

HYACINTHACEAE

A NEW PYROPHYTIC *LACHENALIA* SPECIES (MASSONIEAE) FROM WESTERN CAPE, SOUTH AFRICA

The new species described here forms part of a series of papers towards a revision of the genus (Duncan 1993, 1996, 1997, 1998; Duncan & Edwards 2002, 2006).

***Lachenalia lutzeyeri* G.D.Duncan, sp. nov.**

Bulbus globosus penitus praesens, folia 1 vel 2 anguste lanceolata marginibus cartilagineis, pedunculus rigidus, flores oblongo-campanulati nutantes flavo-cremei gibbis viridibus vel brunneis, stamina bene exserta filamentis leniter declinatis, semina globosa strophiole inflato medio-terminali. *L. youngii* Baker affinis, sed ab specie nova bulbis non profundis foliis linearibus marginibus non cartilagineis pedunculo non rigido floribus staminibus breve exsertis filamentis rectis differt.

TYPE.—Western Cape, 3419 (Caledon): Witkransberg area of Grootbos Private Nature Reserve, northwest

of Gansbaai, on southwest-facing mountain slope in Table Mountain Sandstone, (–CB), November 2004, *H. Lutzeyer s.n.* (NBG, holo.!, PRE, iso.).

Deciduous, winter-growing geophyte, 200–420 mm high. *Bulb* solitary, deep-seated, globose, 20–25 mm diam., white with membranous, dark brown outer tunics; roots numerous, mainly contractile, a few fibrous. *Leaves* 1 or 2, narrowly lanceolate, 85–290 × 4–13 mm, prostrate, spreading or suberect, deeply canaliculate or sometimes conduplicate, yellowish green or pale to deep maroon, adaxial surface plain or with large dark green, brown or maroon flattened pustules, margins cartilaginous, flat or undulate; clasping leaf base white, subterranean, up to 85 mm long, or with short aerial portion up to 15 mm long. *Inflorescence* an erect or suberect, many-flowered, moderately dense raceme 50–120 mm long, with a sterile apex up to 10 mm long; peduncle

rigid, erect or suberect, 120–200 mm long, green and unmarked, or yellowish green and heavily marked with minute maroon speckles or small to large maroon blotches; rachis green, 50–120 mm long; pedicels suberect during flowering, ascending in fruit, green, 3–4 mm long; bracts ovate in lower half of inflorescence, becoming lanceolate in upper half, 1–2 × 0.5–2.0 mm, translucent white. *Flowers* oblong-campanulate, nodding at anthesis, yellowish cream with dark green or brown gibbositities, with a moderately strong, soapy-sweet scent, fading to dull maroon and ascending in fruit; perianth tube cup-shaped, pale yellowish cream, 2–3 mm long; outer tepals ovate, 5–6 × 3–4 mm, inner tepals obovate, 6–7 × 4–5 mm, protruding very slightly beyond outer tepals, translucent white with a yellowish green median keel and a dark green or brown marking near

apex. *Stamens* exerted 5–6 mm beyond perianth; filaments weakly declinate, white, 9–10 mm long; anthers maroon prior to anthesis; pollen yellow at anthesis. *Ovary* obovoid, 2 × 3 mm, bright green; style straight, 9 mm long, white. *Capsule* obovoid, 6–7 × 6–7 mm. *Seed* globose, 1.1–1.2 × 1.2–1.3 mm, shiny black, with a terminal, inflated, black strophiole 0.8–0.9 mm long. *Flowering time*: early to late November, rarely to late January, with a peak in mid-November. Figures 7, 8.

Etymology: *Lachenalia lutzeyeri* is named for Heiner Lutzeyer of Grootbos Private Nature Reserve near Gansbaai, who discovered this species and made the first collection of plants, in recognition of the wonderful contribution that he has made to nature conservation in this part of the southern Cape.

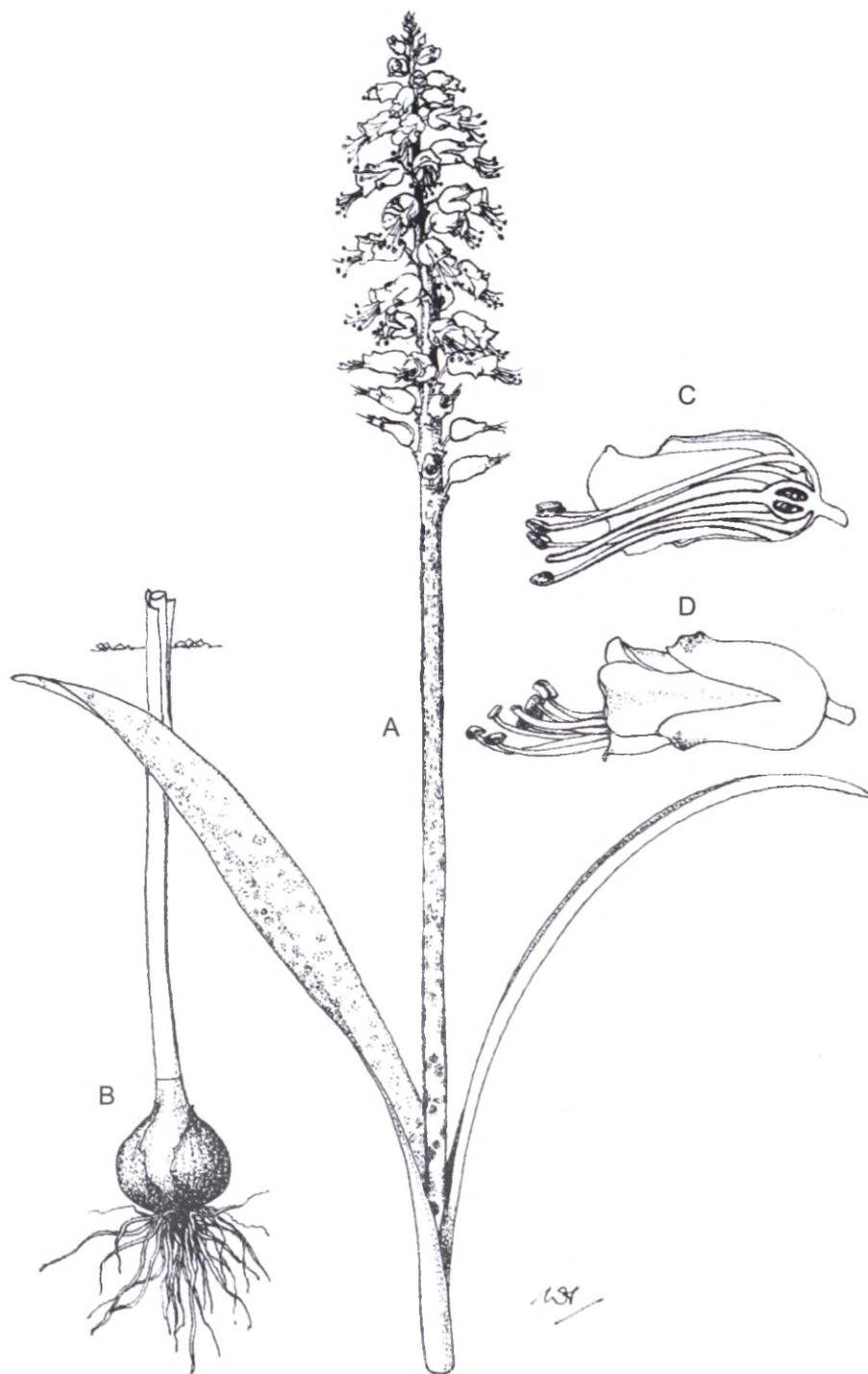


FIGURE 7.—*Lachenalia lutzeyeri*, Duncan 511 (NBG): A, inflorescence, peduncle and leaves; B, bulb and clasping leaf base; C, 1/5 flower; D, single flower. A, B, × 0.8. Scale bar: C, D, 10 mm. Artist: Vicki Thomas.

History: *Lachenalia lutzeyeri* is only known from the type material, first collected by Heiner Lutzeyer (Figure 8B) in early November 2004, following an extensive wild fire that burnt over the Witkransberg area of Grootbos Private Nature Reserve, northwest of Gansbaai, in late March 2004. Large numbers of plants were seen in flower in November 2004 but during the corresponding period in November and December 2005, the number of flowering plants had decreased drastically to just a few individuals. A single flowering specimen was collected on 15 November 2005 for illustration. In February 2006, the *L. lutzeyeri* type population was burnt again as a result of a devastating fire that raged across most of the Grootbos Private Nature Reserve and resulted in the appearance of large numbers of flowering individuals in November of that year.

Diagnostic features and affinities: *Lachenalia lutzeyeri* is recognized by a moderately dense raceme of oblong-campanulate, nodding, yellowish cream flowers with olive green or dark brown gibbosities and well-exserted stamens with weakly declinate, white filaments. The inflorescence is borne on a rigid peduncle and the inner tepals protrude 1–2 mm beyond the outer tepals. The pedicels become ascending and the capsules become suberect at fruiting, and the globose, shiny black seeds have a terminal, inflated, medium-long strophiole 0.8–0.9 mm long. The plants occur as solitary individuals within small to large groups, and have deep-seated, globose bulbs that produce one or two narrowly lanceolate, prostrate, spreading or suberect, deeply canaliculate or sometimes conduplicate leaves with flat or undulate, cartilaginous margins (Figures 7, 8).

Lachenalia lutzeyeri appears to be most closely allied to *L. youngii* Baker, another late-flowering species that

occurs much further east from Mossel Bay in the southern part of the Western Cape to Humansdorp in the southwestern part of the Eastern Cape. *L. youngii* has similar oblong-campanulate, nodding flowers produced on suberect white pedicels and is also a member of the group of species having globose shiny black seeds with a medium-long (0.5–0.9 mm), terminal, inflated strophiole. *L. youngii* differs mainly in having linear leaves without cartilaginous margins, a non-rigid peduncle, shortly exserted, straight stamens, purplish pink, unscented flowers, and its shallow-seated bulbs are offset-forming and not dependent on fire for flowering to occur.

Distribution and habitat: *Lachenalia lutzeyeri* is presently only known from the type locality on the Witkransberg in the Grootbos Private Nature Reserve, northwest of Gansbaai in the southern part of the Western Cape (Figure 9). Possible reasons for it having remained undetected until very recently are that flowering is extremely erratic, due to its dependence on the occurrence of summer or early autumn fires, coupled with its very late flowering period and the slim chance of it being recognized as a distinct taxon due to its superficial similarity to other members of the genus. It may well be recorded in other parts of the southern Cape in due course. In *Lachenalia*, flowering performance is greatly enhanced in a number of species in the spring and early summer season immediately following late summer or early autumn fires, such as in *L. orchioides* (L.) Aiton and *L. peersii* Marloth ex W.F.Barker. However, *L. lutzeyeri* is remarkable in being one of only three members of this genus known to be entirely dependent on the effects of fire for flowering to occur. Until recently, two other pyrophytes endemic to montane fynbos of the southern Cape, *L. montana* Schltr. ex W.F.Barker and *L. sargeantii* W.F.Barker were the only



FIGURE 8.—A. *Lachenalia lutzeyeri* flowering in habitat, Grootbos Private Nature Reserve; B, Heiner Lutzeyer with a flowering specimen of *Lachenalia lutzeyeri*, 15 November 2005. Scale bar: A, 10 mm.

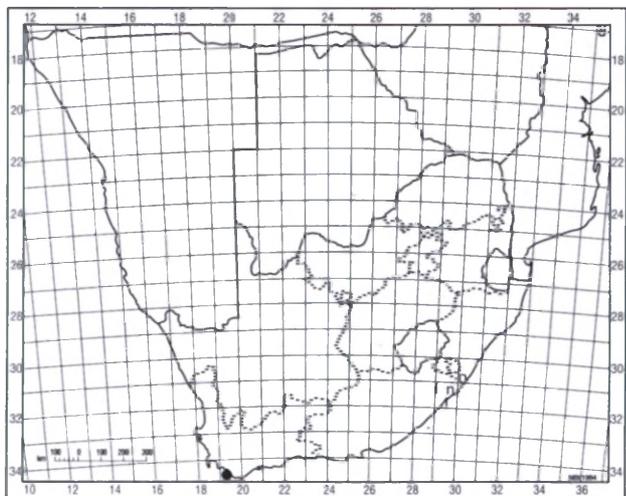


FIGURE 9.—Distribution of *Lachenalia lutzeyeri*.

other species known to flower solely in the wake of wild fires (Duncan 1988). An example of erratic flowering in one of these pyrophytic taxa was observed recently in *L. sargeantii*. It was discovered in full bloom in November 1970 after a summer burn near Bredasdorp; only a few individuals flowered there the following year, and it was only seen in flower again 33 years later, in a new locality in the southern Cape (Duncan & Edwards 2005; Duncan *et al.* 2005). The typical phenological pattern displayed by these three fire-dependent species is seen as lush vegetative growth produced in the winter season immediately following summer or autumn fires, followed by prolific flowering in early summer, and dormancy from midsummer to midautumn. During the second winter season following a burn, most of the bulbs remain completely dormant, with an extremely small number of individuals (or sometimes none at all) producing leaves in winter, and flowers in early summer. The bulbs of these three species all flower at \pm the same time of year, and are deep-seated, especially those of *L. lutzeyeri* that can be buried up to 85 mm deep. All three species produce relatively few fibrous roots, but numerous contractile roots assist in pulling the bulbs deeply into the soil. Deep-seated bulbs may be an adaptive strategy to escape damage from severe fires. Rigid peduncles in *Lachenalia* are only known in these three species.

At the type locality, *Lachenalia lutzeyeri* occurs in a large colony, but as solitary individuals; no plants seen appear to multiply by offset formation. They grow in full sun in open aspects or between Table Mountain Sandstone boulders, on a moderate slope with a south-westerly aspect, at an altitude of 390 m. Following

a recent severe fire that burnt over most of Grootbos Private Nature Reserve in February 2006, large numbers of *L. lutzeyeri* have been observed growing in a range of aspects in addition to the southwesterly aspect of individuals at the type locality, especially on southern and northern slopes. Companion plants of *L. lutzeyeri* include *Mimetes cucullatus* (Proteaceae) and various genera of the family Restionaceae.

Paratype material examined

WESTERN CAPE.—3419 (Caledon): Witkransberg in Grootbos Private Nature Reserve, northwest of Gansbaai, on southwest-facing mountain slope in Table Mountain Sandstone, (–CB), 15-11-2005, Duncan 511 (NBG).

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REFERENCES

- DUNCAN, G.D. 1988. The *Lachenalia* handbook. *Annals of Kirstenbosch Botanic Gardens* 17. National Botanic Gardens, Cape Town.
- DUNCAN, G.D. 1993. *Lachenalia thomasiae*. *Flowering Plants of Africa* 52: t. 2062.
- DUNCAN, G.D. 1996. Four new species and one new subspecies of *Lachenalia* (Hyacinthaceae) from arid areas of South Africa. *Bothalia* 26: 1–9.
- DUNCAN, G.D. 1997. Five new species of *Lachenalia* (Hyacinthaceae) from arid areas of South Africa. *Bothalia* 27: 7–15.
- DUNCAN, G.D. 1998. Five new species of *Lachenalia* (Hyacinthaceae) from arid areas of South Africa and Namibia. *Bothalia* 28: 131–139.
- DUNCAN, G.D. & EDWARDS, T.J. 2002. A new species of *Lachenalia* from Namaqualand, South Africa (Hyacinthaceae: Massonieae). *Bothalia* 32: 190–192.
- DUNCAN, G.D. & EDWARDS, T.J. 2005. *Lachenalia sargeantii*. *Curtis's Botanical Magazine* 22: 176–184.
- DUNCAN, G.D. & EDWARDS, T.J. 2006. Three new species of *Lachenalia* (Hyacinthaceae: Massonieae) from Western and Northern Cape, South Africa. *Bothalia* 36: 147–155.
- DUNCAN, G.D., MCMASTER, C. & MCMASTER, R. 2005. Out of the ashes. *Veld & Flora* 91: 66–69.

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