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A new species of *Lessertia* (Galegeae, Leguminosae) from Gauteng Province, South Africa

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A new species of *Lessertia*, *L. uniflora*, is described. It is morphologically similar to *L. mossii* but differs in the decumbent habit, slender stems, longer leaves, shorter, thinner peduncles and especially in the almost invariably single-flowered inflorescences, the smaller flowers, glabrous style, larger winged fruits and more numerous seeds. It appears to be a rare species and is known from only one small population in the Marievale Bird Sanctuary southeast of Johannesburg in Gauteng Province, South Africa.

Key words: *Lessertia uniflora*, *Lessertia mossii*, turf soil, rare, taxonomy

Introduction

The genus *Lessertia* DC. (1802: 37) (Tribe Galegeae) is a taxonomically complex group of papilionoid legumes sub-endemic to southern Africa (Nkonki, 2013). Infrageneric relationships are unresolved and no molecular phylogeny has yet been published. The shape and turgidity of the fruits are traditionally used as important diagnostic characters. In his revision of the 30 species known at the time, Harvey (1862) divided *Lessertia* into two sections, *Lessertia* sect. *Stenolobae* Harv. (1862: 214) with flat linear pods and *Lessertia* sect. *Platylobae* Harv. (1862: 213) with rotund to oblong, flat to inflated pods. This sectional classification was followed to some extent by later authors but it is now clear (Nkonki, 2013) that much work remains to be done to find natural groups within the genus. Other contributions to the taxonomy include a key to 46 Cape species by Bolus (1915), a checklist of the species occurring in KwaZulu-Natal by Ross (1972), a revision of the KwaZulu-Natal species by Balkwill & Balkwill (1999) and a recent but as yet unpublished synopsis of 54 species by Nkonki (2013). One new species was recently described by Nkonki *et al.* (2013). The two known species of the genus *Sutherlandia* R.Br. ex W.T. Aiton (1812: 327) were subsumed under *Lessertia* (Manning & Goldblatt 2012) because molecular systematic evidence (Amaral *et al.*, unpublished), supported to some extent by morphological data, showed that they are nested within the latter genus. This brings the total number of accepted species to 57.

Recent field observations in the Marievale Bird Sanctuary near Nigel (ca. 40 km from Johannesburg) led to the discovery of a distinct new species, the first with predominantly single-flowered racemes.

Species treatment

Lessertia uniflora B.-E. Van Wyk, *sp. nov.* differs from all other species by the single-flowered inflorescences and from *L. mossii* also by the decumbent, slender stems, longer leaves, smaller flowers, glabrous style, larger and winged fruits, and more numerous seeds per fruit. Type:—SOUTH AFRICA, Gauteng, Nigel (2628): Marievale Bird Sanctuary, close to the Duiker hide (–AD), 1 February 2014, *T. Van Wyk 52 sub T. Nkonki 159* (holotype PRE!, isotypes NBG!, J!, JRAU!, BOL!).

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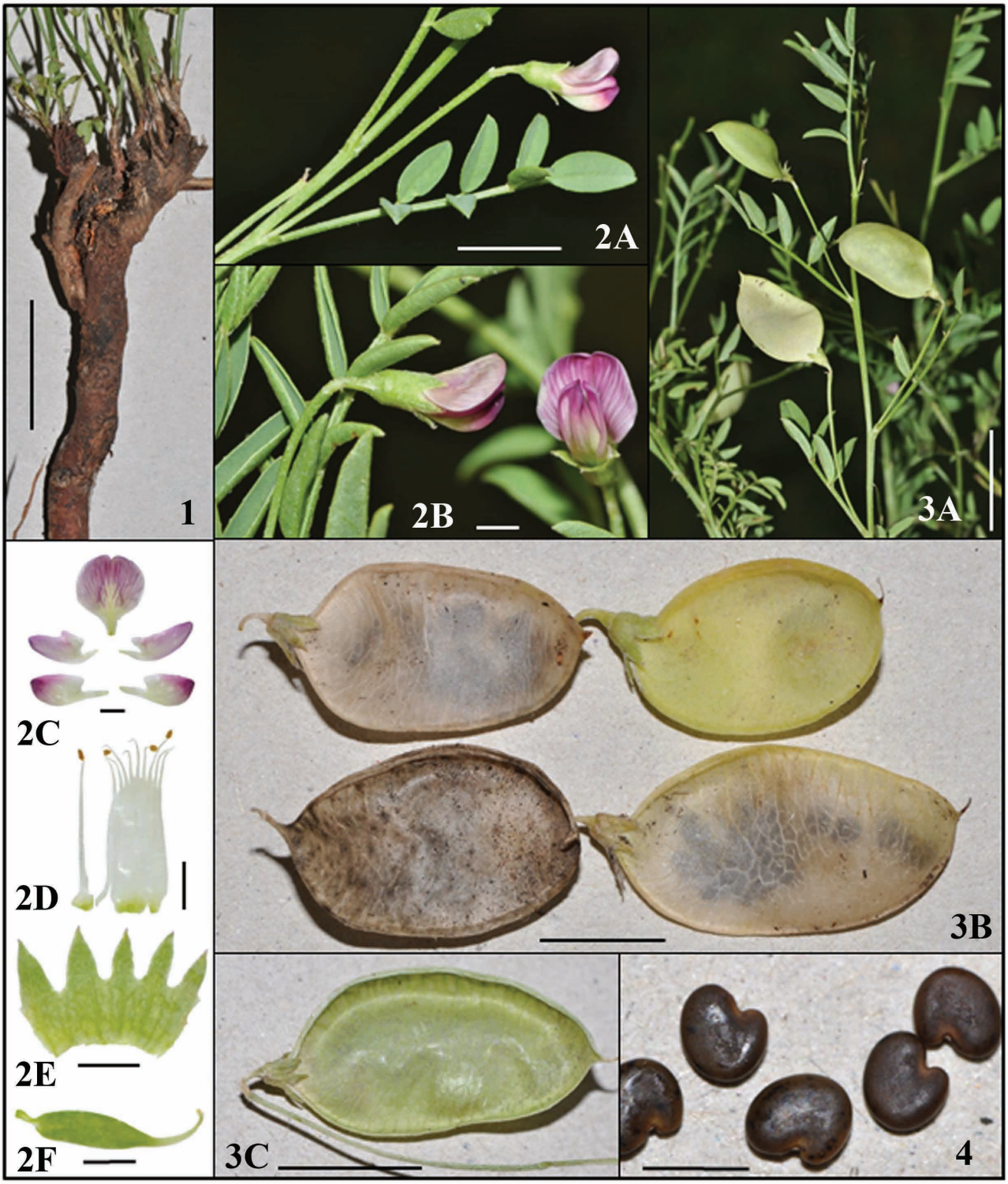

FIGURE 1. Morphology of *Lessertia uniflora*. (1) Rootstock and taproot. (2A) Leaf and flower (note single-flowered inflorescence). (2B) Flowers in lateral and front view. (2C) Standard, wing and keel petals. (2D) Androecium. (2E) Calyx opened out, with upper lobes to the left. (2F) Pistil. (3A) Branch with fruit. (3B) Mature fruits, showing variation in shape. (3C) Mature fruit showing winged upper suture. (4) Seeds. Scale bars: 1 & 3A = 20 mm; 2A, 3B & 3C = 10 mm; 2B–F & 4 = 2 mm.

Small, decumbent suffrutex ca. 100–150 mm high and 200–300 mm wide, with a woody rootstock (Fig. 1). *Stems* annual, slender, subglabrous to minutely and sparsely strigillose-pubescent. *Stipules* linear to linear-lanceolate or filiform, 1–4 mm long, minutely strigillose. *Leaves* imparipinnate, (20–) 35–45 (–60) × (8–) 10–15 (–17) mm; petioles (6–) 8–12 (–16) mm long; leaflets (3–) 4–5-jugate, opposite, sub-opposite to alternate, broadly to mostly narrowly elliptic, base and apex rounded to mostly cuneate, (5–) 8–10 (–12) × 2–3 (–7) mm, abaxially minutely and sparsely strigillose, adaxially glabrous; terminal

leaflet (7–) 9–11 (–16) mm long. *Inflorescences* axillary, lax, almost invariably single-flowered; peduncles long and slender, slightly shorter than the leaves, (15–) 20–25 (–32) mm long; pedicel 2–3 mm long; bracts triangular-lanceolate, 0.5–1.0 mm long, sparsely white-strigose; bracteoles minute, 0.2–0.5 mm long, strigose. *Flowers* small, 6–7 mm long, lilac-purple, white near base. *Calyx* campanulate, subequally 5-lobed, 3–4 mm long, sparsely strigose; tube 1–2 mm long; lobes acute, 1–2 mm long. *Standard* suborbicular, 6–7 × 5–6 mm, emarginate, glabrous, striate, lilac-purple with yellow central nectar guide, greenish on reverse; claw linear, 1 mm long. *Wings* 6–7 × 2–2.5 mm, as long as or slightly longer than keel, obtuse, glabrous, without sculpturing, lilac-purple, claw linear, 1 mm long. *Keel* 6–7 × 3–3.5 mm, obtuse, glabrous, pocket absent, lilac purple; claw linear, 2 mm long. *Stamens* diadelphous, 9 +1, 6–7 mm long; anthers uniform. *Pistil* stipitate, glabrous; ovary 4–5 mm long, glabrous, narrowly elliptic, 12–20 ovulate; style 2–3 mm long, curved upwards, glabrous, with hairs around stigma. *Fruits* stipitate, oblong to broadly elliptic, sub-compressed, bulged to one side, (12–) 22–25 (–28) × (10–) 12–14 (–15) mm, glabrous, veined, upper margin of pods faintly to distinctly winged, wing up to 3 mm wide, (5–) 15–16 (–19) seeded, indehiscent. *Seeds* broadly reniform, 2.0 × 1.5 mm, dark brown, smooth.

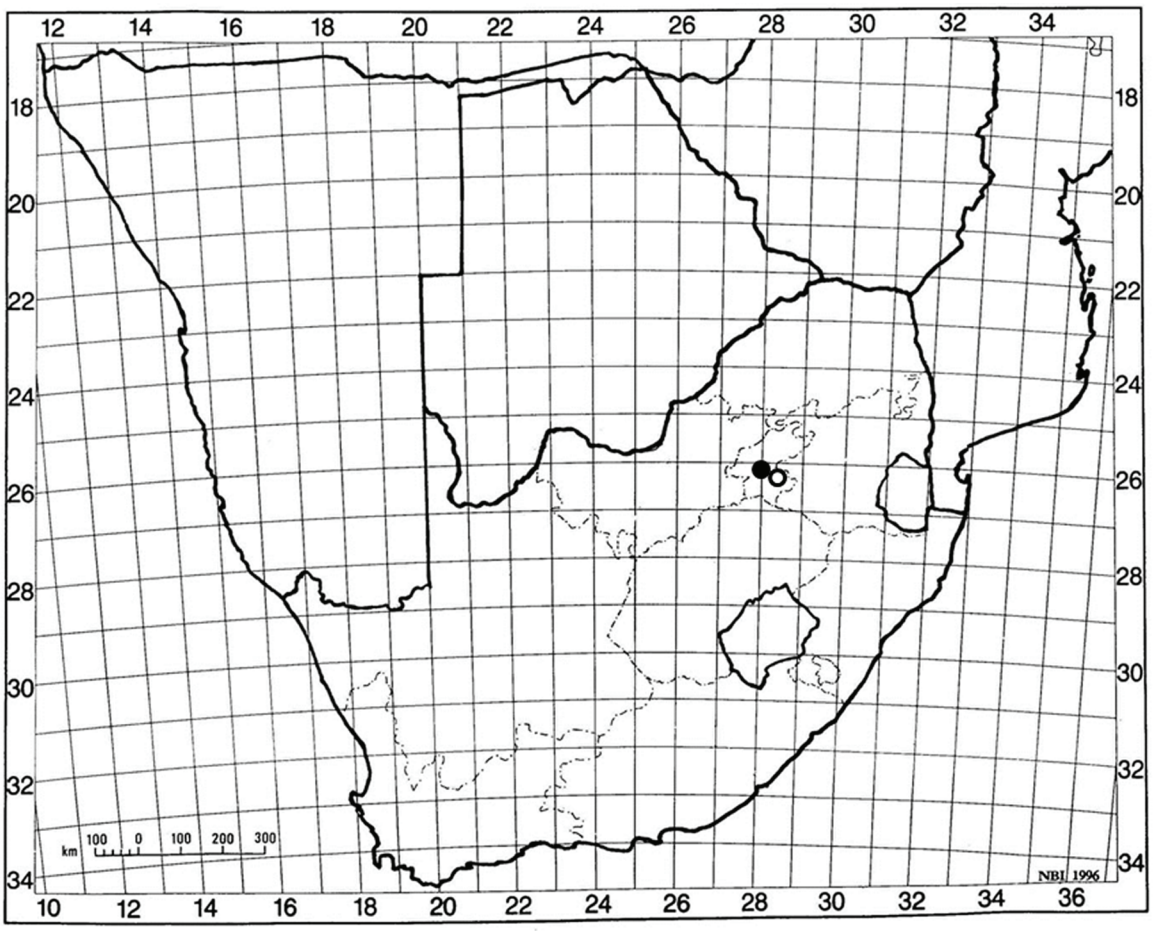

FIGURE 2. Known geographical distribution of *Lessertia uniflora* (open circle) and *L. mossii* (dot).

Diagnostic characters:—*L. uniflora* differs from all other members of the genus in the typically single-flowered inflorescences (Fig. 1). Careful inspection of all known plants (ca. 20 individuals) revealed only one two-flowered inflorescence. It superficially resembles *L. mossii* R.G.N.Young (1932: 408) but differs in the decumbent, slender stems (not robust and erect), the longer leaves (25–31 mm in *L. mossii*), the shorter and thinner peduncles (35 mm and thick in *L. mossii*), the smaller flowers (ca. 12 mm long in *L. mossii*), the glabrous style (hairy along the upper edge in *L. mossii*), the larger fruits (up to 21 mm in *L. mossii*), the obscurely to distinctly winged upper suture (fruit not winged in *L. mossii*) and more seeds per fruit (ca. 7 in *L. mossii*).

It is noteworthy that the new species and *L. mossii* are both known from single populations in Gauteng Province, separated by more than 60 km (the latter known from a single but rich collection near Soweto, Johannesburg). A summary of distinct differences between the two species is presented in Table 1.

The specific epithet refers to the typically single-flowered inflorescence, a diagnostic character for the new species.

Flowering time: January to February.

Distribution and Ecology:—*Lessertia uniflora* is highly localized and known only from a small population in the

Marievale Bird Sanctuary near Nigel, ca. 40 km southeast of Johannesburg (Fig. 2). It grows in grassland adjacent to a wetland, in disturbed turf soil, exposed to full sun, at an elevation of 1568 m.

TABLE 1. Morphological differences between *Lessertia uniflora* and *L. mossii*.

Characters	*Lessertia uniflora*	*Lessertia mossii*
Habit	Decumbent, slender	Erect, robust
Leaf length (mm)	35–45	25–31
Peduncle length (mm)	20–25	35
Number of flowers per inflorescence	1 (very rarely 2)	4 (–6)
Flower length (mm)	6–7	± 12
Style vestiture	Hairy only around the stigma	Hairy along the upper surface of the style
Fruit shape	Oblong to broadly elliptic	Oblong
Fruit wing	present	absent
Fruit length (mm)	22–25 (–28)	20–21
Fruit width (mm)	12.0–14.0	10.5
Seeds per fruit	(5–) 15–16 (–19)	± 7

Conservation notes:—The single known *L. uniflora* population at Marievale Bird Sanctuary comprises ca. 20 mature individuals, distributed in an area of about 5 m^2 and only ca. 10 m away from the boundary fence. The population occurs in a wetland that forms part of a Ramsar Site (i.e., a wetland of international importance) but nevertheless faces possible habitat loss or fragmentation due to the close proximity to agricultural and industrial activities, as well as alien invaders (mainly eucalypts). Furthermore, the plants grow close to the edge of a dirt road, with disturbances such as a bird hide and parking area close by. Repeated efforts to locate more populations were unsuccessful. According to the latest criteria of the International Union for the Conservation of Nature and Natural Resources (IUCN, 2001) and given its small geographic range and population size, the new species could be considered Critically Endangered [CR B1 a,b(i-v), B2 a,b(i-v), D].

Additional specimens examined:—SOUTH AFRICA. Gauteng: **2628** (**Nigel):** Marievale Bird Sanctuary, close to the Duiker hide (–AD), 24 January 2014, *T. Van Wyk 51 sub T. Nkonki 158* (J, NBG, PRE).

Acknowledgements

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