

# The genus *Tetradenia* Benth. (Lamiaceae). II. Malagasy Republic

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### ABSTRACT

Three species of *Tetradenia* are recognized in the Malagasy Republic: *T. fruticosa* Benth., *T. goudotii* Briq. (= *T. hildebrandtii* Briq.) and the newly described *T. nervosa* Codd.

### INTRODUCTION

Since the African species of *Tetradenia* were dealt with in *Bothalia* 14: 177-183(1983), some Malagasy material, including type specimens, has been received on loan from the herbaria of the Royal Botanic Gardens, Kew, and the Conservatoire et Jardin Botaniques, Geneva, whose kind assistance is gratefully acknowledged. This permits an opinion to be expressed regarding the Malagasy species, though a good deal more material is desired, especially living plants, for a reliable assessment to be made. The male and female specimens collected by Mr D.S. Hardy and Prof. W. Rauh in the south-east extremity of the island, mentioned in the earlier article, are unmatched in the loaned material and are described below as *T. nervosa*. This brings the species recognized in the Malagasy Republic to three.

### KEY TO SPECIES

- Under-surface of leaf obscured by a fine or coarse, dense whitish to grey tomentum:
  - Leaf margin finely and often obscurely crenulate; under-surface finely white-felted, upper-surface usually dark grey ..... 1. *T. fruticosa*
  - Leaf margin crenate; both leaf surfaces densely greyish lanate-tomentose ..... 2. *T. goudotii*
- Under-surface of leaf stipitate-glandular, markedly reticulate-veined..... 3. *T. nervosa*

1. *Tetradenia fruticosa* Benth. in Bot. Reg. sub t.1300 (1830); Lab. 164 (1833); in DC., Prodr. 12: 159 (1848); in Hooker's Icon. Pl. 13: t. 1282 (1879); Briq. in Bull. Herb. Boissier 2: 131 (1894); in Natürl. Pfl.Fam. 4, 3a: 331 (1897). Type: Malagasy Republic, near Tananarive, *Hilsenberg & Bojer* s.n. (K, holo.!).

Shrub about 1-1,5 m tall; stems terete, densely felted with fine branched hairs. *Leaves* petiolate; blade ovate-oblong, 50-60 x 25-30 mm, densely felted with fine branched hairs on both surfaces, upper-surface darker than lower, apex obtuse, base obtuse to truncate, margin finely crenulate; petiole 3-10 mm long. *Inflorescence* a terminal panicle 150-180 x 70-100 mm; male and female flower-spikes dense, 10-25 mm long; bracts broadly ovate, 1,5 x 2 mm. *Calyx* 1 mm long, divided to the base below; upper lobe ovate, lateral lobes bifid. *Corolla* 2,5 mm long, 4-lobed, the uppermost lobe deeply bifid giving the corolla a 5-lobed appearance; lobes

oblong, the lowest lobe the longest. *Disc* with 2 lobes exceeding the ovary in length. Figs 1 & 2.

Recorded from central, northern and north-western districts.



FIG. 1.—*Tetradenia fruticosa*, holotype in K (left-hand specimen); the right-hand specimen is *T. goudotii*.

MALAGASY REPUBLIC. — Without locality: *Goudot* s.n. (G); *Lyall* 278 (K); *Tregellis Fox* s.n. (K). Near Tananarive, *Hilsenberg & Bojer* s.n. (K). Fianarantsoa Province, 5 km S of Antanifotsy, *Mabberley* 1028 (K).

The species is characterized by the small to medium-sized leaves with a finely crenulate margin, and the short dense dendroid tomentum on leaves, stems, rhachis and calyx; stipitate glands are absent, but all parts of the plant are freely gland-dotted.

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FIG. 2.—*Tetradenia fruticosa* in Hooker's Icon. Pl. 13: t.1282 (1879).

2. *Tetradenia goudotii* Briq. in Bull. Herb. Boissier 2: 132 (1894). Syntypes: Malagasy Republic: near Tananarive, Goudot s.n. (G); Betsiléo, Hildebrandt 3971 (sic) (G). A sheet of Goudot s.n. in G, annotated by Briquet, is selected as the lectotype (see note below).

*T. hildebrandtii* Briq. in Bull. Herb. Boissier 2: 131 (1894). Type (only specimen cited in protologue): Malagasy Republic, near Tananarive, Hildebrandt 3471 (sic). This sheet in G is annotated by Briquet as *T. goudotii* and No. 3971 (above) is annotated as *T. hildebrandtii*.

Shrub up to 2 m tall; stems stout, quadrangular above, terete below, densely clothed with multicellular hairs and short glandular hairs. Leaves petiolate; blade ovate to ovate-oblong, up to 90 × 60 mm, densely felted with a greyish-tawny tomentum of multicellular hairs and short glandular hairs obscuring both surfaces, matted on the under-surface, appressed on the upper-surface, apex obtuse, base obtuse to truncate, margin crenate; petiole 3–12 mm long. Inflorescence a terminal panicle up to 250 × 120 mm; male and female flower-spikes dense, 15–35 mm long; bracts broadly ovate, obtuse, 1 × 2 mm. Calyx 1 mm long at flowering, enlarging to 2.5 mm long in fruit, glandular-hispid; upper lobe ovate, lateral lobes oblong, shortly bifid. Corolla 2 mm long, 4-lobed, the uppermost lobe deeply bifid giving the corolla a 5-lobed appearance; lowermost lobe the longest,

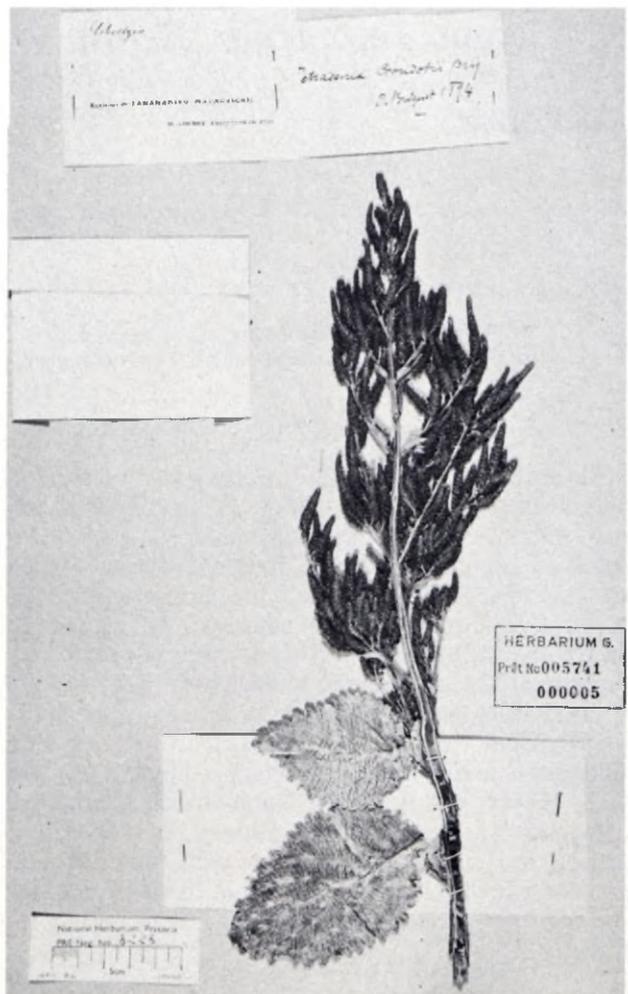


FIG. 3.—*Tetradenia goudotii*, lectotype (Goudot s.n.) in G.

lateral lobes the shortest. Disc with 2 lobes exceeding the ovary in length. Nutlets oblong, 1 × 0.25 mm (Fig. 3).

Recorded from central, north-central and north-western districts.

MALAGASY REPUBLIC.—Without locality, Scott Elliot 3057 (K). Near Tananarive, Goudot s.n. (G); Malassi, near Tananarive, Hildebrandt 3471 (G); Betsiléo, Hildebrandt 3971 (G). 'Chiefly from north-west Madagascar,' Baron 5198 (K);

Distinguished from the former by the more coarsely crenate leaf-margin (though *T. hildebrandtii* is somewhat intermediate in this respect) and the dense, coarse tomentum of multicellular hairs and short glandular hairs of the stems, leaves and rhachis; all parts of the plant are freely gland-dotted. The shape of the leaf, the leaf-margin and the mixed hairs resemble some forms of the African species, *T. riparia*, and the two are closely related. However, in *T. goudotii* the tomentum is coarser and denser, and the disc is 2-lobed whereas in *T. riparia* it is 1-lobed.

There is a contradiction between Briquet's citation of Hildebrandt specimens in Bull. Herb. Boissier 2: 131, 132 (1894) and the names which are on the specimens in G, in Briquet's handwriting. For example, the herbarium sheet of Hildebrandt 3971 from Betsiléo bears the annotation *T. hildebrandtii* in Briquet's handwriting, but is cited under *T. goudotii* in Bull. Herb. Boissier. On the other hand,

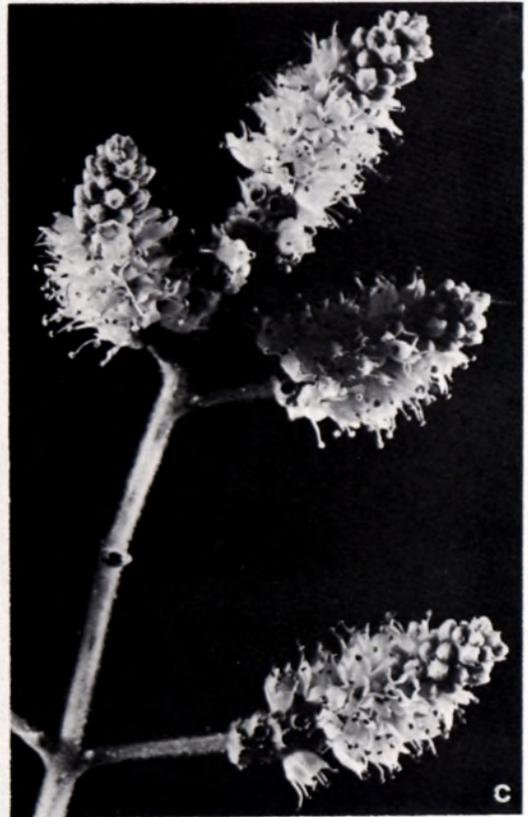


FIG. 4.—*Tetradenia nervosa*, male plant: a, habit, much reduced; b, part of inflorescence,  $\times 0.5$ ; c, flower-spikes,  $\times 2$  (*Hardy & Rauh* 2870, type plant).

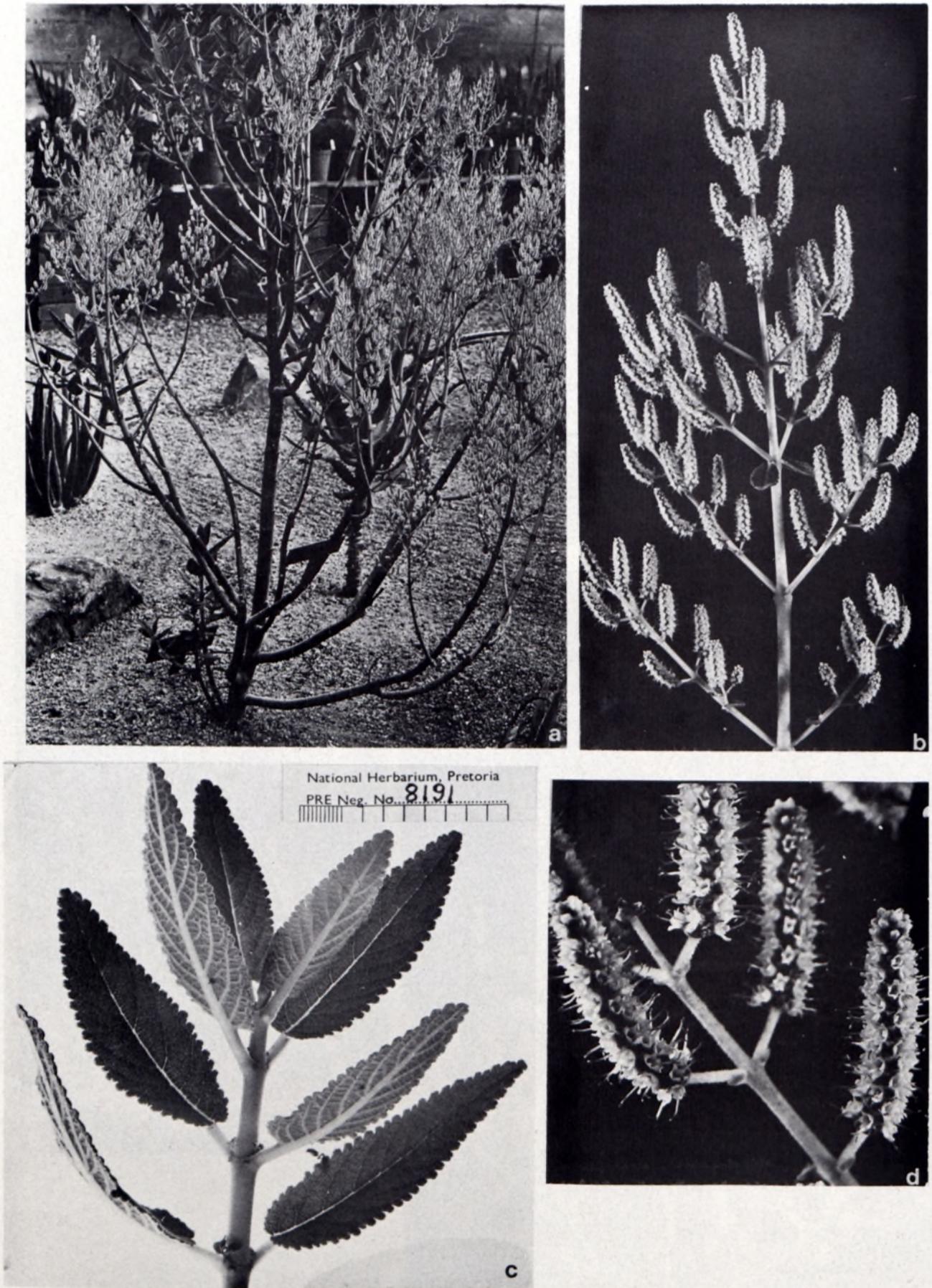


FIG. 5.— *Tetradenia nervosa*, female plant: a, habit, much reduced; b, part of inflorescence,  $\times 0,75$ ; c, immature leaves,  $\times 0,75$ ; d, flower-spikes,  $\times 2,5$  (Hardy & Rauh 2910).

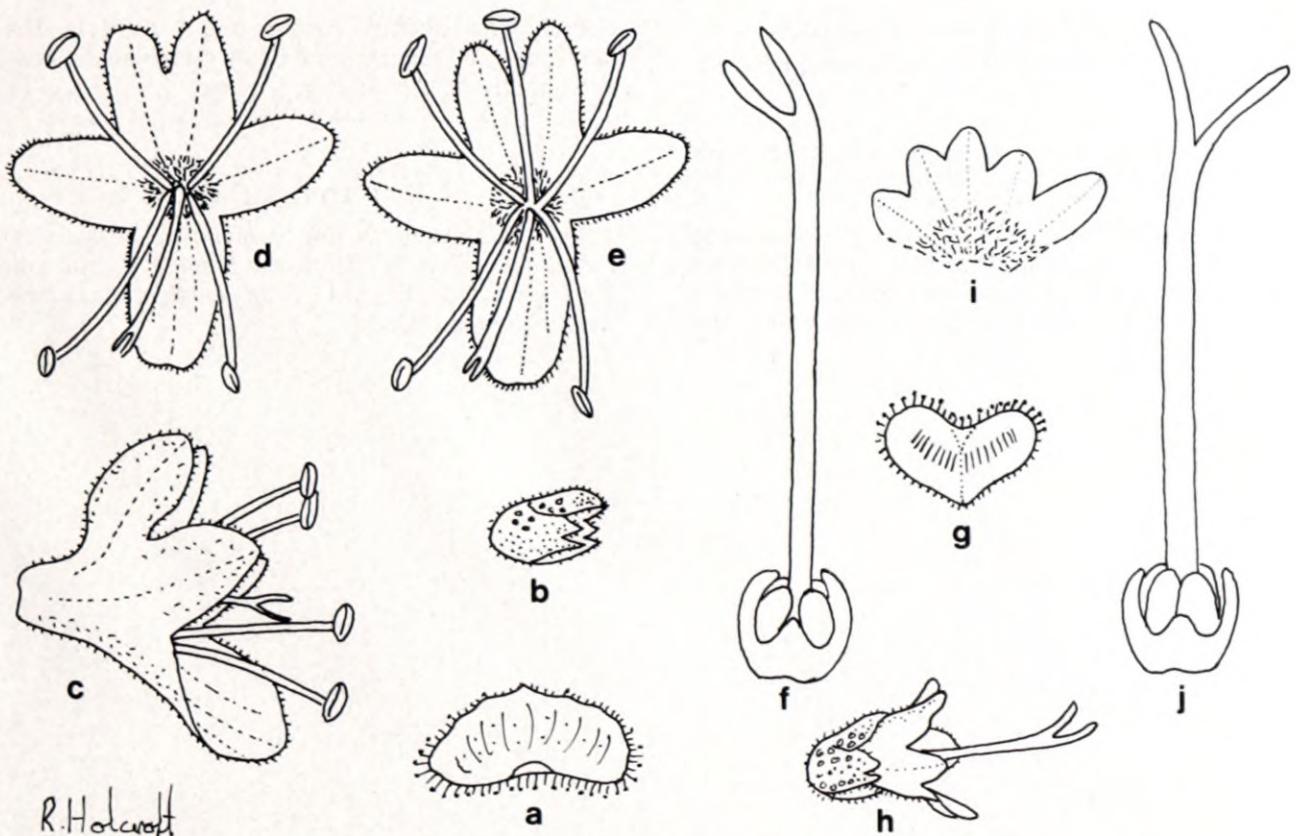


FIG. 6.—*Tetradenia nervosa*, a–f, male plant: a, bract,  $\times 10$ ; b, calyx,  $\times 7$ ; c, flower,  $\times 10$ ; d, male flower,  $\times 10$ ; e, abnormal flower with 5 stamens,  $\times 10$ ; f, abortive ovary and style,  $\times 20$  (Hardy & Rauh 2870). g–j, female plant: g, bract,  $\times 10$ ; h, flower,  $\times 10$ ; i, corolla, opened,  $\times 10$ ; j, fertile ovary and style,  $\times 20$  (Hardy & Rauh 2910).

*Hildebrandt* 3471 from near Tananarive bears the annotation *T. goudotii* by Briquet, and has been provided with a type label, but is cited as the only specimen (and hence the type) of *T. hildebrandtii*. A comparison of the specimens with the descriptions indicates that the specimens as annotated by Briquet compare better with the descriptions than the specimens as cited in the publication. However, *T. goudotii* and *T. hildebrandtii* are now regarded as conspecific, so the problem of their typification will be of only academic interest if the present treatment is followed: i.e. if *T. hildebrandtii* is placed as a synonym of *T. goudotii* and if a *Goudot* sheet is selected as the lectotype of *T. goudotii*.

3. *Tetradenia nervosa* Codd, sp. nov., *T. fruticosae* Benth. affinis, sed foliis lanceolatis vel oblongo-lanceolatis, utrinque glandulis stipitatis obsitis, subtus valde reticulatis differt.

Frutex 1–2 m altus, ramosus; caules subsucculentii, crassiusculi, teretes, tomentulosi. Folia breviter petiolata; lamina lanceolata vel oblongo-lanceolata, 50–120  $\times$  20–35 mm, supra glanduloso-puberula, bullata, subtus valde reticulata glandulis stipitatis obsita, apice rotundato, basi truncata, margine crenulato; petiulus 3–10 mm longus. Inflorescentia terminalis, paniculata, usque ad 400  $\times$  300 mm; spicae densae, 10–18 mm longae; rhachis dense glanduloso-tomentulosa; bractae late ovatae, 1–1,25  $\times$  2–2,25 mm; verticillastri plerumque 6-flori; flores dioeci, subsessiles. Calyx glandulosus, 1 mm longus; lobus posticus ovatus; lobi laterales breviter bifidi. Corolla dilute malvina, 1,75–2,25 mm longa; tubus anguste infundibularis; limbus plus

minusve asymmetricus, 4-lobatus, lobo postico bifido. Stamina 4, erecto-divergentia, breviter exserta. Discus purpureus, 2-lobatus, lobis ovarium superantibus. Stylus florum masculorum 1,5 mm longus, florum femineorum 2–2,5 mm longus; stigma bifidum.

TYPE.—Malagasy Republic, Fort Dauphin area, Pinanihy Beach, Hardy & Rauh 2870 (PRE, holo.).

Soft shrub 1–2 m tall, freely branched; stems semisucculent, rather stout, terete, tomentulose. Leaves shortly petiolate; blade lanceolate to oblong-lanceolate, 50–120  $\times$  20–35 mm, drying brown, upper-surface glandular-puberulous, bullate, under-surface stipitate-glandular, strongly reticulate-veined, apex rounded, base truncate, margin regularly crenulate; petiole 3–10 mm long. Inflorescence terminal, paniculate, up to 400  $\times$  300 mm in male specimens, smaller in female; inflorescence branches subtended by leaves which are smaller towards the apex; flower-spikes dense, 10–18 mm long; rhachis densely glandular-tomentose; bracts broadly ovate, nearly twice as broad as long, 1–1,25  $\times$  2–2,25 mm; verticils usually 6-flowered; flowers dioecious, subsessile. Calyx glandular, 1 mm long; posticus lobe ovate, lateral lobes oblong, shortly bifid. Corolla pale mauve, 1,75–2,25 mm long; tube narrowly funnel-shaped; limb somewhat asymmetric, 4-lobed, posticus lobe bifid. Stamens 4, erect-spreading, shortly exserted. Disc purple, 2-lobed; lobes exceeding the ovary. Style of male flowers 1,5 mm long, of female

flowers 2–2,5 mm long; stigma bifid. Figs 4,5 & 6.

Recorded from the Fort Dauphin area; on rocky outcrops.

MALAGASY REPUBLIC.— Fort Dauphin area: Pic St Louis, Decary 10055; Pinanihy Beach, Hardy & Rauh 2870 (male); Italy Bay, Hardy & Rauh 2910 (female).

Distinguished from the other Malagasy species by the lanceolate to oblong-lanceolate leaves which are glandular-puberulous above and stipitate-glandular below with the reticulate-veined surface visible, not

densely felted as in *T. fruticosa* and *T. goudotii*. The leaf shape and regularly crenulate margin distinguish it from any of the African species.

UITTREKSEL

*Drie Tetradenia spesies word in die Malgassiese Republiek erken: T. fruticosa Benth., T. goudotii Briq. (= T. hildebrandtii Briq.) en die nuutomskrewe T. nervosa Codd.*