

## Three new species of *Lachenalia* (Hyacinthaceae: Massonieae) from Western and Northern Cape, South Africa

G.D. DUNCAN\* and T.J. EDWARDS\*\*

**Keywords:** Hyacinthaceae, *Lachenalia* J.Jacq. ex Murray, new species, South Africa

### ABSTRACT

This is the sixth in a series of papers on *Lachenalia*, towards a revision of the genus. Three new species are described, *L. lutea* from the southwestern part of the Western Cape, *L. cernua* from the southern Cape Peninsula and the Worcester Valley of the Western Cape, and *L. nardousbergensis* from the Bokkeveld Plateau of the Northern Cape, and the Nardousberg and Middelburg Plateaus of the Western Cape.

### INTRODUCTION

The horticulturally important and botanically diverse genus *Lachenalia* J.Jacq. ex Murray is endemic to southern Africa and comprises 120 species of deciduous geophytes, almost all of which are winter growing (Duncan *et al.* 2005). The distribution of *Lachenalia* extends from southwestern Namibia into the western, southern, eastern and central parts of South Africa, and the centre of diversity is in the Worcester grid (3319), divided between the Succulent Karoo and Fynbos Biomes, in the mountains and valleys of the winter rainfall region of the Western Cape (Duncan 2005).

Species delimitation in *Lachenalia* is usually unambiguous, but in some instances there is gradation between species. Other species display extensive variation which has led to considerable taxonomic confusion due to over-emphasis of minor morphological differences. Variation within a species occurs in several macro-morphological characters such as overall plant size, leaf number, pedicel length, degree of stamen exertion, flower size, flower colour and orientation, and flowering period. Variable species often display population stability in features such as bulb and flower shape, and seed morphology; however, a number of species are exceedingly variable (Duncan *et al.* 2005).

In a cladistic analysis of morphological data, it was concluded that a number of evolutionary pressures have driven divergence of vegetative and floral characters in *Lachenalia*. The convergent adaptation to conditions of aridity appears to be the main reason for homoplasy in whole sets of vegetative characters, and similarly, the convergent modification of flowers to similar pollinators is probably the main reason for homoplasy in whole sets of reproductive characters (Duncan *et al.* 2005).

The genus was last revised by Baker (1897) in which 42 species were recognized. The new species described here form part of a series of papers towards a revision

of the genus (Duncan 1993, 1996, 1997, 1998, Duncan & Edwards 2002).

### *Lachenalia lutea* G.D.Duncan, sp. nov.

Plantae 160–240 mm alta; bulbus globosus, 15–20 mm in diametro, folia 2, lanceolata, coriacea, patentia ad suberecta, claro viridia, pagina superior immaculata vel maculis atroviridibus, 90–140 × 12–30 mm, marginibus coriaceis, inflorescentia spicata, erecta, densa, 70–110 mm longa, pedunculus vivido viridis vel immaculatus maculis brunneo-purpureis, flores oblongo-campanulati, suberecti, pallide ad claro viridi-flavi, demum obscure sanguinei, peraromatici, perianthii tubum cyathiforme, 3 mm longa, tepala exteriora ovata, 6–7 × 4 mm, gibbis claro viridibus vel atroflavis, tepala interiora obovata, trans tepala exteriora bene exsertis, 8–9 × 4–5 mm, carinis claro viridibus vel atroflavis, stamina inclusa vel trans perianthium parum exserta, filamenta recta albida, 5–6 mm longa, ovarium ellipsoideum, 3 × 2.5 mm, stylum rectum, albidum, 5–6 mm longa, capsula ellipsoidea, 8–9 × 4–5 mm, semina globosa, 0.9 × 0.8 mm, strophiole inflato, 0.5–0.6 mm longa.

TYPE.—Western Cape, 3418 (Simonstown): Vergelegen Farm, Somerset West, low hillside near reservoir, in heavy clay soil, (–BB), 7-10-1959, *W.F. Barker 9088* (NBG, holo!).

Deciduous, winter-growing geophyte 160–240 mm high. Bulb globose, 15–20 mm diam., offset-forming, white, surrounded by dark brown, spongy outer tunics; cataphyll subterranean, translucent white, tightly surrounding clasping leaf base, apex obtuse. Leaves 2, lanceolate, 90–140 × 12–30 mm, spreading to suberect, flat or weakly canaliculate, leathery, bright green or greenish magenta, plain or marked with dark green spots on upper surface, lower surface sometimes marked with brownish purple spots; margins thickened; clasping base 10–30 mm long, greenish white to deep magenta, plain or occasionally barred with brownish purple in upper part. Inflorescence an erect, dense, few- to many-flowered spike 70–110 mm long, with sterile tip 15–20 mm long; peduncle erect, sturdy, 70–150 mm long, pale green or brownish green, plain or marked with large, irregularly scattered brownish purple blotches; rachis pale green, shading to greenish yellow in upper third; bracts ovate at base of inflorescence, becoming lanceolate above, 2–7

\* South African National Biodiversity Institute, Kirstenbosch, Private Bag X7, 7735 Claremont, Cape Town.

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

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× 1–5 mm, translucent white. Flowers sessile, suberect, oblong-campanulate, sweetly scented; perianth tube cup-shaped, 3 mm long, pale greenish yellow; outer tepals ovate, 6–7 × 4 mm, pale to bright greenish yellow with bright green gibbositities; inner tepals obovate, 8–9 × 4–5 mm, protruding well beyond outer tepals, apices subacute, upper inner tepals overlapping, lower inner tepal slightly recurved, pale greenish yellow with bright green keels in upper half. Stamens usually well included within perianth, rarely just exerted; filaments straight, usually 5–6 mm long, white, rarely up to 8 mm long; anthers dull brownish maroon prior to anthesis, bright yellow at anthesis, maturing to black after anthesis. Ovary ellipsoid, 3 × 2.5 mm, pale yellowish green; style 5–6 mm long, straight. Capsule ellipsoid, 8–9 × 4–5 mm. Seed globose, 0.9 × 0.8 mm, shiny black, with inflated, smooth strophiole 0.5–0.6 mm long. Flowering time: late July to early October. Figures 1A; 2.

*Etymology:* the specific epithet *lutea* is named for the pale to bright yellow flowers.

*History:* the earliest known record of *Lachenalia lutea* is that of J.F. Solly (*Solly sub PRE11352*) who collected it in August 1915 at the foot of Sir Lowry's Pass east of Cape Town, where this species is common, and has been collected on numerous occasions. It has since been widely collected in the southwestern and southern parts of the Western Cape.

*Diagnostic features and affinities:* *Lachenalia lutea* has for many years been overlooked as a distinct taxon.

It belongs to the group of species having sessile, oblong-campanulate flowers with straight stamens, and most closely resembles *L. arbuthnotiae*. *L. lutea* is recognized by its dense inflorescence of suberect, heavily sweet-scented, pale to bright yellow, oblong-campanulate flowers with spreading inner tepals that protrude well beyond the outer tepals (Figures 1A; 2). The outer tepals have bright green gibbositities, the inner tepals have subacute apices and the stamens are usually included within the perianth or rarely slightly exerted. The sturdy peduncle is pale green or brownish green and may be plain or heavily marked with brownish purple blotches. The two leathery, lanceolate leaves are spreading to suberect and bright green or greenish magenta, with or without darker green or greenish magenta blotches on the upper surface. The globose seeds have a shiny black testa and a smooth, inflated strophiole.

The similar oblong-campanulate flowers of *Lachenalia arbuthnotiae* are also heavily sweet-scented but are slightly curved and distinctly longer, with the inner tepals only slightly longer than the outer ones, and scarcely spreading. The inner tepal apices in this species are obtuse and undulate, and flower orientation is spreading to weakly suberect. It has much longer filaments, 8–9 mm long, a much longer style, 9 mm long and its anthers emerge at the mouth of the perianth or are shortly exerted. The style protrudes conspicuously beyond the perianth as the ovary enlarges. Like those of *L. lutea*, the seeds of *L. arbuthnotiae* are globose with a shiny testa, but its similar inflated,



FIGURE 1.—Flowering specimens of three new species of *Lachenalia*. A, *L. lutea*, Duncan 430, in habitat, Elgin; B, *L. cernua*, Duncan 470, in habitat, Wolseley; C, *L. nardousbergensis*, Duncan 198, in habitat, Nieuwoudtville. Scale bars: 10 mm.



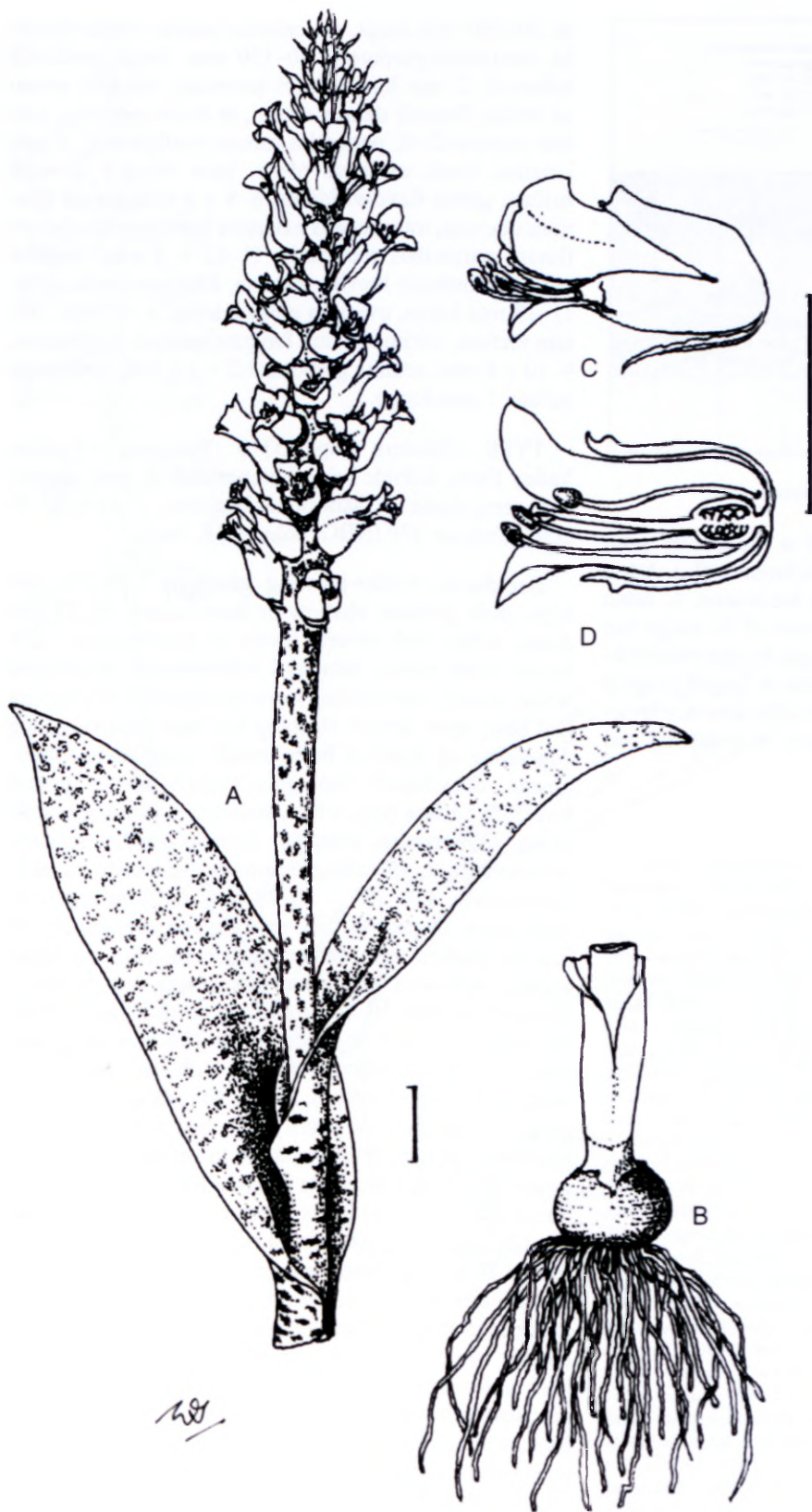


FIGURE 2.—*Lachenalia lutea*, Duncan 430 (NBG). A. inflorescence and leaves; B. bulb; C. single flower; D. 1/5 flower. Scale bars: A–D, 10 mm. Artist: Vicki Thomas.

smooth strophiole is slightly longer. As in *L. lutea*, *L. arbuthnotiae* grows in colonies but is an altogether larger plant occurring in a completely different habitat, confined to the Cape Flats Lowlands from Wetton to Faure, in isolated coastal fynbos remnants in seasonally inundated, deep sandy soil (Duncan 1988a). The peak flowering period for *L. arbuthnotiae* is mid-September, whereas *L. lutea* generally flowers earlier, with a peak period from mid-August to early September.

*Distribution and habitat:* *Lachenalia lutea* occurs in the Fynbos Biome in the southwestern Cape, its distribution extending between Strand and Bot River, and Tulbagh to Villiersdorp (Figure 3). It usually occurs in stony, heavy clay soil in renosterveld, or rarely in sandy soil, and is found in a variety of habitats including seasonally moist, low-lying flats and hills, and on shale bands of higher mountain slopes, growing as scattered individuals or in small groups of two to three plants within large colonies. It flowers particularly well



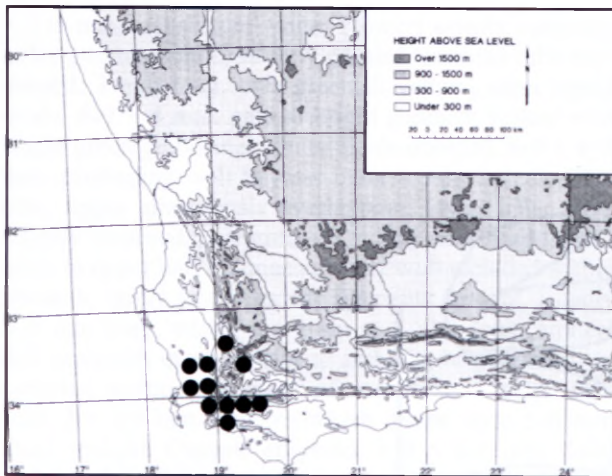


FIGURE 3.—Distribution of *Lachenalia lutea*.

following summer bush fires and is frequently seen growing in association with *L. orchioides* (L.) Aiton var. *orchioides* that flowers later in the season. *L. lutea* is still a common species across most of its range but its numbers have been much reduced by the establishment of deciduous fruit orchards, and in recent years it has been greatly reduced on the clay flats near Somerset West, east of Cape Town, due mainly to industrial and housing development.

#### Additional specimens examined

WESTERN CAPE.—3318 (Cape Town): Klipheuvel, (–DA), 14-8-1962, *Lewis 6134* (NBG); Zuider Paarl, (–DB), 9-1917, *Adendorff 17637* (PRE); Langverwacht Farm above Kuilsrivier, (–DC), 25-8-1973, *Oliver 4363* (NBG); Assegaaibosch, (–DD), 9-1969, *Van der Merwe 994* (PRE); Stellenbosch, (–DD), 27-8-1963, *Taylor 5032* (PRE). 3319 (Worcester): Tulbagh Kloof, (–AC), 10-1920, *Andraee 616* (PRE); 2 miles [3.2 km] west of Ceres, (–AC), 11-9-1968, *Marsh 767* (PRE); 1 mile [1.6 km] south of Tulbagh Road Station, (–AC), 2-8-1967, *Rourke 789* (NBG); Palmiet Valley, Wolseley, (–AC), Aug. 2003, *Van Warmelo s.n.* (NBG); Botha's Halt near Worcester, (–CB), 30-8-1946, *Compton 18283* (NBG); Wangenheim Farm, Rawsonville, (–CB), 30-9-1963, *Walters 952* (NBG). 3418 (Simonstown): road from Strand to Gordon's Bay, (–BB), 12-9-1947, *Parker 4240* (NBG); Gordon's Bay, (–BB), 23-9-1958, *Werdermann 137* (PRE); Sir Lowry's Pass, (–BB), 27-9-1958, *Werdermann 210* (PRE); road to Sir Lowry's Pass (–BB), 12-10-1955, *De Wet 930* (PRE); Sir Lowry's Pass (–BB), 19-8-1915, *Solly sub PRE11352* (PRE); Steenbras River mouth, (–BB), 16-9-1951, *Esterhuysen 18843* (PRE). 3419 (Caledon): Freshwoods, Elgin, (–AA), 25-11-1998, *Duncan 419* (NBG); Aprilskraal, Elgin, (–AA), 7-10-2000, *Duncan 430* (NBG); Theewaterskloof, Villiersdorp, (–AA), 3-9-1975, *Thomas s.n.* (NBG); Happy Valley Farm, southeast of Villiersdorp, (–AB), 30-9-1971, *Barker 10840* (NBG); between Hawston and Karwyderskraal, (–AC), 29-9-1967, *Barker 10513* (NBG); Ysterklip Farm, Kleinmond, (–AC), 8-11-1967, *Barker 10514* (NBG); Bot River, (–AC), 16-8-1982, Bot River-Hermanus Road, (–AC), 30-8-1973, *Barker 10884* (NBG); 2.5 km from turnoff at bridge on Hermanus Road, (–AC), 30-8-1973, *Barker 10886* (NBG); Bot River Vlei, (–AC), 16-8-1982, *O'Callaghan 249* (NBG); Kleinmond, (–AC), 8-1963, *Topper 149* (NBG); Greyton, (–BA), 15-8-1969, *Barker 10641* (NBG); Heuningkloof Farm beyond Caledon, (–BA), 7-9-1974, *Barker 10917* (NBG); Middelploas turnoff near Genadendal, (–BA), 7-9-1974, *Barker 10918* (NBG); Greyton Commonage, (–BA), *Hofmeyer s.n.* (NBG); 46 km E of Caledon, (–BA), 3-9-1975, *Thomas s.n.* (NBG).

#### *Lachenalia cernua* G.D.Duncan, sp. nov.

Plantae 150–270 mm altae, bulbus globosus, 15–25 mm in diametro, folium solitarium, interdum 2, lanceolatum, patens, viride que immaculatum, vel in pagina superiore marroninum maculis plus atomarroninis, 110–260 × 10–28 mm, inflorescentia racemosa erecta vel suberecta,

ta, 30–100 mm longa, pedunculus pallide viridis maculis marronino-purpureis, 60–130 mm longa, pedicelli suberecti, 2 mm longi, flores urceolati, tempore primo ad medio florendi deinde cernui, in fructo patentes, pallide cremeo-flavi, perianthii tubum cyathiforme, 3 mm longum, tepali exteriora ovata, base obscure caerulei suffusi, gibbis flavo-viridibus, 6–8 × 5 mm, tepala interiora obovata, trans tepalis exteriora bene exserta, carinis flavis, marginibus recurvatis, 11–12 × 5 mm, stamina trans perianthium breviter exserta, filamenta recta, alba, 11–13 mm longa, ovarium ellipsoideum, 4 × 3 mm, stylum rectum, album, 12 mm longum, capsula ellipsoidea, 9–10 × 6 mm, semina globosa, 1.2 × 1.1 mm, strophiole inflato, 1 mm longo.

TYPE.—Western Cape, 3319 (Worcester): Palmiet Valley Farm, hillside behind homestead, in open aspects and semi-shade of sandstone boulders, (–AC), 21-9-2002, *Duncan 470* (NBG, holo., PRE, iso.).

Deciduous, winter-growing geophyte 150–270 mm high. *Bulb* globose, shallow or deep-seated, 15–25 mm diam., white with several layers of membranous, dark brown outer tunics; cataphyll subterranean, translucent white, loosely surrounding lowermost portion of clasping leaf base, apex obtuse; clasping leaf base relatively long depending on depth of bulb, usually completely subterranean, occasionally emerging slightly above ground level, 15–85 mm long, white, sometimes forming bulbils along subterranean margins. *Leaves* usually solitary, occasionally 2, spreading, narrowly lanceolate, weakly canaliculate, 110–260 × 10–28 mm, uniformly pale to dark green, or pale to dark maroon and sporadically or heavily marked with darker maroon blotches on upper surface. *Inflorescence* an erect or suberect, few- to many-flowered raceme 30–100 mm long, with a short sterile tip; peduncle erect or suberect, 60–130 mm long, pale green, slightly to heavily marked with dark maroon or maroonish purple blotches; rachis, 50–175 mm long, pale green, immaculate or heavily blotched with maroon or maroonish purple; bracts ovate in lower half of inflorescence, becoming lanceolate in upper half, 1–5 × 1–7 mm, translucent white; pedicels suberect, 2 mm long, white. *Flowers* urceolate, suberect in bud, cernuous from early to mid-flowering, becoming spreading at late flowering and fruiting stage, creamy white and pale yellow with green markings; perianth tube cup-shaped, 3 mm long, creamy white, occasionally tinged with dull blue in upper half; outer tepals ovate, 6–8 × 5 mm, creamy white or greenish yellow, occasionally tinged with dull blue at base, with a yellowish green gibbosity near apex; inner tepals obovate, protruding well beyond outer tepals, 11–12 × 5 mm, creamy white or greenish white with pale to dark yellow keels in upper half, apices slightly recurved. *Stamens* ± straight, subequal, exserted 1–2 mm beyond tip of perianth; filaments 11–13 mm long, white. *Ovary* ellipsoid, 4 × 3 mm, bright green; style straight, white, 12 mm long. *Capsule* ellipsoid, 9–10 × 6 mm, olive green. *Seed* globose, 1.2 × 1.1 mm, shiny black, with smooth, inflated strophiole 1 mm long. *Flowering time*: late September to mid-October. Figures 1B; 4.

*Etymology*: the specific epithet *cernua* is named for the slightly drooping orientation of its flowers during the early and mid-flowering stage.



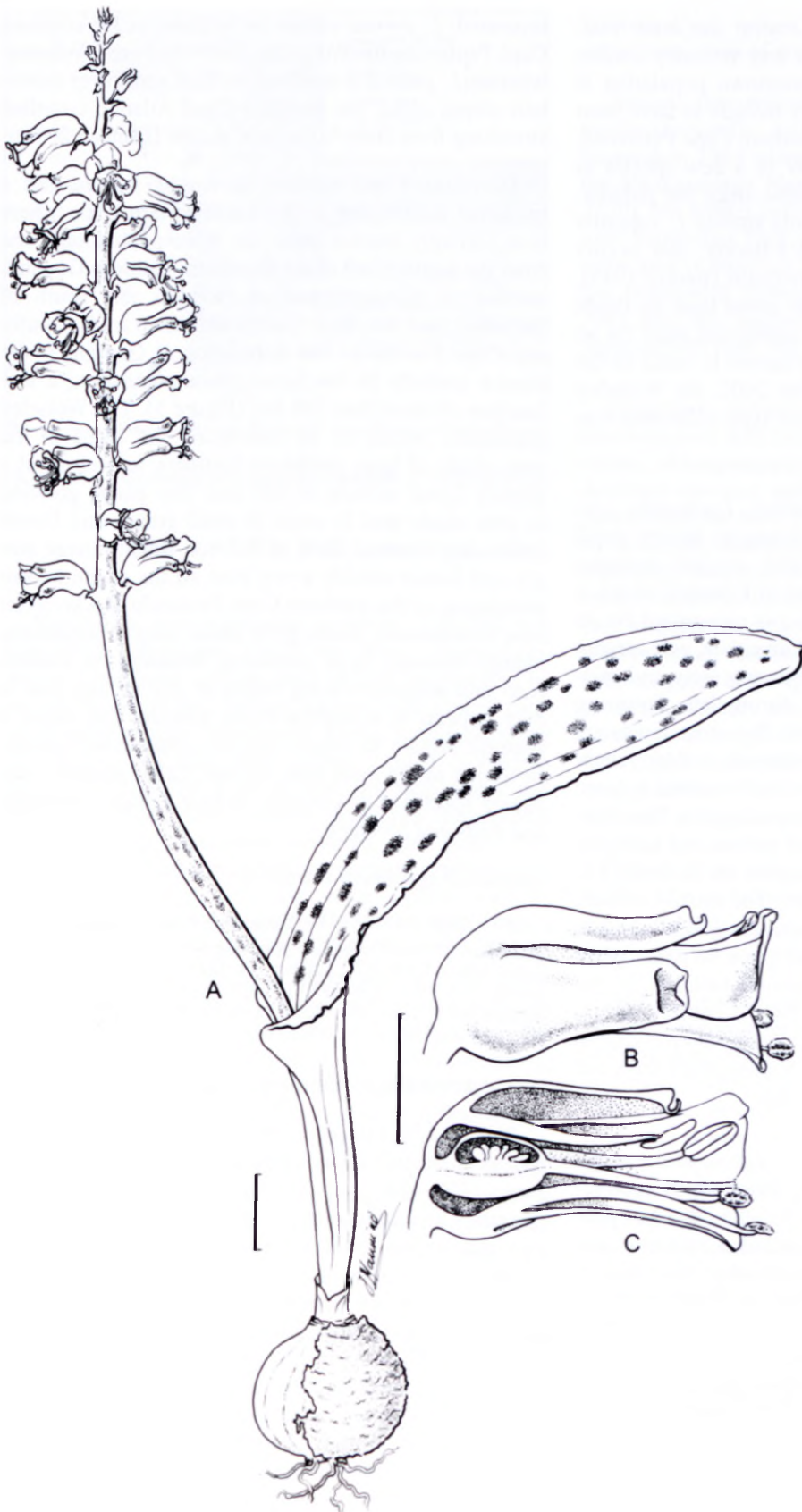


FIGURE 4.—*Lachenalia cernua*, Duncan 470 (NBG). A, inflorescence, leaf and bulb; B, single flower; C, 1/s flower. Scale bars: A, 10 mm; B, C, 5 mm. Artist: John Manning.

*History:* the earliest known record of *Lachenalia cernua* is a sheet housed in the National Herbarium, Pretoria, collected by the amateur botanist Dr F.Z. van der Merwe in October 1937 (*Van der Merwe sub PRE35699*) on a hillside above the spa baths at Goudini in the Worcester Valley of the southwestern Cape. Two further collections in NBG were made at this locality by J.W. Loubser in October 1971 and September 1972

respectively (*Loubser s.n. 2181*). In early October 2000, flowering specimens were collected by the first author some distance to the northwest of Goudini, on a hillside just south of Wolseley (*Duncan 428*). In July 2001, leafing specimens of an unidentified *Lachenalia* were collected by Adam Harrower of Kirstenbosch at the naval base at Klavervlei near Simonstown in the southern Cape Peninsula (*Harrower 104*). When one of these flowered



in the Kirstenbosch nursery in October the same year, it matched those of the Goudini and Wolseley collections. The discovery of the Simonstown population is remarkable for a genus previously thought to have been extensively documented in the southern Cape Peninsula, and is the first record since 1949 of a new species in this genus from the Cape Peninsula since the publication of the endemic Cape Peninsula species *L. capensis* W.F.Barker, and *L. variegata* W.F.Barker, that occurs from the Cape Peninsula to Clanwilliam (Barker 1949). The restricted environment of the naval base no doubt accounts for it having remained undetected there for so long, and no other populations are known to occur on the Cape Peninsula. In late September 2002, the Wolseley locality was visited again, and the type collection was made (Duncan 470).

**Diagnostic features and affinities:** *Lachenalia cernua* is a member of the group of species having small pedicellate, urceolate flowers with straight stamens, and includes *L. peersii* Marloth ex W.F.Barker, which it most closely resembles. *L. cernua* is recognized by its moderately dense inflorescence of urceolate, pale creamy yellow flowers that are cernuous during early and mid-flowering, becoming spreading during late flowering and fruiting stage (Figures 1B; 4). The inner tepals are creamy white or greenish white with pale to dark yellow keels in the upper half, and are well exerted beyond the outer tepals, with slightly recurved apices. The outer tepals are creamy white or greenish yellow, and have yellowish green gibbositities. The stamens are exerted 1–2 mm beyond the tip of the perianth. The usually solitary leaf is narrowly lanceolate and spreading, and varies in colour from uniformly pale to dark green, to pale to dark maroon with scattered darker maroon blotches on the upper surface. The clasping leaf base is entirely subterranean or occasionally slightly emerging above ground level, and the globose seeds have a shiny black testa and a long inflated strophiole, 1 mm long.

*Lachenalia cernua* resembles *L. peersii* in the shape of its urceolate flowers with the inner tepals protruding well beyond the outer tepals, but the latter has pure white, spreading flowers with included stamens, and inner tepals that are distinctly recurved at their tips. *L. cernua* has longer inner tepals and its flowers emit a weak, spicy scent, whereas those of *L. peersii* are strongly carnation-scented. The peduncle of *L. cernua* is pale green and slightly to heavily marked with dark maroon or maroonish purple blotches, whereas the peduncle of *L. peersii* is always immaculate. *L. cernua* usually has a solitary, weakly canaliculate spreading leaf, often with dark maroon blotches on the upper surface, whereas *L. peersii* almost always has two,  $\pm$  flat, lanceolate leaves that are always unmarked. The flowering period of the two species does not overlap as *L. cernua* starts flowering in late September and ends in mid-October, whereas *L. peersii* starts flowering in late October. The flowers of *L. cernua* fade to dull red and become spreading during the fruiting stage, whereas those of *L. peersii* fade to dull pink and become suberect to erect at the fruiting stage. Both species have globose seeds with inflated strophioles 1 mm long. The two species are geographically well

separated: *L. cernua* occurs on hillsides in the southern Cape Peninsula, the Worcester Valley and near Wolseley, whereas *L. peersii* is confined to flats and lower mountain slopes along the southern Cape Atlantic coastline stretching from Betty's Bay to Caledon (Duncan 2003).

**Distribution and habitat:** *Lachenalia cernua* has a restricted distribution in the southwestern Cape where it is currently known from just three populations, one from the western end of the Worcester Valley at Goudini, another to the northwest of Goudini just south of Wolseley, and the third near Simonstown in the southern Cape Peninsula. The population at Goudini is the closest spatially to the Simonstown population, a disjunction of more than 100 km (Figure 5). The Wolseley population occurs on an east-facing hill slope in the semi-shade of large sandstone boulders, as well as at a slightly lower altitude in full sun. The plants growing in semi-shade tend to occur in small groups and flower erratically, whereas those in full sun usually occur singly and flower reliably every year. At the single known population on the southern Cape Peninsula at Klavervlei near Simonstown, plants grow under similar conditions, mainly between large sandstone boulders on shaded, east- and southeast-facing ridges at 363 m, and also in open aspects at a slightly lower altitude, just above a seasonal stream in which *Moraea ramosissima* occurs, flowering at the same time of year. Other notable companion species at this locality include *Protea cynaroides* and *Watsonia tabularis*.

#### *Additional specimens examined*

WESTERN CAPE.—3319 (Worcester): Palmiet Valley, (–AC), 7-10-2000, Duncan 428 (NBG); Goudini, (–CB), 11-10-1971, Loubser 2181 (NBG); 27-9-1972, Loubser s.n. (NBG); Oct. 1937, Van der Merwe sub PRE35699 (PRE). 3418 (Simonstown): Klavervlei, Simonstown, (–AB), 19-10-2001, Duncan 463 (NBG); 17-7-2001, Harrower 104 (NBG).

#### ***Lachenalia nardousbergensis* G.D.Duncan, sp. nov.**

Plantae 150–310 altae; bulbum subglobosum, 15–20 mm in diametro; folia 2, late lanceolata, prostrata, olivacea, 100–180  $\times$  25–55 mm, pagina superior venis depressis longitudinalibus et pustulis magnis atroviridibus, marginibus coriaceis albis; inflorescentia racemosa erecta, 80–180 mm longa, floribus multis; pedunculus robustus, in parte superiore inflatus, pallide viridis, maculis brunneo-purpureis, 80–120 mm longus; pedicelli suberecti, 2–6 mm longi; flores oblongo-campanulati, cernui ad patentes, pallide ad atromagentei; perianthii tubum cyathiforme, 1–2 mm longum; tepala exteriora ovata, 7–8  $\times$  4–5 mm, gibbis carinisque atromagenteis vel viridibus; tepala interiora obovata, 8–9  $\times$  4–5 mm, trans tepala exteriora exserta, carinis atromagenteis; stamina trans perianthium bene exserta, filamenta declinata, in parte  $\frac{2}{3}$  inferiore alba, in parte  $\frac{1}{3}$  superiore magentea, 14–16 mm longum; ovarium obovoideum, 3  $\times$  2 mm; stylum declinatum, in parte  $\frac{2}{3}$  inferiore album, in parte  $\frac{1}{3}$  superiore magenteum, 13–14 mm longum; capsula obovoidea, 6–8  $\times$  5–7 mm; semen globosa, 1.2  $\times$  1.3 mm; strophiole rudimentario, 0.6–0.7 mm longo.

TYPE.—Western Cape, 3118 (Vanrhynsdorp): road to Nardousberge Plateau southeast of Klawer, in deep



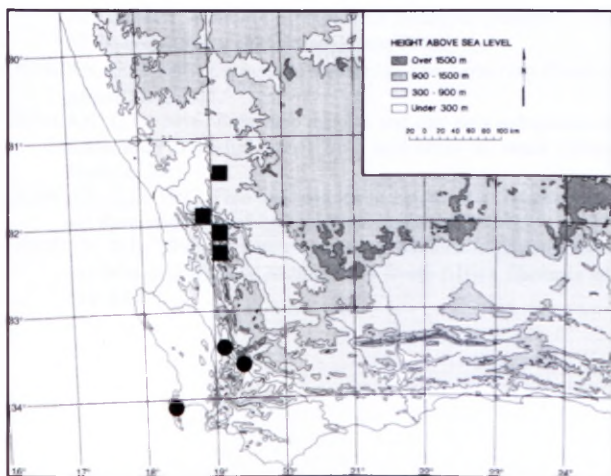


FIGURE 5.—Distribution of *Lachenalia cernua*, ●; *L. nardousbergensis*, ■.

red sand, (–DD), 2-9-1945, W.F. Barker 3630 (NBG, holotype!).

Deciduous, winter-growing geophyte, 150–310 mm high. *Bulb* subglobose, 15–20 mm diam., clump-forming or sometimes solitary, dark yellow, surrounded by several layers of dark brown, spongy outer tunics; cataphyll subterranean, translucent white, tightly adhering to clasping leaf base, apex obtuse. *Leaves* 2, broadly lanceolate, 100–180 × 25–55 mm, prostrate, upper surface olive-green with distinct depressed longitudinal veins and large, irregularly scattered, dark green, flattened pustules; margins white, coriaceous; clasping base subterranean, 10–20 mm long, white. *Inflorescence* an erect, many-flowered raceme 80–180 mm long, with a short sterile tip; peduncle erect, sturdy, 80–120 mm long, usually distinctly inflated in upper portion, pale green, heavily marked with small to large, pale to dark brownish purple blotches; rachis pale green, inflated in lower portion, heavily marked with pale to dark brownish purple blotches; pedicels suberect, 2–6 mm long, brownish green to brownish magenta, shortest at base of inflorescence; bracts ovate at base of inflorescence, becoming lanceolate above, 1–5 × 3–5 mm. *Flowers* oblong-campanulate, nodding or spreading, pale to deep magenta; perianth tube cup-shaped, 1–2 mm long, white throughout or dull blue at base shading to white above; outer tepals ovate, 7–8 × 4–5 mm, pale magenta with darker magenta, brownish magenta or green keels and gibbositities; inner tepals obovate, 8–9 × 4–5 mm, apices subacute, slightly spreading, protruding well beyond outer tepals, pale magenta with prominent, dark magenta keels. *Stamens* well exerted beyond perianth, declinate; filaments 14–16 mm long, white in lower two thirds, shading to deep magenta in upper third; anthers dull magenta prior to anthesis, yellow at anthesis. *Ovary* obovoid, 3 × 2 mm, pale green; style declinate, well exerted beyond perianth, 13–14 mm long, white in lower one third, shading to pale to deep magenta in upper two thirds. *Capsule* obovoid, 6–8 × 5–7 mm, brownish green. *Seed* globose, 1.2 × 1.3 mm, shiny black with smooth, rudimentary strophiole, 0.6–0.7 mm long. *Flowering time*: late August to early October. Figures 1C; 6.

*Etymology*: *Lachenalia nardousbergensis* is named after the Nardousberge southeast of Klaver in the

Western Cape, where the type collection and several other collections of this species have been made.

*History*: the earliest known collection of *Lachenalia nardousbergensis* was made by W.F. Barker on 2 September 1945 along a road leading off the N7 to the Nardousberge Plateau southeast of Klaver (Barker 3630). No further collections appear to have been made until September 1968, when W. Chater collected it in the same area (Chater s.n.). It has since been recorded from the Bokkeveld Plateau near Nieuwoudtville (Duncan 198) and the northern Cederberg (Nicklin 179; G. Summerfield pers. obs.).

*Diagnostic features and affinities*: *Lachenalia nardousbergensis* falls into the group of species having pedicellate, oblong-campanulate flowers with well-exserted, declinate stamens, and most closely resembles *L. purpureo-caerulea* Jacq. *L. nardousbergensis* is recognized by its usually distinctly inflated peduncle that is marked with large brownish purple blotches, and its many-flowered, moderately dense raceme of nodding or spreading, pale to deep magenta, oblong-campanulate flowers with well-exserted, declinate stamens, with the filaments deep magenta in the upper third (Figures 1C; 6). Its two prostrate, broadly lanceolate, olive-green leaves have conspicuous longitudinal grooves along the upper surface, and are covered with large, dark green, flattened, oval pustules. The leaves are partially or completely withered at flowering but remain green under cultivation if plants are kept well watered in late winter and spring. The flesh of the subglobose bulb is dark yellow and the bulb is surrounded by several layers of dark brown, outer tunics. Its globose, shiny black seeds have a rudimentary strophiole, 0.6–0.7 mm long.

The oblong-campanulate flowers of *Lachenalia purpureo-caerulea* differ from those of *L. nardousbergensis* in their deep purplish blue colour and in being larger and more widely flared, with rounded, recurved, deep purple inner tepal apices and a much shorter style 8 mm long and stamens 9–10 mm long. The peduncle of *L. purpureo-caerulea* is unmarked and non-inflated, and it has two bright green, prostrate lanceolate leaves densely covered with small green, dome-shaped pustules. Like those of *L. nardousbergensis*, the leaves of *L. purpureo-caerulea* are partially or completely withered at flowering in the wild and the two species are geographically widely separated, *L. purpureo-caerulea* having a highly restricted distribution in the Darling/Mamre District of the southwestern Cape, occurring on sandy gravel flats in renosterveld, and flowering later in the season, from mid-October to mid-November (Duncan 1988b). Like those of *L. nardousbergensis*, the shiny black, globose seeds of *L. purpureo-caerulea* fall into the group having smooth, rudimentary strophioles.

*Distribution and habitat*: *Lachenalia nardousbergensis* has a limited distribution in the Fynbos Biome in the northwestern part of the Northern Cape and the northwestern part of the Western Cape, extending from the Bokkeveld Plateau at Nieuwoudtville, southwest to the Nardousberge Plateau southeast of Klaver, and southeast to the Middelburg Plateau at the northern end of the Cederberg (Figure 5). The plants occur in areas of



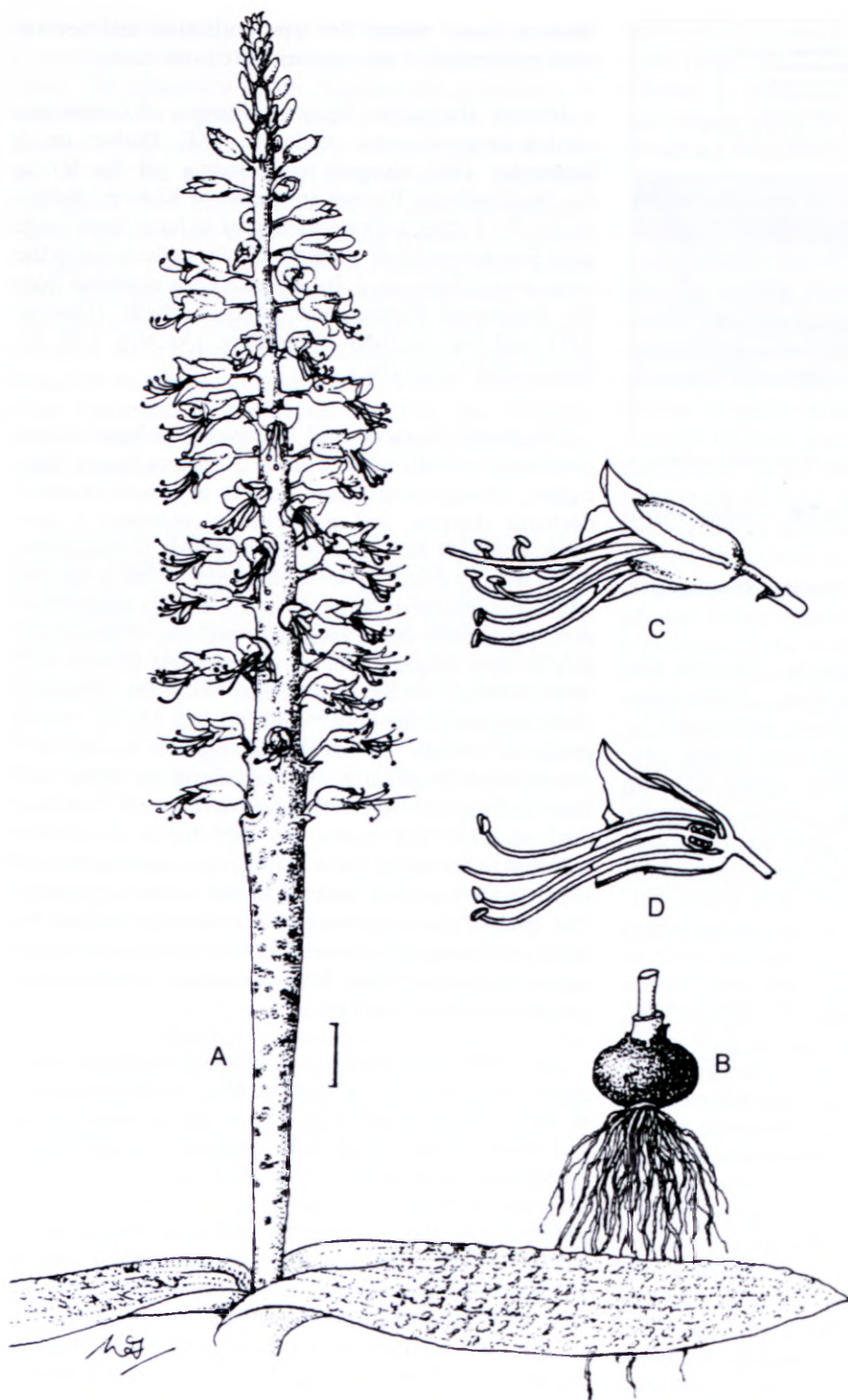


FIGURE 6.—*Lachenalia nardousbergensis*, Duncan 198 (NBG). A, inflorescence and leaves; B, bulb; C, single flower; D, 1/5 flower. Scale bars: A–D, 10 mm. Artist: Vicki Thomas.

fairly level, high-lying ground, in deep red or yellowish brown sand, growing as scattered individuals or in small colonies in fynbos vegetation, among low succulent undergrowth or restios.

#### *Additional specimens examined*

NORTHERN CAPE.—3119 (Calvinia): Farm Oorlogskloof, Nieuwoudtville, (–AC), 1-10-1973, *Barker 10890* (NBG); Farm Glen Ridge, Nieuwoudtville, (–AC), 12-9-1985, *Duncan 198* (NBG).

WESTERN CAPE.—3118 (Vanrhynsdorp): Nardousberge Escarpment, (–DD), 17-9-1968, *Chater s.n.* (NBG). 3219 (Wuppertal): 2 miles [3.2 km] on road Brandewynrivier to Calvinia, (–AA), 27-9-1970, *Barker 10724* (NBG); Middelberg Plateau, (–AC), 4-8-1985, *Nicklin 179* (NBG).

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