

arranged, densely hairy internally proximally and distally; proximal lips without a central notch before anthesis, not recurved after anthesis, hood-shaped at anthesis, sometimes splitting post-anthesis; proximal lips drying the same color as the rachillae; distal lips absent; staminate and pistillate petals not emergent, not valvate throughout; staminate flowers deciduous after anthesis; stamens 6; thecae diverging at anthesis, inserted almost directly onto the filament apices, the connectives bifid but scarcely developed; anthers short and curled over at anthesis; non-fertilized pistillate flowers persistent after anthesis; staminodial tubes crenulate or shallowly lobed at the apex, those of non-fertilized pistillate flowers not projecting and persistent after anthesis; *fruits* 6.7(6.0–8.4) mm long, 5.1(4.8–5.3) mm in diameter, the bases without a prominent stipe, the apices not conical, the surfaces not splitting at maturity, without fibers emerging, bumpy from the numerous, subepidermal, tangential, short fibers present, these coming to a point at fruit apices; locular epidermis without operculum, sculpted, usually also with a raised, meridional ridge, without pores.

Distribution and habitat:—From 1°12'–7°14'N and 73°58'–77°00'W on eastern slopes of the Western, Central, and Eastern Cordilleras in Colombia at 1560(1000–2030) m elevation in montane rainforest (Fig. 19).

Taxonomic notes:—See notes under *Geonoma euspatha*.

Subspecific variation:—Three traits vary within this species (stem branching, leaf division, inflorescence branching). There is geographic discontinuity, but too few specimens to test for differences between areas.

25. *Geonoma galeanae* Henderson, *sp. nov.* (Appendix IV, Plates 35–37)

A speciebus affinis crusta prophylli cristis indivisis parallelis aequalibus atque proximis ferens, defectus operculi differt.

Type: COLOMBIA. Antioquia: Mun. San Luis, 16 km. S.O. de las partidas a San Luis, sobre la vía Medellín-Bogotá, Vereda la Josefina, 6°00'N 74°50'W, 800 m, 25 June 1987, R. Callejas, J. Betancur, A. Arbelaez & H. Correa 4208 (holotype NY!, isotype HUA, *n.v.*).

Plants 3.0 m tall; stems 2.0 m tall, 1.7 cm in diameter, solitary, cane-like; internodes 2.0 cm long, yellowish and smooth. *Leaves* 12 per stem, irregularly pinnate, not plicate, bases of blades running diagonally into the rachis; sheaths 24.0(18.0–30.0) cm long; petioles 37.0(36.0–38.0) cm long, drying green or yellowish; rachis 54.3(43.5–65.0) cm long, 4.9(4.4–5.5) mm in diameter; veins raised and rectangular in cross-section adaxially; pinnae 7(4–10) per side of rachis; basal pinna 38.0 cm long, 9.2(5.5–15.5) cm wide, forming an angle of 42(35–49)° with the rachis; apical pinna 32.8(28.5–37.0) cm long, 19.3(16.5–22.0) cm wide, forming an angle of 32(31–32)° with the rachis. *Inflorescences* branched 2 orders; prophylls and peduncular bracts not ribbed with elongate, unbranched fibers, deciduous; prophylls 19.5 cm long, prophylls not short and asymmetrically apiculate, the surfaces ridged with close, equal, parallel, non-dividing ridges, scarcely tomentose between the ridges, without unequally wide ridges; peduncular bracts 16.0 cm long, well-developed, inserted 0.3(0.2–0.4) cm above the prophyll; peduncles 7.4(4.8–10.3) cm long, 7.0(5.6–8.3) mm in diameter; rachillae 20, 14.6(13.2–16.0) cm long, 2.6 mm in diameter, the surfaces without spiky, fibrous projections or ridges, drying brown, with faint to pronounced, short, transverse ridges, not filiform and not narrowed between the flower pits; flower pits spirally arranged, glabrous internally; proximal lips without a central notch before anthesis, not recurved after anthesis, hood-shaped at anthesis, sometimes splitting post-anthesis; 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 margins; distal lips well-developed; staminate and pistillate petals not emergent, not valvate throughout; staminate flowers deciduous after anthesis; stamens 6; thecae diverging at anthesis, inserted almost directly onto the filament apices, the connectives bifid but scarcely developed; anthers short and curled over at anthesis; non-fertilized pistillate flowers deciduous after anthesis; staminodial tubes crenulate or shallowly lobed at the apex, those of non-fertilized pistillate flowers not

projecting and persistent after anthesis; *fruits* size no data, the bases without a prominent stipe, the apices not conical, the surfaces not splitting at maturity, without fibers emerging, bumpy from the numerous, subepidermal, tangential, short fibers present, these coming to a point at fruit apices; locular epidermis without operculum.

Distribution and habitat:—From 5°53'–6°15'N and 74°50'–75°00'W on the eastern slopes of the Central Cordillera in Colombia at 830(800–860) m elevation in lowland rainforest (Fig. 19).

Taxonomic notes:—*Geonoma galeanae* is similar to a group of species (*G. baculifera*, *G. calyptrognoidea*, *G. concinna*, *G. conncinnoidea*, *G. congesta*) in having the prophyll surfaces ridged with close, equal, parallel, non-dividing ridges. It differs from these in its locular epidermis without an operculum. Only three specimens are known.

Subspecific variation:—No trait varies within this species, nor is there geographic disjunction.

26. *Geonoma gentryi* Henderson, sp. nov. (Appendix IV, Plate 38)

A speciebus affinis prophyllis haud brevibus necnon inaequaliter apiculatis differt.

Type: COLOMBIA. Chocó: 2 km S of Las Animas on road to Istmina, 150 m, 13 August 1976, A. Gentry & M. Fallen 17623 (holotype MO!).

Plants 1.5 m tall; stems height no data, 0.8 cm in diameter, branching no data, cane-like; internodes 2.9 cm long, yellowish and smooth. *Leaves* undivided, not plicate, bases of blades running diagonally into the rachis; sheaths 6.0 cm long; petioles 12.0 cm long, drying green or yellowish; rachis 26.0 cm long, 2.4 mm in diameter; veins not raised or slightly raised and triangular in cross-section adaxially; pinnae 1 per side of rachis; basal pinna length and width not applicable, forming an angle of 25° with the rachis; apical pinna 11.6 cm long, width not applicable; forming an angle of 28° with the rachis. *Inflorescences* branched 2 orders; prophylls and peduncular bracts not ribbed with elongate, unbranched fibers, flattened, deciduous or persistent; prophylls length no data, not short and asymmetrically apiculate, surfaces no data; peduncular bracts length no data, well-developed, inserted 2.4 cm above the prophyll; peduncles 18.7 cm, 3.1 mm in diameter; rachillae 12, 5.3 cm long, 2.0 mm in diameter, the surfaces without spiky, fibrous projections or ridges, drying brown, with faint to pronounced, short, transverse ridges, not filiform and not narrowed between the flower pits; flower pits spirally arranged, glabrous internally; proximal lips without a central notch before anthesis, not recurved after anthesis, not hood-shaped; proximal and distal lips drying the same color as the rachillae, joined to form a raised cupule, the margins not overlapping; distal lips well-developed; staminate and pistillate petals not emergent, not valvate throughout; staminate flowers deciduous after anthesis; stamens 6; thecae diverging at anthesis, inserted almost directly onto the filament apices, the connectives bifid but scarcely developed; anthers short and curled over at anthesis; non-fertilized pistillate flowers deciduous after anthesis; staminodial tubes crenulate or shallowly lobed at the apex; staminodial tubes of non-fertilized pistillate flowers not projecting and persistent after anthesis; *fruits* 8.6 mm long, 5.7 mm in diameter, the bases without a prominent stipe, the apices not conical, the surfaces not splitting at maturity, without fibers emerging, bumpy from the numerous, subepidermal, tangential, short fibers present, these coming to a point at fruit apices; locular epidermis without operculum.

Distribution and habitat:—At 5°16'N and 76°37'W on the Pacific coast of Colombia (Chocó) at 150 m elevation in lowland rainforest (Fig. 19).

Taxonomic notes:—*Geonoma gentryi* is a member of the *G. lanata* clade, within which it appears most similar to *G. spinescens*. Both these species lack data for some prophyll characters, but given its wide geographic separation and different habitat (lowland rainforest at 150 m in the Chocó versus lowland or montane rainforest at 1075(800–1330) m in the Coastal Range in Venezuela), *G. gentryi* is recognized as a distinct species.

Subspecific variation:—No trait varies within this species, and only one specimen is known.

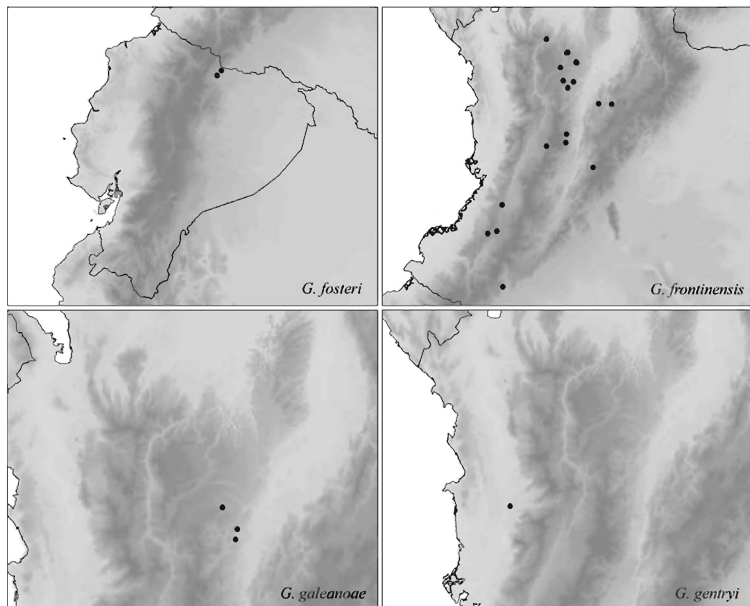


FIGURE 19. Distribution maps of *Geonoma fosteri*, *G. frontinensis*, *G. galeanoae*, and *G. genryi*.

24. *Geonoma frontinensis* Burret (1930a: 170). Type: COLOMBIA. Antioquia: Frontino, 1400–1700 m, September 1871, *F. Lehmann* 7323 (holotype B, destroyed, isotype K!).

Geonoma mucronata Burret (1930a: 171). Type: COLOMBIA. Antioquia: Dos Quebradas, 1500 m, 7 January 1880, *W. Kalbreyer* 1334 (holotype B, destroyed). Neotype (designated by Bernal *et al.* 1989): COLOMBIA. Antioquia: Carretera San Carlos-Granada, Dos Quebradas, 4.5 km E of San Carlos, 1200 m, 20 September 1987, *R. Bernal & L. Tobón* 1383 (neotype COL!, isoneotypes MO!, NY!).

Plants 1.1(0.5–2.0) m tall; stems 0.2(0.2–0.3) m tall, solitary or clustered; internodes no data. *Leaves* 6(4–8) per stem, undivided or irregularly pinnate, not plicate, bases of blades running diagonally into the rachis; sheaths 30.0 cm long; petioles 68.8(26.0–110.0) cm long, drying green or yellowish; rachis 40.0(22.5–65.0) cm long, 3.3(2.0–4.5) mm in diameter; veins raised and rectangular in cross-section adaxially; pinnae 5(1–8) per side of rachis; basal pinna 35.5(19.0–47.5) cm long, 3.6(0.3–8.7) cm wide, forming an angle of 46(30–61)° with the rachis; apical pinna 24.8(19.0–30.0) cm long, 9.8(2.0–21.5) cm wide, forming an angle of 26(20–34)° with the rachis. *Inflorescences* unbranched or branched 1 order; prophylls and peduncular bracts not ribbed with elongate, unbranched fibers, persistent; prophylls 19.8(13.4–26.2) cm long, not short and asymmetrically apiculate, the surfaces not ridged, without unequally wide ridges; peduncular bracts 20.2(14.3–26.5) cm long, well-developed, inserted 9.7(4.0–17.0) cm above the prophyll; peduncles 37.4(21.0–58.0) cm long, 2.9(1.6–4.5) mm in diameter; rachillae 2(1–4), 14.7(7.5–20.5) cm long, 3.9(2.9–5.2) 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