

Available online at www.sciencedirect.com

SCIENCE @ DIRECT®

South African Journal of Botany 72 (2006) 202–204

SOUTH AFRICAN
JOURNAL OF BOTANYwww.elsevier.com/locate/sajb

Notes on the Lamiaceae: A new *Tetradenia* and a new *Thorncroftia* from South Africa

T.J. Edwards

School of Biological and Conservation Sciences, University of KwaZulu-Natal Pietermaritzburg, Private Bag X01, Scottsville 3209, South Africa

Received 6 May 2005; accepted 6 July 2005

Abstract

Two new species of Lamiaceae are described from South Africa. *Thorncroftia lotterii* T.J. Edwards and D. McMurtry is described from the mountains that divide Mpumalanga and Swaziland. The species appears to be endemic to the Ugutugulu River Gorge and is closely allied to *T. succulenta* (R.A. Dyer and E.A. Bruce) L.E. Codd and *T. media* L.E. Codd. *Tetradenia tuberosa* T.J. Edwards is described from the midlands of KwaZulu-Natal. It appears to be closely allied to *T. barberae* (N.E.Br.) L.E. Codd, sharing the occurrence of hermaphrodite flowers. © 2006 SAAB. Published by Elsevier B.V. All rights reserved.

Keywords: Lamiaceae; KwaZulu-Natal; Mpumalanga; New species; Tetradenia; Thorncroftia

1. *Thorncroftia*

The genus *Thorncroftia* is allied to *Plectranthus*, but is distinguished by its leaf-like bracts, which become progressively smaller towards the inflorescence apex, the four-lobed corollas and the flowers that are borne singly rather than in cymes (Codd, 1961, 1985, 1986; Dyer and Bruce, 1949). Whether these characters are sufficient to warrant generic circumscription will come under increasing scrutiny from molecular investigations. Currently, the genus is known from four published species and an unpublished species, allied to *T. longiflora* N.E.Br., which was collected from Paris Dam near Vryheid in KwaZulu-Natal and awaits publication (Balkwill, pers. comm.). Most of the species are known from very tight geographic ranges and from very few gatherings. This is partly an artifact of under-collecting in the extremely rugged terrain that they occupy. However, it is probably also the result of fire sensitivity. All the species are succulent plants incapable of surviving in fire-ravaged grassland and this has probably driven each into its own tight enclave and set the course for allopatric speciation. None of the species are capable of long distance dispersal and so they remain rare and endemic. Similar distributional disjunctions are evident in the aerial succulent *Plectranthus ernstii* Codd, which occurs in the Pondoland Centre of Plant Endemism. By contrast, *Plectranthus* spp. that inhabit grasslands frequently abscise their aerial parts

in winter and have substantial subterranean organs, which resprout after fire.

Recently, a sixth species of *Thorncroftia* was collected in the Barberton Mountains, which flank Swaziland. The new species is closely allied to *T. succulenta* and *T. media*.

Thorncroftia lotterii T.J. Edwards and D. McMurtry sp. nov. differt a *T. succulenta* trichomatibus simplicibus filiformibus (contra trichomata dendroidea *T. succulentae*), floribus roseis.

TYPUS—Mpumalanga: Ugutugulu Gorge below Shiyalongubu Dam, 21.03.2004. (–CC), *McMurtry 11764* (NU, holo.; PRE, iso.).

Semi-succulent erect herb or shrub, 0.3–1.0 m tall, with several main stems. *Stems* grey below, purple to pale green above, 7–25 mm in diameter, sparingly branched, densely tomentose, trichomes recurved, simple and sessile, capitate. *Leaves* succulent, lamina broadly trullate to broadly elliptic, 15–40 × 10–30 mm, densely tomentose above, very densely tomentose below, trichomes simple, recurved, glands white to translucent, venation prominent below; apex round to notched; margin crenate in the upper two thirds, rubrotomentose, teeth in 12–14 pairs, veins terminating in regular discoid, glabrous indentations at the apex of each tooth; base round to cordate; petiole often purple, 0–8 mm long. *Inflorescence* terminal, paniculate, dense; rhachis green to purple, glandular-tomentose; bracts persistent, imbricate, narrowly to broadly elliptic, 6–12 × 3–9 mm, entire, weakly conduplicate, apiculate; flowers axillary, solitary; pedicel purple, 1.5–3.0 mm long. *Calyx* green, becoming purple, recurved filiform

E-mail address: edwards@ukzn.ac.za.

trichomes outside, strigose within, 5–7 mm long; tube 3.5–4.0 mm long; upper lobe ovate, 2.5–3.5 × 2.0–3.0 mm; upper lateral lobes lanceolate-deltoid 2.5 × 1.0 mm; lower lateral lobes lanceolate-deltoid, 1.5–2.0 × 0.75 mm. *Corolla* tubular, four-lobed, lilac-pink; tube 19–24 × 1.5–2.0 mm, outside filiform trichomes recurved, glands clear, sessile, inside distal third glabrous, proximal inner tube villous; posticous lobe erect, obovate, 6–7 × 7–8 mm, purple streaked; lateral lobes deflexed, linear-lanceolate, acuminate, 6–7 × 2 mm, purple spotted; anticus lobe cymbiform, 6–9 mm long, porrect, becoming reflexed, pale lilac to white. *Stamens* 4, filaments 4–6 mm long, adnate to the corolla throat. *Ovary* four-lobed, glabrous; style white, filiform, exerted by 4–8 mm; stigma purple, shortly bifid. *Nutlets* glossy, pale to dark brown, ovoid, 2.0–2.5 × 1.5–2.0 mm.

T. lotterii is known only from the Ugutugulu Gorge in Mpumalanga (Fig. 1). It differs from *T. succulenta* in its simple filiform trichomes (as opposed to the dendroid trichomes of *T. succulenta*), its laxer inflorescences and its pink flowers. It differs from *T. media* in its much smaller, crenate leaves (those of the former are 35–65 × 25–35 mm and entire), short petioles, congested panicles and lilac-pink corollas (Fig. 2).

It seems probable that the new species shares a pollinator with *T. succulenta* and *T. media*. All have scentless, narrow corolla tubes about 20 mm in length with pilose hairs covering the inner surfaces around the lower style and ovary. The lower corolla lips are fleetingly porrect but soon become reflex, suggesting a hovering vector. Their anthers are exerted to about 5 mm. The flowers of *T. succulenta* are pale bluish mauve with darker spots and nectar guides on the petal lobes, *T. media* has lilac corollas with purple markings and the new species has lilac-pink flowers with purple markings. The likely pollinators are long tongued nemestrinid flies. Recently, a pollination guild serviced by the nemestrinid *Stenobasipteron wiedemanni*, and associated with forest and forest margins, such as those of the Ugutugulu Gorge, was described (Potgieter and Edwards, 2005).

Specimens examined—2531 (Komatipoort): Ugutugulu Gorge below Shiyalongubu Dam, 21.03.2004. (–CC), *McMur-*



Fig. 2. Flowering branch of *Thorncroftia lotterii*.

try 11764 (NU, PRE); Ugutugulu Gorge above Shiyalongubu Dam, 14.01.2004. (–CC), *Edwards, Lotter, Hughes and Moeller 3202a* (NU).

2. *Tetradenia*

Tetradenia is a small genus restricted to Africa and Madagascar. Codd (1985) recorded three species from southern

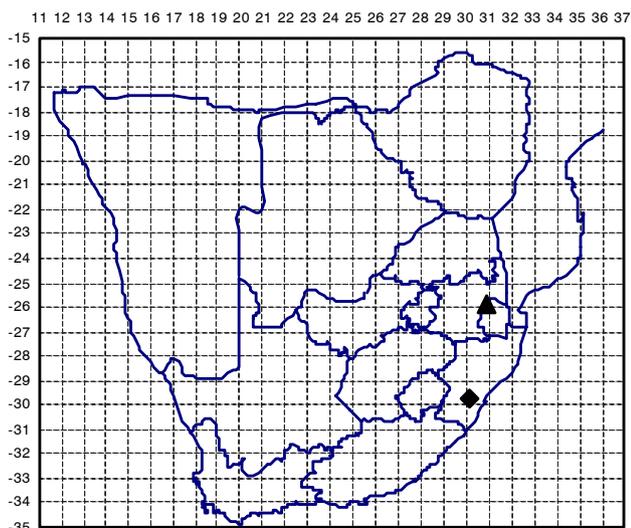


Fig. 1. The known distributions of *Thorncroftia lotterii* (▲) and *Tetradenia tuberosa* (◆).



Fig. 3. Flowering plant of *Tetradenia tuberosa*.

Africa; however, Johnson (1995) under the supervision of Phillipson suggested the recognition of a number of other taxa. The widespread species, *Tetradenia riparia* (Hochst.) L.E. Codd, includes morphologically distinct forms, which display considerable geographic pattern. Codd's (1983) broad circumscription to this species may require a reassessment to adequately cover the population divergence. Recently, a fourth species was described from Kaokoland (Van Jaarsveld and Van Wyk, 2003). A *Tetradenia* collected near Richmond (KwaZulu-Natal), which does not conform to the character suites of existing species, is described here.

Tetradenia tuberosa T.J. Edwards sp. nov. differt a *T. barberae* caudicibus magnis tuberosis, foliis maioribus cordatis petiolis prominentibus, glandibus indumenti albis capitatis.

TYPUS—KwaZulu-Natal: Richmond, Lions Kloof, in Valley Bushveld (–CD), Edwards, Potgieter, Carbutt and Thompson 3245 (NU, holo.; K; E; NH; PRE; MO iso.).

Shrubs well branched, round, 1.5 m wide or scandent, up to 4 m tall; stems woody, grey, initially finely tomentose; root tubers ovoid to fusiform, rarely moniliform, up to 400 × 150 mm. *Leaves* ovate-rotund to cordate, 15–80 × 15–80 mm; adaxial surface rugose-bullate, minutely strigose, glands sessile, capitate, white; abaxial surface costate, densely tomentose, glands sessile, capitate, white; margin revolute, crenate, teeth in 6–14 pairs; petiole 6–65 mm long. *Synflorescence* verticillate, cymes three-flowered; coetaneous with leaves, terminal or axillary, paniculate, with two to four basal side branches, seldom simple; bracts trullate to ovoid-deltate, 4.5–6.0 × 2.5–3.0 mm, imbricate above, caducous below; abaxial surface sparingly tomentose, dotted with white glands. *Calyx* sessile, 1.5–2.0 mm long, elongating to 4 mm in fruit, filiform trichomes erect, dense, glands white, capitate; tube 0.5 mm long; dorsal sepal ovate, 0.75–1.00 × 0.5 mm; lateral sepals fused, lobes deltoid, 0.5 × 0.5 mm; abaxial sinus 1 mm deep. *Corolla* white, five-lobed, 3.0–3.5 × 3.0–3.5 mm, broadly funnel-shaped; base narrow, 0.5 mm wide; lobes rounded, often incurved, 1.0–1.5 mm long. *Stamens* 4, free, fertile or rarely abortive; filaments 4–5 mm long. *Nectariferous disc* with a single well developed lobe. *Style* white, filiform, 6.0–6.5 mm long; stigma bifid. *Nutlets* pale brown, narrowly ovoid, 1.5–2.0 × 0.75–1.0 mm.

T. barberae and its close allies appear to have evolved allopatrically in river gorges of the eastern seaboard of South Africa. An undescribed subspecies of *T. barberae* occurs along the Bashee River in the Eastern Cape (Johnson, 1995). *T.*

barberae grows along the Fish River Valley as a xerophyte in karroid scrub (the type locality is recorded as 'Orange River Colony' but this is very improbable (Codd, 1985). Similarly, *T. tuberosa* (Fig. 3) is restricted to Valley Bushveld of incised dry gorges of the KwaZulu-Natal midlands (Fig. 1).

Tetradenia includes both unisexual and hermaphrodite plants, although the former sexual systems are clearly in the ascendancy. *T. barberae* (N.E.Br.) L.E. Codd is the only other hermaphroditic species from South Africa, apart from the newly described species. *T. tuberosa* differs from *T. barberae* in a number of ways, but is clearly an ally. This rare, scandent shrub grows up to 4 m high in thicket. In exposed situations, it forms round bushes with a circumference of ca. 1.5 m. Unlike *T. barberae*, the capitate glands that cover the vegetative organs are white (not red) and the leaves are large with well developed petioles. In *T. barberae*, leaves are shortly petiolate with small laminae (8–15 × 5–10 mm). The presence of tuberous roots is shared only with *Tetradenia kaokoensis* Van Jaarsv. and A.E. van Wyk; a distinctive species of the Otjhipa Mountains in northern Kaokoland, allied to *T. riparia* (Van Jaarsveld and Van Wyk, 2003).

Acknowledgements

Mervyn Lotter, Shane Burns, Mark Hughes and Michael Moeller are thanked for their assistance in collection of material of *T. lotterii*. Christina Potgieter, David Thompson and Clinton Carbutt are thanked for their assistance in collecting material of *T. tuberosa*.

References

- Codd, L.E., 1961. South African Labiatae, *Thorncroftia*. *Bothalia* 7, 429–434.
- Codd, L.E., 1983. The genus *Tetradenia* Benth. (Lamiaceae): I. African species. *Bothalia* 14, 177–183.
- Codd, L.E., 1985. Lamiaceae. In: Leistner, O.A. (Ed.), *Flora of Southern Africa*, vol. 28 (4). Botanical Research Institute, South Africa.
- Codd, L.E., 1986. Notes on African plants, Lamiaceae. *Bothalia* 16, 51–53.
- Dyer, R.A., Bruce, E.A., 1949. *Flowering Plants of Africa* 27, t.1073.
- Johnson, K., 1995. A revision of the genus *Tetradenia* in southern Africa. Unpublished BSc (Hons) project. Rhodes University.
- Potgieter, C.J., Edwards, T.J., 2005. The *Stenobasipteron wiedemanni* (Diptera, Nemestrinidae) pollination guild in eastern southern Africa. *Annals of the Missouri Botanical Garden* 92, 254–267.
- Van Jaarsveld, E.J., Van Wyk, A.E., 2003. *Tetradenia kaokoensis*, a new species from Kaokoland, Namibia. *Bothalia* 33, 107–108.