MUTISIA

(ACTA BOTANICA COLOMBIANA)

In memoriam atque honorem sepientissimi viri JOSEPHI COELESTINI MUTIS, Naturae scrutatoris maxime perspicacis; fundatoris, optimique rectoris celeberrimae "Expeditionis Botanicae" Novi Regni Granatensis cujus opera et labores varios ipse impense fovit (n. MDCCXXXII - m. MDCCCVIII).
"Nomen immortale quod nulla aetas unquam delebit" (Linnaeus).

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NOTES ON *ZAMIA* IN THE COLOMBIAN AMAZONIA

BY

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During the course of recent botanical exploration in unknown or poorly collected areas of the Amazonia of Colombia, several extremely interesting discoveries have been made in the cycadaceous genus *Zamia*. The following notes discuss two of these discoveries: one — a new species of this genus; the other — the second and a topotypical collection of a species which was described some thirty years ago.

Zamia cupatiensis *Ducke* in Arch. Jard. Bot. Rio Janeiro 3 (1922) 20.

COLOMBIA: Comisaría del Amazonas, Río Caquetá, Cerro de La Pedrera. "Inflorescence brownish yellow." October 2, 1952, *Richard Evans Schultes et Isidoro Cabrera 17663* (Herb. Gray; Herb. Nac. Colomb.).

In 1912, Dr. Adolpho Ducke, the eminent Brazilian authority on the flora of the Amazon, collected in the vicinity of La Pedrera (La Géogr. 30 (1914-15) 365-372). This represented the first botanical exploration of the Colombian course of the Río Caquetá since the work of von

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Martius at Cupatí (= La Pedrera), Araracuara, and other localities in 1820.

One of the fascinating discoveries of Ducke at La Pedrera was the curious *Zamia cupatiensis*. Writing of this plant, Ducke reported: "Cette espèce n'habite que quelques rochers sur le Cerro de Cupatí, petite montagne isolée dans la plaine du territoire du Caquetá (extrème sud-est de la Colombie, près des limites du Brésil)."

The collection cited above (*Schultes et Cabrera 17663*) represents topotypical material of *Zamia cupatiensis* and is the second collection at Cerro de La Pedrera (known formerly as Cerro de Cupatí). It grows in the most inhospitable places near the summit of the hill (which is 1,000-1,300 feet above the forest floor), preferring the tops of huge boulders which are covered with a very thin layer of sand, lichens, and decaying organic material. I have not seen it on the forested slopes of the hill where the soil is deeper and moisture more abundant.

According to Ducke, part of the swollen stem of *Zamia cupatiensis* is exposed and grows above the surface of the ground. I have found that this is a response to extremely sparse soil or sand on certain parts of the mountain and does not represent a truly natural characteristic of the plant. *Zamia cupatiensis*, like most related species of the genus, normally has its swollen stem completely subterranean. This normal growth habit can be appreciated in the accompanying photograph.

Zamia cupatiensis, like the species described below, undoubtedly represents one of the curious endemic plants which are found on the isolated quartzitic cretaceous mountains in Amazonian Colombia — ancient remnants of the once continuous Guiana-Venezuelan landmass and now known to be rich repositories of endemic species.

The vernacular name of *Zamia cupatiensis* in the language of the Yukuna Indians of the nearby Río Miritiparaná is *koo-roó-chee*. These Indians utilise the swollen underground stem in the preparation of a starchy meal or fariña for food.

Zamia jirijirimensis *R. E. Schultes* spec. nov.

Truncus grandis, elongato-obovoideus, usque ad 14 cm. longus, 7 cm. in diametro, perfecte subterraneus, apice multis bracteis fibroso-coriaceis, siccis, fuscis, triangularibus, 4 cm. longis et basi 2 cm. latis coronatus. Folia usque ad quattuor (vel quinque?); petiolo vix flexuoso, vulgo inermi sed spinularum vestigiis saepe armato, usque ad 25 cm.

longo (sed saepius breviore), basi 8 mm. in diametro; rhachide 22 ad 40 cm. longa; segmentis coriaceis, supra nitidissimis, utrinque septem ad novem, oppositis vel subopppositis, 20 ad 27 cm. longis, 1.5 ad 2.2 cm. latis, inferioribus 3-4 cm. superioribus 3 cm. (sed saepe usque ad 6 cm.) distantibus, angustissime lanceolatis, basi sessilibus, apice longe et acute acuminatis, nervis numerosis, parallelis, plus minusve viginti quattuor et subconspicuis, margini valde revolutis, integerrimis. Strobilus femineus inter foliis apparenter solitarius, in pedunculo terete et robusto, usque ad 10 cm. longo, erecto, densissime aureo-tomentoso, cylindricus, apice rotundatus, plus minusve 7-9 cm. longus, 4-4.5 cm. in diametro, peltis in seriebus plus minusve sex verticalibus, hexagonis, majoribus 2 cm. longis, 1 cm. latis. sordide tomentosis, margine atro-purpureis sed cum cinctu centrali cinereo, seminis subovoides trigonis, 14 mm. longis, basi 8 mm. in diametro, aurantiacis; strobilus masculus parvus, 3.5 cm. longus, 1 cm. in diametro, luteus, peltis in seriebus quattuordecim, non elevatis, peltis 2 mm. longis, 2 mm. latis, densissime tomentellis.

COLOMBIA: Comisaría del Amazonas, Río Apaporis, Raudal de Jirijirimo. Extensive white-sand savannah or caatinga on right bank. "Low plant with enormous ovoid storage root or stem. Seeds bright orange. Common in sunniest places of savannah." March 1951. *Richard Evans Schultes 12101* (TYPUS in Herb. Gray; TYPUS DUPLICATUS in Herb. Nac. Colomb.).

Zamia jirijirimensis differs from *Z. cupatiensis,* apparently its closest ally, chiefly in the form of the leaves and female strobilus: whereas *Zamia cupatiensis* has ovate-lanceolate segments about 21 cm. long and 6 cm. wide, *Z. jirijirimensis* has very narrowly lanceolate segments measuring from 20 to 27 cm. in length and 1.5 to 2.2 cm. in width. The segments of the former species have many more nerves than do those of the latter and are basally subpetiolate and (in the upper ones) apically unidenticulate, instead of being sessile and entire. In *Zamia jirijirimensis,* the petiole is sometimes unarmed but usually has vestiges of spinules; in *Z. cupatiensis,* it is apparently always unarmed. There are major differences in the size and structure of both the male and the female strobili. The female strobilus is much larger in *Zamia jirijirimensis* than in *Z. cupatiensis,* and the male strobilus is much smaller; there are, likewise differences in the shape and size of the several parts of the strobili.

The Karapana, Kayaburí, and Taiwano Indians of the Río Kananarí, which empties into the Apaporis slightly above the Raudal de Jirijirimo —the type locality of this new species—, often gather the swollen, underground stem of *Zamia jirijirimensis* and prepare a starchy meal or fariña from it. This is used as a food on long trips.

The abundance of *Zamia jirijirimensis* at the type locality is convincing evidence that the plant can be, in emergency, a reliable source of food. The Taiwano Indians call this plant *gaw*.

Although almost completely unknown until recently, the Raudal de Jirijirimo, in the middle course of the Río Apaporis, is one of the most beautiful and majestic natural wonders of Colombia. *Zamia jirijirimensis* is a most curious xerophyte of the sandy savannah at Jirijirimo, and I have named it for this waterfall and rapids, a sacred place to the Indians of the area, the only inhabitants of the region. This natural wonder has, fortunately, not yet suffered the ravages of that enemy of beauty — civilised man.

Habit of *Zamia jirijirimensis* R. E. Schultes (*Schultes 12101*).
Raudal de Jirijirimo, Río Apaporis, Comisaría del Amazonas, Colombia.

Foto Schultes

Basal portion of *Zamia cupatiensis* Ducke (*Schultes et Cabrera 17663*). Cerro de La Pedrera, Río Caquetá, Comisaría del Amazonas, Colombia.

Foto Schultes