

# Exploring the narrow-leaflet zamias of Eastern Cuba

In the summer of 2017, I teamed up with several Cuban colleagues for our fifth expedition studying *Zamia* in Cuba as part of a broader effort to gain a better understanding of the distribution, conservation status, and genetic relationships of the genus throughout the entire Caribbean region. On this trip we visited populations in southeastern Cuba, and focused on species with narrow leaflets, endemic to this region.



*Zamia stricta* in habitat on the Meseta de Santa María de Loreto, its only known locality.

These “narrow leaflet zamias” of Eastern Cuba are the least understood and most taxonomically controversial among Caribbean zamias. Although at least five species of narrow leaflet zamias are described based on Cuban plants, they are all lumped into two species: (1)

*Zamia stricta*, occurring at a single locality, and (2) *Zamia angustifolia*, a species originally described from the Bahamas. However, these populations are highly variable and several distinct morphotypes can be found.

Narrow leaflet zamias occur in several distinct populations throughout the Sierra Maestra mountain range in southeastern Cuba. All occur in very dry habitats and often co-occur with other narrow leaflet plant species similarly adapted to dry climates such as *Plumeria filifolia* and *Senna angustifolia*.

Considerable morphological variation is found between populations, with great differences in cone color, leaflet width, and new leaf flush color. We hope that the herbarium specimens, morphometric data, photographs, living material and DNA samples collected throughout our Cuban fieldwork of the past few years will help clarify the complex taxonomic situation we observed with these narrow leaflet zamias as well as with Caribbean *Zamia* populations as a whole.

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and Ramiro Chaves from the Empresa Nacional para la Protección de Flora y Fauna (ENPFF) of Cuba along with staff from Cuban botanic gardens and protected areas. *Zamia stricta* photographs were kindly provided by Lian Cabrera-Astraín.

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Background: The mountains of Southeastern Cuba provide great variation in habitat, with many sites favorable for zamias and palms. This view looking south from the Sierra Maestra looks over seasonally dry forest out onto the Caribbean Sea.





**Cone color variation:** Cuban narrow leaflet zamias show some striking differences in cones between the various populations. These differences were largely ignored in early species descriptions which were primarily based on leaf characteristics. This new information, combined with a careful look at habitat, geography and DNA data may help bring order to this group.



**Expedition Team:** *Zamia angustifolia* is often found on dry, upland habitats in areas inaccessible by most conveyances. Much of this fieldwork required hiking up and down steep eroded slopes.



**The narrowest leaflets of all:** Southeastern Cuba is home to many thin-leaflet zamias, but this population was especially striking for its needle-like foliage. Perhaps this leaflet shape is adaptive for these dry windy habitats, where plumeria, cactus and thornscrub thrive.