

# A revision of *Ledebouria* (Hyacinthaceae) in South Africa. 1. Two new species

S. VENTER\* and T.J. EDWARDS\*\*

**Keywords:** Hyacinthaceae, *Ledebouria*, new species, South Africa, taxonomy

## ABSTRACT

A revision of *Ledebouria* in South Africa has revealed a number of undescribed species. This paper deals with two new species, *Ledebouria atrobrunnea* S.Venter and *L. dolomiticola* S.Venter. Both species possess cylindrical bulbs, erect leaves (rare in *Ledebouria*) and prominent shoulders on the carpel apices. These synapomorphies are also seen in *L. viscosa* Jessop, and its allies.

## INTRODUCTION

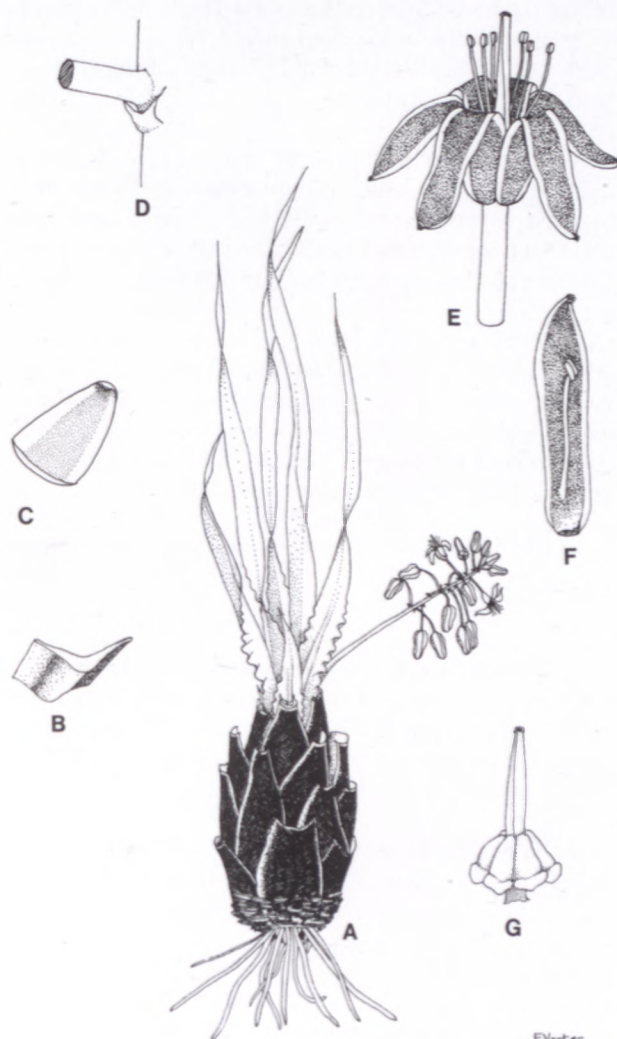
*Ledebouria* Roth includes some highly variable species and this has led to a proliferation of synonyms within the genus. Species plasticity, however, has also resulted in distinct taxa being overlooked in previous revisions (Jessop 1970). The species described in this account (*L. atrobrunnea* and *L. dolomiticola*) are based on characters which do not vary significantly between populations or in cultivated specimens. They form a natural group with *L. viscosa*, sharing cylindrical bulbs, erect leaves (rare in *Ledebouria*) and prominent shoulders on the carpel apices. All three species are exceedingly rare with very narrow distributions, features which make them particularly vulnerable to extinction.

1. *Ledebouria atrobrunnea* S.Venter, sp. nov. similis *L. viscosae*, sed foliis 4–6 (non solum 1–3), attenuatis (haud oblanceolatis usque spatulatis), non-viscosis tortisque et squamarum apicibus duris distincte differt.

TYPE.—North-West, 2527 (Rustenburg): Kroondal, Farm Zuurplaat 337, (–CD), Venter 13460 (PRE, holo.; NU, UNIN).

Plants solitary. *Bulb* hypogeal, 30–60 × 20–30 mm, cylindrical, dead bulb scales purplish brown, very hard, attenuate, apices truncate, live bulb scales loose with threads when torn, bulb white and often purple-spotted. *Leaves* partly emerged at anthesis, 4–6, erect, spirally twisted, linear-lanceolate, 60–80 × 3–10 mm, with threads when torn, fleshy, dull glaucous, venation obscure; margin undulate in lower half, smooth above; base canaliculate, apex acute. *Inflorescences* 1–4, flaccid, lax, 30–60-flowered, longer than leaves; peduncle compressed at base, purple with darker spots, 25–60 mm long; rachis longitudinally ridged; raceme lax, oblong, 20–50 × 25–30 mm; bracts and bracteoles always present, slightly fleshy, 0.8–1.0 × 0.25–0.5 mm, linear to bifurcate, grey-white. *Pedicels* spreading, 6–7 mm long, speckled or pink. *Tepals* recurved, subequal, linear-

oblong, 4.0–5.0 × 1.5–2.0 mm, pink to purple, keel green; apex acute, slightly cucullate. *Stamens* erect, 3–4 mm long; filaments pink, base slightly flattened, epitepalous; anthers 0.75–1.0 mm long, violet. *Ovary* depressed, obtusely 6-lobed, 1.0–1.5 × 2.0–2.5 mm, lobes obtusely deltate, apical shoulders present, basal lobes present; stipe 0.25 × 0.25 mm; style 2.0–2.5 mm long, triangular in section, glabrous, purple. *Capsule*



F.Venter

FIGURE 1.—*Ledebouria atrobrunnea*, Venter 13460. A, habit, × 0.9; B, section through lamina, × 3; C, tepal apex, × 12; D, bract, × 12; E, flower, × 7; F, tepal with stamen, × 7; G, ovary lateral view, × 9. Drawing modified from Burrows (1993).

\* Botany Department, University of the North, Private Bag 1106, 0727 Sovenga. Present address:

\*\* Department of Botany, University of Natal, Private Bag X01, Scottsville 3209.

MS. received: 1997-04-16.



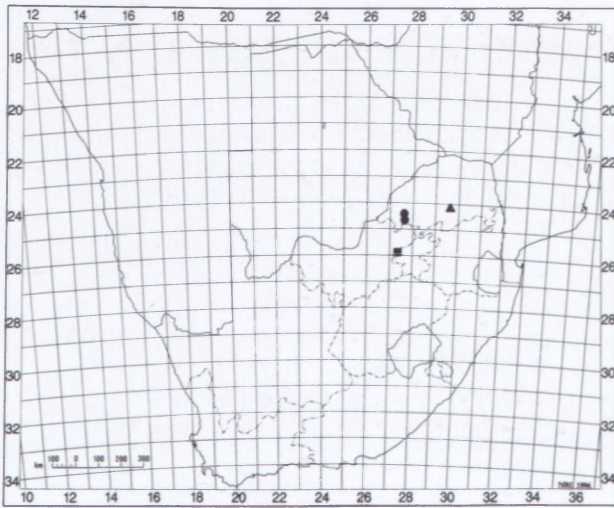


FIGURE 2.—Geographical distribution of *L. viscosa*, ●; *L. atrobrunnea*, ▲.

clavate, base truncate. *Seed* 4–5 mm long, drop-shaped, strongly wrinkled, reddish brown. Figure 1.

This species is known only from Magaliesberg Quartzites of the Pretoria Group (SACS 1980) in the foothills of the Magaliesberg in the Kroondal area near Rustenburg (Figure 2). It occurs in shallow red-brown lithosols derived from coarse-grained recrystallised rock. Vegetation of the area is Bankenveld and consists of low closed deciduous *Protea caffra*–*Lannea discolor* Woodland (Acocks 1988).

The degree of leaf twisting and the prominence of bulb scales vary within *L. atrobrunnea*. Plants from exposed situations tend to have more prominent bulb scales and leaves more twisted than shaded individuals. The species flowers from September to late December.

*L. atrobrunnea* is related to *L. viscosa* Jessop which also has cylindrical bulbs and erect leaves. It is distinguished by its linear-lanceolate, non-viscid, twisted leaves and its hard purplish brown (hence the specific epithet) bulb scales. In *L. viscosa* the leaves are viscid, untwisted and oblanceolate to spatulate.

NORTH-WEST.—2527 (Rustenburg): Kroondal, Farm Zuurplaat 337, (–CD), *Venter* 13460 (NU, PRE, UNIN); *Venter* 13483 (PRE, UNIN).

2. *Ledebouria dolomiticola* S.Venter, sp. nov. similis *L. viscosae* et *L. atrobrunneae*, sed ab ambobus differt bulbis epigaeis. Praeterea ab illa foliis non-viscosis et ab hac bulbi squamis mortuis membranaceis (non duris) recedit.

TYPE.—Northern Province, 2429 (Zebediela): Strydpoort Mountain, Donkerkloof, Farm Rivierplaats 354, (–BA), *Venter* 13089a (PRE, holo.; NU, UNIN).

Bulbs epigeal, 40–100 × 15–30 mm, ellipsoid to cylindrical, in dense groups; dead bulb scales thinly membranous, brown, apices truncate, without threads when torn, live bulb scales tightly appressed, white inside, bulblets often present. *Leaves* fully developed at anthesis, 3–5, erect, lanceolate, 80–100 × 8–20 mm, without threads when torn, fleshy, glaucous, immaculate,

venation obscure; margin smooth; base canaliculate, apex acute. *Inflorescence* solitary, flaccid, lax, 30–40-flowered, longer than leaves; peduncle smooth, terete at base, green, 60–90 mm long; rachis smooth; raceme lax, cylindric, 40–60 × 20–30 mm; bracts with bracteoles, membranous, 1.50 × 0.25 mm, linear-lanceolate, grey to white. *Pedicels* spreading horizontally, 8–10 mm long, white to purple. *Tepals* recurved, subequal, oblong, 5 × 1.0–1.5 mm, pink to purple, keel green. *Stamens* erect, 3 mm long; filaments maroon, epitepalous; anthers 0.5 mm long, yellow. *Ovary* spheroidal, 1.5 × 2.5 mm, lobes narrowly transversely oblong; apex shoulders raised, basal lobes present; stipe 0.25–0.50 mm long; style 3 mm long, triangular in section, glabrous, purple above and white below. *Capsule* subglobose, base truncate. *Seed* 4 mm long, globose, strongly wrinkled, brown. Figure 3.

*L. dolomiticola* occurs in the Strydpoort Mountains near Pietersburg, Northern Province (Figure 2). Plants are limited to the Eccles Formation of the Chuniespoort Group (SACS 1980). The steep dolomitic slopes and cliffs on which *L. dolomiticola* grows experience high temperatures, especially during the summer months. Plants occur commonly in rock fissures and lithosols. Flowering occurs from January to April, as in *L. viscosa*.

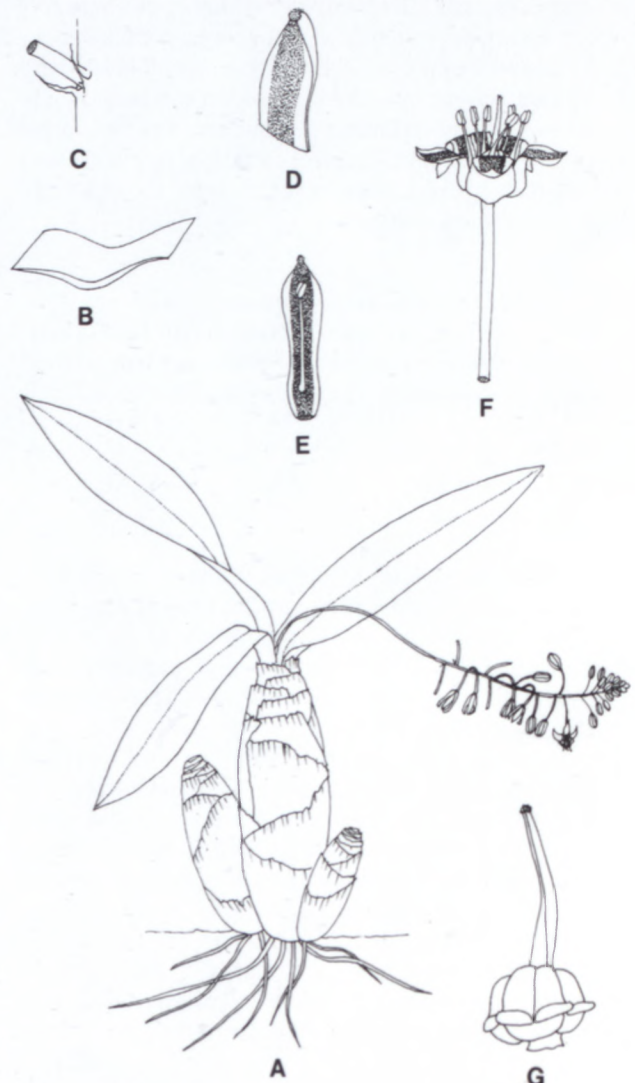


FIGURE 3.—*Ledebouria dolomiticola*, *Venter* 13089a. A, habit, × 0.3; B, section through lamina, × 1.3; C, bract with bracteole, × 4.4; D, tepal apex, × 6.3; E, tepal with stamen, × 3.8; F, flower, × 3.8; G, ovary, lateral view, × 6.3. Drawing modified from Burrows (1993).

*L. dolomiticola* is a close relative of *L. atrobrunnea* and *L. viscosa* which also possess cylindrical bulbs, erect leaves and prominent shoulders on the carpel apices. *L. dolomiticola* is distinguished from both by its epigeal bulbs and from *L. viscosa* by its non-viscous leaves and from *L. atrobrunnea* by its membranous dead bulb scales.

*Specimens of L. viscosa examined*

NORTHERN PROVINCE.—2427 (Thabazimbi): Kransberg, (–BC), *Meeuse 10493* (PRE); Farm Waterval, *Dyer & Ehrens 4201* (PRE); Farm Buffelshoek 446, (–DA), *Venter 13455* (UNIN).

ACKNOWLEDGEMENTS

Financial assistance from the Natal University Research Fund and the FRD is gratefully acknowledged. The cited herbaria are thanked for the loan of material examined during this study. Mr M. Lambert is thanked

for translating the Latin diagnoses. Lastly Mr I. Terblanche and the Department of Nature Conservation, Lebowa are thanked for granting permission to collect material in their reserves. A major part of this research was undertaken at the Department of Botany, University of the North, Private Bag 1106, Sovenga 0727.

REFERENCES

ACOCKS, J.P.H. 1988. Veld Types of South Africa, 3rd edn. *Memoirs of the Botanical Survey of South Africa* No. 57.

BURROWS, S. 1993. Illustrations in S. Venter. *A revision of the genus Ledebouria in South Africa*. M.Sc. Natal University.

JESSOP, J.P. 1970. Studies in the bulbous Liliaceae: 1. *Scilla*, *Schizocarpus* and *Ledebouria*. *Journal of South African Botany* 36: 233–266.

SOUTH AFRICAN COMMITTEE FOR STRATIGRAPHY (SACS) 1980. *Stratigraphy of South Africa. Part 1. Handbook of the Geological Survey of South Africa*.