In the Guayana Highland region of Venezuela, and adjacent parts of Brazil and Colombia, the majority of specimens are spiny. These are found on white-sand soils and podzols in poorly-drained places, usually in black-water areas, in forest, *campina,* or savanna at both low and high (to 1700 m) elevations. Individual specimens have been referred to as *B. acanthocnemis* and *B. tenuis*. This form also occurs sporadically on white-sand formations near Manaus, and south of the Amazon river near Humaitá, Borba, and the upper Rio Tapajos. Leaves of these spiny plants are mostly pinnate with sigmoid pinnae. Some plants have simple, oblanceolate, deeply bifid leaves, with linear, strongly plicate lobes 27–44 cm long and 1.5–5 cm wide. Plants with this leaf shape have been called *Bactris huberiana* and *B. luetzelburgii*.

In the central Amazon region of Brazil most plants have simple leaves, with lobes typically 17–26 cm long and 4–10 cm wide. Pinnate-leafed plants occur near Tefé, and occasionally in other places.

In the western Amazon region of western Brazil, Colombia, Peru, and Bolivia there is considerable variation. Typical forms occur, but there are also some unusual ones. Some plants from Peru (Loreto) and Brazil (western Amazonas) have small, simple leaves with the lobes 13–17 cm long and 1.5–3 cm wide. Most specimens from Pasco, Peru, have numerous, sigmoid pinnae. Some specimens from Peru appear intermediate between *B. simplicifrons* and *B. killipii* or *B. schultesii* (e.g., *Knapp & Mallet 6510*, *Knapp & Mallet 7146*). One specimen (Colombia. Amazonas: Araracuara, rd. to Puerto Arturo, 360 m, 19 Sep 1987, *Galeano & Huitoto 1286* (COL, NY)) has pinnate leaves with densely spinulose rachises, as in *B. hirta*, with inflorescences of *B. simplicifrons*.

66. Bactris soeiroana Noblick, sp. nov. Type. Brazil. Bahia: Mun. Salvador, Itapoan dunes just N of city near Lagoa de Urubu, 12°59'S, 38°31'W, 10 m, 19 Nov 1988, *L. Noblick & R. Soeiro 4682* (holotype, CEPEC; isotypes, ALCB, BH, FTG, K, MO, NY, UFP). Fig. 64-1

A congeneribus omnibus foliorum petiolo et vagina tomento persistenti albo obtectis, necnon fructibus maturis flavis abstat.

Stems cespitose, 0.7–1.5 m tall, 1–2 cm diam., usually covered with persistent, decaying leaf bases. *Leaves* 4–10; leaf spines flattened, spinulose, yellow or brown, to 3 cm long, few on sheath, dense on petiole, fewer on abaxial surface of rachis; sheath 6–20 cm long, fibrous, sheath, petiole, and rachis densely covered with white, woolly tomentum; ocrea to 6 cm long; petiole 5–18 cm long; rachis 22–26 cm long; pinnae 8–17 per side, irregularly arranged in clusters, spreading in different planes, elliptical; middle pinnae 8–20 × 2–4 cm. *Inflorescences* interfoliar; peduncle 5–15 cm long, straight, not spiny; prophyll 7–9 cm long; peduncular bract 16–26 cm long, reddish brown to grayish white tomentose, lacking spines; rachis 4.5–9 cm long; rachillae 4–6, 2.5–6.5 cm long, at anthesis densely covered with moniliform trichomes; *triads* irregularly arranged among paired or solitary staminate flowers; staminate flowers to 4.5 mm long; sepal lobes 1–1.5 mm long; petals 2.5–4.5 mm long; stamens 6–7; pistillode absent; pistillate flowers to 3 mm long; calyx annular, 1–2 mm long; corolla tubular, 2–3 mm long; staminodes absent; *fruits* to 1 × 1.5 cm, depressed obovoid, yellow at maturity; mesocarp not seen; endocarp not seen; fruiting perianth not seen.

Distribution and habitat. Brazil (Bahia) (Fig. 65A); *restinga* vegetation, on sandy soils, near sea level.

Additional specimens examined. BRAZIL. BAHIA: Mun. Salvador, ca. 35 km NE of Salvador, 2 Sep 1978, *Morawetz 12-2978* (BH); Mun. Camaçari, 0.5 km N of TIMBRAS, 12°18'S, 38°20'W, 29 Sep 1988, *Noblick & Soeiro 4609* (F).

Local names. Brazil: *jussa*, *tucum*.

Bactris soeiroana is diagnosed by its sheath, petiole, and rachis densely covered with white, woolly tomentum. It grows in an unusual habitat for *Bactris*, on fully exposed parts of sand dunes. The species is named for Raimundo Soeiro, who, with Larry Noblick, collected the type and many other Bahian palms.

67. Bactris sphaerocarpa Trail, J. Bot. 6: 8. 1877. *Bactris tomentosa* var. *sphaerocarpa* (Trail) Henderson, Palms of the Amazon 221. 1995. Type. Brazil. Amazonas Tabocal, Rio Purus, 11 Sep 1874, *J. Trail 898/CXIX* (holotype, K, isotype, US). Fig. 64-2

Bactris sphaerocarpa var. *minor* Trail, J. Bot. 6: 8. 1877. Type. Brazil. Amazonas: Barreiras de Catatiha, Rio Purus, 28 Sep 1874, *J. Trail 902/CXXX* (holotype, K).

Bactris sphaerocarpa var. *ensifolia* Trail, J. Bot. 6: 8. 1877. Type. Brazil. Amazonas: Barreiras de Carurú, Rio Jutaí, 5 Feb 1875, *J. Trail 904/CXIXa* (holotype, K).

Bactris sphaerocarpa var. *platyphylla* Trail, J. Bot. 6: 8. 1877. Type. Brazil. Amazonas: Gavião, Rio Juruá, 10 Nov 1874, *J. Trail 844/CLIV* (holotype, K; isotype, BM).

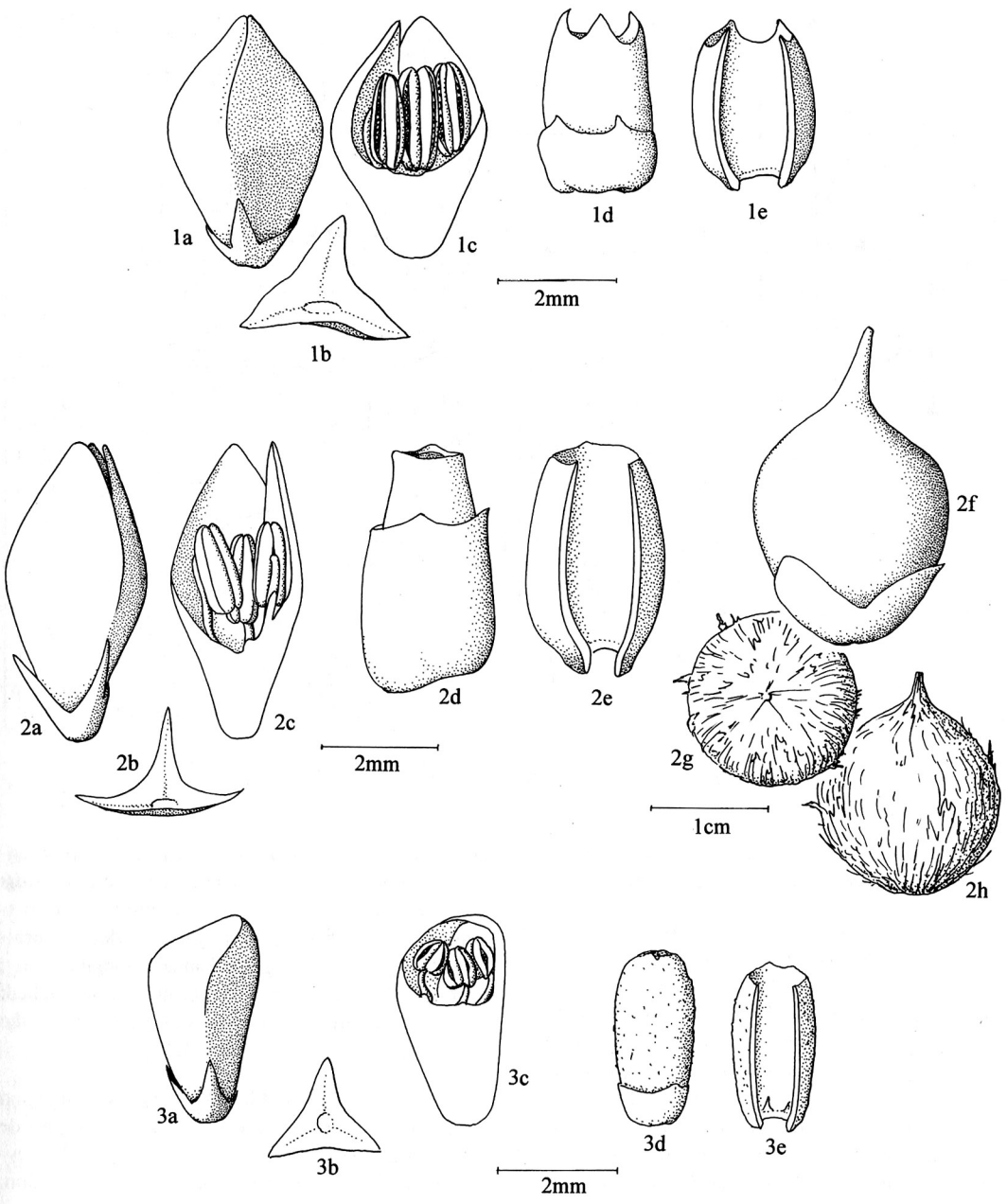

FIG. 64. (**1**) *Bactris soeiroana* (from *Noblick & Soeiro 4682*). **1a.** Staminate flower. **1b.** Sepals. **1c.** Section of staminate flower. **1d.** Pistillate flower. **1e.** Corolla. (**2**) *B. sphaerocarpa* (2a–2c from *Pardini 62*, 2d–2e from *Henderson et al. 1678*, 2f–2h from *Pipoly et al. 13758*). **2a.** Staminate flower. **2b.** Sepals. **2c.** Section of staminate flower. **2d.** Pistillate flower. **2e.** Corolla. **2f.** Fruit. **2g.** Endocarp, top view. **2h.** Endocarp, side view. (**3**) *B. syagroides* (from *Vicentini 1170*). **3a.** Staminate flower. **3b.** Sepals. **3c.** Section of staminate flower. **3d.** Pistillate flower. **3e.** Corolla.

Bactris sphaerocarpa subsp. *pinnatisecta* Trail, J. Bot. 6: 9. 1877. *Bactris sphaerocarpa* var. *pinnatisecta* (Trail) A.D. Hawkes, Arq. Bot. Estado São Paulo 2: 184. 1952. Type. Brazil. Amazonas: Barreiras de Catatiha, Rio Purus, 28 Sep 1874, *J. Trail 906/ CXXXII* (holotype, K; isotypes, BM, P).

Bactris sphaerocarpa var. *schizophylla* Drude in Martius, Fl. bras. 3(2): 326. 1881. Type. Brazil. Amazonas:

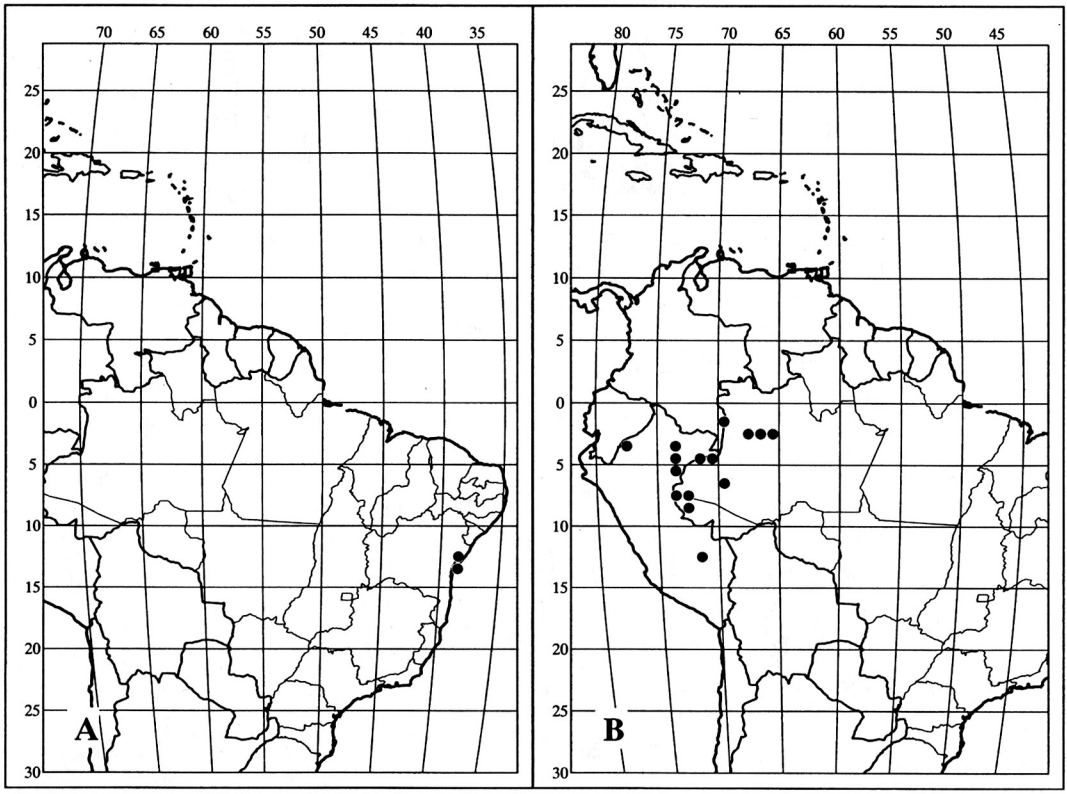

FIG. 65. A. Distribution of *Bactris soeiroana*. **B.** *B. sphaerocarpa*.

Barreiras de Cupana, Rio Purus, 4 Oct 1874, *J. Trail 901/CXXXIX* (holotype, K; isotype, BM).

Stems cespitose, 0.5–1.5 m tall, 0.8–1.5 cm diam. *Leaves* 9–13; leaf spines scattered, black, terete, to 3 cm long, few on sheath, petiole, and rachis, or sometimes absent; sheath 11–18 cm long; ocrea to 10 cm long; petiole 10–28 cm long; rachis 18–55 cm long; blade simple, deeply bifid apically and narrowly cuneate basally, or pinnate with pinnae 2–3 per side, sigmoid, with long, filamentous, minutely spinulose apex, the apical one wider than and well separated from the others; blade to 50(–80) cm long and 15 (–20) cm wide at apex of rachis, pinnate leaves with middle pinnae 18–27 × 3–4 cm. *Inflorescences* interfoliar; peduncle ca. 6 cm long, recurved to straight, not spiny; prophyll 8–9 cm long; peduncular bract 10–17 cm long, not spiny or usually spiny with short, flattened, brown or black spines to 0.3 cm long; rachilla 1, 3–5 cm long, at anthesis densely covered with brown trichomes; *triads* regularly arranged almost throughout rachilla; staminate flowers 5–6 mm long; sepal lobes 1–2 mm long; petals 5–6 mm long; stamens 6; pistillode absent; pistillate flowers 3.5–4.5 mm long; calyx tubular, 3–4 mm long; corolla tubular, 3–4 mm long; staminodes minute or absent; *fruits* to 2.5 × 1.7 cm, broadly obovoid, prominently rostrate, purple-black; mesocarp juicy; endocarp turbinate, the sterile pores slightly displaced longitudinally; endocarp fibers numerous, with juice sacs attached; fruiting perianth with lobed calyx half as long as the lobed corolla, without staminodial ring.

Distribution and habitat. Western Amazon region of Colombia (Amazonas), Peru (Loreto, Madre de Dios), and Brazil (Acre, Amazonas) (Fig. 65B); lowland rain forest on *terra firme*, at 150–400 m elevation.

Additional specimens examined. COLOMBIA. AMAZONAS: Río Caquetá, La Pedrera, Chorro Córdoba, 13 Mar 1990, *Galeano et al. 2073* (COL, FTG, NY).

PERU. LORETO: Prov. Maynas, Río Nanay, Caserío Mishana, 30 km SW of Iquitos, 16 Aug 1980, *R. Foster 4342* (AMAZ); Prov. Maynas, Mishana, Río Nanay, 3°52'S, 73°30'W, 140 m, 12–13 Jan 1983, *Gentry et al. 39403* (MO); Prov. Maynas, Quebrada Sucursari, Río Napo, 3°15'S, 72°55'W, 150 m, 5 Jul 1983, *Gentry et al. 42591* (MO), 21 Feb 1989, *Vásquez & Jaramillo 11826* (MO); Maynas, near Iquitos, Puerto Almendras, 10 Sep 1995, *Henderson &*

Padilla 2017 (NY); Maynas, El Milagro, km 16 on Iquitos–Nauta rd., 15 Sep 1995, *Henderson & Padilla 2032* (NY), 15 Sep 1995, *Henderson & Padilla 2029* (NY); Prov. Requena, Jenaro Herrera, 4°55'S, 73°40'W, 15 Sep 1984, *Kahn & K. Mejía 1735* (USM), Mar 1985, *Kahn & K. Mejia 1785* (CAY), 28 Nov 1987, *Kahn 2300* (USM), Nov 1982, *K. Mejía 159* (USM); Río Nanay, 19 Dec 1974, *S. McDaniel & Rimachi 19437* (US); Prov. Requena, Santa Delia, Dec 1982, *K. Mejía 171* (USM); Quisto Cocha, 11 May 1960, *Moore et al. 8421* (BH, USM); Río Sucusari, 3°20'S, 72°55'W, 6 Nov 1989, *Vásquez & Jaramillo 13070* (MO, NY), 22 Feb 1991, *Pipoly et al. 13308* (MO); Río Sinchiyacu, 2°50'S, 76°55'W, 200 m, 25 Feb 1991, *Pipoly et al. 13758* (NY); Río Nanay, 3°52'S, 73°30'S, 8 Sep 1990, *Vásquez et al. 14359* (NY). **MADRE DE DIOS:** Pakitza PNM, Río Manú, 11°53'S, 70°58'W, 400 m, 4 Nov 1990, *Chávez 694* (NY).

BRAZIL. ACRE: Rio Juruá-Mirim, Escuro, 8°7'S, 72°40'W, 9 Feb 1992, *Henderson et al. 1666* (NY); Rio Moa, mouth of Rio Azul, 7°25'S, 73°10'W, 13 Feb 1992, *Henderson et al. 1678* (INPA, K, NY); Estrada Alemanha, Cruzeiro do Sul, 15 Apr 1971, *Prance et al. 11932* (BH, F, INPA, K, NY, U, US); Mun. Atalai do Norte, Rio Curuçá, tributary of Rio Javari, 4°30'S, 71°22'W, 150 m, 12 Jan 1989, *Henderson et al. 881* (NY). **AMAZONAS:** Altamira, right bank of Rio Juruá, 6°35'S, 68°54'W, 13 Nov 1991, *Pardini 62* (INPA, NY); Braga, Rio Javari, 8 Dec 1874, *Trail 899/CXCIV* (K, P); Barreiras de Pupunha, Rio Jurua, 9 Nov 1874, *Trail 903/CXLVIII* (K); Barreiras de Carurú, Rio Jutaí, 5 Feb 1875, *Trail 905/CXIX* (BM, K).

Local names. Brazil: *marajá*, *marajazinha*. Peru: *kamáncha* (Achual Jívaro), *ñejilla*.

Bactris sphaerocarpa is diagnosed by its inflorescence with 1 rachilla with regularly arranged triads almost throughout, purple-black fruits, and numerous endocarp fibers with juice sacs attached. Henderson recognized two varieties (var. *tomentosa* and var. *sphaerocarpa*) of a broadly conceived *B. tomentosa*. These are recognized here at the species level. Synonymy was established by Henderson (1995), although he (and Henderson et al., 1995) included *B. angustifolia* (here included under *B. bifida*) as a synonym of *B. tomentosa* var. *sphaerocarpa*. Some specimens examined here much resemble smaller versions of *B. fissifrons*, and the two species may be related.

68. Bactris syagroides Barbosa Rodrigues & Trail, Enum. palm. nov. 33. 1875 ("*cyagroïdes*"). *Amylocarpus syagroides* (Barbosa Rodrigues & Trail) Barbosa Rodrigues, Contr. Jard. Bot. Rio de Janeiro 3: 72. 1902. Type destroyed. Brazil. Pará: Rio Tapajós, 17 Mar 1874, *J. Trail 890* (neotype, designated by Henderson, 1995, K; isoneotype, BM). Fig. 64-3

Bactris multiramosa Burret, Notizbl. Bot. Gart. Berlin-Dahlem 14: 263. 1938. Type. Brazil. Pará: Itapacurú, Rio Tapajós, 4 Apr 1924, *J. Kuhlmann 1908* (holotype, RB).

Stems cespitose, 0.6–1.5 m tall, 0.8–2 cm diam., covered with persistent, decaying leaf bases, not spiny on internodes. *Leaves* 5–8; leaf spines scattered, black, somewhat flattened, to 1 cm long, few to moderate on sheath and proximal part of petiole, occasionally absent; sheath 10–20 cm long; ocrea to 1 cm long; petiole 45–90 cm long; rachis 50–58 cm long; pinnae 30–38 per side, more or less regularly arranged and spreading in the same plane, narrowly linear, with spinules on veins abaxially; middle pinnae 25–35 × 0.7–1 cm. *Inflorescences* interfoliar; peduncle to 4.5 cm long, recurved, spiny; prophyll 5–6 cm long; peduncular bract 10–12 cm long, densely covered with soft, black spines to 1.5 cm long, with white, swollen base; rachis 0–1.5 cm long; rachillae 7–13, 4–6 cm long, at anthesis densely covered at anthesis with brown, moniliform trichomes; *triads* regularly arranged almost throughout rachillae; staminate flowers 3–4 mm long; sepal lobes 0.5–1 mm long; petals 3–4 mm long; stamens 4–6; pistillode absent; pistillate flowers 2–3 mm long; calyx cupular, 0.3–1 mm long; corolla tubular, 2–3 mm long; staminodes 6, linear; *fruits* 6–8 mm diam., globose, yellow–orange; mesocarp starchy; endocarp obovoid, pitted, the pores equally spaced; endocarp fibers few or absent; fruiting perianth with 3-lobed calyx and corolla, without staminodial ring.

Distribution and habitat. Eastern Amazon region of Brazil (Amazonas, Pará) (Fig. 66A); lowland rain forest on *terra firme*.

Additional specimens examined. BRAZIL. AMAZONAS: Mun. Borba, Rio Abacaxis, 4°10'S, 58°41'W, 8 Jul 1983, *Cid 4100* (INPA); Abacaxis, 11 May 1874, *J. Trail 891/XLVI* (K); Reserva Florestal Ducke, Manaus–Itacoatiara rd., km 26, Sabiá, 2°53'S, 59°58'W, 7 Feb 1996, *Vicentini 1170* (INPA).

Bactris syagroides is diagnosed by its 30–38, narrowly linear (25–35 × 0.7–1 cm) pinnae per side, more or less regularly arranged and spreading in the same plane. This species is still poorly known and there are few collections. The neotype closely matches the type of *B. multiramosa*, and the latter is thus placed in synonymy. Burret was somewhat puzzled by Kuhlmann's collection (type of *B. multiramosa*), because although it appeared to be related to the Amylocarpus group, it had many more rachillae than usual.

69. Bactris tefensis Henderson, Palms of the Amazon 220. 1995. Type. Brazil. Amazonas: Mun.