Drimia chalumnensis (Hyacinthaceae — Urgineoideae), a new species from Eastern Cape, South Africa

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Drimia chalumnensis, a new inconspicuous dwarf species from the Albany Centre of Floristic Endemism in Eastern Cape, South Africa, is restricted to the coastal plains of the Chalumna river in small scattered aggregated colonies on exposed sandstone sheets in pockets of loose sandy soil. It is distinguished by its capitule inflorescence, separate, petiolate bulb scales, and prostrate, coriaceous, linear-lanceolate leaves with cartilaginous margins.

Introduction
The genera of Hyacinthaceae with spurred petiolar bracts form a natural, monophyletic group comprising the subfamily Urgineoideae (Pfosser and Speta 1999). Within the subfamily, however, the genera are poorly defined. The two core genera, Urginea and Drimia, traditionally separated by the degree of the fusion of the perianth and the orientation of the tepals and stamens (Baker 1897, Mauve 1976), are regarded as a single genus following Jessop (1977), Goldblatt and Manning (2000) and Manning and Goldblatt (2003). Drimia in the broad sense is well defined by the apomorphic short-lived flowers with the tepals mostly more or less fused below and the perianth caducous, absicising at the base and withering as a cap on the developing fruit (Goldblatt and Manning 2000, Manning and Goldblatt 2003). Following Jessop (1977) the new species is similar in floral morphology to D. depressa (Baker) Jessop. It is distinguished by its separate, petiolate bulb scales resembling those of D. haworthioides Baker, its prostrate, flattened, coriaceous, linear-lanceolate leaves with cartilaginous margins resembling those of D. marginata (Thunb.) Jessop, and contiguous stamens forming a cup around the gynaecium. The new species shares its dwarf, cryptic, colonial habit and a similar restricted habitat with D. acarophylla E.Brink & A.P.Dold (Brink and Dold 2003).

Materials and Methods
Pollen, seed and leaf epidermis were examined and photographed with a JEOL-JSM 840 scanning electron microscope. Drawings were made from living plants collected in habitat.

Description
Drimia chalumnensis A.P.Dold & E.Brink sp. nov., D. depressae (Baker) Jessop affinis sed bulbi squamis turgidis petiolatis laxe segregatis, foliis parvis planis linear-lanceolatis coriaceis prostratis, atque staminibus inter se contingentibus, cupulam circa ovarium formantibus, differt.

TYPE — Eastern Cape. 3327 (Peddie): Cornfields Farm, near the Chalumna River, 5km northwest of Kayser’s Beach, 35km southwest of East London, 33°09’48”S 27°35’04”E (–BA), 100m, 25-10-2002, Dold 4619 (GRA, holo.).

Plant dwarf, inconspicuous, ±10–15mm high, closely aggregated in colonies of up to ±40 plants. Bulb globose to subglobose, hypogean, 10–15mm x 15–18mm, composed of loose, separate, tur CID, petiolar scales, each bearing a leaf, becoming truncate when the leaf dies off, smooth, without tunic, white. Leaves 2–6(–8), present or absent at anthesis, rosulate, deciduous, linear-lanceolate, (15–)20–25(–32) x 2.0(–2.5)mm, stiffly coriaceous, subterranean section white, erect, connivent with peduncle, exposed section dark greygreen with a dull whitish bloom, prostrate, axially channelled, acute, glabrous, margin light brown, cartilaginous, thickened. Inflorescence single, subcapitate-racemose; peduncle slender, erect, glabrous, (5–)14–16(–19) long, 0.8–1.0(–1.2)mm diam. at base, dark purple above ground; bracts deltoid, 1.2–1.4 x 0.6mm, attenuate, saccate, occasionally producing a short rounded spur up to 0.4mm long, dark glossy purple-red; pedicels (2.0–)3.0–4.0mm long, 0.4–0.45mm diam., decreasing in length acropetally, dark glossy purple-red. Flowers spreading-erect, stellate, (6–)9–18(–22); tepals biseriate, fused for 0.8mm at base, apices penicillate, recurved, margins recurved, outer tepals golden-brown below with darker keel, white flushed pale golden-brown above, distal margin translucent white, widening to form translucent wings near apex, narrowly ovate, 3.0–3.4mm x 1.6–2.0mm; inner tepals golden-brown below with darker keel, translucent white above, margin translucent white, 0.4mm wide, ovate, 3.0–3.2mm x 1.4–1.6mm, apices truncate. Stamens erect, inserted at the base of the tepals; filaments broadly lanceolate, finely papillate, 1.8–2.0mm x 0.6–0.8mm broad at base, 0.2mm thick, basally contiguous and forming a cup around the ovary, white; anthers globose before dehiscence, dorsifixed, 0.6mm x 0.6mm, yellow, dehiscing.
longitudinally; pollen ellipsoid and monosulcate, 40µm x 20µm, yellow. *Ovary* ovoid, 1.0–1.4mm x 1.0mm, shallowly 3-lobed, pale green; *style* terete, 1.0–1.2mm x 0.2mm, white; *stigma* trigonous, papillate. *Capsule* 3-lobed, 4.0–5.0mm x 4.0–4.5mm, subglobose, leathery, pale pinkish-brown. Seeds ±24 per capsule, each loosely enclosed by a tetrahedrally folded testa, lightly winged along the angles, 1.6–1.9mm x 1.0–1.6mm, glossy, black, shallowly reticulate. Flowering time: October and November (Figures 1 and 2).

**Discussion**

*D. chalumnensis*, with its globose inflorescence and spreading tepals, is probably allied to *D. depressa* (Baker) Jessop although it is not necessarily its closest natural relative. *D. acarophylla* E.Brink & A.P.Dold appears to be closely related, with corresponding inflorescence, flower, capsule and seed characters as well as similar habit and habitat (Table 1). The species epithet is derived from the Chalumna River.

**Distribution and ecology**

First collected by succulent plant enthusiast David Cumming at Kiwane in 2000, this diminutive, inconspicuous plant has subsequently been re-collected at Cornfields farm near to Chalumna (Tylomnqa) in the Albany Centre of floristic endemism (Van Wyk and Smith 2001) where it is rare and difficult to find. Restricted to Coastal Grassland (Lubke et al. 1996) between Cornfields and Kiwane, the species is confined to an area of ±10km of exposed calcareous sandstone of the Nanaga Formation of the Algoa Group (Le Roux 1989). Colonies of 10–40 plants are isolated on exposed sandstone sheets in pockets of shallow, loose sandy soil. At these localities they receive daily mist off the sea and this supplements the annual rainfall of ±700mm (Schulze et al. 1997) that peaks in September (Kopke 1988). *D. chalumnensis* flowers in October and November and is dormant for a short period between January to March. One or two flowers are open per day from ±08h00 to ±17h00.


**Conservation status**

*Drimia chalumnensis* is restricted to two populations in an area of less than 20km². One population is potentially threatened by encroaching informal housing. We therefore suggest that, following the IUCN 3.1 (IUCN 2001) Red Data criteria, the species be classified as VU D2.

**Additional specimens examined**

**EASTERN CAPE**—3327 (Peddie): Kiwane Resort, Dyam Dyam village, Chalumna, flat bare sandstone outcrop on grassy hillside; 33°15'00” S 27°30'30"E (–BA), 50m, 30-10-2000, *Cumming 8896* (GRA); Cornfields Farm, 5km northwest of Kayser’s Beach, 35km southwest of East London, 33°09'48" S 27°35'04"E (–BA), 100m, 20-10-2001, *Cumming 9730* (GRA).

**Acknowledgements** — Thanks to Rhodes University Joint Research Council for support to the first author; Leigh-Ann De Wet for line drawings; Dr Hugh Glen for the Latin diagnosis; and Janine Victor (Red List Authority) for the Red Data status.

**References**


Figure 1: Drimia chalumnaensis (Dold 4819). (a) leaf margin; (b) pollen; (c) seed; (d) seed testa. Scale bars: a, c, d = 100μm; b = 10μm
Figure 2: *Diania chilamnena* (Dodd 4619). (a) plant habit, (b) pedicel and bract, (c) flower, (d) outer tepal, (e) tepal, stamen and gynoecium (f, g) stamens, (h, i) capsule. Scale bars: a = 30mm; b = 50mm; c = 20mm; d, e = 30mm; f, g = 37.5mm; h, i = 1mm. Artist: Leigh-Anne De Wet

Table 1: Morphological differences between *Diania chilamnena*, *D. depressa* and *D. acaenphylla*

<table>
<thead>
<tr>
<th></th>
<th><em>D. chilamnena</em></th>
<th><em>D. depressa</em></th>
<th><em>D. acaenphylla</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulb</strong></td>
<td>10–15mm long</td>
<td>10–50mm long</td>
<td>14–25mm long</td>
</tr>
<tr>
<td></td>
<td>scales separate, turgid, loosely assembled</td>
<td>scales tightly packed</td>
<td>scales turgid, closely imbricate</td>
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<tr>
<td><strong>Leaf</strong></td>
<td>2–8, obovate, coriaceous, up to 32mm x up to 2.5mm diam., prostrate</td>
<td>5–8, linear to linear-lanceolate, herbaceous, up to 260mm x up to 26mm broad, erect</td>
<td>1–2, clavate, succulent, up to 14mm x up to 4mm diam., recumbent</td>
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<tr>
<td><strong>Leaf margin</strong></td>
<td>cartilagenous, thickened, light brown up to 15mm long</td>
<td>Margins insignificant up to 200mm long</td>
<td>Not marginate up to 27mm long</td>
</tr>
<tr>
<td><strong>Peduncle</strong></td>
<td>6–22 flowers, 5–19mm long</td>
<td>10–50 flowers, 26–200mm long</td>
<td>5–17 flowers, 11–27mm long</td>
</tr>
<tr>
<td><strong>Inflorescence</strong></td>
<td>inner tepals oblong ovate, outer tepals ovate, translucently winged near apex</td>
<td>inner and outer tepals linear-oblong, not winged</td>
<td>inner tepals broadly elliptic, outer tepals ovate, not winged</td>
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<tr>
<td><strong>Pentanther</strong></td>
<td>ovoid, olive-green 2mm long, erect, basally constricted, forming a cup</td>
<td>Ovoid, white 3–4mm long, spreading, not forming a cup</td>
<td>ovoid, sandy-apricot 2mm long, spreading, not forming a cup</td>
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<tr>
<td><strong>Ovary</strong></td>
<td>up to 0.6mm long, yellow</td>
<td>0.5–1.25mm long, brown</td>
<td>up to 1.6mm long</td>
</tr>
<tr>
<td><strong>Filament</strong></td>
<td>trilobed, 4.5–6.0 x 4.0–4.6mm long</td>
<td>ovoid, 5–6mm long</td>
<td>orbilobed, 4.5–6.4mm long</td>
</tr>
<tr>
<td><strong>Anther</strong></td>
<td>tetrahedral, 1.6–1.9 x 1.0–1.6mm</td>
<td>flat, 4–4.6mm x 3–4mm</td>
<td>tetrahedral, 2.2–2.4 x 1–2.2mm</td>
</tr>
</tbody>
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