

Two new species of *Pilea* (Urticaceae) from Panama

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SYNOPSIS. Two new species of *Pilea* from Panama are described and illustrated: *Pilea corona* A.K. Monro, which most closely resembles *P. acuminata* Liebm., and *P. digitata* A.K. Monro, which most closely resembles *P. fasciata* Wedd. The affinities of these species are discussed and their position within Weddell's subdivisions of the genus indicated.

INTRODUCTION

Pilea Lindl. is the largest genus in the Urticaceae and comprises over 600 species (Burger, 1977), distributed throughout the tropics, subtropics, and temperate regions (with the exception of Australia, New Zealand, and Europe). It is easily distinguished from other neotropical Urticaceae by the combination of opposite leaves and a single, ligulate, intrapetiolar stipule in each leaf axil.

In the course of preparing a revisionary account for *Flora Mesoamericana*, ten new species have already been described by the author (Monro, 1999, 2000) and a further two new species are described here. Their affinities are discussed and their position within Weddell's (1869) subdivisions of the genus indicated, which although not phylogenetic, are based on the most comprehensive worldwide treatment of the genus.

Pilea corona A.K. Monro, **sp. nov.** Type: Panama, Veraguas, 3 miles from Escuela de Agricultura Alto Piedra on road to Río Calovébra, along stream, 2400 ft, 7 October 1979, Antonio 2043 (PMA!-holotype; MO!-isotype).

Fig. 1A–C.

Species *P. acuminata* Liebm. similis, sed inflorescentiis staminalis non ramosus, stipulis minimis, differt.

Herb to 30 cm; epiphytic or epipetric. **Stems** erect or prostrate, drying dark brown, pubescent, the hairs to 1 mm, appressed, curved; cystoliths fusiform; internodes 7–31 × 1–4 mm, angulate or circular in cross-section. **Stipules** 3–5 mm, obovate or oblong, drying grey-brown. **Leaves** petiolate, petioles at the same node equal or unequal by ratio 1:1.5–4.0, major petiole 3–34 mm, pubescent, the hairs to 1 mm, appressed, curved or straight; laminae of leaves at the same node equal to subequal, 25–130 × 11–45 mm, elliptic, narrowly elliptic or lanceolate, chartaceous; upper surface drying dark brown to dark green, pubescent, the hairs to c. 0.8 mm, appressed, weakly curved, the cystoliths fusiform, 'V'- and 'Y'-shaped; lower surface drying grey-green to grey-brown, pubescent on veins only, the hairs to 1 mm, upright, curved or occasionally straight, glandular-punctate; primary venation 3-nerved, lateral nerves visible for 1/3 to 2/3 of the lamina length, secondary veins (4)8–16 pairs, 45–60° to the midrib, straight; base asymmetrical or symmetrical, cuneate, attenuate or decurrent; margins coarsely dentate, basal 1/10 to 1/8 entire; apex acute. **Inflorescences** 2–4 per stem, unisexual, occasionally bisexual, where bisexual dominated by a single sex; peduncular bracts 1.0–1.5 mm; bracts c. 0.5 mm. **Staminate inflorescences** solitary, 25–47 mm, bearing 15–50 flowers in a compact head; peduncle 2/3 to 3/4 inflorescence length, pubescent, the hairs to

1.5 mm, appressed, straight; pedicels 2.5–4.0 mm, glabrous or pubescent, the hairs to c. 0.5 mm, erect, crisped; flowers 3.0–3.5 × 1.0–1.3 mm immediately prior to anthesis, cream to brown; tepals 4, 1.0–1.3 mm, glabrous, occasionally pubescent, the hairs to c. 0.5 mm, erect, crisped, the subapical appendage 1.8–3.3 mm, linear, pubescent, the hairs to 1 mm, erect, crisped; stamens 4. **Pistillate inflorescences** solitary per axil, 3–10 mm, bearing 20–60 flowers in a compact head; peduncle 1/3 to 1/2 inflorescence length, glabrous or sparsely pubescent, the hairs to c. 0.8 mm, appressed, curved; pedicels 0.4–0.7 mm, glabrous; dorsal tepal 0.5–0.7 mm, oblong to obovate, the dorsal tepal appendage c. 0.3 mm, scale-shaped; lateral tepals 0.5–0.7 mm, asymmetrically ovate. **Infructescences** 14–27 mm; fruit 1.0–1.4 mm, compressed, asymmetrically elliptic, the margin narrow.

DISTRIBUTION. This species is endemic to the provinces of Chiriquí and Veraguas in western Panama. It is found at elevations of 700–1200 m in wet forest.

MATERIAL EXAMINED. **PANAMA.** **Chiriquí:** SE of Fortuna Lake, near mouth of Río Hornito, 8°45'N 82°13'W, 1150 m, Hampshire & Whiteford 318 (BM). **Veraguas:** above Santa Fe beyond Escuela Agrícola Interamericana, 1.8 miles beyond fork in road on Pacific slope, above rocky ravine on side of Cerro Tute, Croat 34207 (MO); Río Segundo Brazo, 700 m, Maas & Dressler 1621 (F, MO); vicinity of Escuela de Agricultura Alto Piedra near Santa Fe, c. 1 hour walk along road beyond school, 900 m, Antonio 2984 (MO); vicinity of Escuela de Agricultura Alto Piedra near Santa Fe, 3 miles beyond fork in road near the school toward Atlantic coast, near trail to top of Cerro Tute, 700 m, Antonio 3537 (MO); vicinity of Escuela de Agricultura Alto Piedra near Santa Fe, along trail to top of Cerro Tute, 700 m, Antonio 4043 (MO); mountains W. of Alto de Piedras, Siclo Básico school N. of Santa Fe, 700 m, Hammel 4648 (MO, NY); forest at base of Cerro Tute, 6.5 km outside Santa Fe, Folsom 3057 (MO); N. of Santa Fe on property of Escuela Agrícola Alto de Piedra, Mori & Kallunki 2521 (NY); NW of Santa Fe, 8.8 km from Escuela Agrícola Alto de Piedra, Pacific slope, Mori et al. 3911 (NY).

Pilea corona falls into Weddell's *Dentatae* species group (Weddell, 1869) in having equal-sized, toothed leaves at each node. Material of this species has previously been determined as *P. acuminata* Liebm., which it closely resembles, but although both species occur in Panama, *P. acuminata* is known only from Coclé Province which lies to the east of the area from which *P. corona* is known. The two taxa may be distinguished on staminate inflorescence arrangement and stipule size, as summarized below.

Pilea acuminata: stipules 7–20 mm; staminate inflorescences with (15–25)50–200 flowers borne in 5–30 compact heads arranged in a loose panicle, peduncle (1/4)1/3 to 1/2(3/4) inflorescence length.

Pilea corona: stipules 3–5 mm; staminate inflorescences with 15–50

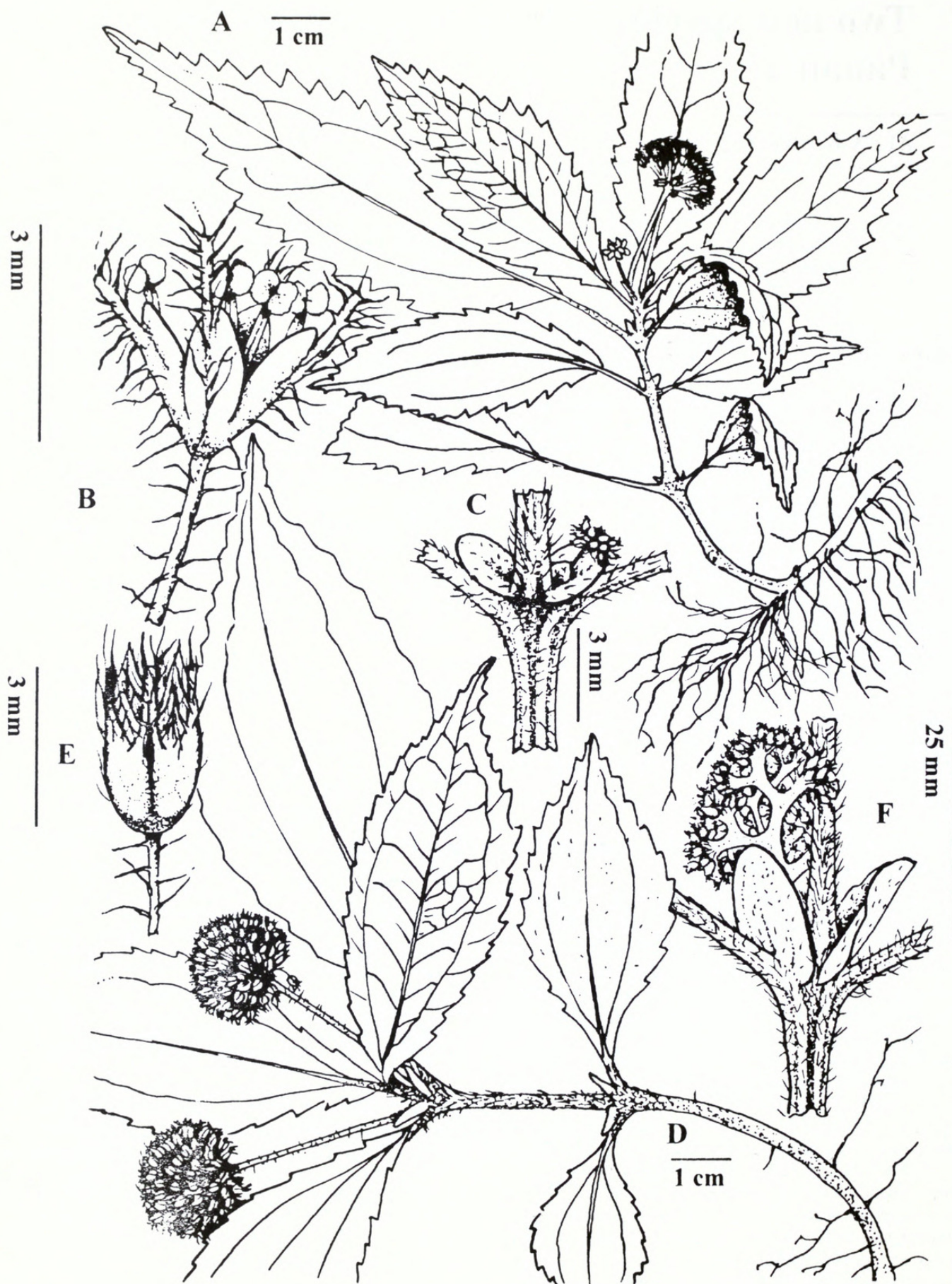


Fig. 1 A–C. *Pilea corona* (Antonio 2043, MO). A. Fertile branch with staminate inflorescence and infructescence; B. Staminate flower at anthesis; C. Pistillate inflorescence and stipule. D–F. *Pilea digitata* (Hampshire & Whitefoord 694, BM). D. Fertile branch; E. Staminate flower immediately prior to anthesis; F. Pistillate inflorescence.

flowers borne in a single compact head, peduncle $\frac{2}{3}$ to $\frac{3}{4}$ inflorescence length.

The species epithet refers to the staminate flowers immediately prior to anthesis, at which time the tepal appendages give the flower the appearance of a crowned head.

Pilea digitata A.K. Monro, **sp. nov.** Type: Panama, Chiriquí, trail W. from Fortuna Dam camp to La Fortuna, 8°43'N 82°14'W, 1300 m, 28 February 1985, *Hampshire & Whitefoord* 189 (PMA!-holotype; BM!-isotype).

Fig. 1D–F.

Species *P. fasciata* Weddell similis, sed inflorescentis staminalis non ramosus, floribus staminalibus majoribus, differt.

Herb to 50 cm; terrestrial. **Stems** erect, prostrate at base, drying dark brown, densely pubescent, the hairs to 1.5 mm, erect or weakly appressed, curved; cystoliths fusiform; internodes 10–85 × 2.5–6.0 mm, angulate in cross-section. **Stipules** 3.0–10.5 mm, obovate to oblong, drying dark brown. **Leaves** petiolate, petioles at the same node unequal by ratio 1:1.5–3.5, the major petioles 6–30 mm, densely pubescent, the hairs to 1.3 mm, weakly appressed or erect, curved or straight, the minor petioles 5–20 mm; laminas of leaves at the same node equal, 40–130 × 17–70 mm, obovate to rhomboid to broadly elliptic, chartaceous, occasionally bullate; upper surface drying dark brown to dark green, pubescent, the hairs to 2 mm, erect or appressed, weakly curved, the cystoliths fusiform and 'V'-shaped, occasionally 'Y'-shaped; lower surface drying grey-green, densely pubescent on veins only, the hairs to 1 mm, erect, curved or occasionally straight, glandular-punctate; primary venation 3-nerved, lateral nerves visible for $\frac{1}{2}$ to $\frac{2}{3}$ of the lamina length, secondary veins 8–26 pairs, 60–75° to the midrib, straight to weakly curved; base asymmetrical or symmetrical, cuneate or obtuse, occasionally decurrent; margins serrate, basal $\frac{1}{10}$ to $\frac{1}{5}$ entire; apex cuspidate. **Inflorescences** 2–6 per stem, unisexual; peduncular bracts 1.8–3.0 mm; bracts 1.0–1.5 mm. **Staminate inflorescences** solitary, 20–60 mm, bearing 30–200 flowers in a compact head; peduncle $\frac{1}{2}$ to $\frac{3}{4}$ inflorescence length, densely pubescent, the hairs to 1.5 mm, appressed or erect, curved or occasionally crisped; pedicels 2.5–7.0 mm, glabrous, occasionally pubescent, the hairs to c. 0.5 mm, erect, crisped; flowers 2.5–3.5 × 1.0–1.3 mm immediately prior to anthesis, cream and green; tepals 4, 1.3–1.8 mm, glabrous, occasionally pubescent, the hairs as for pedicel, the subapical appendage 1–2 mm, linear, frequently reflexed, pubescent, the hairs to 1.5 mm, erect or appressed, curved, occasionally straight; stamens 4. **Pistillate inflorescences** solitary, 12–24 mm, bearing 45–100 flowers in a loose panicle; peduncle $\frac{1}{2}$ to $\frac{2}{3}$ inflorescence length, glabrous or pubescent, the hairs to c. 0.5 mm, erect, crisped or curved; pedicels c. 0.5 mm, glabrous; dorsal tepal 0.7–1.0 mm, oblong, the dorsal tepal appendage 0.4–0.5 mm, obovate to oblong; lateral tepals 0.5–0.7 mm, asymmetrically ovate. **Infructescences** 13–35 mm; fruit 1.5 mm, compressed, asymmetrically elliptic, the margin narrow.

DISTRIBUTION. This species is endemic to the provinces of Bocas del Toro, Chiriquí, Coclé, and Darien in Panama. It is found at elevations of 700–1700 m in wet forest.

MATERIAL EXAMINED. **PANAMA. Bocas del Toro:** along Continental Divide from road branching north off main Fortuna-Chiriquí Grande highway near Continental Divide, 1.1 miles from main highway, 8°44'N 82°17'W, 1200 m, *Croat & Grayum* 60315 (BM, MO); vicinity of Fortuna Dam, 8°40'04"N 79°50'04"W, 850–900 m, *McPherson* 10550 (MO). **Bocas del Toro/Chiriquí border:** Continental Divide above Quebrada Arena, carretera del Oleoducta, IRHE Fortuna Hydroelectric Project, 1150–1200 m, *Knapp & Vodicka* 5639 (MO). **Chiriquí:** road between Fortuna Lake and Chiriquí

Grande, 4.5–5 km N. of dam over Fortuna Lake, 8°43'N 82°17'W, 1100–1135 m, *Croat & Grayum* 60041 (MO); road between Gualaca and Fortuna Dam site, 8.3 miles NW of Los Planes de Hornito, 8°44'N 82°16'W, 1260 m, *Croat* 49935 (BM, MO); Distrito Boquete, Fortuna Dam site, along trail following Continental Divide, 1100 m, *van der Werff & van Hardeveld* 6721 (MO); Distrito Boquete, Fortuna Dam site, Continental Divide, 1100 m, *van der Werff & van Hardeveld* 6798 (MO); La Fortuna Dam site, 9.4 miles beyond entrance to Finca Linares, 20.9 miles from bridge to Río Estí, 1400 m, *Antonio* 2833 (MO); road between Gualaca and Fortuna Dam site, 8.3 miles NW of Los Planes de Hornito, 1260 m, *Antonio* 4162 (MO); road between Gualaca and Fortuna Dam site, 8.3 miles NW of Los Planes de Hornito, 1260 m, *Antonio* 4163 (BM, MO); La Fortuna Hydroelectric project, ridge top N. side of river, c. 1200 m, *Hammel* 2191 (MO); E. del campamento Bijao-Fortuna, *Mendoza* et al. 264 (US); between Los Planes de Hornito and Fortuna Lake, trail to Zarzo, 8°41'N 82°13'W, 1200 m, *Hampshire & Whitefoord* 694 (BM, PMA); Fortuna Dam, above Gualaca, 8°45'N 82°15'W, 1200 m, *McPherson* 6710 (MO). **Coclé:** E. of El Copé sawmill along small stream, 700 m, *Hammel* 3578 (MO). **Darien:** Pirre Massif, Alturas de Nique, above Cana mine, 7°45'N 77°40'W, 1250–1500 m, *McPherson* 12205 (MO); Cana-Cuasi trail, Chipigana District, 1700 m, *Terry & Terry* 1563a (F, GH, MO); N. slopes of Cerro Pirre, 700–950 m, *Mori & Kallunki* 5478 (MO); Cerro Campamento (S. of Cerro Pirre), *Duke* 15671(2) (MO); Cerro Pirre, 800–1400 m, *Duke & Elias* 13698 (MO); Cerro Pirre, ridge top and slope from Rancho Frio to Rancho Plastico, 800–1200 m, *Folsom* 4204 (MO); Coasi-Cana trail, between Cerro Campamento and La Escalera to 'Paramo', E. of Tres Bocas, *Kirkbride & Duke* 1336 (MO, NY); summit of Cerro Pirre, 1000–1400 m, *Gentry & Clewell* 7112 (MO); vicinity of Cerro Tacarcuna summit camp, along stream N. of camp, 1550–1650 m, *Gentry & Mori* 14056 (F, MO).

This species falls into Weddell's (1869) *Dentatae* species group in having equal-sized, toothed leaves at each node. Material of *Pilea digitata* has previously been determined as *P. fasciata* Wedd., *P. latifolia* Wedd., and *Prugosissima* Killip, all of which occur in Chiriquí Province. Of these it resembles only *P. latifolia* and *P. fasciata*, the latter closely. *Pilea digitata* is easily distinguished from *P. latifolia* by the pubescent upper surface of the leaf lamina. It may be distinguished from *P. fasciata* on staminate inflorescence arrangement and flower size, and pistillate inflorescence flower number, as summarized below.

***Pilea fasciata*:** staminate inflorescences with flowers borne in a loose panicle, flowers 1.3–1.8 mm; pistillate inflorescences bearing 100–280 flowers.

***Pilea digitata*:** staminate inflorescences with flowers borne in a single compact head, flowers 2.5–3.5 mm; pistillate inflorescences bearing 45–100 flowers.

The species epithet refers to the tepal appendages of the staminate flowers which, because of their rounded apex, resemble fingers.

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