

***Butia leptospatha*** (Burret) Noblick **comb. nov.** Fig. 3.

*Syagrus leptospatha* Burret, Notizbl. Bot. Gart. Berlin Dahlem 15:105. 1940. Type: Brazil, Mato Grosso, Boliche Seco, Campo Grande, Archer & Gehrt 3915 (Holotype: SP-36429, isotype: US).

*Syagrus leptospatha* was discovered in 1936, described by Burret (1940) and not recollected again until 58 years later in 1994 (Pedro Juan Caballero, Paraguay). Glassman (1987) wrote that it was "probably extinct." Today, its former habitat is dominated and threatened by soybean cultivation. Phylogenetic character analyses of the Attaleinae show that *Syagrus leptospatha* aligns closely with *Butia* species (Noblick unpublished), rather than with other *Syagrus*. *Butia leptospatha* (Fig. 2) differs from *Syagrus* by having no noticeable deep grooves in its onion skin-like, paper-thin bracts. Its leaf anatomy as illustrated in Glassman (1987) shows vascular bundles on both the adaxial and abaxial surface as in other *Butia* (*Syagrus* species have vascular bundles only on the abaxial surface). *Butia leptospatha*, *B. campicola* (Barb. Rodr.) Noblick and *B. exospadix* have dark purple fruit, are acaulescent, have spicate inflorescences, have long peduncles that (usually) project the inflorescence in fruit above the peduncular bract (sometimes

substantially so) and have the narrow grass-like leaflets. Based on its smooth peduncular bracts, its leaf anatomy, the phylogenetic analyses and its similarity to two other *Butia* species, I am here in transferring *Syagrus leptospatha* to *Butia*.

Guillermo Marmorì has discovered two new species of *Butia* in Paraguay. The first was collected in 1980, and the site is now under water. The second was discovered in 1993 from a region just west of the Itaipu reservoir. The 1980 discovery is *Butia exospadix*, and the 1993 discovery is *Butia marmorii*.

***Butia exospadix*** Noblick **sp. nov.**, palma graminiformis, solitaria trunco acaule et subterreano; folium reduplicato-pinnatum foliolis 6–10, congestis, rhachide foliorum 3–10 cm longa; spica super spatham exerta. Typus: Paraguay, Canindeyú, Itanana, L.R. Noblick & T. Rios Otero 5305 (Holotypus: PY; isotypi: FCQ, FTG, K, NY). Fig 4.

Stem solitary, acaulescent, subterranean 10–20 cm in diam. Leaves 2–7 in the crown, spirally arranged and spreading; leaf sheath plus petiole ca. 6–11 cm long, adaxially channeled and abaxially rounded, and glabrous; petiole without the leaf sheath 0–3 cm long and 0.3–0.5 cm wide and 0.2 cm thick at the base

3. Herbarium specimen of *Butia leptospatha* showing its spicate inflorescence and its very short, onion-skin thin peduncular bract (Archer & Gehrt 3915).



of the leaf blade; leaf rachis 3–10 cm long with 6–10 pairs of leaflets distributed evenly along the rachis closely crowded together in a congested manner; basal leaflets ca. 32–42 cm long  $\times$  0.1–0.2 cm wide, middle leaflets ca. 30–48 cm long  $\times$  0.3–0.4 cm wide, apical leaflets ca. 32–45 cm long  $\times$  0.1–0.2 cm wide. Inflorescence interfoliar, unbranched, 4.5–12 cm long with peduncle glabrous, 36–67 cm long  $\times$  0.15–0.2 cm diam.; peduncular bract 33–46 cm long with no apparent beak and the expanded or inflated part of the bract 5.5–16 cm long  $\times$  0.5–1 cm in width and with a 1.2–2.3 cm perimeter and a 0.5–1 mm thickness, tightly enveloping the peduncle; rachilla 1, ca. 4.5–12 cm long; pistillate (triad) flowering portion 1.5–2.5 cm long, number of pistillate flowers 9–17 and the staminate flowering portion measuring 4–6 cm long. Flowers pale yellow to purple tinged, staminate flowers near the base of the inflorescence 3.5–4.0 mm long, sessile; sepals 3, distinct, linear, imbricate but briefly connate at base, acute to mucronate, membranous, glabrous; petals 3 distinct, unequal, obovate, valvate, fleshy, glabrous, with inconspicuous venation, ca. 3.5–4.0  $\times$  2 mm, acute tips; stamens 6, pale yellow, distinct, 2.2–2.8 mm long, with filaments 1–2 mm long; pistillode trifid, not reflexed, less than 0.5 mm long. Pistillate flowers, globose to ovoid, sessile 3.5–4.0  $\times$  2.5–3.5 mm; sepals, glabrous, without visible venation 3–3.5  $\times$  2.5–3.2 mm, coriaceous, imbricate, sepals subequal, acute, keeled to faintly keeled at tip; petals 3, distinct, imbricate at base, valvate at apex, triangular, faintly nerved, especially near the base, glabrous, 2.5–3.5  $\times$  2–3 mm, valvate portion 0.5–1.5 mm long, acute; gynoecium 2–2.7  $\times$  1.5 mm. glabrous, stigma 0.5–0.8 mm long, and staminodes 0.6–0.7 mm long, 3–6 dentate to smooth and truncate. Fruits purple when mature, 1.2–2.0  $\times$  1.2–1.5 cm, ovoid; cupule (persistent perianth) reddish brown, 0.8–1.0 cm in diam.  $\times$  ca. 0.3–0.4 cm high; petals longer than sepals, staminodial ring truncate, 1 mm high  $\times$  3–4 mm diam.; epicarp, dark purple when mature, smooth and glabrous; mesocarp pale yellowish, fleshy, non-fibrous ca. 1–2 mm thick; endocarp nearly spherical, ca. 1.0–1.6  $\times$  1.0–1.3 cm, 1 mm or less thick, hard, bony, dark brown to nearly black, apex with no distinctive protuberance or beak, interior smooth, monovittate, round in cross-section, outer surface nearly smooth, pores 3 nearly even with surface and subequatorial, sutures visible especially at apex; seed 1, spherical to ellipsoidal, ca. 0.8–1.2  $\times$  ca. 1 cm,

endosperm white, homogeneous. Germination remote tubular, eophyll simple, narrowly lanceolate.

**Common name:** *jataí poñy*.

**Habitat and conservation:** Open grasslands and savannas (cerrados); flat terrain with deep sandy soils and with few, and sparsely distributed shrubs and trees, frequently associated with *Allagoptera campestris*. The plants are restricted to the open short grasses rather than in the adjacent low weedy scrub.

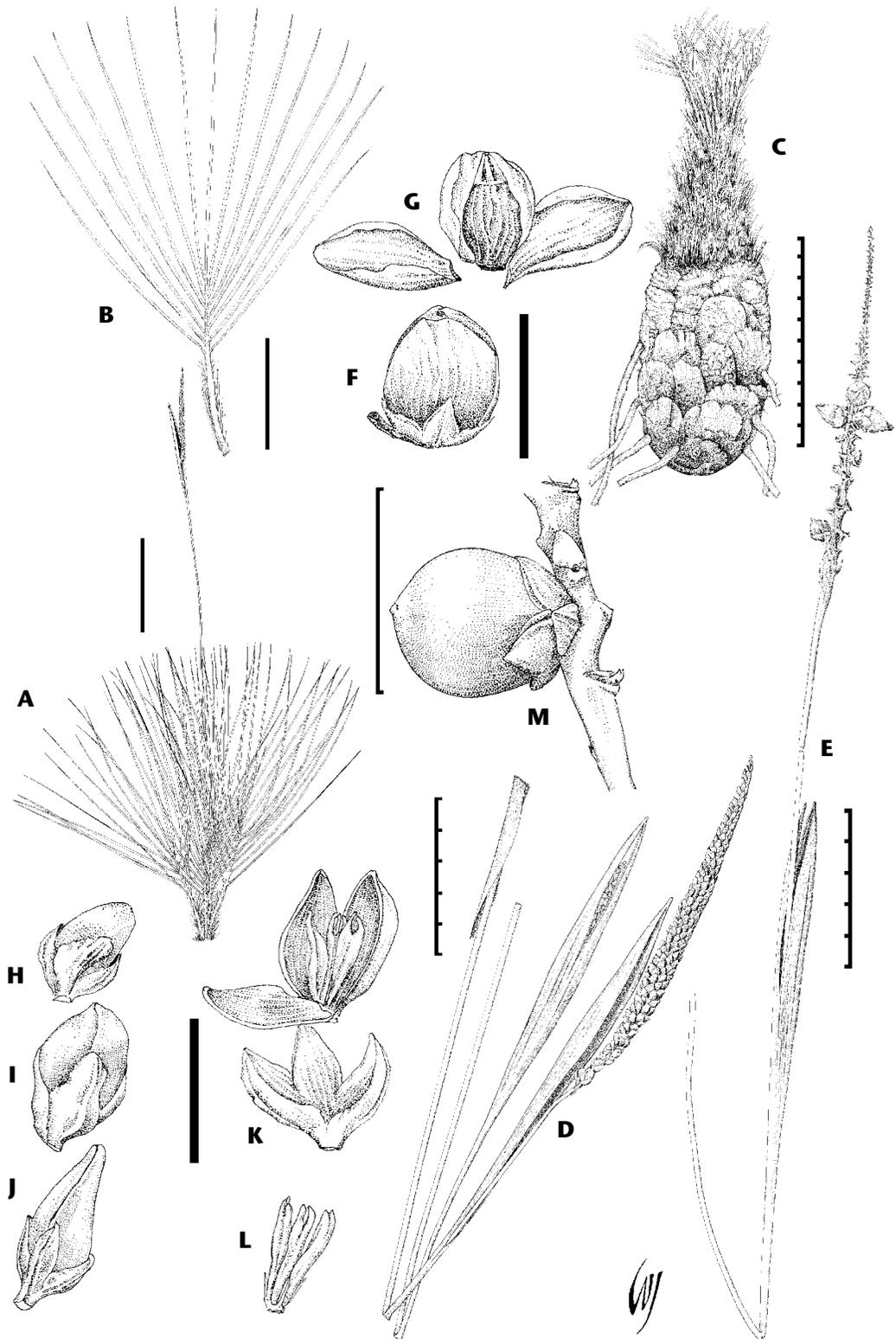
**Etymology:** The specific epithet is from *exo*-meaning “outside” and *spadix* referring to an “inflorescence (of palm).” Together they are translated as “outside inflorescence” or “projecting inflorescence,” referring to the elongated peduncle (in fruit) that projects the inflorescence far above and “outside” of the peduncular bract. It is not the only *Butia* to do this, but it is the one that does it in the most exaggerated manner.

**Distribution:** Known from the Paraguay–Brazil border in Canindeyú, Paraguay between Ypé Jhu (Paranhos, Brazil) and Capitán Bado (Colonel Sapucala, Brazil) just north of Itanana, and also from Alto Parana, an area now flooded by the Itaipu Reservoir.

**Phenology:** Most of palms had flowers or developing immature fruit with only one with mature fruit in February.

**Specimens Examined:** PARAGUAY: Canindeyú, Itanana, 19 km N of Itanara on Ypé Jhu/Capitán Bado Road, ca. 422 m, 23° 37.958'S, 55° 32.210'W, 8 Dec 2002, L.R. Noblick & T. Rios Otero 5305 (Holotype PY; isotypes FCQ, FTG, K, NY); 26–27 km N of Itanara on Ypé Jhu /Capitán Bado Road, ca. 420 m, 23° 34.411'S, 55° 31.875'W, 8 Dec 2002, L.R. Noblick & T. Rios Otero 5307 (FCQ, FTG, K, US); 20 km circa ante Capitan Bado ex Ype-Jhu, 12 Jan 1979, L. Bernardi 19568 (NY); Alto Parana, Agricola Itabo, 70 km NE de Hernandarias, inundado por lago de Itaipu, zona del Rio Itabó, 12 Apr 1980, G. Marmorì 687 (CTES); San Pedro, Yaguareté Forest (Sustainable Forest Systems site), around Aserradera. 23° 47' 46" S 56° 12' 41" W, 21 May 1997, E. Zardini & S. Zavala 46879 (FTG, MO).

**Discussion:** *Butia exospadix* is easily separated from *B. leptospatha* by its shorter leaf rachis (3–10 cm vs. 35–37 cm), longer peduncular bract (48–73 cm vs. 9–13 cm), smaller pistillate flowers (less than 4 mm vs. 7–8 mm) and longer spike (12–21 cm vs. 3–4 cm). *Butia*



4. *Butia exospadix*. A Habit; B Leaf, showing the short rachis; C Underground stem; D Inflorescence; E Infructescence; F–G Pistillate (female) flower; H–L Staminate (male) flowers and one open male flower with sepals and three stamens removed; M Fruit. Habit, stem and fruit drawn from photographs; leaf, flowers, inflorescences and infructescences drawn from Noblick & Rios 5305. Thin line scale is 10 cm (A–B), thick line scale on flowers is 5 mm (F–G and H–L). All other scales are in cm as marked. Drawn by Wes Jergens.



5 (upper left). *Butia exospadix* inflorescence with small crowded flowers (Noblick 5305). 6 (upper right). *Butia campicola* inflorescence with larger and fewer flowers (Noblick 5299). 7 (lower left). *Butia exospadix* infructescence with a mature, beakless, purple fruit (Noblick 5307). 8 (lower right). *Butia campicola* infructescence with immature, beaked fruit (Noblick 5299).



9. *Butia exospadix* leaf rachis showing congested leaflets on a short rachis (Noblick 5305).

*exospadix* is separated from *B. campicola* by its smaller inflorescence (6.0–7.5 cm vs. 12–21 cm), smaller and more crowded flowers (Figs. 5 & 6) and by the smaller, usually non-beaked fruit (Figs. 7 & 8). *Butia exospadix* is vegetatively separated by its congested leaf rachis (Fig. 9).

***Butia marmorii* Noblick sp. nov.**, palma solitaria trunco acaulis et subterreano. Folium reduplicato-pinnatum foliis 9–18, regulariter dispositis. Inflorescentia ad 7–17 cm longa, rachillis (1) 2–4, floribus femineis ca. 5.0–6.5 × 2.5–3.0 mm. Typus: Paraguay, Alto Parana, Cia. Laguna. L.R. Noblick et al. 5122 (Holotypus PY; isotypes FTG, K, NY) Figs. 10 & 11.

Stem solitary acaulescent, subterranean 10–20 cm in diam. with persistent leaf bases (Fig. 12). Leaves 3–5 in the crown, spirally arranged and

spreading; leaf sheath plus petiole ca. 2–15 cm long, adaxially channeled and abaxially rounded, and glabrous; petiole not including the leaf sheath less than 1 cm (0.4–0.5) cm long and 0.5–0.7 wide and 0.1–0.2 cm thick at the base of the leaf blade; leaf rachis 23–51 cm long with ca. 9–18 pairs of leaflets distributed evenly along the rachis; basal leaflets ca. 11–31 cm long × 0.1–0.3 cm wide, middle leaflets ca. 24–44 cm long × 0.4–0.7 cm wide, apical leaflets ca. 17–31 cm long × 0.1–0.3 cm wide. Inflorescence interfoliar, unbranched or branched to 1 order, peduncle 4.5–9.0 cm long × 0.3–0.5 cm wide × 0.1–0.5 cm thick; peduncular bract with a total length of ca. 8–19(–40) cm with no apparent beak and the expanded or inflated part of the bract measuring ca. 4.0–12.5(–18) cm long × 0.3–1.1