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An Annotated Key to the Cultivated Species of Coccothrinax

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Though slow growing, species of *Coccothrinax* are attractive landscape palms and are especially well suited to drought-prone areas with calcareous soils. Because of these attributes, *Coccothrinax* has been a focus of horticultural interest for many years in south Florida among palm enthusiasts and staff members of Fairchild Tropical Garden (FTG). As a result, FTG displays about 120 accessions of *Coccothrinax*, which makes it one of the largest generic collections there.

Until recently, however, these living specimens remained unidentified as a consequence of confusion in the taxonomic literature, which is fragmented and hinders easy genus-wide comparisons for routine identification. For example, we point out the following five situations: 1) Bailey (1939*b*, 1949) provided keys only to the species of the southern Greater Antilles and the Lesser Antilles. Moreover, Read (1979) has shown that the species Bailey accepted are oversplit, which makes them difficult to identify. 2) León (1939, 1946) and Muñiz and Borhidi (1982*b*) provided keys only for Cuban taxa. 3) The original descriptions often lack comparative discussion of characters. 4) The total number of species that Moore (1973) cited is 20, whereas Glassman (1972) listed 37. 5) Since 1966, numerous name changes have been proposed, and 14 new taxa have been described (Borhidi and Muñiz 1971, 1972, 1985; Muñiz and Borhidi 1982*a*, *b*; Quero 1980; Read 1966*a*, *b*, 1980).

Fortunately, many of the species are endemic, each to a particular region, and are often each the sole representative of the genus there. Consequently, wild collections from those areas can aid one greatly in evaluating the original descriptions and other taxonomic literature. To identify the plants in *Coccothrinax* at FTG, we incorporated a study of wild collections in the following ways: 1) By computer assisted morphometric techniques, four populations of *C. argentata* in Florida were analyzed for morphological variation (unpubl. data, but see Sanders 1986). 2) Herbarium specimens and seeds of *Coccothrinax* species were collected in Hispaniola, Trinidad, and the Yucatan peninsula (Appendix I). 3) Specimens were made from accessions grown from seeds of known provenance (Appendix I). 4) We studied specimens of garden accessions given to FTG as authentic material by H. León, R. Read and the National Botanical Garden of Cuba (HAJB) (Appendix II). 5) Specimens and photographs of specimens cited in the original descriptions were examined (Appendix III).

Together, these specimens were compared with the available keys (cited above) and with descriptions and illustrations of all the known species of *Coccothrinax* (Bailey 1939*a*, *b*, 1947*a*, *b*, 1949; Beccari 1907, 1913; Borhidi and Muñiz 1971, 1972, 1985; Borhidi et al. 1978; Britton and Wilson 1923; Burret 1929; Chapman 1883; Duss 1897; Grisebach 1864; Hodge 1942, 1954; Kunth 1822, 1841; León

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1939, 1946; Little et al. 1974; Martius 1837–53; Maycock 1830; Mueller 1858; Muñiz and Borhidi 1982*a*, *b*; Quero 1980; Read 1966*a*, *b*, 1972, 1975, 1979, 1980; Sargent 1899, 1902; Sauvalle 1871, 1873; Schultes and Schultes 1830; Sprengel 1825; Urban 1903, 1920; Victorin and León 1942, 1944, 1956). The wild and authentic collections were matched with species names. This clarified the use of terms in the various descriptions and allowed us to establish our concepts of the species. To identify the unidentified accessions, we then attempted to match them with the named collections. If unsuccessful, we matched the specimen with a description or also an illustration. With respect to "lumping," "splitting," and synonymy, we followed the judgement of recent authors with extensive field experience, such as Read, Muñiz, and Borhidi.

To facilitate matching unidentified plants with our concepts of the cultivated species, we composed the key below. Because FTG has all the species that, to our knowledge, are in cultivation in south Florida and perhaps elsewhere outside of Cuba, we believe that the key should be available to the public, especially for the benefit of palm enthusiasts. The key is preceded by brief cautionary notes and definitions of characters. The key is organized to present the species in three easily recognizable, coherent species-groups—the Argentea Group, the Argentata Group, and the Miraguama Group—that are based on unpublished morphometric analyses that were presented at the Palm Symposium held at Cornell University in 1987. After the key, each species is listed with its author and place of publication, common names, synonyms, native habitats (as a guide for culture needs), and notes for distinguishing closely related or confusing species. The species are alphabetical within species groups, which also are described. The common names in italics are those proposed here as unique English names to be used in American horticulture.

Guide to the Use of the Key

The key is intended to be used with adult plants; i.e., plants that have produced at least one inflorescence. Many of the characteristics are size-related and, therefore, are of little use with juvenile plants.

Plants grown from seeds obtained from a garden under conditions of open pollination are likely to be hybrids. If so, they will not key out well because the key characters may be intermediate or recombined. We encountered several such putatively hybrid accessions in FTG. In particular, our plants of *C. miraguama* from garden sources exhibit much wider variation within the subspecies than what is described in the literature. We attribute this variation to the ease of hybridization among these genetically close taxa.

The name *Coccothrinax martii* (Griseb. & H. A. Wendl.) Becc. has been used in horticulture (Moore 1963). Beccari (1907) published the combination after he saw specimens preserved at Stockholm that were collected by Charles Wright. Although these were given the same distribution number as the type specimens of *Thrinax martii* studied elsewhere by Grisebach and Wendland (Grisebach 1866), they are not part of the type collection. Because *T. martii* is a synonym of *T. radiata* J. A. & J. H. Schult. (Read 1975), *C. martii* is also a synonym of *T. radiata* and is not to be considered further in *Coccothrinax*, even though the material seen by Beccari (but not the type) belongs to *Coccothrinax* rather than *Thrinax*.

Several terms and structures used repeatedly in the keys require explanation (Figs. 1–10).

Lamina (Leaf-Blade) Orbicularity. This character refers to the outline of the leaf blade in mature leaves. Fully (¼) orbicular refers to a circular outline; less than fully (e.g., ⅓, ½, or ¾) orbicular refers to a condition in which the outer segments form an angle giving the leaf a cuneate, semi-circular, or crescent shape; and more

than fully (e.g., $\frac{5}{4}$) orbicular refers to a condition in which the outer segments overlap in a spiral-like manner.

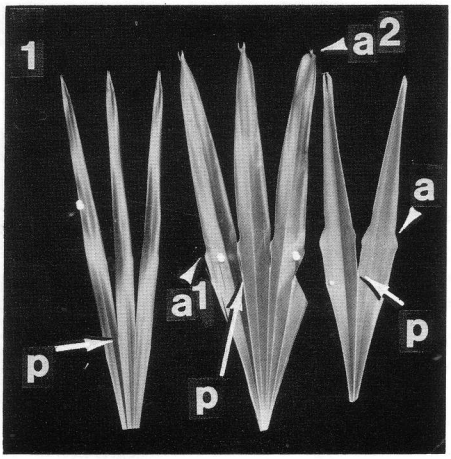
Lamina Coloration. The adaxial (upper) and abaxial (lower) leaf surfaces are both green in color. In most species, the presence, persistence, and color of an indument of finely dissected scale-like hairs will variously modify the overall color of the abaxial surface. The abaxial surface may range from green (with almost no indument and the lamina therefore concolorous) to whitish, gray, or silver (with a very dense indument), and in some taxa, it may have ferrugineous, yellowish, golden, or bronze hues. The feature is sometimes variable within a species, especially when the indument is caducous to deciduous.

Segments. This term refers to the leaf segments in the central region of the blade (Fig. 1). Length is measured from the hastula to the apex; width, at the widest point along the segment.

Hastula. Although frequently used by previous authors to distinguish many taxa, the hastula is often too variable to be used taxonomically. *Coccothrinax readii* exhibits a unique hastula, which is two-toothed at maturity. The split results from a normal developmental process and should not be confused with physical tearing or splitting seen in other species.

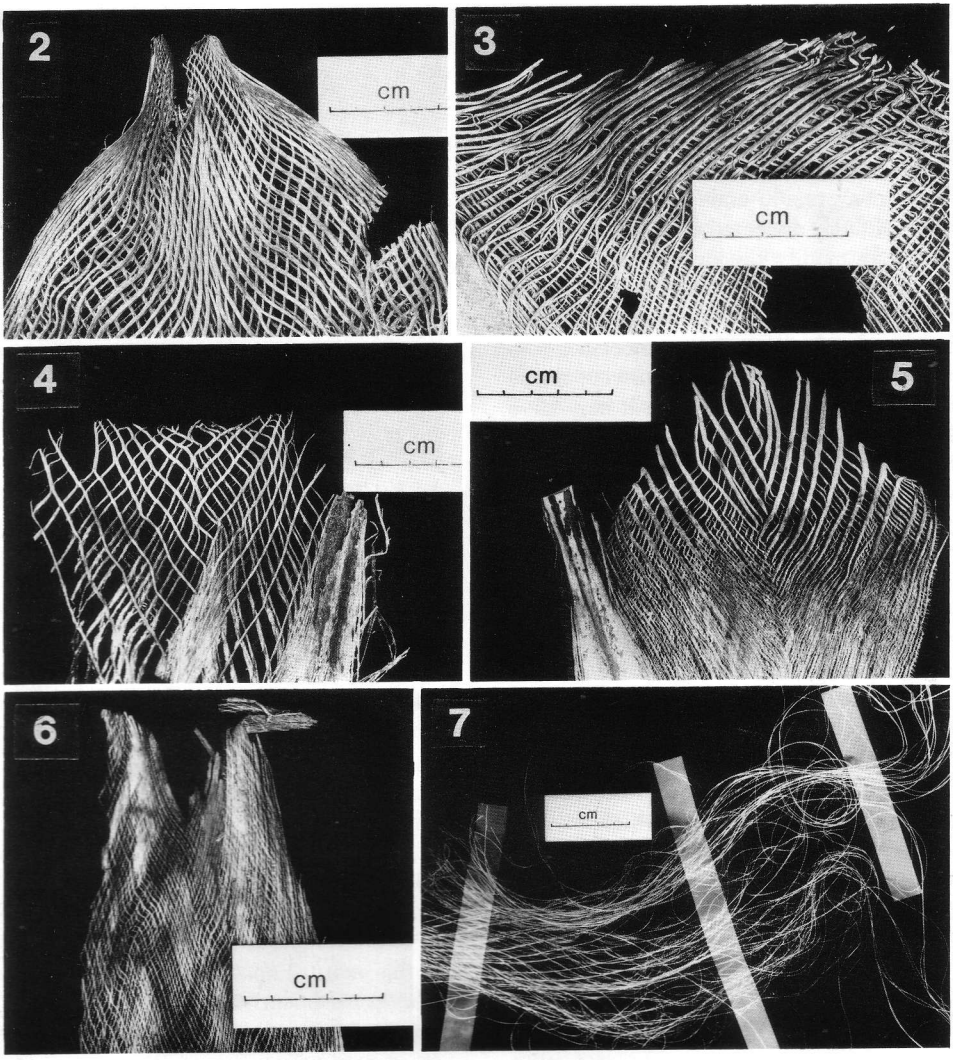
Palman. The palman is that portion of the leaf which is not split and excludes the free segment apices (Fig. 1). Because the length of the unsplit area decreases from the central segments to the outer or basal segments, the palman measurements in the key are taken from the hastula to the sinus along the line between the two central segments. Occasionally, these segments are unsplit for an abnormally much longer distance than are the remaining segments. In this case, a reasonable estimate of the palman can be obtained from the degree of splitting in the next adjacent pairs of segments.

Distal Taper of Segments (Fig. 1). In general, the leaf segments gradually taper distally from their widest point to the very tip. In many plants, the segment is slightly constricted with opposite, shallowly concave indentions at a point about half way from the palman to the tip. The original width of the segment and original tapering lines of the margin are resumed just distal to this constriction. However, in certain species, particularly the Miraguama Group, this constriction is accentuated as a shoulder-shaped acumination. The margins follow convex-concave courses, such that the segment is abruptly narrowed at that point from where it begins its final distal taper to the apex. In extreme cases the acumination is further accentuated by a noticeable dilation just proximal to the constriction. In *C. miraguama*, a few plants, which we suspect have a hybrid ancestry, have only the shallow, concave constriction near the palman and small "shoulders" within about one cm of the segment apex.



1. Central portions of laminas $\times \frac{1}{10}$. Left, *C. readii*, note lax, ± gradually tapering segments and pleating only in palman (p = outer limit of palman). Center and right, *C. miraguama*, note shoulder-shaped acuminations (a) and ± strong longitudinal pleating for entire length of segments. In center, note less pronounced proximal acuminations (a^1) and extreme apical ones (a^2). Apical point is portion of each segment from *a* (or a^2) to tip.

Leaf-Sheath Structure (Figs. 2–7). The



2–7. Leaf sheaths. 2–3. *C. miraguama* subsp. *roseocarpa*, note strands in three layers, tightly woven. 2. Ligule of newly matured sheath, note entire margins of fused finer strands. 3. Persistent sheath from trunk below crown of leaves, note that deterioration of margin has left a few strands falsely "free" and that stretching on trunk has warped many strands. 4. *C. scoparia*, strands in two layers, loosely woven, a few strands falsely "free" by aging. 5. *C. ekmanii*, strands in two layers, tightly woven, with free tips (due to fusion of strands). 6. *C. argentata*, strands in two layers, tightly and loosely woven bands alternating, ligule constituting approximately upper half of this flap of sheath. 7. *C. crinita*, central portion of ligule, strands in two layers, loosely woven, with free tips (due to elongation of strands).

leaf sheath contains a network of greatly enlarged fibrovascular bundles. These are the "sheath fibers" of other students of *Coccothrinax*. However, because of confusion with anatomical fibers, we follow Tomlinson (1964) in calling them strands. In *Coccothrinax*, the strands occur in two or three distinct layers; those within a layer run parallel to one another and more or less perpendicular to those of an adjacent

layer. The strands within a layer are held together by a reticulum of distinctly smaller cross-strands that branch at right angles from the strands and anastomose with adjacent strands.

Number of Leaf-Sheath Layers. The number of layers is best determined from mature leaf sheaths. If the strand layers on the inside (adaxial surface) and outside (abaxial surface) run in perpendicular directions, then there are only two layers (Figs. 4–7). If the inside and outside layers run the same direction, there is a third layer sandwiched between them, running in the perpendicular direction (Figs. 2,3). Notably, the distinction between two and three leaf-sheath layers breaks down in *C. miraguama*, in which the leaf sheaths can have three layers toward their bases and two layers toward their apices.

Thickness of Leaf-Sheath Strands. This character is measured as the average width of the thicker strands in the body of the leaf sheath (unless otherwise specified).

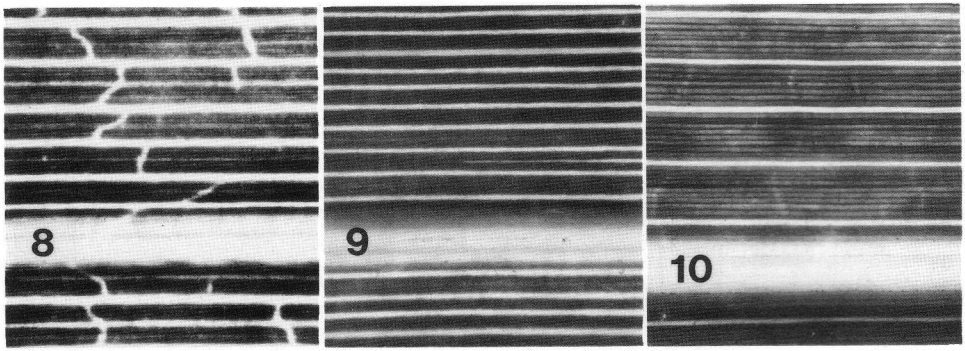
Tightly vs. Loosely Woven Leaf Sheaths. Strands are separated by a distance 1–2 times the strand thickness in tightly woven leaf sheaths (Figs. 2,3,5), and by 3–5 times or more their thickness in loosely woven leaf sheaths (Figs. 4,7). This character is evaluated in the central portion of the leaf sheath. Extreme expressions of this character are useful for distinguishing some taxa or groups but are more variable in other taxa (Fig. 6).

Free Strand Tips. The apical margin of the leaf sheath can bear free strand tips, of which there are two distinct types that differ in development. The first is the result of extensive elongation of the distal portions of the leaf sheath and is characterized by long, flexuous, thin, very loosely interconnected strands (Fig. 7). The overlapping sheaths resemble a mat of hair densely covering and concealing the stem and petiole bases. This type is found exclusively in the Crinita Complex of the Argentata Group. Studies of juveniles indicate this type is derived from leaf sheaths characteristic of the Argentata Complex. The second type of free strand tips is not a result of elongation but of a persistence of stout "vertical" strands and a developmental deterioration and loss of interconnecting cross strands at the leaf sheath apex. These strand tips are often thick and spinelike and usually consist of fused bundles of smaller individual strands (Fig. 5). In species considered here as *not* having free leaf-sheath strand tips, the leaf sheath may fragment with age or abrasion, and some strands are left falsely "free" along the margin (Figs. 3,4).

Ligule. Above its tubular portion, the leaf sheath usually bears an apical, nontubular projection, the ligule, opposite the stem from the petiole (Uhl and Dransfield 1987). The length of the ligule is sometimes difficult to measure because, as the leaf matures, the strands that attach the sheath to the petiole are stretched and broken. The resulting free flap of sheath, thus, includes ligule plus the detached tubular portion. In measuring the ligule, disregard any basal portion of the unattached flap that has its lateral margins bounded by broken strands (Figs. 4,5,6).

Transverse Veinlets (Figs. 8–10). These are veins running perpendicular to the long axis of the segment. Transverse veinlets are considered "present" only if a well developed reticulum is exhibited, that is one that can easily be seen with the unaided eye or a hand lens (Fig. 8 vs. 9). These are sometimes obscure in dry material; and, regardless of whether observed in dry or fresh leaves, the veinlets are most clearly visible when viewed with transmitted light. Some species, notably *C. crinita*, will sometimes exhibit poorly developed, minute, or indistinct transverse veinlets at maturity (Fig. 10).

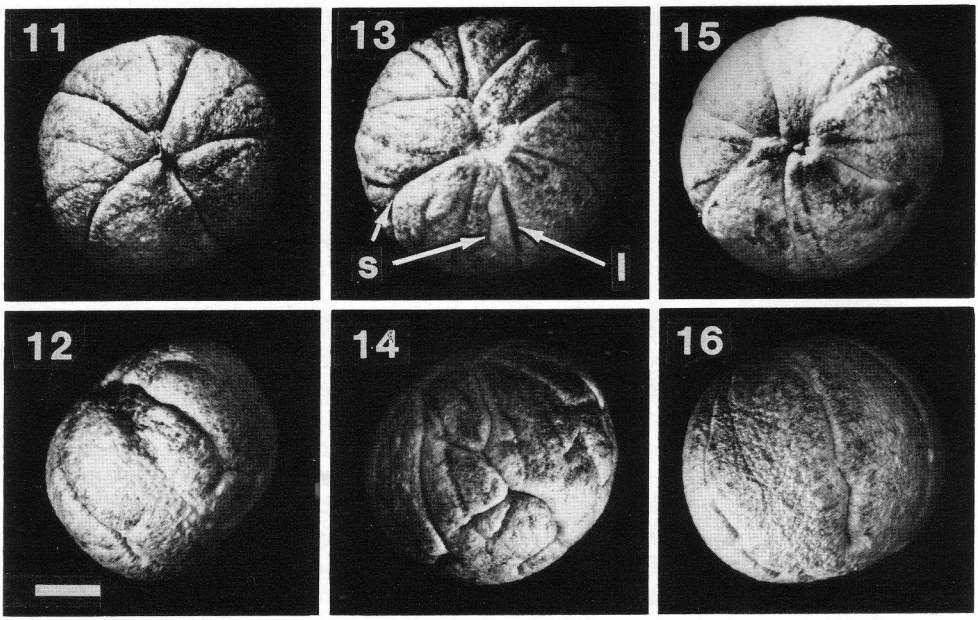
Pedicel Length. Pedicels often elongate during fruit set so that the flowers and fruits may have considerably different pedicel lengths on a given plant. Since anthesis is short-lived (1 to 2 days), pedicel lengths are given for fruits. Also, pedicel length is



8–10. Fresh leaf segments, viewed with transmitted light ×10. Largest vein in each is segment midrib. 8. *C. barbadensis*, with well developed transverse veinlets. 9. *C. argentata*, lacking veinlets. 10. *C. crinita*, adult leaf; note very weakly translucent transverse lines, interpreted here as not representing well developed veinlets.

often variable even along a single rachilla and flowers or fruits may range from distinctly pedicellate to subsessile along the rachis. Therefore, pedicel length refers to the longer pedicels on a given inflorescence, generally those on the lowermost rachillae of the lower primary branches of the inflorescence.

Stamen Number. Stamen number is variable, even within an inflorescence, but a reasonably narrow range generally can be determined for a given plant. Therefore,



11–16. Seeds of the Argentea Group, scale bar = 2 mm. Top views above; side views below, apices pointing toward upper left. Note differences between grooves (i.e., sulci, s) and the shallowly impressed segmented lines (l) which sometimes converge with the grooves. 11–12. *C. argentea.* 13–14. *C. barbadensis.* 15–16. *C. spissa.*

several flowers should be counted to determine the most frequent number. The filaments (and perianth) often persist and can be examined on fruiting specimens.

Ovary and Fruit Surface. Muricate ovaries (roughened by papillae) are typical of *C. ekmanii*. They usually develop into fruits that are dry, tan or pale brown, and papillate to warted. Most other species possess a smooth ovary and a fruit that is fleshy, and purple to blackish purple.

Key to the Cultivated Species of Coccothrinax

1. Transverse veinlets present (sometimes obscured in *C. guantanamensis*; i.e., intermediate between Figs. 8 and 10) [ARGENTEA GROUP]. 2
1. Transverse veinlets absent (or sometimes poorly developed in *C. crinita* and *C. inaguensis* of the Argentata Group). 6
2. Palman less than 20 cm long (sometimes central 2 to 3 segments unsplit for as much as 25 cm); grooves on seed 3 to 6, ± straight, with endosperm lobes not closely compressed but separated by thin to rather wide spaces (at least in upper ⅔) [Figs. 11,12]. 3
2. Palman usually 20 cm or more long (i.e., all segments of central portion unsplit for more than 20 cm); seed grooves 6 or more, straight to flexuous, very narrow, with endosperm lobes closely compressed or overlapping and not separated by any spaces [Figs. 13–16]. 4
3. Leaf segments mostly 30–50 cm long; inflorescence 30–50 cm or less long with 2 to 4 (5) primary branches; stamens 6 to 8 (9), ca. 1 mm long. ..... **2. C. argentea**
3. Leaf segments mostly 50–80 cm long; inflorescence (50) 60–100 cm long with (4) 5 to 8 primary branches; stamen 9 to 15, ca. 2 mm long. ..... **4. C. guantanamensis**
4. Seed grooves much branched, flexuous or contorted giving the seed a brainlike appearance (cerebriform) [Figs. 13,14]; inflorescence with (4) 5 to 10 primary branches; fruiting pedicels usually more than 3 mm long. ..... **3. C. barbadensis**
4. Seed grooves little branched, ± straight, not giving the seed a brainlike appearance [Figs. 15,16]; inflorescence with 3 to 4 (rarely to 6) primary branches; fruiting pedicels usually 0.5–3 mm long. 5
5. Stem 5–15 cm thick, columnar; primary inflorescence branches less than 25 cm long. ..... **1. C. alta**
5. Stem 20–30 cm or more thick, often ventricose; primary inflorescence branches 25–45 cm long. ..... **5. C. spissa**
6. Leaf-sheath layers always 2 with strands fine, the larger ones usually less than 0.5 mm, (occasionally up to 1 mm thick near base of sheath in *C. proctorii* and *C. litoralis*); leaf segments [Fig. 1] usually lax or drooping, becoming flattened beyond the palman, usually lacking shoulder-shaped acuminations [ARGENTATA GROUP]. 7
6. Leaf-sheath layers 2 or 3 with strands rather stout, the larger ones mostly 1–2 mm or more thick (if only 0.5–1 mm thick, then the sheath layers 3); leaf segments [Fig. 1] usually rigidly folded lengthwise from hastula to near tips, usually with prominent shoulder-shaped acuminations [MIRAGUAMA GROUP]. 16
7. Leaf sheath with free strand tips (due to strand elongation) present, the ligule a swatch of hair more than 10 cm long [Crinita Complex]. 8
7. Leaf sheath lacking free strand tips, the ligule an entire or tardily fragmenting flap of woven strands 0–30 cm long [Argentata Complex]. 10
8. Seeds less than 12 mm diam.; leaf segments 40–70 cm long; petioles 10–15 cm long; inflorescence less than 70 cm long; stamens 7 to 9. ..... **7. C. borhidiana**
8. Seeds 12 mm or more in diam.; leaf segments 70 cm or more long; petioles more than 20 cm long; inflorescence 70 cm or more long; stamens 10 or more. 9
9. Ligule equal to or longer than the tubular portion of the sheath; abaxial lamina surface shiny with conspicuous ferrugineous glands. ..... **8a. C. crinita** subsp. **crinita**
9. Ligule shorter than the tubular portion of the sheath; abaxial lamina surface dull ferrugineous-tomentose becoming glabrescent and exposing inconspicuous whitish glands. ..... **8b. C. crinita** subsp. **brevicrinis**
10. Lamina abaxially dull, green or grey-green, indument lacking or, if present, partly deciduous and sparse to patchy on mature leaves (sometimes so in depauperate members of *C. argentata*, see discussion of *C. fragrans*). 11
10. Lamina abaxially lustrous, silvery, metallic light green, golden or bronze, the indument persistent and dense on mature leaves. 12

11. Lamina shallowly saddle-shaped, abaxially with scattered pale mounded dots that are conspicuous under a 10× lens and give the veins a noduled appearance; leaf segments shallowly bifid 1–3 (5) cm at apex; ligule 0–3 cm long, usually subtruncate. **9. C. fragrans**
11. Lamina usually shallowly conic (like an inverted umbrella), abaxially without minute pale mounded dots, such that veins do not appear noduled; leaf segments usually deeply bifid (3.5) 5–11 cm at apex; ligule often attenuate or narrowly triangular, (3) 10–30 cm long. **10. C. inaguensis**
12. Primary inflorescence branches 2 to 6 (rarely more); the longer fruiting pedicels mostly 1–3 mm (occasionally to almost 5 mm in southern Bahamian *C. argentata*). 13
12. Primary inflorescence branches 6 to 9 (mostly 7, but rarely as few as 4); the longer fruiting pedicels (3) 4–7 mm long. 14
13. Leaf segments mostly 30–50 cm long (sometimes up to 70 cm); palman 4–15 (20) cm long; ligule triangular, lobed, or nearly truncate; stem 3–15 cm diam.; inflorescence axes dark yellow in fruit. **6. C. argentata**
13. Leaf segments mostly 70–100 cm long; palman 20–40 cm long; ligule usually irregularly truncate; stem (12) 15–20 cm diam.; inflorescence axes greenish in fruit. **12. C. litoralis**
14. Leaf segments 60–100 cm long; sheath strands wiry, often 0.5–1 mm thick; style plus stigma longer than ovary (before late anthesis). **13. C. proctorii**
14. Leaf segments mostly 40–70 cm long; sheath strands threadlike, usually 0.5 mm or less thick; style plus stigma shorter to almost equalling ovary. 15
15. Adaxial hastula two-toothed at the apex; stem 3–6 (9) cm diam.; number of leaf segments usually fewer than 40. **14. C. readii**
15. Adaxial hastula not two-toothed at the apex; stem 6–20 cm diam.; number of leaf segments usually 40 or more. **11. C. jamaicensis**
16. Leaf sheath with free strand tips lacking or only up to about 1 cm long; sheath-strand layers 2 or 3. 17
16. Leaf sheath with free strand tips well developed, more than 2 cm long, sheath-strand layers only 2. 24
17. Number of leaf segments mostly 40 to 55; longer fruiting pedicels mostly 3–6 mm long (occasionally as little as 2 mm long in *C. miraguama* subsp. *arenicola*) [*C. miraguama*, couplet 18 leads to subspecies]. 18
17. Number of leaf segments 20 to 38; longer fruiting pedicels mostly 0–2 mm long (occasionally up to 4 mm long in *C. cupularis*). 21
18. Strands of the leaf sheath wiry, the larger ones 0.5–1 mm thick, in 3 layers; adaxial hastula ovate-triangular, about 1.5–2.5 cm long. **20b. C. miraguama** subsp. **arenicola**
18. Strands of the leaf sheath woody, the larger ones (1) 1.5–2.5 mm thick, in 2 or 3 layers; adaxial hastula low, rounded or with a central rounded triangular part, usually 1.5 cm or less long. 19
19. Leaf segments mostly 40–50 cm long, with the apical point (distal to shoulder-shaped acumination, Fig. 1) mostly 4–14 cm long; sheath-strand layers 3; fruits maturing rose-purple. **20d. C. miraguama** subsp. **roseocarpa**
19. Leaf segments mostly 60–70 cm long, with the apical points mostly (15) 20–30 cm long; sheath-strand layers 2 or 3; fruits sometimes passing through a rose purple phase but quickly maturing purple-black. 20
20. Leaf-sheath layers 2 (occasionally with a few strands in 3 layers near the base); stamens 8 to 10, with filaments fused together only at very base; fruit usually 7–9 mm diam. **20a. C. miraguama** subsp. **miraguama**
20. Leaf-sheath layers 3; stamens usually 12, with filaments often fused together in lower ⅓ forming a shallow cup; fruit usually 8–12 mm diam. **20c. C. miraguama** subsp. **havanensis**
21. Lamina ½–¾ orbicular; filaments fused together for about ½ their length, forming a cupule around the ovary. **16. C. cupularis**
21. Lamina ¾–⅝ orbicular; filaments fused together only at very base, not forming a cupule around the ovary. 22
22. Number of leaf segments about 32 to 38; leaf-sheath strands in 2 layers; perianth lobes ovate or rounded, each with 3 or more irregular apical teeth. **22. C. scoparia**
22. Number of leaf segments about 20 to 30; leaf-sheath strands in 3 layers; perianth lobes triangular, attenuate, or cuspidate, ± apically entire. 23
23. Leaf-sheath strands about 1–2 mm thick, woody; leaf segments 1–1.8 cm wide; stamens ± 6. **19. C. gracilis**
23. Leaf-sheath strands about 0.5–1 mm thick, wiry; leaf segments 2–4 cm wide; stamens ± 9. **23. C. yuraguana**
24. Number of leaf segments 35 to 50; leaf sheath with the free strand tips 4–9 mm wide. **21. C. salvatoris**
24. Number of leaf segments 20 to 32; leaf sheath with the free strand tips 1–3 mm wide. 25

25. Ovary muricate, fruit dry and corky; lamina about ½ orbicular. ..... **17. C. ekmanii**
25. Ovary smooth, fruit fleshy; lamina ± orbicular. 26
26. Leaf sheath with free strand tips 2–3 cm long; leaf segments 30–60 cm long; primary inflorescence branches 4 to 7. ..... **15. C. clarensis**
26. Leaf sheath with free strand tips 4–7 cm long; leaf segments 20–25 cm long; primary inflorescence branches 2 to 4. ..... **18. C. garciana**

Species Notes

Argentea Group

This group contains a single complex of closely related species, distributed from Cuba to Trinidad. The group is characterized by robust, often tall (to 15 m or more) plants, by tightly woven leaf sheaths of relatively fine strands without free strand tips at the margin, by gradually tapering leaf segments (except in some plants, especially those of *C. argentea*, which have shoulder-shaped acuminations), by transverse veinlets, and by somewhat tubular inflorescence bracts. This suite of characters appears to be rather primitive, having changed little from the condition in the related genus, *Thrinax*. Together, the Argentea and Argentata Groups correspond roughly to *Coccothrinax* section *Coccothrinax* of Muñiz and Borhidi (1982*b*).

1. Coccothrinax alta (*O. F. Cook*) *Becc.*, Webbia 2: 331. 1907.

SYNONYMS: *Coccothrinax laxa* (O. F. Cook) Becc., Webbia 2: 333. 1907. *Coccothrinax latifrons* (O. F. Cook) Becc., Webbia 2: 326. 1907. *Coccothrinax eggersiana* Becc., Webbia 2: 321. 1907. *Coccothrinax sanctithomae* Becc., Webbia 2: 303. 1907. *Coccothrinax discreta* L. H. Bailey, Gentes Herb. 8: 104, f. 11c, 15–17. 1949.

PALMA DE ABANICO, TYRE PALM OR TEYER TREE, YARAY, *PUERTO RICAN SILVER THATCH.*

Puerto Rico and the Virgin Islands, frequent in low hills and slopes of calcareous areas.

Coccothrinax alta appears to be closely related to *C. barbadensis*, differing from the latter primarily in smaller inflorescences, shorter pedicels, and non-cerebriform seeds.

2. Coccothrinax argentea (*Lodd. ex J. A. & J. H. Schultes*) *Sarg. ex Becc.*, Webbia 2: 317. 1907. (Figs. 11,12,17).

GUANO, PALME COYAU, *HISPANIOLAN SILVER THATCH.*

Hispaniola, common in dry rocky areas.

Bailey (1949) distinguished the species by seed grooves that are nearly straight from the apex to the base without anastomosing or curving connections, usually 5 or 6, wide and extending directly into the endosperm. Apparently this also characterizes the closely related Cuban species, *C. guantanamensis*.

Specimens with palmans ca. 20 cm may be hard to separate from *C. alta* but may be distinguished from the latter by ca. 30–50 cm long, 1–3.5 cm wide, rigid segments vs. 40–80 cm long, mostly 2.5–5 cm wide, lax segments; 6 to 8 (9) vs. 9 to 12 stamens; and short (less than 1 mm long), ovate-oblong, ± straight anthers vs. longer (1.3–2 mm long), linear-oblong, twisted or contorted anthers.

3. Coccothrinax barbadensis (*Lodd. ex Mart.*) *Becc.*, Webbia 2: 328. 1907. (Figs. 8,13,14,18).

SYNONYMS: *Coccothrinax martinicensis* Becc., Webbia 2: 324. 1907. *Coccothrinax australis* L. H. Bailey, Gentes Herb. 7: 365, f. 149–152. 1947. *Coccothrinax dussiana* L. H. Bailey, Gentes Herb. 8: 109, f. 11b, 20–21. 1949. *Coccothrinax sabana* L. H. Bailey, Gentes Herb. 8: 110, f. 4, 22–23. 1949. *Coccothrinax boxii* L. H. Bailey, Gentes Herb. 8: 113, f. 24–25. 1949.

17–20. Argentea and Argentata Groups. 17. *C. argentea*; inset, closeup of stem and persistent leaf sheaths. 18. *C. barbadensis*, several adults and juveniles. 19. *C. spissa*. 20. *C. argentata*, note saddle-shaped leaves.

LATANIER, LATANIER A'BALAI, THATCH PALM, *LESSER ANTILLES SILVER THATCH.*

Lesser Antilles to southern Trinidad, on dry calcareous hills, littoral woodland and scrub woodland near coast from sea level to 200 m (Read 1979).

It is easily recognized by its transverse veinlets and cerebriform seeds.

4. Coccothrinax guantanamensis (*León*) *Muñiz & Borhidi*, Acta Bot. Acad. Sci. Hung. 27: 449. (1981). 1982.

SYNONYM: *Coccothrinax argentea* var. *guantanamensis* León, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 134. 1939.

GUANTANAMO SILVER THATCH.

Cuba: Guantánamo.

The species is related to *C. argentea*, but is more robust with a larger palman, broader and laxer segments, and larger inflorescences.

5. Coccothrinax spissa *L. H. Bailey*, Gentes Herb. 4: 253, f. 160. 1939. (Figs. 15,16,19).

GUANO, *SWOLLEN SILVER THATCH.*

Dominican Republic: Peravia and Santiago, in open dry areas or edges of deciduous broadleaf forests.

Together with *C. alta* and *C. barbadensis*, it forms a closely knit group. Like *C. alta*, it has more compact, fewer-branched inflorescences than *C. barbadensis*. In addition to the key characters, it differs from *C. alta* in having generally larger fruits (9–12 mm vs. 7–10 mm), larger seeds (7–8 mm vs. mostly 5–6 mm), stouter rachillae (ca. 2 mm at midlength vs. ca. 1 mm), and leaf sheaths with densely woven or solid margins and a loosely woven center vs. tightly woven, uniform, and burlaplike. However, some collections from northern Dominican Republic have characters in the range of *C. alta*.

Bailey (1939) reported 6 stamens for the species, but our material, including that from the type locality, has mostly 8 to 12 stamens.

Argentata Group

The Argentata Complex, occurring in the northwestern Caribbean, appears to be a natural assemblage. It is characterized by a mixture of primitive and advanced traits: thin-stranded, two-layered sheaths; blades with usually silvery abaxial indument, lacking transverse veinlets but with additional longitudinal veins, and with various curvatures (e.g., inverted conic, saddle-shaped, etc.) characteristic for different species; usually gradually tapered segments (except some leaves of some plants may have shoulder-shaped acuminations); and ± tubular inflorescence bracts.

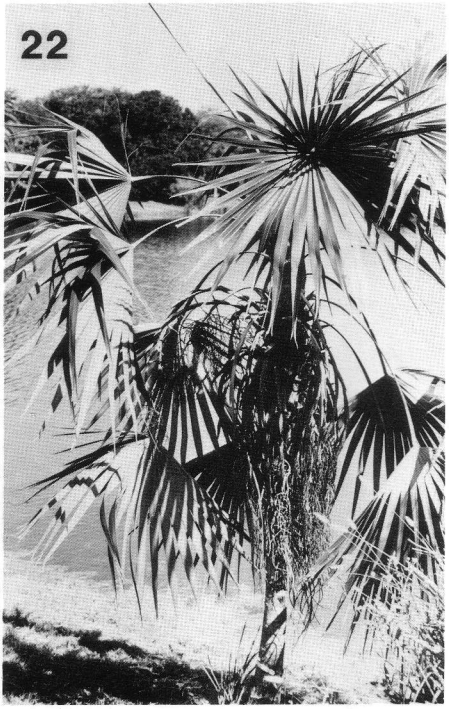
The Argentata Group contains two recognizable species complexes, the Argentata Complex and the Crinita Complex. The groundplan of the Crinita Complex is simply modified from that of the Argentata Complex in having extended sheath strands in the adult plants (Figs. 7,21) and in having much elongated inflorescences. However, the homology of the sheaths is clear because very young juveniles from the two complexes are nearly indistinguishable. Additionally, the presence of weak transverse veinlets in juveniles (poorly developed to absent in adults; Fig. 10) of the Crinita Complex suggests a possible transitional relationship to the Argentea Group.

6. Coccothrinax argentata (*Jacq.*) *L. H. Bailey*, Gentes Herb. 4: 223, f. 140–143. 1939. (Figs. 6,9,20).

SYNONYMS: *Coccothrinax garberi* (Chapm.) Sarg., Bot. Gaz. (Crawfordsville) 27: 90. 1899. *Coccothrinax jucunda* Sarg., Bot. Gaz. (Crawfordsville) 27: 89. 1899.

SILVER PALM, SILVER THATCH PALM, SILVERTOP, *FLORIDA SILVER PALM.*

U.S.A.: Florida, along the southeastern coast and Keys; Bahamas. The species



21–24. Argentata Group. 21. *C. crinita* subsp. *crinita*. 22. *C. inaguensis*, note shallowly conical leaves. 23–24. *C. proctorii*. 23. Habit; note sadddle-shaped leaves. 24. Fruiting inflorescence and stem with leaf sheaths of young mature plant. Note wiry sheath strands and long pedicels.

generally occurs on limestone thinly covered with sandy soil, in relatively open to partially closed habitats of tropical hammock, coppice, or pinelands. It also occurs on dunes and forest ecotones and is relatively tolerant of salt spray.

Where this species and *C. inaguensis* grow together (e.g., San Salvador Island) intermediates often occur.

Most specimens at FTG have fruiting pedicels 1–2 mm long, but a few from the Bahamas have pedicels reaching 5 mm. This species is similar to *C. proctorii* in having the style plus stigma longer than the ovary.

7. Coccothrinax borhidiana *Muñiz in Borhidi et al.*, Acta Agron. Acad. Sci. Hung. 27: 437. 1978.
DWARF OLD MAN PALM.
Cuba: Matanzas.

This species is closely related to *C. crinita*, but it is a smaller plant in many gross morphological features.

8. Coccothrinax crinita (*Griseb. & H. A. Wendl. ex Wright in Sauvalle*) *Becc.*, Webbia 2: 334. 1907.
PALMA PETATE, OLD MAN PALM.

This is perhaps the most distinctive species in the genus. *Coccothrinax crinita* (as well as *C. borhidiana*) is characterized by elongate free strand tips of the leaf sheath.

8a. Coccothrinax crinita subsp. **crinita** (Fig. 7,10,21).

Cuba: Pinar del Río and Sancti-Spíritus, on serpentine soils in low seasonally flooded prairies.

The strand tips are often 20 to 50 cm long, flexuous, and persistent, forming a thick hairlike covering over the stem.

8b. Coccothrinax crinita subsp. **brevicrinis** *Borhidi & Muñiz in Muñiz & Borhidi*, Acta Bot. Acad. Sci. Hung. 27: 448. (1981). 1982.
SHORT-HAIRED OLD MAN PALM.

Cuba: Cienfuegos, serpentine soils, at middle altitudes in open montane areas.

9. Coccothrinax fragrans *Burret*, Kongl. Svenska. Vetenskapsakad. Handl. 6: 15. 1929.
YURAGUANO, *FRAGRANT CUBAN THATCH.*
Cuba: Santiago de Cuba.

In having longer fruiting pedicels 4–7 mm long, *C. fragrans* should not be confused with the occasional depauperate plants of *C. argentata* that have abaxially dull laminas.

10. Coccothrinax inaguensis *R. W. Read*, Principes 10: 30, f. 1–6. 1966. (Fig. 22).
BAHAMIAN THATCH.

Bahamas: Caicos, Great Inagua and San Salvador Islands, in thickets on limestone or sand dunes near the coast.

In addition to the key characters, *C. inaguensis* can be distinguished from *C. argentata* by the following: 1) dull light green vs. dark green adaxial leaf surface, 2) stem diameter of 6–8 cm vs. ca. 13 cm, 3) 39 to 47 segments vs. 15 to 44, 4) fruiting pedicels 3–6 mm vs. 1–3 mm, 5) 8 to 10 stamens vs. 11 to 12, 6) longer anthers (2.5–4 mm vs. 1.5–2 mm) with retuse instead of bifid apices, and 7) fruits 12–13 mm diam. vs. 10–12 mm (Read 1966*a*).

11. Coccothrinax jamaicensis *R. W. Read*, Principes 10: 133, f. 1–10. 1966.
SILVER THATCH, *JAMAICAN SILVER PALM.*

Jamaica, widely distributed along coastal regions from sea level to 1,500 feet on a variety of substrates. Not generally found far inland nor in areas of heavy rainfall and good soil. Generally found on steep mountain slopes and cliffs of limestone or deeply eroded "dog tooth" limestone and sand near the beach. Plants in more exposed situations show a less pronounced silveriness on the abaxial leaf surfaces, and are generally taller with thinner stems (Read 1966*b*).

12. Coccothrinax litoralis *León*, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 138, t. 16(2), 19(1). 1939.

YURAGUANA DE COSTA, MIRAGUANO, *CUBAN SILVER PALM.*

Cuba, along the northern coast and offshore islands, sandy littoral scrub.

This species is most closely related to *C. argentata*, from which it can be separated by its truncate, nearly absent ligule, larger more numerous (40 to 45 vs. 15 to 44) leaf segments, wider stem, more distant inflorescence branches, and an occasional yellowish, golden, or bronze leaf undersurface. *Coccothrinax litoralis* may eventually prove to be simply a robust Cuban form of *C. argentata.*

Having fruiting pedicels mostly about 2 mm long, it should not be confused with *C. jamaicensis* and *C. proctorii*, which have pedicels mostly longer than 3 mm.

13. Coccothrinax proctorii *R. W. Read*, Phytologia 46: 285. 1980. (Figs. 23,24).

THATCH PALM, *PROCTOR'S SILVER PALM.*

Cayman Islands, on limestone in fields, woodlands, thickets and dry ground.

This species is most closely related to *C. jamaicensis* and *C. readii.* It can be distinguished from them by the key characters, frequently larger blades, and lamina anatomy (Read 1980, 1988). It is intermediate between *C. jamaicensis* and *C. readii* in usually having one or more leaves per plant with two-toothed hastulas.

14. Coccothrinax readii *Quero*, Principes 24: 118, f. 1–11. 1980. (Fig. 1).

KNACÁS, *READ'S SILVER PALM.*

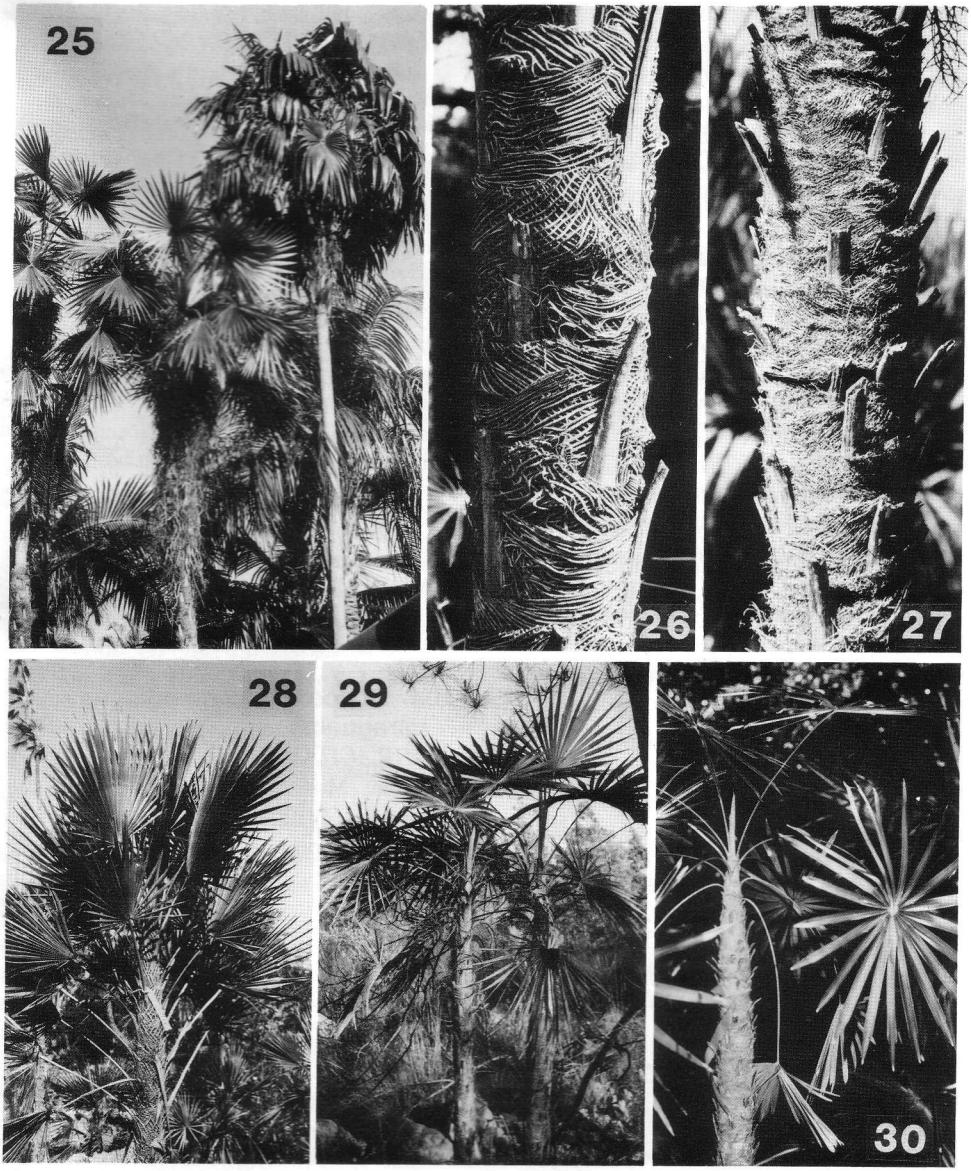
México: Quintana Roo and Yucatán, locally abundant in coastal seasonal tropical forest or sandy dunes.

Plants were described by Quero (1980) as small solitary palms, 1–4 m tall, with brownish or grayish, 3–8.5 cm wide stems. It appears to be most closely related to *C. jamaicensis* and *C. proctorii.* Read (in Quero 1980) noted that lamina anatomy is distinct.

Miraguama (or Pauciramosa) Group

The Miraguama Group is restricted to Cuba and adjacent Hispaniola, but contains a majority of the species in the genus. It is heterogeneous and may comprise two or three species complexes. However, because only a small portion of its species are widely cultivated, it is not divided further here. It is characterized by advanced characters: usually slender trunks; usually small, rigidly plicate (pleated), pinwheel-shaped leaves; segments with pronounced shoulder-shaped acuminations; absence of transverse veinlets; abaxial lamina surface with less silvery, less persistent indument; and coarse, persistent sheaths. Several additional advanced features are variously combined in different species: leaf sheaths with three strand layers (usually diagnostic for a species but variable in *C. miraguama*), strands loosely woven, strands thickened and woody, free strand tips present and stoutly spine-like, inflorescences ascending, inflorescences with dilated and flattened bracts, ovaries muricate, and fruits dry and corky. The Miraguama Group corresponds roughly to *Coccothrinax* section *Longispadiceae* of Muñiz and Borhidi (1982*b*) in which they place most species in subsection *Pauciramosae.*

The major common names for this group are the Spanish *guano*, *miraguano*, and *yuraguana* (or variant spellings of these) and are used interchangeably in Cuba for all stiff-leaved thatches. We propose here MIRAGUAMA and YURAGUANA as general English names within the group. These are taken directly from the Latin epithets of two well-known species, whose scientific names are based on the Spanish names. We feel that these Latin names are more familiar to American enthusiasts and English speakers than are the various local Spanish ones. Moreover, the characteristics signified by these names can be



25–30. Miraguama Group. 25–27. *C. miraguama*. 25. Two plants of subsp. *roseocarpa*, left, and one of subsp. *havanensis*, right. 26. Subsp. *roseocarpa*, stem with persistent leaf sheaths. 27. Subsp. *arenicola*, stem with persistent leaf sheaths. 28. *C. ekmanii*. 29. *C. scoparia*, in native habitat. 30. *C. yuraguana*.

associated with those two species. "Miraguama" is used here for the species with heavier leaves and generally more numerous or closely set, less deeply divided segments. "Yuraguana" is used for those with lighter, more open leaves and generally less numerous or more widely spaced, more deeply divided segments.

15. Coccothrinax clarensis *León*, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 147, t. 17(4), 18(3). 1939.
YURAGUANA, *SHORT-SPINED YURAGUANA.*
Cuba: Santa Clara to Camagüey, in arid serpentine soils.

16. Coccothrinax cupularis (*León*) *Muñiz & Borhidi*, Acta Bot. Acad. Sci. Hung. 27: 449. (1981) 1982.
SYNONYM: *Coccothrinax miraguama* var. *cupularis* León, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 117, f. 5. 1939.
CRESCENT-LEAVED MIRAGUAMA.
Cuba: Southeastern Mantanzas and southwestern Cienfuego, on calcareous rocks of coastal mountains. *Coccothrinax cupularis* is most closely related to *C. miraguama.* It can easily be distinguished by the fewer segments, half orbicular laminas, generally shorter fruiting pedicels, and strongly connate filaments. Also see notes under subspecies of *C. miraguama.*

17. Coccothrinax ekmanii *Burret*, Kongl. Svenska. Vetenskapsakad. Handl. 6: 11, t. 4. 1929. (Figs. 5,28).
SYNONYM: *Haitella ekmanii* (Burret) L. H. Bailey, Contr. Gray Herb. 165: 7. 1947.
GOUANE, GUANITO, *HAITIELLA PALM.*
Haiti and southwestern Dominican Republic, near sea level, on exposed dog-tooth limestone near the coast.

The muricate ovaries and fruits, as well as other features of the fruit wall prompted Bailey (1947*a*) to erect a new genus, *Haitiella*, for this species. The distinctness of the fruit wall needs detailed study, but in all other respects no additional differences could be found to justify recognition of the genus *Haitiella.*

18. Coccothrinax garciana León, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 143, t. 17(2), 20(1). 1939.
LONG-SPINED YURAGUANA.
Cuba: Holguín, in arid siliceous areas.

19. Coccothrinax gracilis *Burret*, Kongl. Svenska. Vetenskapsakad. Handl. 6: 14. 1929.
LATANIER, GUANITO, *SLENDER-LEAVED YURAGUANA.*
Haiti, in calcareous areas.

20. Coccothrinax miraguama (*Kunth*) *León*, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 113. 1939. (Figs. 1,2,3,25–27).
SYNONYM: *Coccothrinax acuminata* (Griseb. & H. A. Wendl. in Griseb.) Becc., Webbia 2: 313. 1907. (*non C. miraguano* Becc. = *C. yuraguana*).
MIRAGUANO, YURAGUANA, YURAGUANCILLO, GUANITO, *MIRAGUAMA.*

20a. Coccothrinax miraguama subsp. **miraguama**.
MIRAGUAMA.
Cuba: Most widely distributed of the subspecies, from Matanzas to Santiago de Cuba, in savannas and serpentine rocky hills.

This subspecies is unique within *C. miraguama* in having only two strand layers of the leaf sheath (occasionally three layered near base of sheath). It is similar to subsp. *havanensis* and subsp. *roseocarpa* in having thickened, woody sheath strands.

20b. Coccothrinax miraguama subsp. **arenicola** (*León*) *Borhidi & Muñiz*, Bot. Közlem. 58(3): 175. 1971. (Fig. 27).
SYNONYM: *Coccothrinax miraguama* var. *arenicola* León, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 115, f. 2. 1939.
WIRY MIRAGUAMA.
Cuba: Pinar del Río and Isla de Pinos, sandy savannas.

This subspecies is unique in having thin,

wiry sheath strands. It is similar to subsp. *miraguama* and subsp. *havanensis* in having mostly 42 to 55 segments, the leaf segments 50–70 cm long, the palman 20–25 cm long, and purplish black fruits. It is similar to subsp. *miraguama* in having the fruit 7–9 mm diam. It is more variable than the other subspecies in the length of the fruiting pedicel (2–4 mm long) and in the length of the apical point beyond the acumination of the leaf segment (12–35 cm long). Although it overlaps with *C. cupularis* in pedicel length, it is easily distinguished by the thin, wiry sheath strands, more numerous leaf segments, orbicular laminas, and nearly free stamen filaments.

20c. Coccothrinax miraguama subsp. **havanensis** (*León*) *Borhidi & Muñiz*, Bot. Közlem. 58(3): 175. 1971. (Fig. 25).

SYNONYM: *Coccothrinax miraguama* var. *havanensis León*, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 116, f. 3. 1939.

HAVANAN MIRAGUAMA.

Cuba: Havana, calcareous coastal soils and serpentine rocky hills.

This is unique among the subspecies in having about 12 stamens vs. 6 to 10, in having the stamen filaments often fused about ⅓ their length into a shallow cupule, and in having larger fruits that are 8–12 mm diam. vs. 7–9 mm. It is similar to subsp. *miraguama* and subsp. *arenicola* in having about 42 to 55 leaf segments, the segments mostly 50–70 cm long with apical points 20–30 cm long, the palman 20–25 cm long, and purple-black fruits. It is similar to subsp. *roseocarpa* in having thickened, woody sheath strands in three layers. It is clearly distinguished from *C. cupularis* by the longer pedicels, more numerous segments, and orbicular laminas.

20d. Coccothrinax miraguama subsp. **roseocarpa** (*León*) *Borhidi & Muñiz*, Bot. Közlem. 58(3): 175. 1971. (Figs. 2,3,25,26).

SYNONYM: *Coccothrinax miraguama* var. *roseocarpa* León, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 117, f. 4. 1939.

ROSE-FRUITED MIRAGUAMA.

Cuba: Matanzas, siliceous hills.

This is unique among the subspecies in having fewer leaf segments (usually 40 to 42 vs. 42 to 55), shorter segments with shorter apical points, smaller palmans (10–18 cm long), and rose-purple fruits. It is similar to subsp. *miraguama* and subsp. *havanensis* in having thick, woody sheath strands and consistently longer fruiting pedicels. It is similar to subsp. *miraguama* in having 8 to 10 nearly free stamens, and to subsp. *havanensis* in having three layers of sheath strands.

21. Coccothrinax salvatoris *León*, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 125, t. 12(6), 15(1). 1939.

YURAGUANA, *THICK-SPINED MIRAGUAMA.*

Cuba: Western Camagüey to Oriente, mostly on calcareous soils.

22. Coccothrinax scoparia *Becc.*, Feddes Repert. Spec. Nov. Regni Veg. 6: 95. 1908. (Figs. 4,29)

LATANIER BALAI, *HISPANIOLAN YURAGUANA.*

Haiti and southwestern Dominican Republic, in dry open pine forests on limestone above 1,000 m elevation.

23. Coccothrinax yuraguana (*A. Rich.*) *León*, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 13: 119, t. 11(2(6–9)), 12(2). 1939. (Fig. 30).

SYNONYM: *Coccothrinax miraguano* Becc., Webbia 2: 295. 1907.

MIRAGUANO DE LOMA, YURAGUANO, GUANICHICHE, *WIRY YURAGUANA.*

Cuba: Pinar del Río and Isla de Pinos, serpentine foothills.

This species is most likely to be confused with *C. miraguama* subsp. *arenicola* because both have thin, wiry sheath strands

in three layers. However, this species has distinctly fewer leaf segments, a very short palman, and fruiting pedicels only 1–2 mm long.

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Appendix I. Specimens collected in the wild or grown from wild-collected seeds. The FTG number is the Garden's accession number of the living plants. The collection number in italics designates the herbarium specimen housed at the FTG herbarium.

C. argentata: FTG 57-727, *Nauman 1904*; FTG 70-7, *Nauman 1909*; *Sanders 1666*; *Sanders 1826*; *Sanders 1827*; numerous other wild-collected herbarium specimens from Florida and the Bahamas. *C. argentea*: FTG 4639, *Fantz 3878*, *Kutz 16*; FTG 4646, *Hammer 31*, *Kutz 15*; FTG 4648, *Hammer 30*, *Kutz 8*; FTG 58-474, *Hubbuch s.n.*; FTG 84-255; *Mejía & Zanoni 6797*; *Sanders 1670*; *Sanders 1699*; *Sanders 1704. C. barbadensis*: *Sanders 1755. C. ekmanii*: FTG 83-202, 84-306, *Sanders 1685. C. gracilis*: FTG 84-396. *C. guantanamensis*: FTG 58-420, *Nauman 1903. C. inaguensis*: FTG 64-284, *Nauman 1750*, *1790*; FTG 64-777, *Nauman 1789*, *1907*; FTG 65-3, *Nauman 1788*; numerous wild-collected herbarium specimens from the Bahamas. *C. jamaicensis*: *Evans 173*; *Read & Proctor 1152. C. proctorii*: FTG 62-20, *Nauman 1794*, *1795. C. readii*: FTG 59-514, *Coons 1466*; FTG 59-1031, *Coons 1432*, *Nauman 1748*; FTG 84-385, *Sanders 1721*; FTG 84-386, *Sanders 1726. C. scoparia*: FTG 58-839, *Nauman 1913*; *Sanders 1684. C. spissa*: FTG 4627, *Nauman 1900*; *Mejía & Zanoni 13287*; *Sanders 1673*; *Sanders 1688*; *Sanders 1789*; *Sanders 1700.*

Appendix II. Critically determined material sent as seed to FTG by Brother León, Dr. R. W. Read, or the National Botanical Garden of Cuba (HAJB).

C. borhidiana: (HAJB) FTG 85-195, 86-370, 87-519. *C. clarensis*: (HAJB) FTG 85-196, 87-520. *C. crinita* subsp. *brevicrinis*: (HAJB) FTG 87-225. *C. cupularis*: (HAJB) FTG 85-198, 87-226. *C. fragrans*: (León) FTG RM-1291, *Houghton 1008. C. litoralis*: (HAJB) FTG 85-197. *C. miraguama* subsp. *havanensis*: (León coll. no. 16155) FTG 62-31, *Nauman 1902*; (León coll. no. 16869) FTG RM-1692; (Read) FTG 80-538; (HAJB) FTG 82-409, 85-299. *C. miraguama* subsp. *miraguama*: (HAJB) FTG 85-322. *C. miraguama* subsp. *roseocarpa*: (HAJB) FTG 82-408, 85-199. *C. readii*: (Read coll. no. 81-PS-3) FTG 81-103. *C. salvatoris*: (HAJB) FTG 85-200. *C. yuruguana*: (HAJB) FTG 85-201, 86-371.

Appendix III. FTG specimens or photographs of specimens cited in the original descriptions of the species or its synonyms. Specimens marked with * are photographs of specimens at US, sent as a gift by US.

C. acunana León: *León 16749**. *C. alexandri* León: *León 15822**, *16191**. *C. alta*: *Eggers 3117* (Field Mus. Neg. 21122). *C. argentata*: *Curtiss 2679**. *C. bermudezii* León: *León 16290**. *C. clarensis*: *León 16080**. *C. concolor* Burret: *Ekman 5958**. *C. crinita*: *Wright 3967**. *C. ekmanii*: *Ekman 6991**. *C. garciana*: *León 15476**. *C. guantanamensis*: *León 16100**. *C. gundlachii* León: *Roig et al. 6725**. *C. hioramii* León: *León 16099**. *C. inaguensis*: *Read 1377* (Isotype). *C. jamaicensis*: *Read*

1563 (Isotype). *C. miraguama* subsp. *havanensis*: *León 16834**. *C. miraguama* subsp. *miraguama*: *Wright 3966**. *C. miraguama* subsp. *roseocarpa*: *León 16958**. *C. muricata* León: *León 15892**, *15910**. *C. orientalis* (León) Muñiz & Borhidi: *Schafer 3217**. *C. proctorii*: cited as plant cultivated at USDA Subtropical Introduction Station, USDA PI 102600 (D. Fairchild coll. no. 3108, Allison Armour Expedition, Georgetown, Grand Cayman), at FTG from same USDA PI no., but accessioned as FTG 59-627, *Nauman 1792*. *C. pseudorigida* León: *León 15779**. *C. salvatoris*: *León 16489**. *C. saxicola* León: *León 18618**.

Notice From The Seed Bank

For the past several years, the Seed Bank has been sending out seed called *Phloga* sp. from what has been called the Robinson garden (formerly belonging to Jane Robinson, IPS member now living in California) at Aiea Point (adjacent to Hilo) on Hawaii Island.

We have been informed that this seed is from a palm properly identified as *Dypsis pinnatifrons*. This palm is very similar to *Phloga* and thrives under similar growing conditions. For a general idea of the appearance of the fronds, please see Figure 82, Page 74 of *Supplement to Palms of the World* by Arthur Langlois. (*Dypsis gracilis*).

The Seed Bank is offering this seed to you in place of *Phloga* sp., due to its availability, its similarity, and the general unavailability of *Phloga* seed from Madagascar.

Should you decide you do not want this seed, please write to me at the below address, telling me if: you want a $3.00 refund; you wish an alternate seed on the Seed List (and give me the name of the seed you want); or possibly another alternative. Do not return the seed sent with this note; it would be too old for us to send to another member due to the lag time.

Should you have good germination results, we believe this palm will give you much pleasure.

For those of you who wish to wait for *Phloga*, we cannot say how many months or years this might be. It would probably involve a seed collection expedition to Madagascar.

ROBERT EGGE
65 Halaulani Place
Hilo, HI 96720

NEWS OF THE SOCIETY

South Florida Trip to Key West

The South Florida Chapter of the IPS organized a January Field Trip to Key West on Saturday, January 19, 1991, departing fgrom Matheson Hammock at 9:00 am (sharp) with return early Sunday evening. Round trip sightseeing bus transportation to Sugarloaf Key and Key West was to include a tour of Baxter Gentry's "Punta RoqueÊa" on the Atlantic Ocean side of Sugarloaf Key with catered lunch, a tour of Peter Whelen's marvelous Key West garden, featuring *Copernicia* and *Corypha* species, dinner and program at LaConcha Holiday Inn, Key West with evening free after 9:00 pm. Group planned to overnight at LaConcha then have the morning free after American-style breakfast buffet. Lunch was to be BBQ poolside with scheduled departure for Miami around 2:00 pm, Sunday.