

Sabal gretheriae, a New Species of Palm from the Yucatan Peninsula, Mexico

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Sabal is a New World genus, ranging in the Northern Hemisphere from the Caribbean Islands and Southeastern United States, through Mexico and Central America, to Venezuela (Bailey 1944).

Mexico has the greatest diversity of *Sabal* with 7 of the 15 known species (Zona 1990). The Yucatan Peninsula comprises the states of Campeche, Quintana Roo and Yucatan, where 3 wild species of *Sabal* occur, *S. mauritiiformis* (Karsten) Grisebach & H. A. Wendland, *S. mexicana* Martius and *S. yapa* Wright ex Becari (Quero 1989).

I conducted a recent survey on the "Palmas de la Peninsula de Yucatán" comprising intensive field work in order to verify distribution ranges of some of the species, as well as to confirm the identity of some palms for which I had not enough material. Collecting flowers and fruits from a *Sabal* population growing in the northeastern portion of the Peninsula, I noticed that these palms, while having a strong similarity to *Sabal mexicana*, did not correspond with the latter species nor with the other taxa commonly occurring in the Yucatan Peninsula. Because this geographic region is located close to Cuba, I assumed that it could be a Cuban species, such as *Sabal maritima* (Kunth) Burret or *S. palmetto* (Walt.) Loddiges ex J. A. & J. H. Schultes (sensu Zona 1990). In order to clarify the situation, I examined herbarium and living wild specimens in Cuba.

After studying the Cuban materials, I

concluded that there are remarkable differences between those *Sabal* species from Cuba and those of Yucatan, sufficient for those from the Chiquila region in Quintana Roo to be considered as belonging to a new species.

***Sabal gretheriae* Quero, sp. nov.**
(figs. 1-6).

Palma mediocris usque ad 8 m alta, trunco 20-30 cm diametro. Folia magna, lamina ca. 2 m lata, petiolis apice 3-4 cm latis, glabris, hastula longe acuminata, glabra, marginibus incurvatis, 13-22 cm longa, segmentis numerosis, unicastis, costa media prominente, venis transversalibus conspicuis uterque paginis, segmentis centralibus usque ad 1.30 m longis, 7 cm latis, apice bifurcatis, palman longitudine $\frac{1}{2}$ laminae, sinibus filiferis. Inflorescentiae ascendentes, folias non excedentes, 1.80-2.00 m longae, ramosissimae. Flores albi, fragrantis, calyce costato, urceolato vel cupulato, ca. 1.5 mm longo, petalis spathulatis siccatis costatis, 5 mm longis, filamentis ca. 5 mm longis, antheris 1.2-1.5 mm longis, pistillo conico ca. 4 mm longo, apice papilloso. Fructus subglobosi vel pyriformes, nigri, 16-20 mm lati, 16-18 mm alti. Semina subglobosa vel ovata-depressa, base plerunque manifeste apiculata; micropyle supraequatoriali. Typus: Mexico, Quintana Roo, 4 km S of Chiquila on road to Kantunilkin, Quero 3592 (Holotypus MEXU; isotypi CICY, NY, UAMIZ, US).

Medium-sized palm to ca. 8 m tall; trunk 20–30 cm diam., with persistent petiole bases only near the crown. Leaf large, with blade more than 2 m diam.; petioles 1.20–1.40 m long, 5–6 cm wide in the middle and 3–4 cm wide at the apex; hastula narrowly triangular to acuminate, 15–22 cm long, glabrous, never lepidote, with incurved to erect margin, never flat; segments 100–120, robust, the middle ones 1.10–1.30 m long, 6–7 cm wide, with a prominent midvein and very conspicuous transverse veinlets on both surfaces, segment apices bifid for 30–40 cm, generally breaking at the apex; palman 40–50 cm long, filiferous at the sinuses at least in the smaller segments, the blade from the larger segments frequently marginally broken above the sinus in a narrow strip 5–11 mm wide. Inflorescence appressed-ascending with 3 orders of branching, not exceeding the leaves, 1.80–2.0 m long, with 25–28 primary branches; rachillae 9–11 cm long, 1–1.2 mm diam. in the lowermost primary branches. Flowers white, fragrant, 4–4.5 mm long; calyx urceolate to cupulate, trilobed, 1.5–2 mm long, strongly costate when dry; petals spathulate, narrow ca. 4 mm long, 1.5 mm wide, ascending to spreading at anthesis, strongly costate when dry; filaments ca. 5 mm long, anthers 1.2–1.5 mm long, pistil conical ca. 4 mm long, with papillose apex, ovary 1.2–1.5 mm high. Fruit globular to globular-pyriform, 16–20 mm diam., 16–18 mm high, black at maturity, epicarp smooth, mesocarp fleshy to 4 mm thick. Seed subglobose to irregularly depressed ovoid, not concave, 9.5–12.2 mm diam., 6–9 mm high, frequently strongly apiculate at the base by the funicular remnant, to 2.2 mm high; embryo supraequatorial.

Specimens examined: MEXICO: Quin-



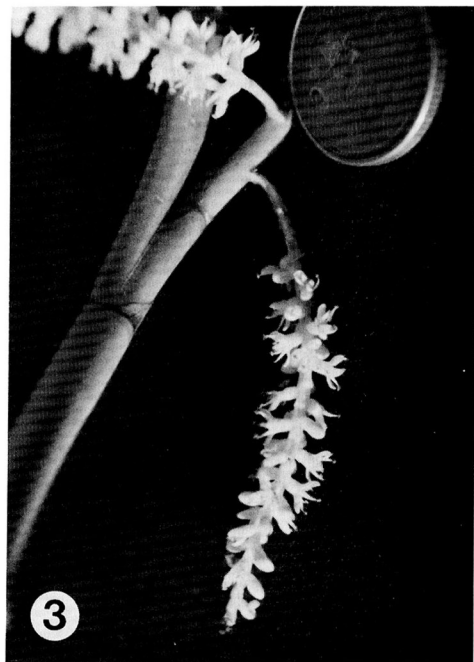
2. Habit of *Sabal gretheriae* in the type locality.

tana Roo: 4 km S. of Chiquilá on the road to Kantunilkin, *Quero 3592* (Holotype MEXU, isotypes CICY, NY, UAMIZ, US); 2 km S of Chiquilá on the road to Kantunilkin, *Orellana 831*; 3 km S of Chiquilá on the road to Kantunilkin, *Orellana 837*; 4 km S of Chiquilá on the road to Kantunilkin, *Quero 3588*; 3.5 km S of Chiquilá on the road to Kantunilkin, *Quero 3591*; 2.5 km S of Chiquilá on the road to Kantunilkin, *Quero 3596* (all CICY).

In addition, numerous measurements were made from randomly distributed plants in the population.

This species is named in honor of Rosaura Grether of the Department of Botany, Universidad Autonoma Metropoli-

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1. *Sabal gretheriae*. a) general appearance of the palm; b) part of the leaf; c) rachilla with flowers; d) open flower; e) flower bud; f) dried flower; g) fruiting branches; h) flowering branches; i) fruits; j) seeds; k) cross section of seed.



3. Close-up of a rachilla with open flowers. 4. Primary branch with fruits.

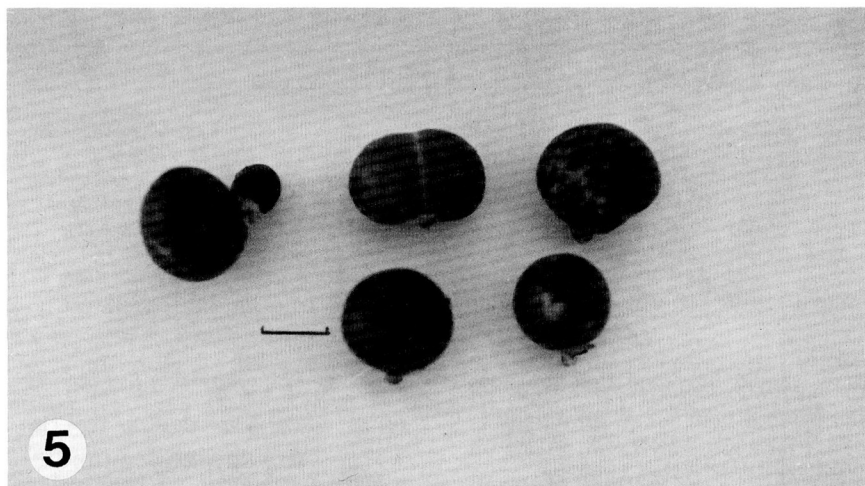
tana-Iztapalapa, who collected palms with the author for many years.

Distribution: The new species is only known to date in the vicinity of Chiquilá, Quintana Roo, a small coastal town located in front of Holbox Island at the northeasternmost point of the Yucatan Peninsula.

This palm is abundant in this restricted area, growing under disturbed conditions, on sandy-loam plane soils. At the limit of its distribution, it grows in association with *Sabal yapa* and *Acrocomia mexicana* Karw. ex Martius.

Sabal gretheriae can be confused in the Yucatan Peninsula with *S. mexicana* because of the uncostate segments, large fruits and petals costate when dry. However, both species can readily be distinguished because the former has the broadest leaf segments 6–7 cm, appressed-ascending inflorescences, spatulate petals, and spheroidal depressed not concave

seeds, 7–9 mm high with an irregular outline, while *S. mexicana* has segments 3.2–5.3 cm wide, an arcuate inflorescence, obovate to oblong petals, and obloid concave seeds, 5.7–7.4 mm high. In addition, some anatomical differences exist between them, both in type and distribution of the bundle sheath extensions and the small adaxial vascular bundles; *S. mexicana* has no extensions of the major vascular bundles and also has 3–7 small vascular bundles between the major ones; *S. gretheriae* has extensions in the major vascular bundles and 7–9 small vascular bundles. The caryotype of the new species comprises 14 metacentric pairs, 8 of them with satellites and 4 submetacentric pairs, 1 of them with satellites, while *S. mexicana* has 14 metacentric pairs, 4 of them with satellites and 4 submetacentric pairs (Palomino, personal communication). Furthermore, *S. mexicana* grows only in the southwestern portion of the Peninsula, in the state of



5. Variation in fruit shape (bar indicates 1 cm). 6. Variation in seed shape (bar indicates 1 cm).

Campeche, and flowering from January to April, while *S. gretheriae* grows only in the northeast, in the state of Quintana Roo, and flowers from May to August.

The new species can be distinguished

from the two apparently more related Cuban species by the petals costate when dry. Other differences between them are as follows:

Table. Comparison of the new species with two others.

	<i>Sabal gretheriae</i>	<i>Sabal maritima</i>	<i>Sabal palmetto</i>
Segments	6-7 cm wide	2.4-5.3 cm	2.5-4.2 cm
Hastula	glabrous	lepidote	lepidote or glabrescent
Calyx	1.2-1.5 mm long	1.5-2.2 mm	1.3-2.4 mm
Petals	spathulate, costate	obovate, non-costate	spathulate non-costate
Fruit	16-20 mm diam.	8.5-14.2 mm diam.	8.1-13.9 mm diam.
	14-16 mm high	8.4-12.6 mm high	8-13.8 mm high
Seed	spheroid depressed	obloid concave	obloid concave
	9.5-12 mm diam.	6.5-9.7 mm diam.	5.4-9.7 mm diam.
	6-9 mm high	4.5-6.2 mm high	4-7 mm high

Also, it should be noted that the new species can be distinguished from *S. palmetto* by the widely spaced nerves and its very prominent transverse veinlets.

Key to the *Sabal* Species from the Yucatan Peninsula

1. Leaf segments with 3 prominent nerves, the central one more prominent than the lateral; petals not costate when dry
 2. Leaves with a small costa, and short palman the segments thus drooping; segments soft and silvery beneath; inflorescence with 4 orders of branching *S. mauritiiiformis*
 2. Leaves with a large costa, strongly curved with long palman; segments hard and green beneath; inflorescence with 3 orders of branching *S. yapa*
1. Leaf segments with 1 prominent central nerve; petals costate when dry
 3. Trunk with persistent petiole bases in at least the upper 1/3; largest leaf segments 3-5.5 cm wide; inflorescence arcuate; petals obovate to oblong; seeds obloid, concave 5-7.4 mm high *S. mexicana*
 3. Trunk with persistent petiole bases only at the top; largest leaf segments 6-7 cm wide; inflorescence appressed-ascending; petals spathulate; seeds spheroidal to ovoid

depressed, not concave, 6-9 mm high
..... *S. gretheriae*

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LITERATURE CITED

- BAILEY, L. H. 1944. Revision of the American palmettos. *Gent. Herb.* 6(7): 367-459.
- QUERO, H. J. 1989. Flora genérica de Arecaceas de México. Tesis Doctoral, Facultad de Ciencias, U.N.A.M. México.
- ZONA, S. 1990. A monograph of *Sabal* (Arecaceae: Coryphoideae). *Aliso* 12(4): 583-666.