

MACARANGA STOLONIFERA SP. NOV. (EUPHORBIACEAE), A BIZARRE UNDERSTORY DWARF FROM PAPUA NEW GUINEA

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Abstract. *Macaranga stolonifera* sp. nov. is a taxonomic oddity instantly distinguished by its diminutive stature, monocaulous architecture, and stoloniferous habit. In marked contrast to other Papuasian congeners, the new species is found only in dark understories of mature growth forest. This latest addition to the euphorbiaceous flora of New Guinea is described and diagnostically depicted with in situ photos.

Keywords: new species, Southern Escarpment, Strickland River, Western Province

East Malesian *Macaranga* Thouars are usually found in successional habitats associated with anthropogenic disturbance or ecologically comparable processes (e.g., forest fires, landslips, windthrows). Because of their visual prominence, the light-demanding taxa are generally well-represented in Papuasian collections, and the local conspectus

was apparently approaching a complete enumeration (Takeuchi, 2007). However, the discovery of another new *Macaranga*, the third in recent years from the Southern Escarpment, suggests that a comprehensive inventory is probably still beyond our reach.

MATERIALS AND METHODS

Taxonomic descriptions are based on the attributes of dried specimens. Characters determined in situ from living plants are reported as “field characters.”

Silica-dried leaf samples from *W. N. Takeuchi & D. Ama*

26856 have been inserted with the A, K, and L duplicates. The LAE sheet for *W. N. Takeuchi & D. Ama* 26873 has ethanol preserved flowers in a leakproof vial.

TAXONOMY

Macaranga stolonifera W. N. Takeuchi, sp. nov. TYPE: PAPUA NEW GUINEA. Western Province: Strickland River, primary growth hill forest, 06°17'05"S, 142°05'33"E, 122 m, 4 August 2013, *W. N. Takeuchi & D. Ama* 26856 (Holotype: A; Isotypes: CANB, K, L, LAE). Fig. 1–4.

The new species is distinguished from all congeners by its diminutive stature, monoaxial (or 1- to 2-branched) architecture, and stoloniferous habit.

Subshrubs 0.25–0.5(–1) m tall, monoaxial or with 1(–2) branches, dioecious. **Stolons** cylindrical, 3–5(–8) mm diam., straight, spreading, woody, adventitiously rooting at the nodes, surfaces crustaceous, dull brown to fuliginous, longitudinally wrinkled. **Stems** terete, 30–95 × 0.1–0.6(–0.9) cm, erect, firm, brunnescent, lenticels absent; indument velutinous, obscuring apical surfaces, persisting, pale brown, hairs hyaline, not septate; abscission scars lenticular-rotund, crateriform, 3–6.5 × 2–5 mm, inconspicuous; internodes 0.5–4(–6) cm long. **Branches** (when present) like the stem in appearance, obliquely ascending, 17.5–29.5 × 0.1–0.4 cm. **Leaves** spirally inserted; stipules 2, opposed, linear-lanceolate, 2.5–5 × 0.1–0.4 mm, scalelike, papery, persisting through 5 or more nodes, hairs as the stem; petioles cylindrical, never planoconvex, (15–)25–65(–75) × 0.5–2(–3) mm, hirtellous, slightly expanded at the poles, geniculate, not articulated; leaf-blades elliptic (or subpandurate), chartaceous, (8.0–)10.5–23.8 × 4.0–10.7(–12.2) cm, adaxially gray, abaxially yellow green, bifacially dull; lamina base obtuse, subtruncate, or notched, margins

entire (or laxly denticulate), apex 0.5–2.5 cm acuminate; indument: upper surface hirtellous on veins, minutely lepidote; lower side acicular-hairy, scales glandular, peltate, initially white with dark centers, 0.3–0.4 mm diam., reducing to < 0.1 mm diam. with age due to peripheral erosion (only the black centers remaining); venation brochidodromous or eucamptodromous; secondaries 5–13 per side above a basal nervation, 8–37(–43) mm apart, at the lamina center with divergence angles of 50–75(–85)° from midribs, straight or gradually curved, usually closing by commissural loops; tertiary nerves scalariform, reticulum irregular; midribs and laterals bifacially prominent, all higher order nerves distinctly raised on both sides. **Staminate inflorescence** (immature) paniculate, longer than broad, 35–68 × 4–25 mm, axillary, single, divaricately branched, densely hirtellous on all exterior surfaces; peduncle 2–16 × 0.8–1.2 mm; lateral branches 1–4, to 15 × 0.5 mm; primary (axial) bracts subulate, ca. 1 × 0.2 mm; bracteoles triangular, ca. 1 × 0.5 mm, aglandular, completely hidden by the indument. **Staminate flowers** congested, glomerate, ca. 10–15 per cluster, subglobose in bud, sessile or nearly so, anthers 4-locular. **Pistillate inflorescence** unknown. **Infructescence** from apical or subapical axils, solitary (or 2 together), unbranched, ascending, 5.5–11.7 cm long; peduncle 45–110 × 0.7–1.2 mm, hirtellous, compressed; bracts acuminate, 5.5–6 × 0.7–1 mm, papery, hairy; fruiting pedicel columnar, ca. 1 × 1.5 mm, stiff. **Fruits** 9–12 × 14–16 mm, bilocular, usually crowded into a single terminal cluster, up to 4

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FIGURE 1. *Macaranga stolonifera* W. N. Takeuchi. Habit. Miniature monocauls ca. 25 cm tall in forest floor litter. From W. Takeuchi & D. Ama 26856.

together; exocarp black, hirtellous and copiously spinose; spines subulate, 2–4 mm long, pliant, plumose, bearded at the top, hairs acicular, irritant; seeds ca. 5 mm diam., conspicuously ridged, black.

Additional specimens examined: PAPUA NEW GUINEA. Western Province: Strickland River, primary growth hill forest, 06°16'15"S, 142°06'14"E, 148 m, 5 August 2013, W. N. Takeuchi & D. Ama 26873 (A, K, L, LAE); 06°16'37"S, 142°06'30"E, 153 m, 7 August 2013, W. N. Takeuchi & D. Ama 26907 (A, L, LAE).

Field characters: subshrubs 0.25–1 m tall, monocaulous (or sparingly branched), stoloniferous; stems green, indument orange brown; leaf-flush brownish-green, mature blades thin, papery, quickly withering when collected, upper side dark dull green, lower side pale green with pink veins, abaxial glands pallid or yellow; infructescence axes green; fruits globose, furnished with red cylindrical spines.

Distribution: widely dispersed through low-lying hills (100–150 m) along the Strickland River in Western Province (Fig. 5).

Habitat and ecology: restricted to densely shaded understories in mature growth forest. Locally common (or dominant) in colline and riverine communities but excluded from the alluvial flood plain.

Phenology: flowering and fruiting in August.

Despite the new taxon's surprising features, its 4-celled anthers, alternate leaves, and absence of stellate hairs are collectively diagnostic for the generic assignment. Any similarity to *Mallotus* Lour. (as presently circumscribed) is superficial and misleading. When *Macaranga stolonifera* was first encountered in the field, the collectors were skeptical of the presumptive identity, but that is where the characters point.

Although an infrageneric phylogeny has not been established for *Macaranga*, the Papuan taxa were treated within seven informal assemblages by Whitmore (1980a, 2008). The new species is referable to the *Dioica* Group on the latest formulation (in Whitmore, 2008), but it is doubtful whether a close connection actually exists to the congeners there. Owing to its unique attributes, *M. stolonifera* has no discernable affinity.

Macaranga in New Guinea are tall shrubs or trees represented primarily by heliophilic plants from secondary environments (Whitmore, 1980b). The discovery of a monocaulous dwarf adapted to dark understories is an astonishing addition to the regional conspectus. Umbrageous forest specialists like *M. stolonifera* are rarely seen in east Malesia and may represent a reversion to the ancestral ecology (cf. Welzen et al., 2014).

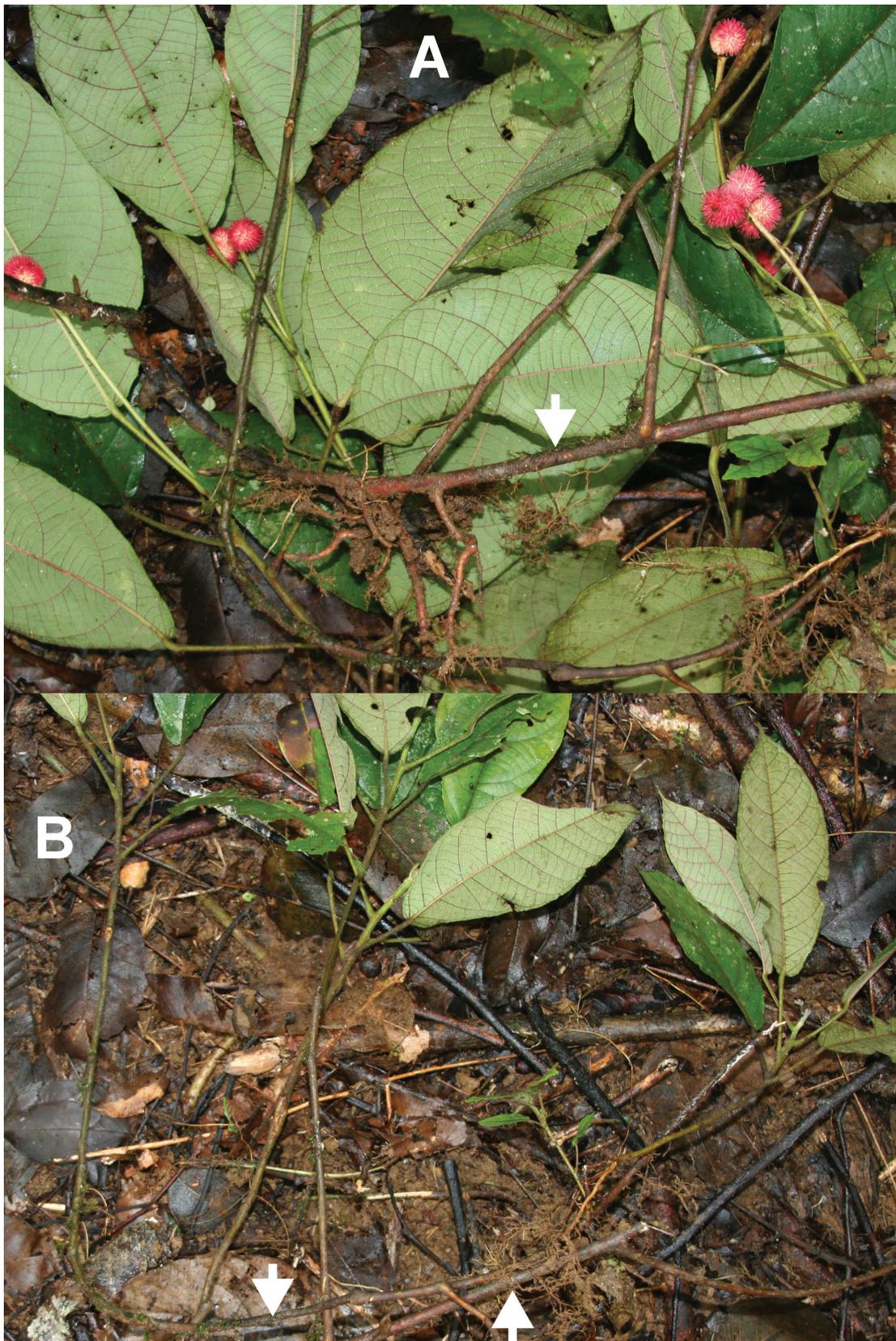


FIGURE 2. *Macaranga stolonifera* W. N. Takeuchi. Uprooted plants, connecting stolons indicated by white arrows. **A**, fertile stems; **B**, sterile stems. A from W. Takeuchi & D. Ama 26873; B from W. Takeuchi & D. Ama 26856.

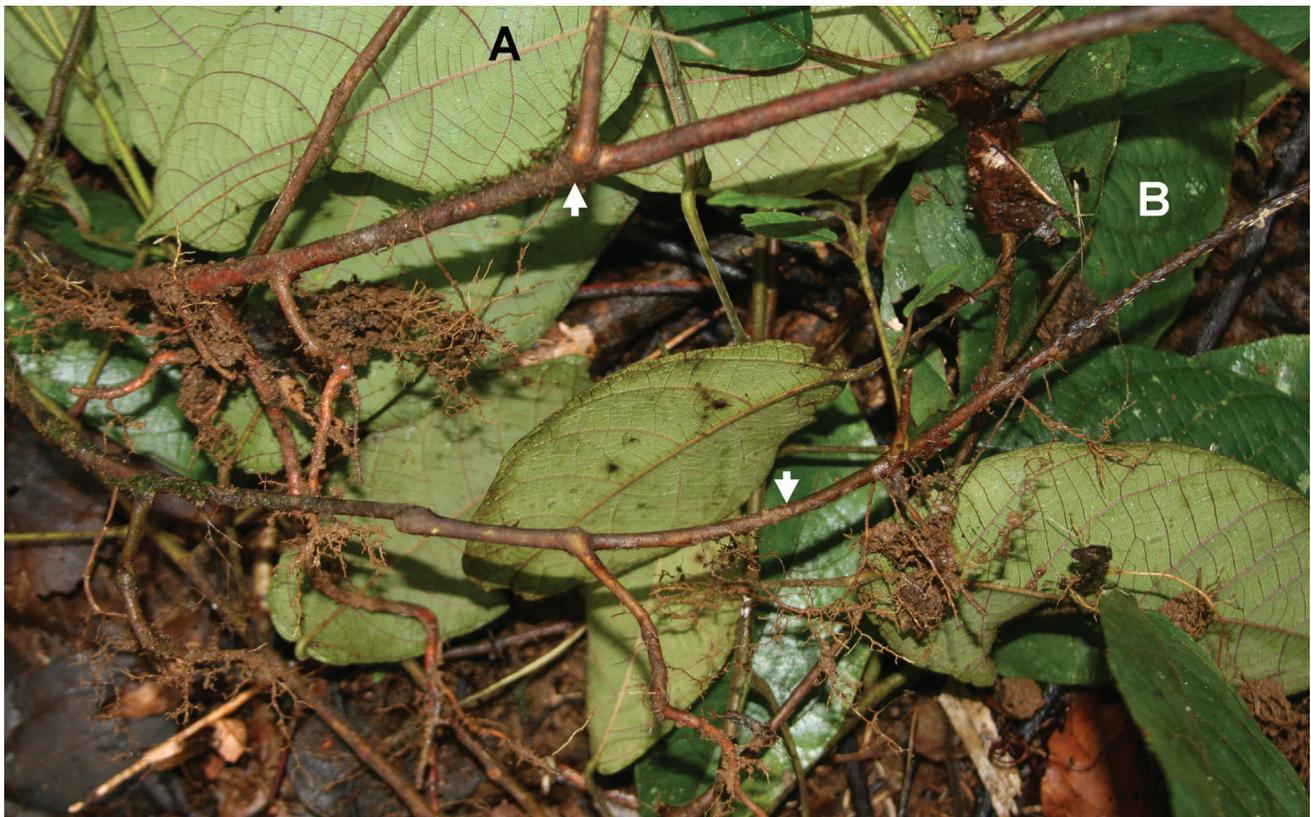


FIGURE 3. *Macaranga stolonifera* W. N. Takeuchi. Vegetative structures. Stolons (white arrows) and subsurface nodes. **A**, abaxial leaf surfaces; **B**, adaxial leaf surfaces. From *W. Takeuchi & D. Ama 26873*.



FIGURE 4. *Macaranga stolonifera* W. N. Takeuchi. Inflorescence. **A**, side view; **B**, oblique apical view. **A** from *W. Takeuchi & D. Ama 26873*; **B** from *W. Takeuchi & D. Ama 26856*.

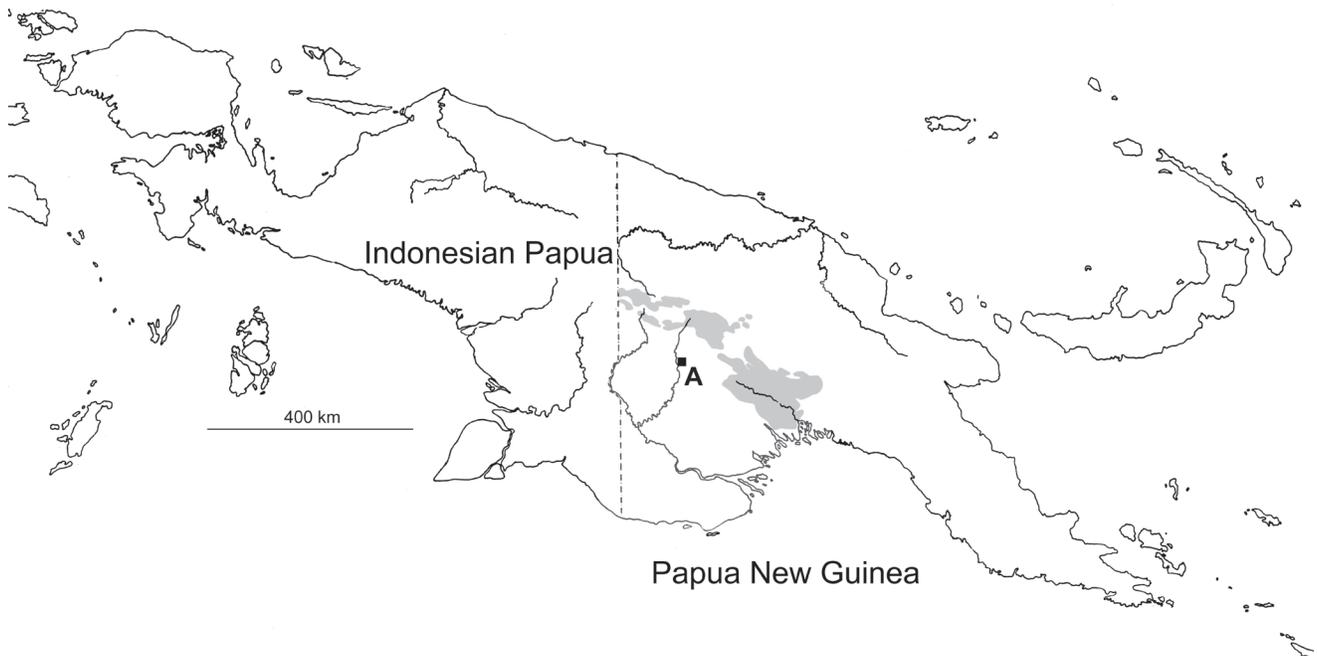


FIGURE 5. Island of New Guinea. A, type locality for *Macaranga stolonifera* W. N. Takeuchi, shown in relation to the southern karst (shaded areas).

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