria*. We had literally parked under the plant!

The next two days were spent mostly driving and hoping. The further we drove along the road to Canglon in southeastern Panama, the more we realized how little of the once great Darien forest was left. Our best find was of *Zamia ipetiensis* in its type locality near the town of Ipeti.

The last two days of the trip were the most productive and, to me, the most exciting. Two and a half hours drive northwest of Panama City, in the Cordillera Central, we were blessed to find primary forest. Here, on either side of the continental divide, *Z. pseudoparasitica* grows in great profusion. We saw over a thousand individuals! Some trees were home to as many as 12 of these epiphytic cycads. And these epiphytes were huge; at least one was estimated to have a leaf span of nearly 10 meters!

On the Caribbean slope of the mountain, about an hour's hike from the summit, we found one of the rarest and most beautiful cycads—*Z. skinneri*. These impressive plants have trunks to 2 m tall and 18 cm in diameter, and leaves up to 3 m long.

The Panama expedition was a great success. Fifty-six zamia plants and five cones of seeds, as well as 12 palm accessions, are now potted in MBC's nursery. DNA vouchers of all collections were sent to NYBG and herbarium vouchers were deposited at UP, FTG, NYBG, and UTREC in Europe. Collaborations among MBC, UP, and NYBG are ongoing, and a collecting trip to northwestern Panama is in the works for 2001.



Russell Adams holding a leaf of *Zamia dresslerii*.