

# New Cycad Discoveries from Colombia

**Late January, 2020:** As the sun began to set, a large group of howler monkeys foraged in the trees above us as our canoe slowly made its way down the river, a tributary of the Magdalena River in Caldas, Colombia. We had just finished an intense week of plant exploration, and as we floated back to our home base down the tranquil river, we were blissfully unaware that this would be the last fieldwork outing anyone in our team would participate in for the rest of the year due to the global covid-19 pandemic just weeks away.

Our team of researchers – from the Universidad de Caldas, the Colombian Cycad Society and Montgomery – was studying an enigmatic species of *Zamia* occurring in the forest-covered steep hills that surrounded us. This species was only recently discovered in the wild and was thought to be new to science. It had small, soft, fern-like leaves somewhat resembling those of the Mexican species *Zamia vazquezii*, only these leaves were supported by much longer petioles (leaf stalks).

The enigmatic *Zamia* we were studying undoubtedly belonged to a group of seven closely related species distributed primarily in the Magdalena-Uraba moist forests ecoregion of northwestern Colombia, with a single species, *Zamia manicata*, ranging into the neighboring Chocó-Darien moist forest ecoregion of Colombia and neighboring Panama. While this related group of species known as the ‘manicata clade’ occurs in a contiguous geographical area and has several morphological similarities (e.g. subterranean stems, strongly toothed leaflets, small seeds, etc.), they have the most extraordinarily variable leaflet morphology of any closely related group of cycads, and their close relationship was only recently revealed in recent genetic studies.

The extraordinary leaf variation in this group is seen in the distinctly channeled petiolule with a gland-like collar in *Z. manicata*, the membranaceous and prominently veined broad leaflets of *Z. disodon*, and the unique midrib found in the leaflets of *Z. restrepoi*. After extensive fieldwork and careful study of herbarium specimens, the team concluded that this enigmatic species was indeed unique and new to science, and it was named *Zamia imbricata* due to its tightly spaced, overlapping leaflets.



Deeper review of the ‘manicata clade’ through this project revealed that another species collected by the team near the Sinú River in Córdoba was also new to science. This species, which we named *Z. sinuensis* due to its distribution within the Sinú River basin, is a robust species with leaves that can get over 10 feet tall. Adding to the remarkable variability of leaflets exhibited by the manicata clade, this species is unique among all *Zamia* in having strongly undulate leaflets (facing page, lower left).

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These two remarkable new species were described in a recent issue of *Phytotaxa* vol. 497 (freely available online). We are grateful to Montgomery’s Plant Exploration Fund and the Sociedad Colombiana de Cycadas for funding this project, and to Dr. Cristina Lopez-Gallego for coordinating these studies.

**Background:** the botanical team enroute to field sites along the Rio San Jorge. **Facing page:** Upper and lower left shows *Zamia sinuensis*, named after the Sinú river basin – but also evoking the very sinuous foliage! Upper and lower right shows Luis Fernando Coca and Jonatan Castro with *Zamia imbricata*, with strongly overlapping leaflets (see also the cover of this issue).



