Park in Amazonian Ecuador, there are two forms of this morphotype. One has smaller leaves and branched inflorescences, the other larger leaves and unbranched inflorescences. The latter exactly resemble *trailii* in their leaves, except for the non-raised veins. There are no specimens of *trailii* from Yasuni, but it occurs just to the west of the Park. There may be introgression between *arundinacea* and *trailii* in this area. A specimen (*Vásquez 7413*) from Amazonian Peru has an exceptionally long rachilla.

On eastern Andean foothills and in the western Amazon region in Colombia, Ecuador, and Peru there is a morphotype (*elevata*) with small, undivided leaves with narrow basal angles and raised adaxial veins and unbranched inflorescences with persistent staminate flowers. Inflorescences are usually pendulous.

In the western Amazon region in Colombia, Peru, and Brazil there is a morphotype (*minor*) with small, undivided, rarely pinnate leaves and unbranched inflorescences with deciduous staminate flowers. Veins are difficult to score in this morphotype.

In the western Amazon region in Colombia, Ecuador, Peru, and Brazil there is a morphotype (*piscicauda*) with large, undivided leaves with narrow basal angles and raised adaxial veins. Inflorescences are unbranched and often pendulous, and have persistent staminate flowers. The types of *G. piscicauda* and *G. wittiana* are of this morphotype.

On eastern Andean foothills in Ecuador at 1217(825–1600) m elevation there is a morphotype (*puyo*) with pinnate leaves and branched or unbranched inflorescences with deciduous staminate flowers. Veins are difficult to score in this morphotype, and there seem to be several local variants. Some specimens (*Balslev 6419, Cerón 6552, 7454, Harling 3762, Øllgaard 98478*) have exceptionally long inflorescences.

A widespread morphotype (*pycnostachys*, Plates XX, XXI) occurs in the central and western Amazon region in Venezuela, Colombia, Ecuador, Peru, and Brazil. It has mostly undivided leaves with the veins not raised adaxially, and unbranched inflorescences with persistent staminate flowers. The type of *G. pycnostachys* is of this morphotype. Several specimens from the central Amazon region (*Campos 519, Cid 545, Henderson 662, 1043, 1066, Nee 42341, 42897*) are more similar to subsp. *stricta* in their small leaves than they are to other, more westerly specimens of *pycnostachys*. However, small-leaved *pycnostachys* also occur sporadically in the western Amazon region. Specimens (*Díaz 7327, Kajekai 300, Rodríguez 261, 568, Rojas 592, Vásquez 18741, 20286, 24195, 24322*) from southeastern Ecuador and northwestern Peru (Amazonas) have exceptionally large leaves, thick rachillae, and large fruits. Specimens from eastern Andean slopes in Ecuador have pinnate leaves with few divisions. Some specimens (e.g., *Lewis 10332, Vásquez 14439*, and probably several others) appear to be hybrids between this and the *trailii* morphotype, and others appear to be hybrids between this and the *piscicauda* morphotype.

In the central and western Amazon region of Colombia, Ecuador, Peru, Bolivia, and Brazil, with outliers in the central Amazon of Brazil and in Bolivia, there is a morphotype (*trailii*) with pinnate leaves with raised adaxial veins and unbranched inflorescences with deciduous staminate flowers. The types of *Geonoma elegans* var. *amazonica, Geonoma trauniana, Geonoma dasystachys,* and *Geonoma bella* are of this morphotype. The two outlying specimens in Bolivia occur in the same area as outlying specimens of the *tapajotensis* morphotype of *G. macrostachys*. As in the *pycnostachys* morphotype, specimens from southeastern Ecuador and northwestern Peru (Amazonas) have exceptionally large inflorescences.

In the southwestern Amazon region in Peru and Brazil there is a morphotype (*uleana*) with undivided or pinnate leaves with non-raised adaxial veins and unbranched inflorescences with deciduous staminate flowers. It has longer peduncular bracts—3.5 (2.7–4.7) versus 0.5(0.1–4.0) cm—than other morphotypes. The type of *G. uleana* is of this morphotype.

60d. *Geonoma stricta* subsp. *bracteata* Henderson, *subsp. nov.* (Appendix IV, Plate 61)

A subspeciebus aliis foliis pinnatis venis haud prominentibus, rachillis tenuibus, atque inflorescentiis ramosis differt.

Type: PERU. Huánuco: Prov. Pachitea, region of Pucallapa, western side of the Sira mountains, 9°28'S, 74°47'W, 800 m, 10 September 1988, *H. Rainer P22–10988* (holotype NY!).

Leaves pinnate; veins not raised or slightly raised and triangular in cross-section adaxially; pinnae 3(3–4) per side of rachis. *Inflorescences* branched; staminate flowers deciduous after anthesis.

Distribution and habitat:—From 9°03'–10°12'S and 74°47'–75°30'W on eastern Andean slopes in central Peru (Huánuco, Pasco, Ucayali) at 542(320–800) m elevation in lowland rainforest (Fig. 39).

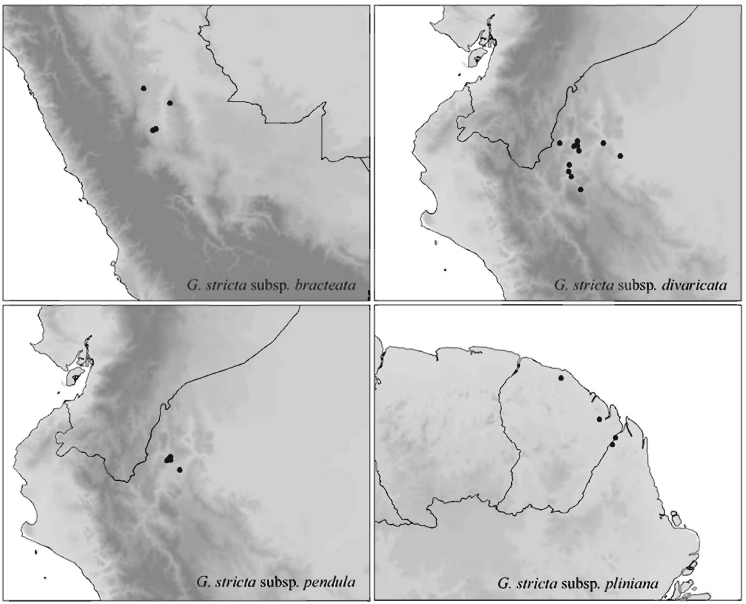

FIGURE 39. Distribution maps of *Geonoma stricta* subsp. *bracteata*, *G. stricta* subsp. *divaricta*, *G. stricta* subsp. *pendula*, and *G. stricta* subsp. *pliniana*.

60e. *Geonoma stricta* subsp. *divaricata* Henderson, *subsp. nov.* (Appendix IV, Plate 62)

A subspeciebus aliis foliis pinnatis venis haud prominentibus, rachillis crassis, atque inflorescentiis ramosis differt.

Type: PERU. Amazonas: Distr. El Cenepa, comunidad de Tutino, 4°33'S, 78°12'W, 500 m, 20 July 1997, *R. Rojas, A. Peña & E. Chávez 101* (holotype NY!, isotype MO *n.v.*).

Leaves pinnate; veins not raised or slightly raised and triangular in cross-section adaxially; pinnae 3(3–4) per side of rachis. *Inflorescences* branched; staminate flowers deciduous after anthesis.

Distribution and habitat:—From 4°28'–5°24'S and 77°20'–78°30'W on eastern Andean slopes in northern Peru (Amazonas, Loreto) at 510(170–950) m elevation in lowland rainforest (Fig. 39).

60f. *Geonoma stricta* subsp. *pendula* Henderson, *subsp. nov.* (Appendix IV, Plate 63)

A subspeciebus aliis foliis plerumque simplicibus venis haud prominentibus atque inflorescentiis ramosis differt.