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A REVISED GENERIC SYNOPSIS OF *HYACINTHACEAE* IN SUB-SAHARAN AFRICA, BASED ON MOLECULAR EVIDENCE, INCLUDING NEW COMBINATIONS AND THE NEW TRIBE *PSEUDOPROSPEREAE*

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A revised generic synopsis of sub-Saharan *Hyacinthaceae* is presented, based on a molecular phylogenetic analysis of the family. Generic rank is accorded only to reciprocally monophyletic clades that can be distinguished by recognizable morphological discontinuities, thereby permitting an appropriate generic assignment of species not included in the analysis. Three subfamilies are recognized within the region. Subfamily *Ornithogaloideae*, characterized by flattened or angular seeds with tightly adhering testa, is considered to include the single genus *Ornithogalum*, which is expanded to include the genera *Albuca*, *Dipcadi, Galtonia*, *Neopatersonia* and *Pseudogaltonia*. Recognizing any of these segregates at generic level renders the genus *Ornithogalum* polyphyletic, while subdivision of *Ornithogalum* into smaller, morphologically distinguishable segregates in order to preserve the monophyly of each is not possible. Subfamily *Urgineoideae*, characterized by flattened or winged seeds with brittle, loosely adhering testa, comprises the two mainland African genera *Bowiea* and *Drimia*. The latter is well circumscribed by its deciduous, short-lived perianth and includes the previously recognized genera *Litanthus*, *Rhadamanthus*, *Schizobasis* and *Tenicroa*. The monotypic Madagascan *Igidia* is provisionally included in the subfamily as a third genus on the basis of its seeds, pending molecular confirmation of its relationships. Subfamily *Hyacinthoideae* resolves into three clades, distinguished as tribes *Hyacintheae* (strictly northern hemisphere and not treated further), *Massonieae* and *Pseudoprospereae* tribus nov. Full descriptions and a key to their identification are provided for all genera. New combinations reflecting the generic circumscriptions adopted here are made for most African and all Indian and Madagascan species.

Keywords. Africa, *Albuca*, *Dipcadi*, *Galtonia*, *Hyacinthaceae*, molecular systematics, *Ornithogalum*, *Pseudoprospereae*, taxonomy.

INTRODUCTION

Hyacinthaceae, with some 700–900 species (Speta, 1998b; Manning *et al*., 2002), are now established as a monophyletic family within *Asparagales* and probably sister to

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Themidaceae (Chase *et al.*, 2000). The recent use of molecular techniques has resulted in the recognition of four subfamilies, based on analysis of plastid *trn*L-F sequence data and corroborated by phytochemical, morphological and micro-structural data (Speta, 1998a,b; Pfosser & Speta, 1999). This has been a significant advance in the taxonomic understanding of the family. Another significant finding to emerge from these studies is the demonstration that the genus *Scilla* L. is strictly a northern hemisphere taxon and that the southern African species treated within it are appropriately segregated as four separate genera (Speta, 1998a; Pfosser & Speta, 1999). A re-examination of these conclusions, using a larger data set and two chloroplast genes, *trn*L-F and *rbc*L (Manning *et al.*, in prep.), supports the recognition of four subfamilies, the New World *Oziroeoideae* and the Old World *Hyacinthoideae*, *Ornithogaloideae* and *Urgineoideae*. These data do not, however, support the division of *Ornithogaloideae* into the two tribes *Dipcadieae* and *Ornithogaleae* suggested by Speta (1998b).

Oziroeoideae are monogeneric, comprising the only New World representatives of the family. A satisfactory delimitation of genera within the remaining subfamilies, however, has remained elusive (Pfosser & Speta, 1999; Stedje, 2001). The delimitation of the core genus in each (*Scilla*, *Ornithogalum* L. and *Urginea* Steinh., respectively) has proved particularly intractable. Historically, these three genera are poorly delimited assemblages left as a residue after more homogeneous clusters of species have been segregated as separate genera. The phylogenetic analyses of Pfosser & Speta (1999) and Manning *et al.* (in prep.) both reveal that these genera, as understood by past workers, are paraphyletic or polyphyletic assemblages. Speta (1998a, 2001), accepting monophyly as a criterion for defining genera, attempted to resolve this problem by circumscribing the genera very narrowly, recognizing most of the clades revealed by his analyses at this taxonomic level. This has resulted in a substantial increase in the number of generic names in the family. Unfortunately there is little possibility of distinguishing many of these segregate genera on morphological grounds. The lack of good diagnostic characters for many genera of *Hyacinthaceae*, even as traditionally circumscribed, has long been a problem (Stedje, 2001) and remains so with this treatment (Speta, 1998a; Wetschnig & Pfosser, 2003). Another significant limitation of this approach emerged as additional taxa were included in the analysis. In several instances, analysis of the enlarged data sets rendered previously recognized genera paraphyletic (Speta, 2001), resulting in the description of further genera in order to preserve the monophyly of the clades that were retrieved. Six new genera were published in *Urgineoideae* alone (Speta, 2001) subsequent to previous accounts of the subfamily (Speta, 1998a,b). Despite the recognition of an increasingly large number of genera, however, the most recent analysis of the family (Pfosser & Speta, 1999) still demonstrates the paraphyly of certain of the genera recognized, particularly in the tribe *Massonieae*.

Attempts to preserve the generic status of morphologically well-circumscribed groups within the family is to be favoured only so long as it does not violate the demonstrable monophyly of the genera that are recognized. Genera such as *Albuca*

L. and *Galtonia* Decne., that were historically distinguished by their more or less distinctive floral characters, are of some horticultural interest and a desire to preserve them is understandable. In striving for this it is tempting to presume that certain nodes in the phylogram are recognized *a priori* to represent genera, rather than assess the analysis *a posteriori* for potential coincidences between clades and morphological discontinuities. Presuming the generic status of the nodes in question leads inevitably to the elevation of other clades to generic status, following the principle that taxa are monophyletic lineages, sometimes with limited or no morphological support. Essentially, therefore, the proliferation of genera in this approach is limited only by the availability of taxa for analysis. The result of this practice is a system that is not only divorced from practical utility but which obscures relationships between taxa rather than emphasizing them.

The alternative approach that we adopt here is a more inclusive one that emphasizes the relationships between species. The resulting classification is derived from the phylogenetic analysis by Manning *et al*. (in prep.) (Fig. 1), based on a wide-ranging sampling of the taxa in sub-Saharan Africa, where *Hyacinthaceae* are most diverse, including most of the segregate genera and several unusual species. We adopt a circumscription of genera that combines recognizable morphological synapomorphies with reciprocal monophyly of the clades. This approach is justified on practical and philosophical grounds in that it facilitates the appropriate placement of species within distinguishable genera while reflecting their broader phylogenetic relationships. Apart from the primary principle of monophyly in a phylogenetic classification, Backlund & Bremer (1998) proposed as secondary principles that a classification should also maximize stability, phylogenetic information, support for monophyly and ease of identification. The generic classification proposed here accords more comfortably with these principles than the current systems. In practice it has meant re-evaluating the types of characters used to circumscribe genera in the family. The result of this approach has been to reduce the number of genera recognized in sub-Saharan Africa, Madagascar and India to 15, compared with the 45 recognized by Speta (1998a,b, 2001).

Floral characters alone, on which many of the genera in *Hyacinthaceae* are traditionally based, may be unreliable indicators of generic boundaries due to the selective pressure of pollination strategies, as was revealed in a recent analysis of the genera allied to *Moraea* Mill. (*Iridaceae*) (Goldblatt *et al*., 2002). There is thus little or no justification for assuming that discontinuities in floral morphology represent the most significant discontinuities in the phylogeny of a group until this has been tested by phylogenetic analysis. The recent analysis of the subtribe *Strobilanthinae* (*Acanthaceae*) by Carine & Scotland (2002) revealed an analogous situation. This reluctance to accept floral diversity within genera of *Hyacinthaceae* finds expression in the description of an enlarged circumscription of *Drimia* as a 'Monstergattung' (Speta, 1998a). Other authors who favour a broader circumscription of genera, however, are comfortable that this circumscription of the genus does not justify regarding it as a 'rag-bag' taxon with highly heterogeneous elements (Stedje, 2001).

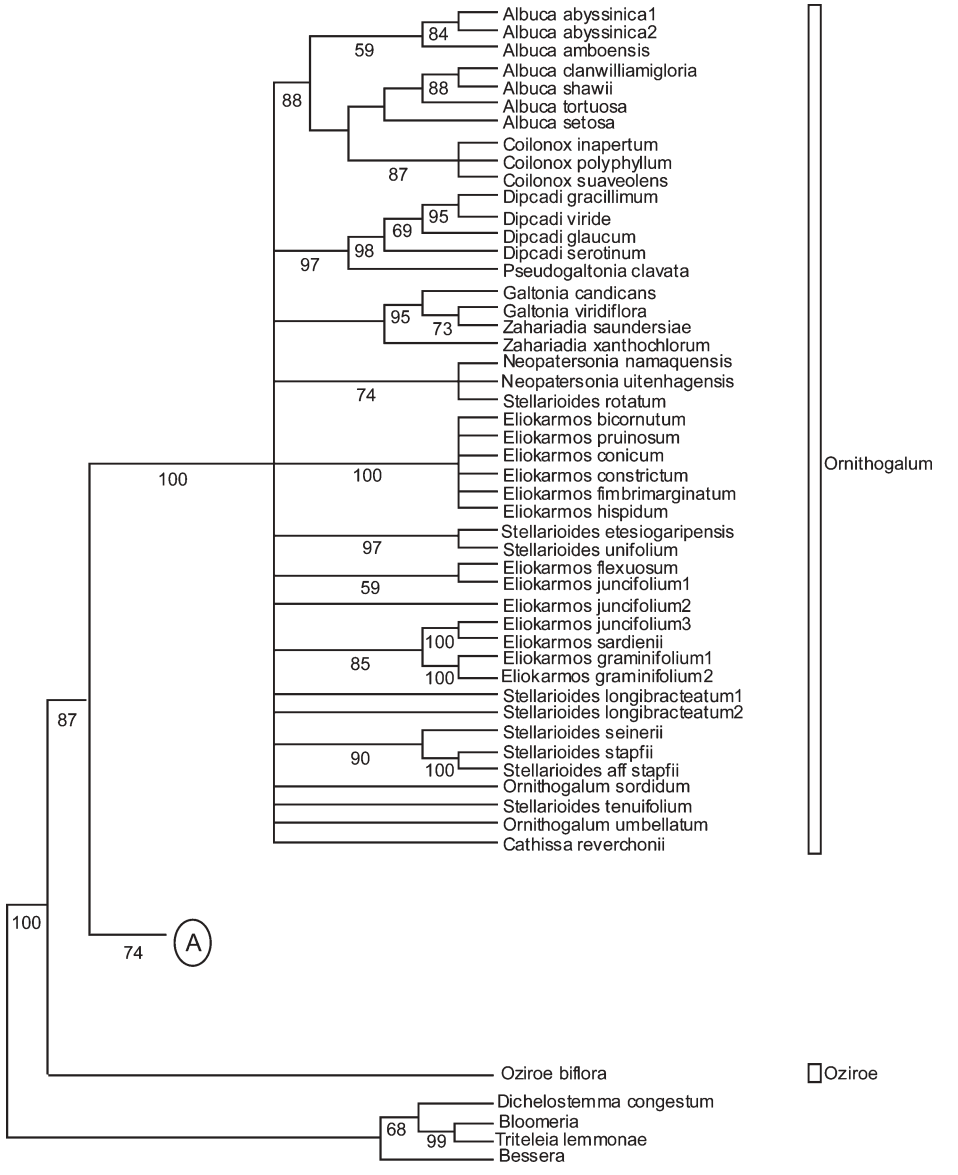

FIG. 1. Strict consensus of 980 trees for the combined *trn*L-F and *rbc*L matrix (CI = 0.59, RI = 0.83). Numbers below branches indicate bootstrap support values. Terminal taxa are labelled according to the generic concepts of Speta (1998a, 2001). Open bars indicate the generic circumscriptions followed here. The three tribes recognized within subfamily *Hyacinthoideae* are also shown.

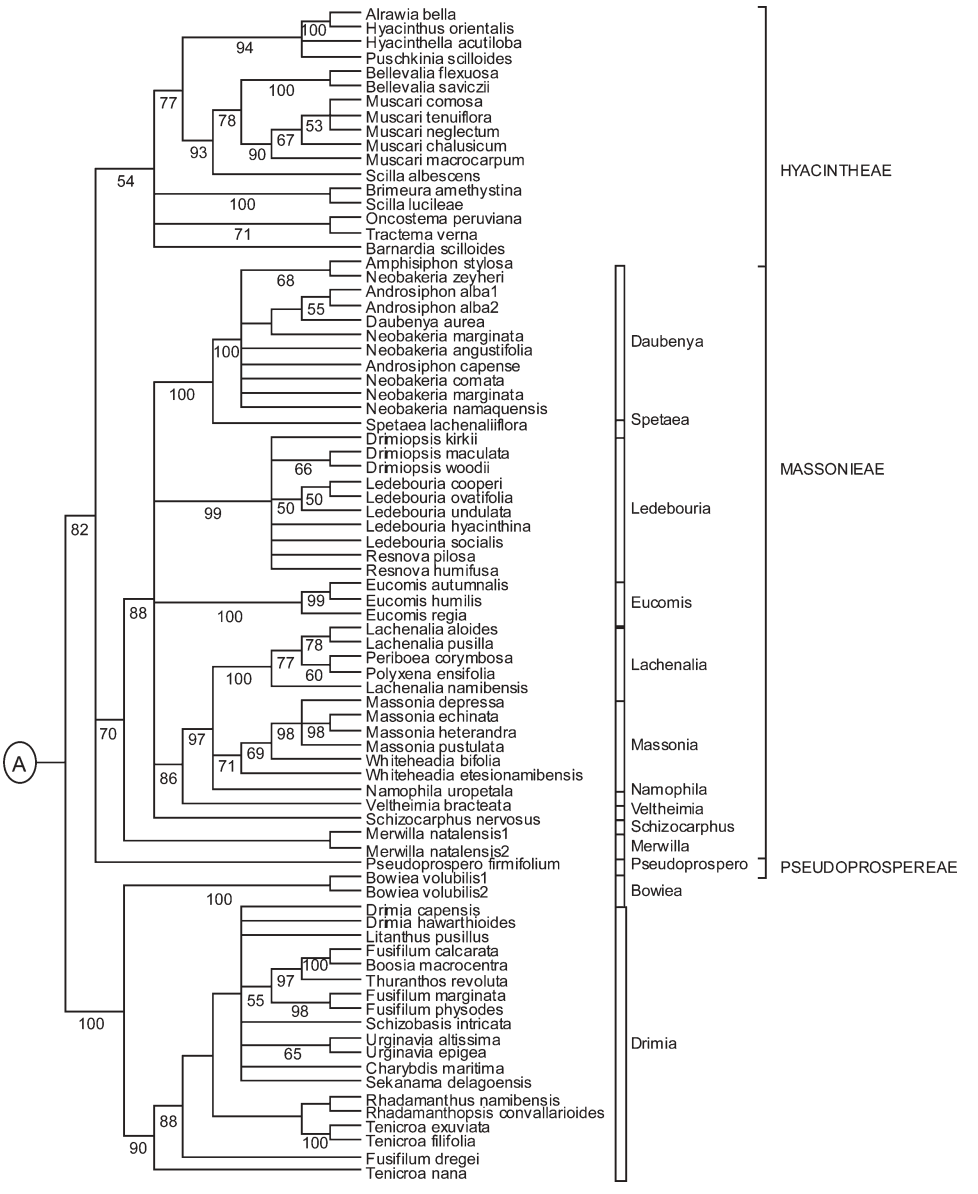

FIG. 1. (*Cont'd*).

A similar observation must now be made for the novel, and greatly expanded, circumscription of *Ornithogalum* proposed here. Including florally distinct segregates such as *Albuca*, *Dipcadi* Medik. and *Galtonia* within *Ornithogalum* may at first sight appear a radical approach but it actually increases by relatively little the diversity that has long been accepted within the genus when the true range of floral form within *Ornithogalum* is fully appreciated. Many of the more unusual species of *Ornithogalum* are rare endemics of the southern African winter-rainfall region and

thus unfamiliar to most students of the family. An awareness of their existence makes the decisions derived from the phylogenetic analysis much more credible.

Taxonomic conclusions

Ornithogaloideae

This subfamily is here considered to comprise the single genus *Ornithogalum*, distinguished by its flattened or angular seeds with closely adhering testa and more or less trifid (rarely capitate) stigma. The exception to this morphological circumscription comprises the three species previously segregated as the genus *Neopatersonia* Schönland, which have subglobose seeds but whose affinities clearly lie with species of *Ornithogalum*. As circumscribed in this way *Ornithogalum* is the largest of the sub-Saharan genera and possibly the largest in the family. Any practical division of the genus into monophyletic clades in order to retain all or some of the more distinctive segregates that have traditionally been recognized, particularly *Albuca*, *Dipcadi* and *Galtonia*, is not possible without leading to a proliferation of genera that are morphologically poorly circumscribed. The alternative, recognizing a single large genus for subfamily *Ornithogaloideae*, is a radical one that it would have been preferable to avoid if possible. Increased sampling within the diverse *Ornithogalum* subg. *Urophyllon* (Salisb.) Baker (= *Stellarioides* Medik.), however, reduces resolution within the clade to a single polytomy in the strict consensus tree (Fig. 1), highlighting the highly heterogeneous nature of this taxon. Obermeyer (1978), in her monograph of the southern African species of *Ornithogalum*, was able to delimit certain groups within the genus on the basis of the relatively homogeneous nature of their capsules and seeds. These included *Ornithogalum* subg. *Osmyne* (Salisb.) Baker and two groups within subgenus *Aspasia* (Salisb.) Oberm., each of which is retrieved as monophyletic in the molecular analysis, but not subgenus *Urophyllon*, which displays great diversity in seed and fruit morphology and is demonstrated to be polyphyletic in the analysis. None of the remaining generic segregates recognized within the *Ornithogaloideae* is retrieved as monophyletic, emphasizing their phylogenetically heterogeneous nature. The genus *Albuca* is paraphyletic unless it includes the species of *Ornithogalum* subg. *Osmyne* (= *Coilonox* Raf.). The similarity between *Ornithogalum* subg. *Osmyne* and *Albuca* has been noted in the past (Obermeyer, 1978). Both share similar, firm-textured, fragrant flowers that close at night, greenish or white tepals with broad, dark green midribs, and relatively large circular or D-shaped seeds. The alternative, segregating *Albuca abyssinica* Jacq. and *A. amboensis* (Schinz) Oberm. as yet another genus, renders the distinction between the three groups even less easy to maintain. The genus *Galtonia* is paraphyletic unless it includes the species *Ornithogalum saundersiae* Baker. This highly distinctive species is recognized by its large stature, broad flaccid leaves, and firm-textured white tepals that do not close at night. It has usually been associated with *Ornithogalum xanthochlorum* Baker (either as series *Xanthochlora* U. Müll.-Doblies

& D. Müll.-Doblies of *Ornithogalum* subg. *Urophyllon*, or in the invalid genus *Zahariadia* Speta). Our analysis retrieves *O. xanthochlorum* as sister to a clade comprising *Galtonia* and *O. saundersiae*. The latter is embedded within the genus *Galtonia*. The two are vegetatively very similar and a sister-species relationship between them is easily envisaged. If *Galtonia* is expanded to include *O. saundersiae*, the genus becomes difficult to circumscribe and certainly ceases to be recognizable on the traditional basis of its pendent, campanulate flowers. Furthermore, an additional monotypic genus will be required to accommodate *O. xanthochlorum*. The two species of *Neopatersonia* Schönland included in the analysis form a trichotomy with *Ornithogalum rotatum* U. Müll.-Doblies & D. Müll.-Doblies. *Ornithogalum rotatum* is a highly unusual species having campanulate flowers with a distinct perianth tube and basally connate filaments inserted in the mouth of the tube. These features, along with the rather glaucous leaf, are shared with *Neopatersonia*. Florally and vegetatively there is a much greater congruence between *Neopatersonia* and *O. rotatum* than between this species and other species of *Ornithogalum* and there is no reason to doubt this association. *Ornithogalum rotatum*, however, lacks the globose seeds, anomalous within the subfamily, that are such a characteristic feature of *Neopatersonia*, and including it within *Neopatersonia* removes this feature as an apomorphy for the genus. The close relationship that is indicated between *Dipcadi* and *Pseudogaltonia* Kuntze is reflected in their similar pendent, tubular flowers with short filaments. Continued recognition of these genera, however, would demand that various lineages within *Ornithogalum* subg. *Urophyllon* be recognized at generic level in order to maintain the monophyly of genera in the family. These include several species currently included in the genus *Stellarioides*. Recognition of the various monophyletic lineages is best done at an infrageneric level and requires more complete data before it becomes feasible.

The generic segregates *Albuca*, *Dipcadi*, *Galtonia*, *Neopatersonia* and *Pseudogaltonia* are recognized by their distinctive floral morphologies, most of which can now be inferred to be syndromes reflecting different pollination systems. The tubular flowers of *Pseudogaltonia* and *Dipcadi*, with their nocturnal fragrance, are clearly adapted to moth pollination, a system that is occasionally developed in other members of the *Ornithogalum* clade, whereas the flowers in *Albuca* represent a sophisticated floral morphology that encourages outbreeding (Klingston, 1998). Understanding that these distinctive floral forms are morphological syndromes developed in association with diverse pollination strategies opens the way to accepting that they reflect adaptive modes that have been exploited by groups of related species rather than representing generic boundaries.

Urgineoideae

This subfamily is readily recognized by the characteristic spurs on the lower bracts in the inflorescence and by its apomorphic flattened or winged seeds with a testa that is not tightly adherent to the endosperm. These two characters were first used

by Jessop (1975), and later by Obermeyer (1980), to distinguish the genera in this clade from others in the family, either as tribe *Bowieae* Hutch. (Jessop, 1975) or as subtribe *Caudebracteatinae* ['*Caudebracteateae*'] Oberm. (Obermeyer, 1980). Within *Urgineoideae*, the monotypic *Bowiea* Harv. ex Hook.f. emerges as sister to the remaining species and can be distinguished by the combination of an apomorphic, highly ramified inflorescence and plesiomorphic long-lived perianth that persists at the base of the fruit. The remaining continental African species comprise a monophyletic lineage that is well circumscribed by the deciduous, short-lived perianth. In this broad circumscription the genus *Drimia* comprises some 100 species and includes the small segregate genera *Litanthus* Harv., *Rhadamanthus* Salisb. and *Schizobasis* Baker that have been maintained by most workers, including those favouring a wider delimitation of *Drimia* (Jessop, 1977; Stedje & Thulin, 1995). It also includes the Madagascan genus *Rhodocodon* Baker (Pfosser & Speta, 2001: fig. 36), which was treated as a synonym of *Rhadamanthus* by Speta (1998a). This broadly inclusive concept of *Drimia* was first proposed for the Cape Flora by Goldblatt & Manning (2000) and has subsequently been extended to the rest of the southern African flora (Manning & Goldblatt, 2003). A less inclusive concept, uniting the genus *Urginea* Steinh. with *Drimia* in the strict sense but retaining several of the smaller segregates (Jessop, 1977; Stedje & Thulin, 1995), is not possible if the monophyly of these genera is to be maintained. Although the genus *Rhadamanthus* is retrieved as monophyletic, *Tenicroa* Raf. is paraphyletic unless *T. nana* Snijman is segregated as a monotypic genus, and the recently revived segregate *Fusifilum* Raf. (which includes several of the southern African species previously placed in *Urginea*) is very evidently polyphyletic.

The status of the Madagascan *Urginea volubilis* H. Perrier is less easy to establish. Described by Perrier de la Bathie (1938), and later regarded by Speta (1998a,b) as a monotypic genus *Igidia* Speta within *Urgineoideae*, this species is not readily placed in either of the two genera of *Urgineoideae* that we recognize. The persistent perianth precludes its inclusion in *Drimia* but it does not resemble the genus *Bowiea* particularly either. Furthermore, it is anomalous in the entire subfamily in lacking the spurred bracts that are found in all other species (with the apparent exception of *D. nana* (Oyewole) J.C. Manning & Goldblatt) and in the chromosome number $2n = 14$ (Jones & Smith, 1967) rather than $2n = 18$ or 20. It is essentially on the basis of its highly compressed and winged seeds that it is included in *Urgineoideae* at all rather than in *Ornithogaloideae*. Pending evidence from molecular data, however, we retain it here.

Hyacinthoideae

The subfamily *Hyacinthoideae* comprises the bulk of the species in the family. It resolves into three clades of a trichotomy, one constituting the species first described as *Scilla firmifolia* Baker but distinguished by Speta (1998a) as the monotypic genus

Pseudoprospero Speta. The second clade comprises all of the northern hemisphere taxa around *Scilla* in the strict sense. The third clade contains the remaining African taxa. The northern hemisphere genera were treated as tribe *Hyacintheae* Dumort. and the sub-Saharan genera were regarded as comprising tribe *Massonieae* Baker (Speta, 1998a). This treatment is adopted here with one exception. Tribe *Massonieae* is only monophyletic with the exclusion of *Pseudoprospero*, which is therefore treated here as comprising the separate tribe *Pseudoprospereae* (Fig. 1). The northern hemisphere *Hyacintheae* will not be considered further in this study.

Within the African *Massonieae*, the three eastern South African species centred round *Scilla natalensis* Planch., and segregated by Speta (1998a) as the genus *Merwilla* Speta, resolve as sister to the remaining species. *Merwilla* is readily distinguished from other genera in the family by its dull beige or pale brown seeds that are unlike the glossy black or brownish black seeds of other genera in the tribe. The remaining species resolve into a polychotomy comprising five clades (Fig. 1) in a topology that does not support further subdivision into the three subtribes *Ledebouriinae*, *Lachenaliinae* and *Massoniinae* proposed by Müller-Doblies & Müller-Doblies (1997). Recognizing any of these subtribes would require the recognition of further subtribes to reflect the monophyly of the clades resolved in the analysis. The small number of genera involved does not justify this.

The first of these clades comprises the single polymorphic species first segregated by Van der Merwe (1943) as the genus *Schizocarphus* Van der Merwe. It is distinguished morphologically by its fibrous outer bulb tunics, the presence of bracteoles and by the bluish ovary with two ovules in each locule. A second clade comprises the small genus *Eucomis* L'Hér., the status of which has never been questioned. A third branch has *Spetaea lachenaliiflora* Wetschnig & Pfosser (long misidentified as *Scilla plumbea*) as sister to a polychotomy comprising species that in the past were assigned to several small genera but which have recently been combined into the single genus *Daubenya* Lindl. (Goldblatt & Manning, 2000; Manning & Van der Merwe, 2002). In this expanded sense, *Daubenya* includes an assemblage of species that are florally extremely diverse but vegetatively very similar, sharing two spreading leaves that are striate on the upper surface, tubular flowers that are aggregated between the leaves on a condensed peduncle, and the apomorphic chromosome number of $2n = 32$ or 34. *Spetaea lachenaliiflora*, which has narrow, convolute leaves and an elongate scape bearing bright blue flowers, is morphologically distinct from this assemblage and has a chromosome number of $2n = 20$.

A fourth clade includes the species traditionally placed in the genera *Ledebouria* Roth and *Drimiopsis* Lindl. & Paxton (sometimes further subdivided into *Drimiopsis* in the strict sense plus *Resnova* Van der Merwe). This clade is not further resolved and provides no support for recognizing more than a single genus. In this broader sense, *Ledebouria* therefore includes both *Drimiopsis* and *Resnova* and is circumscribed by the lack of bracteoles and by its globose or top-shaped ovary containing two ovules per locule. In addition most species have spotted leaves and often produce more than a single inflorescence per plant in one growing season, and the

bulb scales are often rather loosely packed and in many species produce fine threads when torn. The distinction between *Ledebouria* and *Resnova* is a qualitative one based on the orientation of the tepals, whereas the flower form in *Drimiopsis* appears to be an adaptation to wasp pollination (pers. obs.). We also include in *Ledebouria* the two Madagascan species described as *Scilla nossibeensis* H. Perrier and *Hyacinthus cryptopodus* Baker. *Scilla nossibeensis*, in its stipitate, hexagonal and horned ovary with a pair of ovules in each locule and top-shaped capsule with a single ovoid seed in each locule, is consistent with our circumscription of this genus. The inclusion of *Hyacinthus cryptopodus* is less certain but the one or two globose seeds per locule and loose bulb scales that produce fibres when torn suggest that it may belong in *Ledebouria*. It is placed here pending further evidence. Both of these Madagascan species are distinctive in *Ledebouria* in their tubular flowers.

The final clade, also characterized by the complete absence of bracteoles, comprises the genera centred around *Lachenalia* J. Jacq. Within this group three main clades are retrieved as a trichotomy. The first comprises the monotypic *Namophila* U. Müll.-Doblies & D. Müll.-Doblies, and the second *Lachenalia* plus *Polyxena* Kunth. The genera *Lachenalia* and *Polyxena* are distinguished by their biseriate stamens with the two series inserted at different heights, but the distinction between the two rests solely on the relative fusion of the perianth (Manning *et al.*, 2002). The species of *Polyxena* form a monophyletic clade nested within *Lachenalia* and recognition of the genus renders *Lachenalia* paraphyletic. *Polyxena* is therefore appropriately included within the circumscription of *Lachenalia*. The alternative, segregating the genus *Lachenalia*, is unlikely to prove possible and is not recommended. The third clade resolves the genus *Veltheimia* Gled. as sister to a small clade comprising the two species of *Whiteheadia* Harv. paraphyletic to the species of *Massonia* Thunb. ex Houtt. Maintaining the genus *Massonia* in this strict sense renders *Whiteheadia* paraphyletic, and there is little to be served by recognizing another monotypic genus for *Whiteheadia etesionamibensis* U. Müll.-Doblies & D. Müll.-Doblies to avoid this. *Whiteheadia* is therefore included within a slightly expanded circumscription of *Massonia*, which is recognized by its paired, prostrate leaves and filaments that are united at the base.

Diagnostic descriptions of the genera that we recognize are presented below, along with a dichotomous key to distinguish them. New combinations are made for most of the species that are affected. Recent floristic treatments are lacking for parts of tropical Africa, especially west and central tropical Africa, and there is little point in making numerous combinations for species that may turn out to be synonymous with others upon critical examination. New combinations are accordingly made only for type species of genera that are regarded as synonymous with others, and for species that are treated in the more recent accounts for southern Africa (Manning & Goldblatt, 2003), tropical east and north-east Africa (Stedje & Thulin, 1995; Stedje, 1996), Madagascar (Perrier de la Bathie, 1938) and India (Deb & Dasgupta, 1981). Combinations are also made for the European and Indian species of *Ornithogaloideae* and *Urgineoideae* listed by Speta (1998a, 2001). These treatments

provide complete, relatively modern lists of species currently recognized in these genera.

KEY TO THE GENERA OF *HYACINTHACEAE* IN SUB-SAHARAN AFRICA

1a. Bracts (at least the lower) usually spurred, sometimes deciduous; leaves often dry at flowering; testa brittle, loose, forming a peripheral wing; bulb of more or less overlapping scales, often pinkish (subfamily *Urgineoideae*) ——— 2

1b. Bracts never spurred, persistent; leaves mostly green at flowering; testa tightly adhering; bulb usually of sheathing tunics, sometimes of overlapping scales ——— 4

2a. Flowers short-lived, usually lasting at most a single day, rarely up to 2 days; tepals often connate below, circumscissile and caducous, twisted and cohering above when faded; inflorescence erect or branched but then stiff or wiry ——— **4. Drimia**

2b. Flowers long-lived, lasting 2–3 days; tepals free, persistent in fruit; inflorescence more or less twining and fleshy ——— 3

3a. Raceme simple; bracts not spurred; capsule turbinate and deeply 3-winged ——— **2. Igidia**

3b. Raceme branched; lower bracts spurred; capsule ovoid ——— **3. Bowiea**

4a. Seeds flattened or angled, rarely globose but then stigma trifurcate; stigma more or less trifid or capitate (subfamily *Ornithogaloideae*) **1. Ornithogalum**

4b. Seeds ellipsoid or globose to pear-shaped; stigma penicillate (subfamily *Hyacinthoideae*) ——— 5

5a. Flowers rotate, tepals united only at base, whitish to pink or blue; pedicels subtended by both a well-developed bract and a smaller bracteole ——— 6

5b. Flowers various but if rotate then pedicels subtended by a single bract or apparently bractless ——— 8

6a. Bulb tunics fibrous or cartilaginous and decaying above into firm fibres that form a neck; leaves firm-textured or fibrotic with cartilaginous margins; flowers white with a dark bluish ovary ——— **7. Schizocarphus**

6b. Bulb tunics cartilaginous or papery but not fibrous above; leaves leathery without cartilaginous margins; flowers pink to blue with a pale greenish ovary ——— 7

7a. Flowers blue, rarely lilac; ovary with several ovules per locule; fruit obovoid; seeds beige or pale brown ——— **6. Merwilla**

7b. Flowers whitish to lilac; ovary with 2 ovules per locule; fruit turbinate with 3 prominent lobes above; seeds black ——— **5. Pseudoprospero**

8a. Bracts vestigial or lacking; ovules (1)2 per locule, apparently basal; leaves usually spotted; bulb scales often loose and producing threads when torn ——— **8. Ledebouria**

8b. Bracts well developed, at least on the upper flowers; ovules 2 or more per locule, clearly axile; leaves plain or spotted; bulb tunics tightly adhering, never producing threads when torn ——— 9

9a. Filaments inserted in two series at different levels, never fused below; lower bracts often reduced; plants with a well-developed, tubular, membranous cataphyll ——— **13. Lachenalia**

9b. Filaments inserted in one series, either at the same level or obliquely, often fused below; bracts always well developed; plants without a prominent membranous cataphyll ——— 10

10a. Leaves 2 to several, usually ascending; inflorescence distinctly pedunculate ——— 11

10b. Leaves 2, spreading or prostrate; inflorescence not distinctly pedunculate — 13

11a. Flowers blue (rarely lilac); leaves convolute; capsules obovoid or turbinate and firm-textured ——— **14. Spetaea**

11b. Flowers pink or whitish or greenish, sometimes mottled with pink to purple; leaves flat or channelled; capsules ovoid and 3-lobed or -winged, firm-textured or papery ——— 12

12a. Inflorescence topped by a coma of leafy bracts longer than the flowers; flowers campanulate with stamens inserted near base of tepals; ovules 6–7 per locule ——— **9. Eucomis**

12b. Inflorescence not topped by a coma of leafy bracts; flowers tubular with stamens inserted obliquely near middle of tube; ovules 3–4 per locule ——— **10. Veltheimia**

13a. Leaves firm and glossy with impressed longitudinal striations; bulb tunics decaying above into a neck of narrow, flat, papery segments; bracts usually shorter than flowers ——— **15. Daubenya**

13b. Leaves coriaceous or somewhat succulent and matte, smooth, pustulate or setose; bulb tunics not decaying above into narrow segments; bracts usually as long as or longer than flowers ——— 14

14a. Tepals caudate; capsule narrowly ovoid, not distinctly 3-lobed, remaining enclosed by the perianth at maturity ——— **11. Namophila**

14b. Tepals acute but never caudate; capsule obtriangular and deeply 3-angled or -winged, exposed from the withered perianth at maturity ——— **12. Massonia**

Subfamily **Ornithogaloideae** Speta, Phyton 38: 53 (1998). Type: *Ornithogalum* L.

1. Ornithogalum L., Sp. pl.: 306 (1753). Type: *Ornithogalum arabicum* L.

Albuca L., Sp. pl. ed. 2: 438 (1762), **syn. nov.** Type: *Albuca major* L., lectotype, designated here (= *Ornithogalum maximum* (Burm.f.) J.C. Manning & Goldblatt).

Stellarioides Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 369 (1790). Type: *Stellarioides canaliculata* Medik. (= *Ornithogalum longibracteatum* Jacq.).

Dipcadi Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 431 (1790), **syn. nov.** Type: *Dipcadi serotinum* (L.) Medik., *Hyacinthus serotinus* L. (= *Ornithogalum serotinum* (L.) J.C. Manning & Goldblatt).

Honorius Gray, Nat. arr. Brit. pl. 2: 177 (1821). Type: *Honorius nutans* (L.) Gray (= *Ornithogalum nutans* L.).

Melomphis Raf., Fl. tellur. 2: 21 (1837), nom. illeg., superf. Type: *Melomphis arabica* (L.) Raf. (= *Ornithogalum arabicum* L.).

Eliokarmos Raf., Fl. tellur. 2: 24 (1837). Type: *Eliokarmos thyrsoides* (Jacq.) Raf. (= *Ornithogalum thyrsoides* Jacq.).

Loncomelos Raf., Fl. tellur. 2: 24 (1837). Type: *Loncomelos pyrenaicus* (L.) Hrouda ex Holub (= *Ornithogalum pyrenaicum* L.).

Coilonox Raf., Fl. tellur. 2: 28 (1837). Type: *Coilonox albucoides* (Aiton) Raf., *Anthericum albucoides* Aiton (= *Ornithogalum suaveolens* Jacq.).

Cathissa Salisb., Gen. pl.: 34 (1866). Lectotype: *Cathissa concinna* (Salisb.) Speta (= *Ornithogalum concinnum* Salisb.).

Galtonia Decne., Fl. Serres Jard. Eur. 23: 32 (1880), **syn. nov.** Type: *Galtonia princeps* (Baker) Decne., *Hyacinthus princeps* Baker (= *Ornithogalum princeps* (Baker) J.C. Manning & Goldblatt).

Pseudogaltonia (Kuntze) Engl. in Engl. & Prantl, Nat. Pflanzenfam. 2, Abt. 5: 158 (1888), **syn. nov.** Type: *Pseudogaltonia pechuelii* (Kuntze) Engl., *Hyacinthus pechuelii* Kuntze (= *Ornithogalum clavatum* (Mast.) J.C. Manning & Goldblatt).

Lindneria T. Durand & Lubbers, Bull. Soc. Bot. France 36: 217 (1899), **syn. nov.** Type: *Lindneria fibrillosa* T. Durand & Lubbers (= *Ornithogalum clavatum* (Mast.) J.C. Manning & Goldblatt).

Neopatersonia Schönland, Rec. Albany Mus. 2: 251 (1912), **syn. nov.** Type: *Neopatersonia uitenhagensis* Schönland (= *Ornithogalum uitenhagense* (Schönland) J.C. Manning & Goldblatt).

Avonsera Speta, Phyton 38: 95 (1998), **syn. nov.** Type: *Avonsera convallarioides* (H. Perrier) Speta (= *Ornithogalum convallarioides* H. Perrier).

Zaharadia Speta in Kubitzki, Fam. Gen. Fl. Pl. 3: 275 (1998), nom. invalid. sine descr. latin.

Deciduous or rarely evergreen; *bulb* subterranean or epigeal, subglobose or rarely poorly developed and rootstock rhizomatous, tunics sometimes scale-like or loosely overlapping, rarely fragmenting into wedge-shaped segments, usually white but rarely pinkish; outer bulb tunics membranous, papery or leathery. *Leaves* 1 to several, green or dry at flowering, erect or spreading, linear to oblong or filiform, sometimes very succulent, usually glabrous but sometimes pubescent or glandular-pubescent, margins smooth, ciliate, fringed, or hyaline, sheaths sometimes persistent and forming a papery or weakly to strongly fibrous, sometimes horizontally barred

sheath around base of stem. *Inflorescence* a several- to many-flowered raceme, sometimes subcorymbose with shortened axis, or secund, usually solitary but sometimes more than one; peduncle rarely papillate; bracts membranous or leafy, small or large, not spurred; bracteoles usually lacking but sometimes thread-like and borne on alternate sides of pedicels at base; pedicels short or long. *Flowers* white, yellow, orange, or yellowish green, with or without darker keels, scented or unscented, sometimes closing at night or more rarely nocturnal, suberect, patent or nodding, rotate, campanulate or more or less tubular, rarely weakly zygomorphic; *tepals* ovate to narrowly lanceolate, persistent, more or less shortly united at base or less commonly united into a distinct tube, spreading to erect, sometimes with tips reflexed, sometimes weakly to markedly dimorphic, the inner sometimes erect and more or less connivent around stamens and style and cupped or hooded and papillate at tips or developing a fleshy apical knob or flap that can be conspicuously hinged, the outer sometimes with a caudate apical appendage; *stamens* suberect or lightly spreading, filaments free or rarely united below, fused to base of tepals or inserted at top of tube, filiform to lanceolate, all similar or inner usually broader, both whorls or more usually inner variously expanded or toothed below, rarely membranous and closely appressed to perianth when anthers apparently sessile; anthers of outer stamens sometimes smaller or vestigial or absent; *ovary* ovoid to globose or turbinate, sometimes shortly stipitate, rarely with 3 apical knobs, smooth or with distinct paraseptal crests; ovules few to many per locule; style vestigial to long, cylindrical and sometimes slightly deflexed or subcylindrical or more or less trigonous or prismatic and then strongly papillate; stigma small and 3-lobed or -angled or pyramidal to large and capitate and then distinctly papillate and sometimes fringed with longer papillae. *Capsule* fusiform, ovoid to globose, more or less 3-angled or -lobed, membranous or leathery, enclosed in dry perianth or exposed, dehiscing loculicidally; *seeds* few to many per locule, flattened or angled to discoid, sometimes stacked tightly one on top of another, black, testa tightly adhering. $x=9$, other base numbers 12, 11, 8, 7, 6, 4.

About 200 species in Africa, Madagascar, Mediterranean, Saudi Arabia and India; mainly in the winter-rainfall areas of southern Africa, including 70 species in the Western Cape, South Africa. Most of the traditionally recognized segregate genera are based on floral syndromes adapted to specialist pollinators, including moths and megachilid bees.

Species previously placed in Albuca

Ornithogalum abyssinicum (Jacq.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca abyssinica* Jacq., Icon pl. rar. 1: t. 64 (1783).

Ornithogalum albanense J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca longifolia* Baker, Rec. Albany Mus. 1: 91 (1903), non *Ornithogalum longifolium* (Lindl.) J.C. Manning & Goldblatt (2004).

Ornithogalum acutum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca acuminata* Baker, Rec. Albany Mus. 1: 90 (1903), non *Ornithogalum acuminatum* Baker (1870) (= *O. tenuifolium* F. Delaroche).

Ornithogalum angolense J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca monophylla* Baker, Trans. Linn. Soc. London, Bot. 1: 251 (1878), non *Ornithogalum monophyllum* Baker (1897).

Ornithogalum aristatum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca caudata* Jacq., Collectanea 4: 203 (1791), non *Ornithogalum caudatum* Aiton (1789) (= *O. longibracteatum* Jacq.).

Ornithogalum auratum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca aurea* Jacq., Collectanea 4: 202 (1791), non *Ornithogalum aureum* Curtis (1792) (= *O. dubium* Houtt.).

Ornithogalum battenianum (Hilliard & B.L. Burtt) J.C. Manning & Goldblatt, **comb. nov.** *Albuca batteniana* Hilliard & B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 42: 247 (1985).

Ornithogalum baurii (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca baurii* Baker, Fl. cap. 6: 459 (1897).

Ornithogalum bifoliatum (R.A. Dyer) J.C. Manning & Goldblatt, **comb. nov.** *Albuca bifoliata* R.A. Dyer, Rec. Albany Mus. 4: 113 (1931).

Ornithogalum bulbilliferum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca prolifera* J.H. Wilson, Gard. Chron. 1: 396 (1898), non *Ornithogalum proliferum* Jord. & Fourr. (1866) (= *O. divergens* Sanguin.).

Ornithogalum circinatum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca spiralis* L.f., Suppl.: 196 (1782), non *Ornithogalum spirale* Schinz (1896) (= *O. stapfii* Schinz).

Ornithogalum clanwilliamae-gloria (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca clanwilliamae-gloria* U. Müll.-Doblies, Feddes Repert. 106: 358 (1995).

Ornithogalum cooperi (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca cooperi* Baker, J. Bot. 12: 366 (1874).

Ornithogalum cremnophilum (Van Jaarsv. & A.E. van Wyk) J.C. Manning & Goldblatt, **comb. nov.** *Albuca cremnophila* Van Jaarsv. & A.E. van Wyk, Aloe 36: 72 (1999).

Ornithogalum crinifolium (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca crinifolia* Baker, Fl. cap. 6: 457 (1897).

Ornithogalum crudenii (Archibald) J.C. Manning & Goldblatt, **comb. nov.** *Albuca crudenii* Archibald, Bothalia 6: 542 (1956).

Ornithogalum dalyae (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca dalyae* Baker, Rec. Albany Mus. 1: 90 (1903).

Ornithogalum decipiens (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca decipiens* U. Müll.-Doblies, Feddes Repert. 106: 358 (1995).

Ornithogalum desertorum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca reflexa* Dinter & K. Krause, Bot. Jahrb. Syst. 51: 445 (1914), non *Ornithogalum reflexum* Freyn & Sint. (1894).

Ornithogalum diphyllum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca bifolia* Baker, Rec. Albany Mus. 1: 89 (1903), non *Ornithogalum bifolium* K. Koch (1847) (= *O. oligophyllum* Clarke).

Ornithogalum dividens J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca paradoxa* Dinter, Repert. Spec. Nov. Regni. Veg. 19: 157 (1923), non *Ornithogalum paradoxum* Jacq. (1796) (= *Eriospermum paradoxum* (Jacq.) Ker Gawl.).

Ornithogalum drakensbergense J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca rupestris* Hilliard & B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 42: 249 (1985), non *Ornithogalum rupestre* L.f. (1782).

Ornithogalum echinospermum (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca echinosperma* U. Müll.-Doblies, Feddes Repert. 105: 366 (1994).

Ornithogalum englerianum (K. Krause & Dinter) J.C. Manning & Goldblatt, **comb. nov.** *Albuca engleriana* K. Krause & Dinter, Bot. Jahrb. Syst. 45: 145 (1910).

Ornithogalum etesiogaripense (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca etesiogaripensis* U. Müll.-Doblies, Feddes Repert. 106: 363 (1995).

Ornithogalum exuviatum (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca exuviata* Baker, Fl. cap. 6: 456 (1897).

Ornithogalum fastigiatum (Dryand.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca fastigiata* Dryand., Kongl. Vetensk. Acad. Handl. 5: 296 (1784).

Ornithogalum fimbrifolium J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca ciliaris* U. Müll.-Doblies, Feddes Repert. 105: 366 (1994), non *Ornithogalum ciliare* Fisch. ex Graham (1831) (= *O. fimbriatum* Willd.).

Albuca navicula U. Müll.-Doblies, Feddes Repert. 105: 368 (1994), **syn. nov.**

Ornithogalum flaccidum (Jacq.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca flaccida* Jacq., Collectanea 4: 201 (1791).

Ornithogalum fleckii (Schinz) J.C. Manning & Goldblatt, **comb. nov.** *Albuca fleckii* Schinz, Bull. Herb. Boiss. 4, App. 3: 40 (1896).

Ornithogalum foetidum (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca foetida* U. Müll.-Doblies, Feddes Repert. 106: 363 (1995).

Ornithogalum fragrans (Jacq.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca fragrans* Jacq., Pl. hort. schoenb. 1: 44, t. 84 (1797).

Ornithogalum glanduliferum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca glandulosa* Baker, Gard. Chron. 3: 814 (1875), non *Ornithogalum glandulosum* Oberm. (1978).

Ornithogalum glaucescens J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca glauca* Baker, Bull. Herb. Boiss. Sér. 2, 4: 999 (1904), non *Ornithogalum glaucum* Dethard. ex Schult.f. (1702) (= *Gagea bracteolaris* Salisb.).

Ornithogalum goswinii (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca goswinii* U. Müll.-Doblies, Feddes Repert. 106: 363 (1995).

Ornithogalum hallii (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca hallii* U. Müll.-Doblies, Feddes Repert. 105: 366 (1994).

Ornithogalum hereroense (Schinz) J.C. Manning & Goldblatt, **comb. nov.** *Albuca hereroensis* Schinz, Bull. Herb. Boiss. 4, App. 3: 40 (1896).

Ornithogalum hesquaspoortense (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca hesquaspoortensis* U. Müll.-Doblies, Feddes Repert. 106: 366 (1995).

Ornithogalum humile (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca humilis* Baker, Bull. Misc. Inform. 1895: 153 (1895).

Ornithogalum imbricatum (F.M. Leight.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca imbricata* F.M. Leight., J. S. African Bot. 13: 58 (1947).

Albuca juncifolia Baker, Gard. Chron. 1: 534 (1876), non *Ornithogalum juncifolium* Jacq. (1797).

Ornithogalum karasmontanum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca karasbergensis* P.E. Glover, Ann. Bolus Herb. 1: 105 (1915), non *Ornithogalum karasbergense* P.E. Glover (1915) (= *O. stapfii* Schinz).

Ornithogalum lanatum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca villosa* U. Müll.-Doblies, Feddes Repert. 105: 368 (1994), non *Ornithogalum villosum* Kitt. (1863).

Ornithogalum leucanthum (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca leucantha* U. Müll.-Doblies, Feddes Repert. 105: 367 (1994).

Ornithogalum longipes (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca longipes* Baker, Rec. Albany Mus. 1: 93 (1903).

Ornithogalum macowanii (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca macowanii* Baker, Fl. cap. 6: 461 (1897).

Ornithogalum maximum (Burm.f.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca maxima* Burm.f., Prod. fl. cap. 9 (1768).

Ornithogalum monticola J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca collina* Baker, Fl. cap. 6: 461 (1897), non *Ornithogalum collinum* Guss. (1825).

Ornithogalum moylei J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca rogersii* Schönland, Rec. Albany Mus. 3: 59 (1914), non *Ornithogalum rogersii* Baker (1897).

Ornithogalum namaquense (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca namaquensis* Baker, Fl. cap. 6: 456 (1897).

Ornithogalum namibiense J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca dinteri* U. Müll.-Doblies, Feddes Repert. 106: 363 (1995), non *Ornithogalum dinteri* Baker (1901) (= *O. stapfii* Schinz).

Ornithogalum nelsonii (N.E. Br.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca nelsonii* N.E. Br., Gard. Chron. 2: 198 (1880).

Ornithogalum nematophyllum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca tenuifolia* Baker in Saunders, Refug. bot. 5: t. 335 (1872), non *Ornithogalum tenuifolium* F. Delaroche (1811).

Ornithogalum papyraceum (J.C. Manning & Goldblatt) J.C. Manning & Goldblatt, **comb. nov.** *Albuca papyracea* J.C. Manning & Goldblatt, Strelitzia 9: 709 (2000).

Ornithogalum parvum J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca nana* Schönland, Rec. Albany Mus. 1: 262 (1912), non *Ornithogalum nanum* (Burm.f.) Thunb. (1794) (= *Eucomis regia* (L.) L'Hér.).

Ornithogalum patersoniae (Schönland) J.C. Manning & Goldblatt, **comb. nov.** *Albuca patersoniae* Schönland, Trans. Roy. Soc. South Africa 1: 442 (1910).

Ornithogalum pendulum (B. Mathew) J.C. Manning & Goldblatt, **comb. nov.** *Albuca pendula* B. Mathew, Kew Bull. 49: 125 (1994).

Ornithogalum robertsonianum (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca robertsoniana* U. Müll.-Doblies, Feddes Repert. 106: 367 (1995).

Ornithogalum saxatilis J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca massonii* Baker, J. Bot. 24: 336 (1886), non *Ornithogalum massonii* J.F. Gmel. (1791) (= *O. longibracteatum* Jacq.).

Ornithogalum schlechteri (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca schlechteri* Baker, Rec. Albany Mus. 1: 92 (1903).

Ornithogalum schoenlandii (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca schoenlandii* Baker, Rec. Albany Mus. 1: 90 (1903).

Ornithogalum setosum (Jacq.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca setosa* Jacq., Collectanea, Suppl. 100: t. 14 (1797).

Ornithogalum shawii (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Albuca shawii* Baker, J. Bot. 22: 367 (1874).

Ornithogalum simile J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca affinis* Baker, Rec. Albany Mus. 1: 93 (1903), non *Ornithogalum affine* Schult.f. (1830) (= *O. pilosum* L.f.).

Ornithogalum tenuis (Knudtzon) J.C. Manning & Goldblatt, **comb. nov.** *Albuca tenuis* Knudtzon, Nord. J. Bot. 6: 785 (1986).

Ornithogalum teretifolium J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca polyphylla* Baker, Gard. Chron. 1: 471 (1874), non *Ornithogalum polyphyllum* Jacq. (1795).

Ornithogalum thermarum (Van Jaarsv.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca thermarum* Van Jaarsv., Bothalia 33: 116 (2003).

Ornithogalum tortile J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca tortuosa* Baker, Fl. cap. 6: 460 (1897), non *Ornithogalum tortuosum* Baker (1897) (= *O. juncifolium* Jacq.).

Ornithogalum trachyphyllum (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca trachyphylla* U. Müll.-Doblies, Feddes Repert. 105: 368 (1994).

Ornithogalum transvaalense (Mogg) J.C. Manning & Goldblatt, **comb. nov.** *Albuca transvaalensis* Mogg, Fl. Pl. Africa 26: t. 1009 (1947).

Ornithogalum viscosum (L.f.) J.C. Manning & Goldblatt, **comb. nov.** *Albuca viscosa* L.f., Suppl. 196 (1782).

Ornithogalum weberlingiorum (U. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Albuca weberlingiorum* U. Müll.-Doblies, Feddes Repert. 106: 369 (1995).

Ornithogalum wilsonii J.C. Manning & Goldblatt, **nom. nov.**, pro *Albuca corymbosa* Baker, Gard. Chron. 25: 38 (1886), non *Ornithogalum corymbosum* Gaterau (1789) (= *O. umbellatum* L.).

Ornithogalum xanthocodon (Hilliard & B.L. Burtt) J.C. Manning & Goldblatt, **comb. nov.** *Albuca xanthocodon* Hilliard & B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 42: 250 (1985).

(Names for sub-Saharan African species for which combinations already exist:
Ornithogalum amboense Schinz = *Albuca amboensis* (Schinz) Oberm.
Ornithogalum kirkii Baker = *Albuca kirkii* (Baker) Brenan.)

Species previously placed in Dipcadi

Ornithogalum bakerianum (Bolus) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi bakerianum* Bolus, J. Linn. Soc., Bot. 18: 394 (1881).

Ornithogalum concanense (Dalzell) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi concanense* (Dalzell) Baker, J. Linn. Soc., Bot. 11: 399 (1871), *Uropetalon concanense* Dalzell, J. Bot. 2: 143 (1850).

Ornithogalum cowanii (H. Perrier) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi cowanii* H. Perrier, Notul. Syst. (Paris) 5: 63 (1935).

Ornithogalum crispum (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi crispum* Baker, J. Linn. Soc., Bot. 11: 399 (1871).

Ornithogalum durandianum (Schinz) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi durandianum* Schinz in T. Durand & Schinz., Consp. fl. afric. 5: 374 (1895).
Dipcadi marlothii Engl., Bot. Jahrb. Syst. 10: 3 (1889), non *Ornithogalum marlothii* F.M. Leight. (1945).

Ornithogalum erythraeum (Webb & Berthel.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi erythraeum* Webb & Berthel., Hist. nat. Iles Canaries 2(3): 341 (1848).

Ornithogalum heterocuspe (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi heterocuspe* Baker, J. Linn. Soc., Bot. 20: 274 (1883).

Ornithogalum hyacinthoides (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi hyacinthoides* Baker, J. Linn. Soc., Bot. 11: 398 (1871).

Ornithogalum longifolium (Lindl.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi longifolium* (Lindl.) Baker, J. Linn. Soc., Bot. 11: 397 (1870), *Uropetalon longifolium* Lindl., Bot. Reg. 12: t. 974 (1826).

Ornithogalum magnum (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi magnum* Baker, Fl. trop. Afr. 7: 522 (1898).
Dipcadi glaucum (Burch. ex Ker Gawl.) Baker, J. Linn. Soc., Bot. 11: 401 (1871), *Uropetalon glaucum* Burch. ex Ker Gawl., Bot. Reg. 6: 156 (1816), non *Ornithogalum glaucum* Dethard. ex Schult.f. (1820).

Ornithogalum maharashtrense (Deb & S. Dasgupta) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi maharashtrense* [as *maharashtrensis*] Deb & S. Dasgupta, J. Bombay Nat. Hist. Soc. 72: 822 (1975).

Ornithogalum minor (Hook.f.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi minor* Hook.f., Fl. Brit. India 6: 346 (1892).

Ornithogalum papillatum (Oberm.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi papillatum* Oberm., Bothalia 8: 123 (1964).

Ornithogalum planifolium J.C. Manning & Goldblatt, **nom. nov.**, pro *Dipcadi platyphyllum* Baker, Fl. trop. Afr. 7: 518 (1898), non *Ornithogalum platyphyllum* Boiss. (1844) (= *O. montanum* Ten.).

Ornithogalum readii (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi readii* (Baker) Baker, Fl. cap. 6: 447 (1897), *Dipcadi setosum* var. *readii* Baker, J. Linn. Soc., Bot. 11: 398 (1871).

Dipcadi ciliare (Zeyh. ex Harv.) Baker, J. Linn. Soc., Bot. 11: 398 (1871), non *Ornithogalum ciliare* Fisch. ex Grah. (1831).

Ornithogalum reidii (Deb & S. Dasgupta) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi reidii* Deb & S. Dasgupta, J. Bombay Nat. Hist. Soc. 75: 69 (1978).

Ornithogalum rigidifolium (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi rigidifolium* Baker, J. Linn. Soc., Bot. 11: 399 (1871).

Ornithogalum saxorum (Blatt.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi saxorum* Blatt., J. Bombay Nat. Hist. Soc. 32: 736 (1928).

Ornithogalum serotinum (L.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi serotinum* (L.) Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 431 (1790), *Hyacinthus serotinus* L., Sp. pl.: 317 (1753), non *Hyacinthus serotinus* Forssk. (1773).

Ornithogalum turbinatum J.C. Manning & Goldblatt, **nom. nov.**, pro *Dipcadi montanum* (Dalzell) Baker, J. Linn. Soc., Bot. 11: 398 (1871), *Uropetalon montanum* Dalzell, J. Bot. 2: 142 (1850), non *Ornithogalum montanum* Ten. (1810).

Ornithogalum turbinatum var. **madrasicum** (E. Barnes & C.E.C. Fisch.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi montanum* var. *madrasicum* (E. Barnes & C.E.C. Fisch.) Deb & S. Dasgupta, J. Bombay Nat. Hist. Soc. 75: 59 (1978), *Dipcadi madrasicum* E. Barnes & C.E.C. Fisch., Bull. Misc. Inform. 1940: 301 (1941).

Ornithogalum ursulae (Blatt.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi ursulae* Blatt., J. Bombay Nat. Hist. Soc. 32: 735 (1928).

Ornithogalum ursulae var. **longiracemosum** (Deb & S. Dasgupta) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi ursulae* var. *longiracemosum* [as *longiracemosae*] Deb & S. Dasgupta, J. Bombay Nat. Hist. Soc. 72: 823 (1975).

Ornithogalum vaginatum (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi vaginatum* Baker, Fl. trop. Afr. 7: 523 (1898).

Ornithogalum viride (L.) J.C. Manning & Goldblatt, **comb. nov.** *Dipcadi viride* (L.) Moench, Suppl. Meth. 267 (1802), *Hyacinthus viridis* L., Sp. pl., ed. 2: 454 (1762).

(Names for sub-Saharan African species for which combinations already exist:

Ornithogalum dipcadioides Baker = *Dipcadi gracillimum* Baker, non *Ornithogalum gracillimum* R.E. Fr. (1927).

Ornithogalum hyacinthiflorum Bergius ex Schltdl., Linnaea 1: 250 (1826).

Dipcadi brevifolium (Thunb.) Fourc., Trans. Roy. Soc. South Africa 21: 78 (1932), *Hyacinthus brevifolius* Thunb., Prodr. 63 (1794), non *Ornithogalum brevifolium* Poelln. (= *O. graminifolium* Thunb.).

Species previously placed in Galtonia

Ornithogalum candicans (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Galtonia candicans* (Baker) Decne., Fl. Serres Jard. Eur. 23: 33 (1880), *Hyacinthus candicans* Baker in Saunders, Refug. bot. 3: t. 174 (1870).

Ornithogalum princeps (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Hyacinthus princeps* Baker in Saunders, Refug. bot. 3: t. 175 (1870), *Galtonia princeps* (Baker) Decne., Fl. Serres Jard. Eur. 23: 33 (1880).

Ornithogalum regale (Hilliard & B.L. Burtt) J.C. Manning & Goldblatt, **comb. nov.** *Galtonia regalis* Hilliard & B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 43: 369 (1986).

Ornithogalum viridiflorum (I. Verd.) J.C. Manning & Goldblatt, **comb. nov.** *Galtonia viridiflora* I. Verd., Fl. Pl. Africa 30: t. 1188 (1955).

Species previously placed in Neopatersonia

Ornithogalum falcatum (G.J. Lewis) J.C. Manning & Goldblatt, **comb. nov.** *Neopatersonia falcata* G.J. Lewis, Ann. S. African Mus. 40: 8 (1952).

Ornithogalum filicaule J.C. Manning & Goldblatt, **nom. nov.**, pro *Neopatersonia namaquensis* G.J. Lewis, Ann. S. African Mus. 40: 6 (1952), non *Ornithogalum namaquense* (Baker) J.C. Manning & Goldblatt (2003).

Ornithogalum uitenhagense (Schönland) J.C. Manning & Goldblatt, **comb. nov.** *Neopatersonia uitenhagensis* Schönland, Rec. Albany Mus. 2: 252 (1912).

Species previously placed in Pseudogaltonia

Ornithogalum clavatum (Mast.) J.C. Manning & Goldblatt, **comb. nov.** *Lindneria clavata* (Mast.) Speta, Bot. Jahrb. Syst. 106: 125 (1985), *Pseudogaltonia clavata* (Mast.) E. Phillips, Flow. Pl. S. Africa 15: t. 580 (1935), *Galtonia clavata* Mast., Gard. Chron. n.s. 22: 401 (1884).

Subfamily **Urgineoideae** Speta, Phyton 38: 52 (1998). Type: *Urginea* Steinh. (= *Drimia* Jacq.).

2. Igidia Speta, Phyton 38: 70 (1998). Type: *Igidia volubilis* (H. Perrier) Speta, *Urginea volubilis* H. Perrier.

Deciduous; *bulb* subterranean or partially exposed, globose, tunicated. *Leaves* several, green at flowering, narrowly oblanceolate, suberect. *Inflorescence* a many-flowered, rather flaccid raceme, somewhat twining; bracts linear-lanceolate, not spurred, bracteoles lacking; pedicels long and spreading. *Flowers* whitish, rotate, long-lived; *tepals* free, spreading to reflexed, elliptical, persistent; *stamens* suberect or lightly spreading, filaments free, fused to base of tepals, fusiform and swollen towards middle; *ovary* 3-angled; ovules several per locule; style short, stigma apical,

penicillate. *Capsule* turbinate and deeply 3-winged; *seeds* 1 or 2 per locule, elliptic with an apical wing, black, testa brittle, loose. $x = 7$.

One species in Madagascar; growing in deciduous forest. The inflorescence, which may reach 2m in length, twines among supporting vegetation. The placement of *Igidia* in the *Urgineoideae* rather than the *Ornithogaloideae* is based on the flattened, winged seeds, though it lacks the spurred bracts characteristic of the former.

3. Bowiea Harv. ex Hook.f., Bot. Mag. 93: t. 5619 (1867), nom. cons., non *Bowiea* Haw., London Edinburgh Dublin Philos. Mag. & J. Sci. 64: 299 (1824). Type: *Bowiea volubilis* Harv. ex Hook.f.

Schizobasopsis J.F. Macbr., Contr. Gray Herb. n.s. 56: 3 (1918). Type: *Schizobasopsis volubilis* (Harv. ex Hook.f.) J.F. Macbr. (= *Bowiea volubilis* Harv. ex Hook.f.).

Deciduous herbs; *bulb* large, epigeal, globose, the scales truncate and overlapping, green. *Leaves* few, ephemeral and soon withering, small, linear, channelled, suberect. *Inflorescence* a many-flowered, twining raceme, intricately branched above, the branches reflexed-spreading, fleshy and bright green; bracts small, green, the lower ones spurred; bracteoles lacking; pedicels long and spreading, the lower often erect and sterile. *Flowers* yellowish green or whitish, rotate, lightly scented, patent but erect in fruit; *tepals* free, spreading to reflexed, ovate, persistent; *stamens* suberect or lightly spreading, filaments free, fused to base of tepals, filiform from a cuneate base; *ovary* depressed-globose; ovules several per locule; style short and tapering, stigma apical, penicillate. *Capsule* ovoid; *seeds* few per locule, elliptic with a peripheral wing, black, testa brittle, loose. $x = 10$.

One species in southern and tropical Africa, mainly along the eastern seaboard but with a subspecies along the lower Orange River. It is scandent among scrub and in rock outcrops in warmer or subtropical areas. The succulent inflorescence may reach several metres in length, sprawling over supporting rocks or shrubs.

4. Drimia Jacq., Collectanea, Suppl. 38 (1797). Type: *Drimia elata* Jacq.

Urginea Steinh., Ann. Sci. Nat. 2: 321 (1834). Type: *Urginea fugax* (Moris) Steinh., *Anthericum fugax* Moris (= *Drimia fugax* (Moris) Stearn).

Fusifilum Raf., Fl. tellur. 2: 27 (1836). Type: *Fusifilum physodes* (Jacq.) Speta, *Anthericum physodes* Jacq. (= *Drimia physodes* (Jacq.) Jessop).

Tenicroa Raf., Fl. tellur. 2: 52 (1836). Type: *Tenicroa fragrans* (Jacq.) Raf., *Anthericum fragrans* Jacq. (= *Drimia fragrans* (Jacq.) J.C. Manning & Goldblatt).

Litanthus Harv., J. Bot. (London) 3: 314, t. 9 (1844). Type: *Litanthus pusillus* Harv. (= *Drimia uniflora* J.C. Manning & Goldblatt).

Rhadamanthus Salisb., Gen. pl.: 37 (1866). Type: *Rhadamanthus convallarioides* (L.f.) Baker, *Hyacinthus convallarioides* L.f. (= *Drimia convallarioides* (L.f.) J.C. Manning & Goldblatt).

Schizobasis Baker, London J. Bot. 11: 105 (1873). Type: *Schizobasis macowanii* Baker (=*Drimia intricata* (Baker) J.C. Manning & Goldblatt).

Rhodocodon Baker, J. Linn. Soc., Bot. 18: 280 (1881). Type: *Rhodocodon madagascariensis* Baker (=*Drimia mascarenensis* (Baker) J.C. Manning & Goldblatt).

Thuranthos C.H. Wright, Bull. Misc. Inform. 1916: 233 (1916). Type: *Thuranthos macranthum* (Baker) C.H. Wright, *Ornithogalum macranthum* Baker (=*Drimia macrantha* (Baker) Baker).

Urgineopsis Compton, J. Bot. (London) 68: 107 (1930). Type: *Urgineopsis salteri* Compton (=*Drimia salteri* (Compton) J.C. Manning & Goldblatt).

Ebertia Speta, Phyton 38: 65 (1998). Type: *Ebertia nana* (Oyewole) Speta, *Urginea nana* Oyewole (=*Drimia nana* (Oyewole) J.C. Manning & Goldblatt).

Rhadamanthopsis (Oberm.) Speta, Phyton 38: 74 (1998). Type: *Rhadamanthopsis namibensis* (Oberm.) Speta, *Rhadamanthus namibensis* Oberm. (=*Drimia namibensis* (Oberm.) J.C. Manning & Goldblatt).

Urginavia Speta, Phyton 38: 86 (1998). Type: *Urginavia altissima* (L.f.) Speta, *Ornithogalum altissimum* L.f. (=*Drimia altissima* (L.f.) Ker Gawl.).

Sekanama Speta, Stapfia 75: 168 (2001), **syn. nov.** Type: *Sekanama sanguinea* (Schinz) Speta, *Urginea sanguinea* Schinz (=*Drimia sanguinea* (Schinz) Jessop).

Ledurgia Speta, Stapfia 75: 168 (2001), **syn. nov.** Type: *Ledurgia guineensis* Speta (=*Drimia guineensis* (Speta) J.C. Manning & Goldblatt).

Boosia Speta, Stapfia 75: 168 (2001), **syn. nov.** Type: *Boosia macrocentra* (Baker) Speta, *Urginea macrocentra* Baker (=*Drimia macrocentra* (Baker) Jessop).

Geschollia Speta, Stapfia 75: 169 (2001), **syn. nov.** Type: *Geschollia anomala* (Baker) Speta, *Ornithogalum anomalum* Baker (=*Drimia anomala* (Baker) Baker).

Indurgia Speta, Stapfia 75: 169 (2001), **syn. nov.** Type: *Indurgia indica* (Roxb.) Speta, *Scilla indica* Roxb. (=*Drimia indica* (Roxb.) Kunth).

Duthiea Speta, Stapfia 75: 170 (2001), **syn. nov.** Type: *Duthiea senegalensis* (Kunth) Speta, *Urginea senegalense* Kunth (=*Drimia senegalensis* (Kunth) J.C. Manning & Goldblatt).

Deciduous or rarely evergreen; *bulb* small or large, subterranean or epigeal, globose, scales often relatively small and sometimes only loosely overlapping, flesh sometimes pink or reddish. *Leaves* 1 to several, often dry at flowering, linear to oblanceolate or terete, glabrous or rarely pubescent or the margins ciliate, erect to prostrate, the sheaths sometimes persistent and forming a papery or fibrous, sometimes horizontally barred sheath around base of scape. *Inflorescence* a single- to many-flowered raceme, sometimes subcorymbose with shortened axis, rarely branched, often wiry, glabrous or puberulous in lower part, the trichomes often in longitudinal rows; bracts usually small, membranous, at least the lower spurred; bracteoles lacking; pedicels erect to spreading, rarely deflexed at base and erect apically. *Flowers* short-lived, usually lasting less than a day, rarely 2 days, white to yellowish green or brown, often with darker keels, rotate to campanulate, unscented or rarely scented,

erect to nodding but always erect in fruit; *tepals* free or united into a short or moderate tube, erect, spreading or recurved to reflexed, abscissing below and twisting above to form a cap over developing capsule; *stamens* erect, inflexed over ovary or spreading, filaments free, fused to tepals near base or higher, linear-lanceolate to ovate or vestigial, anthers dehiscing longitudinally or by apical pores or slits, sometimes shortly apiculate or barbed below; *ovary* ovoid; ovules several per locule; style cylindrical, erect or slightly declinate; stigma 3-grooved or slightly excavated. *Capsule* ovoid or ellipsoid and sometimes 3-lobed or 3-winged; *seeds* several per locule, angular to elliptic with a peripheral wing, black, testa loose, brittle. $x=10$ or 9.

About 100 species in Africa, Madagascar, the Mediterranean area and Asia, with 50 species in southern Africa; common in seasonally dry or semi-arid regions. Many species flower in the late spring or summer regardless of the rainfall pattern with the result that in areas of winter rainfall the leaves are often withered at flowering. Species diversity is highest in the semi-arid parts of the southern African winter-rainfall zone, with a secondary radiation in Madagascar.

Drimia aphylla (Forssk.) J.C. Manning & Goldblatt, **comb. nov.** *Charybdis aphylla* (Forssk.) Speta, Phyton 38: 60 (1998), *Anthericum aphyllum* Forssk., Fl. aegypt.-arab. 209 (1775).

Drimia aurantiaca (H. Lindb.) J.C. Manning & Goldblatt, **comb. nov.** *Thuranthos aurantiacum* (H. Lindb.) Speta, Phyton 38: 81 (1998), *Urginea aurantiaca* H. Lindb., Itin med. 34 (1932).

Drimia calcicola (H. Perrier) J.C. Manning & Goldblatt, **comb. nov.** *Rhadamanthus calcicola* (H. Perrier) Speta, Phyton 38: 76 (1998), *Rhodocodon calcicola* H. Perrier, Arch. Bot. Bull. Mens. 5: 8 (1931).

Drimia cyathiformis (H. Perrier) J.C. Manning & Goldblatt, **comb. nov.** *Rhadamanthus cyathiformis* (H. Perrier) Speta, Phyton 38: 76 (1998), *Rhodocodon cyathiformis* H. Perrier, Arch. Bot. Bull. Mens. 5: 8 (1931).

Drimia excelsa J.C. Manning & Goldblatt, **nom. nov.**, pro *Ornithogalum elatum* Andrews, Bot. repos. 8: t. 528 (1808), *Charybdis elata* (Andrews) Speta, Phyton 38: 60 (1998), non *Drimia elata* Jacq. (1797).

Drimia floribunda (H. Perrier) J.C. Manning & Goldblatt, **comb. nov.** *Rhodocodon floribundus* H. Perrier, Arch. Bot. Bull. Mens. 5: 11 (1931), *Rhadamanthus floribundus* (H. Perrier) Speta, Phyton 38: 76 (1998).

Drimia guineensis (Speta) J.C. Manning & Goldblatt, **comb. nov.** *Ledurgia guineensis* Speta, Stapfia 75: 168 (2001).

Drimia hesperia (Webb & Berthel.) J.C. Manning & Goldblatt, **comb. nov.** *Charybdis hesperia* (Webb & Berthel.) Speta, Phyton 38: 60 (1998), *Urginea hesperia* Webb & Berthel., Hist. nat. Iles Canaries 2(3): 399 (1848).

Drimia intermedia (H. Perrier) J.C. Manning & Goldblatt, **comb. nov.** *Rhadamanthus intermedius* (H. Perrier) Speta, Phyton 38: 77 (1998), *Rhodocodon intermedius* H. Perrier, Arch. Bot. Bull. Mens. 5: 10 (1931).

Drimia mascarenensis (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Rhadamanthus mascarenensis* (Baker) Speta, Phyton 38: 77 (1998), *Urginea mascarenensis* Baker, London J. Bot. 12: 363 (1874).

Drimia maura (Maire) J.C. Manning & Goldblatt, **comb. nov.** *Charybdis maura* (Maire) Speta, Phyton 38: 60 (1998), *Urginea maura* Maire, Bull. Soc. Hist. Nat. Afrique N. 14: 158 (1923).

Drimia nana (Oyewole) J.C. Manning & Goldblatt, **comb. nov.** *Ebertia nana* (Oyewole) Speta, Phyton 38: 68 (1998), *Urginea nana* Oyewole, Ann. Missouri Bot. Gard. 76: 623 (1989).

Drimia numidica (Jord. & Fourr.) J.C. Manning & Goldblatt, **comb. nov.** *Charybdis numidica* (Jord. & Fourr.) Speta, Phyton 38: 60 (1998), *Urginea numidica* (Jord. & Fourr.) Grey, Hardy Bulbs 2: 632 (1938), *Squilla numidica* Jord. & Fourr., Icon fl. Eur. 2: 1, t. 201 (1868).

Drimia pancration (Steinh.) J.C. Manning & Goldblatt, **comb. nov.** *Charybdis pancration* (Steinh.) Speta, Phyton 38: 60 (1998), *Squilla pancration* Steinh., Ann. Sci. Nat. Bot., Sér. 2, 6: 279 (1836).

Drimia rotunda (H. Perrier) J.C. Manning & Goldblatt, **comb. nov.** *Rhadamanthus rotundus* (H. Perrier) Speta, Phyton 38: 77 (1998), *Rhodocodon rotundus* H. Perrier, Arch. Bot. Bull. Mens. 5: 13 (1931).

Drimia senegalensis (Kunth) J.C. Manning & Goldblatt, **comb. nov.** *Duthiea senegalensis* (Kunth) Speta, Stapfia 75: 170 (2001), *Urginea senegalense* Kunth, Enum. pl. 4: 334 (1843).

Drimia urgineoides (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Rhadamanthus urgineoides* (Baker) Speta, Phyton 38: 77 (1998), *Rhodocodon urgineoides* Baker, Hooker's Icon. pl. t. 2492 (1896).

Drimia zambesiaca (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Thuranthos zambesiacum* (Baker) Kativu, Kirkia 15: 113 (1994), *Urginea zambesiaca* Baker, J. Linn. Soc., Bot. 13: 223 (1873).

Subfamily **Hyacinthoideae** Link, Handbuch 2: 160 (1829). Type: *Hyacinthus* L.

Tribe **Pseudoprospereae** J.C. Manning & Goldblatt, **tribus nov.** Herbae sempervirentes caespitosae, bulbo epigaeo tunicis papyraceis obtecto, foliis linearibus, inflorescentia racemosa laxa multiflora usitate ramo laterali solitario praedita, bracteis parvis lanceolatis membranacies, bracteolis solitariis, floribus albescentibus ad lilacinis rotatis inodoratis, tepalis ad basem connatis patentibus persistentibus marginibus revolutis, filamentis ad basem tepalorum insertis, antheris versatilibus, ovario breviter stipitato, ovulis in quoque loculo duobus, stigmate minuto, fructibus capsularibus turbinatis, semine in quoque loculo uno subgloboso nigro. Type: *Pseudoprospero* Speta.

5. Pseudoprospero Speta, Phyton 38: 116 (1998). Type: *Pseudoprospero firmifolium* (Baker) Speta, *Scilla firmifolia* Baker.

Evergreen, clump-forming; *bulb* epigeal, subglobose, tunicated; outer tunics dry and papery, brownish. *Leaves* several, linear, canaliculate, spreading, coriaceous, without cartilaginous margins. *Inflorescence* a lax, many-flowered raceme, usually with a side branch; peduncle decumbent; bracts small, lanceolate, membranous, not spurred; bracteoles solitary, inserted on alternating sides of pedicels at base; pedicels spreading. *Flowers* whitish to lilac, rotate, unscented; *tepals* fused at base, spreading with revolute margins, oblong-lanceolate, persistent; *stamens* suberect, filaments fused to base of tepals, fused at base, linear-lanceolate, anthers versatile; *ovary* subglobose and 3-lobed, shortly stipitate; ovules 2 per locule, pale greenish; style terete; stigma apical, penicillate. *Capsule* turbinate and deeply 3-lobed, on a short carpophore, dehiscing along top of each locule; *seeds* 1 per locule, subglobose, black, testa tightly adhering. Basic chromosome number $x = 9$.

One species in the Eastern Cape, South Africa, endemic in the Grahamstown district; in rocky savanna and grassland.

Tribe **Massonieae** Baker, J. Linn. Soc., Bot. 11: 355 (1871). Type: *Massonia* Houtt.

6. Merwilla Speta, Phyton 38: 107 (1998). Type: *Merwilla dracomontana* (Hilliard & B.L. Burtt) Speta, *Scilla dracomontana* Hilliard & B.L. Burtt.

Deciduous, clump-forming; *bulb* subterranean or partially to completely epigeal, tunicated; outer tunics firm and cartilaginous, brownish; roots several, firm, tapering and contractile. *Leaves* several, emergent or fully formed at flowering, ovate to lanceolate, glabrous or pubescent, at least on margins, suberect or spreading, coriaceous, without cartilaginous margins. *Inflorescence* a few- to many-flowered raceme; peduncle erect, glabrous or shortly pubescent; bracts linear-lanceolate, membranous, not spurred, the lower sometimes sterile; bracteoles solitary, thread-like, inserted on alternating sides of pedicels at base; pedicels long, spreading. *Flowers* pale to mid-blue, rarely lilac, rotate, unscented; *tepals* spreading, fused at base, oblong-lanceolate, persistent; *stamens* suberect, filaments fused to base of tepals, free or fused at base, linear-lanceolate; *ovary* subglobose, shortly stipitate; ovules 4–6 per locule; style terete; stigma apical, penicillate. *Capsule* obovoid and 3-lobed, on a short carpophore; *seeds* 2–4 per locule, ellipsoid, pale brown or beige, testa tightly adhering. $x = 10$, ?8.

Three species in South Africa, Lesotho, Swaziland and Zimbabwe; restricted to the edge of the eastern escarpment at middle to high elevations on cliffs or rock outcrops in grassland. Examination of the type of the poorly known *Scilla plumbea*, which was for long incorrectly associated with the locally endemic Western Cape species now known as *Spetaea lachenaliiflora*, reveals that it is conspecific with *Scilla natalensis* and is the earliest name for the taxon. The taxonomic synonymy is noted here.

Merwilla plumbea (Lindl.) Speta, Phyton 38: 109 (1998), *Scilla plumbea* Lindl., Bot. Reg. 16: t. 1355 (1830).

Scilla natalensis Planchon, Fl. Serres Jard. Eur. t. 1043 (1855), **syn. nov.**

Scilla kraussii Baker, J. Linn. Soc., Bot. 13: 243 (1873), **syn. nov.**

7. Schizocarphus Van der Merwe, Fl. Pl. Africa 23: t. 904 (1943). Type: *Schizocarphus nervosus* (Burch.) Van der Merwe, *Ornithogalum nervosum* Burch.

Deciduous herbs; *bulb* subterranean, globose, tunicated; outer tunics firm-papery and fibrous, brownish, decaying at the tops to form a stiffly fibrous neck. *Leaves* several, green at flowering, linear to linear-lanceolate, firm-textured and striate with cartilaginous margins, glabrous or minutely pubescent on both surfaces, erect to suberect and often lightly twisted. *Inflorescence* a few- to many-flowered raceme, sometimes subcorymbose; peduncle flexed sideways at base and then erect, rachis minutely pubescent; bracts linear-lanceolate, membranous, not spurred; bracteoles thread-like, solitary, inserted on alternating sides of pedicels at base; pedicels short or long, glabrous or sparsely pubescent. *Flowers* white, rotate, unscented; *tepals* spreading, fused at base, oblong-lanceolate; *stamens* somewhat spreading, filaments fused to base of tepals, free or fused at base, linear-lanceolate; *ovary* subglobose and 3-lobed, shortly stipitate, dark bluish; ovules 2(–6) per locule; style terete; stigma apical, penicillate. *Capsule* obovoid and 3-lobed; *seeds* 2–4 per locule, subglobose, black, testa tightly adhering. $x = 10, 7$.

One species in southern and tropical east Africa. A highly variable species of rocky grasslands.

8. Ledebouria Roth, Nov. pl. sp. 194 (1821). Type: *Ledebouria hyacinthina* Roth.

Drimiopsis Lindl. & Paxton, Paxton's Fl. Gard. 2: 73 (1851), **syn. nov.** Type: *Drimiopsis maculata* Lindl. (= *Ledebouria petiolata* J.C. Manning & Goldblatt).

Resnova Van der Merwe, Tydskr. Wetensk. Kuns 6: 46 (1946), **syn. nov.** Type: *Resnova humifusa* (Baker) U. Müll.-Doblies & D. Müll.-Doblies, *Scilla humifusa* Baker, designated by Müller-Doblies & Müller-Doblies (1997) (= *Ledebouria humifusa* (Baker) J.C. Manning & Goldblatt).

Deciduous or evergreen; *bulb* usually subterranean, sometimes epigeal, subglobose to cylindrical, tunicated or more usually of more or less loosely imbricate scales, fleshy, usually producing fibrous threads when torn. *Leaves* usually contemporary or emergent with flowers, rarely dry at flowering, 1 to several, linear-lanceolate to suborbicular or cordate, sometimes pseudopetiolate, thin-textured or leathery, glabrous or pubescent, suberect or spreading, sometimes twisted or undulate, usually spotted or banded with darker green or purple. *Inflorescences* usually more than one in succession, each a few- to many-flowered raceme, sometimes corymbose or subspicate; peduncle erect at first then decumbent, at first densely flowered but elongating and becoming lax; bracts either small and membranous or vestigial or lacking, not spurred; bracteoles present or absent; pedicels usually short, sometimes

vestigial. *Flowers* usually nodding, green to purple, rotate to campanulate or subglobose, usually unscented; *tepals* usually more or less erect below and recurved above, sometimes erect and incurved above, fused at base, oblong-lanceolate or dimorphic with inner tepals cucullate and connivent; *stamens* exserted and then usually purple or included, free, uniseriate or biseriate, the outer inserted at base of tepals, the inner higher up, sometimes shorter than the outer; filaments filiform or triangular; anthers dorsifixed; *ovary* ovoid or turbinate and then 3- to 6-lobed with short carpophore, the lobes often with swollen, nectar-producing lobules below; ovules (1)2 per locule; style terete; stigma apical, penicillate. *Capsule* globose to obovoid or clavate, 3-lobed; *seeds* 1 or 2 per locule, subglobose, black or brown, testa tightly adhering. $x = 11, 10, 5$.

Forty to fifty species in sub-Saharan Africa, with one or two species each in Madagascar and India, occurring mainly in the eastern parts of southern Africa; in grassland, savanna and forest. The species of woodland and forest have broader, thinner-textured leaves and include most of those previously segregated as the genera *Drimiopsis* and *Resnova*.

Ledebouria atropurpurea (N.E. Br.) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis atropurpurea* N.E. Br., Bull. Misc. Inform. 1921: 299 (1921).

Ledebouria barteri (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis barteri* Baker in Saunders, Refug. bot. 3: App. 18 (1870).

Ledebouria botryoides (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis botryoides* Baker in Saunders, Refug. bot. 3: App. 17 (1870).

Ledebouria botryoides subsp. **prostrata** (Stedje) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis botryoides* subsp. *prostrata* Stedje, Nord. J. Bot. 14: 49 (1994).

Ledebouria burkei (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis burkei* Baker in Saunders, Refug. bot. 3: App. 17 (1870).

Ledebouria burkei subsp. **stolonissima** (U. Müll.-Doblies & D. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis burkei* subsp. *stolonissima* U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 63 (1997).

Ledebouria comptonii (U. Müll.-Doblies & D. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis comptonii* U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 64 (1997).

Ledebouria cryptopoda (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Hyacinthus cryptopodus* Baker, J. Linn. Soc., Bot. 20: 274 (1883).

Ledebouria davidsoniae (U. Müll.-Doblies & D. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis davidsoniae* U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 64 (1997).

Ledebouria fischeri (Engl.) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis fischeri* (Engl.) Stedje, Nord. J. Bot. 15: 6 (1996), *Scilla fischeri* Engl., Pflanzenw. Ost-Afrikas C: 142 (1895).

Ledebouria humifusa (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Resnova humifusa* (Baker) U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 59 (1997), *Scilla humifusa* Baker, Gard. Chron. 15: 626 (1881).

Ledebouria lachenalioides (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Avonsera lachanalioides* (Baker) Speta, Phyton 38: 96 (1998), *Resnova lachenalioides* (Baker) Van der Merwe, Tydskr. Wetensk. Kuns 6: 46 (1946), *Drimiopsis lachenalioides* (Baker) Jessop, J. S. African Bot. 38: 157 (1972), *Scilla lachenalioides* Baker, Fl. cap. 6: 482 (1897).

Ledebouria maxima (Van der Merwe) J.C. Manning & Goldblatt, **comb. nov.** *Resnova maxima* Van der Merwe, Tydskr. Wetensk. Kuns 6: 46 (1946).

Ledebouria minor (Van der Merwe) J.C. Manning & Goldblatt, **comb. nov.** *Resnova minor* Van der Merwe, Tydskr. Wetensk. Kuns 6: 46 (1946).

Ledebouria nossibeensis (H. Perrier) J.C. Manning & Goldblatt, **comb. nov.** *Resnova nossibeensis* (H. Perrier) Speta, Phyton 38: 119 (1998), *Scilla nossibeensis* H. Perrier, Notul. Syst. (Paris) 5: 67 (1935).

Ledebouria petiolata J.C. Manning & Goldblatt, **nom. nov.**, pro *Drimiopsis maculata* Lindl., Paxton's Fl. Gard. 2: 73 (1851), non *Ledebouria maculata* Dalzell (1850).

Ledebouria pilosa (Van der Merwe) J.C. Manning & Goldblatt, **comb. nov.** *Resnova pilosa* Van der Merwe, Tydskr. Wetensk. Kuns 6: 46 (1946).

Ledebouria pusilla (U. Müll.-Doblies & D. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis pusilla* U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 64 (1997).

Ledebouria reilleyana (U. Müll.-Doblies & D. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis reilleyana* U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 64 (1997).

Ledebouria woodii (Baker) J.C. Manning & Goldblatt, **comb. nov.** *Drimiopsis woodii* Baker, Fl. cap. 6: 473 (1897).

9. Eucomis L'Hér., Sert. angl. 7 (1789). Type: *Eucomis regia* (L.) L'Hér., *Fritillaria regia* L.

Deciduous; *bulb* subterranean, often large, pear-shaped or globose, tunicated; outer tunics papery, usually dark brown or black, lightly barred above. *Leaves* few to several, green at flowering, linear to lanceolate or broadly oblanceolate, suberect or prostrate, margins plane or undulate to crispulate, smooth, unmarked or speckled or barred with green or purple beneath, especially on sheath. *Inflorescence* a many-flowered raceme with upper bracts sterile and enlarged to form a leafy coma; peduncle erect, thick; bracts lanceolate, green, lower smaller and broader, not spurred; bracteoles usually absent; pedicels short and spreading or moderately long and cernuous. *Flowers* white or greenish, often flushed or speckled with purple, filaments and ovary sometimes completely purple, campanulate; *tepals* spreading or suberect, fused below into a shallow cup, sometimes unpleasantly scented; *stamens* suberect, filaments fused to base of tepals, narrowly triangular, broadened and fused below; *ovary* subglobose; ovules 6 or 7 per locule; style tapering; stigma apical,

penicillate. *Capsule* ovoid and 3-lobed or -winged, sometimes inflated and papery; *seeds* several per locule, subglobose or ovoid, glossy black or brown, testa tightly adhering. $x = 10$.

Ten species from southern and south tropical Africa, nearly endemic to southern Africa; characteristic of moist montane and subalpine grasslands in the summer-rainfall region. A single species, *E. regia*, is endemic to the winter-rainfall region.

Reyneke (1972), in an unpublished thesis, concluded that *Eucomis pole-evansii* N.E. Br. was a larger, more northerly form of *Eucomis pallidiflora* Baker. This interpretation is validated here.

Eucomis pallidiflora Baker subsp. **pole-evansii** (N.E. Br.) Reyneke ex J.C. Manning, **comb. et stat. nov.** *Eucomis pole-evansii* N.E. Br., Gard. Chron. ser. 3, 63: 185 (1918).

10. Veltheimia Gled., Hist. Acad. Roy. Sci. (Berlin) 25: 66 (1771). Type: *Veltheimia capensis* (L.) DC., *Aletris capensis* L.

Deciduous or almost evergreen; *bulb* subterranean or partially exposed, often large, pear-shaped or globose, tunicated, entirely fleshy or outer tunics pale and papery or membranous and lightly barred above. *Leaves* few to several, green at flowering, oblong-lanceolate to oblanceolate, undulate or sometimes almost crisped, suberect. *Inflorescence* a dense, many-flowered, ovoid or subcylindrical raceme; peduncle erect, usually mottled purple; bracts pale and soft, lanceolate-attenuate, not spurred; bracteoles smaller and solitary, inserted on alternating sides of pedicels at base; pedicels very short. *Flowers* white to greenish but more or less deeply flushed and spotted with dull red or pink on tube, cylindrical and usually gently curved, spreading or more or less nodding, unscented; *tepals* fused for most of length, with small ovate lobes; *stamens* fused to tepals for half their length and obliquely inserted in one series at about middle of tube; upper filaments or at least the uppermost progressively shorter and inserted slightly lower down the tube; filaments slender and terete; anthers just included or shortly exserted, versatile; *ovary* narrowly ellipsoid and 6-ribbed; ovules 3 or 4 per locule; style slender, terete, slightly declinate, recurved at the tip, reaching to the mouth of the tube; stigma apical, penicillate. *Capsule* large, papery, 3-winged; *seeds* 2 per locule, pear-shaped, black, smooth or rugulose, testa tightly adhering. $x = 10$.

Two species in western and southern South Africa. The species are ecological and geographical vicariants, respectively from the arid winter-rainfall parts of Western Cape, and the subtropical southern and eastern coast.

11. Namophila U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 77 (1997). Type: *Namophila uropetala* U. Müll.-Doblies & D. Müll.-Doblies.

Deciduous; *bulb* subterranean, subglobose, tunicated; outer tunics papery and dark brown; roots slender. *Leaves* 2, contemporary with flowers, prostrate or spreading,

oblong to broadly elliptic, clasping at base, smooth, subsucculent or thinly fleshy, uniformly green. *Inflorescence* a several-flowered, corymbose raceme borne at ground level; peduncle contracted; bracts narrowly lanceolate, green, not spurred, the uppermost sterile and forming a leafy coma; bracteoles lacking; pedicels short, suberect. *Flowers* greenish white, campanulate; *tepals* united into cup-shaped tube, suberect, lanceolate and caudate, persistent. *Stamens* suberect, filaments inserted at mouth of perianth tube, fused at base, lanceolate; anthers versatile; *ovary* ovoid; ovules several per locule; style terete and firm-textured, erect; stigma apical, penicillate. *Capsule* narrowly ovoid, remaining enclosed by perianth; *seeds* subglobose, black, testa tightly adhering. $x = ?$.

One species in southern Namibia; restricted to sheltered sites in the mountains of the arid, winter-rainfall area of southern Namibia.

12. Massonia Thunb. ex Houtt., Nat. hist. 2: 424 (1780). Type: *Massonia depressa* Houtt.

Whiteheadia Harv., Gen. S. Afr. pl., ed. 2: 396 (1868), **syn. nov.** Type: *Whiteheadia latifolia* Harv. (= *Massonia bifolia* (Jacq.) J.C. Manning & Goldblatt).

Deciduous; *bulb* subterranean, subglobose, tunicated; outer tunics pale brown and papery or thinly leathery, often lightly barred above; roots slender. *Leaves* 2, contemporary with flowers, prostrate or spreading, oblong to broadly elliptic, clasping at base, glabrous or variously pustulate-pubescent or bristly, subsucculent or leathery, uniformly green or sometimes with dark spots. *Inflorescence* either a several- to many-flowered cylindrical spike or a condensed, corymbose or subcapitate raceme borne at ground level; peduncle contracted; bracts small or large, not spurred, becoming smaller acropetally or the uppermost bracts sterile and enlarged to form a leafy coma, lanceolate to transversely ovate, membranous or subsucculent, smooth or papillose on the margins; bracteoles lacking; pedicels suberect and elongating in fruit, sometimes absent. *Flowers* greenish, white, cream-coloured, yellowish or tinged pink, campanulate to more or less tubular, spreading or suberect, often scented; *tepals* united into a short or long, often delicate tube, spreading and plane or sharply recurved at base then sharply inflexed in a transverse, sigmoid fold, oblong-lanceolate, acute, persistent; *stamens* suberect or erect, filaments inserted at mouth of perianth tube, more or less united at base into a shallow cup, the inner sometimes shorter, firm-textured, lanceolate to filiform; anthers versatile; *ovary* ovoid or obtriangular; ovules numerous per locule; style terete and firm-textured, erect or weakly declinate; stigma apical, penicillate. *Capsule* papery, inflated, obtriangular and 3-lobed or -winged; *seeds* numerous per locule, subglobose, dull black, smooth or rugulose, testa tightly adhering. $x = 13, 11, 10, 9$.

About 10 species in South Africa, southern Namibia and Lesotho; widespread in semi-arid areas, especially the western fringes of the winter-rainfall region of southern Africa.

Massonia bifolia (Jacq.) J.C. Manning & Goldblatt, **comb. nov.** *Whiteheadia bifolia* (Jacq.) Baker, J. Linn. Soc., Bot. 13: 226 (1873), *Eucomis bifolia* Jacq., Collectanea 4: 215 (1791).

Massonia etesionamibensis (U. Müll.-Doblies & D. Müll.-Doblies) J.C. Manning & Goldblatt, **comb. nov.** *Whiteheadia etesionamibensis* U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 82 (1997).

13. Lachenalia J. Jacq. ex Murray, Syst. veg., ed. 14: 314 (1784). Type: *Lachenalia tricolor* J. Jacq. (=*Lachenalia aloides* (L.f.) Engl.).

Brachyscypha Baker, J. Linn. Soc., Bot. 11: 394 (1871). Type: *Brachyscypha undulata* (Thunb.) Baker, *Massonia undulata* Thunb. (=*Lachenalia pusilla* Jacq.).

Periboea Kunth, Enum. pl. 4: 293 (1843), **syn. nov.** Type: *Periboea corymbosa* (L.) Kunth, *Hyacinthus corymbosus* L. (=*Lachenalia corymbosa* (L.) J.C. Manning & Goldblatt).

Polyxena Kunth, Enum. pl. 4: 294 (1843), **syn. nov.** Type: *Polyxena pygmaea* (Jacq.) Kunth, *Polyanthes pygmaea* Jacq. (=*Lachenalia ensifolia* (Thunb.) J.C. Manning & Goldblatt).

Deciduous; *bulb* subterranean, subglobose or flattened, tunicated, often bulbilliferous; outer tunics usually pale and membranous, sometimes papery and dark brown or blackish and then often forming a fibrous neck. *Cataphyll* tubular, membranous. *Leaves* 1 to several but usually 2, usually contemporary with flowers but sometimes dying off, prostrate to suberect, usually lanceolate but sometimes terete, linear or heart-shaped, clasping at base, smooth or pustulate, rarely with simple or stellate trichomes, subsucculent or leathery, uniformly green or spotted or banded, especially on sheath. *Inflorescence* a few- to many-flowered spike, raceme or corymb, sometimes condensed and borne at ground level, upper flowers often vestigial; peduncle erect, rarely condensed, cylindrical or swollen and clavate, sometimes spotted or banded; bracts small, triangular, not spurred, sometimes becoming larger acropetally; bracteoles lacking; pedicels short to moderately long or vestigial. *Flowers* variously coloured, often with darker tips, often scented, often weakly zygomorphic, campanulate to urceolate or tubular, spreading, nodding or suberect; pedicels spreading or vestigial; *tepals* fused below into an oblique cup or short to long tube, subequal or inner longer than outer, the outer usually with a swelling or gibbosity near apex, oblong-lanceolate, erect to recurved, persistent; *stamens* suberect or more or less declinate, filaments fused to base of tepals, inserted in two series at different levels, the outer lower than the inner and sometimes shorter, included or exserted, filiform or clavate; anthers versatile; *ovary* subglobose; ovules several per locule; style terete, erect or declinate; stigma apical, penicillate. *Capsule* membranous or papery, ovoid, 3-angled or -winged; *seeds* subglobose, ovoid or pear-shaped, black, smooth or rugulose, testa tightly adhering. $x=5$–15.

About 110 species in Namibia and South Africa, with about 80 species in the Western Cape Province, South Africa; mostly restricted to the winter-rainfall parts of southern Africa, in a wide range of habitats.

Lachenalia corymbosa (L.) J.C. Manning & Goldblatt, **comb. nov.** *Polyxena corymbosa* (L.) Jessop, J. S. African Bot. 42: 429 (1976), *Periboea corymbosa* (L.) Kunth, Enum. pl. 4: 293 (1843), *Massonia corymbosa* (L.) Ker Gawl., Bot. Mag. 25: t. 991 (1807), *Scilla corymbosa* (L.) Ker Gawl., Bot. Mag. 36: sub t. 1468 (1812), *Hyacinthus corymbosus* L., Mant. pl. Altera 223 (1771).

Lachenalia ensifolia (Thunb.) J.C. Manning & Goldblatt, **comb. nov.** *Polyxena ensifolia* (Thunb.) Schönland, Trans. Roy. Soc. South Africa 1: 443 (1910), *Massonia ensifolia* (Thunb.) Ker Gawl., Bot. Mag. 16: t. 554 (1802), *Agapanthus ensifolius* (Thunb.) Willd., Sp. pl. 2: 48 (1799), *Mauhlia ensifolia* Thunb., Prodr. 10: t. 1 (1794).

Lachenalia longituba (A.M. Van der Merwe) J.C. Manning & Goldblatt, **comb. nov.** *Polyxena longituba* A.M. Van der Merwe, S. Afr. J. Bot. 67: 44 (2001).

Lachenalia maughanii (W.F. Barker) J.C. Manning & Goldblatt, **comb. nov.** *Polyxena maughanii* W.F. Barker, Fl. Pl. S. Africa 11: t. 420 (1931).

Lachenalia paucifolia (W.F. Barker) J.C. Manning & Goldblatt, **comb. nov.** *Polyxena paucifolia* (W.F. Barker) A.M. Van der Merwe & J.C. Manning in Goldblatt & J.C. Manning, Strelitzia 9: 714 (2000), *Periboea paucifolia* (W.F. Barker) U. Müll.-Doblies & D. Müll.-Doblies, Feddes Repert. 108: 84 (1997), *Hyacinthus paucifolius* W.F. Barker, J. S. African Bot. 7: 198 (1941).

14. Spetaea Wetschnig & Pfosser, Taxon 52: 87 (2003). Type: *Spetaea lachenaliiflora* Wetschnig & Pfosser.

Deciduous herbs; *bulb* subterranean, subglobose, tunicated; outer tunics dark brown and leathery; roots several, contractile. *Leaves* several, contemporary with flowers, suberect, linear and more or less convolute, clasping at base, glabrous, fleshy, uniformly green, margins hyaline. *Inflorescence* a many-flowered, cylindrical raceme; peduncle erect; bracts small, oblong or lanceolate, not spurred, decurrent; bracteoles lacking; pedicels moderately long, spreading. *Flowers* bright blue, narrowly campanulate, lightly nodding; *tepals* fused at base, erect then recurved in the outer third, oblong-lanceolate, persistent; *stamens* weakly declinate, filaments fused to base of tepals, inserted in one series, fused at base, linear-filiform; anthers versatile; *ovary* obovoid; ovules 2 or 3 per locule; style terete, weakly declinate; stigma apical, penicillate. *Capsule* turbinate, 3-lobed, shortly stipitate; *seeds* ovoid or ellipsoid, black, rugulose, testa tightly adhering. $x = 10$.

One species in Western Cape Province, South Africa; locally endemic in seeps and along streams in the Bains Kloof and Du Toits Kloof Mountains. *Spetaea lachenaliiflora* was mistakenly associated by Lewis (1947), Jessop (1970), and thereafter by most subsequent authors, with *Scilla plumbea*, which is actually an earlier name for the species long known as *Scilla natalensis* and latterly as *Merwilla natalensis*.

15. Daubenya Lindl., Bot. Reg. 21: t. 1813 (1835). Type: *Daubenya aurea* Lindl.

Androsiphon Schltr., Notizbl. Bot. Gart. Berlin-Dahlem 9: 148 (1924). Type: *Androsiphon capense* Schltr. (= *Daubenya capensis* (Schltr.) A.M. Van der Merwe & J.C. Manning).

Neobakeria Schltr., Notizbl. Bot. Gart. Berlin-Dahlem 9: 150 (1924). Type: *Neobakeria namaquensis* Schltr. (= *Daubenya namaquensis* (Schltr.) J.C. Manning & A.M. Van der Merwe).

Amphisiphon W.F. Barker, J. S. African Bot. 2: 19 (1936). Type: *Amphisiphon stylosa* W.F. Barker (= *Daubenya stylosa* (W.F. Barker) A.M. Van der Merwe & J.C. Manning).

Deciduous herbs; *bulb* subterranean, subglobose, tunicated; outer tunics thinly leathery, brownish and extended as a short neck of narrow, papery segments. *Leaves* 2, contemporary with flowers, prostrate, oblong to broadly elliptic, glabrous, firm and glossy with veins depressed. *Inflorescence* a many-flowered raceme, often condensed or corymbose and borne at ground level; peduncle erect and contracted; bract small or the lower large, green or membranous, not spurred; bracteoles lacking; pedicels suberect, short or moderately long, especially lower. *Flowers* white or pinkish, yellow or bright red, tubular-hypocrateriform, sometimes lower more or less distinctly zygomorphic, in the most extreme case with adaxial tepals highly enlarged, often scented; *tepals* fused into moderately or very long and often delicate tube, usually suberect, oblong-lanceolate, rarely adaxial highly enlarged and oblanceolate; *stamens* erect or suberect, filaments firm, inserted at mouth of perianth tube in one series, free or fused together into a short or elongate tube, rarely with mouth of staminal tube occluded by a thickened disc through which style projects, terete; *ovary* ovoid or obtriangular; ovules several per locule; style terete; stigma apical, minute. *Capsule* papery, ovoid to obtriangular and then 3-winged, usually dehiscent, rarely tardily dehiscent with style persistent as a beak; *seeds* few per locule, subglobose, black, smooth or rugulose, testa tightly adhering. $x = 17, 16$.

Eight species in South Africa, mainly in the winter-rainfall parts. Several are highly local endemics along the western rim of the central plateau, mostly growing in seasonally moist depressions, rarely sandy soils. The genus exhibits the most extreme range of floral specializations in the family.

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