35d. *Geonoma longivaginata* subsp. *vallensis* Henderson, *subsp. nov.* (Appendix IV, Plate 45)

A subspeciebus aliis venis haud prominentibus atque pedunculis longioribus differt.

Type: PANAMA. Coclé: El Valle de Antón, El Monasterio, near Cerro Gaital, 27 November 1995, *A. Henderson & R. Bernal 2039* (holotype PMA!, isotype NY!).

Leaves veins not raised or slightly raised and triangular in cross-section adaxially; rachis 28.1(20.5–37.5) cm long. *Inflorescences* peduncles 9.2(7.4–12.1) cm long rachillae 4(3–5), 18.8(15.4–25.2) cm long.

Distribution and habitat:—From 8°37'–8°40'N and 80°05'–80°12'W in central Panama (El Valle) at 917(880–950) m elevation in lowland tropical rainforest (Fig. 24).

36. *Geonoma macrostachys* Martius (1823: 19). *Taenianthera macrostachys* (Martius) Burret (1930a: 268). Type: BRAZIL. Amazonas: Rio Japurá, no date, *C. Martius s.n.* (holotype M!).

Geonoma acaulis Martius (1823: 18). *Taenianthera acaulis* (Martius) Burret (1930a: 269). *Geonoma macrostachys* var. *acaulis* (Martius) Henderson (1995: 274). Type: COLOMBIA. Amazonas: "Rio Negro ad montem Cupati" [Rio Caquetá, Cerro Yupatí], no date, *C. Martius s.n.* (holotype M!).

Geonoma tamandua Trail (1876: 323). *Taenianthera tamandua* (Trail) Burret (1930a: 268). Type: BRAZIL. Amazonas: Rio Javari, São Antonio de Boa Vista 4 December 1874, *J. Trail 976/CLXXXIII* (holotype K!, isotypes GH!, P!).

Geonoma acaulis subsp. *tapajotensis* Trail (1876: 324). *Geonoma tapajotensis* (Trail) Drude (1882: 508). *Taenianthera tapajotensis* (Trail) Burret (1930a: 269). Type: BRAZIL. Pará: Aramanahy, Rio Tapajós, 10 January 1874, *J. Trail 1017/IX* (holotype K!).

Taenianthera oligostcha Burret (1931a: 201). Type: PERU. Loreto: Río Nanay, May-June 1929, *L. Williams 737* (holotype F!).

Geonoma atrovirens Borchsenius & Balslev in Borchsenius *et al.* (2001: 342). Type: ECUADOR. Napo: Jatun Satcha Biological Field Station, SE of Mishualli, ca. 400 m, 2 October 1995, *H. Balslev et al. 6430* (holotype AAU!, isotype QCA, *n.v.*), ***synon. nov.***

Geonoma supracostata Svenning in Borchsenius *et al.* (2001: 344). Type: ECUADOR. Napo: E of Yasuní Scientific Station, Yasuní National Park, 0°40'S, 76°23'W, 23 March 1995, *J.-C. Svenning 148* (holotype AAU!), ***synon. nov.***

Geonoma ecuadoriensis Henderson, Borchsenius & Balslev (2008: 192). Type: ECUADOR. Napo: carretera Hollin-Loreto-Coca, km 40, entre Río Guamaní y Río Pucuno, 0°40'S 77°38'W, 1200 m, 11 December 1987, *D. Neill, W. Palacios & C. Cerón 8073* (holotype NY!, isotypes AAU!, MO n.v.), ***synon. nov.***

Plants 1.3(0.3–3.5) m tall; stems 0.3(0.1–1.0) m tall, 1.9(1.1–2.8) cm in diameter, solitary or clustered, not cane-like; internodes 0.2(0.1–0.4) cm long, not scaly. *Leaves* 9(3–15) per stem, undivided or irregularly pinnate, not plicate, bases of blades running diagonally into the rachis; sheaths 13.2(2.3–28.0) cm long; petioles 35.5(0.0–137.5) cm long, drying green or yellowish; rachis 46.1(9.3–193.0) cm long, 3.7(1.3–9.8) mm in diameter; veins raised and rectangular in cross-section adaxially or not raised or slightly raised and triangular in cross-section adaxially; pinnae 3(1–16) per side of rachis; basal pinna 24.5(11.0–70.0) cm long, 4.4(0.3–32.0) cm wide, forming an angle of 39(3–100)° with the rachis; apical pinna 20.8(7.2–44.5) cm long, 8.8(1.4–28.0) cm wide, forming an angle of 31(8–77)° with the rachis. *Inflorescences* unbranched; prophylls and peduncular bracts ribbed with elongate, unbranched fibers, both bracts tubular, narrow, elongate, closely sheathing the peduncle, more or less persistent; prophylls 13.0(5.0–33.0) cm long, not short and asymmetrically apiculate, the surfaces not ridged, without unequally wide ridges; peduncular bracts 23.2(10.7–34.5) cm long, well-developed, inserted 1.1(0.1–22.6) cm above the prophyll; peduncles 59.2(19.2–128.5) cm long, 2.9(0.7–6.8) mm in diameter; rachillae 1, 14.1(4.2–31.0) cm long, 5.87(1.7–12.3) mm in diameter, the surfaces without spiky, fibrous projections or ridges, drying brown or yellow-brown, without short, transverse ridges, not filiform and not narrowed between the flower pits; flower pits spirally arranged, glabrous internally; proximal lips with a central notch before anthesis, often the two sides of the notch overlapping, not recurved after anthesis, not hood-shaped; proximal and distal lips drying the same color as the rachillae, not joined to form a raised cupule, the proximal lip margins overlapping the distal lip

Leaves veins not raised or slightly raised and triangular in cross-section adaxially; rachis 23.5(16.5–30.0) cm long. *Inflorescences* peduncles 5.2(3.8–7.5) cm long; rachillae 3(2–4), 17.0(14.0–20.5) cm long.

Distribution and habitat:—From 8°37'–8°47'N and 80°28'–80°39'W in central Panama (Cerro Tife, El Copé, Llano Grande) at 721(200–1200) m elevation in lowland to montane tropical rainforest (Fig. 24).

35c. *Geonoma longivaginata* subsp. *sanblasensis* Henderson, *subsp. nov.* (Appendix IV, Plates 42–44)

A subspeciebus aliis venis prominentibus differt.

Type: PANAMA. San Blas: El Llano-Carti road, km 17–19, 9°19'N, 78°55'W, 19 June 1986, *C. de Nevers & H. Herrera 7957* (holotype NY!, isotype MO, *n.v.*).

Leaves veins raised and rectangular in cross-section adaxially; rachis 52.8(42.0–64.0) cm long. *Inflorescences* peduncles 11.4(8.0–14.0) cm long; rachillae 6(4–8), 27.7(22.3–37.0) cm long.

Distribution and habitat:—From 9°19'S–9°24'N and 78°48'–79°08'W in San Blas, Panama at 322(80–450) m elevation in lowland rainforest (Fig. 24).

One specimen (*de Nevers 4959*—excluded from the above analyses and descriptions) is considerably smaller than the others and) may be a hybrid with *Geonoma deversa*.

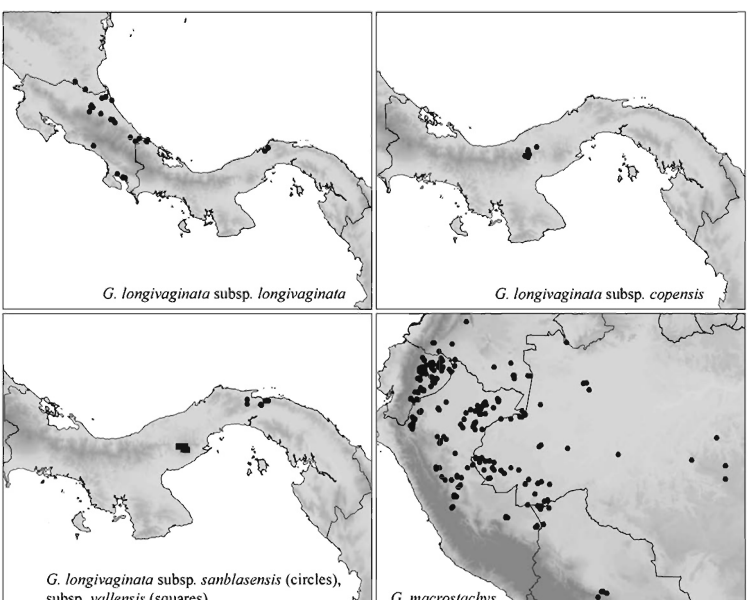

FIGURE 24. Distribution maps of *Geonoma longivaginata* subsp. *longivaginata*, *G. longivaginata* subsp. *copensis*, *G. longivatinata* subsp. *sanblasensis*, *G. longivatinata* subsp. *vallensis*, and *G. macrostachys*.