

## A revision of *Ledebouria* (Hyacinthaceae) in South Africa. 2. Two new species, *L. crispa* and *L. parvifolia*, and *L. macowanii* re-instated

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### ABSTRACT

Two endemic *Ledebouria* Roth species are described with notes, diagnostic characters, distributions and alliances. *L. crispa* appears to be allied to *L. socialis* (Baker) Jessop with which it shares densely gregarious, epigeal bulbs and *L. undulata* (Jacq.) Jessop of the Northern and Western Cape which shares crispate leaf margins. *L. parvifolia* is endemic to Mpumalanga (eastern Transvaal) and was recorded from a single locality near Graskop; it differs from *L. cooperi* (Hook.f.) Jessop in having hairy upper leaf surfaces. *L. macowanii* (Baker) S.Venter is re-instated; it is distinguished from *L. cooperi* by its tightly clasping bulb scales and single cataphyll.

### INTRODUCTION

*Ledebouria* Roth is distributed across Africa into the southern tip of India and the northern tip of Madagascar and includes 33 species. The genus is very well represented in South Africa with high species densities in the central and eastern regions. This paper deals with two new species recorded from Northern Province and Mpumalanga respectively.

1. *Ledebouria crispa* S.Venter, sp. nov. *L. socialis* (Baker) Jessop similis sed statura minore, marginibus crispatis foliorum et bracteolisque flores subtendentibus differt.

**TYPE.**—Northern Province, 2329 (Pietersburg): Farm Majebeskraal, (–DC), Venter 11202 (PRE, holo.; NU, UNIN).

Plants gregarious. *Bulbs* epigeal to semi-epigeal, 15–30 × 10–20 mm, ovoid to obovoid; dead bulb scales pale brown, membranous, apices attenuate, live bulb scales fleshy, tightly appressed, lacking threads when torn; bulblets often abundant. *Leaves* 4–10, synanthous, linear to linear-lanceolate, 20–70 × 4–6 mm, erectly spreading, slightly succulent, glaucous, veins obscure; margin crispate; base canaliculate; apex acute. *Inflorescence* solitary, erect, 40–50 mm long, 8–12-flowered; scape terete, glaucous, glabrous, 40–50 mm long; bracts and bracteoles membranous 1.2–1.5 × 0.4 mm, linear-lanceolate, glaucous. *Pedicels* spreading, 2–4 mm, green suffused with pink. *Tepals* reflexed in distal half, oblong, 4.0–5.0 × 1.0–1.5 mm, pink, keel dull green, apex acute. *Stamens* erect, 3.0–3.5 mm long; filaments pink, epitepalous; anthers 0.5 mm long, mauve. *Ovary* depressed ovoid, 2.5 × 3.0 mm, lobes obtusely deltoid, glabrous, apex tapered; stipe 1 mm long. *Style* 3.0–3.5 mm, white.

*Capsule* symmetrical, globose-ovoid, base truncate. *Seed* 3.0 × 1.5 mm, drop-shaped, wrinkled, black. Figure 1.

*L. crispa* has only been recorded from hills surrounding Pietersburg. The substrates from which specimens

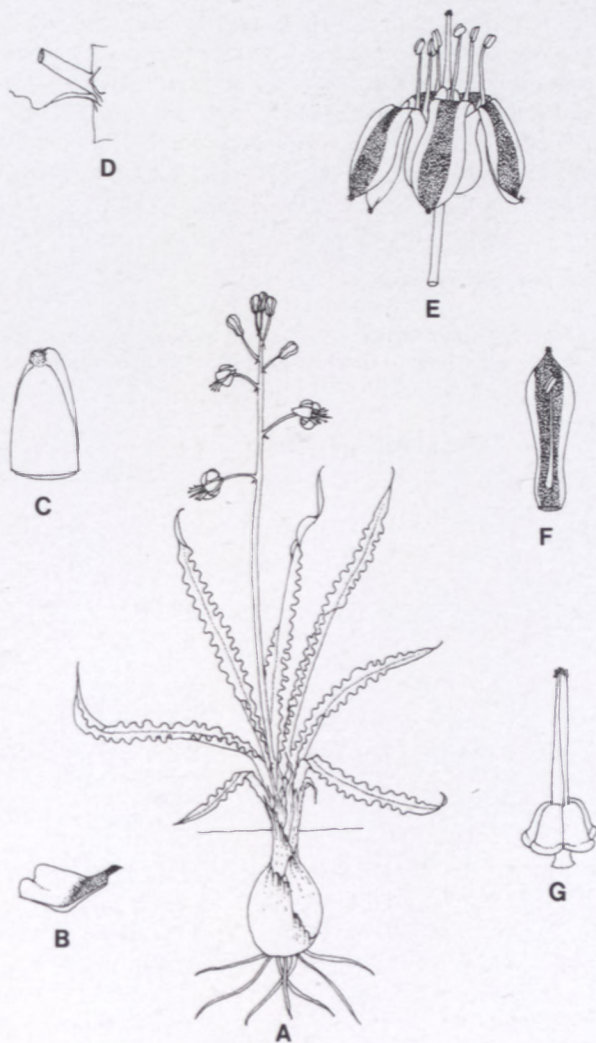


FIGURE 1.—*Ledebouria crispa*. A, habit, × 1.3; B, leaf lamina transverse section, × 4.6; C, tepal apex, × 6.5; D, bract and bracteole, × 10; E, flower, × 6.5; F, tepal with stamen, × 4.6; G, gynoecium, lateral view, × 5. Drawn from Venter 11202 by F. Venter.

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were collected are light brown, gritty loams derived from talcose schists of the Mothiba Formation (Pietersburg Group) (SACS 1980). Precipitation in the area occurs predominantly in summer and ranges between 400–600 mm (Barnard *et al.* 1972). Plants grow in scattered groups of 5 to 40 individuals in typical Pietersburg Plateau False Grassveld (Acocks 1988). The species flowers from October to December.

*L. crisa* is allied to a number of species with prominent bulb necks and lacking extendable xylem 'threads' in their torn leaves. This complex includes *L. concolor* (Baker) Jessop, *L. crisa*, *L. undulata* (Jacq.) Jessop, *L. ovalifolia* (Schrud.) Jessop, *L. petiolata* (Van der Merwe) S.Venter, *L. socialis* (Baker) Jessop and *L. macowanii* (Baker) S.Venter.

*L. crisa* is distinguished from its allies by its diminutive size, synanthous leaves with crispate margins, epigeal bulbs and solitary inflorescences. *L. undulata*, which is limited in distribution to the Northern and Western Cape, also has wavy leaf margins and solitary inflorescences but is a much larger, hysteranthous plant with a hypogean bulb. In addition the leaf undulation in *L. undulata* is variable and plants from shaded situations tend to have smooth margins. This differs from *L. crisa* in which the crispate margins are unaffected by microhabitat. *L. socialis* approaches *L. crisa* in a number of characters. Its densely gregarious habit and epigeal bulbs are similar, but the former has maculate leaves with smooth margins and pedicels which are ebracteolate. In addition, the species are allopatric; *L. socialis* is limited to the Eastern Cape (Figure 2).

#### Specimens examined

NORTHERN PROVINCE.—2329 (Pietersburg): Pietersburg Game Reserve, (–CD), Venter 13209a (PRE, UNIN); Lebowa, Majebeskraal Farm, (–DC), Venter 11202 (PRE, NU, UNIN).

2. *Ledebouria parvifolia* S.Venter, sp. nov. *L. cooperi* (Hook.f.) Jessop arcte affinis sed foliis appressis

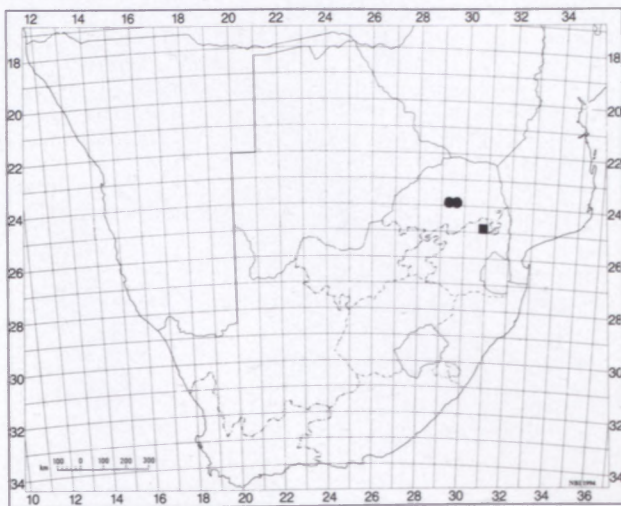


FIGURE 2.—Geographical distribution of *L. crisa*, ●; and *L. parvifolia*, ■.

superficie adaxiali trichomatibus basibus latis in seriebus longitudinalibus dispositis differt.

TYPE.—Mpumalanga, 2430 (Pilgrims Rest): Graskop, near Lisbon Falls, Farm Lisbon 531, (–DD), Venter 12609a (PRE, holo.).

Plants gregarious. *Bulb* hypogean, 10–25 × 10–25 mm, obovoid; dead bulb scales membranous, brown, apices attenuate, with threads when torn, live bulb scales fleshy, tightly appressed; bulblets usually present. *Leaves* enveloped by a single cataphyll, synanthous, 2 or 3, humifuse, lanceolate to oblong, 15–30 × 15–20 mm, with threads when torn, fleshy, dull green, adaxial surface with longitudinal rows of papillae, venation obscure; margin ciliate; base canaliculate; apex acute. *Inflorescence* solitary, 25–35 mm long, erect, lax, 8–12-flowered; scape terete, purple, glabrous, 10–15 mm long; bracts deltoid, 0.5 × 0.5 mm, pink to purple; bracteoles absent. *Pedicels* cernuous, 2–3 mm long, pink. *Tepals* recurved distally, equal, oblong, 2.5–3.0 × 1.0 mm, pink with a green keel, apex obtuse. *Stamens* erect, 3 mm long; filaments pink epitepalous; anthers 0.5 mm long, pale violet. *Ovary* ovoid, 3-lobed, 1 × 2 mm, lobes narrowly transversely oblong, shoulders rounded; stipe 0.5 mm long. *Style* 3 mm long, triangular in section, glabrous. *Seed* 3 mm long, drop-shaped, strongly wrinkled, brown. Figure 3.

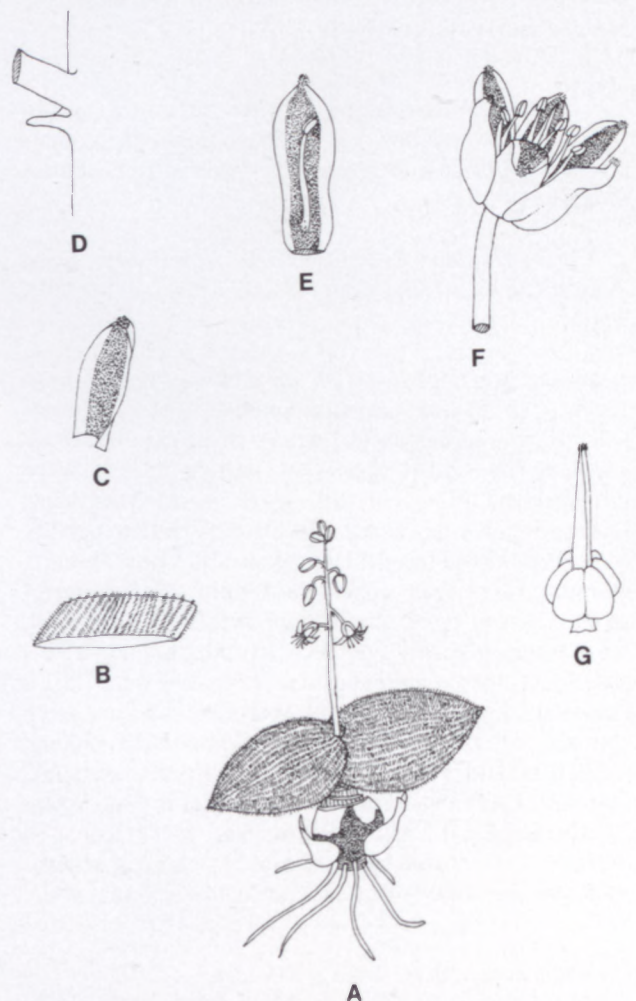


FIGURE 3.—*Ledebouria parvifolia*. A, habit, × 0.6; B, leaf lamina transverse section, × 0.9; C, tepal apex, × 7.6; D, bract, × 12.7; E, tepal with stamen, × 7.6; F, flower, × 6.3; G, gynoecium, lateral view, × 6.3. Drawn from Venter 12609a by F. Venter.

This species was recorded from a single locality on dolomites of the Malmani Formation in the Chuniespoort Group (SACS 1980). Soils derived from these substrata are fine-grained, dark brown clays. The species is a constituent of montane grassland with scattered *Dombeya rotundifolia* and *Faurea saligna*. *L. parvifolia* flowers from October to December.

*L. parvifolia* is closely related to *L. cooperi* (Hook.f.) Jessop but differs in producing appressed leaves with longitudinal rows of broad-based hairs on their adaxial surfaces. This indumental character is stable under a wide range of environmental conditions. Both *L. cooperi* and *L. parvifolia* produce a single basal cataphyll, a character not found elsewhere in the genus.

### 3. *Ledebouria macowanii* (Baker) S. Venter, comb. nov.

*Scilla macowanii* Baker in The Gardener's Chronicle 3: 748 (1875). Type: Cape, Somerset Division, Boschberg, *MacOwan 1841* (GRA!, lecto. here designated; BOL!, PRE!; Z photo.).

*Scilla nelsonii* Baker: 488 (1896). Type: Cape, Vaal River, *Nelson 167* (K!, holo.; PRE!).

Plants weakly gregarious. *Bulb* hypogeal, 15–30 × 15–30 mm, ovoid; dead bulb scales tightly clasping, lacking threads when torn; bulb neck 5–10 × 10 mm. *Leaves* synanthous, 3 or 4, spreading, linear-lanceolate, 75–100 × 6–8 mm, without threads when torn, fleshy, dull green, abaxial surface green with occasional purple spots in the lower half, venation obscure; margin smooth; base canaliculate; apex obtuse to acute. *Inflorescences* 1 or 2, lax, cylindrical, 25–60 mm long, flaccid, 20–40-flowered; scape base terete, spotted 40–100 mm long; bracts deltoid, 0.5 × 0.5 mm, green to pink; lacking bracteoles. *Pedicels* 6–7 mm long, pink to purple. *Tepals* oblong, slightly recurved, 4.0 × 1.5 mm, apex obtuse, green suffused with pink. *Stamens* spreading, 3.8 mm long; filaments white with purple above; anthers 0.5 mm long, pale violet. *Ovary* globose, 6-lobed, 1.5 × 2.0 mm, lobes obtusely deltoid with a basal ridge; stipe 0.5 mm long. *Style* 2.0 mm long, triangular in transverse section, purple. *Seed* drop-shaped, 3–4 mm long, surface strongly wrinkled, brown.

*L. macowanii* is closely allied to *L. socialis* but differs in its hypogeal bulbs and prominent nectariferous ridges on the carpel bases. Jessop (1970) reduced this taxon to synonymy with *L. cooperi*; however, it is distinguished from *L. cooperi* by its tightly clasping bulb scales and single cataphyll. In the Eastern Cape these species are sometimes sympatric but the range of *L. macowanii* extends up to the Northern Province (Figure 4). The species appears to occur in areas of reasonably high precipitation, hence its limitation to the coast and elevated areas in which orographic rainfall occurs. Plants occur in damp, shallow lithosols derived from quartzites, conglomerates or sandstones. The species usually occurs in semi-shade. The flowering period of *L. macowanii* extends from October to March with a peak in November and December.

#### *Specimens examined*

NORTHERN PROVINCE.—2231 (Pafuri): Punda Maria, Dzwini Hill, (–CC), *Codd & Dyer 4598* (KNP, PRE). 2329 (Pietersburg):

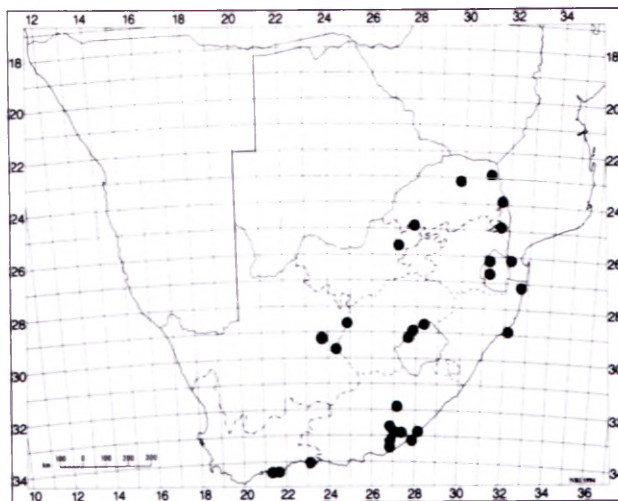


FIGURE 4.—Geographical distribution of *L. macowanii*.

Louis Trichardt, (–BB), *Koker 3* (PRE). 2331 (Phalaborwa): Letaba Camp, (–DC), *Codd 4675* (KNP, PRE). 2427 (Thabazimbi): Rooiberg, (–DD), *Van der Merwe 2044* (PRE).

MPUMALANGA.—2431 (Acomhoek): Skukuza, (–DC), *Codd & De Winter 5076* (PRE); Mabase, (–DC), *Lang s.n.* (PRE).

NORTH-WEST.—2527 (Rustenburg): Rustenburg, (–CA), *Van der Merwe 1558* (PRE).

SWAZILAND.—2631 (Mbabane): Komati Bridge, (–AA), *Compton 29391* (PRE); Usuthu Dam, (–CA), *Compton 27120* (PRE). 2632 (Bela Vista): Mbuluzi Nature Reserve, (–AA), *Culverwell 1389* (PRE).

FREE STATE.—2827 (Senekal): Doornkop Farm, (–DD), *Goosens 777* (PRE). 2828 (Bethlehem): Clarence, (–CB), *Van Hoepen 18270* (PRE). 2924 (Fauresmith): Farm Wanda, (–CB), *Smook 3045* (PRE). 2927 (Maseru): Clocolan, Hillcrest Farm, (–BA), *Crosby 420* (PRE).

KWAZULU-NATAL.—2732 (Ubombo): Phelendaba Crossing, (–BA), *Germishuizen 3533* (PRE). 2832 (Mtubatuba): Enseleni Nature Garden, (–CC), *Venter 6115* (PRU).

NORTHERN CAPE.—2824 (Kimberley): Riverton Pont, (–DB), *Leistner 2016* (PRE). 2923 (Douglas): Douglas, Herbert Dist., (–BB), *Orpen 57* (BOL).

WESTERN CAPE.—3421 (Riversdale): Riversdale, (–AD), *Bohnen 7461* (STE); Still Bay, (–AD), *Bolus s.n.* (BOL), *Ferguson s.n.* (BOL); Albertinia, Ystervarkpunt, (–BC), *Willemse 107* (STE). 3423 (Knysna): Knysna, (–AA), *Breyer 23711* (PRE).

EASTERN CAPE.—3127 (Lady Frere): Glen Grey, Nzebanya Mountain, (–CC), *Galpin 1914* (PRE). 3226 (Fort Beaufort): Katberg Mountain, (–DB), *Bayliss 7442* (NBG). 3227 (Stutterheim): Pirie, (–CC), *Taylor 1760* (BOL); King Williams Town, (–CD), *Sim 628* (NU), *Sim 1075* (BOL), *De Victoria 15* (BOL). 3228 (Butterworth): Kwenqura River, (–CC), *Galpin 5814* (PRE). 3326 (Grahamstown): Peddie, Committee's Drift, (–BB), *Van der Merwe 2132* (PRE); Blaauw Krantz, (–BD), *Daly 1026* (BOL). 3327 (Peddie): East London, (–BB), *Wood 2817* (BOL), *Ratray s.n.* (BOL), *Pamphlett 77* (NBG).

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