

A revision of *Ledebouria* (Hyacinthaceae) in South Africa. 3. The reinstatement of *L. ensifolia*, *L. galpinii* and *L. sandersonii*

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ABSTRACT

Three taxa of *Ledebouria* Roth are raised from synonymy to species status, with notes, diagnostic characters and distributions. *L. galpinii* (Baker) S.Venter & T.J.Edwards is a narrow endemic in the Wolkberg Centre and was formerly placed within *L. cooperi* (Hook.) Jessop. The other species, *L. sandersonii* (Baker) S.Venter & T.J.Edwards and *L. ensifolia* (Eckl.) S.Venter & T.J.Edwards, are closely allied to each other, sharing a number of synapomorphies.

INTRODUCTION

In his revision of *Scilla* L. in South Africa, it was necessary for Jessop (1970) to place a large contingent of species into *Ledebouria* Roth. This subdivision of *Scilla* saw the sinking of a number of valid species and resulted in some confusion in the taxonomy of *Ledebouria*. In his paper Jessop (1970) alerted readers that the 'lumping' involved may have been too drastic. His inclusion of a wide range of morphologically divergent forms within *L. cooperi* (Hook.) Jessop was necessary; however, *S. galpinii* Baker and *S. sandersonii* Baker need to be resurrected.

In our opinion *L. undulata* (Jacq.) Jessop also embraces more than a single species and is subdivided into *L. ensifolia* (Eckl.) S.Venter & T.J.Edwards and *L. undulata sensu stricto*. This subdivision is necessitated by the differences in gynoecium and bract morphology.

1. *Ledebouria ensifolia* (Eckl.) S.Venter & T.J.Edwards, comb. nov.

Drimia ensifolia Eckl. in South African Quarterly Journal 1: 364 (1830). *Scilla ensifolia* (Eckl.) Britten: 201 (1908). Type: Uitenhage, Zwartkops River, Zeyher 10 (K!, lecto. selected here; –PRE, photo!).

D. ludwigii Miq.: 39 (1839). *Idothea ludwigii* (Miq.) Kunth: 681 (1843). *Scilla ludwigii* (Miq.) Baker: 9 (1870). Type: Caput bonae Spei, on the sand hills near the Zwartkops River, Ecklon & Zeyher 1064 (U, holo.; GRA!; PRE!).

D. apertiflora Baker: t. 19 (1868) synonym. nov. *Ledebouria apertiflora* (Baker) Jessop: 254 (1970) synonym. nov. Type: *Saunders Refugium Botanicum* 1: t. 19 (1868).

Scilla prasina Baker: 10 (1870). Type: Kaffirland, Gill s.n. (K!, holo.; –PRE, photo!).

S. pusilla Baker: 183 (1876). Type: Transkei, Bazeia, Baur 293 (K!, holo.; –BOL, drawing!; –PRE, photo!).

S. ecklonii Baker: 7 (1892). Type: Tambukiland, mountains between Silo and Windvogelberg, Ecklon & Zeyher 12 (B!, holo.).

Plants solitary. *Bulb* hypogeal, cylindrical, 40–60 × 20–30 mm; dead bulb scales hard, dark brown to purple, apices attenuate; live bulb scales membranous. *Leaves* 5–10, fully developed at anthesis, spreading, narrowly ovate to ensiform, 80–150 × 15–40 mm, fleshy, dull glaucous, usually immaculate; base canaliculate; apex acute; margin smooth. *Inflorescences* 1–3, dense, 8–320 mm long, 30–100-flowered; scape flaccid, terete, 50–200 mm long; bracts ± 1 × 1 mm, deltoid, fleshy, green, without bracteoles; pedicels patent, 3–4 mm long, green. *Perianth* stellate; tepals green to pink with a dull green keel, sharply reflexed, equal, oblong, 3.0–3.5 × 1.5 mm; apex acute. *Stamens* erect, ± 3 mm long; filaments pink, epitepalous; anthers ± 1 mm long. *Ovary* ellipsoid, 6-lobed, ± 1.0 × 2.5 mm, carpels oblong with papillate basal lobes; style triangular in section, ± 1.5 mm long, glabrous, purple; stipe up to 0.5 × 0.5 mm. *Capsule* 3-lobed, symmetrical, globose; base truncate. *Seed* ellipsoid, 3–5 mm long, surface wrinkled, brown.

L. ensifolia differs from other species of *Ledebouria* in having fusiform roots. The species is widespread, occurring on sandy soils derived from quartzites, gneiss or rhyolite in woodlands or shrublands (Figure 1). *L. cooperi* and *L. revoluta* (L.f.) Jessop are commonly misidentified as *L. ensifolia* but both have bracteoles and

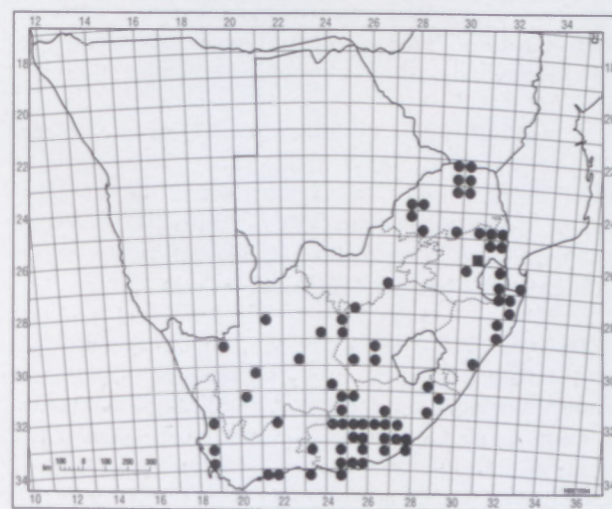


FIGURE 1.—Distribution of *Ledebouria ensifolia*, ●; *L. galpinii*, ■.

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smooth carpel lobes; the latter also has elongate styles (± 6 mm). In addition, the torn leaves of *L. revoluta* reveal 'threads' (from unravelling xylem), no such 'threads' occur in the leaves of *L. ensifolia*.

Jessop (1970) placed *L. ensifolia* in synonymy with *L. undulata* which, in our opinion, is not a close ally. The latter species has ovoid bulbs, lacks fusiform roots, lacks papillate basal lobes on the ovary and has bracteoles. In addition the undulate leaf margins, from which the species was named, are consistently absent from *L. ensifolia*. Instead *L. ensifolia* appears to be closely allied to *L. sandersonii* which also lacks bracteoles, lacks 'threads' in the torn leaves, has solitary bulbs and prominent papillate lobes on the carpel bases.

Vouchers: *Acocks* 16235 (PRE); *Barker* 6900 (NBG); *Harrison* 231 (NH); *Moss & Rogers* 540 (J); *Rogers* 28366 (GRA); *Schlechter* 18 (BOL).

2. *Ledebouria galpinii* (Baker) S. Venter & T.J. Edwards, comb. nov.

Scilla galpinii Baker in *Flora capensis*, 6: 487 (1896). Type: Eastern Transvaal [Mpumalanga], summit of Duiwel's Kantoer, *Galpin* 672 (PRE!, lecto., designated here: BOL!, GRA!, NH!, SAM!, Z).

Plants usually gregarious. *Bulb* ovoid, hypogaeal, 20–30 \times 20–25 mm, neck 1–2 \times 3–5 mm, usually with bulblets on basal stem; dead bulb scales brown, apices truncate; live bulb scales fleshy, arranged loosely; cataphylls 1–3, exerted above ground. *Leaves* fully developed at anthesis, 3 or 4, humifuse, oblong to ovate-spathulate, 50–80 \times 20–25 mm, fleshy, without threads when torn, glossy purple to green-purple, adaxial surface lacunose, venation obscure; margins smooth; base canaliculate; apex mucronate. *Inflorescences* 1–3, subglobose, 10–20 \times 10–20 mm, flaccid, 20–30-flowered, as long as or longer than leaves, extending in fruit; scape usually twisted basally, purple, 20–50 mm long; bracts fleshy, linear-lanceolate, up to 1 \times 0.5 mm, pink to purple; bracteoles present; pedicels patent, 3–4 mm long, purple. *Perianth* stellate; tepals subequal, oblong, 4–5 \times 2 mm, pink to purple, keel green; apex obtuse, cucullate. *Stamens* spreading, 3–4 mm long; filaments maroon; anthers up to 0.5 mm long, violet. *Ovary* globose, 3-lobed, $\pm 1.5 \times 1$ mm, lobes obtusely ovate; style up to 3 mm long, triangular in section, purple; stipe $\pm 0.5 \times 0.5$ mm. *Capsule* globose, base truncate. *Seed* elliptic, 1.5–2.0 mm long, surfaces strongly wrinkled, red-brown.

L. galpinii occurs on Black Reef Quartzites of the Wolkberg Group (SACS 1980). The species may be added to the list of 130 endemics within the Wolkberg Centre of Endemism (Van Wyk & Smith 2001) (Figure 1). Plants occur in mistbelt sourveld often in association with *Streptocarpus galpinii* Hook.

Jessop's (1970) reduction of *L. galpinii* into synonymy with *L. cooperi* is unwarranted. *L. cooperi* is a plant of seepages and vleis, it is soboliferous and quickly forms dense populations. By contrast, *L. galpinii* is a plant of lithosols and, while occasionally producing basal bulbs, is never soboliferous. Bulb morphology differs significantly, *L. galpinii* has ovate bulbs with truncate apices compared to the acuminate apices of *L.*

cooperi. *L. galpinii* frequently produces 3 cataphylls but in *L. cooperi* cataphylls are always solitary. The leaves of *L. galpinii* are fleshy, flat, broadly ovate and humifuse, whereas those of *L. cooperi* are mesic, canaliculate, lanceolate and erect. The most obvious distinguishing character of *L. galpinii* is the corrugated adaxial leaf surface, embossed with regular pits. Plants of *L. cooperi* are always more floriferous, producing between 20 and 60 flowers per raceme, the inflorescences of *L. galpinii* have less than 30 flowers. Lastly the pedicels of *L. galpinii* are usually 3–4 mm long, whereas those of *L. cooperi* are 6–12 mm. The abundance of distinguishing characteristics, and the occurrence of *L. galpinii* in an area renowned for plant endemism, leaves us in no doubt of its specific status.

Vouchers: *Codd* 9789 (PRE); *Galpin* 672 (BOL, GRA, NBG, NH, PRE); *Van der Merwe* 2047 (PRE); *Venter* 13389 (UNIN).

3. *Ledebouria sandersonii* (Baker) S. Venter & T.J. Edwards, comb. nov.

Scilla sandersonii Baker in *Saunders Refugium Botanicum* 3 (Append.): 5 (1870). Type: Transvaal, without precise locality, *Sanderson s.n.* (K!, holo.; –PRE, photo!).

S. baurii Baker: 484 (1896). Type: Tembuland, Bazeia Mountain, *Baur* 550 (K!, holo.; –PRE, photo!; SAM!).

S. tysonii Baker: 484 (1896). Type: Griqualand East, *Tyson s.n.* (K!, holo.; –BOL!, drawing; –GRA!, drawing).

S. oostachys Baker: 487 (1896). Type: Upper Umkomaas, *Wood* 4627 (K!, holo.; –BOL!, drawing; –NH!, –PRE, photo!).

S. diphylla Baker: 489 (1896). Type: Barberton, Saddleback Range, *Galpin* 1182 (K!, holo.; BOL!, GRA!, NH!, PRE!, SAM!).

S. bella Markötter: 13 (1930). Type: Oliviers Hoek Pass, *Thode* STE3372 (STE!, holo.; –PRE, photo!).

Plants solitary. *Bulb* hypogaeal, ovoid to subglobose, 10–30 \times 10–15 mm; dead bulb scales membranous, brown, apices attenuate; live bulb scales membranous. *Leaves* 2–6, fully developed at anthesis, spreading or appressed, ovate to broadly lanceolate, 15–75 \times 8–30 mm, fleshy, dull glaucous; adaxial surface sometimes blotched with purple; abaxial surface suffused with purple; base canaliculate; apex acute; margin smooth. *Inflorescences* 1 or 2, lax, 12–22-flowered, 20–25 mm long; scape erect to flaccid, terete, 20–40 mm long; bracts deltoid, $\pm 1.0 \times 0.5$ mm, fleshy, pink to purple, without bracteoles; pedicels patent, 6–8 mm long, pink. *Perianth* stellate; tepals pink, sometimes with a dull green keel, recurved, equal, oblong, $\pm 3 \times 1$ mm, apex acute. *Stamens* erect, ± 3 mm long; filaments purple above, white below, epitepalous; anthers ± 1 mm long. *Ovary* ovoid, 6-lobed, $\pm 1 \times 2$ mm; carpels oblong with papillate basal lobes; style ± 3 mm long, triangular in section, glabrous, purple; stipe up to 0.5 \times 0.5 mm. *Capsule* 3-lobed, symmetrical, globose; base truncate. *Seed* ellipsoid, ± 2.5 mm long, surface wrinkled, brown.

The inclusion of *Scilla sandersonii* within *L. cooperi* obscures its true alliances. By his recognition of the *sandersonii* series it is clear that Jessop (1970) was aware of divergence within his broad concept of *L. cooperi*. Examination of the gynoecium of *L. sandersonii*

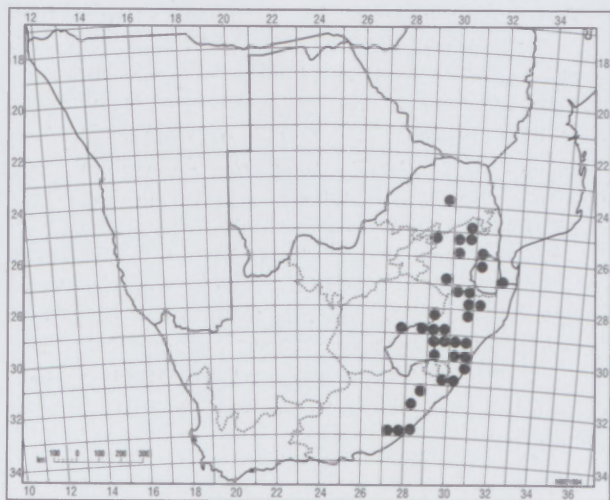


FIGURE 2.—Distribution of *Ledebouria sandersonii*.

sonii reveals a synapomorphy shared with *L. ensifolia*. In these species the carpel bases are strongly lobed and are adorned with papillae. Although closely allied to *L. ensifolia*, *L. sandersonii* is easily distinguished by its smaller bulbs (10–30 × 10–15 mm versus 40–60 × 20–30 mm) and the absence of fusiform roots. In addition, the leaves of *L. sandersonii* are fewer (1–6 vs. 5–10), smaller and broader (15–75 × 8–30 mm vs. 80–150 × 15–40 mm). *L. ensifolia* is more floriferous producing 30–100 flowers per raceme, whereas inflorescences of *L. sandersonii* seldom produce more than 20 flowers. *Flowering time*: October to November.

L. sandersonii is commonly associated with montane grassland in the eastern parts of southern Africa where it grows in shallow soils, overlying rock outcrops (Figure 2). These soils act as seepages in summer and frequently freeze in winter. Both maculate and immaculate forms of

L. sandersonii occur, but mixed populations have never been encountered.

Vouchers: Brown 323 (BOL); Compton 27803 (NBG, PRE); Kerfoot 8168 (PRE); Strey 9362 (NH, PRE); Van der Merwe 2602 (NU).

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