PRESTOEA (PALMAE) IN CENTRAL AMERICA¹

Andrew Henderson² and Greg de Nevers³

ABSTRACT

Differences among the morphologically similar Prestoea, Euterpe, and Neoniicholsonia are discussed. All species of Prestoea occurring in Central America are treated. Prestoea semisipicata and P. integrifolia are described as new species. Prestoea allenii, P. darianensis, P. decurrens, P. roseospadix, P. sejuncta, and P. longipetiolata are characterized. E. brachyspatha, E. williansii, and E. simiarum are placed in synonymy under P. longipetiolata. Euterpe simplicifrons is transferred to Prestoea. A key and illustrations are provided.

The neotropical Prestoea Hook f. has remained problematic. Moore (1963) argued in favor of keeping Prestoea separate from the morphologically similar Euterpe. Wessels Boer (1965) argued for unifying the two. Doubts about the characters used by Moore have been expressed by Galeano-Garcés (1986) and Henderson (1986). A third genus, Neonicholsonia, is also similar to Prestoea but had formerly been distinguished by its spicate inflorescence. Our discovery of a Prestoea having usually spicate inflorescences has raised doubts about the distinctness of Neonicholsonia from Prestoea. Differences between the three genera as understood by us are given in Table 1, which shows that three groups exist. However, any change in ranking should await a study of all species throughout their neotropical ranges.

The Central American species of Prestoea are poorly known; too many names are in use; and the regional floras (Standley, 1937, for Costa Rica and Bailey, 1943, for Panama) are outdated. Here we treat all Central American species, based on extensive fieldwork and study of herbarium specimens, including all relevant types. Eight species are recognized. Although Prestoea carderi (W. Bull) Hook f. was reported by Hooker (1890) to have come from Guatemala, the description clearly states that the type material came from Colombia.

Although the species are relatively easy to distinguish in the field, this is not so in the herbarium, where the most useful character is the hairs, or their absence, on the rachillae. Sections of rachillae are illustrated for each species, as is the habit. The flowers and fruits of Central American Prestoea provide few distinguishing characters. There is substantial variation within species.

KEY TO THE SPECIES OF PRESTOEA IN CENTRAL AMERICA

1a. Leaves entire .......................... (4) P. integrifolia
1b. Leaves regularly pinnate .......................... 2

2a. Sheaths closed, forming a green, maroon, or purple-black crownshaft; rachillae at anthesis with sessile, crustose, mostly unbranched hairs (occasionally brown tomentose) ........................................ (1) P. allenii
2b. Sheaths open, not forming a crownshaft; rachillae at anthesis free of crustose hairs (except P. darianensis) ........................................ 3

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² The New York Botanical Garden, Bronx, New York 10458-5126, U.S.A.
³ The Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, U.S.A. Present address: California Academy of Sciences, Golden Gate Park, San Francisco, California 94118, U.S.A.

Table 1. Comparison of Neoniaicholsonia, Prestoea, and Euterpe.

<table>
<thead>
<tr>
<th></th>
<th>Neoniaicholsonia</th>
<th>Prestoea</th>
<th>Euterpe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf sheaths</td>
<td>open and not forming a crownshaft</td>
<td>either semiopen and forming an asymmetric crownshaft or open*</td>
<td>always closed and forming a symmetric tubular crownshaft*</td>
</tr>
<tr>
<td>Pinnae</td>
<td>always spreading</td>
<td>spreading to vertical</td>
<td>pendulous, occasionally spreading</td>
</tr>
<tr>
<td>Inflorences</td>
<td>always spicate</td>
<td>usually branched, rarely spicate</td>
<td>always branched</td>
</tr>
<tr>
<td>Prophylls</td>
<td>much shorter than the peduncular bract</td>
<td>much shorter than the peduncular bract</td>
<td>more or less equal to the peduncular bract</td>
</tr>
<tr>
<td>Rachillae</td>
<td>essentially glabrous, but with groups of hairs, rachillae surface visible</td>
<td>occasionally glabrous, but often with various hairs, rachillae surface visible</td>
<td>never glabrous, densely white- to brown-pressed tomentose or velutinous, rachillae surface not visible</td>
</tr>
<tr>
<td>Sepals of staminate flowers</td>
<td>united into a cupule with 3 long-acuminate lobes</td>
<td>free and imbricate or briefly connate at base inflexed at apex</td>
<td>not inflexed at apex</td>
</tr>
<tr>
<td>Filaments of staminate flowers</td>
<td>inflexed at apex</td>
<td>6, dentate</td>
<td>absent</td>
</tr>
<tr>
<td>Staminodes</td>
<td>absent</td>
<td>superficial on rachillae; bracteoles not prominent</td>
<td>sunken in rachillae; bracteoles prominent</td>
</tr>
<tr>
<td>Pistillate flowers</td>
<td>subapical</td>
<td>lateral</td>
<td>lateral</td>
</tr>
<tr>
<td>Stigmatic residue positions</td>
<td>few, large, deeply sunken</td>
<td>numerous, anastomosing to form a network</td>
<td>numerous, anastomosing to form a network</td>
</tr>
<tr>
<td>Raphe branches</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Prestoea inflorescences are more or less terete in bud, and in species with a crownshaft the bud expands before the subtending leaf falls, thereby giving a swollen and open crownshaft. Euterpe inflorescences are dorsiventrally compressed and mostly expand after the subtending leaf falls, thus the crownshaft is generally tubular and closed.

3a. Inflorescence spicate or with 2-4 rachillae; pinnate elliptic and abruptly tapered at apex; inflorescence horizontal; endosperm homogenous to slightly ruminate (8) *P. semispicata*

3b. Inflorescence usually with many branches; pinnate linear and gradually tapered; inflorescence erect or horizontal; endosperm ruminate (4)

4a. Rachillae at anthesis with short, stiff, simple to branched, white hairs; staminate petals pilose; stem smooth, shiny, with leaf sheaths cleanly abscising and nodes prominent (3) *P. decurrens*

4b. Rachillae at anthesis glabrous, or with sessile, crustose, branching hairs, or densely reddish brown tomentose, or with patches of long, loosely intertwined hairs; staminate petals glabrous; stem mostly rough with persistent leaf sheaths and obscure nodes (occasionally with clean stems and deciduous sheaths in *P. sequenta* and *P. longipetiolata*) (5) *P. longipetiolata*

5a. Rachillae at anthesis with sessile, crustose, branching hairs; inflorescence erect, 2-2.5 m long. (2) *P. darienensis*

5b. Rachillae at anthesis glabrous, or with patches of long, loosely intertwined hairs, or densely reddish brown tomentose; inflorescence erect or horizontal, less than 1.6 m long (6)

6a. Rachillae at anthesis glabrous; stem usually less than 2 m tall; endosperm erect (6) *P. roseospadix*

6b. Rachillae at anthesis with patches of long, loosely intertwined hairs, or densely reddish brown tomentose; stem usually greater than 2 m tall; inflorescence arching to horizontal (5) *P. longipetiolata*

7a. Rachillae at anthesis densely reddish brown tomentose; stem thin, often procumbent, less than 2.5 m tall; inflorescence arching; rachis 1-8 cm long with 2-15 rachillae (7) *P. sequenta*

7b. Rachillae at anthesis with patches of long, loosely intertwined hairs; stem stout, erect, greater than 2 m tall; inflorescence arching to horizontal; rachis 33-50 cm long with (18-42-48) rachillae (7) *P. sequenta*

1. *Prestoea allenii* H. Moore, Principes 9: 72. 1965. TYPE: Panama. Chiriqui: vicinity of Cerro Punta, 2,000 m, 24
May 1946, P. Allen 3531 (holotype, BH; isotype, MO). Figures 1, 2.

Stems solitary or cespitose, erect, to 12 m tall, 9-18 cm diam. Leaves 6-8; sheaths deciduous, forming a distinct green, maroon, or purple-black crownshaft 68-75 cm long; petiole 20-60 cm long; rachis 1.8-2.5 m long; pinnae 33-51 per side; middle pinnae 118 cm long, 6 cm wide; apical pinna not wider than others. Inflorescence infrafolioliar, horizontal; peduncle ca. 20 cm long, 1.8-2.3 cm diam.; prophyll 40-51 cm long, 10.5 cm wide; peduncular bract ca. 1.1 cm long, 4-6 cm wide, inserted 5-6 cm above base of peduncle; rachis 41-85 cm long; rachillae 23-100, to 73 cm long, at anthesis with sessile, crustose, mostly branched hairs (occasionally brown tomentose); flowers glabrous; fruit 10-11 mm diam.; seeds with ruminate endosperm.

**Common name.** “Maquentenque” (Panama).

**Distribution.** Eastern Nicaragua to western Panama, in cloud forest 1,000-3,000 m.

**Additional specimens examined.** NICARAGUA, RIVAS: Isla de Ometepe, NW slopes of Volcán Maderas, 11°26'-27°N, 85°30'-31°W, 1,000-1,350 m, 24 Feb. 1978, Stevens 6510 (MO, COSTA RICA, ALAJUELA: Reserva Biológica de San Ramón, road from Las Lagunas to Colónia Palmareña, 10°14'N, 84°32'W, 850-1,100 m, 30 May 1986, de Nevers et al. 7779 (MO). CATTAGO: above Finca La Florita on road from Cattago to El General, 2,450 m, 8 Apr. 1953, Moore 6677 (BH). HEREDIA: Santo Domingo de Vara Blanca, 2,200 m, 22 Feb. 1937, Valerio 1597 (F). LIMÓN: Cordillera de Talamanca, Atlantic slope, Valle de Silencio, area just N of Cerro Hoffmann, 4.5 airline km W of Costa Rica/Panama border, 9°08'N, 82°58'W, 2,350-2,450 m, Davidsen et al. 28700 (MO). PUNTA-RENAS: Cerro Echandi, 3,200 m, “Bocas, Panama, Aug. 1983; Musci, epípetico” (sic), Gómez et al. 21835 (CAS, MO); Monteverde, 10°17'N, 84°47'W, 1,300 m, 7 June 1986, Hammel 14872 (NY); 1,800 m, 16 June 1986, Hammel 14960 (NY); between Sabalito and Finca López above Beneficio de Wa Chong, 1 Feb. 1967, Moore & Parthasarathy 9440 (BH); Las Cruces ridge, San Vito de Java, 1,200 m, 2 Feb. 1967, Moore & Parthasarathy 9443 (BH). PANAMA, CHIRIQUI: 2.2 km SW of Cerro Punta on road above IDAAN water tank, along ridge trail SW of Quebrada Iglesia above vegetable gardens, 2,100-2,250 m, 7 Aug. 1974, Croat 26316 (MO); Cerro Pate Macho, Pacific side, 2,150 m, 8°49'N, 82°24'W, 31 Dec. 1985, de Nevers & Charnley 6685 (MO, NY); road to Cerro Punta from Alto Quiel, above Boquete, 3.5 mi. up Cerro Punta road, 1,850 m, 8°51'N, 82°29'W, 16 Jan. 1986, de Nevers & McPherson 6800 (MO, NY); path above Cerro Punta to Boquete, 8°50'N, 82°30'W, 2,500 m, moist forest, 16 Mar. 1983, Hamilton & Stockwell 3392 (CAS, MO, NY).

**Prestoea allenii** varies considerably with altitude. At lower elevations mature plants are sometimes solitary and have green crownshafts, and immature plants can lack crownshafts. At higher elevations the stems are usually cespitose, and the crownshafts maroon or purple-black. In Nicaragua and Costa Rica, lower-elevation populations with green crownshafts may represent a distinct taxon (e.g., de Nevers et al. 7779). However, the rachilla hairs are similar to those of *P. allenii*, and such collections are tentatively referred to that species. Robert Read (pers. comm.) reports that color variability in crownshafts of the same species is not uncommon in certain palms.

**Prestoea allenii** is the largest species of the genus in Central America and occurs at the highest altitude. This is not an uncommon correlation in neotropical palms, occurring, for example, in *Geonoma* and *Chamaedorea*.


Stem solitary, erect, 2.5 m tall, 10 cm diam. Leaves 6; sheaths persistent, not forming a crownshaft; petirole 80 cm; rachis 165 cm; pinnae 29 per side; middle pinnae 75 cm long, 5 cm wide; apical pinna not wider than others. Inflorescence inter- or infrafolioliar, erect; peduncle 75 cm long, ca. 1.5 cm diam.; prophyll 60 cm long, 4 cm wide; peduncular bract 2.23 m long, 2.5 cm wide, inserted 23 cm above base of peduncle; rachis 80-135 cm long; rachillae ca. 60, 45-72 cm long, at anthesis scabrid with crustose, branching hairs; flowers glabrous; fruit 8 mm diam.; seeds with ruminate endosperm.

**Distribution.** Known only from the type locality.
Prestoea dariensis can be distinguished from the similar *P. sejuncta* by the rachillae with short, crustose, branching hairs. The inflorescence bud of the type is 2.5 m long, the longest of any *Prestoea* seen, and only approached by some specimens of *P. sejuncta*, which occasionally reach 2.1 m.


Stems usually cespite, (1–)2–7, erect, 3–7(–10) m tall, 3.2–10 cm diam., smooth and shiny, green or yellow. Leaves 7–9; sheaths 26–34 cm long, semipersistent, not forming a crownshaft; petiole 50–95 cm long; rachis 1.6–2.3 m long; pinnae 36–50 per side; middle pinnae 52–66 cm long, 3–4 cm wide; apical pinna not wider than the others. Inflorescence infrafoliar, white at anthesis, erect or diagonal; peduncle 15–25(–42) cm long, (0.7–)1–3 cm diam.; prophyll 17.5–19.5 cm long, 3 cm wide; peduncular bract 42–81 cm long, 2.5 cm wide, inserted 2.5–6.5 cm above base of peduncle; rachis 8–27 cm long; rachillae 7–50, 20–56 cm long, at anthesis with short, stiff, simple to branched, white, persistent hairs; staminate petals pilose near apex; fruit 6.5–8 mm diam.; seeds with ruminate endosperm; seedling leaves pinnate.
FIGURES 3, 4. Prestoea darienensis.—3. Habit, showing long, erect, interfoliar inflorescence bud (Henderson 97).—4. Part of rachilla, showing sessile, crustose branching hairs (Henderson 97). Scale bar = 250 μm.

Common name. “Palmitillo” (Costa Rica).

Distribution. Throughout Nicaragua, Costa Rica, and Panama, usually between sea level and 1,500 m. This species is also known from northern Colombia (Galeano-Garcés, 1986).

Additional specimens examined. NICARAGUA, MANAGUA: Cornarca, 12°33'N, 85°13'W, 180–200 m, 14 May 1980, Moreno & Araquistain 2389 (MO, US); Rio San Juan: near Caño Chontaleño, 20 km NE of El Castillo (Rio Indo watershed), 200 m, 7–9 Mar. 1978, Neill 3320 (MO); 18 Apr. 1978, Neill & Vincelli 3495 (MO, US), Zelaya: “Kurinwacito,” 13°38'N, 84°57'W, 80 m, 24 Mar. 1984, Moreno 23880 (US); Mun. Siuna, Caño El Léon, road to Horquinuero, 2 Feb. 1983, Ortiz 730 (MO); Mina Nueva America, ca. 11.3 km N of main road leading W from 14.3 km N of El Empalme to Rosita, 22 Apr. 1979, Pippoly 5322 (US); Caño between Cerro La Pimienta and El Horquinuero, 13°43'N, 85°59'W, 800–1,000 m, 15 Mar. 1980, Pippoly 6018 (MO, US); ca. 6.3 km S of bridge at Colonia Yolonia and ca. 0.8 km S of ridge of Serranias de Yolonia on road to Colonia Manantiales (Colonia Somoza), 11°36'N, 84°22'W, 200–300 m, 29–31 Oct. 1977, Stevens 4823 (BH, MO, US); 13–14 Feb. 1978, Stevens 6387 (MO); Caño Costa Rica, ca. 1.8 km SW of Colonia Naciones Unidas, above road between Colonia Nueva León and Colonia Naciones Unidas, ca. 11°43'N, 84°18'W, 150–180 m, 6–7 Nov. 1977, Stevens 5034 (BH, MO, US); S slope of Cerro El Inocente down to near Caño Majaguá, ca. 13°45'N, 85°0'W, 800–1,000 m, 9 Mar. 1978, Stevens 6814 (BH, MO); trail from Cerro Saslaya to San José del Horquinuero, between Caño Majaguá and Caño Sucio, ca. 13°43'N, 84°59'W, 600–800 m, 10 Mar. 1978, Stevens 6838 (BH, MO); 6.3 km S of bridge of Colonia Yolonia on road to Colonia Manantiales of Nueva Guinea, 200–300 m, 13 Feb. 1978, Vincelli 250 (MO). COSTA RICA. ALAJUELA: E of San Rafael, S of hot springs, W of La Marina, 10°23'N, 84°23'W, 500 m, 19 May 1968, Burger & Soloz 5021 (F, NY); plains of San Carlos, 100 m, 3 Apr. 1903, Cook & Doyle 54 (BH, US); Reserva Biológica de San Ramón, road from Las Lagunas to Colonia Palmareña, 10°4'W, 84°32'N, 850–1,100 m, 30 May 1986, de Nevers et al. 7780 (MO, NY); slopes of Miravalles, above Bijaguar, lower montane rainforest, ca. 1,500 m, Nov. 1982, Gómez et al. 19185 (CAS, CR, MO); vicinity of Guatuso de San Rafael on Río Frio, 10°43'N, 84°48'W, 80–100 m, 4 Aug. 1949, Holm & Itts 996 (BH, MO); Río Cuarto, Sarapiquí valley, 1945, Langlois 12 (BH); beside Laguna María Aguilar, 780 m, 28 Mar. 1969, Lent 1531 (NY); 2 km N of...
Santa Rosa, 15 km N of Boca Arenal on Quezada-Muelle San Carlos-Lo Chiles road, 100 m, 10°38'N, 84°31'W, 28 Apr. 1983, Ljesner et al. 15045 (MO, WIS); Rio María Aguilar between Cariblanco and San Miguel, valley of Rio Sarapiquí, ca. 700 m, 23 Mar. 1953, Moore 6560 (BH); between Corazón de Jesús and La Virgen, Rio Sarapiquí, 340 m, 24 Mar. 1953, Moore 6576 (BH); 9.1 km before Venado on road from Arenal, 750 m, 1974, Read & Daniels 74-26 (US). CARTAG: between Rio Fucare and Grano de Oro, 7 km below Hacienda Moravia, ca. 900 m, 13 Apr. 1953, Moore 6699 (BH). HEREDIA: Finca La Selva, on Rio Puerto Viejo above junction with Rio Sarapiquí, 20 Feb. 1981, Folsom 9056 (DUKE); 27 June 1979, Holdridge 5107 (BH); 17 Oct. 1980, Hammel 10189 (DUKE); 5 May 1982, Hammel 12036 (DUKE); 10 May 1982, Hammel 12168 (DUKE); 13 June 1984, Jacobs 2306 (DUKE); 15 July 1984, Jacobs & Peralta 2883 (DUKE); 28 Jan. 1967, Moore & Parthasarathy 9407 (BH); 18 Apr. 1972, Opler 723 (F); 13 May 1984, Wilbur & Jacobs 34374 (DUKE); 13 May 1984, Wilbur & Jacobs 34393 (DUKE); 1 June 1985, Wilbur 37722 (DUKE). LIMÓN: Hacienda Tappezco-Hda. La Suerte, 29 air km W of Tortuguero, 40 m, 10°50'N, 83°47'W, 7 Mar. 1978, Davidson et al. 6237 (MO). PUNTARENAS: along short cut road to Golfito from Villa Briceño on Interamerican Highway, W side of Filo Gamba, ca. 6 km from Golfito airport, 8°41'N, 83°12'W, ca. 100 m, 6 Mar. 1985, Croat & Grayum 59025 (CAS, MO); road to Rincón de Osa, 16.5 km W of Chacartilla, 8°32'W, 8°45'N, 25 May 1986, de Nevers et al. 7755 (MO, NY); along the Camino al Pacifico, W of Rincón de Osa, Osa Peninsula, 30 m, 7 Aug. 1967, Raven 21593 (DS, F, NY). PANAMA: CHIRIQUI: above Chiriquí Grande road to Fortuna Dam, 20 Jan. 1985, Read et al. 85-206 (US). COCLE: along river leading up mountain to Alto Calvario and trout stream from La Junta near Limón, 800–1,000 m, 12 Oct. 1977, Folsom 9504 (BH, MO); forest at base of Cerro Píon above El Valle, 9 Jan. 1972, Gentry & Dwyer 3655 (BH, MO); 46 m N from Penonomé on road to Coclesito, 30 m, 22 Feb. 1978, Hammel 1711 (BH, MO). COLÓN: Rio Guanche, 3 km upstream of the road, 27 Oct. 1985, de Nevers & Charnley 6107 (MO, NY); 18 Jan. 1980, Moore et al. 10515 (BH); 14 Dec. 1974, Mori & Kallunki 3716 (BH); 15 Mar. 1986, Hammel & Trainer 14775 (MO); 6 Oct. 1983, Neve 7253 (CAS, MO); ridge top leading N from Rio Escandaloso toward Cerro Bruja, 450 m, 27 Apr. 1978, Hammel 2707 (MO). COMARCA DE SAN BLAS: El Llano–Cartí road, km 27.6, Rio Pingandi, downstream of road, 9°19'N, 78°55'W, 150 m, 9 Mar. 1985, de Nevers et al. 5065 (CAS, MO); El Llano–Cartí road, km 26.5, along Rio Cartí Chico, 9°19'N, 78°55'W, 200 m, 12 Apr. 1985, de Nevers et al. 5346 (MO, NY); 13 Mar. 1986, de Nevers et al. 7379 (MO, NY); Yar Bired, continental divide between Cangandi and San José, 9°20'N, 79°08'W, 400–500 m, 5 Feb. 1986, de Nevers et al. 6900 (MO, NY); Rio Cangandi at confluence of Quebrada Titamite, 9°24'N, 79°7'W, 60 m, 8 Feb. 1986, de Nevers & Herrera 7017 (MO, NY); Rio Taimid (Taimid of maps), 2–3 km above confluence with Rio Mandinga, 9°25'N, 79°11'W, 3 Apr. 1986, de Nevers et al. 7626 (MO, NY); 3 Apr. 1986, de Nevers & Herrera 7629 (MO); trail to Cerro Obu (Hub of maps) from Rio Urgandi (Rio Sidra), 9°23'W, 78°48'N, 100–300 m, 24 June 1986, de Nevers & Herrera 7988 (MO); Cerro Malí, near Colombian border, 1,400 m, 23 Jan. 1975, Gentry & Mori 13823 (BH, MO, NY). PANAMÁ: pipeline road near Gamboa, 9°10'N, 79°45'W, 100 m, 24 Feb. 1985, de Nevers & Charnley 4942 (MO).

The type is no longer extant at Berlin. Burret cited a paratype (*Wendland 63*) consisting only of fruit. This is not at Göttingen among Wendland’s other specimens, and is apparently lost. We therefore designate *Henderson 50*, from the same general area as the paratype, as neotype. Burret (1929) considered *P. decurrents* to be closely related to *Euterpe macropadix* Oerst. and placed them in the same subsection (see Henderson, 1986), but they are unrelated. The confusion probably arose because the type of *E. macropadix* at Copenhagen appears to be a mixture of *Prestoea* leaves (probably *P. longipetiolata*) and a *Euterpe* inflorescence.

Specimens from the Osa Peninsula in Costa Rica (*Raven 21593, Croat & Grayum 59925*) and Rio Guanche in Panama have the typical momentum of *P. decurrents*, but the inflorescence is less stout, the peduncle is longer and thinner, and there are 7–20 (vs. 50) rachillae. The strongly cespitose (vs. erect) stems are thinner and weaker than usual for the species.


Ab alis speciebus integrifolius inflorescentia erecta, rachillis tenuibus pilis simplicibus obsitis necon seminum endospermate ruminato diversa.

Stems cespitose, one well-developed, erect, 2.8–5.8 m tall, 3–4 cm diam.; internodes 3–8 cm long; adventitious roots forming a prominent cone at base of stem, 18–30 cm long, 6–8 mm diam., red, covered with small round projections. Leaves 8–12, spreading; sheaths not forming a crownshaft, 30–38 cm long, closed basally for 15–18 cm, open apically, covered sparsely with closely appressed whit-
Central American *Prestoea*

ish-brown scales; petiole channeled adaxially, rounded abaxially, 30–50 cm long, covered with closely appressed brown scales; rachis 40–65 cm long, ridged adaxially, rounded abaxially and with scales similar to those of petiole; blade entire, 103–113 cm long, 30–35 cm wide, deeply bifid at apex for 60–65 cm; veins prominent adaxially, 14–15 per side, with brown scales proximally. Inflorescence interfoliar, erect at anthesis; peduncle 40–75 cm long, sparsely covered with brown scales; prophyll 21–35 cm long, covered with scales similar to those of peduncle; peduncular bract inserted 5–10 cm above base of peduncle, 80–130 cm long, with scales similar to those of peduncle, at anthesis brown on outside, whitish on inside; rachis 18–32 cm long; rachillae 23–28, 35–54 cm long, 1 mm diam. at middle at anthesis; rachis and rachillae white at anthesis, becoming reddish in fruit, with sparse, hyaline, simple or branched hairs; triads subtended by a low bract; stamine flowers 4 mm long, sessile; sepals 3, free, imbricate, triangular, keeled, membranaceous, hyaline margined, apiculate, 1.5 mm long; petals 3, free, valvate, lanceolate, 4 mm high; stamens 6; filaments unequal, 0.9–1.5 mm long; anthers dorsifixed at center of thecae, introrse; thecae unequal, 0.8–1.2 cm long; pistillode 1 mm long, deeply trifid; pistillate flowers 2 mm long, surrounded by 2 low bracteoles; sepals 3, free, imbricate, glabrous, broadly ovate; petals similar to sepals but slightly smaller; gynoecium ovoid, pseudomonomorous, 1.5 mm long; stigmas sessile; staminodes minute, dentate; immature fruits with ruminiate endosperm.

**Distribution.** Only known from the type locality.

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**Figures 5, 6.** *Prestoea decurrens.*—5. Habit, showing smooth stem, persistent leaf sheaths not forming a crownshaft, erect, interfoliar inflorescence bud, and infrapetiolar inflorescence (Langlois 12). Photograph courtesy of BH.—6. Part of rachilla, showing short, stiff, simple to branched hairs (Henderson 50). Scale bar = 500 µm.
Additional specimens examined. **Panama, Colon:** same locality as type, 13 May 1986, de Nevers et al. 7738 (MO, NY); km 22, 500 m, 17 Feb. 1986, Hammel et al. 14473 (MO, NY).

Prestoea integrifolia differs from all other Central American members of the genus by its entire leaves. Three other extra-Central American species have entire leaves: *P. simplicifrons*, *P. simplicifolia* Galeano, and *P. cuatrecasasii* H. Moore.

The holotype of *P. simplicifrons* is no longer extant at B, and no isotypes are known, but there is another collection from at or near the type locality (Henderson & Bernal 156). Thus represented, *P. simplicifrons* has relatively short rachillae with a moderate to dense covering of reddish brown hairs, whereas *P. integrifolia* has long rachillae sparsely covered with hyaline hairs.

Prestoea simplicifolia (represented at NY by an isotype and by Henderson & Bernal 140) has a stout, pendulous inflorescence with thick rachillae, in contrast with *P. integrifolia*, which has a thin, erect inflorescence with thin rachillae.

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**Prestoea cuatrecasasii** (represented by the original description) has seeds with homogeneous endosperm, as opposed to the ruminate endosperm of *P. integrifolia*.

**Prestoea pubigera** (Griseb. & H. A. Wendl.) Hook. f. is sometimes reported to have entire leaves (e.g., Galeano-Garcés, 1986), but all specimens examined, including the type at Götingen, have the lower part of the leaf with separate but unequal pinnae, and these are joined in the upper part.


Euterpe williamsii Glassman, Fieldiana, Bot. 31: 5. 1964. **Type:** Nicaragua. Matagalpa: Cordillera Central de Nicaragua, along road to La Fundadora, cloud forest area, 1,300–1,400 m, 23 Feb. 1963, L. O. Williams, A. Molina & T. P. Williams 24922 (holotype, F).

Stems solitary or cespitose, often procumbent, 0.5–3 m tall, ca. 5 cm diam. Leaves 4–8; sheaths persistent, not forming a crownshaft; petiole 80–240 cm long; rachis 116–209 cm long; pinnae 21–33 per side; middle pinnae 45–56 cm long, 1.5–3 cm wide; apical pinna often markedly wider than others. Inflorescence interfoliar or infrafoliar, arching; peduncle 12–100 cm long, 3–6(–11) mm diam.; prophyll (9.5–)15–30 cm long, 1.5–2 cm wide; peduncular bract (32–)56–114 cm long, 2–4 cm wide; rachillae (2–)3–8(–20), (8–)16–35 cm long, at anthesis densely reddish brown tomentose; flowers glabrous; fruit 6–11 mm diam.; seeds with ruminate endosperm.

**Distribution.** From Nicaragua to western Panama (Chiriquí), 1,000–1,800 m. Contrary to a report by Wessels Boer (1971), this species does not occur in Venezuela (Henderson & Steyermark, 1986).

**Additional specimens examined.** NICARAGUA. Jinotepe: Ocoítito near Sta. Lastenia, Cordillera Central de Finca Naranjo, 1,550 m, 17 Jan. 1965, *Williams et al. 27806* (F, NY). MATAGALPA: Cerro Carlota, 12°58′N, 85°52′W, 1,250–1,300 m, 23 Oct. 1982, *Moreno 18129* (MO); Cerro El Picacho, N of Sula Negra, 13°0′N, 85°55′W, 1,500 m, 7 July 1983, *Moreno 21670* (MO, US); 7 July 1983, *Moreno 21671* (MO); Cerro Carlota, 12°58′N, 85°52′W, 1,250–1,300 m, *Moreno 18149* (MO); along Highway 3, ca. 1.9 km W of Aranquita road entrance, ca. 13°2′N, 85°56′W, 1,460–1,480 m, 30 June 1983, *Stevens 9168* (MO, US); along Highway 3, ca. 1 km NW of La Fundadora entrance, unnamed peak ca. 500 m W of Highway, ca. 13°1′N, 85°56′W, 1,450–1,520 m, 24 May 1981, *Stevens & Henrich 20456* (MO); W slope of summit of Cerro El Picacho, ca. 13°0′N, 85°55′W, 1,350–1,590 m, 3 June 1983, *Stevens & Moreno 22168* (US); Cordillera Central de Nicaragua, along road to La Fundadora, 1,300–1,400 m, 23 Feb. 1963, *Williams et al. 24918* (F); Cordillera Central de Nicaragua, Xelajú, 13°0′2′N, 85°55′W, 1,500 m, 12 Feb. 1965, *Williams et al. 29266* (F, NY). COSTA RICA. Alajuela: Buena Vista, road to San Carlos valley, 600 m, 11 Apr. 1903, *Cook & Doyle 38* (US); Juan Viñas, Revontzón valley, near Juan Viñas River, 1,000 m, 21 Apr. 1903, *Cook & Doyle 173* (US); along Camino Raíz de Hule, SE of Planaltillo (Tispiri), 1,200–1,400 m, 1 July 1976, *Cook 36792* (MO); Reserva Biológica de San Ramón, road from Las Lagunas to Colonia Palmareña, 10°4′N, 84°22′W, 850–1,100 m, 30 May 1986, *de Nevers et al. 7769* (MO, NY); near Río Naranjo, 2 km W of Orosi, 1,400 m, 16 Jan. 1977, *Lent 4066* (F); slopes of ridge separating Río Paz Grande and Río Paz Chiquita, about halfway between Vará Blanca and Cariblanco, valley of Río Sarapiquí, 1,340–1,500 m, *Moore 6639* (BH); Paraíso, area of Muñeco, 9–10 Mar. 1974, *Read & Daniels 74-80* (US); Guadalupe de Zarcero, 1,200 m, 1 Nov. 1973, *Smith 4567* (F); La Peña de Zarcero, Cantón Alfar Ruiz, 1,375 m, 23 Jan. 1939, *Smith 1544* (NY); El Muñeco, S of Navarro, 1,400 m, 8 Feb. 1924, *Standley 33600* (F, US); *Cattaro, Caño de Río Grande de Orosí y Aluvión, 23 Oct. 1983, *Chacon et al. 1489* (MO); Río Tambor, 3 km SE of Cachi, 1,420 m, 22 Aug. 1971, *Lent 2060* (F); about 5 km beyond Hacienda Moravia, 1,000–1,200 m, 13 Apr. 1953, *Moore 6686* (BH); fords of Las Vueltas, Tucurrique, 635 m, Dec. 1898, *Tonduz 12924* (F, US); PUNTAÑRES: Finca Loma Linda, 1 mi. SW of Cañas Gordas, 1,150 m, 26–27 Feb. 1973, *Croat 22232* (CAS, K, MO); foothills of the Cordillera de Talamanca, around Tres Colinas, 907′N, 83°04′W, 1,800–1,850 m, 20 Mar. 1984, *Davidsd et al. 25609* (MO); Monteverde, along Río Guacimal below Lechería, 10°1′N, 84°48′W, 1,500 m, 11–14 June 1983, *Hammel & Trainer 13322* (CAS, MO); 16 June 1985, *Hammel 13872* (MO); Monteverde area, valley of Río San Luis just S of Monteverde, 10°1′N, 84°48′W, 1,200–1,200 m, 18 June 1985, *Hedges & Hafner 13924* (MO); 1,800 m, 16 June 1986, *Hammel 1961* (NY); Finca Las Cruces, on trail to Rio Java, ca. 1,000 m, 31 Jan. 1967, *Moore & Parthasarathy 9426* (BH); Monteverde, along foot trail in forest reserve, 3 Nov. 1974, *Moore et al. 10170* (BH); Las Cruces, Finca Kilpauk, 15 Dec. 1961, *Read 655* (BH); San Vito de Coto Brus, Las Cruces Botanical Garden, Jan. 1985, *Wilson s.n.* (BH); SAN JOSÉ: El General, 1,490 m, Feb. 1939, *Skutch 4184* (US); between San Isidro and La Georgina, 17 Nov. 1973, *Moore & McAlpin 10150* (BH); 17 Nov. 1973, *Moore & McAlpin 10150* (BH); PANAMA. BOCAS DEL TORO: La Fortuna Dam Area, N of dam along continental divide trail W of oileducato road, 8°47′N, 82°15′W, 1,200–1,300 m, 11 Feb. 1986, *Hammel & McPherson 14528*; near continental divide in vicinity of Cerro Colorado, 9.4 road miles from Chami camp, ca. 8°35′N, 81°45′W, ca. 1,700 m, 15 Apr. 1986, *McPherson 8917* (NY, MO); CHIRIQUI: 9 mi. from Rio Chiriquí Viejo bridge near Nueva California on road to Rio Sereno, 7 Apr. 1979, *Hammel et al. 6829* (MO).

**Malortiea simiarum** was originally distinguished by its pinnate leaves and little-branched inflorescence when being compared with *Reinhardtiad* (Malortiea). The size, degree of branching, and pubescence of the type fall within the range of variation observed in Costa Rican material of *P. longipetiolata*.

**Euterpe brachyspatha**, as judged from the original description, was named after a misinterpretation of the inflorescence. Burret (1929) described the spadix (inflorescence) as 98 cm long and the spathe (peduncular bract) as 17 cm long, which is impossible. The ho-
lototype is lost, and the isotypes are incomplete. However, the specimens described by Burret represent *P. longipetiolata*. The Munich isotype has the broad apical pinna typical of most but not all specimens of *P. longipetiolata*. A topotype, Croat 22232, is typical *P. longipetiolata*.

_Euterpe williamsii_ was originally contrasted with _E. brachyspatha_, presumably represented by the original description. In Burret's (1929) key, _E. brachyspatha_ and _E. longipetiolata_ are contrasted in the same couplet. In its protologue, Glassman did not contrast _E. williamsii_ with _E. longipetiolata_. _Euterpe williamsii_ agrees in the diagnostic characters of size, branching, and pubescence of the inflorescence with _E. longipetiolata_.

6. **Prestoea roseospadix** (L. Bailey) H. Moore, Principes 9: 73. 1965. _Euterpe roseospadix_ L. Bailey, Gentes Herb. 6: 201. 1943. **Type**: Panama, Chiriquí: vicinity of Bajo Chorro, 1,900 m, 20–22 July 1940, R. E. Woodson & R. W. Schery 623 (holotype, MO; isotype, BH). Figure 11.

Stems solitary, erect, 0.3–3 m tall, 8–10 cm diam. Leaves 4–6; sheaths persistent, not forming a crownshaft; petiole 61–76 cm long; rachis 120–125 cm long; pinnae 21–27 per side; middle pinnae 38–50 cm long, 2–2.5 cm wide; apical pinna not wider than others. Inflorescence infraphylar, erect; peduncle 16–38 cm long, 0.5 cm wide; prophyll 20–23 cm long, 2 cm wide; peduncular bract 70–80 cm long, 2 cm wide, inserted ca. 14 cm above base of peduncle; rachis 16–40 cm long; rachillae 9–16, 20–40 cm long, glabrous; flowers glabrous; fruit 9–10 mm diam.; seeds with ruminate endosperm.

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Distribution. Western Panama (Chiriquí and Veraguas) at altitudes around 1,500 m.

Additional specimens examined. **Panama. Chiriquí:** Fortuna dam area, road from Gualaca to Chiriquí Grande, continental divide trail west of road, 1,150 m, 8°45′N, 82°15′W, 18 Jan. 1986, de Nevers & McPherson 6849 (MO, NY), colón: trail from Alto Pacora to Cerro Bre- stner, 9°18′N, 79°16′W, 700 m, 18 Nov. 1985, de Nevers et al. 6223 (MO, NY), cocle: El Valle de Antón, La Mesa, ca. 1,000 m, 2 Sep. 1941, Allen 2740 (paratype) (BH, MO), comarca de san blas: Brester, 9°18′N, 79°16′W, 850 m, 25 Apr. 1985, de Nevers et al. 5541 (MO, NY), panamá: 3 mi. N of Cerro Azul, 26 July 1970, Croat 11589 (MO); Cerro Jefe, ca. 700 m, 20 Jan. 1980, Moore et al. 10522 (BH); Rio Pequeti, slopes of Cerro San Francisco, 150–300 m, 9°22′N, 79°31′W, 29 Nov. 1985, de Nevers & Henderson 6411 (CAS, MO, NY); road to Alto Pacora from Cerro Jefe, 700 m, 28 Nov. 1985, Henderson & Brako 505 (MO, NY); Gorgas Memorial Lab’s yellow fever research camp, ca. 25 km NE of Cerro Azul on Rio Piedras, 550 m, 20–22 Nov. 1974, Mori & Kallunki 3454 (BH, MO).

Among the specimens examined, there appear to be two ecotypes, which may turn out to represent distinct taxa. At higher altitudes (900–1,200 m) in premontane rain forest (Holdridge et al., 1971), the inflorescence is straight and erect in bud (Fig. 13) and relatively long and thick (1.5–2.1 m × 3–5 cm). At lower altitudes (10–200 m) in tropical moist forest and tropical wet forest (Holdridge et al., 1971), the inflorescence is curved and horizontal in bud (Fig. 14) and is relatively short and thin (75–80 × 1.2–2.5 cm). When Bailey described *P. sejuncta*, he cited two specimens, one of each ecotype. The holotype is the short-inflorescence ecotype, and the paratype, *Allen 2740*, is the long-inflorescence ecotype. Although letters accompanying *Allen 2740* from Paul Allen to Bailey clearly outlined this variation, Bailey included only the dimensions of the smaller Madden Lake plant.


Ab omnibus congeneribus inflorescentia simplicis vel pauciinanosa necon seminum endospermatis subruminato diversa.
Stems cespitose, only one well-developed, to 145 cm long, 3.5–9 cm diam., often procumbent and partly subterranean; roots visible above ground, spiny and occasionally swollen. Leaves 4–10, arching to erect; sheaths not forming a crownshaft, 17–20 cm long, brown, persistent; petiole 29–100 cm long, densely covered with closely appressed, brown hairs; rachis 52–180 cm long; pinnae 12–20 per side, elliptic, abruptly and asymmetrically long-apiculate, glossy green adaxially, lighter green abaxially; middle pinnae 19–51 × 2.5–6 cm. Inflorescence infrafoliar, protandrous, arching, borne at or near ground level; peduncle 6–50 cm long, 1.5–3 mm diam., terete, with scattered brown scales; prophyll erect and persistent in leaf axil, inserted at base of peduncle, (1.2–)4.5–19 cm long, 1.1–1.8 cm wide, dorsiventrally compressed, ancipitous, splitting apically; peduncular bract (9–)29–90 cm long, 1–2 cm wide at middle, inserted (0.7–)1.5–7 cm above insertion of prophyll, terete in bud, apically pointed, brown at anthesis, soon dropping; rachillae 1(–4), 8–30 cm long, glabrous; peduncle and rachis white at anthesis and becoming red in fruit; triads densely crowded and borne to apex of rachillae, slightly sunk, subtended by a low bract; staminate flowers 4 mm long, sessile or borne on a short, flattened pedicel, white; sepals 3, triangular, gibbous, imbricate below, 1 mm long, ciliate; petals 3, free, lanceolate, valvate, 4 mm long; stamens 6; filaments slightly flattened, with long reflexed apex in bud, 3 mm long; anthers dorsifixed, latrorse, 2 mm long; pistillode prominent, as long as stamens in bud, briefly trifid at apex; pistillate flower 3 mm long, surrounded by 2 low bracteoles; sepals 3, free, imbricate, minutely ciliate; petals 3, free, val-
vate above, imbricate below; gynoeicum ovoid, pseudomonomorous, 2 mm long, the ovule attached laterally; stigmas sessile, elongate, not recurved at anthesis; staminodes dentiform; fruit spherical, 8 mm diam., with lateral stigmatic residue, black; epicarp smooth; mesocarp fleshy; seed spherical, 7 mm diam., the endosperm homogenous to slightly ruminate; embryo basal.

Common name. “Siler burwi” (Kuna, Panama).

Distribution. Known only from the low mountains of Central Panama, from the western end of the Serranía de San Blas to El Copé in Coclé, where it is uncommon between 350 and 850 m. It grows on steep slopes and ridge tops in premontane rainforest and tropical wet forest.

**Additional specimens examined.** Panama. Coclé: El Valle de Antón, Cerro Gaítal, 8°37’N, 80°6’W, 1,000 m, 26 Nov. 1985, de Nevers et al. 6351 (CAS, MO, NY); continental divide above El Copé, 900 m, 19 Jan. 1978, Hammel 967 (MO); 27 Nov. 1985, de Nevers et al. 6381 (MO, NY, PMA, other duplicates to be distributed). Comarca de San Blas: same locality as type, 16 Oct. 1984, de Nevers et al. 4027 (MO, NY); 25 Apr. 1985, de Nevers et al. 5550 (MO, NY); 19 Nov. 1985, de Nevers et al. 6242 (MO, NY); 21 Dec. 1985, Hammel & de Nevers 13560 (CAS, MO); El Llano–Carú road, km 16.5, 9°19’N, 78°53’W, 350 m, 13 Mar. 1985, de Nevers & Herrera 5153 (MO); 12 Mar. 1986, de Nevers et al. 7371 (MO); 22 Nov. 1985, de Nevers & Henderson 6312 (MO, NY); 8 Mar. 1986, de Nevers & Herrera 7260 (MO, NY); 18 June 1986, de Nevers & Herrera 7945 (CAS, MO); trail from Cerro Camucañalá to Río Titimibe, 9°24’N, 79°8’W, 60–100 m, 28 Jan. 1985, de Nevers et al. 4719 (CAS, MO, NY); trail from Río Esadi to Cerro Banega, 300–530 m, 9°23’N, 78°51’W, 21 Dec. 1985, de Nevers & Herrera 6671 (CAS, MO, NY); Yar Bired (Cerro San José), continental divide between Cangandi and San José, 9°20’N, 79°8’W, 400–500 m, 7 Feb. 1986, de Nevers & Herrera 6961 (MO, NY); trail to Cerro Olo (Habu of maps) from Río Urgandi (Río Sidra), 9°25’N, 79°11’W, 100–300 m, 3 Apr. 1986,
I. (lit. living procumbent. stem

Prestoea iiu (C.S. SUM: C-.rr.. Olui. ihr

genus by the usually spicate inflorescence, seeds with homogenous endosperm, and shape of the pinnae. In populations where individuals with branched inflorescences occur, spicate inflorescences are also found. In fact, branched and spicate inflorescences form on the same plants. Prestoea semispicata is unusual in the specimens of Prestoea characterized by a weakly developed stem, absence of crownshaft, markedly unequal prophyll and peduncular bract, short rachis with few rachillae, and seeds with either homogenous or ruminate endosperm (Henderson, 1986). In this group, Prestoea semispicata shares with Prestoea semispicata, H. Moore from Panama, with notes on the genus

H. Moore seeds with homogenous endosperm but differs in the shape of the pinnae and in the shape of the inflorescence and in having usually spicate inflorescences. Some specimens of Prestoea longipetiolata from Nica-


