



3. *Syagrus vermicularis*. View looking up into the canopy showing the fine sheath fibers and inflorescence.

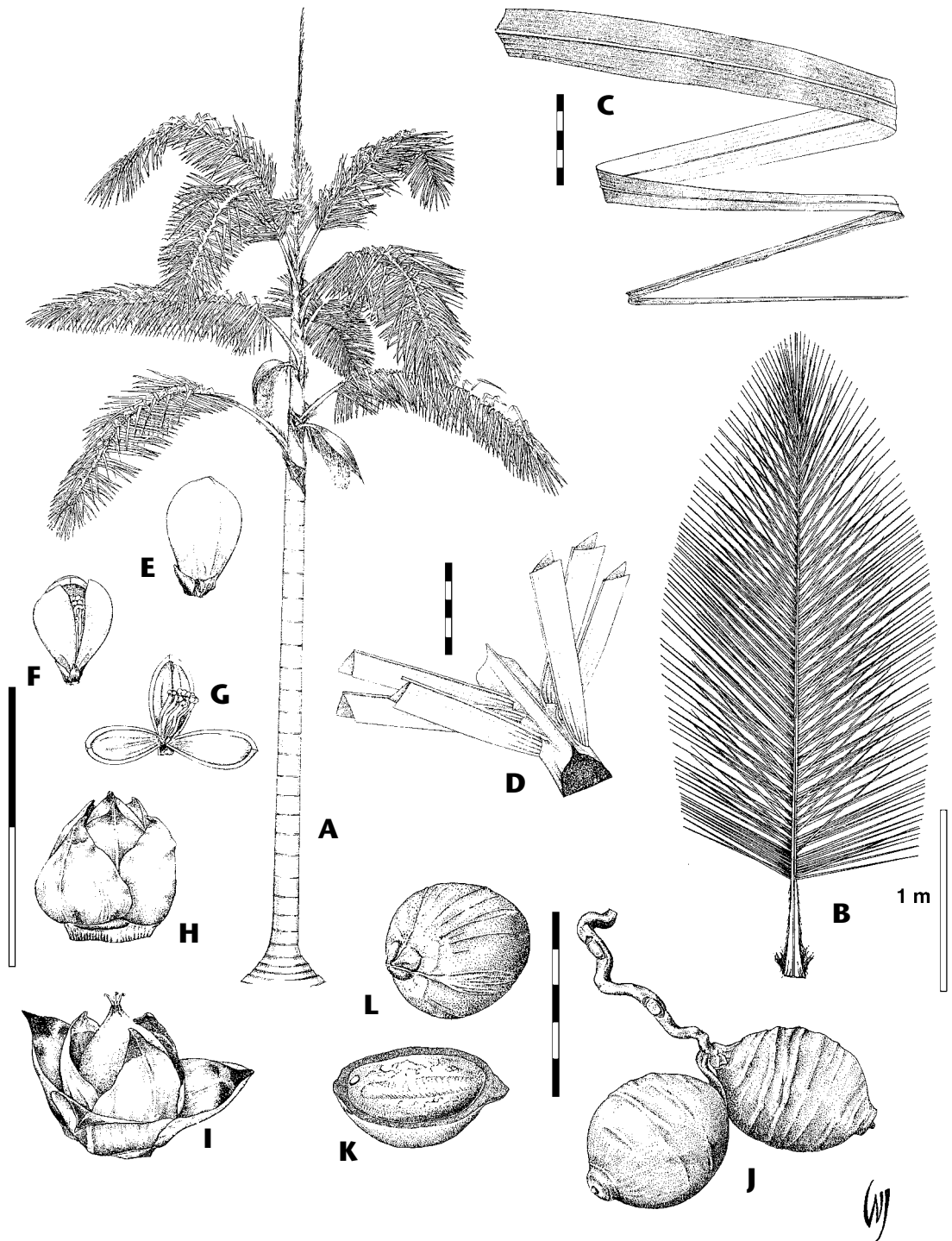
worms and thus the epithet, *vermicularis*, meaning worm-shaped, referring to the shape of the primary branch tips.

***Syagrus vermicularis* Noblick sp. nov.**

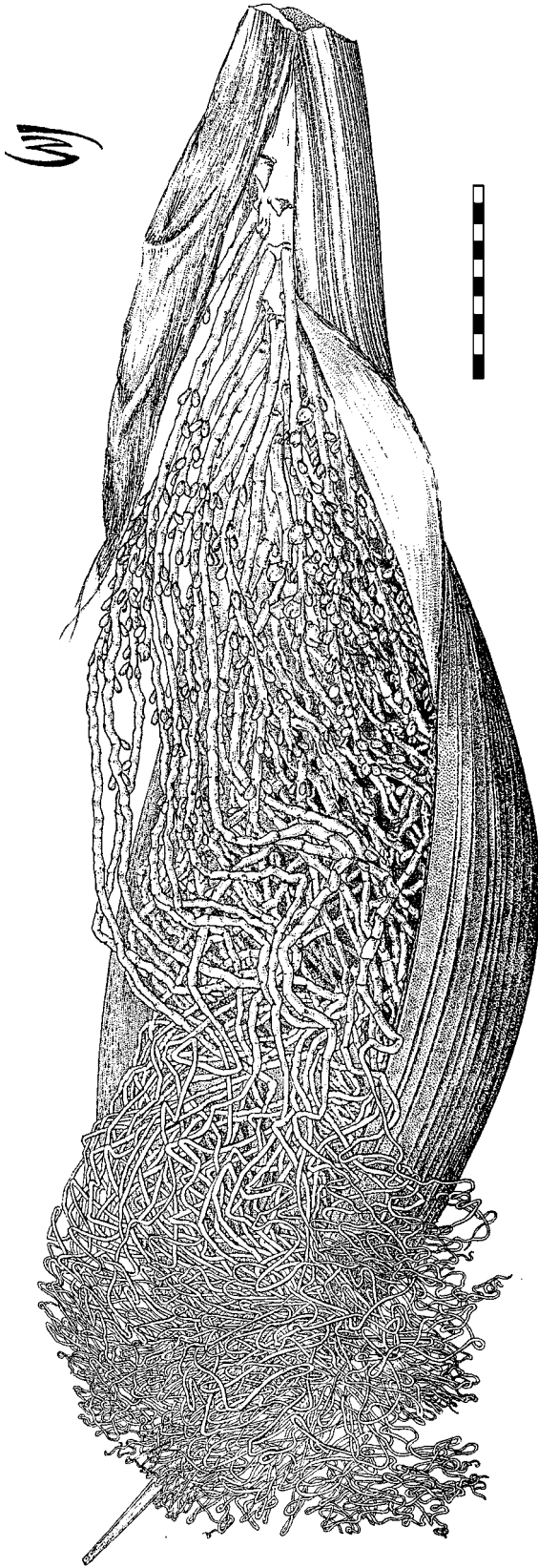
Palma solitaria tronco conspicue articulado. Folium reduplicato-pinnatum foliolis numerosis. Inflorescentia ad ca. 1.2 m longis solitaria axillaris interfoliaris in unum ordinem ramificans. Rachillae numerosae ca. 80–100 prope basin triades, prope apicem flores masculos solitarios vel binatim ferentes sed apicem longis vermicularis et nudus sine floribus. Fructus endocarpio, basin 3 (–4)-poratum, prope apicem rostrum trilobatum ferens. Typus: BRAZIL, Maranhão, Açailândia. *L. R. Noblick & J. A. Feitosa 4971* (Holotypus IPA; isotypi FTG, Herbarium of Fazenda Itaibaiana, K, MO, NY, US)

Solitary palm tree. Stem erect, 10 m tall, ca. 12–20 cm diam., basally with a large root boss to ca. 45 cm diam., distally stem very conspicuously ringed with oblique leaf scars, new internodes densely covered with white caducous wooly indument; internode ca. 9–17 cm long. Leaves ca. 12–15 in crown, spirally arranged and spreading; leaf sheath plus petiole ca. 90–100 cm long × ca. 18–20 cm wide at the base, composed of finely-netted matting of fibers breaking away easily and leaving

a finely fibrous margin on the apparent petiole, apparent petiole adaxially channeled and abaxially rounded and covered adaxially with wooly caducous indument; true petiole 6–8 cm long, ca. 3.1–4.4 cm wide and 1.5–2.2 cm thick at the base of the leaf blade; rachis 2.2–2.5 m long with ca. 100–140 pairs of leaflets distributed in clusters of 2–3 along the rachis in various divergent planes; middle leaflets ca. 80–90 cm long × 3–4 cm wide. Inflorescence interfoliar, androgynous, erect in bud, later horizontal; peduncle 60–61 cm long × 4 cm wide × 2 cm thick; peduncular bract ca. 90–103 cm long including a beak 4–5 cm and the expanded or inflated part of the bract measuring ca. 55–65 × 27–29 cm and with a perimeter 33–37 cm, 5–9 mm thick, often separating from the peduncle before the fruits reach full maturity; rachis 49–52 cm long; rachillae ca. 70–100, apical ones ca. 54 cm long and basal ones ca. 118 cm, a major part of the distal portion of the rachillae devoid of any flowers, sterile and folded back and forth on themselves like dried noodles or worms. Flowers bright yellow drying white or cream-colored. Staminate flowers near the base ca. 9–10 mm long, sessile; sepals 3, distinct, triangular, imbricate but briefly connate at base, acute, membranaceous, glabrous; petals 3 distinct, unequal, obovate, valvate, fleshy, glabrous, with inconspicuous venation, ca. 8–9 × 4 mm, obtuse to broadly acute;



4. *Syagrus vermicularis*. A Habit; B Leaf; C Leaflet; D Section of leaf rachis showing inserted leaflets; E–G Staminate (male) flower; H Receptive pistillate (female) flower; I Pistillate flower showing tomentose ovary; J Fruit with a portion of the primary branch; K. Endocarp in longitudinal section; L. Endocarp showing the trilobed beak at the apex. Habit drawn from MBC accession number 94690\*G; Leaf, leaflet and flowers drawn fresh from 94690\*D; and endocarp and fruit drawn from Noblick & Feitosa 4971. All scales are in centimeters with exception of 1 m scale. Drawn by Wes Jurgens.



5. Inflorescence only a few days old showing highly folded sterile tips and how male flowers are shed quickly; drawn fresh from 94690\*D. Drawn by Wes Jurgens. Scale as in Fig. 4.



6. Collector J. A. Feitosa (left) and driver showing leaves and infructescences of *Syagrus vermicularis*.

stamens 6, distinct, 4–5 mm long, with filaments 1.5 mm long; pistillode trifid, less than 0.5 mm long. Pistillate flowers, conical, sessile; sepals glabrous, without visible venation, sclerenchymous or fleshy, imbricate, ca. 9–10 × 8–9 mm, acute, faintly keeled at tip; petals 3, distinct, imbricate at base, valvate at apex with valvate tip ca. 2–3 mm long, triangular, indistinctly nerved, glabrous, 11 × 8–9 mm, acute; gynoecium of receptive flower ovoid, 9 × 7 mm, covered in wooly tomentum, persisting on the apex of the fruit; stigmas 3, ca. 2 mm long; staminodal ring ca. 3 mm long, undulate with ca. 6 undulations and three small residual teeth, one on every other undulation. Fruits orange when mature, 5–6 × 4 cm, ovoid; cupule (persistent perianth) dark brown, ca. 2 cm in diam. × ca. 1 cm high; petals slightly longer than sepals; staminodial ring truncate, ca. 3 mm high × 10 mm diam.; epicarp smooth for most part but tomentose at apex; mesocarp fleshy, fibrous or pulpy remaining as a fibrous mat over endocarp; endocarp ovoid, 4.5–5 × ca. 3.5–4 cm, ca. 6 mm thick, hard, bony, brown to red-brown, apex with a distinctive, trilobed protuberance or beak, interior smooth, trivittate, slightly triangular in cross-section, outer surface nearly smooth, with small fibers, only slightly pitted, pores 3(–4) nearly even with surface, sutures

visible especially at apex. Seed 1, elliptical, 3 × 2.5–3.2 cm; endosperm homogeneous. Germination remote tubular with cotyledonary tube penetrating deeply before sending up a plumule; eophyll simple, lanceolate. (Figs. 3–5; Back Cover).

COMMON NAME: *pati*. It is interesting to note that this same common name is also applied to *S. botryophora* from the Atlantic coastal rain forest.

HABITAT AND CONSERVATION. In pre-Amazonian seasonally wet, marginal or secondary forests on terra firme with deep lateritic clay soils on rolling or steep hilly slopes at ca. 100–200 m. elevation. Often growing in open pastures. Also seen on lower slopes adjacent to river floodplains. Other palms present were *Oenocarpus bataua*, *Oenocarpus disticus*, *Attalea maripa* (*Maximiliana maripa*) with *Euterpe oleracea* in the low lying areas. *Syagrus vermicularis* is threatened by the heavy lumbering practices that are reducing the regional forests to pasture. However, this palm species seems to thrive in secondary growth and farmers often maintain the trees in their pastures.

DISTRIBUTION: Brazil, state of Maranhão (mid-western portion) near Açailandia and Imperatriz, Maranhão, state of Para (at least in the mid-eastern



7. *Syagrus vermicularis* in its native habitat near Açailândia, Maranhão, Brazil.

part) near Serra Carajás and the Rio Paraupebas and probably the northern part of the state of Tocantins (Figs. 2, 6 & 7).

**PHENOLOGY:** Many of the trees in September had immature developing fruits. A small number had mature fruits and fewer still had flowers. Fortunately, I found a few sporadic inflorescences, but all contained only male flowers. I found this initially perplexing, but after growing them at MBC, it has been observed that the first few

inflorescences of young palms do frequently produce only male flowers and often these flower outside their normal season. However, it must be noted that female flower bearing inflorescences were observed opening at MBC in September.

**SPECIMENS EXAMINED.** BRAZIL: Maranhão, Açailândia, Fazenda Itaibaiana (Companhia Vale do Rio Doce), ca. 17 km S. on BR 10 km 1, Lat. 05° 02' S, Long. 47° 01' W, 6 Sep 1994, *L. R. Noblick & J. A. Feitosa* 4971 (Holotype IPA; Herbarium of

Fazenda Itaibaiana, FTG, K, MO, NY, US); Açailândia, 5–6 km S. of the city on BR-010 (Açailândia/Imperatriz road), Lat. 05° 02' S, Long. 47° 01' W, 8 Sep 1994 L. R. Noblick *et al.* 4974 (FTG, IPA, K, NY); Par., Marab.: Carajás – Marab.-Highway, 8 km from the entrance to Serra Carajás, 20 Apr 1985. A. B. Anderson & M. Rosa 2202 (MG); Parauapebas, Serra dos Carajás, fazenda em Parauapebas [ranch in Parauapebas]; J. B. P. Rocha & J. P. Silva 666 12 Jan 1990 (Herbarium of Carajás – HCJS); J. P. Silva 695 12 Jan 1990; Proximo Sitio de Chagas [Near Chagas farm, margin of the Parauapeba River, Raimundo Mascarenha road]; J. P. Silva 650 19 Oct 1990 (Herbarium of Carajás – HCJS).

COMMENTS: A study of the leaf anatomy reveals that just below the upper leaf epidermis, there is a continuous one-cell thick layer of sclerenchyma fibers that is present in more or less all Amazonian species and in a few Atlantic coastal species of *Syagrus*. The Amazonian *Syagrus* are *S. sancona*, *S. inajai*, *S. orinocensis*, *S. stenopetala*, *S. cocoides*, *S. smithii* and *S. stratincola*. The closely related *Syagrus* from the Atlantic Forest are *S. botryophora* and *S. pseudococos*.

Seeds collected in September 1994 and sown before the end of the month started germinating shortly after mid-October and continued until February of 1995. No plants resulted from the holotype collection, MBC accession number 94694, due to its immature fruit. However, another more mature MBC seed accession, 94690, collected from the same Açailândia population is represented at MBC by 25 plants. Additional seed was collected and donated by Bernard Fischer in 1996 and is represented in the garden by two plants, accession 96364. Bernard's collection came

from a specimen that had four instead of the usual three basal pores on the endocarp.

In summary, *Syagrus vermicularis* is easily distinguished from other *Syagrus* by long, sterile, strongly folded inflorescence tips, by a peduncular bract that frequently is shed before the inflorescence reaches full maturity (not yet observed in any other species of *Syagrus*); prominent trilobed endocarp beak (seen only occasionally in *S. botryophora*); and the young attractive trunk covered (at least initially) with a dense white caudaceous tomentum.

#### Acknowledgments

I thank the 1994 staff at Fazenda Itaibaiana (Companhia vale do Rio Doce) who facilitated this collection: Juan Alfonso Rodrigues Ataides, José Mario, Deonizio Mendes and my designated guide, Josely Alves Feitosa (Tê). I am grateful to Professor Nivaldo de Figueiredo of the Universidade Federal of Maranhão, São Luiz, for his help collecting in the northern part of the state and for connecting me up with Juan Alfonso at the Fazenda. Sincere thanks goes to staff of IPA Herbarium in Recife, Pernambuco, for the generous use of their facilities to process plant material between trips. Also, sincere thanks to Fairchild Tropical Garden Research Center and staff, where I am a research associate. Thanks to Dr. Scott Zona for his valuable advice and Wes Jurgens for his wonderful line drawings. The impetus and financial support for this work was provided by the National Science Foundation Grant # 0212779 and by the Montgomery Botanical Center.

#### LITERATURE CITED

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