A NEW SPECIES OF *LACHENALIA* FROM NAMAQUALAND, SOUTH AFRICA

INTRODUCTION

Lachenalia Jacq.f. ex Murray is the largest endemic genus within the southern African Hyacinthaceae and comprises ± 117 species. The distribution of the genus is concentrated in the winter rainfall zone of the subcontinent, but also extends into areas of intermediate as well as summer rainfall (Duncan 1998a). All its species follow a strictly winter-growing, summer-dormant life cycle, with the exception of *Lachenalia pearsonii* (Glover) W.F.Barker from southern Namibia, which is summer-growing and winter-dormant (Duncan 1999). The genus is exceptionally diverse in flower shape, colour and orientation, as well as in leaf shape, surface sculpturing and markings, and is cytologically also very varied. *Lachenalia* comprises several very widely distributed species, but a much larger number are confined to narrow distribution ranges, such as the species described here. The genus occurs across a wide variety of habitats and vegetation types, including Succulent Karoo, Nama-Karoo, Fynbos and Grassland Biomes. Many of the species have great ornamental value (Duncan 1988, 1989a, b), and hybrids developed by the Agricultural Research Council at Roodeplaat near Pretoria, have recently been introduced onto the international pot plant market. The new species described here forms part of a series of papers towards a revision of the genus (Duncan 1996, 1997, 1998b).

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

Planta 100–350 mm alta; bulbus subglobosus, 15–20 mm diam., albus, tunicis externis tenuibus brunneis; folia 2, late lanceolata ad anguste ovata, 120–170 × 20–30 mm, patentia, pagina superiore venis longitudinaliter depressis pustulis minutis dense tecta; flores oblongo-urceolati, sessiles, patentes, pallide viridiflavi, tubo perianthii cremeo 2–3 mm longo, tepalis exterioribus ovatis 7–8 × 4–5 mm, tepalis interioribus obovatis, apicibus parum recurvatis, tepalis duobus superioribus imbricatis 9–10 × 5 mm, tepalo inferiore longiore angustioreque 10–11 × 3–4 mm, in parte superiore vivide magenteo; stamina inclusa declinata 7 mm longa.

TYPE.—Northern Cape, 2917 (Springbok): northwestern Namaqualand, Kleinsee Nature Reserve, Kleinsee, on west-facing granite slopes in brownish red sand, (–CA), *Duncan 444* (NBG, holo.).

Deciduous, winter-growing geophyte, 100–350 mm high. *Bulb* subglobose, 15–20 mm diam., usually solitary, occasionally clump-forming, white with thin, membranous, pale to dark brown outer tunics, produced into a very short neck; cataphyll subterranean, translucent white with minute longitudinal veins, loosely clasping leaf base. *Leaves* 2, broadly lanceolate to narrowly ovate, 120–170 × 20–30 mm, spreading or suberect, canaliculate, upper surface dark green with distinct depressed longitudinal veins, densely covered with minute, dark green pustules, lower surface plain or lightly to heavily flushed with maroonish magenta; clasping leaf base 20–50 mm long, yellowish green or heavily flushed with dark maroonish magenta above soil level, shading to white below soil level. *Inflorescence* an erect, many-flowered dense spike up to 120 mm long with short sterile tip; peduncle erect, sturdy, up to 230 mm long, lower half pale green with minute brownish purple speckles, upper half heavily mottled with brownish purple; rachis pale purplish brown in lower half, shading to electric-blue in upper half and at tip; bracts much reduced, ovate throughout inflorescence, 1–2 × 1–4 mm. *Flowers* sessile, suberect in bud stage, spreading at flowering stage, oblong-urceolate, pale greenish yellow, with conspicuous, pale to bright magenta lower, inner tepal; perianth tube cup-shaped, cream-coloured, with or without a very pale blue tinge, 2–3 mm long; outer tepals ovate, 7–8 × 4–5 mm, cream-coloured at base, shading to yellowish green above, with bright green keels and gibbosities; inner tepals obovate, tips slightly recurved, protruding well past outer tepals, upper inner tepals translucent dull white, overlapping, 9–10 × 5 mm, with bright green keels; lower inner tepal deeply canaliculate, 10–11 × 3–4 mm, lower half translucent dull white, upper half pale to bright magenta with pale greenish yellow keel. *Stamens* included within perianth, declinate; filaments white, 7 mm long; anthers dull maroon prior to anthesis, yellow at anthesis. *Ovary* ellipsoid, 3–4 × 2 mm, pale green; style 6–7 mm long, white. *Capsule* ellipsoid, 8 × 5 mm, bright green. *Seed* ovoid, 1.7 × 1.0 mm, shiny black with short, ridged strophule, up to 0.4 mm long. *Flowering time*: late July to mid-August. Figure 4.

FIGURE 4.—*Lachenalia valeriae*. A, foliage and inflorescence; B, bulb; C, single flower; D, l/s flower. Scale bars: A, B, 10 mm; C, D, 5 mm. Artist: Vicki Thomas, drawn from type, *Duncan 444* (NBG).

Etymology: Lachenalia valeriae is named for Valerie Fay Anderson (Mrs R. Geary-Cooke), in recognition of the wonderful contribution she has made to the knowledge of the flora of southern Africa, through the medium of watercolour paintings.

Diagnostic features and affinities: *L. valeriae* falls into the small group of species with sessile, urceolate or oblong-urceolate flowers with included, declinate stamens, its closest relatives being *L. framesii* W.F.Barker and *L. carnosa* Baker. *L. valeriae* is recognized by its moderately dense inflorescence of patent, oblong-urceolate, pale greenish yellow flowers with the deeply canaliculate lower inner tepal distinctly longer than the two upper lateral tepals, and conspicuously marked with pale to bright magenta in the upper half (Figure 4). The inner tepals are all slightly recurved at their tips, and the outer tepals have bright green gibbosities and keels. Mature bulbs always produce two opposite, spreading or suberect, slightly canaliculate, broadly lanceolate or narrowly ovate leaves with depressed longitudinal veins on the upper surface, which is densely covered with minute, rounded green pustules. The clasping leaf base is usually plain yellowish green but may also be heavily flushed with dark maroonish magenta. The white, subglobose bulb is surrounded by pale to dark brown, membranous outer tunics and its relatively large, ovoid seeds have a shiny black testa and a short, ridged strophule.

Lachenalia framesii resembles *L. valeriae* in the shape of its yellow or greenish yellow, oblong-urceolate flowers with the upper part of the inner tepals recurved, and in the similar pale to bright blue upper portion of the rachis, but its flowers are much smaller and the upper part of its inner tepals are all pale to bright magenta, whereas in *L. valeriae* only the lower inner tepal has this colouring. *L. framesii* also differs in being a dwarf species with much shorter, suberect flowers, and it has much shorter, suberect, canaliculate, narrow-lanceolate leaves with strongly undulate margins, and the upper leaf surface is always smooth. Its bulb is globose and much smaller than that of *L. valeriae*, and its globose seeds are minute in comparison, and have a reticulate, matt black testa. *L. framesii* is a common species throughout central Namaqualand and the Knersvlakte, and its distribution extends close to that of *L. valeriae* in the Komaggas Flower Reserve, but does not overlap that of *L. valeriae,* which occurs west of this area. It usually occurs on flats in large colonies in quartzitic sand.

The similar urceolate flowers of *L. carnosa* are shorter and wider than those of *L. valeriae* and have dull white perianth segments, with all the inner tepals having broad, pale to dark mauve tips, and the gibbosities dark purplish brown. Its two spreading or suberect leaves differ in being broadly ovate and flat, with a distinct purplish maroon, cartilaginous margin, whereas those of *L. valeriae* are broadly lanceolate to narrowly ovate, and slightly concave. The upper surface of *L. carnosa* is almost always smooth but may occasionally have irregularly scattered, large flattened brown pustules, whereas those of *L. valeriae* are always covered with numerous small green, rounded pustules. The bulb tissue of *L. carnosa* is usually pale to dark yellow, surrounded by strong, dark brown tunics, whereas that of *L. valeriae* is always white. The similarly shaped, ovoid seeds of *L. carnosa* are less than half the size of those of *L. valeriae,* and like this species, also have a short, ridged strophule. *L. carnosa* is a very common species in central and western Namaqualand, and the Kamiesberg, where it usually grows in cracks and depressions of granite outcrops in sandy soil, or less frequently in sandy gravel on open flats. Its distribution does not overlap that of *L. valeriae*, but comes close to it in the Komaggas area.

Distribution and habitat: *L. valeriae* is currently known from five populations in the sandy coastal plain of northwestern Namaqualand in the Succulent Karoo Biome, where it occurs in shallow or deep brownish red sand on east- and west-facing slopes of granite outcrops (Figure 5). At its type locality near the mouth of the Buffels River in the Kleinsee Nature Reserve, it occurs only on west-facing slopes, near to or amongst low succulent vegetation including *Aloe framesii, Pelargonium fulgidum* and several *Crassula* and *Euphorbia* species, but at a locality just north of Kleinsee it is found on both east- and west-facing slopes. Individuals grow singly or in colonies on rock depressions and in between rock cracks (Figure 6), either in full sun or in partial shade of the surrounding vegetation. The distribution of *L. valeriae* needs to be further investigated north of Kleinsee, as

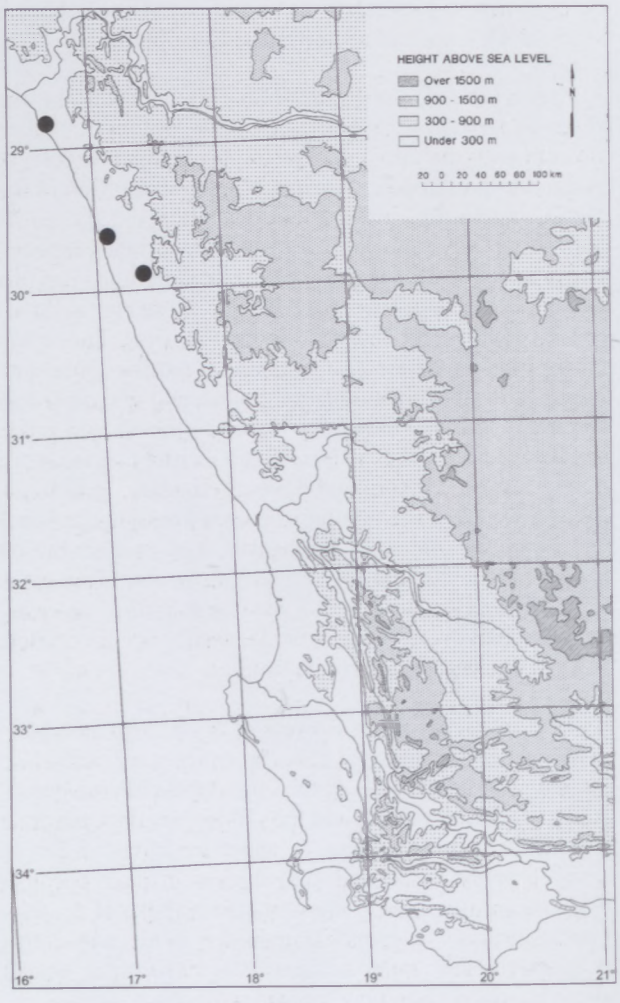

FIGURE 5.—Distribution of *Lachenalia valeriae*.

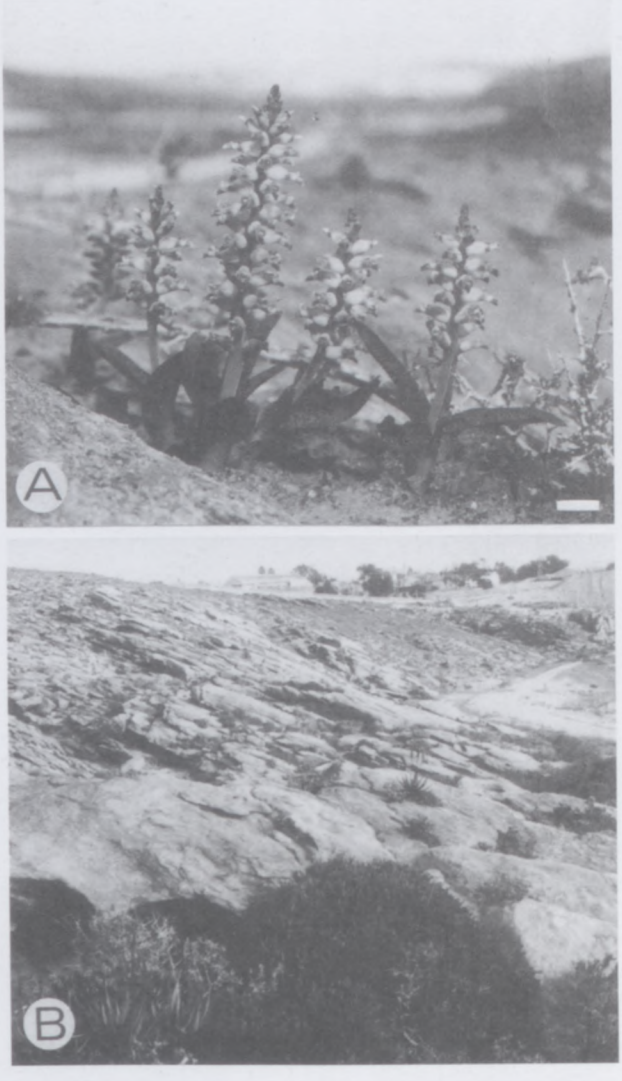

FIGURE 6.—*Lachenalia valeriae*, Kleinzee Nature Reserve. A, group of flowering plants; B, natural habitat on west-facing granite slopes. Scale bar: 10 mm.

it is likely that it extends all the way up the coast to the mouth of the Holgat River, which is currently its northernmost limit.

Material examined

NORTHERN CAPE.—2816 (Oranjemund): Holgat River mouth, 1.6 km east of road, in sand dunes, (–DC), *Wisura 1610* (NBG). 2917 (Springbok): Kleinsee Nature Reserve, (–CA), *Duncan 444* (NBG); 2 km N of Kleinsee, (–CA), *Duncan 448* (NBG); 8 km W of Komaggas, (–CD), *Lavranos 28585* (NBG).

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REFERENCES

DUNCAN, G.D. 1988. The *Lachenalia* handbook. *Annals of Kirstenbosch Botanic Gardens* 17. National Botanical Institute, Cape Town.

DUNCAN, G.D. 1989a. *Lachenalia*. In B.J. Jeppe, *Spring and winter flowering bulbs of the Cape*. Oxford University Press, Cape Town.

DUNCAN, G.D. 1989b. *Lachenalia*. In N.M. du Plessis & G.D. Duncan, *Bulbous plants of southern Africa*. Tafelberg, Cape Town.

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. 1998a. Notes on the genus *Lachenalia*. *Herbertia* 53: 40–48.

DUNCAN, G.D. 1998b. Five new species of *Lachenalia* (Hyacinthaceae) from arid areas of Namibia and South Africa. *Bothalia* 28: 131–139.

DUNCAN, G.D. 1999. *Lachenalia violacea*. *Curtis's Botanical Magazine* 16: 252–255.

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