

Equatorial Chocó, Esmeraldas, Quinindé, ECUADOR

Endemic Plants of Canandé Reserve

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Photos: Bente Klitgaard, Leanmary Roa, Pablo Lozano & Alvaro Perez. Produced by Universidad Estatal Amazónica with support from Royal Botanic Gardens Kew & Fundación de Conservación JOCOTOCO, and assistance from Valéria Sampaio, Field Museum. Pablo Lozano [plozano@uea.edu.ec], Bente Klitgaard [b.klitgaard@kew.org], David Neill [dneill@uea.edu.ec], and LeanMary Roa [leanearth84@gmail.com].



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The majority of the Chocó bioregion lies within Colombia and extends past the Equator into the coastal landscapes of the provinces Esmeraldas, Manabí and Guayas in Ecuador. A tropical climate with temperatures 30°C, annual rainfall >4,000 mm, and 70% relative humidity characterizes the Canandé Reserve, which includes 4,000 ha covered in rainforest, at altitudes of 200-700 masl. The reserve is part of a private initiative and owned by Fundación JOCOTOCO and has been a protected area since 2,000. Studies to date have focused on bird habitat preservation, and 62 endemic birds species have been recorded from within the Chocó bioregion, 37 of which are threatened and seven globally threatened (Endangered or Vulnerable). Niño current, running along the Pacific coast, carries a high level of humidity and warm climate, influencing the the entire Chocó region. For example, precipitation reaches near 8,000 mm per year in the northern Chocó.



Canandé canopy mature forest landscape.
Photo: James Muchmore (2019).



Work team 2018 (Alcidez Z., Bente K., Pablo L., LeanMary R. & Douglas).

The Chocó bioregion is recognized as a biodiversity hotspot, with approximately 9,000 plant species of which 2,000 are endemic. Endemism is shaped by isolation in the Andean Cordillera and also by rapid radiation in certain plant groups. Between 2016 and 2019, our botany team carried out floristic surveys in the vicinity of the Jocotoco trail system and installed a permanent one-hectare plot (100 x 100m) in Canandé Reserve (mainly at 450 masl). A total of 475 individuals, including 320 species (94 family, 200 genera) were recorded. Twenty-nine species were identified as being endemic. The plant families Araceae, Gesneriaceae and Rubiaceae are represented with three endemic species each, followed by Campanulaceae and Fabaceae with two endemic species each, the last 16 species cover different families. Another 114 species are distributed from Central America to Ecuador along the Chocó Bioregion; 87 species range from Central America through northern south America across to Brazil; and 90 species show vicariance as evidence of the past connection between Amazon and the Pacific coast.

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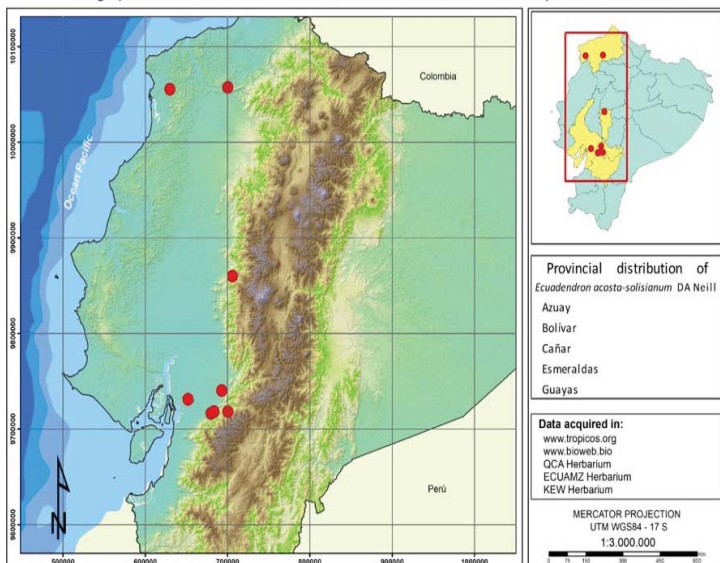


Ecuadendron acosta-solisianum. Photo: Francisco Sornoza.

One of the primary findings was the presence of a hitherto unknown population of *Ecuadendron acosta-solisianum* D.A. Neill, a monospecific woody legume species locally endemic to the Chocó area and colloquially known as “guabo”. The timber from *Ecuadendron* is very desirable and has led to its disappearance in other areas of the Chocó. This recently discovered population may be the only one in Ecuador to safeguard a continued existence of *Ecuadendron*. It may serve as study site for future studies of pollination and dispersal mechanisms, and germination and regeneration studies, which will allow the local environmental authorities to take measures to conserve this iconic Ecuadorian species.

Other tropical endemic trees no less important are: *Inga silanchensis* (Fabaceae), *Magnolia canandeanana* (Magnoliaceae), *Matisia palenquiana* (Malvaceae), *Viorola aequatorialis* (Myristicaceae), *Sorocea sarcocarpa* (Moraceae), *Carapa longipetala* (Meliaceae), among other native and fine woody species such as *Humiriastrum procerum* (Humiriaceae), *Brosimum utile* (Moraceae), and *Triplaris guayaquilensis* (Polygonaceae).

Geographical distribution of *Ecuadendron acosta-solisianum* DA Neill specimens in Ecuador



Map 1. *Ecuadendron acosta-solisianum* species distribution.



Work team 2017 (Israel, L.; Rowan, S.; Bente, K. & Alcides, Z.).

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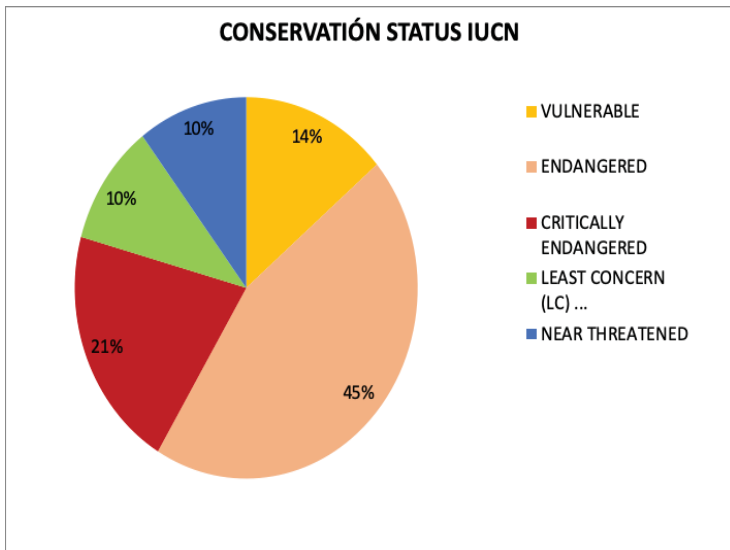
Photos: Bente Klitgaard, Leanmary Roa, Pablo Lozano & Alvaro Perez. Produced by Universidad Estatal Amazónica with support from Royal Botanic Gardens Kew & Fundación de Conservación JOCOTOCO, and assistance from Valéria Sampaio, Field Museum. Pablo Lozano [plozano@uea.edu.ec], Bente Klitgaard [b.klitgaard@kew.org], David Neill [dneill@uea.edu.ec], and LeanMary Roa [leanearth84@gmail.com].



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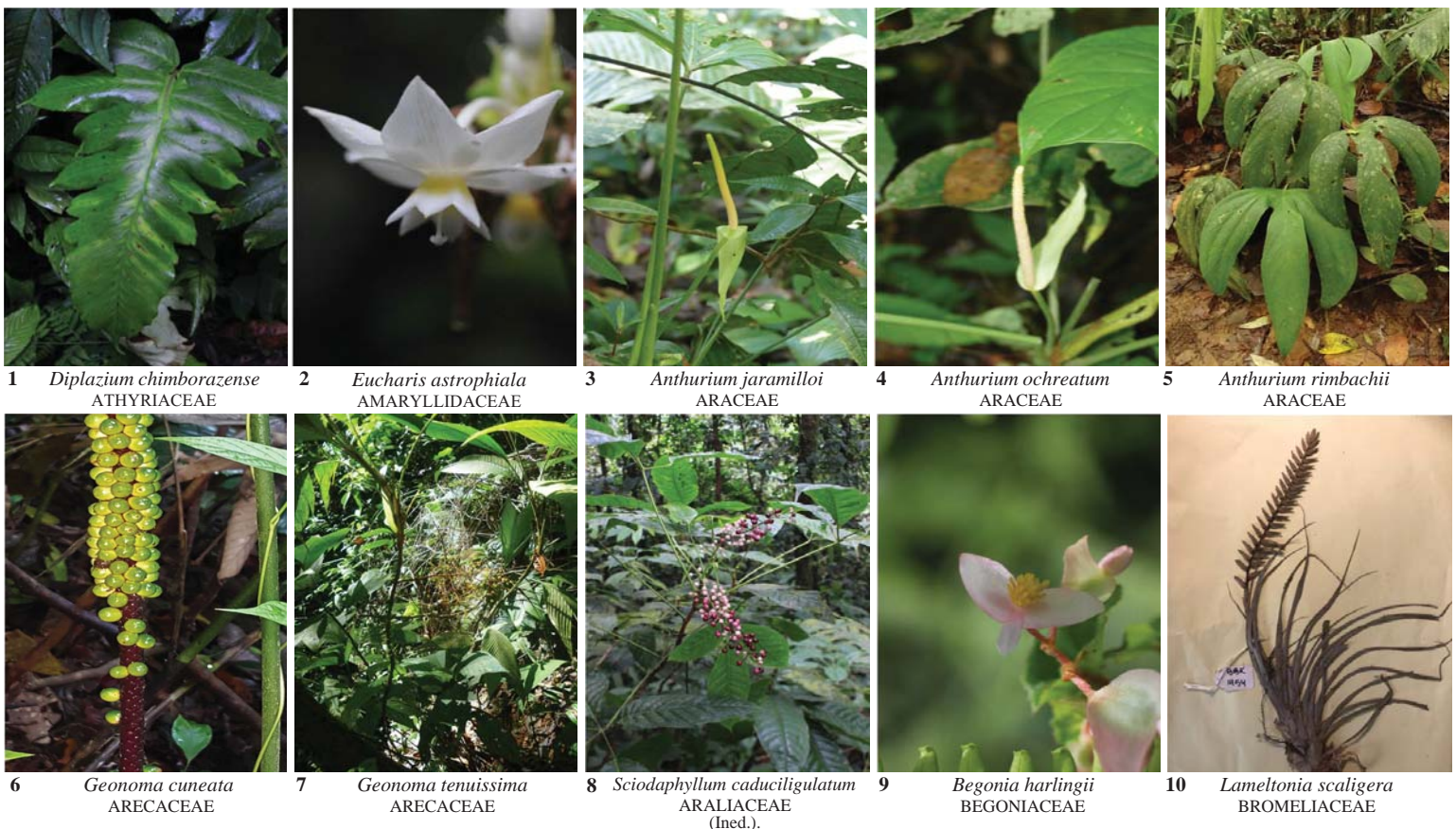
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The 29 endemic species in Canandé are a clear sample of a plant distribution restricted to the equatorial Chocó. Six of these are Critically Endangered following the IUCN categories of threat; another 13 are Endangered; four species are Vulnerable; being three reported as Least Concern, as well as Near Threatened.

The equatorial Chocó is permanently threatened by logging and agricultural expansion including the use of fire, influenced by long-standing timber harvests. In Ecuador the remnants of this ecosystem are less than 5 %. A huge loss of plant and animal biodiversity is expected as their habitats are eradicated. Biotic and abiotic studies at Chocó Bioregion are urgent and necessary to fill the information gaps on this little known yet highly threatened and endangered ecosystem.

Figure 1. Endemic Plant Category According to IUCN Conservation Status.



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11 *Burmeistera brachyandra*
CAMPANULACEAE



12 *Burmeistera smaragdi*
CAMPANULACEAE



13 *Podandroyne brevipedunculata*
CAPPARACEAE



14 *Ecuadendron acosta-solisianum*
FABACEAE



15 *Inga silanchensis*
FABACEAE



16 *Gasteranthus crispus*
GESNERIACEAE



17 *Gasteranthus timidus*
GESNERIACEAE



18 *Monopyle sodiroana*
GESNERIACEAE



19 *Trichodrymonia binata*
GESNERIACEAE



20 *Magnolia canandeanana*
MAGNOLIACEAE



21 *Matisia palenquiana*
MALVACEAE



22 *Miconia dapsiliflora*
MELASTOMATACEAE



23 *Sorocea sarcocarpa*
MORACEAE



24 *Heisteria pacifica*
OLACACEAE



25 *Peperomia pachystachya*
PIPERACEAE



26 *Ardisia websteri*
PRIMULACEAE



27 *Amphidasya amethystina*
RUBIACEAE



28 *Randia carlosiana*
RUBIACEAE



29 Canandé Reserve



30 Canandé River