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POUZOLZIA FLORESIANA (URTICACEAE), A NEW SPECIES FROM FLORES, NUSA TENGGARA TIMUR (LESSER SUNDA ISLANDS), INDONESIA

C. M. WILMOT-DEAR[1] & I. FRIIS[2]

Pouzolzia floresiana Friis & Wilmot-Dear (Urticaceae) is described and illustrated on the basis of a single collection from the western part of the Indonesian island of Flores. The species is a thick-stemmed herb, similar in habit to *Pouzolzia thailandica*, but differs in having axillary flower clusters and broadly winged fruiting perianths. The description of the new species supplements a revision of the Old World taxa of *Pouzolzia* by the two authors published in 2006.

Keywords. Description, Flores, Indonesia, new species, *Pouzolzia*, *Pouzolzia floresiana*, taxonomy, Urticaceae.

INTRODUCTION

A complete revision of the Old World taxa of *Pouzolzia* Gaudich. was published by Wilmot-Dear & Friis (2006). Subsequently, the identification of hitherto undetermined Urticaceae specimens from the Netherlands Centre for Biodiversity Naturalis (section NHN) (L), material which was not seen for the revision, has brought to light one collection of a distinctive new species. It is described here.

MATERIAL AND METHODS

The methods used for this paper are those of classical herbarium taxonomy with special attention given to minute morphological details of leaves, inflorescences, flowers, fruiting perianths and fruits, as described in Wilmot-Dear & Friis (2006). The material used here, a specimen from the herbarium in Leiden (L), was compared with other species of *Pouzolzia* described in Wilmot-Dear & Friis (2006).

[1] The Herbarium, Royal Botanic Gardens, Kew, Richmond TW9 3AE, England, UK. E-mail: m.thomas@kew.org
[2] The Herbarium, Botanical Garden, Natural History Museum of Denmark, University of Copenhagen, Gothersgade 130, DK-1123 Copenhagen K, Denmark. E-mail: ibf@snm.ku.dk

Species Description

Pouzolzia floresiana Friis & Wilmot-Dear, **sp. nov. Fig. 1.**

Ab omnibus ceteris speciebus combinatione characterarum, nempe caule succulento atque per magnam partem longitudinis nudum, foliis ad marginem in dimidio proximali integris distaliter tantum paucidentatis et fructu magno distaliter alam marginalem conspicuam 1.5–2 mm latam ferenti facile distinguenda. – Type: Indonesia, Nusa Tenggara Timur ['Kl. Soenda Eil.'], W Flores, Nggoer-Wae Népa, near the coast, 1–5 m, 9 iii 1967, *Schmutz* 1325 (holo L! – barcode L0737946).

Herb, height unknown, stated by the collector to be very fragile in living state, stems presumably unbranched or little branched, very thick (presumed succulent in living state), up to c.4 mm diameter in dry state and with abundant minute adpressed whitish hairs 0.1–0.2 mm long. *Stipules* very soon caducous, narrowly triangular-acuminate, 3 × 1 mm, red-brown, rather thick-chartaceous with broad semi-hyaline margins, midrib robust keel-like, with long fine whitish hairs c.0.5 mm long on margin and dorsal surface of midrib. *Leaves* spirally arranged, in a tuft and crowded towards the apex of stems, but lower ones apparently soon falling leaving prominent scars; lamina ovate, 5–6 × 2–3 cm, width:length ratio 1:2–2.3, margin with 6–8 broad rounded teeth in distal part of lamina, all shallow c.1 mm deep but of irregular width 2–6 mm broad, becoming increasingly indistinct towards proximal part of lamina, the proximal 1/3–1/2 part with entire margin; apex abruptly long-acuminate to c.1.2 cm, base rounded; basal veins extending just into apical 1/3 of lamina, upper veins 2–3 either side, lowermost arising near middle of lamina, indistinctly impressed above, fine-prominent beneath, tertiary veins inconspicuous both sides; chartaceous; adaxial surface with very dense cystoliths giving rough feel and slightly greyish appearance to surface, glabrescent except for inconspicuous sparse fine hairs on main veins; abaxial surface with sparse very fine hairs 2–3 mm long along main veins and shorter along reticulation. *Petioles* 1–2.5 cm long, widely varying in proportion to lamina length, 0.15–0.4 × lamina length and those of lower leaves generally markedly longer than upper; indumentum like that of the abaxial side of the lamina. *Inflorescences* axillary, few-flowered with 2–3(?–4) female flowers and occasional males (only 1 male seen). *Male flowers* presumably 4-merous, mature buds small, c.1 mm diameter, with sparse hairs like those on petioles, subsessile. *Female flowers* (only seen in fruiting state) with conspicuous stigma 6–7 mm long. *Fruiting perianth* ovoid, c.2.5 mm long, 1.5 mm broad (excluding marginal wings), slightly dorsiventrally flattened and with 1–2 longitudinal ribs on each face and an extremely broad (1.5–2 mm wide) often slightly crenate marginal wing either side extending to the apex where the perianth is abruptly narrowed with a narrowly constricted opening bearing clearly visible apical teeth but not elongated into a beak; indumentum as in male flowers.

Distribution. Indonesia (Flores). See further under *Discussion*.

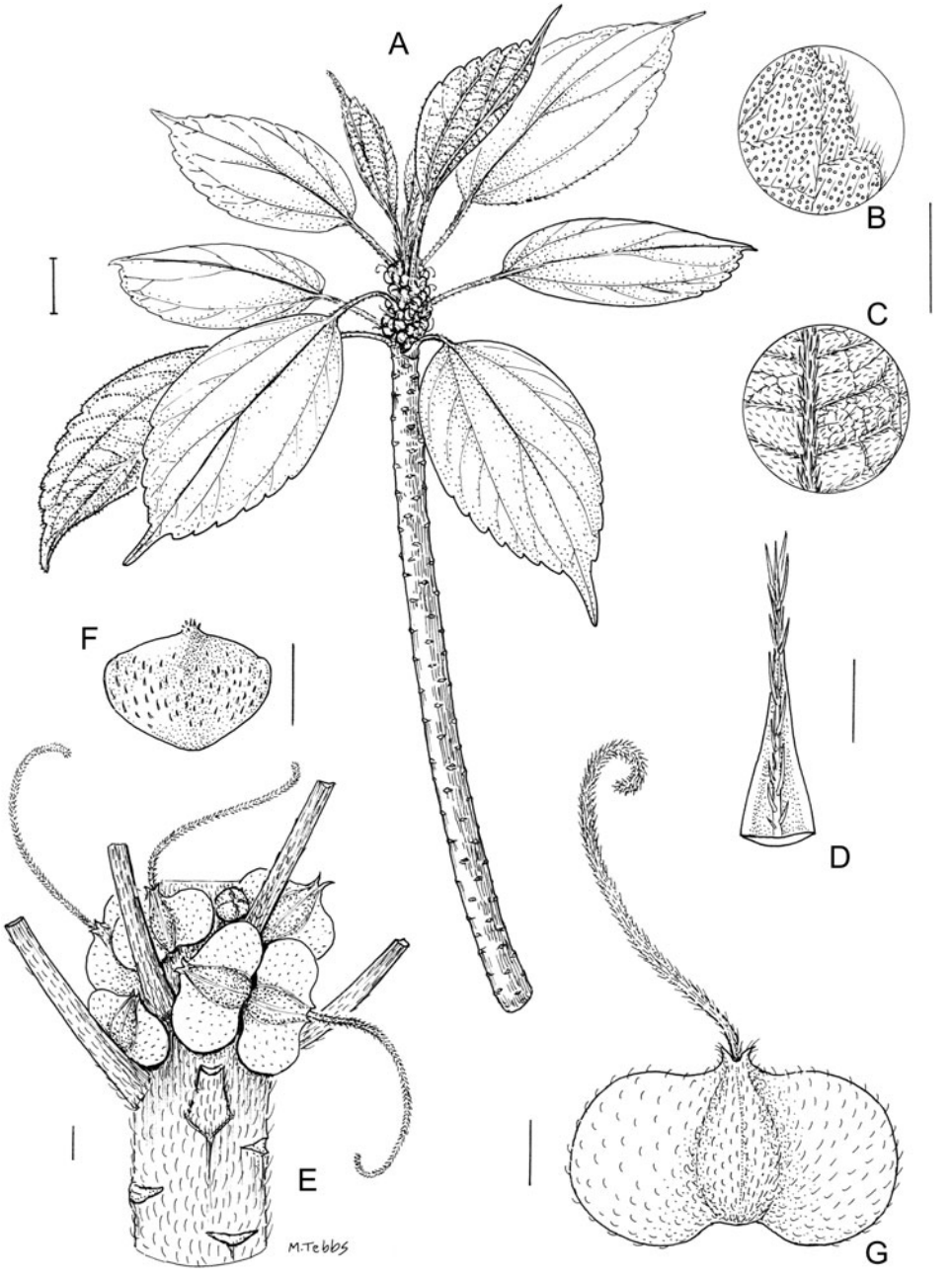

FIG. 1. *Pouzolzia floresiana* Friis & Wilmot-Dear. A, habit; B, leaf, detail of upper surface and margin; C, leaf, detail of lower surface; D, stipule, dorsal view; E, portion of stem showing bisexual flower clusters in the axils of four leaves; F, male bud; G, fruiting perianth. Scale bars: A = 10 mm; B & C = 5 mm; D, E & G = 1 mm; F = 0.5 mm. Drawn from the holotype (*Schmutz* 1325, L) by Margaret Tebbs.

Habitat. Plant growing near the seashore, 1–5 m above the shoreline, possibly on rocks; the substrate in W Flores consists of igneous rock of various ages.

Conservation assessment. We provisionally give the new species the category (IUCN, 2011) of Critically Endangered, CR B1ab(iii). *Pouzolzia floresiana* seems to have a very narrow distribution. It is only known from one collection made at 'Nggoer-Wae Népa', a locality which we have only been able to localise to western Flores. The plant was found near the shore but it has not been possible to discover whether it was collected on the northern, western or southern side of the island. Flores is still very under-collected and therefore other populations of this plant may exist on the island. However, Flores habitats near the coast are the most disturbed by human activity (in the western part of the island this is particularly the case along the southern coast). The few and small conservation areas which exist on western Flores are mainly for marine animals or terrestrial vertebrates (IUCN, 2010). We therefore consider this plant, known only from a single collection from near the coast and presumably rare, to be clearly at risk and have therefore placed it in the IUCN category 'Critically Endangered'. Urgent surveys are required at the type location (once its exact position has been established) and elsewhere along the coast, in order to determine whether this species is even still extant.

Discussion. The specimen was recently tentatively named as 'cf. *Pouzolzia*' by H. C. den Bakker. The characters of simple axillary inflorescence clusters (rather than branched axes or receptaculate glomerulae) and filiform (rather than capitate) stigma easily separate it from most other genera in the tribe Boehmerieae and confirm it as a species of *Pouzolzia*. Its female perianth constricted at the apex and not succulent separates it from the closely similar genus *Pipturus* Wedd. (whose perianth is succulent at maturity and with a clearly visible dark round apical opening). It is separated from the most similar genus, *Boehmeria* Jacq., on its shiny (rather than dull) achene which is easily detached from the perianth, fruit ornamentation formed by perianth tissue (rather than outer layers of the achene), and its caducous stigma.

Pouzolzia floresiana has a sufficiently striking habit and fruit morphology that it can be described adequately as a species of *Pouzolzia*, even from such limited material. The absence of a transverse dorsal appendage on male tepals and the spirally arranged (rather than opposite) petiolate leaves possessing upper veins places it within *Pouzolzia* sect. *Pouzolzia*. It is distinctive in *Pouzolzia* sect. *Pouzolzia* (and in the genus as a whole) in its combination of a thick succulent stem with leaves crowded at its apex, leaves few-toothed distally, and a broadly winged fruit. The only other Old World species with a similar habit is *Pouzolzia thailandica* Friis & Wilmot-Dear (endemic to the eastern part of peninsular Thailand) which also occurs near the coast (although on limestone) but its leaves are entire and thick and its inflorescence architecture and fruit morphology are very different. Four of the five Old World species of *Pouzolzia* sect. *Pouzolzia* with a broadly winged fruiting perianth are also

entire-leaved (as well as differing markedly from *Pouzolzia floresiana* in habit and other characters). Among the species with serrate leaves only *Pouzolzia variifolia* Friis & Wilmot-Dear (endemic to Timor and S Sulawesi) has a broad-winged fruiting perianth; the leaves of both taxa are somewhat similar in being entire proximally (rather than the more common character-state of toothed throughout) but *P. variifolia* differs markedly in habit, leaf form and inflorescence architecture. *Pouzolzia floresiana* is thus morphologically very distinct within *Pouzolzia* sect. *Pouzolzia*, although nothing is so far known about its phylogenetic position within the section. The taxa and characters mentioned above are detailed in Table 1.

In the key in Wilmot-Dear & Friis (2006: 11) couplet 6 is slightly modified and a new couplet inserted before couplet 8, as indicated in the following extract. (The second lead of couplet 6 will thus lead to a new couplet in the original key, '8A' rather than '8'.)

6. First leaves dentate, later ones progressively changing in form towards stem apex, becoming smaller and entire or with a few erratically-scattered teeth; main stems usually with at least some highly reduced congested lateral inflorescence-bearing axes with bract-like leaves; slender herb with stems less than 1 mm diameter and membraneous or thin-chartaceous leaves _____ 7

6. All leaves dentate or serrate and of similar form; no highly reduced axes present; shrub, tree or robust herb with stems often 2–3(–4) mm in diameter and leaves often thicker _____ 8A

7. Fruiting perianth thick, warty, persistent; bract-like leaves of congested modified axes similar to unmodified leaves in shape, colour and texture; leaves always membraneous, drying bright green; male flowers 4-merous (Africa) _____ 6. *P. fadenii*

7. Fruiting perianth smooth with broad wing giving apex a bi-dentate form; bract-like leaves of the congested modified axes very unlike unmodified leaves, forming an almost tubular structure enclosing inflorescence and drying blackish (?fleshy); unmodified leaves drying dull green, often thin-chartaceous; male flowers 3-merous (Sulawesi and Timor) _____ 5. *P. variifolia*

8A. Leaves crowded at stem apex; herb with stems thick, juicy and fragile, c.4 mm diameter near apex; fruiting perianth longitudinally ribbed and with a broad, often slightly crenate, marginal wing, 1.5–2 mm wide; leaf margin entire in proximal 1/2–1/3, with up to 8 broad shallow teeth in distal part _____ *P. floresiana*

8A. Leaves well spaced along stems; tree, shrub or woody-based herb, stems slender or woody, 1–3 mm diameter near apex; fruiting perianth longitudinally ribbed but without marginal wings; leaves often toothed to base _____ 8B

8B. Stipules extremely broadly deltoid-cordiform with abrupt tail-like apex, broader than long, 2–3 × 2.5–5.5 mm excluding apical 'tail'; stigma always short, c.0.5 mm; woody-based herb to 60 cm with leaves membraneous to thin-chartaceous, not

TABLE 1. Comparison of some morphological characters of the new species of *Pouzolzia* (*P. floresiana*) with those of a range of similar species in sect. *Pouzolzia*

Character	*P. floresiana*	*P. variifolia*	*P. thailandica*	*P. arachnoidea*	*P. zeylanica*	*P. laevigata*	*P. mandrarensis*
Habit	Succulent-stemmed herb	Slender herb	Succulent-stemmed herb	Slender herb	Herb or subshrub	Shrub	Tree
Leaf margin	Few-toothed distally	Few-toothed distally	Entire	Entire	Entire	Entire	Entire
Leaf arrangement	Spiral, crowded at apex of stem	Alternate, well-spaced along stem	Spiral, crowded at apex of stem	Alternate, well-spaced along stem	Alternate, well-spaced along stem	Spiral, sometimes crowded at apex of stem	Alternate, well-spaced along stem
Leaf form	All leaves similar	Changing towards stem apex	All leaves similar	All leaves similar	All leaves similar	All leaves similar	All leaves similar
Leaf texture	Thin	Thin	Thick	Thin	Thin	Thin or thick	Thin
White tomentum	None	None	None	On abaxial leaf surface	None	None	Abundant on lower abaxial leaf surface
Inflorescence architecture	Simple axillary clusters	Reduced and highly modified axis	Modified leafless axis	Modified leafless axis	Simple axillary clusters	Simple axillary clusters	Simple axillary clusters
Fruiting perianth	Broadly winged	Broadly winged	Ribbed	Broadly winged	Broadly winged	Broadly winged	Broadly winged

exceeding 8 cm long, basal veins rarely extending into distal 1/3 of lamina (Indonesia, Luzon) _____ 4. *P. rubricaulis*

8B. Stipules triangular-acute to narrowly triangular and gradually ± acuminate, always longer than broad; stigma always long, (1.5–)2–6 mm; often shrub to tree 1–5 m high, leaves often thicker and often up to 13 cm long, basal veins extending well into distal 1/3 of lamina _ 9 [i.e. rest of key in Wilmot-Dear & Friis (2006)]

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