

CAPE PLANTS: CORRECTIONS AND ADDITIONS TO THE FLORA

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MS. Received:

Keywords: Cape Floristic Region, floristics, phytogeography, plant diversity, southern Africa, speciation

Abstract

Comprising an area of $\pm 90,000 \text{ km}^2$, less than 5% of the land surface of the southern African subcontinent, the Cape Floristic Region (CFR) is one of the world's richest areas for plant species diversity. A recent synoptic flora for the Region has established a new base line for an accurate assessment of the flora. Here we document corrections and additions to the flora at family, genus and species ranks. As treated in *Cape Plants*, which was completed in 1999, the flora comprised 173 families (5 endemic), 988 genera (160 endemic: 16.2%), and 9 004 species (6192 endemic: 68.8%). Just four years later, a revised count resulting from changes in the circumscriptions of families and genera, and the discovery of new species or range extensions of species, yields an estimate of 172 families (4 endemic), 992 genera (162 endemic: 16.3%) and 9 087 species (6 226: 68.5% endemic). Of these, 947 genera and 8 971 species are flowering plants. The number of species packed into so small an area is remarkable for the temperate zone and compares favourably with species richness for areas of comparable size in the wet tropics. The degree of endemism is also remarkable for a continental area. An unusual family composition includes, in descending order of size based on species number, Asteraceae, Fabaceae, Iridaceae, Ericaceae, Aizoaceae, Scrophulariaceae, Proteaceae, Restionaceae, Rutaceae, and Orchidaceae. Disproportionate radiation has resulted in 59.1% species falling in the 10

largest families and 74.6% in the largest 20 families. Thirteen genera have more than 100 species and the 20 largest genera contribute some 31.5% of the total species.

INTRODUCTION

Published in September 2000, *Cape Plants* (Goldblatt & Manning 2000) is a synoptic account of the vascular plant flora of the Cape Floristic Region (CFR) of southern Africa. As with such endeavours, it contained its share of errors and omissions. Moreover, changes to the systematics of plant taxa of the Cape flora have accumulated at a steady pace. Thus, despite our best efforts to produce an accurate and lasting account, we find after just four years since publication, and about five years since completed copy was handed to the publisher, that a fair number of corrections and additions are necessary. Most of these concern species: 9 004 species were recognized in 2000, and we now include 9 087 species in the flora region. Some 988 genera were recognized in the flora in 2000, but with additions and taxonomic changes there are now 992 genera. We hope to continue to publish lists of additions periodically when such compilations seem useful. Changes to the account are discussed in detail below under the headings *Families*, *Genera*, and *Species*.

Families. Changes in familial classification resulting from the continuing molecular research in angiosperm phylogeny, have compelled adjustments to the generic constitution of several families (Angiosperm Phylogeny Group 1998, 2002). The rule of priority has also made necessary some name changes. Most notable for the CFR is the work of Olmstead and his collaborators in the Lamiales–Scrophulariales which has shown that *Veronica* and its allies, previously Scrophulariaceae, should be included in an expanded Plantaginaceae (Olmstead *et al.* 2001). In the Cape flora the genera affected include *Limosella* (2 spp.) and *Ilysanthes* (1 sp.), which are accordingly transferred to Plantaginaceae. These studies also show that several African genera of Scrophulariaceae and Loganiaceae comprise a clade with the Cape family Stilbaceae. In order to retain monophyletic family circumscriptions, these genera have been transferred to Stilbaceae (alternatively Stilbaceae and several more families would have to be included in Scrophulariaceae). Thus *Halleria* (3 spp.) and *Ixianthes* (1 sp.) are removed to Stilbaceae, which ceases to be endemic to the CFR. *Nuxia* (previously Loganiaceae) also belongs in an expanded Stilbaceae while *Buddleja*, previously Loganiaceae and more

recently Buddlejaceae, is now included in Scrophulariaceae. This leaves Scrophulariaceae with 31 genera and 409 species, and Loganiaceae with one genus (*Strychnos*) and two species in the CFR.

Another important familial change is the union of the endemic southern African family Achariaceae with Kiggelariaceae (Savolainen *et al.* 2000). The conserved name Achariaceae is used for the expanded family. The endemic Cape tree *Hyaenanche* (1 sp.) is now known to be nested in Picrodendraceae (= Pseudanthaceae) (Savolainen *et al.* 2000) and is transferred to this family from Euphorbiaceae. The status of the monotypic *Curtisia*, usually included in Cornaceae, has varied with time. Molecular data show that the genus is sister to the Cape endemic family, Grubbiaceae, and recognition of a monogeneric Curtisiaceae is recommended by APG (2003). The family Cornaceae is thus no longer represented in the Cape flora. In the monocots, the South African and near Cape endemic, Prioniaceae (with the monotypic *Pronium*) is sister to the South American *Thurnia* and has been referred to Thurniaceae by Chase *et al.* (2000). Tamaricaceae, represented by one species of *Tamarix* in the Cape flora, was omitted in error from *Cape Plants*.

Convallariaceae, the family that includes *Dracaena*, *Eriospermum* and *Sansevieria*, must now be known by the earlier name, Ruscaceae. The APG (2003) recommend that Ruscaceae as well as Anthericaceae and Hyacinthaceae be included in an enlarged monophyletic Asparagaceae. They also favor union of Agapanthaceae and Amaryllidaceae in Alliaceae and Asphodelaceae and Hemerocallidaceae in Xanthorrhoeaceae. Alternative treatment is permitted and for the present we do not follow these recommendations and maintain the narrower family circumscriptions in *Cape Plants*.

Another family realignment is the inclusion of *Centella* in Apiaceae (Araliaceae in *Cape Plants*) as a result of extensive molecular study (Lowry *et al.* 2004). Also likely as a result of sequence studies, is the removal of *Ceraria* and *Portulacaria* from Portulacaceae to Didieriaceae. This previously endemic family of Madagascar forms a sister clade with Portulacaceae s.s. (Applequist & Wallace 2001). The changes involving Portulacaceae have not yet been formalized in the literature (APG 2003), and are not taken into account here.

At family level it is most notable that the flora loses its second largest endemic family, Stilbaceae, which in its expanded circumscription extends through tropical Africa and Madagascar to Arabia (*Halleria*, *Nuxia*). This leaves only four endemic families in the CFR: Penaeaceae in Myrtales (21 species), Grubbiaceae in Cornales (3 species), Roridulaceae in Ericales (2 species), and Geissolomataceae in Saxifragales (1 species) (classification following APG 2003). Based on a molecular clock calibrated using 135 mya for the divergence of the eudicot lineage (Savolainen *et al.* 2000; Wikström *et al.* 2001; V. Savolainen, unpubl. ms), Penaeaceae may have diverged 20 mya from its sister clade, the African Oliniaceae plus the Neotropical Alzateaceae, while Roridulaceae diverged from Ericaceae, its closest relative (Savolainen *et al.* 2000), \pm 48 mya. Geissolomataceae appear to be older, having diverged perhaps 55 mya from Ixerbaceae plus Strasburgeraceae. Grubbiaceae may have diverged from Curtisiaceae in the early Tertiary, 63 mya.

Bruniaceae, one of the distinctive families of the Cape flora, has an estimated 64 species in 11 genera (Goldblatt and Manning 2000). Just three species in two genera extend outside the confines of the Cape Region, two locally, and one as far east as southern KwaZulu-Natal. Bruniaceae may be the sister group to the order Dipsacales (Savolainen *et al.* 2000), perhaps meriting recognition at ordinal rank. The discovery of pollen matching modern Bruniaceae in early Tertiary and late Cretaceous (?Senonian) deposits in northern Namaqualand (S.E. de Villiers, pers. comm.), well to the north of the CFR, attests to considerable age for the family in southern Africa. The pollen record also accords with a preliminary early Tertiary dating of the divergence between Bruniaceae and Dipsacales at about 57 mya (V. Savolainen, unpubl. ms.). In the later APG (2003) classification, however, Brunicaeae are not assigned to any order in the Euasterids II group.

With the above changes, there are now 149 families of seed plants, and 23 families of ferns and other vascular cryptogams, for a total 172 families of vascular plants in the CFR. This is two less than was recognized in *Cape Plants*. Anticipated transfer of two genera of Portulacaceae to Didieriaceae would bring the total number of seed plant families to 148. The CFR is characterised by an unusual family composition that includes, in descending order of size (species number) following Asteraceae and Fabaceae, the families Iridaceae, Ericaceae, Aizoaceae, Scrophulariaceae, Proteaceae, Restionaceae, Rutaceae, and Orchidaceae, among the 10 most species-rich families in the flora. Asteraceae alone, with 1 048 species, contributes 11.5% of the total species in the flora. Disproportionate

radiation in the 20 largest families (Table 1) has resulted in over 59% of the species falling in the 10 largest families and more than 74% in the largest 20 families.

<<TABLE 1 HERE>>

Genera. A total of 942 genera of seed plants (or 988 genera of vascular plants) were included in the Cape flora by Goldblatt and Manning (2000), comprising about half of all those occurring in southern Africa. Of those, some 160 genera (all of them seed plants), were endemic, constituting 16.2% of the total vascular plant flora. The inclusion of Tamaricaceae in the flora adds one more genus, *Tamarix*, and the recent discovery of a species of *Clivia* (Amaryllidaceae) in the Cape flora (Rourke 2002) is a second generic addition. The genus *Pilularia* (Marsileaceae) has also recently been recorded for the first time in the flora (Roux 2002). *Carpolyza* (Amaryllidaceae) has been found by molecular analysis to be nested in *Strumaria*, in which it is now included (Meerow & Snijman 2001). Also in Amaryllidaceae, the monotypic *Cybistetes* is now included in *Ammocharis* (Snijman & Archer 2003). In Aizoaceae, some species previously assigned to *Lampranthus* and *Ruschia* are now referred to the new endemic genera *Brianhantleya* (monotypic) (Chesselet *et al.* 2003), and *Phiambolia* (7 species) (Klak 2003).

Old herbarium records, until now overlooked, show that *Calystegia* (Convolvulaceae) and *Chaetachme* (Celtidaceae) occur naturally in the Cape Flora, adding another two genera to the total. Another generic omission is *Gomphostigma*, now added to Scrophulariaceae. In Asteraceae, a new monospecific genus *Roodebergia* has been described (Nordenstam 2002b) and two species of *Dicoma* have been transferred to *Macleodium*, thus adding two more genera to the flora. The endemic genus *Alciope* (Asteraceae), has been found to be nomenclaturally illegitimate, and is now *Capelio* (Nordenstam 2002a, 2003a). Lastly, in Hyacinthaceae the endemic species *Scilla plumbea* has been shown by molecular data to be misplaced generically and has been assigned to the new and endemic genus *Spetaea*, as *S. lachenaliiflora* (Wetschnig & Pfosser 2003). Also in Hyacinthaceae, *Albuca*, *Dipcadi* and *Neopatersonia* have been sunk in *Ornithogalum*, *Whiteheadia* in *Massonia*, and *Polyxena* is included in *Lachenalia* (Manning *et al.* 2004). This reduces the number of genera but significantly enlarges *Ornithogalum*, which now has 72 species (previously 40 species) in the Cape flora, while *Lachenalia* now has 69 species in the flora.

Recent molecular studies on Zygophylloideae (Beier *et al.* 2003) have resulted in substantial restructuring of the genera in the subfamily. The *Zygophyllum* is now understood to be restricted to Asia and the majority of the southern African species of *Zygophyllum* are now referred to the genus *Roepera*. The species of *Zygophyllum* subg. *Agrophyllum* are placed in the genus *Tetraena*.

With these changes there are currently 947 genera of seed plants, or 992 genera of vascular plants recognized in the CFR. This is an increase of four genera to the previous total for the flora (Goldblatt & Manning 2000). Of these, 162 genera (16.3%) are endemic, representing an insignificant increase in generic endemism over that recorded in *Cape Plants*. Thirteen genera have more than 100 species and the 20 largest genera contribute some 2856 species, or 31.5% of the total in the flora (Table 2).

<<TABLE 2 HERE>>

Species. The number of species added to the flora is considerable and we list changes below by family. New inclusions are provided with treatments comparable to those in *Cape Plants*, including brief descriptions, and notes on flowering time, distribution, habitat, and phytogeographic centre(s) within the Cape Region. Corrections to species names, descriptions, or ranges are included in the list that follows. The sign * indicates endemic to the CFR and the sign ! indicates introduced species. With the additions and corrections, the Cape flora now includes 9 086 species of vascular plants, 6 226 endemic (8 971 species of seed plants, 6 217 endemic) with a percentage endemism of 68.5 %. This represents an increase of 80 species since the publication of *Cape Plants* and a reduction in endemism from 68.8%. In Table 1 we list the ten largest families in the flora with their number of species and degree of endemism.

AIZOACEAE

Acrodon deminutus Klak Spreading, tufted succulent shrublet to 10 cm. Leaves trigonous, free almost to base, margins toothed. Flowers with petals magenta at base and tips, white between, staminodes white with magenta tips, 15–20 mm diam. Capsule 5-locular, 7–8 mm diam. Sept. Stony quartz outcrops on clay, SW (Swellendam to Bredasdorp)* (Klak 2003).

Amphibolia hutchinsonii (L.Bolus) H.E.K.Hartmann is a synonym of **A. laevis** (Aiton) H.E.K.Hartmann (Hartmann 2001).

Antimima aristulata (Sond.) Chesselet & G.F.Sm. is a new combination for *Ruschia aristulata* (Sond.) Schwantes (Chesselet and Smith 2001).

Antimima insidens (L.Bolus) Chesselet is a new combination for *Ruschia insidens* L.Bolus (Chesselet 2001).

Antimima viatorum (L.Bolus) Klak is a new combination for *A. bina* (L.Bolus) H.E.K.Hartmann. NW, SW (Namaqualand to Malmesbury). Revised distribution, not endemic (Klak 2003).

Brianhuntleya is a new genus for the flora (Chesselet *et al.*, 2003).

Brianhuntleya intrusa (Kensit) Chesselet, S.Hamer & I.Oliver (= *Ruschia intrusa* (Kensit) L.Bolus) Tufted succulent 7–10 cm, with spreading branches, bearing persistent dry leaves. Leaves swollen-trigonous, obtuse, entire, $\pm 55 \times 8$ mm, grey-green. Flowers solitary, to 35 mm diam., with an intrusive calyx tube, pale rose-purple. Fruits 5-locular. June–July. Shale slopes, NW (Worcester Karoo). Revised description.

Drosanthemum asperulum (Salm-Dyck) Schwantes is a new combination for *Delosperma asperulum* (Salm-Dyck) L.Bolus (Klak 2003).

Drosanthemum quadratum Klak Like **D. asperulum** but plants smaller, to 15 cm high, with thicker leaves 2–4 mm wide, and wider capsules 5–10 mm diam. Sept.–Oct. Stony quartz outcrops on clay slopes, SW (Swellendam to Bredasdorp)* (Klak 2003).

Erepsia simulans (L.Bolus) Klak. Laxly branched succulent shrublet to 16 cm. Leaves shortly fused toward the base, narrowed near the tips, acute to obtuse. Flowers silvery white tipped with pink. Capsules 7-locular. Oct. Limestone flats, AP (Agulhas Peninsula: Brandfontein)* (Klak 2003).

Esterhuysenia mucronata (L.Bolus) Klak is the correct name for *Lampranthus mucronatus* L.Bolus (Klak 2003).

Lampranthus gydouwensis (L.Bolus) H.E.K.Hartmann is a synonym of **Phiambolia incumbens** (L.Bolus) Klak (Klak 2003).

Machairophyllum acuminatum L.Bolus is a synonym of **M. bijliae** (N.E.Br.) L.Bolus (Kurzweil & Chesselet 2003).

Machairophyllum baxteri L.Bolus is a synonym of **M. bijliae** (N.E.Br.) L.Bolus (Kurzweil & Chesselet 2003).

Machairophyllum bijliae (N.E.Br.) L.Bolus. Tufted perennial to 20 cm. Leaves pale green, trigonous, angles acute. Flowers solitary on pedicels to 75 mm long, golden yellow with red reverse or red, 50–60 mm diam. Mostly Oct.–

Nov. Rocky slopes and rock crevices, KM, SE (Swartberg Pass to Uniondale and George to Humansdorp and E Cape). Revised description and range, no longer endemic (Kurzweil & Chesselet 2003).

Machairophyllum cookii (L.Bolus) Schwantes is a synonym of **M. albidum** (L.) Schwantes (Kurzweil & Chesselet 2003).

Machairophyllum latifolium L.Bolus is a synonym of **M. brevifolium** L.Bolus (Kurzweil & Chesselet 2003).

Machairophyllum stayneri L.Bolus does not occur in the CFR.

Oscularia comptonii (L.Bolus) H.E.K.Hartmann is a new name for *O. ebracteata* (L.Bolus) H.E.K.Hartmann.

Stony slopes, NW (Namaqualand to Olifants River valley). Corrected distribution, not endemic (Klak 2003).

Phiambolia is a new genus for some species previously of *Lampranthus* and *Ruschia* (Klak 2003).

Phiambolia franciscii (L.Bolus) Klak Succulent shrub to 60 cm. Leaves fused at the base into a sheath 4–5 mm long, 25–40 × 3–6 mm, papillate-velvety. Flowers in cymes, pink, 30–45 mm diam. Fruits funnel-shaped. Oct.–Nov. Mainly stony sandstone slopes, NW (Cold Bokkeveld to Karooport).*

Phiambolia hallii (L.Bolus) Klak Prostrate succulent rooting at the nodes, branches to 30 cm. Leaves joined for 3–4 mm, free parts 20–35 mm, 4–6 mm diam. Flowers solitary on pedicels 15–25 mm, flowers to 35 mm diam., pink. Fruits funnel-shaped. July. Sandstone and shale outcrops, NW (Swartuggens: Katbakkies to Karooport).*

Phiambolia incumbens (L.Bolus) Klak is a new combination for *Ruschia incumbens* L.Bolus.

Phiambolia mentiens Klak Shrublet to 35 cm, with smooth internodes 25–40 mm. Leaves basally fused, subterete, with recurved mucronate tips, 13–25 × 4–6 mm. Flowers in few-flowered cymes, petals magenta, filamentous staminodes in a cone, white with magenta tips. Fruits funnel-shaped. Sept. Sandstone rocks, NW (Cedarberg Mts to Karooport).*

Phiambolia persistens (L.Bolus) Klak is a new combination for *Lampranthus persistens* (L.Bolus) L.Bolus Sandy and stony slopes, NW, KM (Bokkeveld Mts and Witteberg).* Revised range.

Phiambolia stayneri (L.Bolus ex Tolken & Jessop) Klak is a new name for *Lampranthus dissimilis* (G.D.Rowley) H.E.K.Hartmann) Stony slopes, NW (Ceres: Warm Bokkeveld).* Corrected range.

Phiambolia unca (L.Bolus) Klak is a new combination for *Lampranthus unca* (L.Bolus) H.E.K.Hartmann Stony slopes and flats, NW (Bokkeveld Mts to Ceres).* Revised range.

Ruschia knysnana (L.Bolus) L.Bolus. Sandstone slopes, SE (Knysna to Grahamstown). Revised distribution, not endemic.

Ruschia pulchella (Haw.) Schwantes is now regarded as an insufficiently known species and must be removed from the account of *Ruschia* (Chesselet and Smith 2001).

Current total: Genera 77; species 658 (previously 76 genera and 661 species).

AMARANTHACEAE

Sarcocornia sp. 1 Woody jointed shrublet to 60 cm, branches 2 mm diam. Leaves fleshy. Flowering time?. Saline washes in renosterveld, NW (Eendekuil flats).*

Current total: Genera 12; species 23 (previously 12 genera and 22 species).

ALLIACEAE

Tulbaghia capensis L. SW, AP, LB, SE (Namaqualand, Cape Peninsula to Long Kloof). Revised range, not endemic.

AMARYLLIDACEAE

Ammocharis longifolia (L.) M.Roem. is the correct name for *Cybistetes longifolia* (L.) Milne-Redh. & Schweik.

Brunsvigia elandsmontana Snijman Bulbous geophyte to 20 cm. Leaves dry at flowering, 4–6, prostrate. Flowers 6–18 in a compact, hemispherical head, actinomorphic, deep pink, tepals widely flared, stamens about as long as the tepals, central. Capsules 3-angled. Mar.–May. Stony flats, SW (Hermon)* (Snijman 2001a).

Carpolyza is now included in *Strumaria* (Meerow & Snijman 2001).

Clivia is added to the flora (Rourke 2002).

Clivia mirabilis Rourke Rhizomatous perennial to 80 cm. Leaves several, linear, often with a whitish midline, 3–4 cm wide. Flowers tubular, nodding, reddish with green to yellow tips, pedicels reddish, ± 25 mm long. Oct.–Nov. Wooded scree, NW (Bokkeveld Mountains)*.

Cybistetes is now included in *Ammocharis* (Snijman & Archer 2003).

Cyrtanthus debilis Snijman is a new species for *Cyrtanthus* sp. 2 (Snijman 2001b).

Gethyllis linearis L.Bolus Bulbous geophyte to 6 cm, forming compact clumps. Leaves dry at flowering, spreading, tightly coiled, glabrous and sub-succulent. Flowers white tinged pink, anthers 6. Oct.–Nov. Gravelly flats, NW (S Namaqualand to Bokkeveld Mts) (Manning *et al.* 2002).

Gethyllis oliverorum D.Müll.-Doblies Bulbous geophyte to 4 cm. Leaves dry at flowering, linear, glabrous or subglabrous, curved and spreading on the ground or slightly ascending. Flowers white to pale pink, anthers 6. Fruit almost dry. Nov.–Dec. Shallow soil on rocks, NW (Heerenlogement, near Vanrhynsdorp, N Cedarberg).*

Strumaria spiralis (L'Hér.) Snijman is the correct name for *Carpolyza spiralis* (L'Hér.) Salisb.

Current total: Genera 15; species 97 (previously 16 genera and 93 species).

ANTHERICACEAE

Chlorophytum comosum (Thunb.) Jacques (not Jacq.)

APIACEAE

Centella with 49 species is transferred here from Araliaceae

Current total: Genera 24; species 121 (previously 23 genera and 72 species).

APOCYNACEAE (P. Bruyns pers. comm.)

Pachypodium succulentum (Jacq.) Sweet (not (L.f.) A.DC.)

Stapelia obducta L.C.Leach Leafless succulent with erect, 4-angled stems 10–20 mm diam. forming dense clumps, 10–25 cm; sap clear. Flowers 50 mm diam., button-like with strongly recurved lobes, purple-brown, softly hairy on the inner surface throughout. Mar.–Oct. stony sandstone slopes, SE (Great Winterhoek Mts).* Not conspecific with **S. hirsuta**.

Tromotriche choanantha (Lavranos & H.Hall) Bruyns (not (Lavranos & A.V.Hall) Bruyns).

Current total: Genera 36; species 113 (previously 36 genera and 112 species).

ARALIACEAE

Centella with 49 species is transferred to Apiaceae

Current total: Genera 3; species 6 (previously 4 genera and 55 species).

ASPHODELACEAE

Bulbine cremnophila van Jaarsv. Dwarf perennial to 30 cm, roots fleshy, grey. Leaves rosulate, fleshy, narrowly lanceolate, glaucous. Flowers in a lax raceme, yellow. Capsules ovoid, erect. Aug.–Feb. Sandstone cliff faces, SE (Humansdorp)* (van Jaarsveld & van Wyk 1999).

Bulbine melanovaginata G.Will. (Williamson 2003) is included in **Bulbine foleyi** E.Phillips.

Bulbine navicularifolia G.Will. (Williamson 2003) is included in **Bulbine succulenta** Compton.

Bulbine meiringii van Jaarsv. Dwarf geophyte to 30 cm, clustered, rootstock a small tuber with fleshy roots. Leaves slender and fleshy, semi-terete, surrounded at base by a short fibrous neck. Flowers in a lax raceme, yellow. Capsules ovoid, erect. June–Sept. Rocky sandstone ledges, KM (Swartberg Mts)* (van Jaarsveld 2003).

Bulbine ramosa van Jaarsv. Branching geophyte to 50 cm, forming clusters, stems globose below with fleshy roots. Leaves linear-lanceolate, bright green. Flowers in a lax raceme, yellow. Capsules ovoid, erect. Nov. Sandstone cliff faces, KM (Calitzdorp: Badspoor)* (van Jaarsveld 2003).

Gasteria polita van Jaarsv. Like **G. acinacifolia** but smaller, up to 60 cm in flower, and usually solitary; raceme usually unbranched and flowers smaller, 35 mm long. Oct.–Nov. Slopes and embankments in forest, SE (Plettenberg Bay)* (van Jaarsveld 2001).

Gasteria vlokii van Jaarsv. KM (Swartberg Mts to Willowmore). Range correction.

Haworthia bruynsii M.B.Beyer does not occur in the CFR.

Haworthia pubescens M.B.Beyer NW (Worcester-Robertson Karoo). Range correction.

Current total: Genera 8; species 161 (previously 8 genera and 157 species).

ASTERACEAE (*Othonna* and *Senecio* corrections, P.V. Bruyns, pers. comm.;

Arctotheca marginata Beyers Prostrate perennial rooting at the nodes, softly hairy. Leaves linear-elliptic, margins crisped and rolled under, softly hairy above and felted beneath. Flower heads radiate, solitary on felted scapes, yellow with rays reddish outside, involucre bracts felted. Achenes woolly, pappus wanting. Oct.–Nov. Sandy edges of pans, NW (Bokkeveld Mountains)* (Beyers 2002).

Athanasia trifurcata (L.) L. NW, SW, AP, KM, LB, SE (Springbok to Port Elizabeth). Revised range, not endemic.

Capelio B.Nord. is a new name for *Alciope* DC. (Nordenstam 2002a, 2003a).

Capelio caledonica B.Nord. is a new species for *Alciope* sp. 1. (Nordenstam 2002a, 2003a).

Capelio tabularis (Thunb.) B.Nord. is a new combination for *Alciope tabularis* Thunb. (Nordenstam 2002a, 2003a).

Capelio tomentosa (Burm.f.) B.Nord. is a new name for *Alciope lanata* (Thunb.) DC. (Nordenstam 2002a, 2003a).

Dimorphotheca nudicaulis (L.) DC. (not (L.) B.Nord.).

Felicia bergeriana (Spreng.) O.Hoffm. (not *F. bergerena*)

Felicia josephinae J.C.Manning & Goldblatt is a new species for *Felicia* sp. 1. (Manning & Goldblatt 2002).

Gazania pectinata (Thunb.) Hartweg (not (Thunb.) Spreng.)

Ifloga thellungiana Hilliard & B.L.Burt (not *Ifloga thelliana*)

Macleodium is now recognized in the Cape flora for two of the four species of *Dicoma* in the flora (Ortiz 2001).

Macleodium relhanioides (Less.) S.Ortiz is a new combination for *Dicoma relhanioides* Less. (Ortiz 2001).

Macleodium spinosum (L.) S.Ortiz is a new combination for *Dicoma spinosum* L. (Ortiz 2001).

Marasmodes oligocephala DC. (not *M. oligocephalus* DC.).

Masarmodes polycephala DC. (not *M. polycephalus* DC.).

Oedera epalacea Beyers Twiggy shrublet to 60 cm. Leaves oblanceolate, spreading, gland-dotted. Flower heads radiate, few in slender peduncles in lax umbels, yellow, disc florets female-sterile. Achenes hairy. June–Sept. Sandstone outcrops in cracks, NW (Swartruggens)* (Beyers 2001).

Osteospermum australe B.Nord. is a new species for *Osteospermum* sp. 2 (Nordenstam 2004).

Osteospermum burttianum B.Nord. Densely leafy, glabrescent rounded or spreading shrublet to 1 m. Leaves oblong-lanceolate, leathery, ascending, margins minutely scabrid. Flower heads radiate, solitary on short, roughly hairy peduncles, yellow. Achenes obscurely ribbed, 5–7 mm long. Mainly Dec.–May. Rocky sandstone slopes, LB (Langeberg near Heidelberg)* (Nordenstam 2004).

Osteospermum potbergensis A.R.Wood & B.Nord. Decumbent to prostrate shrublet to 20 cm. Leaves leathery, petiolate, often sparsely dentate, margins curved under. Flower heads radiate, single on white-woolly peduncles, yellow. July–Dec. Stony lower slopes, SW (Potberg)* (Wood & Nordenstam 2003).

Othonna alba Comton Like *O. cylindrica* but leaves long and slender, almost filiform and rays usually white. Aug.–Oct. Sandy plateaus, NW (Botterkloof, Cedarberg, Anysberg).* Previously included in *O. cylindrica*.

Othonna carnosa Less. Succulent shrublet with short erect or sprawling branches, 10–30 cm. Leaves fleshy, ovoid to fusiform. Flower heads radiate, few in lax, terminal cymes on slender peduncles, yellow. Mainly Apr.–Oct. Stony flats and slopes, NW, SW, KM, AP, LB, SE (Namaqualand to Worcester to E Cape).

Othonna cylindrica (Lam.) DC. NW, SW (S Namibia to Langebaan). Corrected range and taxonomy.

Othonna floribunda Schltr. does not occur in the flora, and is restricted to Namaqualand.

Othonna spinescens DC. Spiny shrub, older branches slender and stiff. Leaves tufted on short shoots, narrowly oblanceolate, coriaceous, felted in axils. Flower heads radiate, solitary on short terminal peduncles, yellow; pappus of marginal florets elongating in fruit. Sept. Rocky sandstone slopes, NW, KM (Cedarberg and Swartruggens to Witteberg).*

Pteronia undulata DC. Like **P. divaricata** but leaves strongly undulate or crisped, glandular papillate. Sept.–Oct. Rocky slopes, NW (Namaqualand, Swartruggens).

Pteronia viscosa Thunb. Twiggy shrublet, 30–100 cm, branchlets whitish, glabrous. Leaves oblong-lanceolate, keeled, leathery, setulose-ciliate. Flower heads discoid, solitary at branch tips, yellow, 20–25 × c.15 mm; bracts rough, margins obscurely fringed. Oct.–Dec. Rocky slopes, NW, KM (Namaqualand, W Karoo to E Cape, Swartruggens, Little Karoo: Ladismith).

Roodebergia B.Nord. is a new monotypic genus and species for the flora. It is probably close to *Felicia* (Nordenstam 2002b).

Roodebergia kitamura B.Nord. Diffuse perennial rooting at the nodes to 20 cm. Leaves opposite, elliptic, roughly hairy. Flower heads discoid, solitary, reddish-purple. Jan. Rocky sandstone slopes, 1850 m, NW (Hex River Mountains)* (Nordenstam 2002b).

Schistostephium umbellatum (L.f.) Bremer & Humphries (not *S. umbellata* (L.f.) Bremer & Humphries).

Senecio addoensis Compton Like **S. scaposus** but leaves apically toothed or lobed. Mar. Stony sandstone slopes, SE (Great Winterhoek Mts and E Cape).

Senecio articulatus (L.) Sch.Bip. KM, SE (Montagu to Uitenhage and Great Karoo). Revised range, not endemic.

Senecio corymbiferus DC. Gnarled or erect succulent shrub with cane-like stems, 30–200 cm. Leaves fusiform, glaucous, striate. Flower heads discoid, in sparse corymbs clustered apically, yellow. Mar.–July. Rocky hills, often granite, NW (S Namibia to Cedarberg and Swartruggens).

Senecio ficoides (L.) Sch.Bip. KM (Swartberg Mts to Suurberg). Revised range, not endemic.

Senecio haworthii (Sweet) Sch.Bip. Thick-stemmed, white-felted shrub to 70 cm. Leaves in terminal clusters, cylindrical or fusiform, succulent, white-felted. Flower heads discoid, large, mostly solitary on thickly felted peduncles, yellow, involucre calyced. Nov.–Mar. Rocky slopes, KM (Richtersveld and W Karoo to Witteberg Mts).

Senecio littoreus Thunb. NW, SW (Namaqualand: Koekenaap to Cape Peninsula and Napier). Revised range, not endemic.

Senecio ovoideus (Compton) H.Jacobsen (= *Kleinia ovoidea* Compton, *Senecio* sp. 5) Like **S. crassulaefolius** but leaves thicker, ovoid and obtuse. Dec.–June. Dry stony slopes, KM (western Little Karoo). * Previously included in *S. crassulaefolius* (DC.) Sch.Bip.

Stoebe nervigera (DC.) Sch. Bip. NW, SW, LB (Namaqualand to Albertinia). Revised range, not endemic.

Syncarpha aurea B.Nord. is a new species for *Syncarpha* sp. 4 (Nordenstam 2003b).

Syncarpha chlorochrysum (DC.) B.Nord. is a new combination for *Syncarpha* sp. 1 (Nordenstam 2003b).

Syncarpha mucronata (P.J.Berg.) B.Nord. is a new combination for *Syncarpha* sp. 2 (Nordenstam 2003b).

Syncarpha stachelina (L.) B.Nord. is a new combination for the species to which the name *Syncarpha virgata* (P.J.Berg.) B.Nord. was misapplied (Nordenstam 2003b).

Syncarpha virgata (P.J.Berg.) B.Nord. is to be applied to *Syncarpha* sp. 3 in *Cape Plants* (Nordenstam 2003b).

Tarchonanthus littoralis P.P.J.Herman is a new species segregated from *T. camphoratus* L. for the genus in the CFR. The revised range is SW, AP, ?KM, LB, SE (Cape Peninsula to S KwaZulu-Natal) (Herman 2002).

Current total: Genera 123; species 1047 (previously 121 genera and 1035 species).

BORAGINACEAE

Trichodesma africanum (L.) Sm. (not (L.) Lehm.)

BUDDLEJACEAE

Buddleja with three species has been removed to Scrophulariaceae

Current total: Genera 0; species 0 (previously 1 genus; 3 species).

CAMPANULACEAE (*Merciera* corrections, C.N. Cupido, pers. comm.; *Grammatotheca* correction, E.Knox, pers. comm.)

Grammatotheca sp. 1 of *Cape Plants* is **Lobelia thermalis** Thunb. (a species included in *Cape Plants*).

Merciera azurea Schltr. Rigid, closely leafy shrublet to 30 cm. Leaves imbricate, stiffly linear, pungent, shortly hairy, margins lightly revolute and roughly ciliate. Flowers sessile in upper axils, blue to purple, tube narrowly funnel-

shaped, 10–25 mm long, petals elliptic-lanceolate. Nov.–Feb. Sandstone slopes, SW (Sir Lowry's Pass to Bredasdorp).*

Merciera brevifolia A. DC. Like **M. leptoloba** but leaves shorter, less than 8 mm long and petals ovate. Nov.–Feb. Shale or granite slopes, SW (Houwhoek to Caledon Swartberg).* Revised description and range.

Merciera eckloniana Buek. ex Eckl. & Zeyh. Like **M. azurea** but plants slender and leaves scattered. Oct.–Feb. Rocky slopes, NW, SW (Tulbagh to Groenland Mts).* Previously a synonym of *M. brevifolia* A.DC.

Merciera leptoloba A. DC. Rigid, closely leafy shrublet to 30 cm. Leaves imbricate, stiffly linear, pungent, shortly hairy, margins lightly revolute and harshly ciliate but axillary leaves glabrous. Flowers subsessile in upper axils, white, tube slender, 3–6 mm long, petals linear-lanceolate. Nov.–Mar. Sandy flats and lower slopes, SW, AP (Kogelberg to Bredasdorp).* Revised description and range.

Merciera tenuifolia (L.f.) A.DC. Like **M. azurea** but axillary leaf tufts present and corolla tube cylindrical. Dec.–Jan. Rocky slopes, SW (Houwhoek to Kogelberg).* Revised description and range.

Merciera tetraloba C.N.Cupido Like **M. leptoloba** but floral parts in 4s, petals tipped mauve. Nov.–Feb. Clay and granite flats, SW (Dutoitskloof to Gordon's Bay)* (Cupido 2002).

Wahlenbergia debilis H.Buek is the correct name for *W. ramulosa* E.Mey. ex DC. (T. Lammers, pers. comm.).

Current total: Genera 13; species 186 (previously 13 genera and 184 species).

CELTIDACEAE

Chaetachme is added to the flora (Wilmot-Dear 1999).

Chaetachme aristata Planch. Monoecious scrambling shrub or small tree with zig-zag branches and paired axillary spines. Leaves elliptic, aristate, glossy. Flowers unisexual, in axillary cymes, greenish or cream. Flowering time?.

Coastal and riverine forest, SW, SE (Knysna to tropical Africa and Madagascar).

Current total: Genera 2; species 2 (previously 1 genus and 1 species).

CERATOPHYLLACEAE

Ceratophyllum muricatum Cham. Monoecious, free-floating aquatic herb to 3 m. Leaves whorled, aristate and mostly 3–4-branched, margins sparsely cuspidate. Flowers unisexual, usually solitary at the nodes. Fruit warty with

three slender spines. Flowering time?. Sluggish and stagnant fresh water, LB, SE (George to Old World Tropics) (Wilmot-Dear 1997).

Current total: Genera 1; species 2 (previously 1 genus and 1 species).

CONVOLVULACEAE

Calystegia sepium (L.) R.Br. Glabrous climber to 3 m. Leaves hastate-sagittate. Flowers white or pink, 50–55 mm long, sepals broadly lanceolate; bracts ovate-cordate, longer than calyx. Dec.–Jan. Bush, SW (Cape Peninsula, Northern Hemisphere native now naturalised along the Atlantic coasts of both hemispheres)! (Meeuse & Welman 2000).

Calystegia soldanella (L.) R.Br. Glabrous creeping perennial to 50 cm, forming large mats. Leaves reniform and emarginate, subsucculent. Flowers pink to pale purple, 25–40 mm long, sepals ovate; bracts ovate-suborbicular, shorter than the calyx. Nov.–Dec. Coastal sands, AP (Stilbaai, nearly pantemperate).

Current total: Genera 6; species 18 (previously 5 genera and 17 species).

CORNACEAE

Curtisia dentata (Burm.f.) C.A.Sm. has been removed to Curtisiaceae

Current total: Family no longer represented in the flora (previously 1 genus; 1 species).

CRASSULACEAE (P. Bruyns, pers. comm.)

Adromischus bicolor Hutchison does not occur in the CFR.

Adromischus maculatus (Salm-Dyck) Lem. KM (Willowmore district, Georgida, and E Cape). Corrected distribution.

Adromischus subdistichus Makin ex Bruyns Succulent perennial to 30 cm. Leaves suborbicular, brownish green without waxy bloom. Flowers in a spicate cyme, greenish with purple stripes, petals grooved, ovate, fused basally, anthers just exerted. Jan.–Feb. N-facing sandstone and quartzite ridges, KM (Swartberg Mts).*

Adromischus triflorus (L.f.) Berger KM, SE (Touwsrivier to Great Karoo and E Cape). Corrected distribution.

Cotyledon muirii Schonl. (incl. **C. elisiae** van Jaarsveld) Small shrublet to 60 cm. Leaves obovate, green. Flowers several in a pedunculate cyme, nodding, reddish, usually glandular, lobes twice as long as tube. Mainly Oct.–Dec. Stony slopes, LB (Gouritz river valley)*.

Cotyledon papillaris L.f. Delicate sprawling shrublet with decumbent branches to 25 cm long, rooting at the nodes. Leaves linear-oblong to fusiform, green. Flowers several in a pedunculate cyme, nodding, reddish, usually glandular, lobes twice as long as tube. Mainly Oct.–Dec. Gravelly slopes, KM (Little and Great Karoo).

Crassula badspoortensis van Jaarsv. Like **C. perfoliata** but leaves broadly ovate and rounded inflorescence. Nov.–Feb. Sandstone cliffs, KM (Calitzdorp: Badspoort).*

Crassula cremnophila van Jaarsv. Like **C. hemispherica** but leaves broadly obovate, flowers in a rounded thyrses, petals 7 mm long and anthers black. Aug.–Feb. Sandstone cliff faces, SE (Baviaanskloof and Kouga).*

Crassula deceptor Schonl. & Baker. Listed twice in *Cape Plants*.

Crassula perfoliata L. Densely papillate, few-branched perennial to 1.5 m. Leaves opposite, lanceolate to triangular, green to grey sometimes with purple blotches. Flowers in flat-topped, pedunculate clusters, tubular, white, pink or red, petals 3–6 mm long. Oct.–Jan. Dry lower slopes, SE (Karoo and Uitenhage to N Province).

Tylecodon albiflorus Bruyns Succulent shrublet to 20 cm. Leaves dry at flowering but not abscising, oblanceolate. Flowers in a narrow cyme, funnel-shaped with spreading lobes, green but white with reddish stripes in the throat, tube 12–15 mm. Nov.–Feb. Renosterveld, KM (Montagu to Barrydale).*

Tylecodon stenocaulis Bruyns Succulent shrublet to 30 cm. Leaves dry at flowering but not abscising, oblanceolate. Flowers in a delicate cyme, urn-shaped, yellowish green but purple in the throat, tube 11–13 mm. Sept.–Mar. Dry slopes, NW (Swartruggens and Tanqua Karoo).

Current total: Genera 5; species 129 (previously 5 genera and 123 species).

CUCURBITACEAE

Kedrostis psammophila Bruyns Monoecious tuberous perennial, prostrate with stems to 1 m long, without tendrils. Leaves palmate. Flowers borne at ground level on subterranean peduncles, male fascicled, female solitary, greenish. Fruits berry-like, subterranean. Apr.–June. Reddish sands, NW (Namaqualand to Redelinghuys) (Bruyns 1993).

Current total: Genera 5; species 8 (previously 5 genera; 7 species).

CURTISIACEAE

Curtisia dentata (Burm.f.) C.A.Sm. is transferred here from Cornaceae

Current total: Genera 1; species 1 (family not previously included in the flora).

CYPERACEAE

Isolepis incomtula Nees (not *I. incomptula* Nees).

DENNSTAEDTIACEAE

Hypolepis villosa-viscidia (Thouars) Tardieu Rhizomatous perennial. Fronds suberect to arching, to 1 m long, stipe hairy, lamina 3-pinnate-pinnatifid. Sori in 1 to 3 pairs on ultimate segments, pseudo-indusium often strongly modified, receptacle haired. Perennial stream banks and seeps, ± 50–760 m, SW (Peninsula to Genadendal and E Cape, also S Atlantic Islands) (Roux 2001).

Current total: Genera 4; species 6 (previously 4 genera; 5 species).

ERICACEAE

Erica amalophylla E.G.H.Oliv. & I.M.Oliv. Sprawling diffuse shrublet. Flowers small, cup-shaped, white, thinly hairy. Dec. Sandstone shelters, NW (Twenty Four Rivers Mts)* (Oliver & Oliver 2002b).

Erica anemodes E.G.H.Oliv. Compact shrublet to 50 cm. Flowers small, campanulate, white. Nov. Sandstone slopes, NW (Hexrivier Mts and Keeromsberg)* (Oliver & Oliver 2001a).

Erica annalis E.G.H.Oliv. & I.M.Oliv. Erect shrublet to 1 m. Flowers large, tubular, orange-red, shortly hairy. July–Oct. Quartzite rock faces, KM (Kammanassie Mts)* (Oliver & Oliver 2002b).

Erica blaerioides E.G.H.Oliv. Compact shrublet to 30 cm. Flowers small, urceolate, white, shortly hairy. Dec.–Jan. Sandstone slopes at high alt., KM (Swartberg Mts)* (Oliver & Oliver 2001b).

Erica breviflora Dulfer is a synonym of *Erica plukenetii* L. (Oliver & Oliver 2002a).

Erica casta Guthrie & Bolus is a synonym of *Erica regia* Bartl. (Oliver & Oliver 2002a).

Erica cavartica E.G.H.Oliv. & I.M.Oliv. Diffuse procumbent shrublet. Flowers small, shortly tubular, hairy. Mar. Sandstone shelters, NW (Cedarberg Mts)* (Oliver & Oliver 2002b).

Erica chionodes E.G.H.Oliv. Compact shrublet to 60 cm. Flowers small, urceolate, white, finely hairy. Sept.–Nov. Sandstone seeps, KM (Grootswartberg Mts)* (Oliver & Oliver 2001b).

Erica cymosa E.Mey. ex Benth. Sprawling diffuse shrublet. Flowers small, campanulate, white to pale pink, sparsely hairy. Oct.–Mar. Sandstone shelters, NW, SW (Hex River and Du Toit's Kloof Mts to Keeromsberg).* Revised description and range.

Erica comptonii T.M.Salter is a synonym of *Erica banksii* Andrews (Oliver & Oliver 2002a).

Erica dolfiana E.G.H.Oliv. Compact shrublet to 50 cm. Flowers small, campanulate-urceolate, white or tinged pink. Oct.–Dec. Sandstone slopes at high alt., KM (Grootswartberg Mts)* (Oliver & Oliver 2001b).

Erica gallorum L. Bolus is a synonym of *Erica viscaria* L. (Oliver & Oliver 2002a).

Erica gilva J.C.Wendl. is a synonym of *Erica mammosa* L. (Oliver & Oliver 2002a).

Erica grandiflora L.f. is a synonym of *Erica abietina* L. (Oliver & Oliver 2002a).

Erica humidicola E.G.H.Oliv. Bushy or lanky shrublet to 1 m. Flowers small, broadly campanulate, shortly hairy, pink. Sept.–Oct. Sandstone seeps, SW (Kogelberg)* (Oliver & Oliver 2000).

Erica intermedia Klotsch ex Benth. Erect, rigid shrub to 1.2 m. Flowers medium/large, tubular, white or green to yellowish, with far-exserted anthers. Jan.–Dec. Sandstone slopes, LB, SE (Langeberg Mts at Swellendam to Outeniqua Mts at George)* (Oliver & Oliver 2002a).

Erica jananthus E.G.H.Oliv. & I.M.Oliv. Compact or loose, single-stemmed shrublet to 15 cm. Flowers small, urceolate, viscid, white. Aug.–Nov. Rocky, S-facing sandstone slopes, KM (Swartberg Mts: Snyberg)* (Oliver & Oliver 2004).

Erica limnophila E.G.H.Oliv. Sprawling, tangled shrublet to 15 cm. Flowers small/medium, urceolate, thinly hairy, white. Dec. Marshy soils, SW (Dutoitskloof and Wemmershoek Mts)* (Oliver & Oliver 2001a).

Erica lineata Benth. is a synonym of *Erica plukenetii* L. (Oliver & Oliver 2002a).

Erica lithophila E.G.H.Oliv. & I.M.Oliv. Compact brittle shrublet to 20 cm. Flowers medium, urceolate, pink. Aug.–Nov. N-facing sandstone crevices, KM (Swartberg and Kammanassie Mts)* (Oliver & Oliver 2002b).

Erica mariae Guthrie & Bolus is a synonym of *Erica regia* Bartl. (Oliver & Oliver 2002a).

Erica onosmiflora Salisb. is a synonym of *Erica viscaria* L. (Oliver & Oliver 2002a).

Erica oreotragus E.G.H.Oliv. Compact shrublet to 40 cm. Flowers small, urceolate with 4 basal bulges, densely hairy, pinkish. Dec.–Mar. Sandstone slopes, KM (Swartberg Mts)* (Oliver & Oliver 2001b).

Erica penduliflora E.G.H.Oliv. Erect shrublet to 1 m. Flowers large, inflated tubular to urn-shaped, white or green. Apr.–July. Sandy hills and flats, SW, AP (Pearly Beach to Viljoenshof)* (Oliver & Oliver 2001c).

Erica petrusiana E.G.H.Oliv. & I.M.Oliv. Low woody shrublet. Flowers medium, funnel-shaped, sparsely hairy, slightly sticky, dull yellow. Mar. Stony shale band and sandstone, SW (Kogelberg Mts)* (Oliver & Oliver 2002a).

Erica phyllicifolia Salisb. is a synonym of *Erica abietina* L. (Oliver & Oliver 2002a).

Erica pilaarkopensis H.A.Baker is the corrected spelling of *Erica pillarkopensis* H.A.Baker (Oliver 2004).

Erica porteri Compton is a synonym of *Erica thomae* L.Bolus (Oliver & Oliver 2002a).

Erica primulina (Bolus) E.G.H.Oliv. & I.M. Oliv. is a synonym of *Erica viridiflora* Andr. (Oliver & Oliver 2002a).

Erica richardii E.G.H.Oliv. Prostrate to erect shrublet to 30 cm. Flowers small, globose-urceolate, white, shortly hairy. May–July. Crevices in N-facing quartzite outcrops, KM (Grootswartberg: Witberg)* (Oliver & Oliver 2001a).

Erica rimarum E.G.H.Oliv. Compact gnarled shrublet to 10 cm. Flowers small, campanulate, leathery, maroon. Oct.–Dec. S-facing sandstone cliffs, NW, SW (Hex River and Dutoits Mts)* Oliver & Oliver 2000).

Erica rusticula E.G.H.Oliv. Compact shrublet to 30 cm. Flowers small, widely funnel-shaped, pink. Apr.–May. Sandy flats, NW (Cold Bokkeveld)* (Oliver & Oliver 2000).

Erica salicina E.G.H.Oliver (= *E. viminalis* E.G.H.Oliv.) Willowy shrub to 1.5 m. Flowers small, ovoid, white. Jan. Moist, sheltered sandstone cliffs, NW (Hexrivier Mts: Milner Peak)* (Oliver & Oliver 2001a; Oliver 2004).

Erica schelpeorum E.G.H.Oliv. & I.M. Oliv. Erect twiggy shrublet to 1.5 m. Flowers small, globose-urceolate, pink. Mainly May–Jul. Dry renosterveld, KM (Swartberg and Kammanassie Mts)* (Oliver & Oliver 2002b).

Erica taylorii E.G.H.Oliv. Prostrate shrublet to 20 cm. Flowers medium, ovoid-urceolate, finely hairy or smooth, pink. Oct.–Dec. Sandstone slopes at high alt., NW, KM (Cedarberg, Swartberg Mts)* (Oliver & Oliver 2001b).

Erica tenax L.Bolus is a synonym of *Erica thomae* L.Bolus (Oliver & Oliver 2002a).

Erica tragomontana R.C.Turner Erect, single-stemmed shrublet to 35 cm. Flowers broadly funnel-shaped, pink. Sep.–Nov. S-facing quartzite slopes, NM (Cold Bokkeveld)* (Turner & Oliver 2004).

Erica umbraticola E.G.H.Oliv. & I.M. Oliv. Delicate brittle shrublet to 50 cm with drooping branches. Flowers urceolate, white, sticky. Jan.–Dec. Moist southern slopes, KM (Swartberg Mts: Meiringspoort)* (Oliver & Oliver 2002b).

Current total: Genera 1; species 667 (previously 1 genus; 658 species).

EUPHORBIACEAE

Hyaenanche globosa (Gaertn.) Lamb. has been removed to Picrodendraceae

Current total: Genera 11; species 79 (previously 12 genera; 80 species).

FABACEAE

Aspalathus albens L. NW, SW (Namaqualand: near Hondeklipbaai to Cape Peninsula). Revised range, not endemic.

Aspalathus hispida Thunb. NW, SW, AP, LB, SE (Namaqualand near Springbok, Gifberg to Alexandria). Revised range.

Aspalathus spinescens Thunb. NW, SW (Namaqualand: near Hondeklipbaai to Malmesbury). Revised range, not endemic.

Melolobium lampolobium (E.Mey.) A.Moteetee & B.-E.van Wyk Rigid, thorny, scarcely glandular shrublet to 60 cm, with brown-velvety stems. Leaves 3-foliolate, leaflets oblanceolate. Flowers many along the thorns, yellow, fading reddish orange. Pods falcate, shining. May–Jan. Karroid scrub, 900–1530 m, SW, KM (Robertson Karoo and Little Karoo mountains)* (Moteetee & van Wyk 2001).

Podalyria myrtillifolia (Retz.) Willd. is the correct name for *P. cuneifolia* Vent.

Psoralea glaucescens Eckl. & Zeyh. NW (Richtersveld, Kamiesberg to Bokkeveld Mts). Revised range, not endemic.

Rafnia perfoliata (L.) Willd. is the correct name for *R. acuminata* (E.Mey.) G.J.Campbell & B.-E.van Wyk (Campbell & van Wyk 2001).

Wiborgia obcordata (Berg.) Thunb. NW, SW, LB (Namaqualand: near Port Nolloth, and Bokkeveld Mts to Mossel Bay). Revised range, not endemic.

Current total: Genera 37; species 761 (previously 37 genus; 760 species).

GERANIACEAE

Pelargonium senecioides L'Hér. NW, SW, KM (Namaqualand to Cape Peninsula and Witteberg). Revised range, not endemic.

HYACINTHACEAE

Albuca is now included in *Ornithogalum*; the 27 new combinations in *Ornithogalum* resulting from this action are listed by Manning *et al.* (2004).

Daubenya zeyheri (Kunth) J.C.Manning & Goldblatt Bulbous geophyte to 10 cm. leaves prostrate, shiny green, bracts small to 10 mm. Flowers clustered between leaves, tubular below, white, filaments orange with purple base. May–June. Coastal limestone flats, NW (Paternoster to Saldanha).* This species was incorrectly identified as *Daubenya angustifolia* (L.f.) A.M. van der Merwe & J.C.Manning.

Dipcadi is now included in *Ornithogalum* (Manning *et al.* 2004).

Drimia barkeri Oberm. ex J.C.Manning & Goldblatt is a new species for *Drimia* sp. 1 (Manning & Goldblatt 2003b).

Drimia ciliata (L.f.) J.C.Manning & Goldblatt is the correct name for *D. ciliata* (L.f.) Baker (Manning & Goldblatt 2003).

Drimia fragrans (Jacq.) J.C.Manning & Goldblatt NW (Namaqualand: Hondeklipbaai, and Bokkeveld Mts to Hex River Valley). Revised range, not endemic.

Drimia hesperantha J.C.Manning & Goldblatt is the correct name for *Drimia revoluta* (A.V.Duthie) J.C.Manning & Goldblatt (Manning *et al.* 2004).

Lachenalia corymbosa (L.) J.C.Manning & Goldblatt is a new combination for *Polyxena corymbosa* (L.) Jessop.

Lachenalia ensifolia (Thunb.) J.C.Manning & Goldblatt is a new combination for *Polyxena ensifolia* (Thunb.) Schönland.

Lachenalia maughanii (W.F.Barker) J.C.Manning & Goldblatt is a new combination for *Polyxena maughanii* W.F.Barker.

Lachenalia paucifolia (W.F.Barker) J.C.Manning & Goldblatt is a new combination for *Polyxena paucifolia* (W.F.Barker) A.M. van der Merwe & J.C.Manning.

Ledebouria ensifolia (Eckl.) S.Venter & T.J.Edwards is a new name for *Ledebouria* sp. 1 of *Cape Plants* (Edwards & Venter 2003)

Massonia grandiflora Lindl. is now included in *M. depressa* Houtt. (Manning *et al.* 2004).

Massonia bifolia (Jacq.) J.C.Manning & Goldblatt is a new combination for *Whiteheadia bifolia* (Jacq.) Baker.

Neopatersonia is now included in *Ornithogalum* (Manning *et al.* 2004).

Ornithogalum cirrhulosum J.C.Manning & Goldblatt is a new name for *Dipcadi ciliare* (Zeyh. ex Harv.) Baker.

Ornithogalum cremnophilum (van Jaarsv. & van Wyk) J.C.Manning & Goldblatt (= *Albuca cremnophila* van Jaarsv.) Pendent, bulbous geophyte to 2 m, bulb usually epigeal, greyish green, scales firm, truncate above. Leaves lanceolate, firm. Flowers erect on long pedicels, subsecund on an inclined peduncle, white with pale greenish keels, inner tepals cowed, outer anthers smaller. Dec.–Feb. Cliffs, SE (Baviaanskloof Mts).*

Ornithogalum crispum (Baker) J.C.Manning & Goldblatt is a new combination for *Dipcadi crispum* Baker.

Ornithogalum malodorum J.C.Manning & Goldblatt is a new name for *Dipcadi brevifolium* (Thunb.) Fourc.

Ornithogalum thermarum (van Jaarsv. & van Wyk) J.C.Manning & Goldblatt (= *Albuca thermarum* van Jaarsv.)

Like **O. thermarum** but leaf bases persistent and fibrous. Nov.–Dec. Sandstone cliffs, KM (Calitzdorp: Badspoort).*

Ornithogalum uitenhagense (Schönland) J.C.Manning & Goldblatt is a new combination for *Neopatersonia uitenhagensis* Schönland.

Ornithogalum viride (L.) J.C.Manning & Goldblatt is a new name for *Dipcadi viride* (L.) Moench.

Polyxena is now included in *Lachenalia* (Manning *et al.* 2004).

Spetaea Wetschnig & Pfosser is a new monotypic genus for the species identified as *Scilla plumbea* (Wetschnig & Pfosser 2003).

Spetaea lachenaliiflora Wetschnig & Pfosser is a new name for the species identified as *Scilla plumbea* Lindl. in *Cape Plants* (Wetschnig & Pfosser 2003).

Whiteheadia is now included in *Massonia* (Manning *et al.* 2004).

Current total: Genera 10; species 193 (previously 14 genera; 192 species).

GEISSOLOMATACEAE

Geissoloma marginatum (L.) Kunth (not *Geissoloma marginata* (L.) A.Juss.)

GENTIANACEAE

Sebaea amicorum I.M.Oliver & Beyers Annual to 50 cm. Leaves narrowly lanceolate. Flowers 4-lobed, yellow, calyx lobes lightly keeled, corolla tube shorter than lobes, ±4 mm long. Oct.–Dec. Sheltered S-facing sandstone ledges, KM, SE (Klein Swartberg, Great Winterhoek Mts)* (Oliver & Beyers 2001).

Sebaea albens (L.f.) Sm. (not (L.f.) Roem. & Schult.)

Sebaea aurea (L.f.) Sm. (not (L.f.) Roem. & Schult.)

Current total: Genera 3; species 32 (previously 3 genera; 31 species).

IRIDACEAE

Aristea capitata (L.) Ker-Gawl. is the correct name for *A. major* Andrews (Goldblatt *et al.* 2002).

Aristea bracteata Pers. is the correct name for *A. monticola* Goldblatt (Goldblatt *et al.* 2002).

Aristea macrocarpa G.J.Lewis is now a synonym of *A. bakeri* Klatt (Goldblatt *et al.* 2002).

Aristea sp. 1 (= *Aristea nana* Goldblatt & J.C.Manning ined) Evergreen rhizomatous perennial to 10 cm, with broadly winged, unbranched flowering stem with the terminal internode elongated. Flower paired in terminal clusters within green spathes, on long pedicels, anthers yellow. Capsules ovoid. Aug.–Sept. Stony sandstone slopes, LB, SE (Robinson's Pass to E Cape).

Babiana cuneata J.C.Manning & Goldblatt Acaulescent cormous geophyte 8–15 mm. Leaves abruptly truncate at widest point, loosely pleated, smooth or sparsely hairy. Flowers several in dense spikes at ground level, pale to deep blue, the lower lateral tepals with white spear-shaped markings. Mainly Sept. Rocky sandstone or dolerite slopes and flats, NW (Bokkeveld Mts to Swartruggens and Western Karoo) (Goldblatt & Manning 2004b).

Babiana fragrans (Jacq.) Goldblatt & J.C.Manning is the correct names for *Babiana disticha* Ker. Gawl. (Goldblatt & Manning 2004b).

Babiana longiflora Goldblatt & J.C.Manning Cormous geophyte 15–20 mm, with suberect stem. Leaves loosely pleated, softly hairy. Flowers several in an inclined spike, zygomorphic, purple, tube elongate, anthers erect, anthers violet. Aug.–early Sept. Seasonally wet stony flats, NW (Piketberg and Porterville)* (Goldblatt & Manning 2004b).

Babiana regia (G.J.Lewis) Goldblatt & J.C.Manning Cormous geophyte 5–12 mm, with stems arching outward. Leaves firm, erect, tightly plicate. Flowers several in an inclined spike, actinomorphic, violet with a deep red center, anthers erect, pollen brown. Aug.–Sept. Seasonally wet sandy flats, SW (Klipheuwel to Stellenbosch)* (Goldblatt & Manning 2004b).

Babiana spiralis Baker is the correct name for the plant called *B. fimbriata* (Klatt) Baker.

Babiana truncata G.J.Lewis does not occur in the CFR.

Babiana sp. 1 (= *Babiana inclinata* Goldblatt & J.C.Manning ined.) Cormous geophyte 15–30 mm, with stems arching outward. Leaves firm, erect, tightly plicate. Flowers numerous in an inclined spike, zygomorphic, violet with white and

darker blue marks on the lower tepals, dorsal tepal and stamens facing the spike apex. Sept.–Oct. Stony clay flats and lower slopes in renosterveld SW (Piketberg to Paarl).*

Babiana sp. 2 (= *Babiana melanops* Goldblatt & J.C.Manning ined.) Cormous geophyte 10–20 mm, with stems suberect. Leaves erect, lanceolate, softly hairy. Flowers several in an erect spike, actinomorphic, violet to purple with a dark center, anthers arrow-shaped with wide connective, blackish. Aug.–Sept. Clay slopes in renosterveld, NW, SW (Tulbagh valley to Mamre).*

Babiana sp. 3 (= *Babiana noctiflora* J.C.Manning & Goldblatt ined.) Like **B. odorata** but flowers larger, with a tube 35–50 mm long, narrow at base and wider in the upper 15–25 mm. Sept.–Oct. Rocky outcrops in renosterveld, Paardeberg S of Malmesbury)*.

Babiana sp. 4 (*Babiana papyracea* Goldblatt & J.C.Manning ined.) Cormous geophyte to 15 mm, with stems reaching ground level. Leaves firm, linear, erect, tightly plicate. Flowers several in short erect spikes, actinomorphic, purple with a darker center, anthers erect, pollen cream, floral bracts dry, papery and attenuate. Sept.–Oct. Clay flats, NW (Bokkeveld Plateau).*

Babiana sp. 5 (*Babiana radiata* Goldblatt & J.C.Manning ined.) Cormous geophyte to 10–15 mm, with stems reaching ground level. Leaves firm, linear, erect, softly hairy. Flowers several in short erect spikes, actinomorphic, purple with a red center and margins often white below, anthers erect, pollen cream. Aug.–Sept. Sandy flats, KM (Little Karoo near De Rust).*

Dietes grandiflora N.E.Br. Evergreen rhizomatous perennial, 30–50 cm. Leaves sword-shaped. Flowers white with violet style arms, outer tepals with yellow marking at limb base and a line of yellow hairs on the claws, lasting 2–3 days. Mainly Sept.–Dec. Margins of evergreen thicket, SE (Hankey to KwaZulu-Natal).

Ferraria divaricata Sweet Cormous geophyte to 45 cm, stem reaching well above ground, much-branched above. Leaves sword-shaped, crowded basally. Flowers brown to maroon with lighter brown margins or golden brown with darker margins, claws broad, forming a wide cup, nectaries pale green, large, anther lobes divergent, capsule beaked. Mainly late Sept.–Nov. Deep sands, NW, SW (Hondekliipbaai to Langebaan). Revised species circumscription and range.

Ferraria variabilis Goldblatt & J.C.Manning Cormous geophyte, 6–20 cm, branching mostly near base. Leaves sword-shaped, crowded at base, sheathing the stem. Flowers dull yellow, yellow-green or brown, with banded or speckled markings and darker margins, often putrid smelling, claws broad, forming a wide cup, nectaries basal,

dark-coloured, anther lobes diverging, capsule beaked. Aug.–Nov. Sandy and shale flats and rock outcrops, NW, SW, KM, LB (S Namibia to Clanwilliam, Caledon to Little Karoo).

Ferraria uncinata Sweet Flowers blue to violet with brown margins. Aug.–Sept. Mainly sandstone slopes and outcrops, NW, SW (Klawer to Malmesbury)*. Revised description and range, now endemic (Goldblatt & Manning 2004).

Freesia fucata J.C.Manning & Goldblatt Cormous geophyte, 15–30 cm. Leaves linear, glaucous. Flowers white flushed mauve on reverse, sweetly scented, bracts tricuspidate. July. Renosterveld, SW (Bosjesveld between Villiersdorp and Breede River)* (Manning & Goldblatt 2001a).

Freesia juncea (L.f.) Ker Gawl. is the correct name for *Freesia verrucosa* (Vogel) Goldblatt & J.C.Manning (Manning & Goldblatt 2004).

Freesia sp 1 (= *Freesia marginata* J.C.Manning & Goldblatt ined.) Like **F. caryophyllacea** but leaves leathery with thickened submarginal veins. May–June. Gravelly washes in succulent karoo, SW (Robertson karoo)*.

Freesia sp 2 (= *Freesia praecox* J.C.Manning & Goldblatt ined.) Like **Freesia alba** but stems mostly unbranched and without axillary cormels. June–July. Rocky sandstone slopes, SW (Riviersonderend Mts)*.

Gladiolus wilsonii (Baker) Goldblatt & J.C.Manning Cormous geophyte, 30–50 cm, tunics fibrous. Leaves linear, whip-like. Flowers in slender spikes, short-tubed, bilabiate, white or flushed lilac. Oct.–Nov. Open grassland, SE (Humansdorp to E Cape).

Hesperantha ciliolata Goldblatt Like **H. pilosa** but leaves terete or oval in section with four to several deep grooves scabrid-ciliate in the rib edges, and flowers violet, musky scented. Aug.–Sept. Stony sandstone slopes, KM (Voetpadsberg (Touwsrivier) and Roggeveld Escarpment) (Goldblatt 2003).

Hesperantha malvina Goldblatt Like **H. pilosa** but leaves sparsely long-hairy, and flowers pale mauve, larger with tepals $\pm 14 \times 4$ –5 mm. Sandstone cliffs, KM (Little Karoo: Anysberg)* (Goldblatt 2003).

Hesperantha sufflava Goldblatt Like **H. falcata** but leaves always 3, crowded at the base, flowers pale yellow and perianth tube 12–16 mm long, exceeding the tepals. Late July–Aug. Sandy gravel lopes in renosterveld, SW (Malmesbury)* (Goldblatt 2003).

Ixia atrandra Goldblatt & J.C.Manning Cormous geophyte to 50 cm. Leaves narrowly lanceolate, usually four, stem 1–2-branched. Flowers crowded in a dense spike, pink or cream with a large dark center, tube filiform, stamens fully

exserted, blackish, anthers broad, arrow-shaped with exposed connective. Sept.–Oct. Renosterveld, SW (Bosjesveld between Villiersdorp and the Breede River)* (Manning & Goldblatt 2001a).

Ixia superba J.C.Manning & Goldblatt Cormous geophyte to 60 cm. Leaves lanceolate, twisted. Flowers crowded in a dense 3–6-flowered spike, salver-shaped, pale to deep pink, purple to blackish in the centre, lightly scented, tube filiform below, stamens blackish, anthers linear. Aug.–Sept. Loamy lower slopes, KM (Little Karoo, Montagu)*.

Moraea cantharophila Goldblatt & J.C.Manning Like **M. lurida** but flowers always cream, tepals claws shorter, forming a shallow cup, and anthers partly exserted from floral cup, not foul scented. Aug.–Sept. Loamy clay and shale bands, SW (Sir Lowry's Pass to Sandy's Glen).*

Moraea lilacina Goldblatt & J.C.Manning is a new species for *Moraea* sp. 1 (Goldblatt & Manning 2002).

Moraea regalis Goldblatt & J.C.Manning is the correct name for *M. derustensis* Goldblatt & J.C.Manning *nom. nud.* *Moraea neopavonia* R.C.Foster is now a synonym of *M. tulbaghensis* L.Bolus (Goldblatt & Manning 2002).

Moraea minuta Goldblatt is the correct name for *M. minutiflora* Goldblatt.

Moraea monticola Goldblatt is the correct name for *M. obscura* Goldblatt.

Moraea simplex Goldblatt & J.C.Manning Like **M. elsiae** but foliage leaf solitary, flowers pale yellow, and style branches undivided, filiform, extending between the bases of the anthers. Sept.–Oct. Gritty sandy flats, NW (eastern foot of the Piketberg Mts)* (Goldblatt & Manning 2004a).

Romulea discifera J.C.Manning & Goldblatt Cormous geophyte, 10–20 cm, with symmetrical, depressed bell-shaped corm, lower margins forming a spreading ridge, stem branching above the ground. Leaves 3–5. Flowers cup-shaped, bright yellow with a darker yellow cup. Mid July–early Aug. Sandy flats, NW (Bokkeveld Plateau)* (Manning & Goldblatt 2001b).

Romulea lilacina J.C.Manning & Goldblatt Cormous geophyte, 1–3 cm, corms rounded at base. Basal leaf solitary, sticky with adhering sand grains. Flowers solitary, lilac with darker stripes in a pale cup. Ripe capsules recurved. May–June. Deep sands in washes, NW (Cold Bokkeveld: Katbakkies)* (Manning & Goldblatt 2001b).

Romulea papyracea Wolley-Dod is now a synonym of *R. schlechteri* Bég. (Manning & Goldblatt 2001b).

Thereianthus montanus J.C.Manning & Goldblatt is a new name for *Thereianthus* sp. 1 of *Cape Plants* (Manning & Goldblatt 2004)

Tritoniopsis bicolor J.C.Manning & Goldblatt Like **T. parviflora** but leaves narrowly lanceolate, pseudopetiolate, and filaments shorter, 6–7 mm long. Dec. Seasonally waterlogged sandstone plateau, SW (Bredasdorp Mts)* (Manning & Goldblatt 2001c).

Tritoniopsis flava J.C.Manning & Goldblatt Like **T. parviflora** but more robust with lanceolate leaves, 2- or 3-veined and flowers yellow. Dec. Seasonal marshes, SW (Kogelberg Reserve near Palmiet River mouth)* (Manning & Goldblatt 2001c).

Tritoniopsis toximontana J.C.Manning & Goldblatt Cormous geophyte, 30–65 cm. Leaves lanceolate, 3-veined, pseudopetiolate. Flowers pink, tube elongate, 20 mm. March–May. Sandstone outcrops, NW (Gifberg and Matsikamma Mts)* (Manning & Goldblatt 2001c).

Current total: Genera 28; species 684 (previously 28 genera; 663 species).

ISOETACEAE

Isoetes toximontana L.J.Musselman & J.P.Roux Tufted geophyte, rootstock 3-sided, with horny tricuspidate scales. Sporophylls 3–10, to 42 mm long. Sporangium lacking velum. Megaspores grey–green. Seasonal pools and seepage areas, 300–560 m, NW (Gifberg and Cedarberg Mts)* (Musselman & Roux 2002).

Current total: Genera 1; species 3 (previously 1 genus; 2 species).

LOGANIACEAE

Nuxia with *N. floribunda* Benth. has been removed to Stilbaceae

Current total: Genera 1; species 2 (previously 2 genera; 3 species).

MARSILEACEAE

Pilularia americana A.Braun Minute herb, rhizome creeping, branched, leaves simple, terete, to 19 mm long, sporocarps globose, to 2.5 mm in diameter, densely haired. Rim of ephemeral pools, NW (Bokkeveld Plateau and N and S America) (Roux 2002).

Current total: Genera 2; species 5 (previously 1 genus; 4 species).

MENYANTHACEAE

Villarsia manningiana Ornduff Like **V. capensis** but usually smaller, leaf blades up to 50 mm long. Sept.–Dec. Peaty soils and stream margins (SW, SE: Cape Peninsula to Hermanus and Outeniqua Mts at Knysna)* (Ornduff 2001).

Current total: Genera 1; species 3 (previously 1 genus; 2 species).

ONAGRACEAE

Ludwigia octovalvis (Jacq.) P.H.Raven Softly woody shrub to 4 m, shortly hairy on the branches. Leaves linear to lanceolate. Flowers solitary in the upper axils, yellow, sepals 4. Oct.–Jan. Wet places and river banks, NW (pantropical but probably naturalised in the Olifants River valley)!

Current total: Genera 1; species 2 (previously 1 genus; 2 species).

PICRODENDRACEAE

Hyaeananche globosa (Gaertn.) Lamb. (not (Gaertn.) Lam.), transferred from Euphorbiaceae

Current total: Genera 1; species 1 (not previously recognized in the flora).

PLANTAGINACEAE

Ilysanthes dubia (L.) Bernh., transferred from Scrophulariaceae

Limosella africana Glück, transferred from Scrophulariaceae

Limosella grandiflora Benth., transferred from Scrophulariaceae

Current total: Genera 3; species 6 (previously 1 genus; 3 species).

POACEAE

Agrostis polygonooides Stapf (not *A. polygonoides* Stapf).

Cenchrus incertus M.A.Curtis (not *C. incertis* M.A.Curtis).

Chaetobromus involucratus (Schrad.) Nees (= *C. dregeanus* Nees)

Cymbopogon nardus (L.) Rendle (= *C. validus* (Stapf) Stapf ex Burtt Davy)

Cymbopogon pospischilii (K.Schum.) C.E.Hubb. (= *C. plurinodis* (Stapf) Stapf ex Burtt Davy)

Digitaria scalarum (Schweinf.) Chiov. (= *D. abyssinica* of authors, missapplied name)

Eragrostis mexicana (Hornem.) Link (= *E. virescens* J. Presl. & C.Presl.)

Hordeum geniculatum All. (= *H. marinum* Huds.)

Leptochloa fusca (L.) Kunth (= *Diplachne fusca* (L.) P.Beauv. ex Roem. & Schult.)

Pentaschistis heptamera (Nees) Stapf Perennial to 30 cm. Leaves basal, linear. Spikelets 5–6 mm long, in a dense panicle, lemmas 5–9-awned. Nov.–Dec. Coastal sands, SE (Humansdorp to East London).

Current total: Genera 61; species 208 (previously 61 genera; 207 species).

POLYGALACEAE

Muraltia bondii Vlok Erect, single-stemmed, closely leafy shrublet to 50 cm. Leaves subsessile, linear-lanceolate and semi-terete, mucronate. Flowers solitary in axils, white tipped purple. Aug.–Nov. Rocky sandstone slopes, KM (Little Karoo, Anysberg)*.

Current total: Genera 3; species 142 (previously 3 genera; 141 species).

RESTIONACEAE

Ceratocaryum caespitosum H.P.Linder Dioecious, caespitose perennial to 1 m, culms simple. Nuts to 10 mm long, tuberculate at the apex.. Nov. Sandstone slopes, 100–200 m, SW (False Bay to Hermanus)* (Linder 2001a).

Ceratocaryum persistens H.P.Linder. Dioecious, spreading perennial to 1.5 m, culms simple. Nuts to 10 mm long, smooth. Mar.–Apr. Sandstone slopes, 300–500 m, SW (Hottentots Holland Mts)* (Linder 2001a).

Ischyrolepis gaudichaudiana (Kunth) H.P.Linder NW, SW, AP, KM, LB (Namaqualand to Uniondale). Revised range, not endemic (Linder 2001b).

Current total: Genera 19; species 320 (previously 19 genera; 318 species).

RHAMNACEAE

Noltea africana (L.) Endl. (not (L.) Reichenb.).

ROSACEAE

Cliffortia ruscifolia L. NW, SW, KM, LB, SE (Richtersveld to Humansdorp). Revised range, not endemic.

SAPINDACEAE

Dodonaea viscosa Jacq. (= *Dodonaea angustifolia* L.f.).

SCROPHULARIACEAE

Buddleja with **B. glomerata** H.L.Wendl., **B. saligna** Willd., and **B. salviifolia** (L.) Lam. moved here from Buddlejaceae.

Gomphostigma is added to the flora.

Gomphostigma virgatum (L.f.) Baill. Slender, willowy, closely leafy shrublet to 1 m. Leaves opposite, linear, usually greyish. Flowers in long narrow racemes, white, scented, tube subcampanulate, 2–4 mm long, tepals spreading. Nov.–Sept. Along watercourses in running water among boulders, NW, KM (Namaqualand, Bokkeveld and Swartberg Mts, Namibia and Zimbabwe).

Freylinia helmei van Jaarsv. Erect slender resprouting shrub to 2.5 m. Leaves narrowly elliptic, 20–30 mm long. Flowers in short racemes, subpendulous, tubular, white to mauve, 25–27 mm long, stamens unequal, style over half as long, 15–17 mm long. Oct.–Nov. Steep shale slopes in renosterveld, SW (Botrivier)* (van Jaarsveld & Thomas 2003).

Halleria, with *H. elliptica* Thunb., *H. lucida* L., and *H. ovata* Benth., removed to Stilbaceae

Ilysanthes, with *I. dubia* (L.) Bernh., removed to Plantaginaceae.

Ixianthes, with *I. retzioides* Benth., removed to Stilbaceae

Limosella, with *L. africana* Glück and *L. grandiflora* Benth., removed to Plantaginaceae.

Nemesia cheiranthus E.Mey. ex Benth. NW (Namaqualand: Komaggas, and Bokkeveld Mts to Piketberg). Revised range, not endemic.

Selago gloiodes Hilliard is the correct name for *Selago gliodes* Hilliard (Hilliard 1999).

Selago subspinosa Hilliard KM (W Little Karoo and Roggeveld Escarpment). Revised range, not endemic (Hilliard 1999).

Current total: Genera 31; species 408 (previously 33 genera; 411 species).

SOLANACEAE

Lycium strandveldense A.M.Venter Dioecious thorny shrub to 1.5 m. Leaves densely fascicled on short branches, succulent, narrowly ovate or obovate. Flowers solitary, from centre of leaf clusters, actinomorphic, tubular, deep

purple, male flowers with fertile stamens and vestigial style lacking a stigma, female flowers with long style, anthers lacking pollen. Sept.–Dec. Sandy flats and dunes, NW (Namaqualand to Velddrif) (Venter & Venter 2003).

Current total: Genera 2; species 19 (previously 2 genera; 18 species).

STILBACEAE

Halleria elliptica Thunb., transferred from Scrophulariaceae.

Halleria lucida L., transferred from Scrophulariaceae.

Halleria ovata Benth., transferred from Scrophulariaceae.

Ixianthes retzioides Benth., transferred from Scrophulariaceae.

Nuxia floribunda Benth., transferred from Loganiaceae.

Current total: Genera 9; species 19 (previously 6 genera; 14 species).

TAMARICACEAE

Tamarix usneoides E.Mey. ex Bunge Willowy tree with slender, drooping branches, to 9 m. Leaves scale-like.

Flowers in massed panicles, minute, pink to grey. Mainly Mar.–June. Stream banks or dry river courses, KM (Little Karoo to Great Karoo and E Cape).

Current total: Genera 1; species 1 (not previously included in *Cape Plants*).

THYMELAEACEAE

Gnidia denudata Lindl. ?KM, LB, SE (Touws River and Langeberg Mts to Mozambique: Inhaca Island). Revised range, not endemic (Edwards, Beaumont & Styles 2001).

Passerina comosa C.H.Wright NW, SW, KM, LB (Kamiesberg, W Karoo, and Cold Bokkeveld to Kleinswartberg Mts). Revised distribution.

Passerina esterhuyseniae Bredenk. & A.E.van Wyk Like **P. comosa** but bracts helmet-shaped brownish bracts and pale yellow flowers turning red to brown after pollen release. Flowering time?. High rocky slopes and peaks (NW: Pakhuis Mts and Redelinghuys)* (Bredenkamp & van Wyk 2003).

Passerina falcifolia (Meisn.) C.H.Wright SW, KM, LB, SE (Caledon District and Outeniqua Mts to Alexandria), revised range, not endemic.

Passerina filiformis L. NW, SW, LB (Clanwilliam to Peninsula, Hexriver Mts to Langeberg at Attaquaskloof).*

Revised distribution.

Passerina montevisa Bredenkamp & A.E.van Wyk Like **P. filiformis** but leaves below the flowers swollen at the base. Flowering time?. Rocky slopes, LB, SE (Mossel Bay to N Tanzania) (Bredenkamp & van Wyk 2002c).

Passerina nivicola Bredenkamp & A.E. van Wyk NW (Cold Bokkeveld and W Karoo) (Bredenkamp & van Wyk 2002a). Revised range.

Passerina quadrifaria Bredenkamp & A.E.van Wyk Like **P. comosa** but leaves less hairy. Flowering time? Rocky sandstone slopes at high alt., LB, KM, SE (Langeberg and Little Karoo mountains to Great Winterhoek Mts)* (Bredenkamp & van Wyk 2002b).

Passerina truncata (Meisn.) Bredenkamp & A.E.van Wyk is the correct name for *Passerina glomerata* Thunb. and the distribution is corrected to NW, SW, KM, LB, SE (Namaqualand and Bokkeveld Mts to Baviaanskloof).

Current total: Genera 4; species 127 (previously 4 genera; 124 species).

ZYGOPHYLLACEAE

Roepera cordifolia (L.f.) Beier & Thulin (= *Zygophyllum cordifolium* L.f.)

Roepera cuneifolia (Eckl. & Zeyh.) Beier & Thulin (= *Zygophyllum cuneifolium* Eckl. & Zeyh.)

Roepera debilis (Cham. & Schltld.) Beier & Thulin (= *Zygophyllum debile* Cham. & Schltld.)

Roepera flexuosa (Eckl. & Zeyh.) Beier & Thulin (= *Zygophyllum flexuosum* Eckl. & Zeyh.)

Roepera foetida (Schrad. & J.C.Wendl.) Beier & Thulin (= *Zygophyllum foetidum* Schrad. & J.C.Wendl.)

Roepera fulva (L.) Beier & Thulin (= *Zygophyllum fulvum* L.)

Roepera fuscata (van Zyl) Beier & Thulin (= *Zygophyllum fuscatum* van Zyl)

Roepera lichtensteiniana (Cham. & Schltld.) Beier & Thulin (= *Zygophyllum lichtensteinianum* Cham. & Schltld.)

Roepera maculata (Aiton) Beier & Thulin (= *Zygophyllum maculatum* Aiton)

Roepera maritima (Eckl. & Zeyh.) Beier & Thulin (incl. **Zygophyllum uitenhagense** Sond.)

Roepera morganiana (L.) Beier & Thulin (= *Zygophyllum morganiana* L.)

Roepera pygmaea (Eckl. & Zeyh.) Beier & Thulin (= *Zygophyllum pygmaeum* Eckl. & Zeyh.)

Roepera rogersii (Compton) Beier & Thulin (= *Zygophyllum rogersii* Compton)

Roepera sessilifolia (L.) Beier & Thulin (= *Zygophyllum sessilifolium* L.)

Roepera spinosa (L.) Beier & Thulin (= *Zygophyllum spinosum* L.; incl. **Z. procumbens** Adamson) NW, SW
(Namaqualand: near Kleinsee, and Lambert's Bay to Cape Peninsula) (van Zyl 2000). Revised range, not endemic.

The undescribed species of *Zygophyllum* listed in *Cape Plants* should also be included in **Roepera**.

Tetraena retrofracta (Thunb.) Beier & Thulin (= *Zygophyllum retrofractum* Thunb.)

Current total: Genera 5; species 22 (previously 4 genera; 23 species).

ACKNOWLEDGEMENTS

Field work in southern Africa was supported by the National Geographic Society (grants 5994-97, 6704-00 and 7103-01). We thank Clare Archer, R.K. Brummitt, Peter Bruyns, C.N. Cupido, Cornelia Klak, Eric Knox, Thomas Lammers, Bertil Nordenstam, Dee Snijman, and J.J.A. Vlok for their help in compiling the corrections presented here.

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Table 1. Ranking of the 20 largest families in the Cape flora as indicated by species number from Goldblatt & Manning (2000) combined with changes in this paper. These families contribute 7 014 species to the flora, or 75% of the total 9 080 species. Family circumscriptions reflect the recommendations of the Angiosperm Phylogeny Group (1998, 2003).

Family	Total species	Number endemic (% of total)	Total genera (endemic)	Species/Genus
1. Asteraceae	1048	653 (62.3)	123 (31)	8.5
2. Fabaceae	761	624 (82.0)	37 (6)	20.6
3. Iridaceae	684	539 (78.8)	32 (6)	21.4
4. Ericaceae	667	644 (96.5)	1 (0)	667
5. Aizoaceae	658	520 (79.0)	77 (19)	8.5
6. Scrophulariaceae	409	294 (71.9)	31 (7)	13.2
7. Proteaceae	330	319 (96.7)	14 (9)	23.6
8. Restionaceae	320	295 (92.1)	19 (10)	16.8
9. Rutaceae	273	257 (94.1)	15 (6)	18.2
10. Orchidaceae	227	138 (60.8)	25 (2)	9.1
11. Poaceae	208	80 (38.5)	61 (3)	3.4
12. Cyperaceae	206	101 (49.0)	29 (3)	7.1
13. Hyacinthaceae	193	89 (41.5)	10 (1)	19.3
14. Campanulaceae	186	142 (76.3)	13 (6)	14.3
15. Asphodelaceae	162	85 (52.5)	8 (0)	20.3
16. Geraniaceae	155	91 (58.7)	3 (0)	51.7
17. Polygalaceae	142	123 (86.6)	3 (0)	47.3
18. Rhamnaceae	137	126 (91.9)	5 (1)	27.4
19. Crassulaceae	129	40 (31.0)	5 (0)	25.8
20. Thymelaeaceae	<u>127</u>	<u>91 (71.6)</u>	<u>4 (1)</u>	<u>31.8</u>
	7 020	5 248 (74.6)	515 (112)	13.6

Table 2. Ranking by numerical size of the twenty largest genera in the CFR (endemic species number) from Goldblatt & Manning (2000) with changes following this paper.

<i>Erica</i>	667 (644)	<i>Muraltia</i>	107 (101)
<i>Aspalathus</i>	272 (256)	<i>Gladiolus</i>	106 (86)
<i>Pelargonium</i>	148 (88)	<i>Selago</i>	100 (76)
<i>Agathosma</i>	143 (138)	<i>Crassula</i>	97 (28)
<i>Phyllica</i>	133 (126)	<i>Disa</i>	92 (78)
<i>Lampranthus</i>	119 (113)	<i>Ruschia</i>	83 (66)
<i>Oxalis</i>	119 (94)	<i>Restio</i>	85 (82)
<i>Moraea</i>	116 (80)	<i>Leucadendron</i>	82 (79)
<i>Cliffortia</i>	114 (103)	<i>Helichrysum</i>	81 (34)
<i>Senecio</i>	113 (56)	<i>Thesium</i>	81 (35)

Total in largest 10 genera = 1942 spp.

(21.4% of the flora)

Total in largest 20 genera = 2856 spp

(31.5% of the flora)