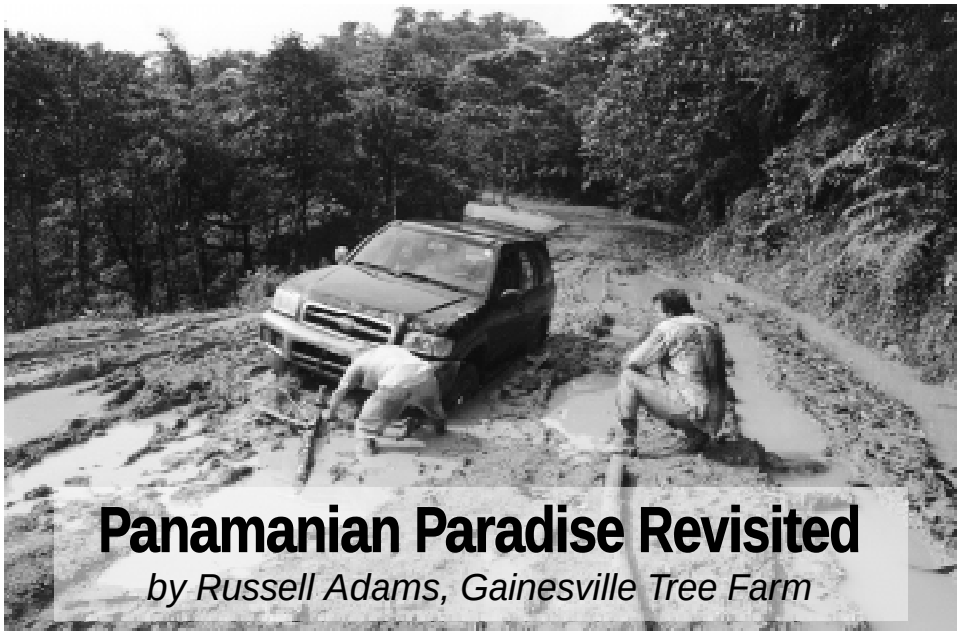


Panamanian Paradise Revisited

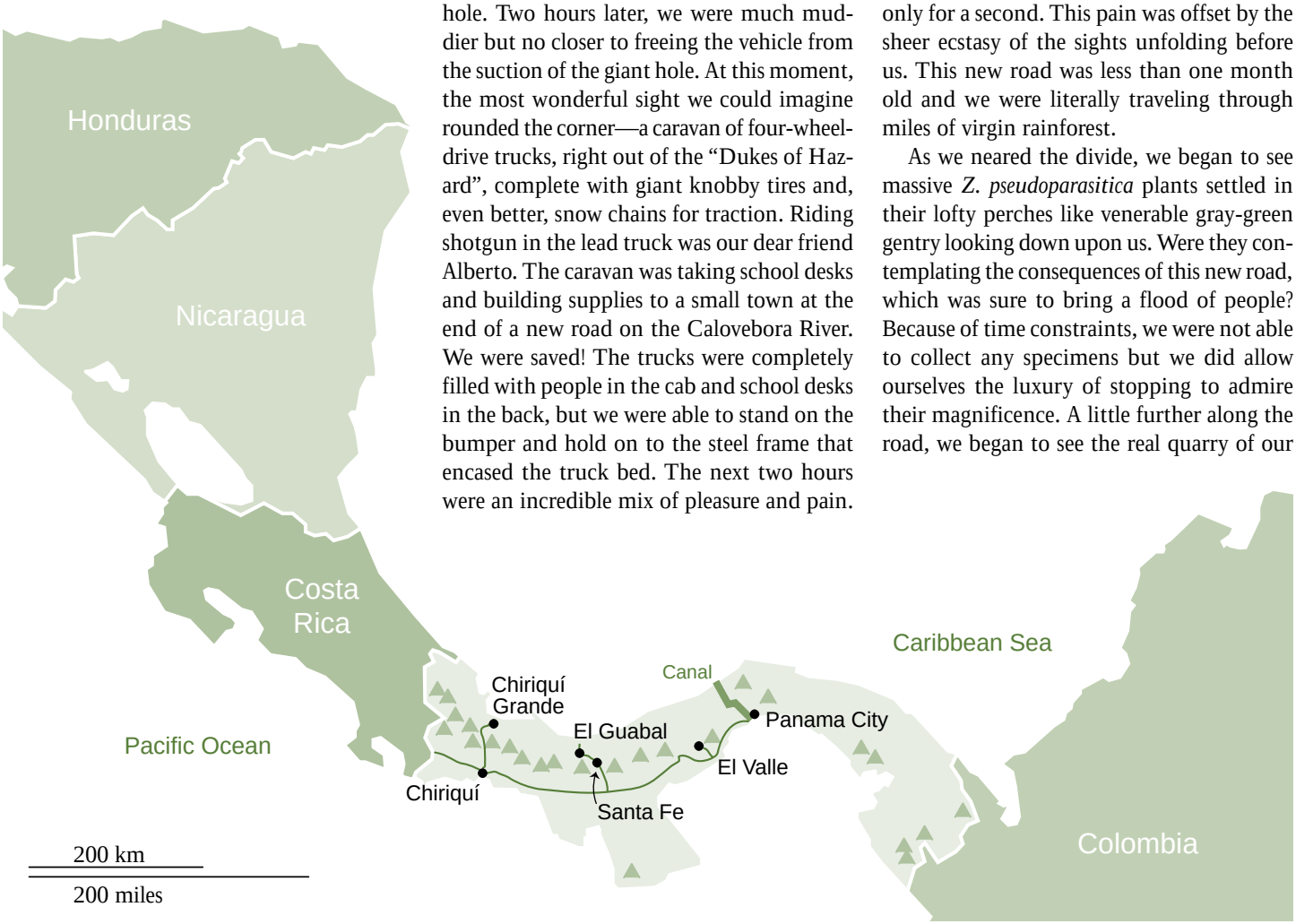
by Russell Adams, Gainesville Tree Farm

The year 2001 brought about a second Panama Expedition involving three great institutions and a reunion among three old friends. The group included myself as representative of MBC, Dr. Dennis Stevenson from the New York Botanical Garden, and Dr. Alberto Taylor from the University of Panama. We were joined on this excursion by world traveler and cycad enthusiast Alan Whittington of Florida. Our goal was to explore the northwestern region of Panama, including the states of Cocle, Veraguas, Chiriquí, and Bocas Del Toro. We were especially interested in the *Zamia skinneri/Z. neurophyllidia* complex and targeted several localities for this group.

From Panama City, we traveled west to the town of Santa Fe. This was to be our starting point for what we knew would be a very long and difficult day of travel. We planned to drive our four wheel drive Pathfinder as far as the road would allow and then continue on foot over the continental divide and down the Caribbean slope to the headwaters of the Calovebora River. This location is where Dr. Bob Dressler reported finding a plant that was a "perfect match" for Warscewicz's 1851 sketch and description of *Z. skinneri*.

With our shiny new SUV buried to the frame only two kilometers outside of Santa Fe (see photo above), our hopes of a successful trip were greatly diminished. Alberto was dispatched back to Santa Fe for help, while Dennis, Alan, and I set our backs to the task of extracting the vehicle from the giant mud hole. Two hours later, we were much muddier but no closer to freeing the vehicle from the suction of the giant hole. At this moment, the most wonderful sight we could imagine rounded the corner—a caravan of four-wheel-drive trucks, right out of the "Dukes of Hazard", complete with giant knobby tires and, even better, snow chains for traction. Riding shotgun in the lead truck was our dear friend Alberto. The caravan was taking school desks and building supplies to a small town at the end of a new road on the Calovebora River. We were saved! The trucks were completely filled with people in the cab and school desks in the back, but we were able to stand on the bumper and hold on to the steel frame that encased the truck bed. The next two hours were an incredible mix of pleasure and pain. The pain was brought about by leg cramps from constant flexing as the trucks forded small rivers, traversed giant boulders, and scaled inclines as steep as 50 degrees. The constantly shifting chairs would occasionally smash into our also cramping hands, forcing us to relinquish our white-knuckled grip, but only for a second. This pain was offset by the sheer ecstasy of the sights unfolding before us. This new road was less than one month old and we were literally traveling through miles of virgin rainforest.

As we neared the divide, we began to see massive *Z. pseudoparasitica* plants settled in their lofty perches like venerable gray-green gentry looking down upon us. Were they contemplating the consequences of this new road, which was sure to bring a flood of people? Because of time constraints, we were not able to collect any specimens but we did allow ourselves the luxury of stopping to admire their magnificence. A little further along the road, we began to see the real quarry of our



quest—*Z. skinneri*. Like garnet and ruby fountains in an emerald green sea, the massive new leaves arched skyward from trunks measuring a meter tall. Leaves were produced in numbers from one to five, but mostly in sets of three. Some leaves were over 2.5 m long with leaflets up to 60 cm long and 20 cm wide. The anthocyanins, which gave the new leaves a ruddy hue, stood out in stark contrast to the green forest behind.

Once in the town of El Guabal, we quickly unloaded the trucks with the help of the entire town and headed into the forest. Zamias were very abundant and we soon had all the plants, herbarium vouchers, and DNA samples we needed. The steady rain that had accompanied us all day now became a downpour and we rushed to leave before the road became totally impassable. We arrived back in town as night fell—bruised, tired, and hungry, but giggling like school children at the day's events.

The next morning, we were up early, driving west to the town of Chiriquí, then turning north on one of only two roads to transect Panama from the Pacific to the Caribbean coast. Near midway along this road is the continental divide and the Fortuna Dam area. This is an incredibly diverse botanical region protected by the national park system of Panama. Here, in cloud forest at 1,200 m elevation, we found the rare and beautiful *Z. lindleyi*. The plants were scattered sparsely along the top of the ridge. The trunks averaged about a meter tall, although all sizes from seedlings to much larger trunks were observed. Each plant held about five to six leaves per flush. New leaves were a bright shiny green; the older leaves were dull green and almost completely covered with bryophytes. A leaf was composed of 20 to 30 pairs of narrow leaflets, each leaflet measuring 2.5 cm wide by about 20 cm long.

As we continued down the mountain toward the town of Chiriquí Grande we again observed *Z. pseudoparasitica*. In the hills above the town, and along the costal road, which continues northwest to the Costa Rican border, we collected *Z. neurophyllidia*. This plant is described basically as a dwarf form of *Z. skinneri*. The emergent leaves of this species are bright green as opposed to the reddish bronze color of *Z. skinneri*, and they tend to sport twice as many leaves at any one time. Leaflets of *Z. neurophyllidia* are generally smaller and more numerous than those of *Z. skinneri*. However, we found some mature *Z. neurophyllidia* individuals with leaves over 2.2 m long and leaflets 15 cm wide by 50 cm long. We found at least one large female plant with a trunk over 3 m tall. This is much larger than any trunks of *Z. skinneri* that I have personally seen. Plants were abundant all throughout this area, but are being threatened by deforestation.

Above: *The price of our taxi ride to El Guabal was to unload the trucks.* ***Right:*** *Dennis Stevenson hard at work in the field pressing leaves of* Zamia lindleyi.

Next, we headed to the barrier islands on the seaward side of Laguna de Chiriquí. We landed on the southern or mainland side of the island and made our way over the tall ridge that runs down the center and then started down to the northern side. At the bottom of the ridge was a low swampy area. From here, the ground rose gently but steadily toward the beach. It was here that I saw something that I will never forget. It was a forest of *Z. neurophyllidia*. This forest was narrow, starting at the beach and continuing back toward the swamp for maybe 100 meters. It continued for about 1.5 km and contained literally thousands of individuals, maybe tens of thousands of plants. Plants were in all stages of development, from seedlings to mature plants with trunks 3 m tall. There were emergent male cones, emergent female cones, female cones with ripe seeds, and cones at every stage in between. Zamias were the dominant understory plant as well as the dominant ground cover. This was due in part to the fact that the indigenous people keep the underbrush down with their machetes. The zamias, like the great Hydra of myth, seem to sprout anew with each swing of the blade. The severed apex, likewise, falls to the ground, becomes rooted, and continues growing. This has created the the most robust population of cycads I have ever seen. I only hope some steps towards conservation are made in this area, as beach-front real estate, even in these remote islands, is at a premium. The first beach house on this part of the island already decimated the eastern end of the cycad population.

On the next leg of our journey, we traveled back to the mainland, over the Cordillera de Talamanca, and into the State of Chiriquí. Near the border with Costa Rica, at an elevation of 1,300 m, we found the beautiful and controversial *Z. pseudomonticola*. The plants were growing along steep slopes in dark volcanic soils in the forest remnants between coffee plantations. Trunks were up to 1.2 m tall with leaves up to 2 m long. The bright glossy green leaflets had a slight crease down the middle, and the petiole was lightly armed with prickles.

On our way back to Panama City, we stopped in the State of Cocle near the town of El Valle to look for the diminuitive *Z. acuminata*. We found them in abundance along the slopes of an extinct volcano. This is a subterranean species with small glossy green leaves less than 60 cm long.

The 2001 Panama Expedition was an unqualified success. Over 50 accessions of cycads and palms were collected. Collaborations developed during this and the previous Panama expedition will continue to benefit MBC and the scientific community at large for years to come.