

prophyll and peduncular bract. It is a widespread and variable species.

Subspecific variation. *Pholidostachys pulchra* occurs in at least six geographically separate populations. However, no subspecific division is made here for two reasons. It is not clear if the gaps between some of the populations are artifacts of insufficient collecting, and in most cases there are too few specimens to test for differences amongst populations.

From the north, at low elevations of 245(15–750) m in Nicaragua and Costa Rica there is a large and apparently uniform population. This population has proximal lips that are slightly different from other populations; they are wider than long and the apex of each lip slightly overlaps the bases of the next two, distal lips (Fig. 3C, left). One specimen from near Puerto Viejo in Costa Rica is reported to have clustered stems; all others are solitary. There is a single outlier in Costa Rica, from the Osa Peninsula.

The gap between the Nicaraguan and Costa Rican population and the next, in Veraguas, Panama appears real since there are collections of many other palms from the intervening region. The Veraguas population occurs at higher elevations of 712(400–1000) m and has shorter stems, smaller leaves, smaller inflorescences, and larger fruits than the Nicaragua/Costa Rica population.

The next population, in Coclé, Panama, occurs at slightly lower elevations at 519(100–775) m. It has shorter and narrower apical pinnae with a narrower angle and longer peduncular bracts and interbract distances than other populations. One specimen from here is reported to have clustered stems.

The next population occurs east of the Canal Zone, in three areas, the Santa Rita Ridge, Cerro Brewster, and the western end of the Serranía de San Blas. These are likely to represent collecting localities rather than populations, and all are treated together. This population occurs also occurs at slightly lower elevations at 426(200–850) m. It has longer stems, longer and wider rachises, longer and wider peduncles, and longer and wider rachillae than other Central American populations. One specimen (*de Nevers 5206*) has an unusually short inflorescence. In this population, several specimens are reported to have clustered stems. This and other Panamanian populations (Veraguas, Coclé) have different proximal lips from the Costa Rican/Nicaraguan population; they are usually longer than wide and do not overlap the two distal lips (Fig. 3C, right). However, a few specimens from San Blas have proximal lips more like the Costa Rican/Nicaraguan population.

Almost 500 km further south, there are two populations in western Colombia. One of these, from near Quibdó at 356(200–450) m elevation, comprises several specimens that have unusually short inflorescences and smaller fruits. These tend to have the inflorescence bracts surrounding, although not covering, the rachilla at anthesis.

Furthest south, from Valle at 129(12–600) m elevation, there are several specimens that also have unusually small fruits, like those of the population from near Quibdó. However, unlike that population, the Valle specimens have the longest rachillae of any population of *Pholidostachys pulchra*.

6. *Pholidostachys sanluisensis* Henderson, *sp. nov.* (Appendix IV, Plates 15–23)

It differs from other species in its compressed fruits, obovoid in lateral view with an asymmetric base, ellipsoid in frontal view, with a pronounced meridional ridge.

Type:—COLOMBIA. Antioquia: Municipio San Luis, Vereda Manizales, 12 km de San Luis en la via San Luis-San Carlos, a lo largo del río Dornilón, 1440 m, 26 June 1987, R. Callejas, H. Correa, J. Betancur & A. Arbelaez 4274 (holotype HUA n. v., isotype NY!).

Stems 3.1(2.0–5.0) m long, 4 cm diameter, solitary. Leaves 11(9–15) per stem; sheaths 50 cm long; petioles 93.5(87.0–100.0) cm long; rachises 92 cm long, 9.5(7.6–11.9) mm diameter; pinnae 9(7–12) per side of rachis; basal pinna 39 cm long, 1.4(1.0–2.0) cm wide, forming an angle of 74(57–85)° with the rachis; apical pinna 30.5 cm long, 12.8(6.0–19.3) cm wide, forming an angle of 13(9–20)° with the rachis. Inflorescences branched 1 order, with a welldeveloped peduncle, short rachis, and several rachillae, these erect at anthesis; prophylls and peduncular bracts fibrous, covering all or part of the rachillae at anthesis; prophylls length no data; peduncular bracts 41.4 cm long, inserted 7.0(4.5–11.5) cm above the prophyll; peduncles 18.0(13.5–

26.0) cm long, 8.3(7.6–9.2) mm diameter; rachillae 4, 36.4(26.0–43.5) cm long, 7.9(6.7–8.8) mm diameter; proximal lips of flower pits irregularly shaped, often acute or acuminate, completely covering pits before anthesis; fruits compressed, obovoid in lateral view with an asymmetric base, ellipsoid in frontal view, with a pronounced meridional ridge, 19.8(19.6–19.9) mm long, 10.3(9.8–10.7) mm diameter.

Distribution and habitat. From 5°57'–6°08'N and 74°51'–75°10'W in Colombia (Antioquia) on the Cordillera Central at 1004(700–1440) m elevation in lowland or montane rainforest (Fig. 6).

Taxonomic notes. Specimens of *Pholidostachys sanluisensis* have been determined as *P. dactyloides*. They differ from that species in their fruits that are compressed, obovoid in lateral view with an asymmetric base, ellipsoid in frontal view, with a pronounced meridional ridge (Fig. 4E) (versus fruits that are scarcely compressed, obovoid, with an obscure longitudinal ridge in *P. dactyloides*, Fig. 4A). Fruits of *P. sanluisensis* are also larger—19.8(19.6–19.9) mm long and 10.3(9.8–10.7) mm diameter versus 9.0(6.0–16.5) mm long and 6.8(5.1–12.9) mm diameter in *P. dactyloides*.

Subspecific variation. There is no geographic discontinuity and only a few specimens are known.

7. *Pholidostachys synanthera* (Mart.) Moore (1969: 231). *Geonoma synanthera* Martius, 1823–1837: 13. *Calyptrogyne synanthera* (Mart.) Burret, 1930: 137. *Calyptronoma synanthera* (Mart.) Bailey, 1938: 166. Type:—PERU. Huánuco: Chicoplaya, no date, *H. Ruiz & J. Pavón s. n.* (holotype M n.v., isotype F!).

Stems 3.3(1.0–6.0) m long, 5.6(3.0–22.0) cm diameter, solitary. **Leaves** 15(4–27) per stem; sheaths 32.8(15.0–74.0) cm long; petioles 70.1(24.0–136.0) cm long; rachises 84.0(48.0–124.0) cm long, 8.1(3.6–12.6) mm diameter; pinnae 10(4–18) per side of rachis; basal pinna 49.6(26.5–67.5) cm, long, 1.7(0.2–7.6) cm wide, forming an angle of 50(27–72)° with the rachis; apical pinna 45.0(23.0–65.0) cm long, 10.5(2.5–22.5) cm wide, forming an angle of 15(9–24)° with the rachis. **Inflorescences** branched 1–2 orders, with a well-developed peduncle and rachis, and several rachillae, these spreading at anthesis; prophylls and peduncular bracts woody, not covering rachillae at anthesis; prophylls 38.0(25.5–55.0) cm long; peduncular bracts 32.1(19.0–41.0) cm long, inserted 8.6(5.0–12.5) cm above the prophyll; peduncles 44.8(20.0–70.0) cm long, 11.4(5.3–19.1) mm diameter; rachilla 12(4–25), 28.5(14.0–56.0) cm long, 6.1(3.7–10.3) mm diameter; proximal lips of flower pits regularly shaped, rounded, not covering pits before anthesis, recurved fruits scarcely compressed, ellipsoid, with obscure longitudinal ridges, 14.3(10.2–17.7) mm long, 8.4(6.1–10.5) mm diameter.

Taxonomic notes. *Pholidostachys synanthera* is the most widespread species in the genus.

Subspecific variation. There are three geographically separate populations of *Pholidostachys synanthera*. One occurs at 146(90–250) m elevation in the western Amazon region; the second on eastern Andean slopes at 1040(400–1620) m elevation; and the third on the Cordilleras Central and Oriental in Colombia at 1206(550–1750) m elevation. Only three variables (rachis length, number of divisions, apical pinna angle) are significantly different between the two Andean populations (*t*-test, *P* < 0.05), and they are here treated as one. Between this expanded Andean population and the Amazon population, 11 variables (stem height, stem diameter, leaf number, rachis length, rachis width, number of divisions, basal pinna length, basal pinna angle, apical pinna length, apical pinna width, rachillae width) are significantly different (*t*-test, *P* < 0.05). Most of these variables are from stems and leaves, and only one from inflorescences. Based on these results, Amazon and Andean populations are recognized as subspecies (subsp. *robusta*, *synanthera*).

Key to the subspecies of *P. synanthera*

- 1 Stems 2.6(1.0–6.0) m long; rachises 74.1(48.0–91.0) cm long; pinnae 7(4–12) per side of rachis; western Amazon region in Colombia, Peru, and Brazil at 146(90–250) m elevation subsp. *robusta*
- Stems 3.9(1.8–6.0) m long; rachises 92.2(55.0–124.0) cm long; pinnae 12(7–18) per side of rachis; Cordilleras Central and Oriental in Colombia and eastern Andean slopes in Colombia, Ecuador, and Peru at 1064(400–1750) m elevation subsp. *synanthera*

7.1 *Pholidostachys synanthera* subsp. *synanthera*