ORNITHOGALUM KIRSTENII (*ALBUCA* GROUP), A NEW SPECIES FROM WESTERN CAPE, SOUTH AFRICA, AND NEW COMBINATIONS IN THE GROUP

INTRODUCTION

The circumscription of the sub-Saharan genera of Hyacinthaceae has recently undergone substantial revision as a result of molecular studies (Manning *et al.* 2004). One of the more radical changes has been the inclusion within a widely circumscribed *Ornithogalum* L. of all genera previously assigned to the subfamily Ornithogaloideae (Speta 1998), among them the sub-Saharan African and Arabian species segregated as the genus *Albuca* L. *Ornithogalum* in this broad sense is defined by its flattened or angular seeds and distinctly trifid or trifurcate stigma. While sinking these genera into synonymy in an expanded *Ornithogalum* has its critics, the alternative taxonomy consistent with the molecular phylogeny not only requires the recognition of *Albuca*, *Dipcadi*, *Galtonia*, *Neopatersonia* and *Pseudogaltonia*, but also requires several (the final number is uncertain) additional genera to accommodate the sub-Saharan African species currently assigned to *Ornithogalum*, with *Ornithogalum* itself restricted to the Mediterranean and Near East (Speta 1998). Any other taxonomy would render *Ornithogalum* paraphyletic.

The taxonomy of the *Albuca* alliance remains one of the least understood in the Hyacinthaceae. One estimate places the total number of species in the group at ± 60 (Speta 1998) but the most recent listing of the southern African species alone includes 72 current names (Manning & Goldblatt 2003). Many of these will undoubtedly prove to be synonyms. The last complete revision of the southern African species of *Albuca* remains that of Baker (1897) but the revisions of subgenus *Albuca* and subgenus *Falconera* (Salisb.) Baker by Müller-Doblies (1994, 1995), albeit incomplete, represent a substantial advance in our understanding of the genus and provide a basis from which to assess and identify about half of the southern African species currently known. One of their most significant contributions is the proposed division of the species in this alliance into four infrageneric groupings (subgenera).

Albuca subgenus *Falconera*, comprising 19 species from southern Africa, mainly the winter rainfall region of Western Cape, is distinguished by relatively unspecialized inner tepals lacking hinged or hood-shaped apices (Müller-Doblies 1995). The subgenus is further divided into two sections based on the condition of the anthers of the inner whorl of stamens. In section *Falconera* all six stamens are fertile, whereas in section *Trianthera* U.Müll.-Doblies, the stamens of the inner whorl bear rudimentary anthers. Populations of an unusual autumn- and early winter-flowering taxon of section *Falconera* were recently discovered near Swellendam in Western Cape by Kirsten Louw, a young Cape Town naturalist. They represent an unknown species, described here as *Ornithogalum kirstenii*, in memory of his tragic and untimely death in 2005, just weeks after he brought the species to our attention (Cohen *et al.* 2005).

Ornithogalum kirstenii *J.C.Manning & Goldblatt*, sp. nov.

Plantae deciduae (100–)200–300 mm altae, bulbo solitario vel fasciculis parvis conico non profunde infosso vel partim supra terram 15–20(–40) mm diam., tunicis externis tenuiter coriaceis griseis, internis arcte imbricatis albis vel pallide viridibus ubi expositis, foliis 2, inflorentia leviter brevioribus vel subaequalibus linearibus convolutis sed ad apicem teretibus 10–20(–30) × 1.5–3.5 mm succulentibus, in quarta vel tertia parte basali caulem amplectentibus; inflorescentia racemus laxus erectus vel inclinatus parum flexuosus ad apicem in alabastro nutans, (2)3–18-florus; bracteis ovato-acuminatis, 5–7(–10) × 2–3 mm viridibus initio demum pallide brunneis marginibus latis pellucidis, pedicellis patentibus anthesis initio 10–15(–20) mm longis, suberectis ad erectis ubi fructicantibus ad finem 30–50 mm longis; floribus nutantibus flavis carinis viridibus leviter vanillariodoris, tepalis biseriatis laminis externis connatis ad ± 1 mm patentibus oblongo-oblanceolatis 13–15 × 4.0–4.5 mm ad apicem papillosis, internis suberectis leviter divergentibus ubi apertis oblanceolatis concavis 13–14 × 4.5–5.5 mm ad

apicem pauciter tumidis succulentibusque in pagina interiore fascia longitudinali papillarum, staminibus parum dimorphis, externis subteretibus decrescentibus infra leviter expansis canaliculatisque ± 11 mm longis, internis lateraliter expansis; antheris erectis ± 3 mm longis, ovario oblongo ± 4 mm longo cristis paraseptalibus obscuris, stylo columnari trigono transverse ruguloso ± 8 mm longo, stigmate obtuso-trigono papilloso.

TYPE.—Western Cape, 3420 (Bredasdorp): 2 km WSW of Malgas, Farm Malgaskraal, W bank of gulley leading into Breede River opposite Perdekloof, (–BC), 17 April 2005, *J. Manning 2942* (NBG, holo.; K, MO, iso.).

Deciduous geophyte, (100–)200–300 mm high. *Bulb* solitary or in small clusters, conical, shallowly buried or partially epigeal, 15–20(–40) mm diam.; outer tunics thinly leathery, pale grey; inner tunics tightly overlapping, white but pale green when exposed. *Leaves* 2, erect, slightly shorter than or subequal to inflorescence, fleshy but firm-textured, linear-convolute for most of length but terete in apical 5–15 mm, 100–200(–300) × 1.5–3.5 mm, dull green, clasping stem in basal fourth or third. *Inflorescence* an erect or inclined, lax raceme, weakly flexuose, (10–)20–30 mm long, apex nodding in bud, (2)3–18-flowered; bracts ovate-acuminate, 5–7(–10) × 2–3 mm, green when young but soon drying pale brown, with broad transparent margins; pedicels spreading, nodding at tip at anthesis, 10–15(–20) mm long, becoming subsecund in fruit and suberect to erect, lengthening and ultimately 30–50 mm long. *Flowers* pendulous, canary yellow with green tepal keels, faintly vanilla-scented; tepals biseriate with blades of outer series overlapping inner, joined at base for ± 1 mm, outer tepals spreading, oblong-oblanceolate, 13–15 × 4.0–4.5 mm, apices papillate, inner tepals suberect, weakly diverging when fully open, oblanceolate, concave, 13–14 × 4.5–5.5 mm, apices slightly swollen and fleshy with longitudinal band of papillae on inner face. *Stamens* adnate to perianth for ± 1 mm, weakly dimorphic, outer three erect around style, inner three suberect and lying against inner tepals; outer filaments subterete and tapering, slightly widened and channelled in basal third, ± 11 mm long, inner laterally expanded and pinched in lower fifth; anthers erect, ± 3 mm long, cream-coloured. *Ovary* oblong, slightly narrowed at waist, green, ± 4 mm long, paraseptal ridges obscure; style columnar, trigonous, transversely rugulose, yellow, ± 8 mm long, obtuse with trigonous, papillate stigma. *Capsule* narrowly ovoid to flask-shaped, 3-angled, 15–16 × 5.5–6.5 mm. *Seed* angular-pyriform or D-shaped with flattened sides, minutely papillose, dull black, 2.0–2.5 × 1 mm. *Flowering time*: April to June. Figure 18.

Distribution and ecology: known from several populations along the lower reaches of the Breede River Valley and its tributaries near Malgas and De Hoop, south of Swellendam (Figure 19). *Ornithogalum kirstenii* is unique among related species in flowering in the late autumn and early winter. Populations of the species occur on both sides of the Breede River (K. Louw pers. comm.), growing on shale cliffs along gulleys and rivers with the bulbs partially exposed or shallowly buried in the decaying rock on the exposed banks and cuttings. The vegetation on the cliffs is dominated by succulents, especially various Crassulaceae: *Crassula rupestris, Cotyledon orbiculata* and an *Adromischus* species. *O. kirstenii* is restricted to this particular habitat and is not found on the adjacent, more gentle, stony or gravelly slopes that support renosterveld shrubland.

Diagnosis and relationships: among the species of *Ornithogalum* previously segregated as the genus *Albuca,* the pendulous flowers with weakly cucullate inner tepals (not apically hinged nor hooded) and six fertile stamens, place *O. kirstenii* in section *Falconera* of subgenus *Falconera* as defined by Müller-Doblies & Müller-Doblies (1995). Of the fourteen species recognized in this section by Müller-Doblies & Müller-Doblies, just six lack glandular hairs. Among these, *O. clanwilliamaegloria* (U.Müll.-Doblies) J.C.Manning & Goldblatt and *O. fragrans* (Jacq.) J.C.Manning & Goldblatt from Western Cape are distinguished by their smooth styles, *O. bifoliatum* (R.A.Dyer) J.C.Manning & Goldblatt from Eastern Cape by its unique, 3-horned stigma, and *O. angolense* J.C.Manning & Goldblatt (= *Albuca monophylla* Baker) from Angola and Namibia by the single leaf and well-developed, diverging paraseptal ridges on the ovary. This leaves just two species, *O. hesquaspoortense* (U.Müll.-Doblies) J.C.Manning & Goldblatt and *O. robertsonianum* (U.Müll.-Doblies) J.C.Manning & Goldblatt, with which *O. kirstenii* may be confused. Both occur in the Breede River Valley in the general vicinity where *O. kirstenii* has been collected, and both have few or just two leaves, and weakly developed or obsolete paraseptal ridges. These features are all characteristics of *O. kirstenii* but the absence of the types of *O. hesquaspoortense* and *O. robertsonianum* from the herbaria in which they are purported to have been deposited, makes direct comparison with them impossible. The type material of both of these species was, however, apparently collected in the spring, between August and October, rather than in the late autumn or early winter, when *O. kirstenii* flowers. In addition, *O. hesquaspoortense* is distinguished in the protologue from other species by the basally scabrid scape, and *O. robertsonianum* by its thickly fibrous, outer bulb tunics. The scape in *O. kirstenii*, like the leaves, is completely glabrous and the outer bulb tunics are thinly leathery and not at all fibrous. On the available morphological and phenological evidence, therefore, it appears that *O. kirstenii* warrants recognition as a species, at least until more is known about *O. hesquaspoortense* and *O. robertsonianum*.

Other specimens examined

WESTERN CAPE.—3420 (Bredasdorp): 23.5 km along road to De Hoop, shale cliff 300 m S of road, (–AD), 16 May 2005, *C. Cohen s.n.* (NBG); 2 km WSW of Malgas, Farm Malgaskraal, W bank of gulley leading into Breede River opposite Perdekloof, (–BC), 10 April 2005, *K. Louw s.n.* (NBG).

Among the extensive list of new names and combinations in *Ornithogalum* that accompanied the synonymy of *Albuca* (Manning *et al.* 2004), are several that are inadvertently preoccupied. New names for the taxa concerned are provided here.

Ornithogalum glutinosum *J.C.Manning & Goldblatt,* nom. nov., pro *O. hallii* (U.Müll.-Doblies)

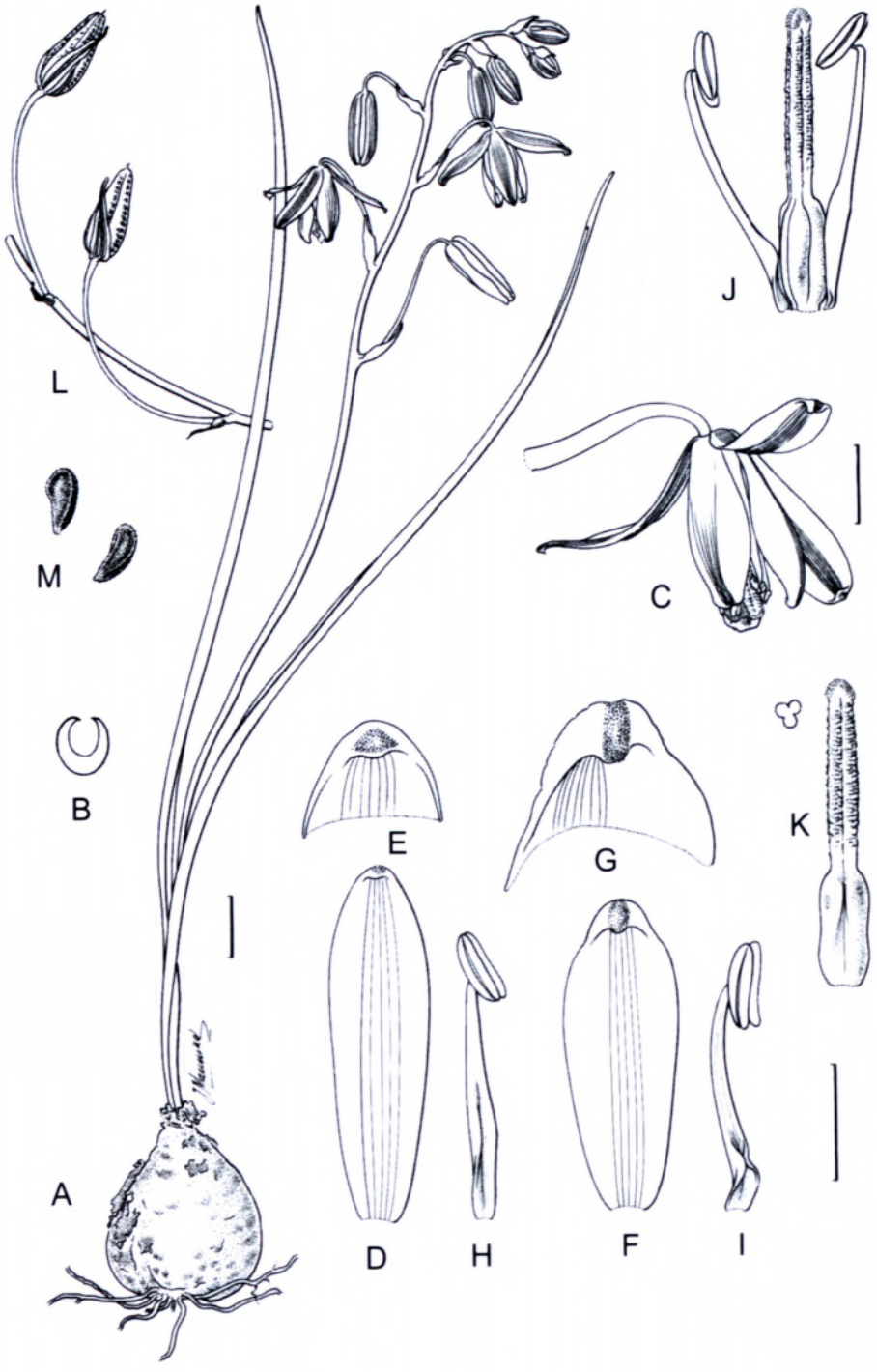

FIGURE 18.—*Ornithogalum kirstenii*, *Manning 2942* (NBG). A, whole plant; B, t/s leaf; C, flower; D, outer tepal; E, apex of outer tepal; F, inner tepal; G, apex of inner tepal; H, outer stamen; I, inner stamen; J, gynoecium and two stamens; K, gynoecium with t/s style; L, capsule; M, seeds. Scale bars: A, L, 10 mm; B–D, F, H–K, M, 5 mm; E, G, 2.5 mm. Artist: John Manning.

J.C.Manning & Goldblatt in J.C.Manning et al. in Edinburgh Journal of Botany 60: 548 (2004), non *O. hallii* Oberm. (1978).

Ornithogalum melleri *Baker* in Journal of the Linnean Society, Botany 13: 280 (1873).

Ornithogalum abyssinicum (Jacq.) J.C.Manning & Goldblatt in J.C.Manning et al. in Edinburgh Journal of Botany 60: 546 (2004), syn. nov., non *O. abyssinicum* Fresen. (1835).

Ornithogalum neopatersonia *J.C.Manning & Goldblatt*, nom. nov., pro *O. uitenhagense* (Schönland) J.C.Manning & Goldblatt in J.C.Manning et al. in Edinburgh Journal of Botany 60: 553 (2004), non *O. uitenhagense* Poelln. (1944).

Ornithogalum soleae *J.C.Manning & Goldblatt*, nom. nov., pro *O. diphyllum* J.C.Manning & Goldblatt in J.C.Manning et al. in Edinburgh Journal of Botany 60: 548 (2004), non *O. diphyllum* Baker (1895).

Ornithogalum volutare *J.C.Manning & Goldblatt*, nom. nov., pro *O. circinatum* J.C.Manning & Goldblatt in J.C.Manning et al. in Edinburgh Journal of Botany 60: 547 (2004), non *O. circinatum* L.f. (1781).

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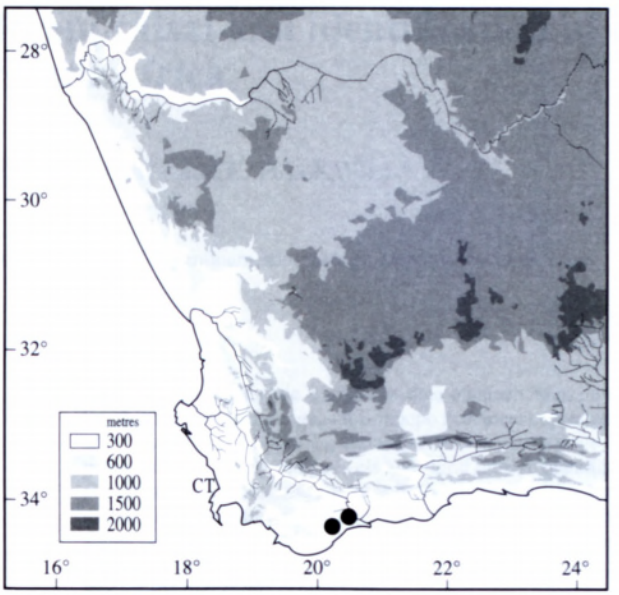

FIGURE 19.—Distribution of *Ornithogalum kirstenii* in Western Cape.

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