

HYP SERPA ADEMAE (MENISPERMACEAE), A DISTINCTIVE NEW SPECIES FROM THE BOWUTU ULTRABASICS OF PAPUA NEW GUINEA

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Hypserpa ademae Takeuchi (*Menispermaceae*) is described from the Bowutu Range of Papua New Guinea. The novelty is distinguished by its whiplike inflorescence, 6-merous male flowers, and glabrous, cordate leaves.

Keywords. *Hypserpa*, *Menispermaceae*, new species, Papua New Guinea, ultrabasics.

INTRODUCTION

Hypserpa Miers (*Menispermaceae*) is represented in Malesia by three species, and over its entire range including SE Asia and Polynesia by eight species (Forman, 1986, 1997). The genus is primarily distinguished by its spirally arranged sepals, drupes with lateral style-scars, bilocular condyles, and horseshoe-shaped seeds embedded in endosperm.

In Malesian *Hypserpa* the paniculiform inflorescences are shorter or only slightly longer than the subtending leaves. Laminae are elliptic, oblong-elliptic, or ovate. None of the previously described species from our region have cordate blades.

Ongoing investigations of the Bowutu ultrabasics and adjacent areas (Figs 1, 2) have recently revealed the presence of an unusual *Hypserpa* with cordate leaves and remarkably long inflorescences. A substantial number of botanical novelties has resulted from these exploratory surveys near Blue Mt (e.g. Takeuchi, 2003). The following description of *Hypserpa ademae* is the first in a series of impending papers presenting the latest discoveries.

DESCRIPTION

***Hypserpa ademae* Takeuchi, sp. nov. Figs 3, 4.**

Inter speciebus congeneribus Malesiae singularis inflorescentiis flagelliformibus usque ad 37 cm longis; floribus masculis 6-staminibus; foliis cordatis glabris.

– Type: Papua New Guinea, Morobe Province, buttress ridge to Blue Mt, 07°17'42"S, 147°05'24"E, 700 m, 17 iv 2005, *Takeuchi, Jisaka, Towati & Ama* 21135 (holo LAE; iso A, CANB, K, L).

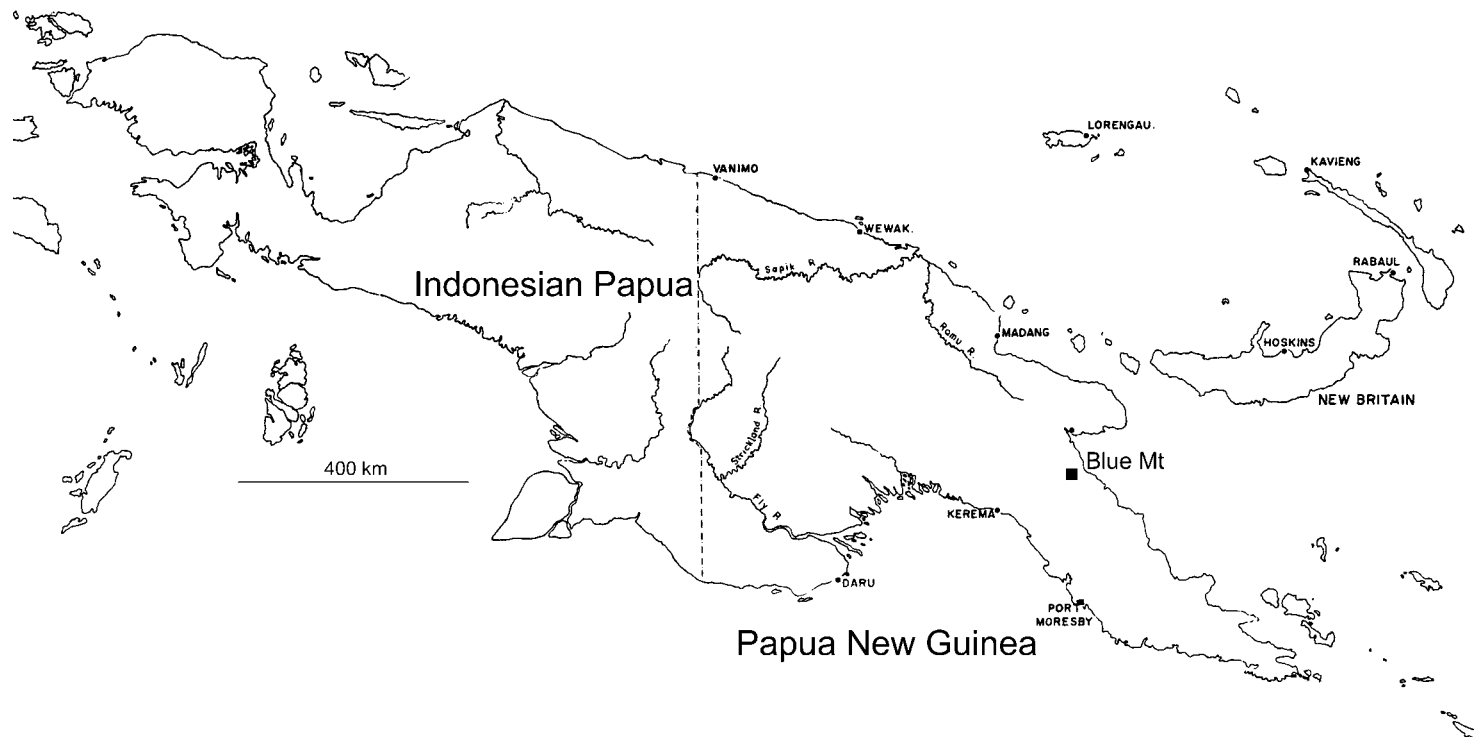


FIG. 1. Island of New Guinea. *Hypserpa ademae* is found along drainages and interfluves near Blue Mt.

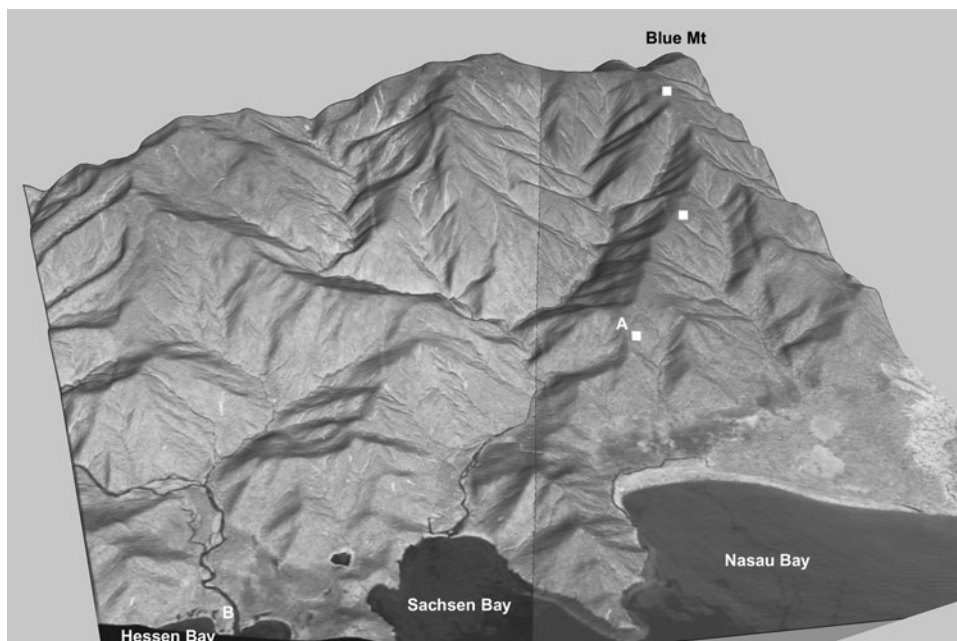


FIG. 2. Digital terrain model of the ultrabasic belt in the northwest Bowutu Range. A, collection site for *Takeuchi et al.* 21135 (type). B, collection site for *Takeuchi et al.* 14744. Bivouacs from the 2005 survey are depicted by squares on the ascending ridge to Blue Mt. (Map provided by Phil Sherman of the Remote Sensing Center in Port Moresby.)

Terrestrial woody vines, dioecious. *Stems* sparingly branched, black, striate or lineolate, laxly cicatricatous, surfaces glabrous except for persisting hair-rings around peduncle scars; terminal branchlets terete, apices prolonged, tendrilliform, 1–2 mm diameter at the first node; older intervals twining or not, cylindrical, 4–7 mm diameter at the lower nodes. *Leaves* spiral, glabrous, exstipulate; petioles cylindrical, (15–)23–43 (–47) × 0.5–1.2 mm, lineate, black, proximally pulvinate, slightly expanded near the lamina, geniculate; leaf-blades ovate-cordate, (8.2–)9.0–13.5(–15.0) × (4.8–)5.5–8.8 (–9.5) cm, papyraceous, bifacially brownish-green; base cordate (or shallowly concave); margin entire; apex acuminate-subcuspidate; venation (3–)5-digitate at the petiole insertion, anastomosing; lateral nerves 1–3 pairs along the distal half of the midrib, arcuate; tertiary nerves scalariform or not, reticulum coarsely areolate, conspicuous; veins adaxially prominulous, abaxially prominent. *Male inflorescence* from lower axils, pseudoracemose-thyrsoïd, solitary, pendulous, delicate, whiplike; peduncle absent or to 55 mm long, comose at the base; rachis (13.2–)15.0–24.5(–32.0) cm × 0.2–0.7(–1.0) mm; axial surfaces glabrous, jet black, inconspicuously striate; rachis bracts subulate, 0.7–1.2 mm long, persisting, laxly hirtellous; higher-order bracts scalelike, linear-deltate, 0.2–0.5 mm long, glabrous. *Male flowers* fasciculate or cymose, all parts glabrous; pedicels (1.2–)2.2–4.3(–5.2) × 0.2–0.4 mm, articulate,



FIG. 3. *Hypserpa ademae* Takeuchi. Unmounted duplicate from the type collection (Takeuchi et al. 21135).

usually 1(–2) bracteolate; sepals spirally inserted, distinct, dimorphic, fleshy; outer sepals deltate-ovate, $0.4\text{--}0.6 \times 0.3\text{--}0.6$ mm; inner sepals ovate-orbicular, $1.5\text{--}1.6 \times 1.2\text{--}1.5$ mm, concave, apical margins hyaline; petals 6, equal, membranaceous, elliptic-oblongate, c.1.2 mm long, involute; stamens 6, distinct, incurved, clasped by the opposing petal; filaments c.1.0 mm; anthers more broad than long, dorsifixed, 2-celled, introrse, transversely dehiscent; pistillode absent. *Female inflorescence and flowers* unknown. *Infructescence* pseudoracemose-thyrsoid, to at least 16×2 cm, axes glabrous, rachis bracts as for the staminate plant. *Drupes* paired, attached on opposite sides of a conoid carpophore, orbicular-obovate in outline, 10–13 mm across, compressed, black, wrinkled; stigmatic scar positioned near the base, umbonate, often contiguous with the scar on an opposing drupe; pyrene curved, 11×11 mm, crustaceous, transversely rugose, brown; condyle 2-chambered, each cavity open to the side through a funnellform channel; endosperm copious, no ruminations.

Field notes. Vine without exudate, not aromatic; terminal branchlets hanging, aerial; leaves firm or papyraceous, bifacially dark green; male flowers yellow; fruits initially yellow-green, black and glaucous when ripe.

Distribution. Known only from the type locality.

Habitat. In alluvial and hill forests, from sea level to at least 700 m.

Phenology. Known from a single male collection flowering in mid-April, and by a female specimen producing mature fruits in late July.

Etymology. The epithet recognises the collective contributions of Frits Adema (L) to the Flora Malesiana.

Additional specimen examined. PAPUA NEW GUINEA. Morobe Province, W bank of the Saia River near Hessen Bay, alluvial forest at sea level, 22 vii 2000, *Takeuchi, Siga & Towati* 14744 (A, L, LAE).

Notes

- 1 *Hypserpa ademae* is distinguished by its cordate leaves and whiplike male inflorescence, the latter typically produced as a pendulous thyrse (pseudoraceme) up to 37 cm in length.
- 2 The new *Hypserpa* has male flowers with 6 sepals and stamens, the lowest number recorded for the genus in Malesia. A minor modification to the generic (staminate) key (Forman, 1986: 169) is required for this novel character state:
 6. Sepals 6–12, spirally arranged, not in distinct whorls. Stamens 6–40, free or connate. Inflorescences cymose, thyrsoïd, or pseudoracemose _____ *Hypserpa*
 6. Sepals in one or more whorls _____ To the existing continuation
- 3 *Hypserpa ademae* will run successfully through the generic key for female plants (Forman, 1986: 172), at least with respect to the fruit characters. The pistillate flowers are unknown.
- 4 The novelty can be accommodated in Forman's (1986: 218) key to the species with the following additions to the first couplet in that key:
 1. Inflorescences glabrous or nearly so (at most with scattered hairs restricted to bracts)
 - Lamina elliptic to oblong-elliptic, 7–12 × 3.0–4.5 cm; male flowers with 11–15 free (or connate) stamens _____ *Hypserpa laurina*
 - Lamina ovate-cordate, 8.2–15.0 × 4.8–9.5 cm; male flowers with 6 free stamens _____ *Hypserpa ademae*
 1. Inflorescences pubescent or tomentose _____ To the existing continuation
- 5 *Takeuchi et al.* 14744 was uncritically distributed as *Hypserpa polyandra* Becc., although the cordate leaves and long, glabrous infructescence were inconsistent with that species. Recent acquisition of flowering material indicates this earlier gathering is actually a previously undescribed species.
- 6 *Hypserpa ademae* occurs in mixed populations with *H. polyandra*, the most frequently collected congener in eastern Malesia. The two species can be separated in sterile condition by their leaf shape: ovate with a cordate base in *Hypserpa ademae*, and ovate-elliptic with a rounded base in *H. polyandra*.
- 7 Although *Hypserpa ademae* is (thus far) known only from ultrabasic terrain, endemic distributions in New Guinea are primarily linked to palaeohistorical



FIG. 4. *Hypserpa ademae*. Pyrene (11 × 11 mm). The rippled surfaces ('rugose' sensu Forman) are characteristic. Condyles are 2-chambered and open to the sides (Takeuchi *et al.* 14744).

phases of tectonic accretion rather than to edaphic environments (Van Welzen, 1997; Heads, 2003). Most of the Bowutu endemics are insensitive to substrate, occurring on both sides of an ultrabasic boundary (e.g. *Cyathea lamoureuxii* Takeuchi, *Freycinetia takeuchii* Huynh, *Gardenia kamialiensis* Takeuchi, *Nastus schlechteri* (Pilger) Holttum, *Schradera schlechteri* (Valeton) Puff, Buchner & Greimler). *Cyathea lamoureuxii* and *Gardenia kamialiensis* were originally described from the ultrabasic zone, but have more recently been found across the Kui-Lababia contact, on conventional soils (Takeuchi *et al.* 21329, 21352, respectively). Patterns of endemic distribution suggest that future collections of *Hypserpa ademae* will extend its range at least to the south Morobe border and possibly into Oro Province, mirroring the occurrences of associate taxa such as *Zanthoxylum novoguineense* Hartley and *Guioa grandifoliola* Welzen.

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