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Coccothrinax readii, A New Species From the Peninsula of Yucatan, Mexico

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The Mexican portion of the Peninsula of Yucatan comprises the states of Campeche, Yucatan, and Quintana Roo. In its geological and physiographic features, this region is clearly different from the rest of Mexico; it is a great plain formed by a vast sheet of Tertiary and Recent porous and friable limestone having several low hills not more than 400 m high. The climate is warm and humid. The soils are rendzinas, gley, and sand.

For botanists, this region is very interesting because it has some endemic species, it is the northern boundary of some Central American species, the southern boundary of some North American species, and it has a great affinity with the Antillean flora. There are five Antillean genera of palms present: *Coccothrinax*, *Thrinax*, *Pseudophoenix*, *Acoelorrhaphe*, and *Roystonia*, each represented by one species.

A new species of *Coccothrinax* described herein has a very wide distribution in the Peninsula of Yucatan along the coastal regions of Quintana

Roo and Yucatan; it had been collected only a few times (*Schott 721*, in Progreso; *Kiem 331*, in Chichchulub, near Progreso, both in Yucatan, and *Kiem 403*, at Puerto Juarez, Quintana Roo). The author collected this palm for the first time in 1971 (*Quero 464*), but it was not until 1976, when he began to work on "The Palms of the Peninsula of Yucatan," that he made intensive field studies of the palm. With the assistance of Dr. R. W. Read, who traveled with the author to that region, it has been determined as a new species.²

Coccothrinax readii Quero sp. nov.

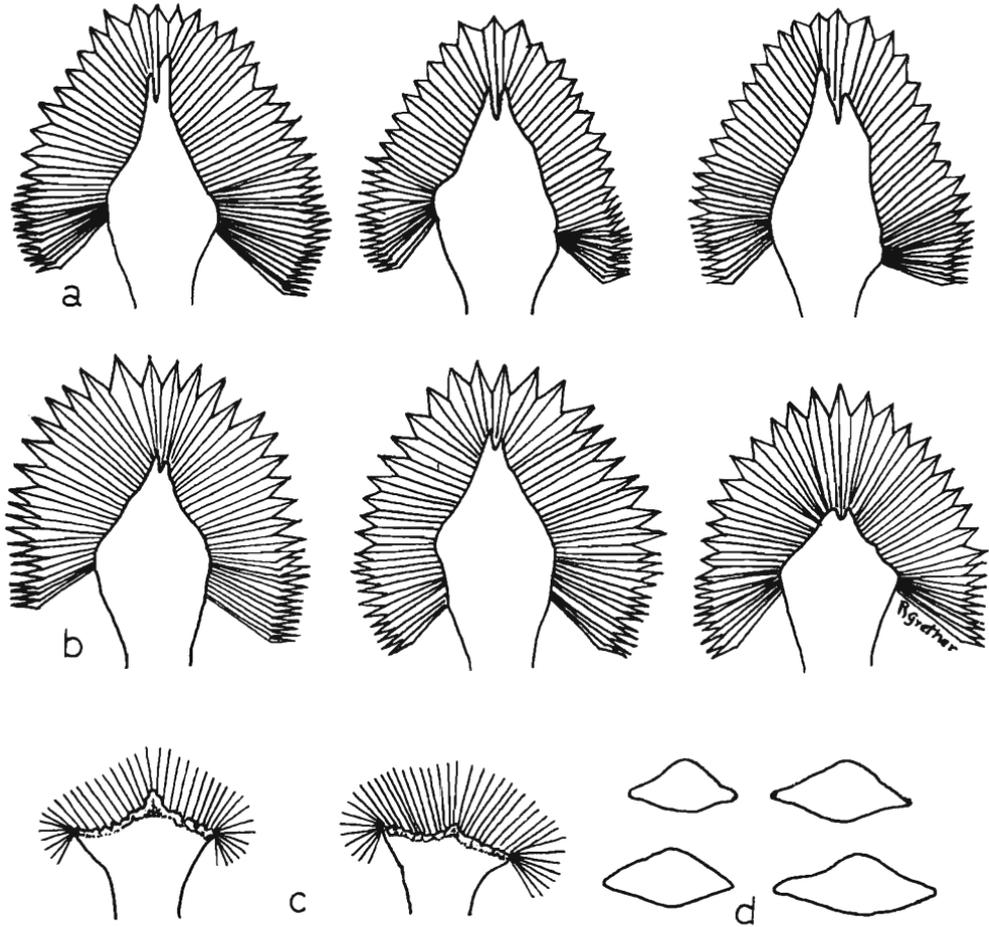
Truncus simplex, caule gracili usque ad 4 m alto, plerumque minus

² The seeds collected by Dr. R. W. Read and distributed to the members of The Palm Society in June (*Coccothrinax* sp. from Mexico) were, in fact, of this species.



1. Map showing the distribution of *Coccothrinax readii* in the Peninsula of Yucatan.

¹ This species is named in honor of Dr. Robert W. Read of the Department of Botany, Smithsonian Institution; I wish to express my appreciation to him for his assistance and for critically reviewing the manuscript, and to Biol. Rosaura Grether of the Department of Biology, Universidad Autónoma Metropolitana, for her assistance with the field work and the drawings. Dr. W. J. Dress of the L. H. Bailey Hortorium, Cornell University, assisted with the Latin description.

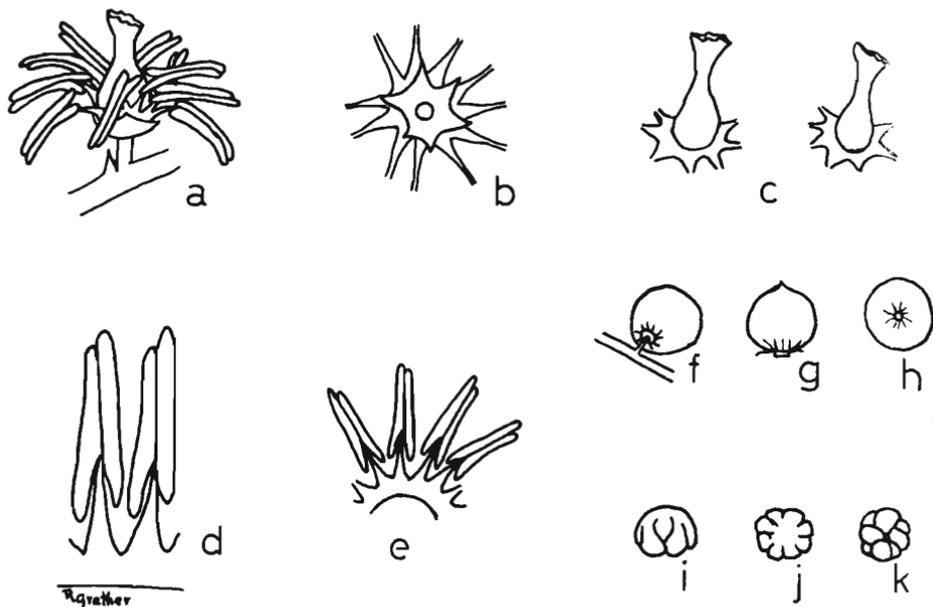


2. *Coccothrinax readii*. **a**, variation of adaxial hastulas from palms growing on sand dunes of Punta Sam, $\times 1$; **b**, variation of adaxial hastulas from palms growing in forest near Cancun, $\times 1$; **c**, abaxial hastulas, $\times 1$; **d**, petioles in cross section at the slenderest portion, $\times 2$.

quam 5 cm lato; folia palmata ambitu orbicularia, pagina supra atroviridi infra argentea et non punctulata, lamina in 39–54 segmenta divisa, segmentis centralibus usque ad 65 cm longis apice bifurcatis, ad 3.8 cm latis supra sinus, hastula apiculata bifida 0.9–2.5 cm longa, vagina linguiformi, parte libera usque ad 6.8 cm longa; inflorescentie non elongatae 4–7 (–9)-partitae plerumque 5, floribus eburneis, fragrantibus, pedicellis 1.5–4 mm longis,

perianthio 5–6-partito, segmentis subulatis, staminibus 9–13, antheris 2–3.7 mm longis, basi in forma sagittis; inflorescentiae fructificantes arcuatae, fructibus subglobosis purpureo-nigris, 5–12.5 mm diam., pedicellis fructiferis 2–6.5 mm longis, semine 3.5–10 mm diam.

Coccothrinax readii is a small, solitary palm 1–4 m high, with a very slender, brownish or grayish trunk 3–5 (–



3. *Coccothrinax readii*. **a**, flower at anthesis, $\times 5$; **b**, perianth and filaments in bottom view, $\times 5$; **c**, pistil shape with infundibuliform stigma, $\times 5$; **d**, anthers with unequal thecae, $\times 10$; **e**, stamens with filaments fused at their bases, $\times 5$; **f**, fruit attached at the rachilla, $\times 1$; **g**, fruit in side view, $\times 1$; **h**, fruit in bottom view with remaining perianth and filaments, $\times 1$; **i**, seed in side view $\times 1$; **j**, seed in upper view, $\times 1$; **k**, seed in bottom view $\times 1$.

5.5) cm in diam. bearing a small open crown of 9–16 palmate leaves. Leaf blades are 40–110 cm in diam., dark green above and silvery on the abaxial surface, with 39–54 segments connate in a palman 13–30 cm long, the free portion triangular, generally tapering to a bifid apex to 3 cm deep, sometimes abruptly constricted in the middle of the free portion, middle segments 40–65 (–71) cm long from hastula to apex, the widest point always over the sinus, 2–3.8 cm wide; petioles 25–110 cm long, 6–11 mm wide at the most slender point and 8–15 mm wide at the union with the sheath, biconvex to narrowly rhombic in cross section and flattened adaxially toward the base; sheath linguiform, free portion 3–6.8 (–9.5) cm long from the union with the petiole, woven of fine fibers and forming a looser net

with age; hastula narrowly triangular, sometimes only slightly retuse apically, but mostly very deeply bifid to 7.5 mm, free portion 9–25 mm long, sometimes tubular; abaxial hastula 1.7–4 mm long. Inflorescence interfoliar, arcuate in fruit, (37–) 40–84 cm long, bearing 4–7 (–9), usually 5, primary branches, the lowermost branch 9–25 cm long with 6–20 (–25) rachillae (3–) 4.5–11 cm long. Flowers fragrant, creamy-white; perianth in a single series with (4–) 5–6 unequal, subulate lobes; stamens (8–) 9–11 (–13) longer than pistil, filaments connate at the base in a ring around the base of the ovary, anthers retuse to bifid at the apex, sagittate at the base, longer than filaments, thecae unequal 2–3.7 mm long; pedicels 1.5–4 mm long. Fruit subglobose, purple-black and juicy-fleshed at maturity, 5–12.5 mm in

diam. with persistent perianth and filaments; fruiting pedicels 2–6.5 mm long; seed brownish, subglobose, cerebriform, 3.5–10 mm in diam.

Vernacular name: *knacás*.

Uses: the trunks are used in the construction of rustic houses and fences.

Specimens examined: MEXICO. QUINTANA ROO: ½ km N of Xel-Ha, *Quero* 2755 (holotype, MEXU; isotypes BH, US, NY, F, GH; topotype, *Quero* 2747); 5 km S of Cancun, *Quero* 2318, 2494, 2495, 2661, 2742, 2743, 2744; Cancun, *Quero* 464; 1.5 km SW of Xel-Ha, *Quero* 2647, 2723, 2746, *López-Franco* 1137; 1 km S Ruins of Tulum, *Quero* 2395, 2645, 2722; 5–10 km S Town of Tulum, *Quero* 2370, 2396, 2754; 17 km NE Carrillo Puerto,

Quero 2642; 6 km E Limones, *Quero* 2536; Punta Sam, *Quero* 2320, 2397, 2496, 2497, 2745, 2756, *Grether* 451; Cozumel Island, *Quero* 2489, 2490; Puerto Morelos, *Quero* 2435. YUCATAN: road from El Cuyo to Lagartos, *Quero* 2405, 2668, 2738, 2739, 2740, 2741; road from Telchac to Progreso, *Quero* 2410, 2748, 2749, 2751, 2752; road from Progreso to Sisal, *Quero* 2474, 2682, 2753.

In addition numerous measurements were made from random plants in each population.

Coccothrinax readii appears most closely related to *Coccothrinax jamaicensis* Read; however, it can be distinguished as follows:³

	<i>C. jamaicensis</i>	<i>C. readii</i>
Trunk length	6–8 m	to 4 m
Trunk diameter	(5–) 6.4–20 cm	3–5 (–5.5) cm
No. of leaf segments	35–38	39–54
Hastula:		
a) Apex	not bifid	bifid
b) General outline	broadly rounded acute	narrowly triangular
Petiole width:		
a) slenderest point	1.3–2 cm	0.6–1.1 cm
b) at the union with the sheath	to 2.5 cm	to 1.5 cm
Sheath length (free apex)	2–4 cm	3–6.8 (–9.5) cm
No. rachillae of the lowermost primary branch	14–40	6–20 (–25)
Rachillae length of the lowermost primary branch	8–16 cm	4.5–11 cm

Distribution and Ecology

The species is endemic to the Peninsula of Yucatan, from the southern region of the state of Quintana Roo to near Sisal on the northwestern coast of the state of Yucatan.

Coccothrinax readii is a very abundant palm where it grows, occurring in

Median or Low Tropical Rain Forests near the coast and in Sandy Coastal Dunes.

³ The laminar anatomy, using samples that were randomly collected throughout the range of distribution and variability of this species, tends to support a uniform and distinct taxon in Mexico. Pers. comm. R. W. Read.



4. Dr. Robert W. Read and the author with *C. readii* in a Median Forest near Xel-Ha.



6. *Knacás* on sand dunes south of Tulum; at right, *Thrinax radiata*.



5. *Coccothrinax readii* growing in a Median Forest near Cancun. Note the slender trunk and the long and thin petioles.



7. R. Grether with a very small palm growing on sands at Punta Sam.



8. A depauperate individual of *C. readii* at the limit of distribution near Chelem. Notice the small leaves and petioles and the orchid *Schomburgkia* growing on the trunk.

In the Median Forest, this palm is an important element of the physiognomy. It is very abundant in the median stratum under the shade of species such as *Manilkara zapota*,



9. Close-up of the short inflorescence.



10. Close-up of the short fruiting inflorescence.

Metopium brownei, *Caesalpinia gaueri*, etc. It grows under conditions of high humidity and on shallow soils with abundant humus not more than 10 to 15 cm deep where it reaches its best development. It is common to find it with brownish trunks usually tall (4 m), but very slender, not more than 4 cm in diameter. Leaves are large, 80–110 cm in diameter, with petioles 70–110 cm long. The hastula can be slightly bifid and is frequently tubular on account of the expansion of the blade. This kind of forest with *kna-cás* is exclusively found in Quintana Roo, from the south to the environs of Cancun; it is in the southern region that *C. readii* grows farthest inland (30 km), while it is never found more than 2 km inland in the environs of Cancun.



11. Rustic houses built with trunks of *C. readii* thatched with leaves of *Sabal yapa*.

The Low Forest where this palm is found is in the transition zone between the Median Forest and the Sandy Dunes. These forests grow in the middle region of Quintana Roo (environs of Tulum) near the coast where the humidity is also high but soils are poorer and very rocky, with coralline limestone outcrops. The habit of *C. readii* is similar to that of specimens of Median Forest, but it is generally smaller, the mean height being 2.5 m. The palm is associated with *Metopium brownei*, *Thevetia thevetioides*, *Acacia gauderi*, *Pithecellobium platylobum*, *Beaucarnea pliabilis*, and *Pseudophoenix sargentii*.

This species grows on Sandy Dunes from the coast of Tulum in Quintana Roo to Sisal in Yucatan, where it is exposed to the sun and sea breezes, and it is here that *C. readii* presents its widest variations. It is generally smaller, but trunks are wider and grayish, the hastula is deeply bifid, the inflorescences are shorter and frequently the terminal primary branches are not well developed.

In the dunes of Tulum, humidity is high: this zone is exposed to frequent rainfall, as well as to the strong sea breezes. Here, *C. readii* is very vigorous, more than 2 m high with trunks 5 cm in diameter, and leaves are large, to 110 cm in diameter, with segments to 3.8 cm wide and petioles 1 m long. Other species growing in these dunes are *Thrinax radiata*, *Chrysobalanus icaco*, *Metopium brownei*, *Coccoloba uvifera*, *Cordia* sp., etc.

In the dunes of Punta Sam, this palm grows 2 m high, although it is generally smaller, the width of trunks

reaches 5.5 cm, the leaves are smaller—40–70 cm in diameter, petioles 25–50 cm long, hastula to 2.5 cm long and deeply bifid (to 7 mm)—and the inflorescence is 30–50 cm long. Associates are *Pithecellobium keyense*, *Chrysobalanus icaco*, *Sophora tomentosa*, *Coccoloba uvifera*, and *Thrinax radiata*.

The region of El Cuyo on the northern coast of Yucatan limits a coastal lagoon, therefore the humidity is high. *Coccothrinax readii* is found here growing 2 m high, the leaves are larger than those of Punta Sam, to 90 cm in diameter, the petioles are to 60 cm long, and the inflorescences to 50 cm long. Other associated species are *Pseudophoenix sargentii*, *Thrinax radiata*, *Metopium brownei*, *Agave* sp., and several species of cactus.

The environs of Chelem, on the northwestern coast of Yucatan, near Sisal, are one of the driest regions of the Peninsula and they are the limit of distribution of the species. This palm is there represented by depauperate individuals 1–1.5 m high, with slender trunks to 4 cm in diameter, leaves 40–50 cm diameter, petioles to 40 cm long. The inflorescences are very short and the branches are not well developed. The species grows with *Thrinax radiata*, *Metopium brownei*, *Gossypium hirsutum*, *Malvaviscus arboreus*, and different kinds of cactus.

There are three islands near the northeastern coast of the Peninsula: Cozumel, Isla Mujeres, and Contoy. It is interesting to emphasize that scattered individuals of this species are found only in Cozumel, none on the other islands.