

New species of Iridaceae from the Hantam-Roggeveld Centre of Endemism, and the Bokkeveld, Northern Cape, South Africa

J.C. MANNING* and P. GOLDBLATT**

Keywords: Iridaceae, *Ixia amethystina* J.C.Manning & Goldblatt, *Moraea marginata* J.C.Manning & Goldblatt, new species, *Romulea singularis* J.C.Manning & Goldblatt, South Africa, taxonomy

ABSTRACT

Three new species of Iridaceae are described from the Bokkeveld and Roggeveld Escarpments. *Ixia amethystina*, a member of section *Dichone*, is endemic to the edge of the Roggeveld Escarpment. It shares an unusual, inclined spike that is nodding in bud with *I. trifolia* but is distinguished by its blackish purple (not yellow) anthers, narrower leaves 1.5–2.0 mm wide, medium-textured corm tunics that form a distinct neck at the base of the stem, and short style branches 2.0–2.5 mm long. *Moraea marginata*, another Roggeveld endemic, is a member of section *Polyanthes* and florally similar to *M. fistulosa* and *M. monticola* but differs in its linear, channelled leaves 5–7 mm wide, with unusual, thickened margins. *Romulea singularis*, from the edge of the Kobbie River Valley in the Bokkeveld Mountains, is a member of section *Ciliatae*. It is unique in the genus in its narrowly funnel-shaped, mauve to purple flowers with slender perianth tube 10–11 mm long, and unusually long filaments, 8–9 mm long, inserted in the lower half of the tube.

INTRODUCTION

Plant geographers have been aware of the high levels of endemism in the flora of the winter rainfall region along the western margin of the Upper Karoo for almost a century, culminating in its recent recognition as the Hantam-Roggeveld Centre of Endemism (Van Wyk & Smith 2001). The Hantam-Roggeveld occupies the high-lying southwestern portion of the South African interior plateau and includes the Hantams, Roggeveld and Nuweveld Mountains. The vegetation is primarily succulent karroid shrubland, with renosterveld at the higher elevations and in moister areas. The region is exceptionally rich in geophytes, which may account for nearly 40% of the flora in some places (Snijman & Perry 1987). The richest and most interesting geophyte flora is found along its western rim, on the main Roggeveld Escarpment and on the Hantamsberg, which receives more rain than the surrounding country. Among the geophyte flora are some 90 species of Iridaceae, many endemic to the region (Manning *et al.* 2002).

The Bokkeveld Mountains, which border the Hantam-Roggeveld in the northwest, constitute the northern limit of the Cape Floral Region (Goldblatt & Manning 2000). This sandstone escarpment supports dry fynbos vegetation, with a narrow belt of renosterveld along its interior margin. Although not recognized as a separate centre of endemism by Van Wyk & Smith (2001), the region is a centre of diversity for several geophyte genera (Manning *et al.* 2002), and its flora includes numerous endemic Iridaceae (Manning & Goldblatt 1997).

Here we describe two new species from the Roggeveld-Hantam plateau, *Ixia amethystina* and *Moraea marginata*, and a third, *Romulea singularis*, from the Bokkeveld Mountains. All three species appear to be most closely

allied to other endemics from their respective regions, emphasizing the importance of local radiation in the floras of these two regions. Two of these species, *M. marginata* and *R. singularis*, were brought to our attention by botanist and ardent plant enthusiast, Nick Helme, who has been responsible for the discovery of several new species in the Cape region in the past few years (Manning & Goldblatt 2001a; Van Jaarsveld & Thomas 2003; Goldblatt 2004).

Ixia amethystina J.C.Manning & Goldblatt, sp. nov.

Species habitu floribusque *Ixia trifolia* G.J.Lewis similis sed floribus pallide purpureis centro tuboque atropurpureis, antheris atropurpureis, ramis stylorum inconspicuis filamentis brevioribus 2.0–2.5 mm longis, et foliis angustioribus 1.5–2.0 mm latis differt.

TYPE.—Northern Cape, 3220 (Sutherland): west of Farm Agerkop, near the top of Gannaga Pass, (–AA), 16 September 1997, P. Goldblatt & J.C. Manning 10745A (NBG, holo.; MO, iso.).

Plants 150–300 mm high. *Corms* globose, 12–20 mm diam.; tunics of medium-textured, wiry, reticulate fibres, extending up in papery neck 30–70 mm long. *Stem* erect, unbranched or with up to two branches that are erect below and then inclined, 1.0–1.5 mm diam. below base of main spike. *Cataphylls* submembranous, flushed reddish brown, upper one reaching above ground level and then papery and dark reddish brown. *Leaves* 3 or 4, all basal, uppermost completely sheathing lower two thirds of stem, remainder suberect or lowermost slightly falcate, 1.5–2.0 mm wide, reaching to near top of stem, firm-textured, margins and midrib hyaline, slightly thickened, plane or slightly twisted in upper half, with an additional one or two membranous, scale-like leaves in upper third of stem, in axils of which lateral branches may develop. *Spike* inclined, crowded, 5–7-flowered, branches 1–4-flowered, inflorescences nodding in bud; bracts scarious, translucent or flushed purple above,

* Compton Herbarium, South African National Biodiversity Institute, Private Bag X7, 7735 Claremont, Cape Town.

** B.A. Krukoff Curator of African Botany, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, USA.

MS. received: 2006–04–11.

outer 5–7 mm long, acute or obscurely three-dentate, inner bracts about as long as outer or slightly shorter, bicuspidate, margins connate in lower 1.5 mm around ovary. *Flowers* rotate, pale purple with small, dark purple eye, faintly scented; perianth tube filiform and clasping style for entire length, 2.0–2.5 mm long, widened only in upper 1 mm; tepals obovate, somewhat narrowed below into short claw, spreading and slightly cucullate distally, 12–13 × 7–8 mm. *Filaments* inserted at apex of tube and occluding throat, blackish purple, free, diverging above, 2.5 mm long; anthers oblong-sagittate, 4.5–5.0 × 1.5 mm, erect, thecae narrowly separated by connective and dehiscing laterally by narrow slits extending length

of thecae, blackish purple; pollen creamy yellow. *Ovary* ovoid, 2.5–3.0 mm long; style straight and erect, ± 2 mm long, dividing at or just below mouth of tube, branches involute-filiform and stigmatic at apex only, purple, arching outward, 2.0–2.5 mm long. *Flowering time*: late September to early October. Figure 1A–F.

Distribution and ecology: *Ixia amethystina* is known from a small area southwest of Middelpos on the edge of the Roggeveld Escarpment (Figure 2). The three known collections were made within a few kilometres of each other on the Farms Zoekop and Agterkop. Plants grow in stony clay in renosterveld (*Elytropappus rhinocerotis*)

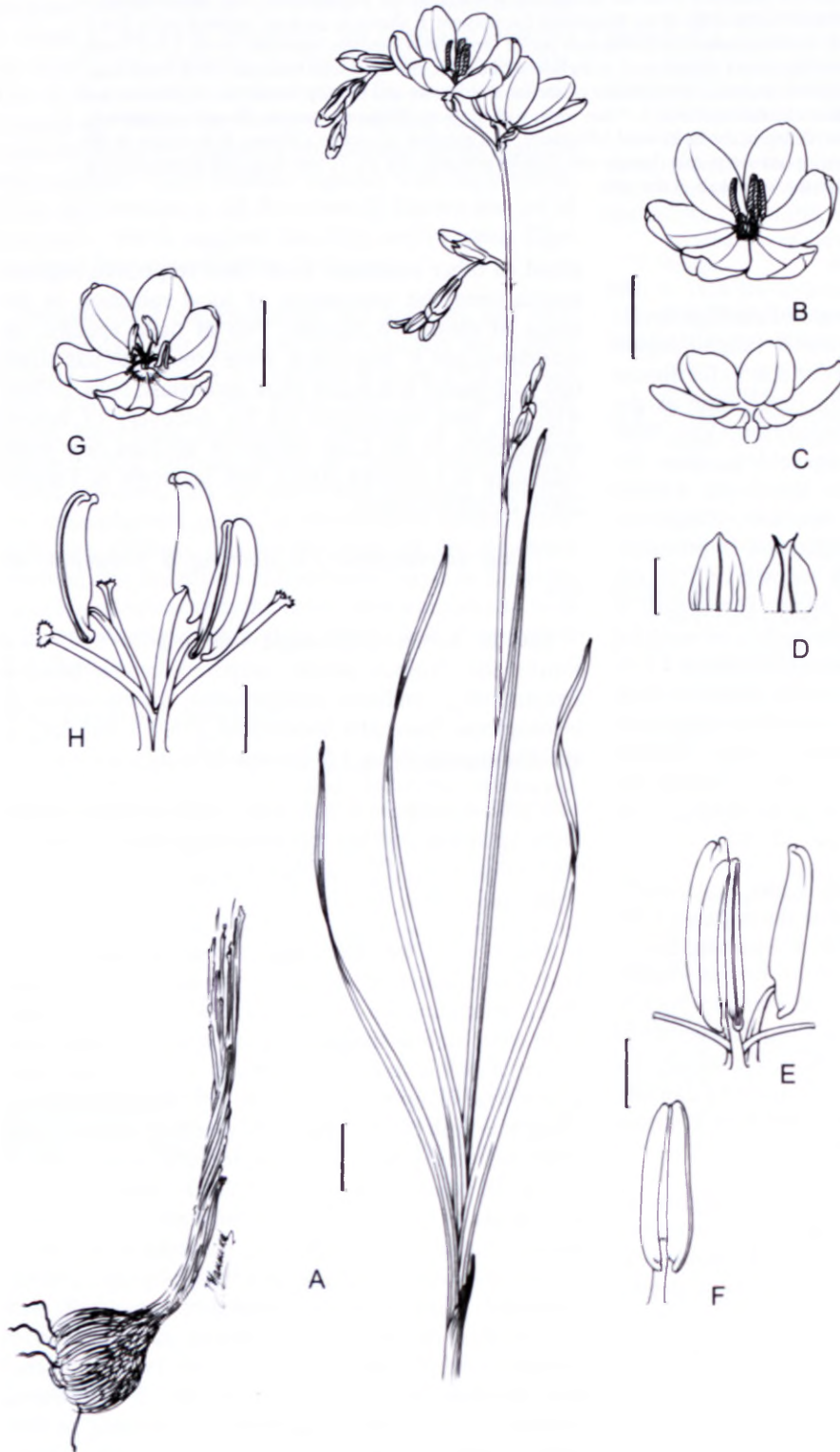


FIGURE 1.—*Ixia amethystina*, NBG192794: A, corm and flowering stem; B, flower, three-quarter view; C, flower, side view; D, floral bracts, outer (left) and inner (right); E, stamens and style branches; F, stamen, abaxial view. *Ixia trifolia*, Helme 1662 (NBG): G, flower, three-quarter view; H, stamens and style branches. Scale bars: A–C, G, 10 mm; D, 5 mm; E, F, H, 2 mm. Artist: John Manning.

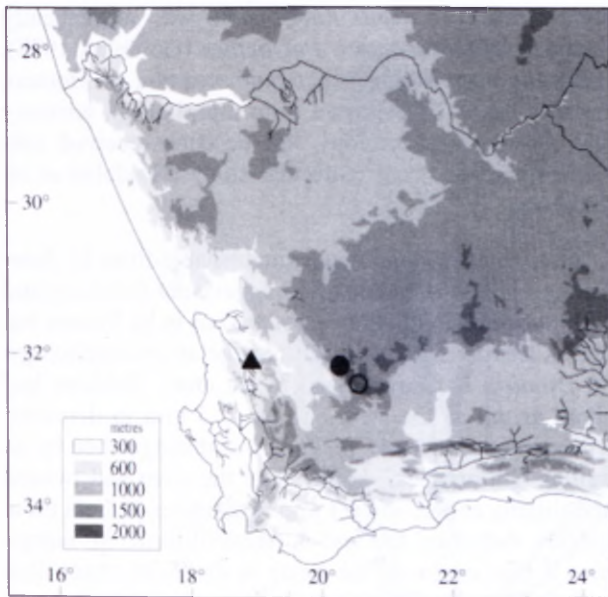


FIGURE 2.—Distribution of *Ixia amethystina*, ●; *Moraea marginata*, ○; and *Romulea singularis*, ▲.

shrubland. *I. amethystina* appears to be less sensitive to light and temperature than other species in the subgenus. The flowers open widely around 08:00, even in cool, overcast conditions and remain fully open until late afternoon, whereas those of *I. trifolia*, like many other species of section *Dichone*, will not open fully under cooler conditions.

Diagnosis and relationships: *Ixia amethystina* is an attractive species distinguished by its pale purple flowers with small, dark eye, relatively broad, blackish anthers that dehisce laterally so that the pollen forms a contrasting pale margin to each anther, and short style branches that are subequal to the filaments in length, thus scarcely projecting from between the stamens. The lovely amethyst-coloured flowers are borne on inclined spikes so that they face directly upward in an elegant, arching spray.

The filiform perianth tube clasping the style for its whole length and the involute-filiform style branches stigmatic only at the extreme apex, place *Ixia amethystina* in section *Dichone* of subgenus *Ixia* (Goldblatt & Manning 1999). Here it falls among a small group of species that are endemic or near-endemic to the Roggeveld Escarpment, including *I. brevituba* G.J.Lewis, *I. trifolia* G.J.Lewis and *I. curvata* G.J.Lewis. These species share relatively unspecialized, longitudinally dehiscent anthers, 4–5 mm long. The species of section *Dichone* from the southwestern Cape below the Escarpment, in contrast, fall into two groups defined by their derived stamens, the one characterized by its very short anthers, 2–4 mm long and the other by their curious attachment, resulting in their reclinate orientation.

Among the Roggeveld species of section *Dichone*, *Ixia amethystina* appears to be most closely allied to *I. trifolia* (Figure 1G, H) on the basis of their unusual, inclined spikes, and lateral branches that are decurved and nodding when young. All other species have spikes that are erect from bud to fruit. Although not explicitly mentioned in the original description of *I. trifolia* (Lewis

1962), this feature was later noticed and illustrated by De Vos (1999). The two species both have a perianth tube 2–3 mm long, which is longer than in *I. brevituba* (1.0–1.5 mm) but shorter than in *I. curvata* (3–5 mm). *I. amethystina* differs from *I. trifolia* in its blackish purple anthers, purple perianth tube, which gives the flowers a small, dark, central eye, consistently narrower leaves 1.5–2.0 mm wide, and medium-textured corm tunics drawn into a well-developed neck. *I. trifolia*, like all other species in section *Dichone*, has yellow anthers, although the filaments may be pale mauve, and a pale perianth tube, giving the flowers a well-defined, whitish eye. The observation by Lewis (1962) and later De Vos (1999) that *I. trifolia* may occasionally have a dark eye is not corroborated by examination of living plants. The pale eye in this species is usually surrounded by darker shading, which in pressed specimens may give the eye a dark appearance. The leaves of *I. trifolia* are broader than in *I. amethystina*, (2.5–)5.0–12.0 mm wide, and the tunics are more coarsely fibrous, with the lower fibres developed into woody claws but not drawn into a neck above. In addition, the style branches in *I. trifolia* are longer than the filaments, 4–5 mm long, and project conspicuously between them.

The unusual pale purple of the flowers of *Ixia amethystina* occurs occasionally in both *I. trifolia* and *I. brevituba* (Lewis 1962) although the flowers in these two species are more usually bright pink. Other species of section *Dichone* invariably have pale to deep pink flowers. *I. trifolia* is more widely distributed along the Roggeveld Escarpment than *I. amethystina* and has been collected from several places along the escarpment from Uitkyk in the north to Komsberg in the south and thence to Laingsburg and Tweedside below the escarpment. The two species are parapatric, with *I. amethystina* occurring immediately to the north of the range of *I. trifolia*. The differences in their flowers appear to be related to their pollination biology. *I. amethystina* has flowers that conform to the hopliine beetle pollination syndrome (Goldblatt *et al.* 1998) and the beetle *Kubousia axillaris* Burmeister has been collected on the flowers. All individuals of this insect carried pure loads of *Ixia*-type pollen on their dorsal thorax and frons (unpublished data). In contrast, *I. trifolia* is pollinated by solitary female anthophorine bees (unpublished observations).

Etymology: named for the distinctive colour of the flowers.

Other material examined

NORTHERN CAPE.—3220 (Sutherland): Zoekop Farm, 3 km S of entrance along road to Gannaga Pass, (–AA), 26 September 2002, NBG192794 (NBG); Farm Zoekop, past ruins near edge of escarpment, (–AA), 24 September 2002, Rosch 154 (NBG).

***Moraea marginata* J.C.Manning & Goldblatt, sp. nov.**

Species habitu floribusque *Moraea fistulosa* Goldblatt affinis sed breviora 100–150 mm alta, foliis canaliculatis et marginibus incrassatis hyalinis 20–25 × 5–7 mm, et floribus parvioribus tepalis 9–13 mm longis differt.

TYPE.—Northern Cape, 3220 (Sutherland): Sutherland, 200 m along Bo-Visrivier road south of town, Farm

Tweefontein, stony flats in open karroid scrub, (–BC), 15 November 2005, *J. Manning 2997* (NBG, holo.; K, MO, iso.).

Plants 100–150 mm high. *Corm* globose, 15–20 mm diam.; tunics of coarse black fibres. *Stem* erect, usually with 1–4 branches at upper nodes, dull purplish where exposed; spathes dry and papery at flowering, attenuate, inner 25–30 mm long, outer about half as long. *Foliage leaf* solitary, basal, longer than stem, trailing and slightly twisted and coiled, firm-textured, greyish green with maroon margins but dry at flowering, linear and channelled, 20–25 × 5–7 mm, margins conspicuously thickened and cartilaginous, especially evident when dry; cauline leaves 3 or 4, bract-like and entirely sheathing, imbricate, dry and papery, attenuate. *Flowers* blue-violet; tepals free but contiguous at base, oblanceolate, outer larger, 10–13 × 3.5–4.0 mm, inner 9–12 × 2.5–3.0 mm, shortly unguiculate, claws 1.0–1.5 mm long, erect and held against base of filaments, limbs spreading or slightly reflexed, inner twisted slightly counter-clockwise distally, propeller-like, with small, oblong, yellow nectar guides 1.5–2.0 mm long at base, unscented. *Filaments* free but contiguous at base, 4–5 mm long, suberect, mauve; anthers erect, 4.5–5.0 mm long, yellow, curving inwards above at anthesis. *Ovary* narrowly ellipsoid, 4 mm long; style erect, filiform, mauve, 3.5–4.0 mm long, style branches spreading to ascending between anthers, filiform, 4 mm long. *Capsules* barrel-shaped, 6–8 × 5 mm. *Seeds* subglobose or angled by pressure, ± 2 mm diam., reddish brown, testa surface rugulose. *Flowering time*: November; flowers opening at ± 16:00 and wilting at ± 20:00. Figure 3.

Ecology: known from a single small population on the southern outskirts of the town of Sutherland at an elevation of around 1 550 m (Figure 2). Plants occur locally in fine alluvium over shale at the foot of outcrops of sandstone in open, succulent karroid scrub. The leaves are quite dry and withered at flowering, and the attractive, blue-violet flowers, 20–25 mm in diameter, open in early summer in the late afternoon for just a few hours, withering around sunset.

Diagnosis and relationships: *Moraea marginata* is recognized by the combination of stellate, purplish flowers with free stamens and filiform style branches, and a solitary, linear, channelled leaf with conspicuous, maroon margins that are conspicuously thickened when dry. The distinctive flower form places *M. marginata* with the two species previously segregated as the genus *Roggeveldia*. This genus was established by Goldblatt (1979) for *R. fistulosa* Goldblatt, a *Moraea*-like plant that was anomalous in *Moraea* as then circumscribed in having free stamens and filiform style branches that spread between the stamens, rather than being opposite to and ± appressed to them as in typical species of *Moraea*. A second species of *Roggeveldia*, *R. montana* Goldblatt, very similar to *R. fistulosa* in morphology, was described by Goldblatt (1992) more than a decade later. At this time he suggested that the relationships of the genus lay with *Moraea* section *Polyanthes*, most particularly with *M. crispa* Thunb., with which it shared a similar vegetative and floral morphology, including a rotate, blue-violet perianth, free stamens and narrow style branches without

style crests. The genus *Roggeveldia* was subsequently included in *Moraea* sect. *Polyanthes* (Goldblatt 1998), following a revision of the circumscription of *Moraea*. Initially based on evidence from morphology, anatomy and chromosome cytology, this decision received subsequent support from molecular study (Goldblatt *et al.* 2002b).

Moraea marginata is indistinguishable from *M. fistulosa* (Goldblatt) Goldblatt (= *Roggeveldia fistulosa*) and *M. monticola* Goldblatt (= *R. montana*) in its flowers but differs sharply from them in its vegetative morphology. *M. fistulosa* is characterized by an erect, fistulose leaf about as tall as the stem and up to 3 mm in diameter, whereas the smaller *M. monticola* is distinguished by its trailing, filiform leaf, longer than the stem and twisted and slightly coiled, and ± 1 mm in diameter. In both these species, therefore, the leaf is terete/filiform. *M. marginata* is thus unique in the group in its linear, channelled leaf, 5–7 mm wide, with conspicuously thickened and cartilaginous margin. The leaf of *M. marginata*, which is longer than the stem, trailing, and slightly twisted and coiled, represents a remarkable specialization in the *M. crispa* alliance. Similar leaves with thickened margins are also encountered in some plants of *M. crispa* from the Roggeveld Plateau, including *Bond 145* (NBG, SAM) from the Farm Gunstfontein on the Klein Roggeveld, and *Snijman 774* (NBG) from near Williston. Although these collections are vegetatively indistinguishable from *M. marginata*, the partially fused filaments and flattened style branches, bifid at the tips and with small style crests, are entirely consistent with *M. crispa* and there is no doubt that they represent that species.

All the species of the *Roggeveldia* group have a similar phenology, flowering in early summer, in October or November, with individual flowers opening in the late afternoon around 16:00 and withering in the evening between 19:00 and 20:00. The species are concentrated in the western Karoo, along the edge of the central escarpment, and are generally poorly known and collected. *Moraea marginata* and *M. fistulosa* are known only from the type collections, both from the edge of the Roggeveld Escarpment near Sutherland, and *M. monticola* from three collections, one in Namaqualand and two from the southern margin of the Great Karoo. *M. crispa*, in contrast, is widespread through the drier interior mountains of the Cape region and along the western and southern edge of the interior escarpment (Goldblatt 1986). *M. crispa* is probably plesiomorphic in its somewhat flattened and bifid style branches and thus most likely sister to the *Roggeveldia*-group.

Etymology: alluding to the unusual, thickened leaf margin.

***Romulea singularis* J.C.Manning & Goldblatt, sp. nov.**

Inter species sectionis *Romulea* floribus malvinis ad lilacinis fauce albo purpureo striato, tubo rubro-ochraceo externe, tubo perianthi anguste infundibuliforme 10–11 mm longo, tepalis lanceolatis ± 13 × 3 mm, filamentis 8–9 mm longis antheris longioribus ad basem puberulis recedens.

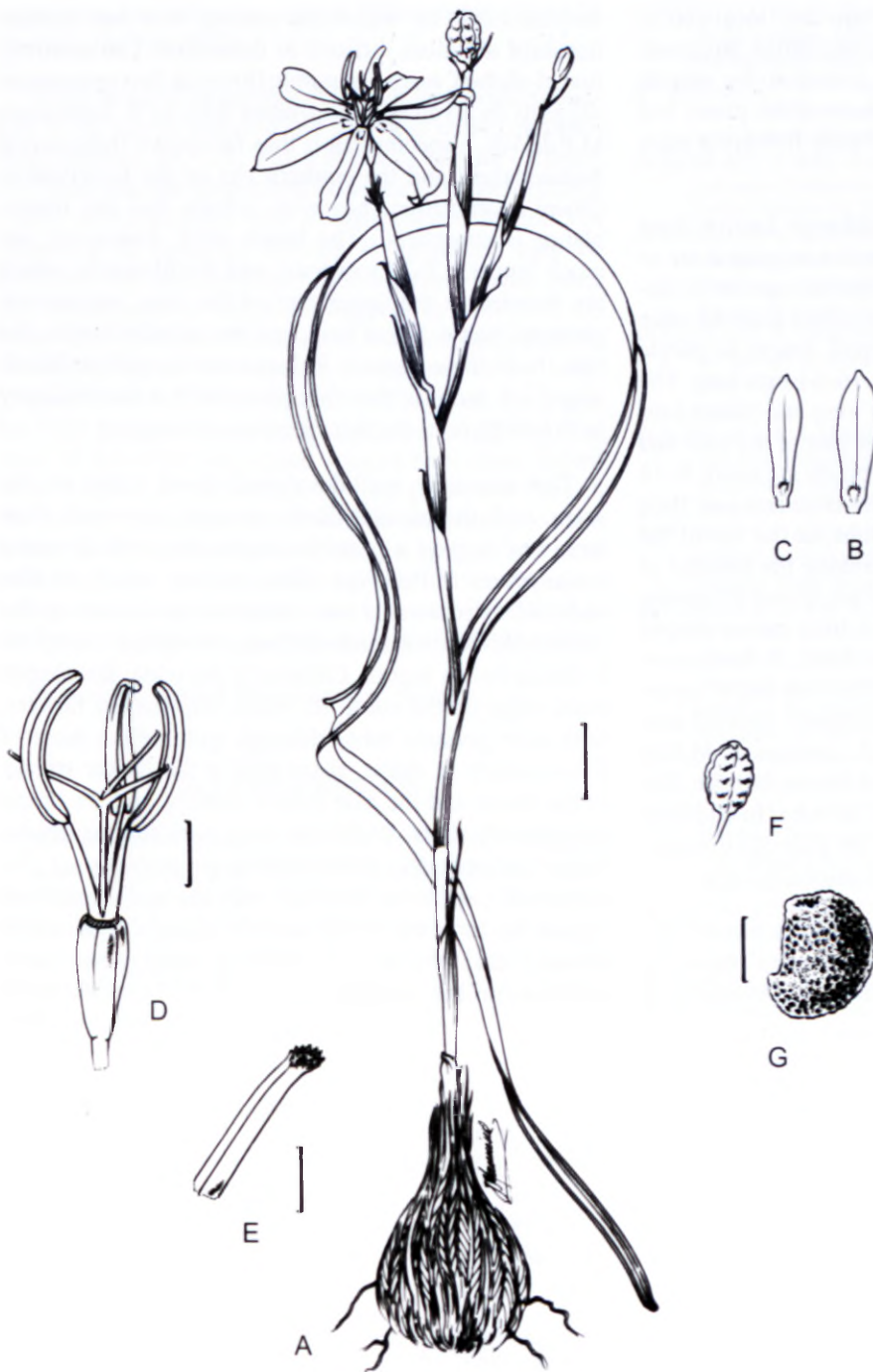


FIGURE 3.—*Moraea marginata*, Manning 2997 (NBG): A, whole plant; B, outer tepal; C, inner tepal; D, floral details, perianth removed; E, apex of style branch; F, capsule; G, seed. Scale bars: A–C, F, 10 mm; D, 2 mm; E, 0.2 mm; G, 1 mm. Artist: John Manning.

TYPE.—Northern Cape, 3119 (Calvinia): Oorlogskloof Nature Reserve, Farm Uitkomst, 4 km east of Arrie se Punt, overlooking Saaikloof, seasonally moist sandstone pavement in Bokkeveld Sandstone fynbos, 830 m, (–CA), 18 September 2005, *N.A. Helme 3564* (NBG, holo.).

Plants 200–400 mm high; stem subterranean. *Corm* asymmetric with broad, crescent-shaped basal ridge, 10–12 mm diam.; tunics brown, woody, lower margins splitting into fine, parallel fibrils 1.5–2.0 mm long in irregular clusters, drawn into coarse fibres 5–6 mm long above. *Leaves* up to 6, lower 2 basal and longest, remainder cauline but appearing basal through contraction of stem, blades spreading, narrowly 4-grooved, 15–35 × 0.75–1.25 mm. *Inflorescence* of up to 4 single-flowered units; outer bracts ovate, subobtuse, green, with slender, well-spaced veins and narrow, hardly visible translucent margins, 7–10 mm long, inner bracts notched apically,

green in centre with broad translucent margins flecked or flushed pale brown, slightly shorter than outer. *Flowers* narrowly funnel-shaped, mauve to lilac with white throat streaked with purple, tube reddish ochre on outside, probably unscented, 12–15 mm diam.; perianth tube narrowly funnel-shaped, 10–11 mm long, with lower, narrow portion 3–4 mm long; tepals lanceolate, ± 13 × 3 mm. *Filaments* inserted at top of lower, narrow portion of tube, sparsely puberulous at base, 8–9 mm long, exerted ± 2 mm; anthers pale yellow, ± 3 mm long. *Ovary* ellipsoid, 2 mm long; style dividing between base of anthers and middle of anthers, branches ± 2 mm long, divided for ± half of their length. *Capsule and seeds* unknown. *Flowering time*: September. Figure 4.

Ecology: known from a single population on the Bokkeveld Escarpment near Nieuwoudtville, on the eastern edge of the Kobee River Gorge in the Oorlogskloof

Nature Reserve. The plants are rare and localized in seasonally wet sand and moss on sandstone pavement in arid fynbos vegetation. At the time that the species was collected in mid-September, most of the plants had finished flowering, suggesting that peak flowering takes place in early September.

Diagnosis and relationships: although known from just two plants, the flowers of *Romulea singularis* are so unusual that they leave no doubt that the species is distinct. *R. singularis* is readily distinguished from all other species by its narrowly funnel-shaped, mauve to purple flowers with slender perianth tube, 10–11 mm long. The unusually long filaments, 8–9 mm long and puberulous at the base, are inserted in the lower part of the tube and are shortly exerted, and the floral bracts are short, 8–10 mm long. The unusual length of the filaments and their insertion in the lower part of the tube, at the top of the basal, narrow portion, are unique among the handful of long-tubed species of *Romulea* that are known (Manning & Goldblatt 2001b). Those with a truly salver-shaped flower [*R. alba* J.C.Manning & Goldblatt, *R. hantamensis* (Diels) Goldblatt, *R. stellata* M.P.de Vos and *R. syringodeoflora* M.P.de Vos] have the filaments inserted near the mouth of the tube, but even *R. kamisensis* M.P.de Vos, with a narrowly funnel-shaped flower, has the filaments inserted in the upper part of the tube. In addition, the filaments in all of these species are glabrous throughout and 3–5 mm in length, thus not unusually long.

The oblique corm with crescent-shaped basal ridge splitting into parallel fibrils, places *Romulea singularis* in section *Ciliatae* of subgenus *Romulea* (Manning &

Goldblatt 2001b). Within the section, however, its relationships are more difficult to determine. The narrowly funnel-shaped, mauve to purple flower at first appearance suggests an atypically short-tubed form of *R. kamisensis* M.P.de Vos, a species that is thus far known from central Namaqualand and the northern rim of the Knersvlakte. Closer examination, however, reveals that the resemblance is superficial. The bracts of *R. kamisensis* are much longer, 13–22 mm long, and the filaments, which are inserted in the upper part of the tube, are entirely glabrous, just 4–5 mm long, and are included within the tube. In all these respects *R. kamisensis* is quite unlike *R. singularis* and it is therefore probable that the similarity in flower form in the two species is convergent.

The unusually well-developed, basal ridge on the corm, with the parallel fibrils grouped into small clusters, may suggest a possible relationship with *Romulea toximontana* M.P.de Vos. This species, which is also endemic to seasonally wet sandstone pavement on the Bokkeveld–Matsikamma–Gifberg Mountain complex, is distinctive in section *Ciliatae* in the wide, fan-shaped basal ridge on the corm. Its white, cup-shaped flowers, with short perianth tube, although quite unlike those of *R. singularis* in shape, share with it the darker streaks in the throat and the pale yellow anthers, and the bracts are typically short, 10–20 mm long, with similar slender veins. Unfortunately these features are probably all plesiomorphic and it is therefore only the well-developed rim on the corm that might actually signal a relationship between the two species. Cytology may prove more useful since the chromosome number, $2n = 28$, in *R.*

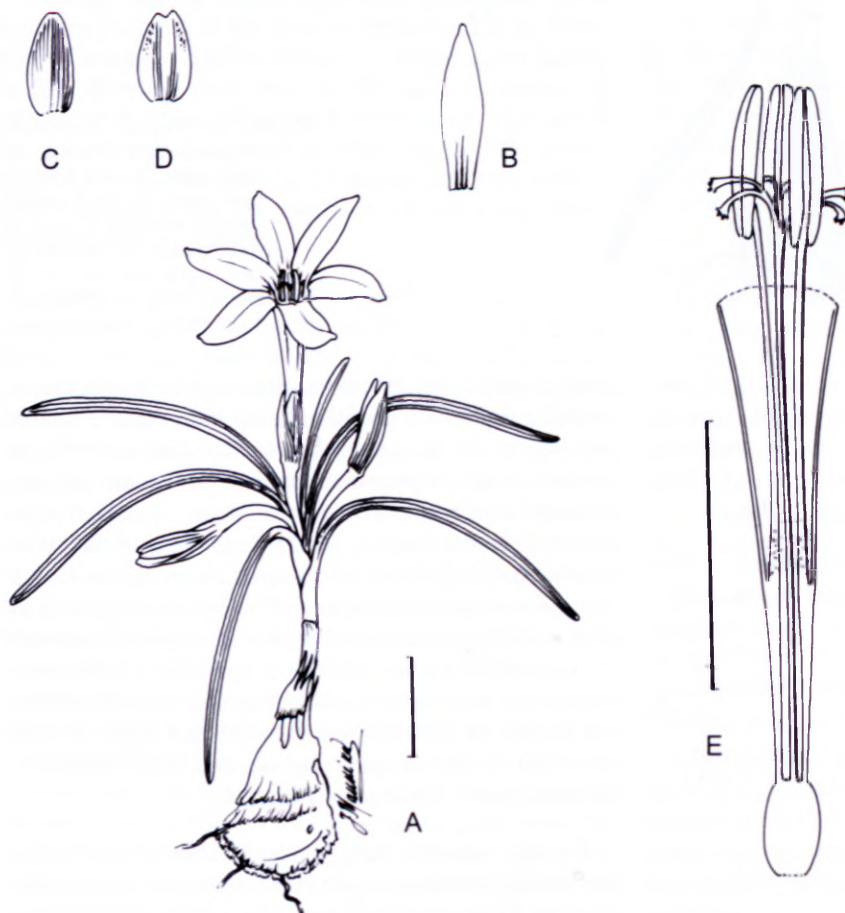


FIGURE 4.—*Romulea singularis*, Helme 3564 (NBG): A, whole plant; B, tepal; C, outer bract; D, inner bract; E, floral details. Scale bars: A–D, 10 mm; E, 5 mm. Artist: John Manning.

toximontana is unique in section *Ciliate*, where $2n = 24$ is usual (De Vos 1972).

On the basis of the presence of secondary vascular bundles in the leaves, and possibly also their shared chromosome number, $2n = 26$, which is rare in section *Ciliatae*, it is likely that the long-tubed *Romulea kamisensis* shares a short-tubed ancestor with *R. namaquensis* M.P.de Vos (Manning & Goldblatt 2001b). *R. singularis* may be similarly but independently derived from some other short-tubed species and it does appear as if most of the long-tubed species of *Romulea* are independently derived within the genus in response to pollination by long-tongued insects. The pollination biology of the genus has been fairly well studied (Goldblatt *et al.* 2002a), and most of the other long-tubed species have been shown to be adapted to pollination by long-proboscid flies in the family Nemestrinidae. A similar pollination system is thus likely for *R. singularis*, and the species will most probably prove to be another member of the *Prosoeca peringueyi* pollination guild, which is well-developed in the Bokkeveld Mountains (Manning & Goldblatt 1996).

Etymology: named for its unusual flowers.

ACKNOWLEDGEMENTS

We are most grateful to Nick Helme for bringing *Moraea marginata* and *Romulea singularis* to our attention. Thanks are due also to Elizabeth Parker for facilitating the trip to collect the type material of *M. marginata*. Material was collected under permits issued by the Departments of Nature Conservation of the Northern and Western Cape.

REFERENCES

- DE VOS, M.P. 1972. The genus *Romulea* in South Africa. *Journal of South African Botany*, Suppl. vol. 9.
- DE VOS, M.P. 1999. *Ixia*. *Flora of southern Africa* 7,2,1: 1–87. National Botanical Institute, Pretoria.
- GOLDBLATT, P. 1979. *Roggeveldia*, a new genus of southern African Iridaceae–Irideae. *Annals of the Missouri Botanical Garden* 66: 839–844.
- GOLDBLATT, P. 1986. The moraeas of southern Africa. *Annals of Kirstenbosch Botanic Gardens* 14. National Botanic Gardens, Cape Town and Missouri Botanical Garden, St Louis.
- GOLDBLATT, P. 1992. New species, chromosome cytology and notes on the southern African Iridaceae–Irideae: *Moraea*, *Roggeveldia* and *Homeria*. *South African Journal of Botany* 58: 209–214.
- GOLDBLATT, P. 1998. Reduction of *Barnardiella*, *Galaxia*, *Gynandriris*, *Hexaglottis*, *Homeria* and *Roggeveldia* in *Moraea* (Iridaceae: Irideae). *Novon* 8: 371–377.
- GOLDBLATT, P. 2004. A synoptic review of the African genus *Hesperanthes* (Iridaceae: Crocoideae). *Annals of the Missouri Botanical Garden* 90: 390–443.
- GOLDBLATT, P., BERNHARDT, P. & MANNING, J.C. 1998. Pollination of petaloid geophytes by monkey beetles (Scarabaeidae: Rutelinae: Hopliini) in southern Africa. *Annals of the Missouri Botanical Garden* 85: 215–230.
- GOLDBLATT, P., BERNHARDT, P. & MANNING, J.C. 2002a. Floral biology of *Romulea* (Iridaceae: Crocoideae): a progression from a generalist to a specialist pollination system. *Adansonia* 24: 243–262.
- GOLDBLATT, P. & MANNING, J.C. 1999. New species of *Sparaxis* and *Ixia* (Iridaceae: Ixiodeae) from Western Cape, South Africa, and taxonomic notes on *Ixia* and *Gladiolus*. *Bothalia* 29: 59–63.
- GOLDBLATT, P. & MANNING, J.C. 2000. Cape plants. A conspectus of the Cape flora of South Africa. *Strelitzia* 9. National Botanical Institute, Cape Town & Missouri Botanical Garden, St. Louis.
- GOLDBLATT, P., SAVOLAINEN, V., PORTEOUS, O., SOSTARIC, I., POWELL, M., REEVES, G., MANNING, J.C., BARRACLOUGH, T.G. & CHASE, M.W. 2002b. Radiation in the Cape flora and the phylogeny of peacock irises *Moraea* (Iridaceae) based on four plastid DNA regions. *Molecular Phylogeny and Evolution* 25: 341–360.
- LEWIS, G.J. 1962. South African Iridaceae: the genus *Ixia*. *Journal of South African Botany* 27: 45–195.
- MANNING, J.C. & GOLDBLATT, P. 1996. The *Prosoeca peringueyi* (Diptera: Nemestrinidae) pollination guild in southern Africa: long-tongued flies and their tubular flowers. *Annals of the Missouri Botanical Garden* 83: 67–86.
- MANNING, J.C. & GOLDBLATT, P. 1997. *Nieuwoudtville*. South African Wild Flower Guide 9. Botanical Society of South Africa, Cape Town.
- MANNING, J.C. & GOLDBLATT, P. 2001a. Three new species of *Tritoniopsis* (Iridaceae: Crocoideae) from the Cape Region of South Africa. *Bothalia* 31: 175–181.
- MANNING, J.C. & GOLDBLATT, P. 2001b. A synoptic review of *Romulea* (Iridaceae: Crocoideae) in sub-Saharan Africa, the Arabian Peninsula and Socotra, including new species, biological notes, and a new infrageneric classification. *Adansonia* 23: 59–108.
- MANNING, J.C., GOLDBLATT, P. & SNIJMAN, D.A. 2002. *The color encyclopedia of Cape bulbs*. Timber Press, Portland.
- SNIJMAN, D.A. & PERRY, P. 1987. A floristic analysis of the Nieuwoudtville Wild Flower Reserve, north-western Cape. *South African Journal of Botany* 53: 445–454.
- VAN JAARSVELD, E.J. & THOMAS, V. 2003. *Freylinia helmei*. *Flowering Plants of Africa* 58: 112–116, t. 2197.
- VAN WYK, A.E. & SMITH, G.F. 2001. *Regions of floristic endemism in southern Africa: a review with emphasis on succulents*. Umdaus Press, Hatfield, Pretoria.