A Field Key to the Palms of Belize

Last modified January 2007

Modified from Brewer, S.W. 1999. The Palms of Belize: Species Richness and a Key Based on Vegetative Characters. *Palms* (formerly *Principes* 43(3): 109–113)

NB: This key has not been revised to reflect the revision of *Geonoma*, though the species list below has been modified.

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Comments, caveats, and an invitation for suggested improvements: The following key is part of an on-going project to create a field guide to the woody plants of Belize. The present key is a modification of Brewer (1999); it includes a nested-hierarchical format, species additions, and some changes to the character information based on recent field experience. Recommended companion literature includes Henderson *et al.*'s (1995) *Field Guide to the Palms of the Americas* and Hodel's (1992) work on *Chamaedorea*. The latter includes many outstanding photographs of species in their natural environment, and is a valuable aid to identification of this diverse and often-difficult genus.

As keys are human constructs, they are not fool-proof tools for field identification. Please send comments on better characters for separating taxa, information regarding new species to Belize, or any other suggestions for improving this key to brewersw@gmail.com

Please remember when visiting Belize that permission to collect herbarium specimens, or other plant material is required via a research/collection permit from the Belize Forest Department (Conservation Division, Forestry Drive, Belmopan Belize).

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References:

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Henderson, A.H., G. Galeano, R. Bernal. 1995. *Field guide to the palms of the Americas*. Princeton University Press, Princeton, N.J.

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Palm Species of Belize

24 genera, 40 species total

Nomenclature follows Henderson *et al.* (1995) except where noted

Acoelorraphe wrightii (Griseb. & H. Wendl.) H. Wendl. ex Becc.
Acrocomia aculeata (Jacq.) Lodd. ex Mart.
Asterogyne martiana (H. Wendl.) H. Wendl. ex Hemsl.
Astrocaryum mexicanum Liebm. ex Mart.
Attalea cohune Mart.
Bactris major Jacq. var. major
Bactris mexicana Mart.
Calyptrogyne ghiesbreghtiana (Linden & H. Wendl.) H. Wendl.
Chamaedorea adscendens (Dammer) Burret
Chamaedorea arenbergiana H. Wendl.
Chamaedorea costaricana Oerst.
Chamaedorea elegans Mart.
Chamaedorea ernesti-augustii H. Wendl.
Chamaedorea geonomiformis H. Wendl.
Chamaedorea schippii Burret **(pop.s in Belize are not *C. graminifolia* H. Wendl acc. to D. Hodel)**
Chamaedorea oblongata Mart.
Chamaedorea pinnatifrons (Jacq.) Oerst. >> **specimens from Belize are *Chamaedorea neurochlamys***
Chamaedorea seifrizii Burret
Chamaedorea tepejilote Liebm.
Cocos nucifera L.
Coccothrinax argentata (Jacq.) L. H. Bailey (reported by Bijleveld, 1998)
Colpothrinax cookii Read
Cryosophila stauracantha (Heynhold) R. Evans
Desmoncus orthacanthos Mart.
Euterpe precatoria Mart. var. *longevaginata* (Mart.) Henderson
Gaussia maya (O. F. Cook) Quero & Read
Geonoma deversa (Poit.) Kunth
Geonoma interrupta subsp. *magnifica* (Linden & Wendland) Henderson
Geonoma pinnatifrons subsp. *mexicana* (Liebman ex Martius) Henderson
Manicaria saccifera Gaertn.
Pseudophoenix sargentii H. Wendl. subsp. *sargentii*
Reinhardtia gracilis (H. Wendl.) Drude ex Dammer var. *gracilior* (Burret) H. E. Moore
Reinhardtia gracilis (H. Wendl.) Drude ex Dammer var. *gracilis*
Reinhardtia latisecta (H. Wendl.) Burret
Roystonea regia (Kunth) O. F. Cook
Sabal mauritiiformis (H. Karst.) Griseb. ex H. Wendl.
Sabal mexicana Mart.
Sabal yapa C. Wright ex Becc.
Schippia concolor Burret
Synechanthus fibrosus (H. Wendl.) H. Wendl.
Thrinax radiata Lodd. ex Schult. & Schult. f.

Names Excluded

Brahea dulcis (Kunth) Mart. >> **photo mis-referenced in Genera Palmarum (1st edition) as taken in Belize**

Geonoma undata Klotzsch >> **missapplied**

Chamaedorea woodsoniana L. H. Bailey> >> **missapplied to *Gaussia maya***

Commonly Cultivated Species (*not included in key*; this list is very incomplete)

Bactris gasipaes Kunth (unconfirmed, reportedly cultivated)
Dypsis lutescens (H. Wendl.) Beentje & J. Dransf.
Elaeis guineensis Jacq.
Pseudophoenix sp.
Veitchia merrillii (Becc.) H. E. Moore

A Field Key to the Palms of Belize

Leaves palmately compound (or costa-palmate, or palmately veined) **Group I**

Leaves simple or pinnately compound

Stems and/or petioles armed with spines or thorns **Group II**

Plants unarmed

Stems stout, often dark to light gray, potentially taller than 5 m **Group III**

Stems slender, canelike, usually green or brown, rarely taller than 5 m **Group IV**

GROUP I: Leaves palmately compound (or costa-palmate, or palmately veined)

1a. Stem armed with slender, often branched, spines. ….....…..……..... *Cryosophila stauracantha*
1b. Stem unarmed.
2a. Petioles armed with thorns or spines.
3a. Stems clumped in groups of 2–15+, covered with persistent leaf bases; in savannas and pine forests, of low elevation in wet soils; leaves bright green above. ...……..... *Acoelorraphe wrightii*
3b. Stems solitary (rarely clumped), only apically covered with persistent leaf bases; on hill sides; leaves dull green (to glaucous) above. ...……..... *Brahea dulcis*
2b. Petioles unarmed.
4a. Leaves with a *long* rachis (costa) on which the segments attach (costa nearly = length of blade); leaf sheaths conspicuously split lengthwise; ripe fruits black.
5a. Leaf segments joined for almost their entire length in pairs to 3's, with pendulous tips and an "untidy appearance". Stems <25 cm, often <20 cm diameter.
6a. Widespread south of Corozal; Leaf segments joined for almost their entire length in groups of 2–3, the groups joined for about one-third their length; stems swollen at the base; inflorescence branched to 4 orders. ……..... *Sabal mauritiiformis*
6b. Northern Belize (Corozal district) ; Leaf segments joined for one-half their length in groups of 2 (rarely 3), the groups joined for about one-sixth their length; stems not swollen at the base; inflorescence branched to 3 orders. ……..... *Sabal yapa*
5b. Leaf segments regularly joined, tips stiff and erect. Stem to 35 cm, often >25 cm. (Cayo District)……. *Sabal mexicana*
4b. Leaf blades with a short costa or costa absent; leaf sheath split or not at the base;

ripe fruits black or not.

7a. Leaf sheath and petiole conspicuously split lengthwise; leaflets usually > 50; stems ≤ 15 cm diameter; ripe fruits white, <1 cm diameter. …….. *Thrinax radiata*

7b. Leaf sheath and petiole not (or merely inconspicuously) split lengthwise; leaflets, stems, fruits as above or not

8a. Upland forest palms (usually in hills or mountains) with leaves with a short costa, whitish beneath; stems 20–35 cm diameter; inflorescences branched to four orders; ripe fruits brown or black, to 2 cm. …..... *Colpothrinax cookii*

8b. Savanna, woodland/open forest palms of low-lying areas; leaves gray or not beneath in *Coccothrinax*; stems <20 cm diameter; inflorescence branched to 2 orders;ripe fruits white or purplish-black.

9a. Rare; of northernmost Belize; stems to 20 cm; ripe fruits purple-black, <1.5 cm diam., inflorescence bracts not wooly tomentose. ..……..... *Coccothrinax argentata*

9b. Common or rare palms south of Corozal District; stems to 10 cm; ripe fruits white, to 2.5 cm diam., inflorescence bracts wooly tomentose. …...……..... *Schippia concolor*

GROUP II: Leaves pinnately compound, stems and/or petioles armed with spines or thorns

1a. Stems and/or leaves spiny.

2a. Climbing palms; leaves with a whip-like extension of the rachis (cirrus) containing barb-like hooks. ……. *Desmoncus orthacanthos*

2b. Arborescent, to 4 m tall, cirrus absent.

3a. Stems clumped, rarely solitary, mostly ≤6 cm diameter.

4a. Leaflets glabrous beneath, regularly arranged and spreading in the same plane; spines on sheath, petiole, and rachis <9 cm long; found in open habitats near groundwater; fruits purple-black. ……..... *Bactris major* var. *major*

4b. Leaflets often pubescent beneath, clustered and spreading in different planes; spines on sheath, petiole, and rachis to 15 cm long; in wet forest; fruits orange to red. ……...… *Bactris mexicana*

3b. Stems solitary.

5a. Stems to 8 cm (rarely >6 cm) diameter, with whorls of flattened, black spines; leaves not plumose in appearance; found in moist to wet forests; fruits bristly. ..……..……. *Astrocaryum mexicanum*

5b. Stems to 50+ cm diameter, spines not flattened; leaves plumose; fruits smooth; in open and/or disturbed areas. ……... *Acrocomia aculeata*

GROUP III: Plants unarmed, stems stout, often dark to light gray, potentially taller than 5 m

1a. Cultivated, or naturally-occurring and most often found along beaches; stems often markedly curved; woody "coconuts" >20 cm diameter. ..……...……. *Cocos nucifera*

1b. Naturally-occurring in a variety of habitats, rarely along beaches; stems usually straight; fleshy or woody fruits <6 cm diameter.

2a. Crownshaft, of closed (or partially closed) leaf sheaths, present; leaflets spreading in different planes (appearing plumose) or not.

3a. Leaves plumose, with leaflets spreading in different planes.

4a. Stems generally >30 cm (to 60 cm) diameter; crownshaft conspicuous, of closed leaf sheaths; inflorescences born below the leaves. On wet soil in forest or open

savanna, disturbed areas, also cultivated.…… *Roystonea regia*

4b. Stems <30 cm; crownshaft open, short; infl.s born among the leaves.

5a. Palms of the coastal plain of N. Belize, usually near the sea; leaflets somewhat glaucous, with brown scales beneath; inflorescence branched to 5 orders. .....…….. *Pseudophoenix sargentii*

5b. Widespread palms; leaflets not glaucous, without brown scales; inflorescence branched to 1-2 orders. .....…..... *Gaussia maya*

3b. Leaves not plumose, leaflets in 1 row per side, not spreading in different planes (the tips may be pendulous). ……..……..... *Euterpe precatoria*

2b. Crownshaft never present; leaflets not spreading in different planes.

6a. Leaves irregularly divided into wide leaflets with serrated apical margins; stems to 20 cm diameter; fruits covered with pyramidal protrusions; most common on low, poorly drained soils near the coast. ..…….…… *Manicaria saccifera*

6b. Leaves regularly divided into many narrow, entire leaflets; stems usually >30 cm diameter; fruits smooth; on slopes or lowlands on moderate to well-drained soil. ……..…….…..…. *Attalea cohune*

GROUP IV Stems slender, canelike, usually green or brown, rarely taller than 5 m

1a. Leaves simple.

2a. Leaves 8–15 or more, usually bifid, leaf sheaths brownish; stems 3–5 cm diameter or acaulescent adults;.

3a. Apparently acaulescent (stems short, underground); leaves usually not simple; inflorescences spicate and with a deciduous bract (leaving a conspicuous scar) near the apex of the peduncle; fruits obovoid to 2 cm diameter, green to black. ……..……..... *Calyptrogyne ghiesbreghtiana*

3b. Stems not underground (as adults), 3–5 cm diameter; leaves bifid; inflorescences branched, fruits reddish. ....……..... *Asterogyne martiana*

2b. Leaves mostly 3–8, bifid or not; leaf sheaths green; stems ≤2 cm (to 3 cm in *C. pinnatifrons*) diameter;.

4a. Leaf blades bifid or compound, very thick, leathery and rigid, with a velvety aspect, blue-gray-green; female infl. spicate, male infl. with 2–10 branches; restricted to limestone hilltops. ……...… *Chamaedorea adscendens*

4b. Leaf blades bifid or not, thin, not blue-gray-green.

5a. Leaf blade obscurely nerved above, <15 cm wide, to 30cm long, more or less oblong; female infl. usually with up to 3 flowering branches, male infl. with 1-6 branches. ..……..... *Chamaedorea geonomiformis*

5b. Leaf blade prominently nerved above, usually >20 cm wide, to 75 cm long, more or less obovate; female infl. >3 flowering branches or spicate.

6a. Leaf blades thick, simple, with ≥12 major veins per side; female infl. usually spicate, rarely with up to 4 branches, male infl.with 13–25 branches. ..... ……... *Chamaedorea ernesti-augustii*

6b. Blades thin, rarely all simple except when very young, with ≤10 major veins per side; female infl. usually with up to 20 flowering branches, rarely spicate, male infl. with 2-45 branches. ....…….. *Chamaedorea pinnatifrons*

1a. Leaves compound.

7a. Stems solitary.

8a. Apparently acaulescent (stem short, underground); with 8-21 leaves inflorescences spicate. ..…….……... *Calyptrogyne ghiesbreghtiana*

8b. Stems evident in mature palms; leaves usually ≤8 (to 12 in *Synechanthus*)

inflorescences branched (except in *Chamaedorea nationsiana*).

9a. Stems green; leaves clustered at stem apex, often ≤7.

10a. Leaflets many (>10) per side and arranged in groups of 2–6; sub-apical leaflets with one principal vein, rachis and petiole without a pale to yellow line beneath; monoecious; flowers arranged in rows along the flowering axes. ……..…...…... *Synechanthus fibrosus*

10b. Leaflets few or many per side, not arranged in groups, sub-apical leaflets without one principal vein, rachis and petiole often with a distinct, pale to yellow line beneath on the rachis, extending to the sheath; dioecious; flowers solitary or in groups.

11a. Leaves unusually thick (for *Chamaedorea*), leathery, rigid and with a velvety aspect, blue-gray-green; leaflets 2–6/side, female infl. spicate, male infl. w/ 2–10 branches; restricted to limestone hilltops. ……..…..…..... *Chamaedorea adscendens*

11b. Leaves thin and/or leaflets wider, rigid or not, green in color.

12a. Leaflets mostly ≤11 per side of the rachis; stems usually <2 cm diameter.

13a. Apex of leaf sheath white; leaflets thin; stem to 3 cm diameter; female flowers greenish, male flowers joined at the tips, opening by lateral slits; female, male infl. with 5-20 branches; common. ……..…..…..... *Chamaedorea pinnatifrons*

13b. Apex of leaf sheath green; male petals free. ……..…..…..... *Chamaedorea oblongata*

12b. Leaflets ≥11 per side, stems variable.

14a. Small, slender palms <2 cm diameter and <2 m tall; leaf sheaths only tubular near base; leaflets 11-21/side, linear to lanceolate; female, male infls. with 5-35 branches. …….. *Chamaedorea elegans*

14b. Medium-sized, ± stout palms, 2–10 cm diam., 2–12 m tall; usually clumped; leaf sheaths tubular for ± entire length. ..……. *Chamaedorea tepejilote*

9b. Stems not green, and/or leaves spread loosely along the stem; leaves often more than 7.

15a. Leaves 7-18, loosely spread apart along the stem; stems brown or green, usually clumped, 0.5–3 cm diameter. ……..... *Geonoma deversa*

15b. Leaves 6+, clustered at stem apex; stems not green, usuallysolitary and >3 cm diameter (except *Reinhardtia*, w/ openings b/w leaflet folds).

16a. Leaflets 4-ranked, spreading in 4 different planes and giving leaves a plumose appearance; leaves 6–8 on a short, open crown shaft; stem whitish-gray, to 15+ cm diameter; fruits red; palm of rocky, limestone soils at low elevations, N. Belize. ……..... *Gaussia maya*

16b. Leaflets generally spreading in 1-2 planes; leaves often >8; crownshaft present or not; fruits and habitat various.

17a. Leaves with brown scales on lower surface; salt-tolerant, found near the sea in N. Belize; stem to 30 cm diameter; fruits red. ……..... *Pseudophoenix sargenti* ssp. *sargentii*

17b. Leaves without brown scales beneath; most commonly found

in wet or moist forest, widespread or S. Belize; fruits brown or blackish.

18a. Leaves very large (2–8 m long), erect and irregularly divided into wide leaflets with serrated apical margins, persistent and forming a skirt around the stem; stems 15–20 cm diameter; fruits large (4–6 cm diameter), brown, covered in pyramidal protrusions; on wet, lowland soils of southern Belize. …… *Manicaria saccifera*

18b. Leaves smaller, generally <3 m long, arching or erect, regularly divided, persistent or not, but never forming a skirt around the stem; leaflets not serrated (but apically toothed in *Reinhardti gracilis*); stem diameter large or small; fruits small, <2 cm diameter, purple-black, fleshy.

19a. Leaflets few, usually 2/side; slender palms <2 cm diameter, leaf sheaths closed but not forming a crownshaft (forming interwoven fibers instead). ……..……..…….. *Reinhardtia gracilis*

20a. Leaves large: leaf rachis 11–23 cm long, with 14–22 nerves on each side, the lower pinnae 14.5–25 cm long. …… *Reinhardtia gracilis* var. *gracilis*

20b. Leaves small: leaf rachis 3.5-6 cm long, with 8–11 nerves on each side; the lower pinnae 8.5–12 cm long. …….. *Reinhardtia gracilis* var. *gracilior*

19b. Leaflets many, often >10/side; stems >>2 cm. ….

20a. (from 24b) Crownshaft (green or purplish) formed by open or closed leaf sheaths; leaves 5-10, leaflets ± same-shaped and linear flowers not in pits. Stem gray; green crownshaft formed by closed leaf sheaths; infl. axes densely pubescent.…... *Euterpe precatoria*

20b. Crownshaft absent (or very short, sometimes reddish, and open "crownshaft" present in *G. undata*); to 20 leaves present, leaflets often irregularly-shaped; stem light brown.

21a. Rare, presumably montane (?); reported by Henderson et al. (1995); not seen in Belize; pits in flowering branches with a lower and upper lip; infl. borne below the leaves; leaflets ± linear. ….. *Geonoma undata*

21b. Common, montane or not; pits in flowering branches without a distinct upper lip; most leaflets ± sigmoid to sickle-shaped. ……. …… *Geonoma interrupta*

7b. Stems clumped.

22a. Stems green and leaves tightly clustered at stem apex.

30a. Stems 1.5-3 cm diameter, to 3 m tall, forming open, sprawling colonies on

limestone hilltops and ridges (dense in burned places); stems, sheath, petiole, and rachis often glaucous; leaflets usually 22–42 per side, <3 cm wide; stems 2–3 cm diameter; female, male infls. with 10-35 branches. ..…...... *Chamaedorea schippii*

30b. Stems larger or not, forming tight clusters or ± closed and well-defined clumps; plant glaucous or not; leaflets usually <22 per side.

31a. Stems (at least a few) glaucous, to 6 cm diam., to 8 m tall; leaflets to 5 cm wide and to 40 cm long, to 30 per side, with a prominent ligule/flap at the apex of the leaf sheath/base of the petiole on either side. Rare, in higher elevations (>300m) on igneous substrata. …………………………………………..………… *Chamaedorea tepejilote*

31b. Stems not as above, not glaucous.

32a. Stems slender, 1–2 cm diameter, to 3 m tall; leaflets narrow (≤3 cm) and short (to 35 cm), 5–18 per side, with one primary vein; female, male infl. with 4-12 branches (cf. *C. schippii*, 30a.). ..…..…………………………………………….. *Chamaedorea seifrizii*

32b. Stems stout, to 10 cm diameter, to 7 m tall; leaflets 3–10 cm wide and to 70 cm long, to 25 per side, with several prominent primary veins above; female infl. with up to 20 branches, male infl. with up to 50 branches. ………………………………..… *Chamaedorea tepejilote*

22b. Stems not green (sometimes green in *Geonoma deversa*, but then leaves loosely clustered at stem apex).

33a. Leaflets numerous (usually >20/side, at least >3/side), without "windows" between the folds and the rachis.

34a. Crownshaft (green or purplish) formed by open or closed leaf sheaths; leaves 5-10, leaflets ± same-shaped and linear flowers not in pits. ……………………………………...……………...... *Euterpe precatoria*

34b. Crownshaft absent; to 20 leaves present; leaflets often irregularly-shaped; stem light brown, flowers in pits on the infl. axes.………………. ……………………………………………………… *Geonoma interrupta*

33b. Leaflets usually <4 per side, (with small windows between the folds on either side of the rachis in *Reinhardtia*).

35a. Leaves clustered at the apex, with compound leaflets having small windows between the folds on either side of the rachis.

36a. Stems thick, c. 6-7 cm diameter; leaf blades ≥ 1 m long. …………………........…………………......……........ *Reinhardtia latisecta*

36b. Stems c. 1.5 cm diameter; leaf blades <1 m. (usually <0.5 m). ……………………………………………....……….. *Reinhardtia gracilis*

37a. Leaves large: leaf rachis 11-23 cm long, with 14–22 nerves on each side; the lower pinnae 14.5–25 cm long. …………..……………… *Reinhardtia gracilis* var. *gracilis*

37b. Leaves small: leaf rachis 3.5-6 cm long, with 8–11 nerves on each side; the lower pinnae 8.5–12 cm long. ……………… ………………………… *Reinhardtia gracilis* var. *gracilior*

35b. Leaves loosely spread apart along the stem, without windows; stem ≤3 cm diameter. …...…………………………………….…..... *Geonoma deversa*