THE CACTUS FILE HANDBOOK

3

# Adromischus

by John Pilbeam, Chris Rodgerson and Derek Tribble

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Front cover picture: *Adromischus marianiae*
Back cover picture: *Adromischus marianiae* "Bryan Makin" (Photographs by Bill Weightman)

***This book is dedicated to the late Bryan Makin who inspired all three authors to an early appreciation of the genus Adromischus***

# INTRODUCTION

The genus *Adromischus* is popular among collectors of succulent plants, grown principally for the beautiful shapes and markings of the leaves. There are 28 species of *Adromischus*, but with the recognized subspecies and the often considerable variation of some species, there are at least 50 which would grace any collection of succulent plants before there was a real danger of duplication.

For serious collectors of *Adromischus* plants there is pre-Tölken time and post-Tölken time. Before Tölken wrote his revision of the Crassulaceae of southern Africa, including this genus, we happily and innocently collected together as many different looking plants as we could lay hands on, and the standard reference work on the genus was the monumental work on succulent plants, Jacobsen's *Handbook of Succulent Plants* (English edition, 1960) or his *Succulent Lexicon* (English edition, 1974). Tölken's revision appeared in 1978, in *Bothalia*, under the title 'New taxa and new combinations in *Cotyledon* and allied genera' (the *Adromischus* part on pages 382 to 393), and since then the more seriously interested collectors of this colourful genus have talked of this or that species being a "Section 1" or "Section 5" etc., as though they had done so all their lives. And indeed once a plant in cultivation has produced its flowers, there is little doubt where it belongs in the five sections which Tölken clearly delineated, and this certainly narrows the possibilities of its identity.

So — this book attempts to do two things. Firstly, while accepting the substance of Tölken's revision, some of the more worthwhile former taxa, which he sinks into synonymy beneath a broad view of *A. marianiae*, are retained, so that collectors have a familiar handle for these distinctive and popular plants. For instance, to take probably the most sought after of the little gems in this genus: *Adromischus herrei* (sunk without trace beneath *A. marianiae* var. *immaculatus*) will be called in this book *Adromischus marianiae "herrei"*.

As David Hunt has said: "It really doesn't make much difference whether you call something a variety or a form, and it is a bore checking who treated what at what infraspecific rank". With the changeover in botanists' favour from variety to subspecies, and conflicting opinions on whether a lower rank still should be called a form (forma) or a cultivar, it seems a very sensible solution to drop all these definitive terms in favour of this unequivocal system that recognizes distinctive variations, such as those of the popular species *A. marianiae*.

Secondly the inclusion of good photographs of the plants will provide what has often been lacking in the past, as an aid to identification. To this end, where there is considerable variation in leaf shape and leaf marking, one of the most confusing aspects of understanding this genus, a photograph of the variation of leaf shape and marking is included to give an idea of the range that might be encountered.

We hope that the first objective will please collectors like us, who are reluctant to lose to bland synonymy such beauties as *A. herrei, A. antidorcatum* or *A. blosianus* to name but three, and that it will not displease too much the lumpers. And we hope that the photographs meet their proverbial worth of 1,000 words each, which in the case of this genus is an understatement! Certainly without the photographs this book would be of little use at all.

Chris Rodgerson's and Derek Tribble's observations of these plants in their natural habitat in southern Africa are included in the text. Many of the illustrations are of plants either in habitat, or of known habitat origin. Details of location data are to be found in the Appendix of collectors' numbers.

*Adromischus* plants are delightful succulents which have held the authors' fascination for many years. A specialist collection of these plants with their variation of leaf form, colour and texture, is very rewarding, and a constant source of wonder and sometimes perplexity. Their size is just right for pot culture, and they will grow well in glasshouses, conservatories or sunny windowsills.

We hope that this Handbook will inspire more people to grow more of these beautiful plants.

John Pilbeam, Chris Rodgerson and Derek Tribble 1998

# ACKNOWLEDGEMENTS

It is invidious to pick out for special mention the many enthusiasts of this wonderful genus, and there are many who will remain unsung, but whose continued encouragement and enthusiasm has kept the spur on the plodding progress of this book.

But a few deserve special mention. They include Bill Weightman, for his usual unstinting patience in helping with the photography; the late Bryan Makin for help, advice and material; Steven Hammer for helpful comments on the manuscript; John Lavranos and Peter Bruyns for help, advice and valuable material; and particularly Gordon Rowley for helpful advice on nomenclatural problems; Cathryn Mangold, Henry Varney, Harold Wilson and John Marsden for enthusiastic support; and Kurt Zadnik of the Berkeley Gardens, for allowing pillage of the collection there for leaves.

We are particularly grateful to the National Botanical Institute, Pretoria, for permission to reproduce the drawings of flowers used in Tölken's revision of this genus in volume 14 of the *Flora of Southern Africa* (see p. 5).

*Adromischus nanus* growing on quartz rocks north-east of Kon Kyp, Northern Cape (western Bushmanland)

# HISTORY

*Adromischus* is part of the Family Crassulaceae, closely related to the genera *Cotyledon* and *Tylecodon*, and some were described in the first place as *Cotyledon* species. Indeed one species sits on the border between these two genera, viz. *A. phillipsiae*. It is the only *Adromischus* species to have orange-red, pendant flowers, superficially resembling those of *Cotyledon* species, but with the individual blooms owing more to *Adromischus* in their structure and detailed characters.

After the erection of the generic name *Adromischus* by Lemaire in 1852 (*Le Jardin Fleuriste 2 Miscellanées* 58-61), it was little used until resuscitated in 1930 by Alwin Berger (Engler & Prantl, *Natürlichen Pflanzenfamilien* 18 – Crassulaceae). Since then it has stuck and been accepted by most students and collectors of succulent plants.

Several authorities have since made attempts at classifying the genus and sorting out the names. The first two did so almost simultaneously and without initial knowledge of each other's work: C. A. Smith, who worked in the State Information Office, Pretoria, in 1939 (*Bothalia* 3: 613-654) and Karl von Poellnitz in Germany in 1940 (*Fedde's Repertorium Specierum Novarum Regni Vegetabilis* 48: 80-113; 49:58-65).

Uitewaal of the Netherlands in 1952 (*National Cactus & Succulent Society Journal* 7:69-70) made the first attempt to divide the genus by floral characters, which forms the basis of the present accepted division into Sections by Helmut Tölken (see below).

There was some interesting work in the 1950s and early 1960s by Paul Hutchison in the USA while at the University of California Botanic Garden, Berkeley. Several new species were described at that time in the US Cactus and Succulent Society's journal, and along with good photographs, were well illustrated by the excellent drawings of May Blos. This work was based on material sent to Hutchison mainly by Hans Herre and Harry Hall.

Also in the US Society's journal, in 1953, Myron Kimnach produced a well-researched study of the genus, including a key.

Hermann Jacobsen of Germany in his major works on succulent plants (*Handbook of Succulent Plants*, 1960, and *Succulent Lexicon*, 1974) also set out to bring some order into the genus, and his work is probably still the most often turned to for general information about this genus.

But it was Helmut Tölken in 1978 who produced a complete revision of the genus (*Bothalia* 12. 3: 382) updated in 1985 (*Flora of Southern Africa*, 14: 37-60), which is taken seriously by most enthusiasts of the genus today. Tölken's work is based on herbarium specimens and field work, and was a massive task, being part of an overall revision of the Crassulaceae in southern Africa. But it is essentially a botanist's work, dumping several well-known species unceremoniously into synonymy. He followed in these publications the standard format for 'flora', with little illustration, apart from a diagram of floral characteristics, a page of drawings mainly of the leaves of *A. marianiae* showing its considered and considerable variation and distribution, and a drawing of one species, *A. roanianus*; how much better it would have been with drawings of more species. The Sections were clearly and usefully defined, but the species were not. The result has been a reluctance by collectors to discard the names of their old favourites which provide a means of distinguishing what are essentially very different looking plants. The most heinous sin that Tölken committed though, was in failing to illustrate, then or subsequently, the four new species that he proposed in his work.

One new species has been described since Tölken's revision. This is *A. subdistichus*, by Peter Bruyns, compared with *A. leucophyllus* in Section 5. It was subsequently realized that its flowers place it in Section 1.

## CLASSIFICATION

First it is worthwhile reiterating Tölken's considerations when determining the separate standing of this genus from its close relatives, *Cotyledon* and *Tylecodon*.

Linnaeus's original concept of the genus *Cotyledon* was wide, and as well as *Adromischus* it embraced well-known genera since hived off, including such succulent genera as *Kalanchoe* and *Orostachys*. *Adromischus* was established in 1852 by Lemaire but not recognized for some 80 years or so.

Lemaire used the enigmatic name *Adromischus*, meaning thick or stout stalk, referring, as his footnote makes clear, to the pedicels. He listed the species: *A. robustus* (syn. *C. triflora*); *A. maculatus* (syn. *C. maculata* and *C. alternans*); *A. jasminiflorus*; *A. hemisphaericus* (syn. *C. hemisphaerica*); *A. cristatus* (syn. *C. cristata*); *A. clavifolius*.

And with a question-mark *A. rhombifolius* (syn. *C. rhombifolia*); *A. mammillaris* (syn. *C. mammillaris*), an unfortunate mis-spelling of Linnaeus the younger's *C. mamillaris*, copied by many; *A. cuneatus* (syn. *C. cuneata*); *A. caryophyllaceus* (syn. *C. caryophyllacea*); *A. mucronatus* (syn. *C. mucronata*); *C. undulata*.

Tölken maintained that "the three genera are obviously very similar to one another, but no indication of direct or close relationship between any two of them was found. It is significant . . . that no natural intergeneric hybrids between any of the three have been recorded, although plants often grow near one another. Yet numerous natural hybrids between species of each of the genera are known".

Tölken published a table showing the differences separating the three genera. For those readers interested in the technicalities of the separation of these genera, his key is worth reproducing:

Leaves deciduous, with elongate epidermis cells with sinuate anticlinal walls . . . . . *Tylecodon*

Leaves persistent with isodiametric cells with straight anticlinal cross walls:

Leaves opposite (or in whorls of 3); petals fused for less than the full length of tube, nectary cup-shaped . . . . . *Cotyledon*

Leaves spirally arranged; petals fused beyond the tube; nectary disc-like . . . . . *Adromischus*

In simple terms, to use the most obvious, visible characters, *Tylecodon* has thick, fleshy stems and leaves which are deciduous, *Cotyledon* and *Adromischus* have leaves which persist (unless you allow them to become too dry for too long, that is!). And leaves of *Cotyledon* are in opposite pairs, while those of *Adromischus* spiral around the stem; this spiral arrangement is not always obvious, but can be seen more clearly if the stem is made to etiolate. In addition, the flowers are different: *Cotyledon* has a branching inflorescence, with pendant flowers; *Tylecodon* also has a branching inflorescence, but with usually erect or spreading flowers; *Adromischus* has usually a simple, spike-like inflorescence (branching in *A. phillipsiae* and one or two other species), with erect or spreading flowers (pendulous in *A. phillipsiae*).

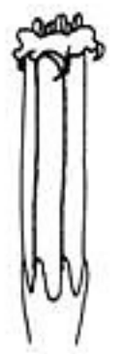
Helmut Tölken's classification of *Adromischus* is based on floral characters, and he divided the genus into five sections, as follows:

**Section 1 Adromischus** Jacobsen, Kakteen 17: 189 (1966); & Sukk. Lex. 27 (1966); Tölken, Bothalia 12: 384 (1978). (Syn. Section Suffruticuli Lemaire; Section Connatilobati Uitewaal; Section Longipedunculati Subsection Hemisphaericus (Schonland) von Poellnitz; Cotyledon, Section Spicatae, Group Hemisphaerica Schonland).

Corolla with cylindrical tube, green often tinged red; lobes broadly triangular, cuspidate and usually reflexed against the tube, with undulate and frilled margin, rough but usually without trichomes, white, pale yellow, or pale pink, rarely red except for midrib and mucro. Anthers protruding.

Species: *A. alstonii; A. bicolor; A. filicaulis* (and subsp. *marlothii*); *A. hemisphaericus; A. liebenbergii; A. montium-klinghardtii; A. roanianus; A. subdistichus* (added recently).

**Section 2 Boreali** Tölken, Bothalia 12: 385 (1978).



Corolla with cylindrical tube slightly grooved, glaucous, pink or red; lobes ovate to ovate-triangular, acute, usually reflexed against the tube which thus appears to have an undulate fringe, usually with some club-shaped trichomes mainly in the throat, white or pink and dark pink in the throat. Anthers protruding.

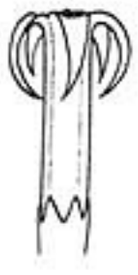
Species: *A. schuldtianus* (and subsp. *juttae*); *A. trigynus; A. umbraticola* (and subsp. *ramosus*).

**Section 3 Brevipedunculati** von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48: 89 (1940) in part; Tölken, 12: 386 (1978). (Syn. Cotyledon Section Paniculatae Harvey Group Caryophyllacea Schonland; Section Adromischus Jacobsen Subsection Pendenti Jacobsen).

Corolla with funnel-shaped tube, slightly grooved towards apex, glaucous-green rarely pink; lobes ovate-triangular, spreading or recurved, rough and usually with club-shaped trichomes on lobes and in throat, white to deep mauve, rarely orange or mauve along middle of petals. Anthers enclosed (not protruding).

Species: *A. caryophyllaceus; A. diabolicus; A. fallax; A. humilis; A. nanus; A. phillipsiae.*

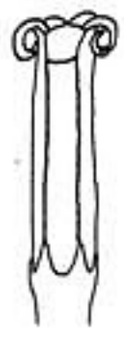
**Section 4 Incisilobati** Uitewaal, Nat. Cact. Succ. J. 7: 70 (1952), in part; Tölken, Bothalia 12: 388 (1978) – incorrectly as Inscisilobati.



Corolla with cylindrical tube usually green; lobes lanceolate-triangular, spreading to recurved, rough with club-shaped trichomes on lower lobes and throat, white to pale pink and usually with deep mauve line along exposed margin. Anthers enclosed (not protruding).

Species: *A. inamoenus; A. mamillaris*; *A. maculatus; A. maximus; A. sphenophyllus; A. triflorus.*

**Section 5 Longipedunculati** von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48: 89, 95 (1940); Tölken, Bothalia 12: 389 (1978). (Syn. Cotyledon Section Spicatae Harvey Group Cristata Schonland; Adromischus Section Longipedunculati von Poellnitz Subsection Cristati (Schonland) von Poellnitz).



Corolla with cylindrical tube slightly grooved, glaucous-green; lobes lanceolate-triangular, erect, spreading or recurved, rough and with club-shaped trichomes restricted to the throat, white and with usually deep red or mauve line along the exposed margin. Anthers enclosed (not protruding).

Species: *A. cooperi; A. cristatus* (and var. *clavifolius*, var. *schonlandii,* var. *zeyheri*); *A. leucophyllus, A. marianiae* (and its variations); *A. subviridis.*

(Floral illustrations reproduced with the kind permission of the National Botanical Institute, Pretoria)


Typical flowers (above) and inflorescence (below) from each of the five Sections of the genus:
SECTION 1 ADROMISCHUS (FLOWER: *A. LIEBENBERGII.* INFLORESCENCE: *A. ALSTONII).*
SECTION 2 BOREALI *(A. TRIGYNUS).*
SECTION 3 BREVIPEDUNCULATI *(A. HUMILIS).*
SECTION 4 INCISOLOBATI *(A. MACULATUS).*
SECTION 5 LONGIPEDUNCULATI *(A. MARIANIAE).*

## KEY TO THE SPECIES AND SUBSPECIES

Tölken in his work on this genus has produced several keys. That below is based mainly on vegetative material, but does not include the later described *A. subdistichus*.

1a Leaves soft (shrivelling irregularly when withering):

2a Stems long (up to 150mm), little branched; Graaff-Reinet area ..... *A. fallax*

2b Stems short (up to 40mm), much branched and forming dense rosettes:

3a Leaves green to grey; corolla orange-red; south of Sutherland ..... *A. phillipsiae*

3b Leaves green and purple underneath; corolla deep plum-colour; Nuweveld Mountains .....
..... *A. humilis*

1b Leaves stiff (shrivelling but basic shape remains intact):

4a Plants with thin aerial roots along stems, if not then leaves viscid:

5a Stems 40-80mm long, without adventitious roots, covered with glandular hairs .....
..... *A. cristatus* var. *zeyheri*

5b Stems 20-40mm long, covered with aerial roots:

6a Ridge at apex of leaves narrower than broadest point on leaf; inflorescence and petals with glandular hairs ..... *A. cristatus* var. *schonlandii*

6b Ridge at apex of leaf constitutes broadest point on leaf; inflorescence and petals glabrous, rarely with a few hairs when young:

7a Leaf blade 1-1.5 times longer than breadth of apical ridge; leaves obtriangular-spathulate, usually with distinct petiole ..... *A. cristatus* var. *cristatus*

7b Leaves 2-5 times longer than breadth of apical ridge, narrowly oblanceolate to obtriangular ..... *A. cristatus* var. *clavifolius*

4b Plants without aerial roots; leaves glabrous:

8a Leaves terete or partly so (often ridged at apex):

9a Leaves drawn into an apical point (no lateral ridge present):

10a Stems with stilt-roots ..... *A. filicaulis* subsp. *marlothii*

10b Stems sometimes rooting but then with fine roots:

11a Stems decumbent to suberect; Namaqualand, Richtersveld .....
..... *A. filicaulis* subsp. *filicaulis*

11b Stems usually prostrate; eastern Little Karoo..... *A. mamillaris*

9b Leaves with lateral ridge on either side (sometimes on both sides of a groove):

12a Roots tuberous:

13a Leaves up to 20mm long; inflorescence with 1 or 2 flowers ..... *A. nanus*

13b Leaves (20-)25-70mm long; inflorescence with (6-)8-many flowers .....
..... *A. marianiae* var. *immaculatus*

12b Roots fibrous or fleshy but not tuberous:

14a Stems 80-150(-250)mm long..... *A. roanianus*

14b Stems 30-50(-80)mm long:

15a Leaves truncate with flat apex ending in horny ridge ..... *A. cooperi*

15b Leaves pointed with ridge continuing on either side of central groove:

16a Marginal ridge of leaves usually horny and raised; south of Vanrhynsdorp .....
..... *A. marianiae* var. *marianiae*

16b Marginal ridge often brown but scarcely raised and not horny: Richtersveld ..... *A. marianiae* var. *kubusensis*

8b Leaves dorsiventrally flattened:

17a Basal stems irregularly tuberous, producing many short erect branches:

18a Horny margin right around leaves ..... *A. trigynus*

18b Horny margin of leaves rarely extending to lower leaf half:

19a Leaves 8-14mm ..... *A. diabolicus*

19b Leaves (15-)20-50(-80)mm long:

20a Northern Namaqualand, Richtersveld, south-western South West Africa/Namibia ... *A. alstonii*

20b Central and eastern South West Africa/Namibia, Transvaal, eastern Cape:

21a South-eastern Cape ..... *A. bicolor*

21b South West Africa/Namibia and Transvaal:

22a South West Africa/Namibia:

23a Erect branches up to 30mm long, much branched ..... *A. schuldtianus* subsp. *schuldtianus*

23b Stems 40-120mm long, little branched ..... *A. schuldtianus* subsp. *juttae*

22b Transvaal:

24a Erect stems up to 30(-35)mm long; club-shaped trichomes present in throat of corolla ..... *A. umbraticola* subsp. *umbraticola*

24b Erect stems up to 80mm long; club-shaped trichomes absent on corolla ..... *A. umbraticola* subsp. *ramosus*

17b Basal stems terete:

25a Horny ridge right around leaf:

26a Leaves 10-30(-35)mm long. ..... *A. leucophyllus*

26b Leaves 40-80(-120)mm long:

27a Eastern Cape between Humansdorp, Steytlerville and King William's Town ..... *A. sphenophyllus*

27b Western and southern Cape:

28a Western Cape: Cedarburg to Matsikama Mountains ..... *A. maximus*

28b Southern Cape between Worcester and George ..... *A. maculatus*

25b Horny ridge usually restricted to upper half of leaves:

29a Leaves (35-)40-80(-110)mm long:

30a South-western Great Karoo and Little Karoo:

31a Stems erect to decumbent; leaves 6-16(-20)mm broad ..... *A. caryophyllaceus*

31b Stems usually prostrate; leaves 20-30mm broad ..... *A. triflorus*

30b Northern Cape or eastern Cape:

32a Leaves at least 3 times longer than broad:

33a Leaves truncate (usually mucronate) and with terminal horny ridge. ..... *A. cooperi*

33b Leaves acute, rarely obtuse, and with horny margin on either side of central groove ..... *A. marianiae* var. *marianiae*

32b Leaves less than 3 times longer than broad:

34a Eastern Cape, Willowmore to Grahamstown ..... *A. inamoenus*

34b South West Africa/Namibia, north-western and western Cape:

35a Northern Namaqualand, Richtersveld and south-western South West Africa/Namibia ..... *A. alstonii*

35b Cedarberg to Matsikama Mountains ..... *A. maximus*

29b Leaves 10-30(-35)mm long:

36a Eastern Cape east of Willowmore ..... *A. inamoenus*

36b Western to north-western Cape:

37a Richtersveld west of Steinkopf to south-western South West Africa/Namibia:

38a Stems up to 200mm long but if very short then much branched ..... *A. montium-klinghardtii*

38b Stems up to 30mm long, with rarely more than 3 basal rosettes:

39a Near Steinkopf ..... *A. nanus*

39b Near Orange River mouth ..... *A. marianiae* var. *hallii*

37b South-western Cape, west of Willowmore and south of Loeriesfontein:

40a Stems somewhat zig-zagging; on sandstone in Cedarberg to north of Vanrhyn's Pass ..... *A. roanianus*

40b Stem straight; south-western Cape:

41a Leaves densely covered with a white bloom or specimens from just south of Calvinia only with a moderate bloom:

42a Leaves round or elliptic; western Little Karoo ..... *A. leucophyllus*

42b Leaves oblanceolate to obovate; just south of Calvinia ..... *A. subviridis*

41b Leaves without bloom but often with flaking wax:

43a Growing in Fynbos or False Fynbos:

44a West of Worcester ; corolla tubes c. 2.5mm long ..... *A. hemisphaericus*

44b East and south-east of Robertson; corolla lobes 4-6mm long ..... *A. caryophyllaceus*

43b Growing in low karroid vegetation:

45a Leaves almost terete at middle; corolla lobes at least as long as broad ..... *A. liebenbergii*

45b Leaves evenly convex on both surfaces; corolla lobes at least twice as long as broad ..... *A. triflorus*

# GEOGRAPHY

*Adromischus* plants are frequently seen growing among other leaf succulents throughout southern Africa in the drier areas of all the provinces of South Africa, and southern Namibia, as shown on the maps on pp 13–15. We have included some general landscape pictures throughout the handbook to show the various types of terrain in which *Adromischus* may be found growing.

Species from Section 1 are the most abundant *Adromischus* in the winter-rainfall area of the west. A broad view of *A. hemisphaericus* and a narrow view of *A. roanianus* have been taken (see later discussions under each species).

The three species in Section 2 occupy central summer rainfall parts of southern Africa and, in general, do not occur with other *Adromischus* species. *A. schuldtianus* in Namibia and *A. umbraticola* in Northern Province are the most northerly species.

The six species in Section 3 are distributed from the southern Cape to western Bushmanland. This is an unusual distribution pattern. While *A. fallax, A. humilis* and *A. phillipsiae* are obviously closely related (with similar leaves), *A. diabolicus* and *A. nanus* (with short, sometimes single-flowered inflorescences) are unlikely to be closely related to their nearest neighbour, *A. phillipsiae* (with tall inflorescences and bird-pollinated flowers). Section 3 plants are not often or easily seen since they occur in widely spaced populations and are small and plain when not in flower.

The species within Section 4 are the most abundant *Adromischus* in the southern Cape, in areas of low rainfall throughout the year. The distribution of Section 4 species is difficult to define because of the difficulty of distinguishing *A. sphenophyllus* from *A. maculatus* from *A. triflorus*. This Section is more diverse than is suggested by the six currently recognized species and some of the small forms of these species could be new taxa.

The five species in Section 5 have a similar distribution to Section 1, but also occur north-eastwards into Kwazulu-Natal. The distributions drawn for *A. cooperi* and *A. cristatus* may be confused, due to misidentification of plants reported in the literature. By naming nearly all Section 5 plants from the west as one complex species (that is *A. marianiae*) the large diversity of form has been rather masked. Section 5 plants are also not often or easily seen, since they are small plants occurring in small populations in the driest places e.g. quartz patches.

Each Section of the genus *Adromischus* has a distinctive distribution pattern, as shown on the simplified distribution maps. The sectional distributions overlap and so more than one species of *Adromischus* can be found at a given place. However, it is remarkable that species within a Section rarely overlap, and one almost never finds two species from the same Section together. The only exception to this known by the authors is *A. filicaulis* in Section 1, which occasionally grows near other Section 1 species.

Examples of combinations where three or more species occur in the same vicinity include:

| **Species** | **Vicinity** |
|---|---|
| *A. alstonii* (Sect.1), *A. filicaulis* (Sect. 1), *A. marianiae* form (Sect. 5) | Helskloof, Richtersveld |
| *A. hemisphaericus* (Sect. 1), *A. triflorus(?)* (Sect. 4), *A. marianiae* form (Sect. 5) | Swartruggens, W Cape |
| *A. filicaulis* ssp. *marlothii* (Sect. 1), *A. liebenbergii* (Sect. 1), *A. triflorus* (Sect. 4), *A. leucophyllus* (Sect. 5) | S Laingsburg, W Cape |
| *A. caryophyllaceus* (Sect. 1), *A. cristatus* (Sect. 3), *A. inamoenus* (Sect. 4), *A. subdistichus* (Sect. 5) | Nuwekloof, SE Willowmore |

If it is true that the geographic origin of a genus is near the centre of diversity, then an origin for *Adromischus* in the southern Cape is suggested by these maps.

It is interesting to contrast the above *Adromischus* Section distributions with the allied genera *Cotyledon* and *Tylecodon*. *Cotyledon* has contracted taxonomically in recent years to only nine recognized species and is most diverse in the Eastern Cape. In contrast, *Tylecodon* has grown in recent years to over 40 recognized species and is most diverse throughout Namaqualand. These different centres of origin help distinguish the genera.

As far as we know at present, no species of *Adromischus* deserves a conservation status of 'vulnerable', 'endangered' or 'extinct'. Their habitat preference for rocky terrain means that they live in places unlikely to be developed. The ease of propagation from leaves should remove any threat from excessive collection by people. Many are widespread and, with the exception of *A. fallax*, all are known from multiple populations. And since *A. fallax* comes from the edge of a precipitous mountain escarpment, it is very likely that more unrecorded populations exist.

Occasionally hybrids between Sections can be found, but in nature these are very rare i.e. less than one hybrid seen per hundred populations viewed. Such hybrids are usually distinctive and directly intermediate between adjacent parents i.e. they are probably first generation hybrids.

Examples quoted by Tölken (1985) are:

| **Sections** | **Species** |
|---|---|
| 1 x 4 | *A. filicaulis* var. *marlothii* x *A. maculatus* |
| 1 x 4 | *A. filicaulis* var. *marlothii* x *A. triflorus* |

Examples seen in habitat:

| **Sections** | **Species** | **Area** |
|---|---|---|
| 1 x 5 | *A. filicaulis* x *A. marianiae* (RL 624/59) | N Khamieskroon, N Cape |
| 1 x 5 | *A. ?hemisphaericus* x *A. marianiae* (DT 6365a, CR 1399a) | S Nieuwoudtville, N Cape |
| 4 x 5 | *A. ?triflorus* x *A. marianiae* "tanqua" (DT 5594) | Swartruggens, W Cape |
| 1 x 4 | *A. filicaulis* ssp. *marlothii* x *A. triflorus* (DT 5000a) | SW Ashton, W Cape |
| 1 x 5 | *A. filicaulis* ssp. *marlothii* x *A. leucophyllus* (CR 1309) | Montagu Springs, W Cape |

## DISTRIBUTION SUMMARY

**Gauteng, Mpumalanga, Northern and North-West Provinces:** *A. umbraticola*

**Free State, Northern Cape Province:** *A. trigynus*

**Namibia:** *A. marianiae* forms, *A. montium-klinghardtii, A. schuldtianus, A. trigynus*

**Richtersveld**: *A. alstonii, A. filicaulis, A.montium-klinghardtii, A. marianiae* forms

**Namaqualand, W Bushmanland:** *A. alstonii, A. diabolicus, A. filicaulis, A. marianiae* forms, *A. nanus, A. phillipsiae*

**Knersvlakte:** *A. filicaulis, A. hemisphaericus, A. marianiae* forms

**Bokkeveldberg, Tanqua Karoo:** *A. filicaulis, A. hemisphaericus, A. marianiae* and forms, *A. roanianus, A. subviridis*

**Cederberg, SW Cape**: *A. hemisphaericus, A. maximus*

**Great Karoo & Nuweveldberg**: *A. filicaulis, A. humilis, A. maculatus, A. phillipsiae*

**Robertson Karoo, Langeberg, Little Karoo, Lainsgsburg, Swartberg:** *A. caryophyllaceus, A. filicaulis, A. leucophyllus, A. liebenbergii, A. maculatus, A. mamillaris, A. triflorus*

**Outeniekwaberg, Willowmore area:** *A. cristatus, A. filicaulis, A. inamoenus, A. maculatus, A. subdistichus*

**South Eastern Cape, Graaff-Reinet area**: *A. bicolor, A. cooperi, A. cristatus, A. fallax, A. inamoenus, A. sphenophyllus*

The edge of Bushmanland, north of Steinkopf, Northern Cape, with *Cheiridopsis* flowering in spring

*Adromischus maximus* DT 5567 growing near the Doring River, south of Klawer, Western Cape

# DISTRIBUTION MAPS

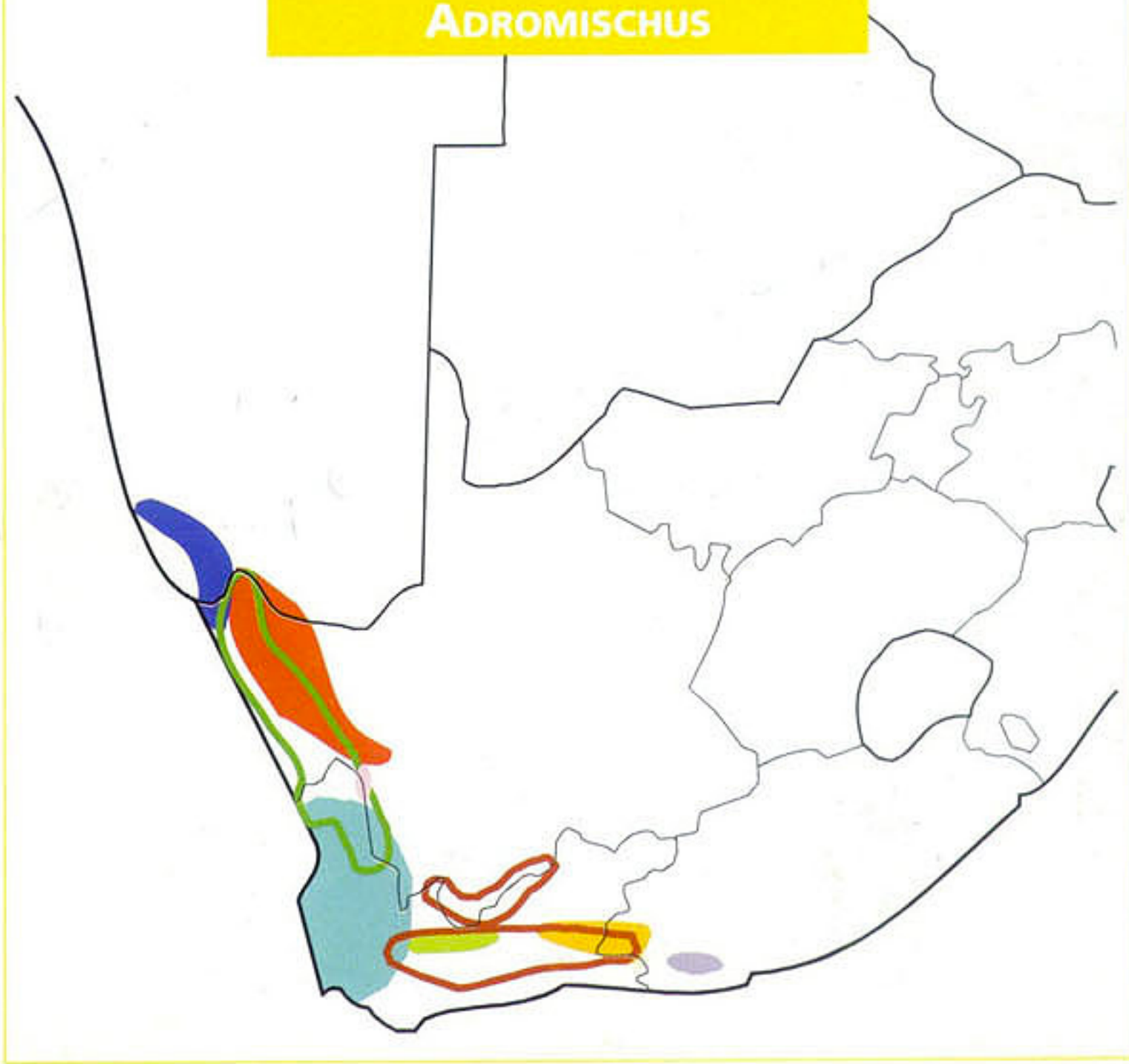
This is the first attempt to publish distribution maps for all species of *Adromischus*. Since these plants cover a wide area, more distribution information is badly needed for the more remote species. In particular, more information is needed for all species in Section 2 from Namibia, Northern Cape Province, Northern Province and Mpumalanga. For Section 4, more information from the Great Karoo and the Eastern Cape is needed.

The maps are based upon personal observations and published records, but not upon herbarium specimens. The distribution of individual *Adromischus* species is discussed further in the main chapter of this book, the *Commentary on Species*.

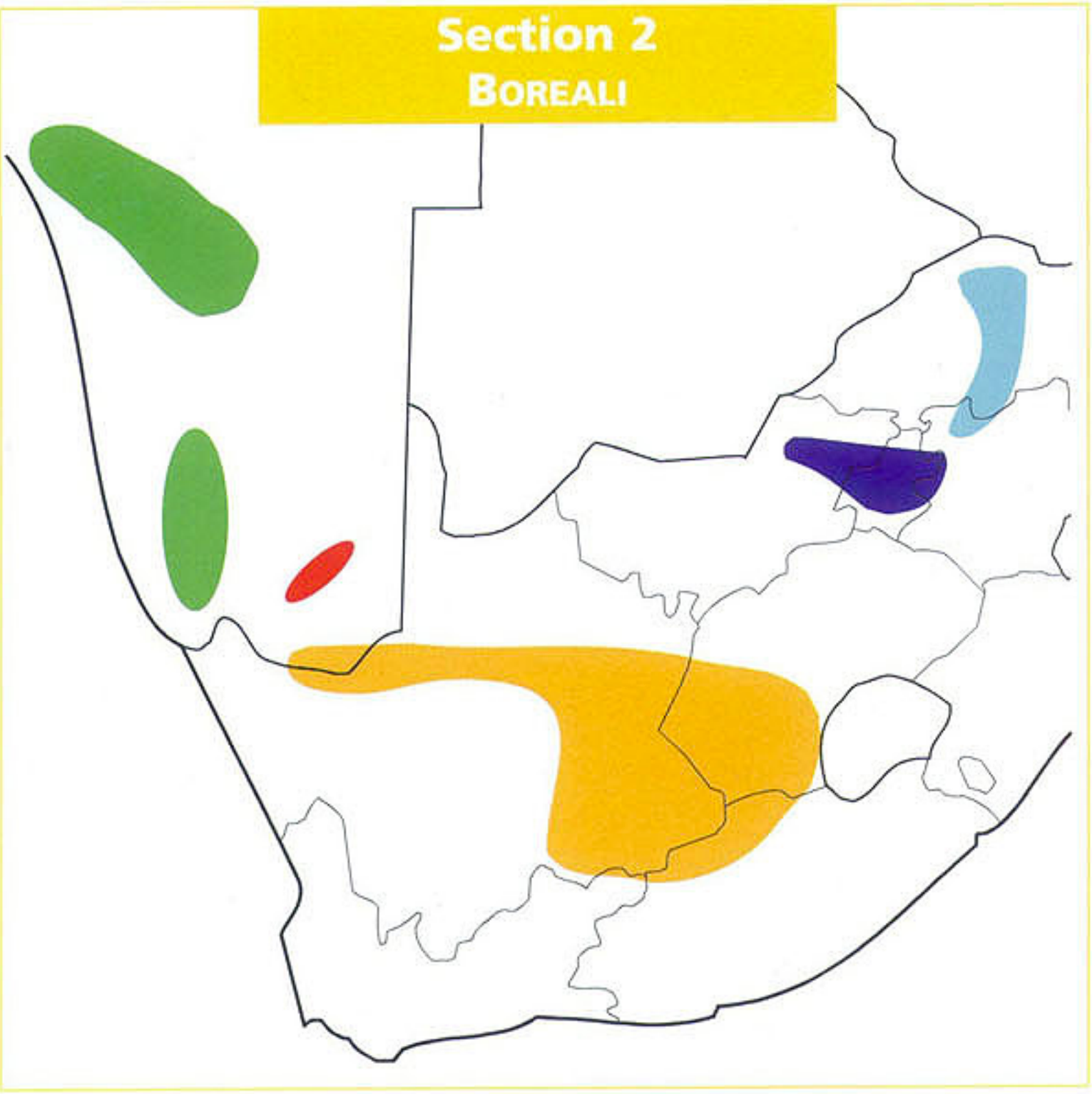

## Distribution map 1

- *A. alstonii*
- *A. bicolor*
- *A. filicaulis*
- *A. filicaulis* subsp. *marlothii*
- *A. hemisphaericus*
- *A. liebenbergii*
- *A. montium-klinghardtii*
- *A. roanianus*
- *A. subdistichus*

## Section 1
## Adromischus



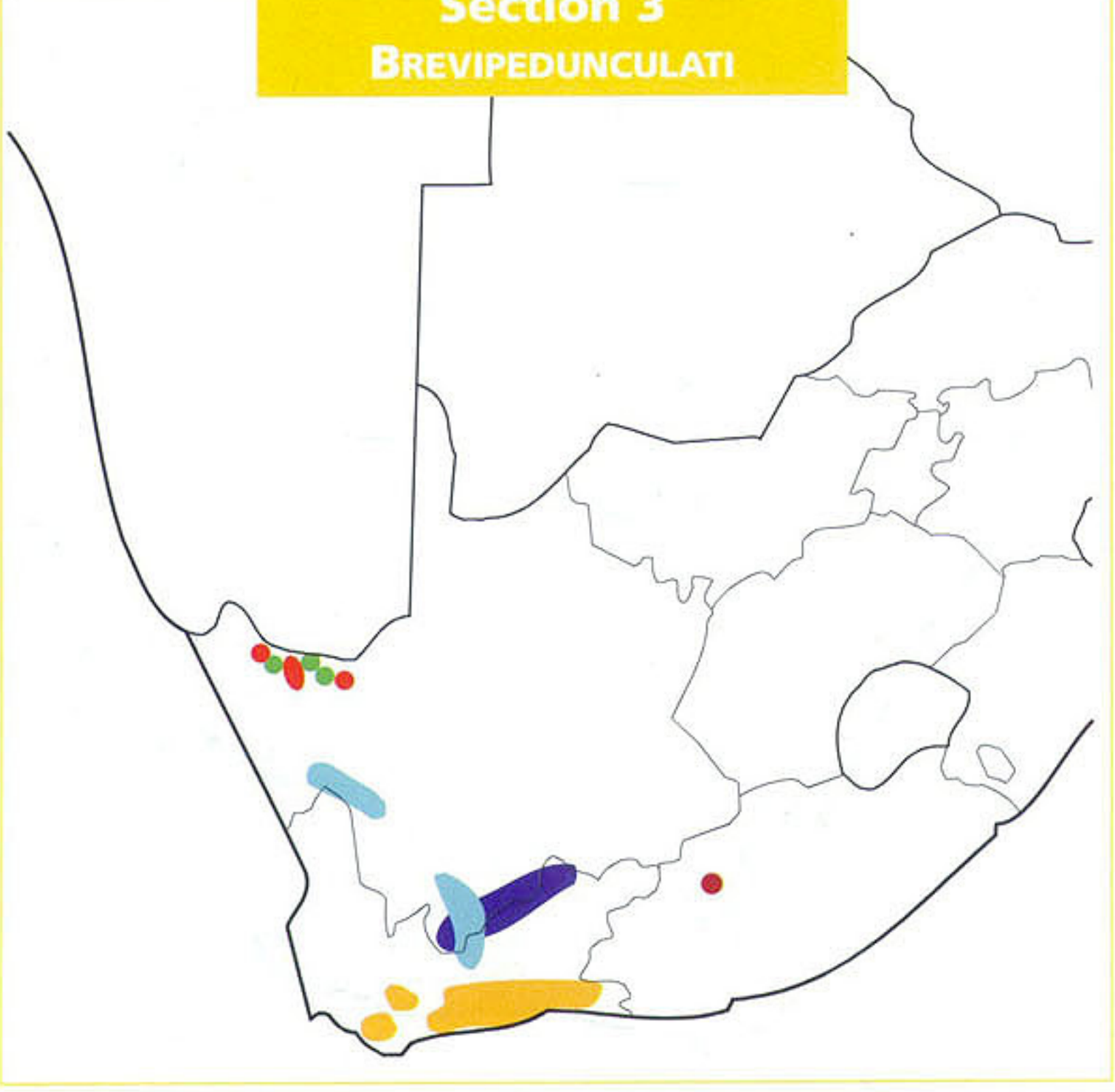
## Section 2
### Boreali



**Distribution map 2**

- *A. schuldtianus*
- *A. schuldtianus* subsp. *juttae*
- *A. trigynus*
- *A. umbraticola*
- *A. umbraticola* subsp. *ramosus*

## Section 3
### Brevipedunculati

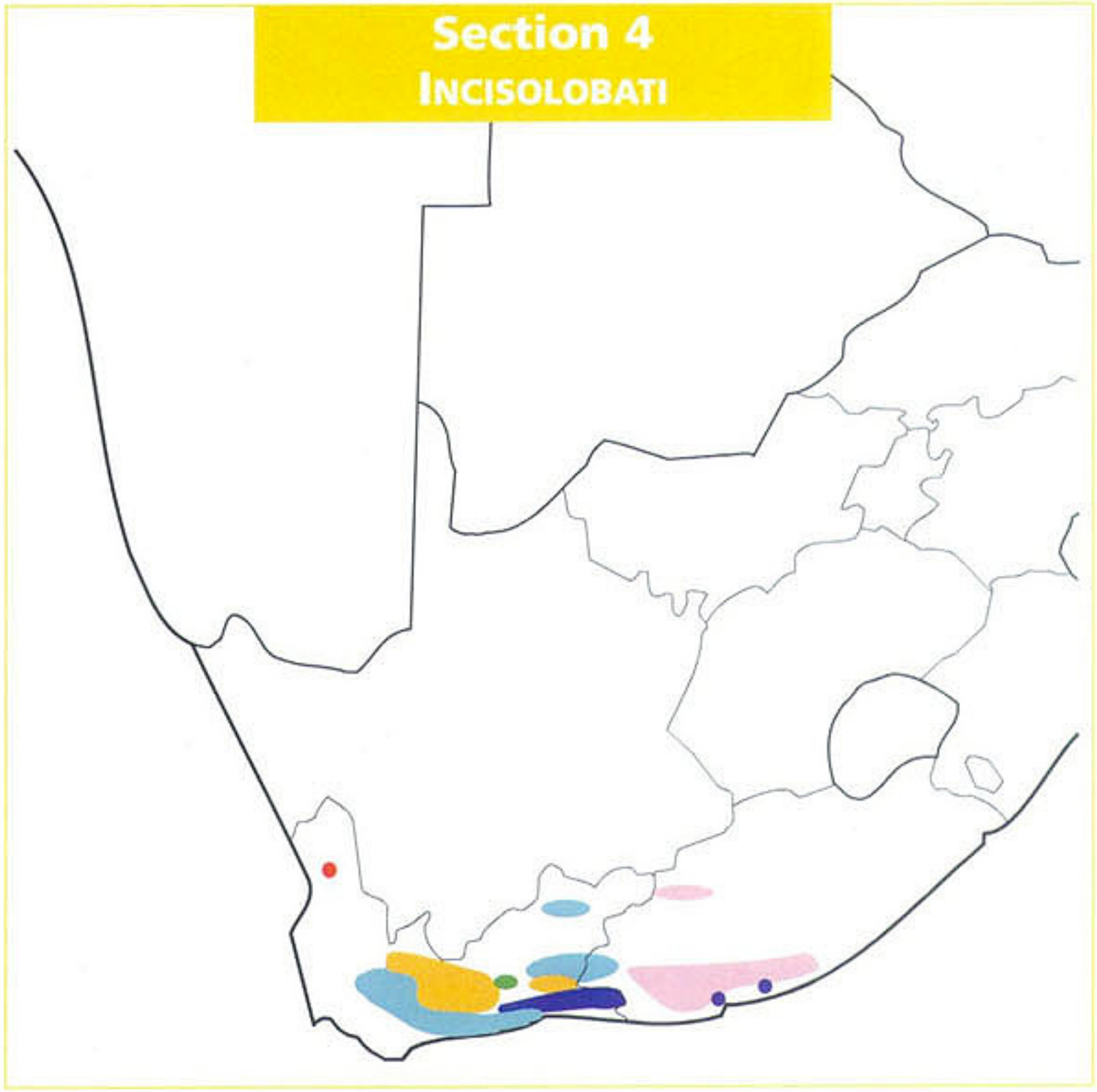


**Distribution map 3**

- *A. caryophyllaceus*
- *A. diabolicus*
- *A. fallax*
- *A. humilis*
- *A. nanus*
- *A. phillipsiae*

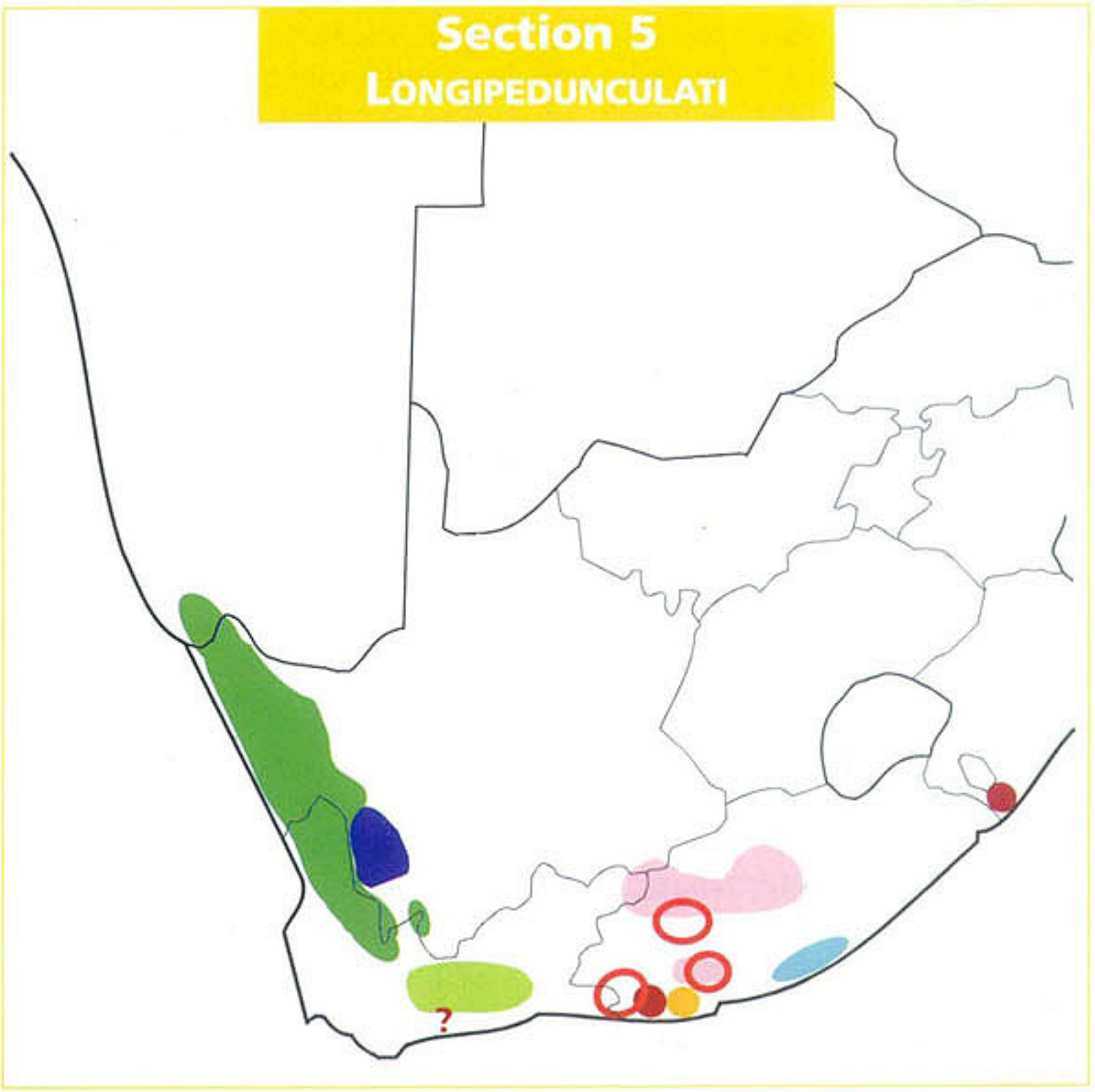
## Distribution map 4

- *A. inamoenus*
- *A. mamillaris*
- *A. maculatus*
- *A. maximus*
- *A. sphenophyllus*
- *A. triflorus*




## Distribution map 5

- *A. cooperi*
- *A. cristatus* var. *cristatus*
- *A. cristatus* var. *clavifolius*
- *A. cristatus* var. *schonlandii*
- *A. cristatus* var. *zeyheri*
- *A. leucophyllus*
- *A. marianiae*
- *A. subviridis*



# CULTIVATION

These observations are based on growing plants in a glasshouse in England; growers will clearly wish to adapt the advice to suit their circumstances.

*Adromischus* are generally easy plants to grow, although there are exceptions, as with any large and widespread genus. Some species are easy and quickly make substantial plants, but others are very slow and take many years to outgrow a small pot. As is the way of things, those with good looks are often those with the most cussed nature.

## Compost

In the wild, *Adromischus* grow in many different soil types, derived mainly from shale, sandstone, granite or quartzite. In cultivation they are not fussy, adapting well to soil or peat-based mixes (or a mixture of both), as long as there is free drainage. The addition of about a third coarse grit to any mix should be adequate to ensure good drainage, with perhaps a little more grit for those which have tuberous roots, since these are often found in minimal detritus in rock crevices.

## Watering

Even though *Adromischus* grow in both winter and summer rainfall areas, they seem fairly tolerant about watering in cultivation. Under glass they make their strongest vegetative growth early and late in the year, when there are warm days and cool nights. The summer months are taken up by the production of flowers and very little stem growth occurs at this time. Generally they seem to appreciate water throughout the year, but beginning in early spring can be watered regularly as long as they are dry for a few days between douses. Too little water in periods of hot weather will cause the plants to shed leaves as a natural survival process; on the other hand excessive watering, so that the soil stays wet for too long, is liable to rot the roots (especially those with tuberous roots) and can cause the same leaf-drop and subsequent collapse of the whole plant. A balance has to be struck, and this will vary according to where you live and the conditions in which you grow your plants.

## Light and ventilation

In habitat *Adromischus* start life in the shade of rocks or bushes, but the majority then grow to become fully exposed. In cultivation they need all the light they can get, otherwise the beautiful shapes, colours and markings which most develop during the summer will not develop to their full potential. The problem under glass is getting the balance right between light intensity and ventilation: if the ventilation is not sufficient, plants near the glass will scorch, so that having the ventilators and doors open during the summer months is essential. Better still the installation of fans to move the air around in the glasshouse constantly is certainly beneficial from several points of view. Light shading in summer will keep them growing and still maintain their colour. Keep the slower growing and more colourful plants high in the glasshouse in the best light.

## Temperature

As with most South African Crassulaceae, *Adromischus* can tolerate low temperatures, and will be safe even down to near freezing overnight, if they are fairly dry at the root and as long as the temperature rises during the day. A safe temperature for these plants in the winter is a minimum of about 3°C, watching the leaves for shrivelling, when a little water may be given.

## Repotting or potting on

'Repotting' is for plants which have not been repotted for several years, when the spent soil should be shaken out from the roots, and the plants put into completely fresh soil. Smaller growing species with fibrous roots, requiring less root room, are better treated in this way so that they are not overpotted; they can often be put back into the same size pot.

'Potting on' is for more vigorous plants (especially those developing tuberous roots) in the first few years in cultivation, to encourage their growth and development. Minimal disturbance of the roots and a pot one size larger will encourage steady development, and prevents plants receiving a setback.

The safest time for either operation seems to be, as for most plants, before they really start into growth in early spring. If potting on with no root disturbance, it can be left until later, or can be undertaken carefully at any time of year if they have really outgrown their allotted space. Some tuberous rooted plants will push a pot out of shape if left in the same pot too long.

## Feeding

Plants in the wild have been seen emerging from small cracks in solid rock, with seemingly very little in the way of sustenance. They do very well in cultivation with no fertilizer at all, as long as they are repotted or potted on every couple of years. If not given fresh soil *Adromischus* probably appreciate feeding as much as any other plants, but how much depends on the grower. A good practice seems to be feeding at about monthly intervals throughout the growing season, particularly at the beginning and the end. This encourages stem growth and flowering at first, and replaces energy lost from flower production later in the year. A high potash fertilizer is recommended. But be careful not to overfeed, as excess fertilizer will result in lush, green growth.

## Pests and diseases

As with most other succulent plants, *Adromischus* can suffer from the usual pests. Increasingly these days remedies other than chemicals are recommended, but none yet eradicate pests, they just keep the numbers down; in particular the mealy-bug predator looks more fearsome than the mealy-bugs themselves, as well as suffering from the disadvantages of being larger, and so not able to follow mealy-bugs into smaller crevices, as well as pining away once the temperature drops below about 10°C.

The availability of effective chemicals too is reducing, through many being declared too dangerous to the growers themselves. If chemicals are used then ring the changes to find what is most effective against the pests, which tend more and more to be resistant to these remedies. It should be kept in mind that *Adromischus* leaves can be damaged by some insecticides, especially by dissolving their waxy coating. Drenching the soil with a systemic insecticide three times a year seems to keep most pests at bay. Fumite smoke cones, based on pirimiphos-methyl, have also been used to good effect, with no detrimental effects on the plants, but be careful not to ignite the cones too near the plants.

Mealy-bugs are a perennial problem, and in the last few years we have seen inroads into succulent collections of a new species, *Vryburgia brevicruris*, the short-legged mealy-bug, (see *Asklepios* 68:16-20 (1996). It concentrates its efforts around the necks of plants as well as in the more usual places, including the roots, actually eating into the tissue, and setting up rot. Whatever species attacks your plants, swift action is necessary to prevent the numbers building up to lethal proportions, for make no mistake, they can kill your beloved plants if left unattended.

Picking off by hand is one of the most effective (and satisfying) treatments, using a wooden cocktail stick, with one end cut and frayed to brush away the surrounding, egg-laden wool, after using the pointed end to stab the fat mealy-bugs themselves.

Root mealy-bugs, little sausage-shaped, white creatures on the roots, accompanied by the egg-bearing wool, are best dealt with by washing off the root system, and/or disposing of the fibrous roots altogether, dipping in an insecticide, and drying off thoroughly before repotting in fresh soil; allow the plant time to make some fresh root growth into the soil before watering.

Red spider mite seems not to be a problem with *Adromischus*, but it would come as no surprise to hear that someone somewhere had suffered from them. Spraying with an insecticide which specifies this pest is recommended, be it chemical or soap-based. Watering the plants overhead will discourage this pest too, since it prefers hot, dry conditions to thrive.

An increasing pest of all succulent plants is the sciara or mushroom fly, a tiny fly whose larvae attack the roots. The first sign of their presence is the flies themselves flying lazily around the plants, or skipping on the surface of the soil with flicking, twitching wings, or diving beneath it if attacked by a prodding finger. This is the stage when they are vulnerable, as once the glassy-white larvae are inside the plant's root system or stem they are extremely difficult to attack. Yellow, sticky fly-traps placed near the plants help reduce the numbers, as well as overhead spraying with an insecticide whenever the flies are seen; a good time to see them is on sunny mornings which seems to bring them out to bask, like holidaymakers to the beach.

Vine weevils can be troublesome with this genus. The usual sign of attack is nibbles out of the leaf edges, which is done at night by the adult weevils, dull blackish-brown, long-nosed, beetles. They rest during daylight hours between the bases of the pots. The most effective way of getting rid of them seems to be to spread an insecticide dust recommended specifically for the control of vine weevil on the staging around the pots where they are lurking, as they are not easily discovered. Alternatively a visit after dark will discover them feeding and they can then be caught with the fingers or by the squeamish with a pair of tongs and disposed of. It is the larvae of these pests which do the real damage, boring up through the tissues of the plants, and any grower of *Cyclamen* or *Begonia*, or other plants with fleshy stems will tell you horror stories of the devastation they can wreak. Once in the plant they are virtually impossible to get at. Inspection of the plants, and cutting back until you find the larvae seems to be the only way to save plants, once they have got a hold. As with most pests, prevention is far better than an unsure cure.

Aphids are sometimes a problem in summer on the flower spikes. They drip a sticky excretion on to the leaves below, which results in unsightly black mould. They can easily be killed with an insecticide, or between finger and thumb.

Botrytis, a fungus which attacks usually in the winter, will quickly reduce your plants to a black mess with a grey feathery covering (the spore-bearing parts of the fungus). It usually attacks already dead or dying material, such as fallen leaves which have been left around the plants. It will gain entry to living plants via the slightest wound, such as the place where the fallen leaves have detached themselves from the stem, or old flower stems, which have been left on the plants. It will even grow on nectar which has dripped down onto the plants from the flowers. If seen, remove all affected parts and cut back to clean flesh on the plant, dusting with a fungicide.

To ensure this devastating fungus does not get a start, ventilate whenever possible, or instal a small fan to keep the air moving around the plants, especially in the autumn and winter. Clean up your plants in early autumn to ensure there are no dead or dying leaves, remove all old flower spike remains, and spray with rainwater to remove any signs of nectar remains, usually evidenced by that other insidious, but not so damaging fungus, sooty mould. A light dusting with hormone rooting powder of any exposed tissue as a result of your efforts will usually prevent any attack.

## Propagation

Most *Adromischus* plants are easily propagated from individual leaves. Plants can also be raised from seed and stem cuttings, but leaves are by far the most popular method. Most species obligingly, or infuriatingly sometimes, detach leaves readily, but others need the assistance of a knife to ease the heel of the leaf away from the stem. In all cases the leaf must be detached right at the junction with the stem with the heel intact. The majority can be simply laid in an empty tray in light (but not in direct sunlight) until roots begin to form at the base of the leaves, at which time they can be potted up, but do not bury them too deeply. Some growers lay the leaves on a tray of grit or sand, and get small plants established in the tray before potting up.

Leaves for propagation can be taken at any time of year, but it is better to do so early in the year, when the plants show the vigour of new growth and the leaves have some substance after the first major watering of the season. They also root more quickly when the soil is warm, so if taken in winter, or if spring turns cloudy and cold (as it sometimes does in England), some bottom heat will assist growth. It will take a few days or even weeks for the roots to form, and while some species will form strong roots, others may be sparse and weak. Watering can begin as soon as the roots are a few millimetres long, and they soon find their way into the soil and establish the leaf which subsequently nurtures the tiny plant. If the leaves have curled up so that the roots are some way above the soil, turn them over so that the roots make contact with the soil.

Some species form little plants quickly, but others can take weeks or even months before forming the plants you have been waiting for. As the new plant grows the mother leaf shrivels away. Sometimes the mother leaf continues to grow and get much larger than normal; in this case it can be used again after plants have reached the size that they can be safely detached (when two or three new leaves have formed), to generate more new plants. Occasionally the mother leaf will root, grow and swell without producing a new plant at all, which is unfortunate.

Few plants are raised from seed in cultivation, except for those which are difficult from leaves, like *A. phillipsiae, A. fallax, A. humilis* and *A. maximus*. Cross-pollination of plants can be effected by the timely insertion of a single bristle from a decorator's paintbrush (choose the thinner bristles), moving alternately between open flowers on the two different clones being pollinated. When mature the tiny seed may be extracted by squeezing the dry carpels over a sheet of paper, and the seed stored in paper packets in a cool place. Seed seems best sown in the early spring, on the surface, not covered, of a standard seed-sowing medium, kept moist until germination, when any covering is best removed, spraying lightly overhead thereafter every few days. Once large enough to handle, the seedlings can be potted up and grown on. Most will make flowering plants the following year.

## Restarting

Most species begin to show their age after some years of growth in cultivation. Tall plants begin to lose the lower leaves, leaving bare, unsightly stems, or the growing point dries up with the same result. Tuberous rooted plants can suffer in the same way, leaving bare patches at the centre. This is the time (or better beforehand) to start afresh with either stem cuttings or plants produced from rooted leaves. These signs of age can easily come on prematurely if the advice on cultivation above is not followed, particularly as regards watering, feeding and repotting.

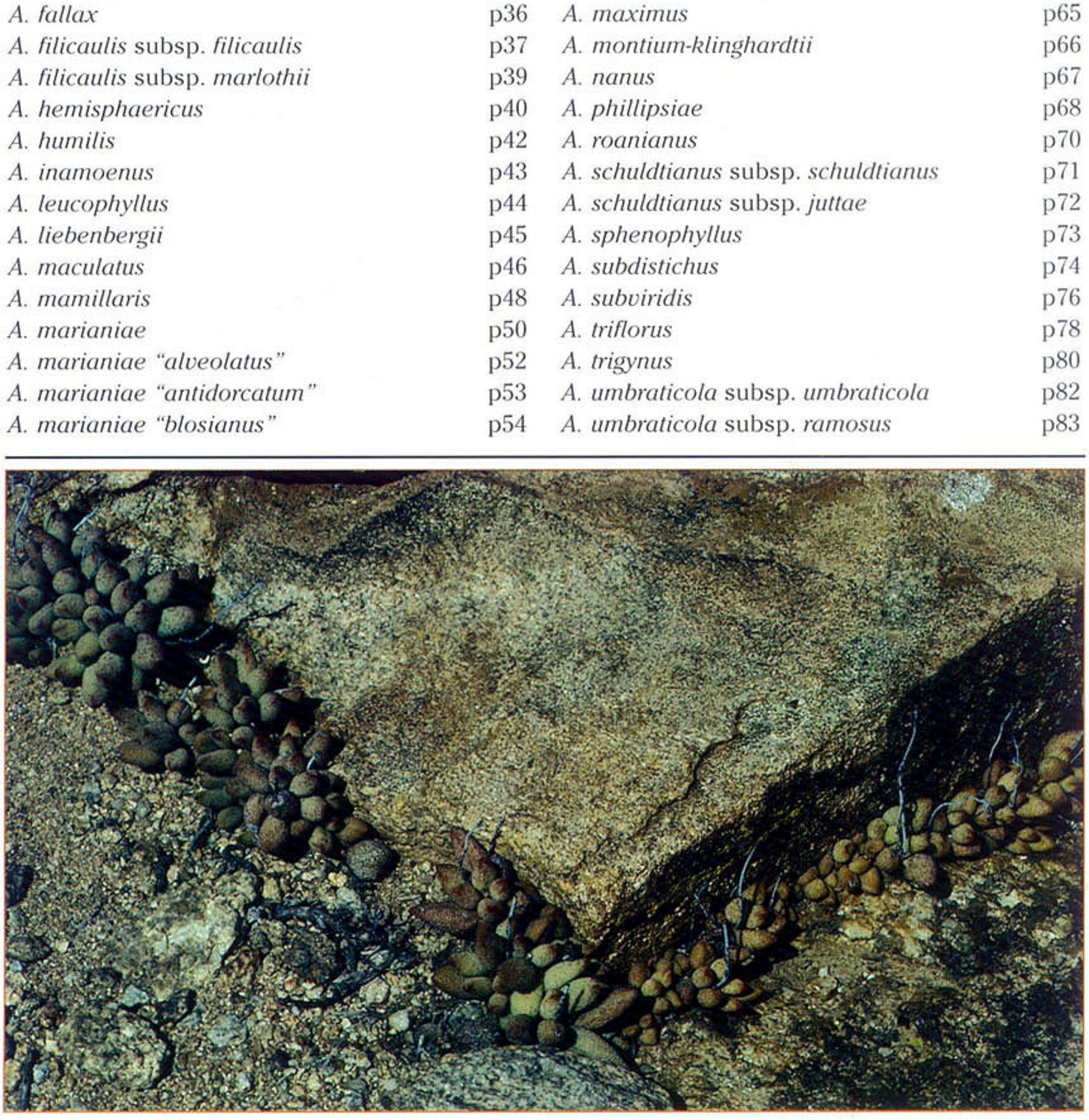
# GLOSSARY

| | |
|---|---|
| Acute | Pointed, narrowing gradually with an angle of less than 90° |
| Adromischus | Thick or stout stalk (referring here to the pedicel) |
| Alveolate | Pitted, honeycombed |
| Anticlinal | Orientation of a cell-wall at a right angle to the nearest surface |
| Antidorcatum | Referring to the animal called the springbok (*Antidorcas marsupialis*); a pun on the plant's origins, i.e. the town of Springbok |
| Bicolor | Of two colours |
| Bract | Modified leaf at the base of a pedicel |
| Calyx | Outer ring of triangular sepals at base of flower |
| Canaliculate | With longitudinal grooves or channels |
| Carpel | Female part of flower |
| Cartilaginous | Flexible, but tough and hard |
| Caryophyllaceus | Literally resembling walnut leaves, but referring to the aromatic smell, which led to the use for the clove pink, *Dianthus caryophyllus*, and *A. caryophyllaceus*, for the resemblance of its unusual flowers to *Dianthus* |
| Clavifolius | With club-shaped leaves |
| Compressed | Flattened |
| Corolla | Tube formed out of the petals |
| Corolla lobes | Petal-like structures at outer end of corolla |
| Crispate | Crisped, irregularly waved and twisted |
| Cristatus | Crested |
| Cuneate | Wedge-shaped |
| Cuspidate | Abruptly ending in a long, sharp tip |
| Cyme | Type of inflorescence with oldest flower in centre, teminating the main axis, with subsequent growth from one or more branches beneath it |
| Decumbent | Lying down with tip rising upward |
| Deltoid | Triangular |
| Diabolicus | Devil-like |
| Elliptic | Shaped like a long, flattened oval |
| – ensis | Coming from . . . . . |
| Fallax | Deceptive, false |
| Fertile bracts | Bracts below flowers |
| Filicaulis | With thread-like stem |
| Fusiform[is] | Spindle shaped, terete and tapering towards both ends |
| Glaucous | With a fine waxy surface, like a plum |
| Globose | Spherical |
| Hemisphaericus | Hemisphaerical, half a globe |
| Humilis | Low-growing |
| – ianus | Belonging to, in honour of |
| Immaculatus | Unspotted |
| Inamoenus | Not beautiful or pleasing, unloved |
| Isodiametric | With the same diameter in all directions, more or less spherical |
| Lanceolate | Lance-shaped, i.e. broadest at base, tapering evenly to a sharp tip |
| Leucophyllus | White-leaved |
| Linear | Long and narrow, with parallel edges, like blade of grass |
| Maculatus | Spotted |
| Mamillaris | Provided with nipples, nipple-like |

| | |
|---|---|
| Maximus | Largest |
| Mucro | Small triangular tip |
| Mucronate | Abruptly ending in a small, triangular tip |
| Multicolor | Many coloured |
| Nanus | Dwarf |
| Nectary | A nectar-producing structure |
| Ob- | Inverted in shape in relation to the point of attachment |
| Oblanceolate | Inverted lance-shape, i.e. narrower at the base, broader at the tip |
| Oblong | Evenly shaped, longer than broad |
| Obovate | Egg-shaped, broadest at top |
| Obtriangular | Triangular, broad end at top |
| Obtuse | Bluntly pointed, evenly narrowing to a point, the angle greater than 90° |
| Orbicular | Flat and circular in outline |
| Ovate | Oval, flat, egg-shaped in outline |
| Ovoid | Solid and egg-shaped |
| Papillae | Minute, rounded projection from surface |
| Pedicel | Individual flower stalk |
| Peduncle | Flower-stem, i.e. main axis of the inflorescence |
| Perianth | The floral envelope, sepals and petals |
| Petiole | Stalk of leaf |
| Petiolate | Having a leaf-stalk |
| Procumbent | Lying flat on soil |
| Raceme | Type of inflorescence with a spike of flowers, the older flowers at the bottom |
| Ramosus | Many branched |
| Rhombic | Shaped like a rhombus, i.e. oblique parallelogram with equal sides, like the diamond on playing cards |
| Rotund | Flat and circular in outline |
| Rounded | Without sharp corners |
| Rugose | Rough, with uneven, wrinkled surface |
| Sinuate | Wavy |
| Spat(h)ulate | Shaped like a spatula or narrow spoon |
| Sphenophyllus | With wedge-shaped leaves |
| Squamae | Small scales at the base of each carpel, by a nectary |
| Striation | Longitudinal markings, or grooves, or ridges |
| Sub- | Somewhat, to some extent, nearly |
| Subacute | Nearly acute |
| Subdistichus | Somewhat or partially in two ranks, or fan-shaped |
| Suberect | Nearly erect |
| Subpetiolate | With the hint of a leaf-stalk |
| Subviridis | Somewhat green |
| Terete | Circular in cross section |
| Thyrse | Raceme of cymes |
| Trichome | Hair-like structure |
| Triflorus | Having three flowers, i.e. at each fertile bract |
| Trigynus | Having three female parts |
| Truncate | Ending abruptly, as if cut off |
| Umbraticola | Shade dwelling |
| Undulate | Wavy |

# COMMENTARY ON SPECIES — CONTENTS





One of the many variations of *Adromischus marianiae,*
growing between rocks south-east of Concordia, Northern Cape

# COMMENTARY ON SPECIES

For the reasons stated in the Introduction, several names under *A. marianiae* which Tölken has dumped into synonymy, are here retained as they are collectors' plants, eagerly sought after and grown. To leave the collector with only one name to label very different looking plants serves enthusiasts for the genus badly. The scheme adopted here is useful for the collector, and we hope bridges the gap between the pure attitude of the botanist and the more down-to-earth stance adopted by amateur growers, who almost invariably call for names for plants they find distinctive and desirable.

Tölken's revision is accepted as the skeleton of the genus; the following commentary and most importantly the photographs (mostly plants in the collections of Chris Rodgerson and Derek Tribble) take the opportunity to add the flesh to show more than anything else the acknowledged variation of some species.

The descriptions below are largely taken from Tölken's detailed treatment of the genus, since they were in the main based on a broader view of a species in the wild, or in cultivation in almost natural conditions in South Africa, compared with the original descriptions, sometimes based on a single plant, and sometimes after it had been in cultivation for some time. Rather than try to translate the botanical terms used (an invidious task) they have been left largely as used by Tölken, but the glossary on page 20 gives the meaning of many of what may be unfamiliar terms, and a finger in this page as the descriptions are read will soon familiarize the reader with them.

Many of the floral details described by Tölken and others are revealed only with a powerful magnifying glass (worth using on these plants to reveal beauty invisible to the naked eye), and many characters are common to most species. Therefore, to avoid unnecessary repetition, only the more obvious, or individually different characters of the flowers are included in the descriptions of species below.

For instance, all but a few species have a spike-like flower stem, with flowers close to the stem, singly, or occasionally in twos and threes, arising from the fertile bracts on the flower-stem. Most species' flowers are tubular, with the petals reflexing only at the tip, and upright or standing out a little from the upright. So, unless described otherwise, it may be assumed that this is so, and that the flower spike and flowers follow the form of those which characterize their Section (see floral drawings for each Section on page 5). The more intimate flower characteristics tend to be the same for the species in each Section, for instance the anthers protrude beyond the end of the flower-tube in Sections 1 and 2, and do not so protrude in Sections 3, 4 and 5; and trichomes (hair-like papillae) are present in the throat of the flower usually in Sections 2, 3, 4 and 5, but are usually not present in species in Section 1. The shape of the leaves is in some species extremely variable, and Tölken has described the various shapes in a wealth of botanical terms. So as not to confuse the reader, these terms are somewhat abbreviated in the descriptions below, and study of the composite photographs (where included) showing the range of shapes and markings is recommended.

# Adromischus alstonii

*A. alstonii* (Schonland & Baker fil.) C. A. Smith, Bothalia 3:638 (1939); Schonland & Baker fil., J. Bot. Lond. 40:93 (1902) – as Cotyledon; Tölken, Bothalia, 12:384 (1978); Fl. Southern Afr. 14:46 (1985)

(Syn. A. triebneri von Poellnitz, Beitr. Sukkulentenk. 18 (1939); A. pulchellus P. C. Hutchison, Cact. Succ. J. (US) 31(4):118. (1959). Note: A. subrubellus von Poellnitz, Fedde's Rep. Spec. nov. Regni. veg. 50:319 (1941) is also referred to synonymy hereunder by Tölken, but the reported locality makes it clearly referable to A. hemisphaericus.)

Section 1 – *Adromischus*

Plain and spotted forms of *A. alstonii*. Back (left to right): DT 4466 from north-east of Kuboos, Richtersveld;, DT 6027 from north-east of Skimmelberg; DT 3666 from north-west of Steinkopf Front: MBB 3332 from Rietberg Mine, north of Springbok; DT 6109 from Duke's Kop, north of Steinkopf; DT 5372 from Leeupoort, north of Concordia.

Although this name is now accepted among enthusiasts, it was only when Tölken resurrected it in his revision that it came into use. Formerly *A triebneri* was often used, or *A. pulchellus* for a heavily spotted form.

It is one of the more northern species, being found mainly in Namaqualand, and into the Richtersveld. It is easily the largest growing species of Section 1, but not at all quick growing in cultivation. It makes very stout plants, with usually thick stems and large leaves, which can vary tremendously in size and markings within a population.

Plants seen at Leeupoort, south-east of Steinkopf, were amazingly variable, large and small, plain to heavily spotted. Conversely a huge population on the way to Umdaus, north-west of Steinkopf, has plants almost identical to each other; these have long and flat, completely plain leaves. Plants take a few years of patience in cultivation to make any size from leaf cuttings, and even large plants make but a few new leaves each year. The wait is worth it, for they do make fine, upstanding pot plants. In

Variation in size, shape and spotting of leaves between different forms of *A. alstonii*

cultivation stems reach about 10 to 12cm before flowering and shooting afresh from the old stems.

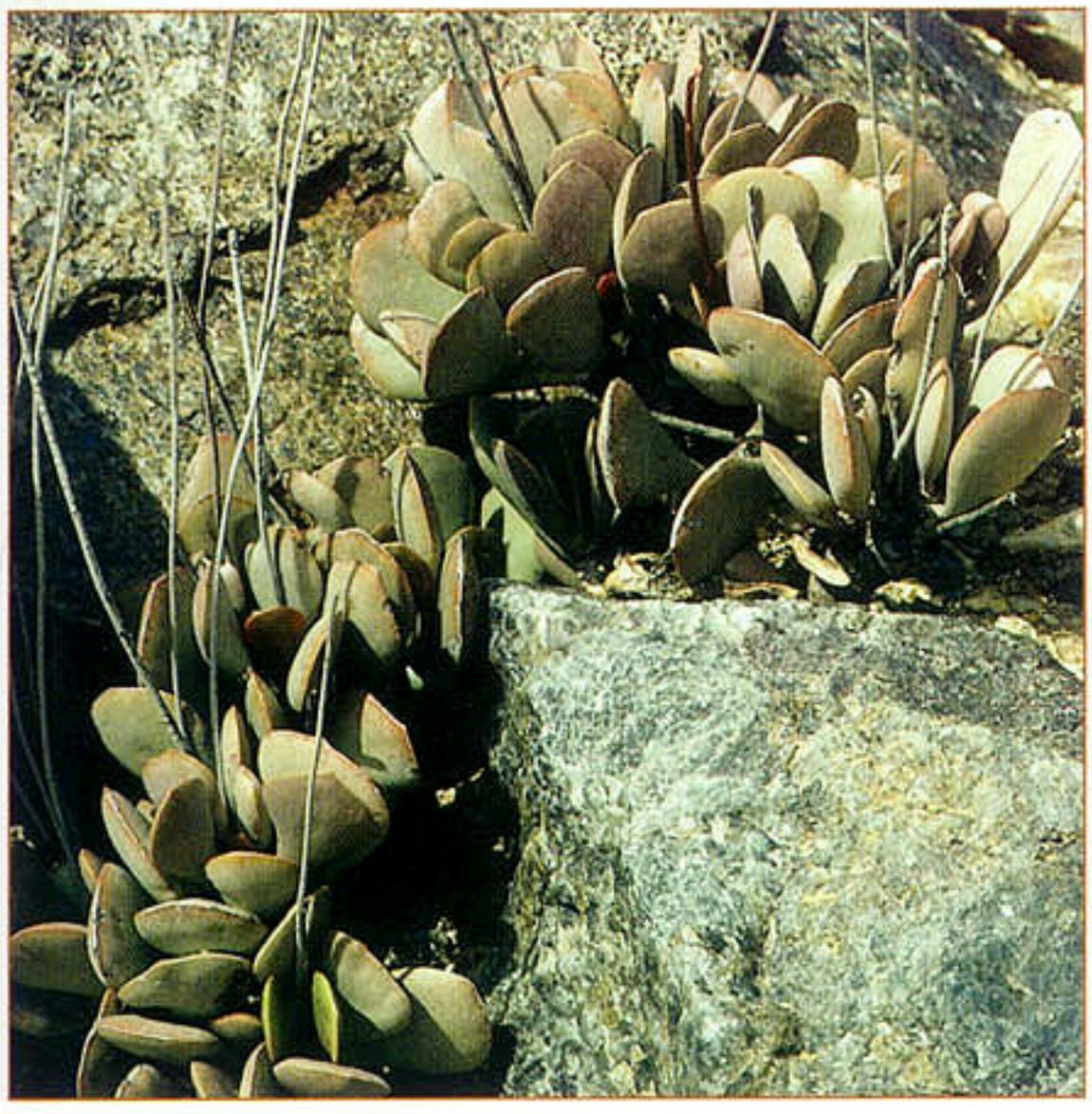
It is described as having flattened obovate to oblanceolate leaves, with a barely distinguishable point at the apex, 3cm, more commonly 4 to 8cm, or up to 11cm long, and to 2 to 4cm wide, greyish-green, distinctively olive-brown in youth, sometimes with a suggestion of spotting in the upper part of the leaf, more pronounced in older leaves. The waxy coating on the leaves intensifies as the leaves age and it can crack and craze, but not to the extent found for instance in *A. hemisphaericus*. The inflorescence is 20 to 35 (to 50)cm long, green to purple, with 1 or 2 (or 3)-flowered fertile bracts. Corolla is green, more or less tinged brown, lobes white to pale pink to purple, with darker mucro.

(Bottom left) A large, unspotted form of *A. alstonii* growing just south of Steinkopf

(Bottom right) A colourful, spotted form of *A. alstonii* collected near Ratelpoort

Reported from 'Namaqualand Minor', without precise locality, but the synonymous *A. triebneri* was reported from Springbok; *A. pulchellus*, a very heavily spotted form, was reported from Namaqualand, at Bowesdorp, about 5km north of Khamieskroon. It grows throughout the mountains of Namaqualand, from Kliprand to the Richtersveld.

Type: Cape, Namaqualand, Alston without number (GRA, holotype; SAM).



# Adromischus bicolor

*A. bicolor* P. C. Hutchison, Cact. Succ. J. (US) 29(1):15 (1957); Tölken, Bothalia 12:384 (1978); Fl. Southern Afr. 14:47 (1985)

Section 1 – *Adromischus*

Even though we are some forty years on from Paul Hutchison's description, this species is still rarely encountered in cultivation, although the name is often misapplied to plants bearing no resemblance to the original description and excellent accompanying photograph and May Blos's drawings.

There is a superficial resemblance between this species and *A. trigynus*, but its flowers, habit and colouring make it easy to differentiate.

It is a strange, dwarf plant, which has not been collected much, which is partly why it is so seldom seen in cultivation. Material available is from around the Steytlerville Karoo in the eastern Cape, and it has not been found recently from Middelburg and King William's Town, as reported by Tölken.

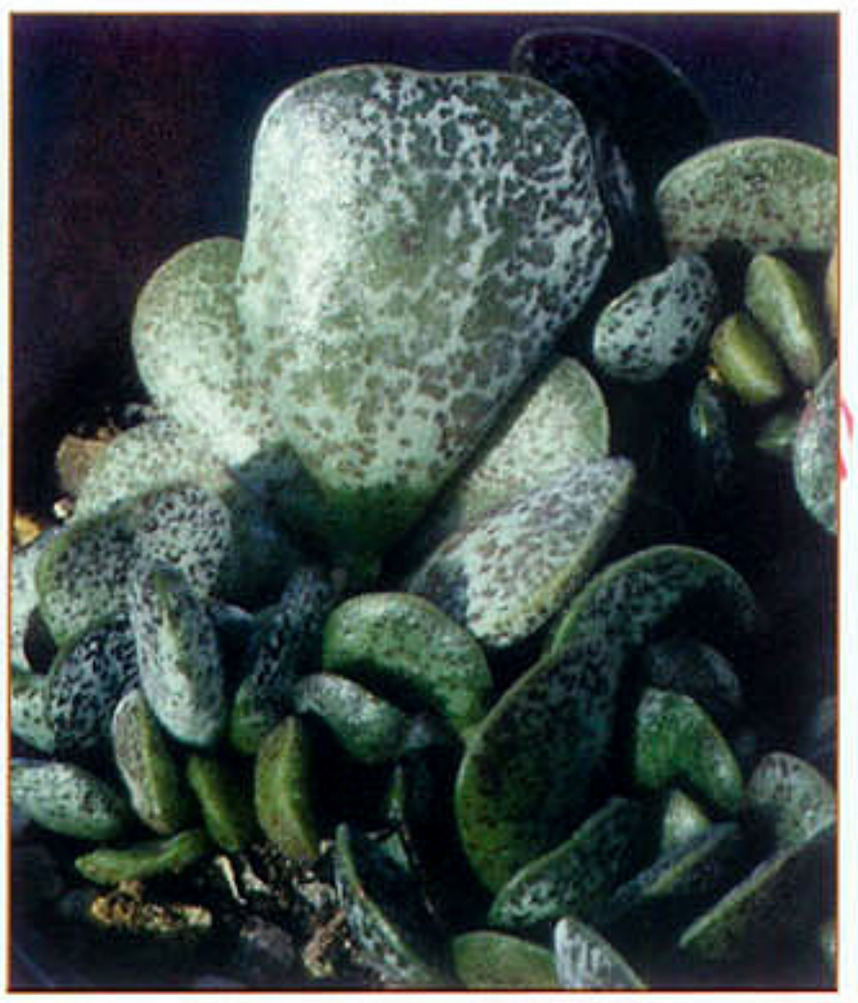
It is slow-growing, making a thick rootstock on which the leaves cluster like gregarious butterflies, with virtually no stem developing above ground. The base colour of the leaves is dark green, heavily but finely spotted with silver and red or reddish-brown, suffused with a rose-pink tinge near the apex. The leaves are described as up to about 4cm long and broad, but are usually much smaller, varying in shape from almost round to obovate or rounded-deltoid, the apex varying from rounded with a barely discernible tip, to straight or slightly indented, the upper surface flattened to concave, the lower surface convex, base of leaf oval in section, flattening progressively towards the apex. Inflorescence is relatively short, grey, 10 to 20 (to 25) cm long, with 1 (to 2)-flowered fertile bracts. Corolla is yellowish-green tinged red; lobes white to pale pink with purple mucro.

Reported from only a few localities east of Steytlerville, listed above.

Type: Cape, near Steytlerville, Hall in NBG 914/47 (BOL, holotype; NBG; PRE; UC).

(Below left) Variation between clones from one population of *A. bicolor* DT 4865

(Below right) *A. bicolor* DT 4865 from west of Springbokvlakte, north-west of Port Elizabeth



# Adromischus caryophyllaceus

(Right)
An individual flower of
*A. caryophyllaceus*

(Below)
*A. caryophyllaceus*
DT 4902 from west of
Molenriver

*A. caryophyllaceus* (Burmann fil.) Lemaire, Jard. Fleur. 2. Misc. 60 (1852); Burmann fil., Rar. Afr. Pl. t.17 (1738) – as Cotyledon; Prodr. Fl. Cap. 13 (1768) – as Cotyledon; De Candolle, Prodr. 3:398 (1828) – as Cotyledon; C. A. Smith, Bothalia 3: 629 (1939), excl. Bolus 758; von Poellnitz, Fedde's Rep. Spec. nov. Regni. veg. 48: 107 (1940); Kimnach, Cact. Succ. J. (US) 25(2):47 (1953); Tölken, Bothalia 12: 387 (1978); Fl. Southern Afr. 14:51 (1985)

(Syn. A. bolusii (Schonl.) Berger, Nat. Pflanzenfam. ed.2.18a:416 (1930); A. grandiflorus Uitewaal, Succulenta 1953:8 (1953); A. jasminiflorus (Salm-Dyck) Lemaire, Jard. Fleur.2.Misc.60 (1852))

Section 3 – *Brevipedunculati*

This species was named for the resemblance of its flowers to *Dianthus* (family Caryophyllaceae); a bit of a stretch of the imagination, but the resemblance is there, if somewhat diminished in size. They measure 15mm in diameter across the widest part of the flower, the largest for this genus. Their flower structure differs somewhat from most other species too, in having flowers flaring open and a branching peduncle.

It makes quite long stems, to about 10cm or more before flowering and sprawling under their own weight. In cultivation it has the annoying habit of sending out shoots which are liable to go down in the pot, pushing the plant upwards to the point of depotting.

Leaves are oblanceolate-spathulate, like long, flat, wooden spatulas, plain green, some clones reddening at the edges in strong light, with a whitish margin around the ends of the leaves and a slight wax covering, especially evident in the older leaves, length varies up to 40mm and the width is also variable, up to 25mm. The thin inflorescence is whitish-green, 20 to 35cm long, with 1 (to 4)-flowered fertile bracts. Pedicels are relatively long. Corolla is widened at the mouth, white or pale pink, the lobes white with pink to purple midstripe. Like others in this Section, leaves are

(Right)
The inflorescence of *A. caryophyllaceus* — carrying the largest flowers in the genus

reluctant to root, although not impossible; take several if attempting this, as a low success rate is common. Stem cuttings are a more sure way of propagation.

Reported from Touwsberg, Bonnievale and Hermanus, and widespread in the Little Karoo; and from the coastal plain west of Hermanus. It usually occurs under shrubs, indicating a preference (in the wild that is) for shade.

A dainty form from Bonnievale in the Robertson Karoo, with small, almost round leaves was described by Uitewaal as *A. grandiflorus*, and this is recommended as the most manageable and decorative form in cultivation.

Type: Cape, J. Burm., Rar. Afr. Pl. t.17 (1738).

(Below)
*A. caryophyllaceus* DT 4474 from south of Robertson (near to the form described by Uitewaal as *A. grandiflorus*)

# Adromischus cooperi

*A. cooperi* (Baker) Berger, Nat. Pflanzenfam. ed.2,18a:416 (1930); Baker in Saunders, Refug. Bot. t.72 (1869); C. A. Smith, Bothalia 3:632 (1939); von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 49:60 (1940); Uitewaal, Nat. Cact. Succ. J. 4(2):35 (1949) – as A. festivus; 5(2):29-30 (1950); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

(Syn. A. cooperi var. immaculata Schonland & Baker fil., J. Bot. Lond. 40:91 (1902); A. pachylophus C. A. Smith, Bothalia 3: 633 (1939); A. festivus C. A. Smith, Bothalia 3: 633 (1939); A. cuneatus von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48: 102 (1940); A. halesowensis Uitewaal, Desert Pl. Life 20: 142 (1948) but see note under this name in Superfluous and dubious names chapter)

Section 5 – *Longipedunculati*

This is the classic beginner's *Adromischus*, and indeed is often the first acquired for its attractive plover's-egg markings on the leaves. It also presents no difficulty in cultivation, and is a vigorous grower. Many forms have been in cultivation for many years, and only recently has there been re-collection of it in the wild in some variety, by Lavranos, Bruyns and Hammer, with leaf-size varying from 1 to 4cm long.

The amalgamation of the names *A. festivus* and *A. cooperi* resolves the difficulty of determining which is which, that has bothered both collectors and authors of general books on succulents for some time, especially since intermediate forms are found.

*A. festivus* as originally described is the longer-leaved of the two, the leaves tapering towards the tip, with a crinkled ridge at the apex of the leaf, which is narrower than the centre part of the leaf; *A. cooperi* is more triangular in shape, with a wide, crinkled apex, narrowing fairly evenly down to the base of the leaf. The names have been frequently transposed, but this is their correct application: compare Jacobsen's illustration in his *Handbook of Succulent Plants* with that in his later *Succulent Lexicon*! But this is a somewhat academic point, in view of the variability of the species.

*A. cooperi*
Lavranos 25965 from Soutvlei, north of Grahamstown

Shiny and spotted, the distinctive leaves from different forms of *A. cooperi*

The description, taking account of the variation is as follows: leaves pale, glaucous green, smooth, with or without spots of darker green, becoming purplish-brown, especially at the apex, varying in length from about 1cm to about 5 or 6cm, and to about 1.5 to 2cm wide, a little flattened to almost terete, sometimes wider at the apex and tapering towards the base, or sometimes wider at the centre and tapering towards the base and the apex, with a crispate, horny margin at the apex. Inflorescence is 25 to 40cm long, grey-green to almost white, covered with a thick bloom, with single-flowered fertile bracts. Corolla is pale pink and with a thick bloom, the lobes pink, often deep red towards the margins and the tips.

Reported from high altitude in the Zuurberg, Graaff-Reinet and Queenstown areas. By Tölken as 'widespread, but never common, between Uitenhage, Graaff-Reinet and Queenstown (Eastern Cape Province), growing in rock crevices usually on the shaded south-facing aspect or in the shade of other vegetation'. By Hammer from all around Grahamstown, and to Nieu Bethesda, rarely common.

Type: Baker, Refug. Bot. t.72 (1869).

*A. cooperi* WRB 25 from the Bamboesberg

# Adromischus cristatus

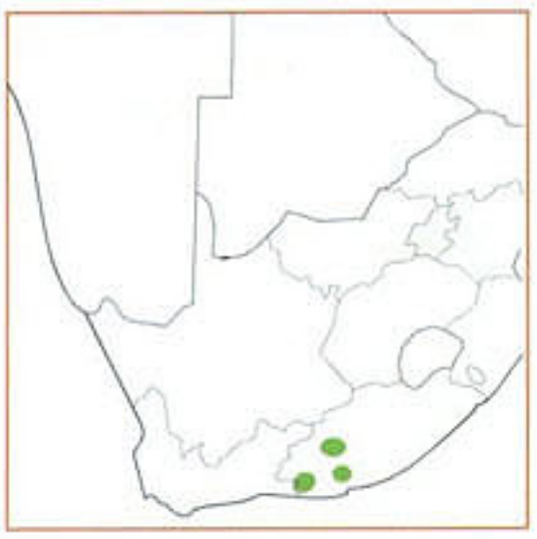
*A. cristatus* (Haworth) Lemaire, Jard. Fleur. 2, Misc. 60 (1852); Haworth, Phil. Mag. 274 (1827) – as Cotyledon; De Candolle, Prodr. 3:399 (1828) – as Cotyledon; Harvey, Fl. Cap. 2: 376 (1862) – as Cotyledon; Schonland, Rec. Albany Mus. 3:155 (1915) – as Cotyledon; Marloth, Fl. South Afr. 2,1.20. t.9, 5 (1925); C. A. Smith, Bothalia 3:635 (1939); von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 49:60 (1940); J. R. Brown, Cact. Succ. J. (US) 19(6):92 (1947); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:55 (1985)

Section 5 – *Longipedunculati*

*A. cristatus*, a form collected from the Ecca Pass

This species is immediately distinguishable by its leaf-ends, undulating like finger-crimped pie-crust, and the generous amount of ginger-brown aerial roots on the stems, though, oddly this last feature is not present on var. *zeyheri*. It is a very variable species, with many old forms in cultivation, which go back many years, and no doubt still bear the names they started life with, viz. *A. poellnitzianus, A. nussbaumerianus, A. kesselringianus*. Although Tölken has assigned these to synonymy with var. *clavifolius* (see below), the lines between the type and this variety are loosely drawn. To add to the confusion, much new material has come into cultivation over the last few years from several different collectors, broadening the spectrum of forms of this species considerably more than hitherto realized.

Tölken has maintained the varieties below for this species because of their geographic isolation, there being no evidence, he maintains, of continuous variation between the varieties.



var. *cristatus*

The type is described as having stems 2 to 4cm long, often much branched, and with dense aerial roots. Leaves broadly triangular, wider at the apex, with a usually undulating, hard, raised margin at the apex, varying considerably in size, but usually from 2 to 4cm long, about 1 to 1.5cm wide, narrowing dramatically to the base where they join the stem. The epidermis is fuzzy from tiny, somewhat sticky hairs. Inflorescence is 15 to 25cm long, white, with 1 (to 2)-flowered fertile bracts. Corolla is apple green, covered with a thick bloom, lobes pale yellow, often tinged pink.

**cristatus var. cristatus**

Although quite easy to grow, and with leaves readily rooting to form new plants, it is not a quick-growing plant, and takes several years to reach its full potential of a large plant, shaggy with aerial roots.

Plant material collected at the Valley of Desolation, Graaff-Reinet, by van Jaarsveld has tiny leaves only 1cm long, and there are similar small-leaved populations at Mistkraal, near Patensie (SH 1902), at Nuwekloof Pass (DT 4894), at Uniondalepoort (DT 5838), and Cradock (DT 5863).

(Left) *A. cristatus* DT 4777 from Gamtoos Ferry, north-east of Jeffreys Bay
(Right) Leaf variation between different forms of *A. cristatus,* with three leaves of *A. cristatus* var. *zeyheri* nearest the scale

Reported widespread from between Port Elizabeth, Graaff-Reinet and Uniondale, growing on rocky slopes or sometimes on shallow soil on rocks, usually where they get some mist.

Type: without locality, Haworth, without number (OXF, holotype).

cristatus
var. clavifolius

var. *clavifolius* (Haworth) Tölken, Bothalia 12:390 (1978); Haworth, Phil. Mag. 1827:274 (1827) – as C. clavifolia; De Candolle, Prodr. 3:399 (1828) – as C. clavifolia; Lemaire, Jard. Fleur. 2, Misc. 60 (1852) – as A. clavifolius; Schonland & Baker fil., J. Bot. Lond. 40:92 (1902) – as C. clavifolia; von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 49:60 (1940) – as A. clavifolius; Uitewaal, Nat. Cact. Succ. J. 7(1):33 (1952) – as A. clavifolius; Tölken, Fl. Southern Afr. 14:56 (1985)

(Syn. A. clavifolius Haworth, Phil. Mag. 274 (1827); A. nussbaumerianus (von Poellnitz) von Poellnitz, Jahrb. Deutsch. Kakt. Ges. 1: 95 (1936); Fedde's Rep. Spec. nov. Regni veg. 48: 109 (1940); A. poellnitzianus Werdermann, Fedde's Rep. nov. Spec. Regni veg. 39: 270 (1936); A. kesselringianus, von Poellnitz, Kakteenkunde, 1940:64 (1940); ).

*A. cristatus* var. *clavifolius* (the form formerly named *A. poellnitzianus*

The separation of this variety is questionable according to Tölken, since too little material was available at the time of his papers on the genus to determine whether they are always distinguishable. However, much of the material which he refers here belongs more with the type. The water colour at the Herb-

arium at the Royal Botanic Gardens, Kew, contemporary with Haworth's original description, shows a distinct, long and narrow leaved form of this species, which matches well with plants in cultivation for some time under this name. These can be traced back to the 1930s (ex J. T. Bates collection), matching well a photograph in the Kew folio put there by N. E. Brown in 1922. It seems to have been an extreme form.

Tölken describes it as having stems 2 to 4cm long (in cultivation some forms will reach as much as 10cm), often much branched and moderately covered with aerial roots, the leaves narrower than the type, the shape very variable, triangular to lanceolate, wider at the apex, where there is a horny margin the width of the leaf, usually undulating. Flowers are similar to the type.

Reported as restricted and rarely common between Alexandria, Grahamstown and East London, usually growing in shallow soil on rock outcrops. Type: Haworth plate (K, lectotype).

**cristatus var. schonlandii**

*A. cristatus* var. *schonlandii*

var. *schonlandii* (Phillips) Tölken, Bothalia, 12:390 (1978); Phillips, Fl. Pl. S. Afr. 9. t.328 (1929) – as C. schonlandii; von Poellnitz, Cact. J. 6:68 (1938) – as A. schonlandii; Fedde's Rep. Spec. nov. Regni veg. 48:97 (1940) – as A. schonlandii; Uitewaal, Nat. Cact. Succ. J. 7(1):33 (1952) – as A. schonlandii; Tölken, Fl. Southern Afr. 14:56 (1985)

(Syn. A. schonlandii (Phillips) von Poellnitz, Cact. J. 6: 68 (1938)

This is a distinct variety, in cultivation for many years, with very narrow petioles, sticky, hairy leaves and a very individual herb-like odour. Great care is needed when repotting, as the normal procedure of nearly inverting the plants will result in sand particles and other debris left clinging to the sticky leaves, making for a very 'natural' looking plant, but not so pleasing to the eye of the owner. It was described as having stems 2 to 3 (rarely to 4)cm long, often much branched, covered with coir-like aerial roots. Leaves are green, 3.5cm long, 1cm wide, almost terete, wider at the middle, tapering towards the tip, where they are concave on the under surface, the tip tending to curve inwards, with a slight, dark green margin on the upper edge, and narrowing very much towards the base of the leaf, pubescent. Although Tölken mentions that the stems are brittle, and leaves drop readily when touched, this is certainly not the case of plants in cultivation, and the opposite is true. Other discrepancies in his adapted description compared with the original (which also has an excellent illustration by Cynthia Letty), cast doubt on the identity of the plants he was looking at. The inflorescence, including the flowers, has glandular hairs, whereas they are glabrous in the type.

Reported to be rare in lower Baviaanskloof and Langkloof west of Humansdorp, in sheltered and shaded rocky outcrops.

Type: without locality or collector, PRE 7944 (PRE, holotype).

## cristatus var. zeyheri

var. *zeyheri* (Harvey) Tölken, Bothalia 12: 390 (1978); Harvey, Fl. Cap. 2: 377 (1862) – as C. zeyheri; Schonland & Baker. fil., J. Bot. Lond. 40: 91 (1902) – as C. zeyheri; Schonland, Rec. Albany Mus. 3: 155 (1915) – as C. zeyheri; von Poellnitz, Cact. J. 6: 68 (1938); Fedde's Rep. Spec. nov. Regni veg. 48: 98 (1940) – as A. zeyheri; C. A. Smith, Bothalia 3: 635 (1939) – as A. zeyheri; Tölken, Fl. Southern Afr. 14:56 (1985)

(Syn. A. zeyheri (Harvey) von Poellnitz, Cact. J. 6: 68 (1938)

Known only by Tölken from the type collection, this variety is described as having stems 4 to 8cm long, little branched, with no aerial roots. The light green leaves are broad-triangular, without sticky hairs as in var. *schonlandii*, and with horny, sometimes undulating margins at the apex. Flowers are similar to var. *schonlandii*, with glandular hairs.

Recently it has been collected by Ernst van Jaarsveld (collection number EvJ 7720) from Geelhoutbos Kloof in the Kougaberg, more than 250km to the east of the type collection, and this is the form usually seen in cultivation; he has also collected this variety in the Kougaberg and Baviaanskloof (EvJ 11079 and EvJ 11201). Surprisingly, similar plants have been found in southern Natal around Oribi Gorge (David Cumming 336 (= ISI 96-18) and EvJ 10464). This is a very long distance north east of other reports of this and other varieties of this species.

(Right) The first re-discovery of *A. cristatus* var. *zeyheri* by Ernst van Jaarsveld, EvJ 7720, from Geelhoutboskloof, Kougaberg

(Below) *A. cristatus* var. *zeyheri* DMC 336 from Oribi Gorge, Natal

Reported for the type collection, from Kenko River, east of the Buffeljagds River, and more recently as indicated above. A recent superficial search in the Kenko River area (now called the Kinko River), near Swellendam, revealed no trace of any *Adromischus* in the farmland, and it seemed an unlikely locality. Well over a hundred years since the original collection may mean that the landscape has changed considerably at the expense of this variety.

Type: Cape, Kenko River, Zeyher 2571 (K, lectotype; S; SAM).

# Adromischus diabolicus

*A. diabolicus* Tölken, Bothalia 12:633 (1979); Fl. Southern Afr.14:50 (1985)

Section 3 – *Brevipedunculati*

This is a recently described species, slowly getting into cultivation. It is a very close relative of *A. nanus*, and may not be worth specific rank. More field work is needed to establish its credentials. It can also be tricky to keep in winter, and it is wise perhaps to keep a couple of separate propagations as an insurance, as botrytis can reduce a whole plant to mush very quickly.

It is similar to *A. nanus* in that it has a thick base, but differs in having numerous, short branches about 10mm long, stretching up to 80mm long if in shade, but much thinner stemmed then. Leaves too are similar to *A. nanus*, described as obovate to orbicular, rarely elliptic, usually 8 to 12 (more uncommonly from 6 to 14)mm long, and 6 to 9 (rarely to 11)mm wide, wedge shaped with rounded apex, flattened, with an indistinct, pale, horny margin at the upper edge, pale green to greyish-brown, waxy, often tinged red towards the apex, without markings. The inflorescence is similar to *A. nanus* too, 7 to 15 cm long, green, with 1 or 2 (or 3) flowers, but the flowers are more open, to 7 or 8mm in diameter. Corolla is pale yellowish-green, lobes white except for a deep mauve lengthwise line on each petal; the few plants which have emerged into cultivation have attractive, whitish flowers.

*A. diabolicus* EvJ 6427 from the Dabenorisberge, near the Orange River in northern Bushmanland

Type: Cape, south of Blesberge Mine, north of Steinkopf, Drifhout 1942 (PRE, holotype; SUG).

# Adromischus fallax

*A. fallax* Tölken, Bothalia 12:3:387 (1978); Fl. Southern Afr. 14:51 (1985)

Section 3 – *Brevipedunculati*

There have been few collections of this species since its original discovery, and only one is definitely recorded, by Peter Bruyns (PVB 2970). Because of this it has only very recently appeared in cultivation.

It has a very similar appearance vegetatively to *A. phillipsiae*, but with flowers nearer *A. humilis*. Originally it seems to have been confused with *A. caryophyllaceus*, but Tölken described it as a separate species.

The description is as follows: plant with sprawling stems up to 20cm long, little branched, fibrous rooted. Leaves are oblanceolate to elliptic, 20 to 40 (to 50)mm long, and 8 to 15 (to 20)mm wide, wedge-shaped, concave on upper, convex on lower surface, soft in texture, without any horny margin, (in cultivation red lines appear on the upper leaf surface when exposed to strong light). Inflorescence is 20 to 30cm long, with 1 to 3 (to 5) flowers. Corolla has a cylindrical to slightly broadened tube, lobes pink or purplish.

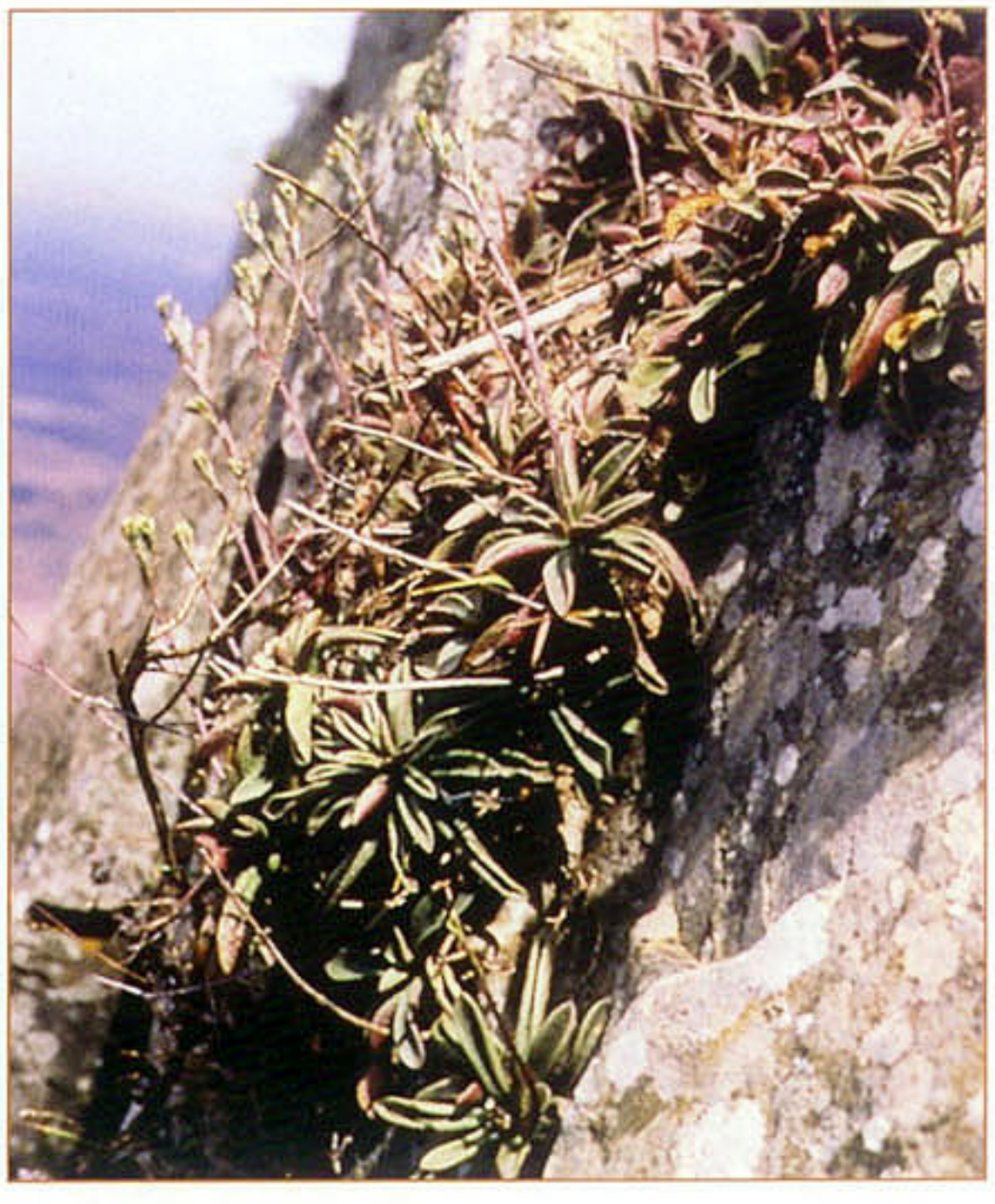
Like *A. humilis* and *A. phillipsiae*, its close relatives, this species is readily propagated from stem cuttings, and resulting rosettes on the decapitated stem, but is difficult if not almost impossible to propagate from leaves alone.

Reported (as yet, only) from a mountain top near Graaff-Reinet. Type: Cape, near Graaff-Reinet, Bolus 758 (BOL, holotype: K; SAM).

(Above) The flowers of *A. fallax*

(Below) *A. fallax* PVB 2970 from near Graaff-Reinet, growing in cultivation

(Right) *A. fallax* PVB 2970 growing in habitat on a rock face at Graaff-Reinet



# Adromischus filicaulis

*A. filicaulis* (Ecklon & Zeyher) C. A. Smith, Bothalia 3:630 (1939); Ecklon & Zeyher, Enum. 307 (1837) – as Cotyledon; Curtis's Bot. Mag. 99, t.6020 (1873) – as C. mammillaris in error, iconotype; P. C. Hutchison, Cact. Succ. J. (US) 25(1):3–5 (1953) – as A. mamillaris in error; Tölken, Bothalia 12:384 (1978); Fl. Southern Afr.14:42–44 (1985)

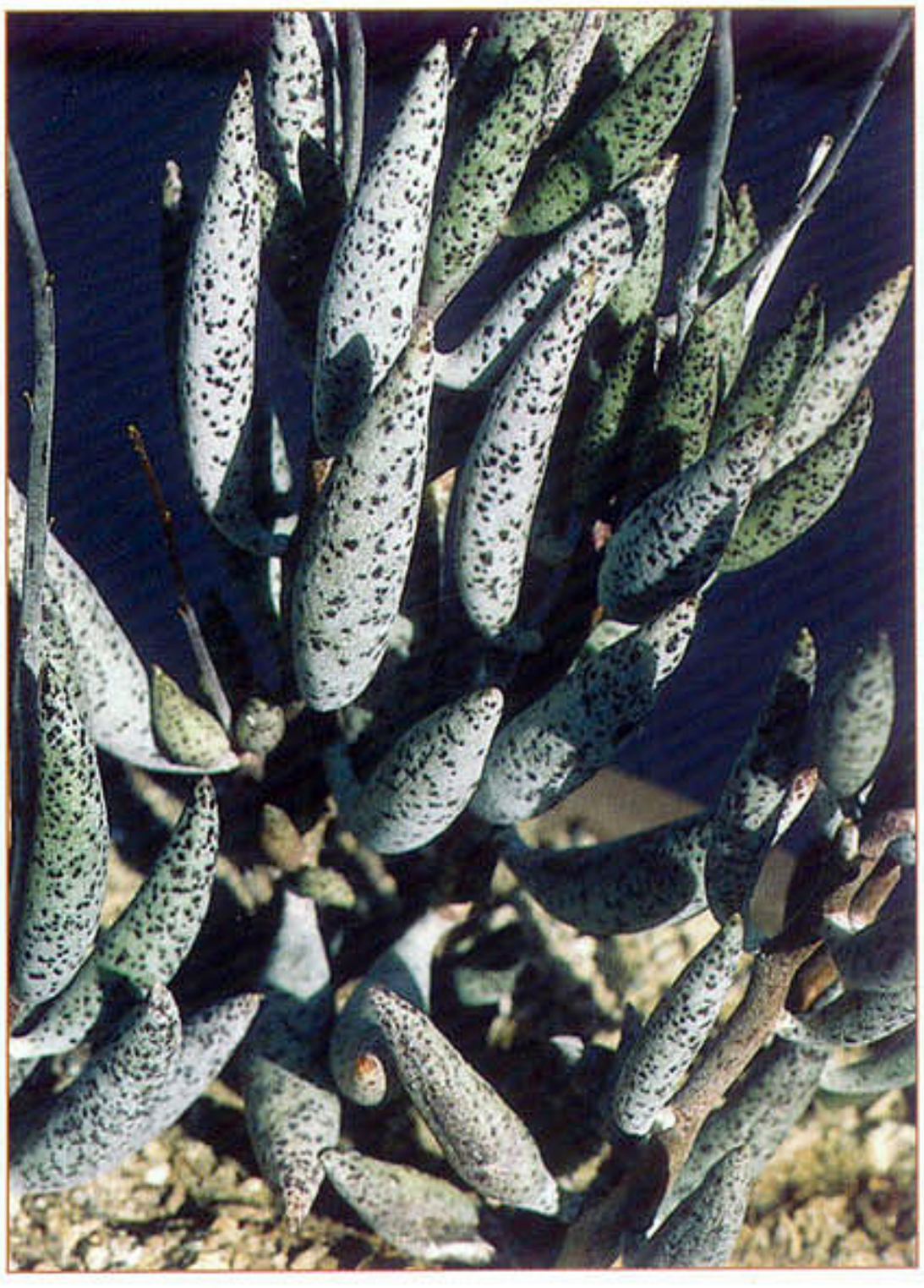
(Syn. A. fragilis P. C. Hutchison, Cact. Succ. J. (US) 31(6):167 (1959); A. fragilis var. numeesensis P. C. Hutchison, Cact. Succ. J. (US) 31(6):168 (1959); A. fusiformis (Rolfe) Berger, Nat. Pflanzenfam. ed. 2. 18a: 416 (1930); A. kleinioides C. A. Smith, Bothalia 4:631 (1939); A. tricolor C. A. Smith, Bothalia 3: 632 (1939); A. mamillaris var. filicaulis (Eckler & Zeyher) Jacobsen, Sukk. Lex. 29 (1970), no type was cited; A. mamillaris var. fusiformis (Rolfe) Jacobsen, Sukk. Lex. 29 (1970), no type was cited; A. mamillaris var. rubra von Poellnitz, Desert Pl. Life 10:112 (1938))

Section 1 – *Adromischus*

(Below left) *A. filicaulis* subsp. *filicaulis* DT 4216 from the Helskloof in the Richtersveld

(Below right) *A. filicaulis* subsp. *filicaulis* – one of the more distinctive forms, popular in cultivation

This is a very widespread and extremely variable species, but in all forms is easy to grow. There are populations with plain green leaves, but many have attractive red to purple markings, which need strong light to show of their best. It has been seen growing on sandstone, granite and quartzite. Some forms from around Garies and the Spektakel Pass, west of Springbok, have very long, thin leaves. Those from around Steinkopf and places north are very short. The distinctive forms from Botterkloof Pass and around Lokenburg, south of Nieuwoudtville, have long, silvery-grey leaves, heavily spotted.



On the whole this species does not make huge plants, and will live happily for years in pots no larger than 8 to 12cm, but some of the larger forms are more vigorous. As the illustration to the left shows, the variability means that many forms are available in cultivation, some more attractive than others, depending on your preference.

Amazing variation between leaves from different forms of *A. filicaulis*

## filicaulis subsp. filicaulis

subsp. *filicaulis*

This subspecies, the type, is a plant with erect to rarely decumbent stems, sometimes with thick, branching, adventitious roots, so that it roots as it creeps; the leaves are green to reddish, "oblong-oblanceolate, elliptic or rarely lanceolate, obtuse or rounded, rarely acute, often with distinctly flattened upper surface to rarely terete, with or without purple spots", about as varied as they come (see illustration above). Inflorescence is (15 to) 20 to 35cm long, green often tinged brown, with 1 (to 3)-flowered fertile bracts. Corolla is yellowish-green often tinged brownish-red, lobes white, pale yellow often tinged pink or deep mauve-red, but usually with mauve mucro.

Reported common in the north-western Cape by Tölken, mainly north-west of Khamieskroon to the Richtersveld, but extending also south to the Knersvlakte. There is an extreme form, with rounded, spotted, easily detached leaves known as *A. fragilis* (sunk by Tölken into synonymy) on the western slopes of the coastal mountains between Komaggas and the Orange River. It grows usually on rock outcrops or on lower gravelly slopes. A variety was described of this form (*A. fragilis* var. *numeesensis*) from near Numeesberg in the Richtersveld, distinguished by its smaller leaves and larger spots. As the illustration shows, it makes a small, attractive looking plant in cultivation, but is so fragile as to be almost untransportable.

Type: Cape, Kamiesberg, Ecklon & Zeyher 1975 (S).

*A. filicaulis* DT 4244 from W Numeesberg, Richtersveld (described as *A. fragilis* var. *numeesensis* by Hutchison in 1959)

## filicaulis subsp. marlothii

subsp. *marlothii* (Schonland) Tölken, Bothalia 12:385 (1978); Schonland, Rec. Albany Mus. 1:59 (1903); 3:153 (1915) – as C. marlothii; Berger, Nat. Pflanzenfam. ed. 2,18a:416 (1930) – as A. marlothii; Tölken, Fl. Southern Afr. 14:43 (1985)

(Syn. A. mamillaris sensu Berger, Nat. Pflanzenfam. ed. 2, 18a: 416 (1930); sensu von Poellnitz, Desert Pl. Life 10: 112 (1938); Fedde's Rep. Spec. nov. Regni veg. 48: 109 (1940); sensu C. A. Smith, Bothalia 3: 631 (1939); A. mamillaris var. marlothii (Schonland) Jacobsen, Sukk. Lex. 29 (1970); A. marlothii (Schonland) Berger, Nat. Pflanzenfam. ed. 2, 18a: 416 (1930))

This subspecies comes from much further south than the type. Most forms of it are decumbent, creeping along the ground, making excellent subjects in cultivation for hanging pots. The leaves are usually small and cylindrical in varying lengths. Although often plain green, some can get a colourful purple blush in strong sunlight, and a few clones are lightly spotted. It is very easy to cultivate and some forms have the annoying habit of shedding leaves at the slightest touch. Plants would fill a large pan if allowed, but if grown hard in a small pot hung close to the glass (in England), they can look extremely attractive. This is contrary to how they live in the wild, as they are often found on shady cliffs or creeping under bushes.

It is described as having decumbent or prostrate stems, usually with flaking bark, with stiff, stilt-like roots. Leaves are lanceolate, rarely elliptic, usually with acute apex, terete or almost so, green to reddish, rarely with purple spots. Inflorescence similar to the type.

Reported mainly from the Little Karoo and adjoining areas from Worcester to east of Oudtshoorn, rarely also on the Knersvlakte west of Vanrhynsdorp. It grows on dry, rocky slopes, usually in the shade of rocks or of other plants. Small forms from Beaufort West and the edge of the Tanqua Karoo are distinctive with extremely fragile leaves.

Type: Cape, near Laingsburg, Marloth 2520 (GRA, holotype).

(Top) Variation between clones from one population of *A. filicaulis* subsp. *marlothii* DT 5000 from south-west of Ashton

(Bottom) *A. filicaulis* subsp. *marlothii* growing in cultivation

# Adromischus hemisphaericus

*A. hemisphaericus* (Linnaeus) Lemaire, Jard. Fleur. 2 Misc.60 (1852); Dillenius, Hort. Eltham t.95 fig. 111 (1732) – as Cotyledon, iconotype; Linnaeus, Sp. Pl. ed. 1:429 (1753) – as Cotyledon; De Candolle, Hist. Plant. Grass. t.87 (1802); C. A. Smith, Bothalia 3:625 (1939); von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:105 (1940); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr.14:44,46 (1985)

(Syn. C. crassifolia Salisbury, Prodr. 3078 (1796); A. rotundifolius (Haworth) C. A. Smith, Bothalia 3: 627 (1939); Haworth, Phil. Mag. 1827: 273 (1827) – as C. rotundifolius. Note: Tölken referred A. subrubellus von Poellnitz to synonymy with A. alstonii, but it is referred to synonymy here because of its reported type locality)

Section 1 – *Adromischus*

This is the type species of the genus, and was beautifully depicted by Redouté in De Candolle's publication (ref. above).

This species is the closest to Cape Town, but has surprisingly not been common in cultivation for some years.

Tölken considered it difficult to distinguish this species from *A. roanianus*, due to the limited amount of plant material he had to work with. The populations encountered by Derek Tribble and Chris Rodgerson in the field show that this species is much the more widespread, but that it does intergrade with *A. roanianus* on the Cederberg.

*A. hemisphaericus* in cultivation, showing the typical crazed, wax coating on the leaves

Exploration since Tölken's revision has revealed that this species is widespread, and this name is used here for all the flat-leaved Section 1 plants up to the Knersvlakte. Near Cape Town, it could be described as the 'classic' form, having medium to large, flattish, silvery leaves, with a crazed, flaking, waxy surface. On Signal Hill, next to Table Mountain, it makes large plants which trail and hang down the hillside. On the Perdeberg, some miles inland, plants on granite are intermediate in size, and mostly lack the silvery leaves. It is a very variable and widespread species. Further north, along the coast, it becomes much smaller, in some cases, making tiny-leaved plants which fill sandstone crevices, for

The widespread *A. hemisphaericus* (CR 1193/DT 5943) shown here growing on the northern Perdeberg

example north of Lambert's Bay at Soutpansklipheuwal. Some of these retain the silvery flaking, but also have red or darker markings, making very attractive little plants. It also occurs inland on the Cederberg and recurs further north until it meets *A. roanianus*. All forms seem easy to grow, and the southern forms will take a good amount of watering. Good light is essential to maintain the lovely silvery flaking of the leaves, or the redness of the smaller forms.

As with many other species it is very variable in leaf-shape and size, with often a crazed, wax coating to the leaves, increasing in density as the leaves age. The stem is nearly upright, becoming decumbent as it lengthens to 20 or 25cm, and is usually quite thick, branching freely, with usually fleshy, thick leaves, round to round-elongated, with convex lower surface and flat to slightly convex upper surface; there is sometimes a suggestion of a hard margin around the upper half of the leaf, and occasionally darker spots beneath the wax. The leaf colouring is light, grey-green, rapidly becoming silvery from the thick wax coating or reddish where the wax is lacking. Inflorescence is 15 to 25 cm long, green, fertile bracts each with 1 (to 2) flower(s). Corolla is green more or less tinged brown, lobes white, or more or less tinged pink, darker around the throat and the mucro.

Reported as localized populations on the Cape Peninsula and occasionally in the Hottentots-Holland Mountains and eastwards from near Caledon to Worcester; and northwards as above.

Type: Dillenius, Hort. Eltham. t.95, fig. 111 (1732).

Leaf variation between different forms of *A. hemisphaericus*

# Adromischus humilis

*A. humilis* (Marloth) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:91 (1940); Marloth in Schonland, Rec. Albany Mus. 3:151(1915) – as C. humilis; Marloth, Fl. South Afr. 2,1:17,t.3d (1926); Tölken, Bothalia 12: 387 (1978); Fl. Southern Afr. 14:50 (1985)

(Syn. C. nana Marloth, Trans. R. Soc. S. Afr. 2:33. (1910), non N. E. Brown)

Section 3 – *Brevipedunculati*

20 years or so ago, this species was quite unknown in cultivation. It was one of the two species John Pilbeam asked Derek Tribble to inquire about in 1980, when he proposed visiting the Karoo Botanic Garden, the other species being *A. phillipsiae*. Fortuitously and happily he brought both back, and they are now once more gracing succulent collections after an absence of over half a century. These originated from a collection by Bruce Bayer, and are quite common in cultivation now, but there has been little material of this species collected since.

(Above) The flower of *A. humilis*

(Below) *A. humilis* MBB 2456 (left) from the Langberg, and (right) another clone, without habitat data

*A. humilis* has leaves very similar to its companions, *A. phillipsiae* and *A. fallax*, and is not easily distinguishable out of flower, except that the leaves are smaller than the other two, and stems tend to be shorter. As its name implies it is altogether a much 'humbler', i.e. more lowly, smaller plant. It has a tendency to offset from near or even below the base of the stem, unlike its two companions. The leaves are more grooved down the centre, and often have attractive red flecking when grown in good light. As with *A. phillipsiae* and *A. fallax*, this species will propagate easily from stem cuttings, and rosettes resulting from the decapitated stem, but leaves are rarely successfully rooted.

This vigorous plant is described as having a short, usually unbranched stem, only about 10 to 20mm long, with a ring of fusiform root-tubers, although it does cluster from around the base of the stems (or from the tubers) to form a mat of low rosettes. Leaves are described as obovate to orbicular, 10 to 15 (to 24)mm long, 5 to 8 (to 12)mm wide, usually abruptly wedge-shaped, rounded at the apex, concave on the upper, convex on the lower surface, softly fleshy, green to grey-green, often with purple speckles above, and sometimes coloured pink to purple below. Inflorescence is typical of the Section, but with brownish-purple flowers. It has 1 to 3 (to 4) fairly short, subsidiary flower stems, each with 1 to 3 flowers. Corolla has a narrowly funnel-shaped tube, yellowish-green, lobes deep reddish-purple.

Reported from the Nuweveld mountains, near Beaufort West, growing in rock crevices, but there are many hills and mountains along the escarpment where it could possibly be found. It has also been found north of Laingsburg at Klipfontein (PVB 3110); and Oukloof Pass near Fraserburg (PVB 2123).

Type: Cape, near Beaufort West, Marloth 4689 (PRE, holotype).

# Adromischus inamoenus

*A. inamoenus* Tölken, Bothalia 12:388 (1978); Fl. Southern Afr.14:54 (1985)

(Syn. C. rhombifolia sensu Schonland & Baker fil., J. Bot. Lond. 40:92 (1902) in part)

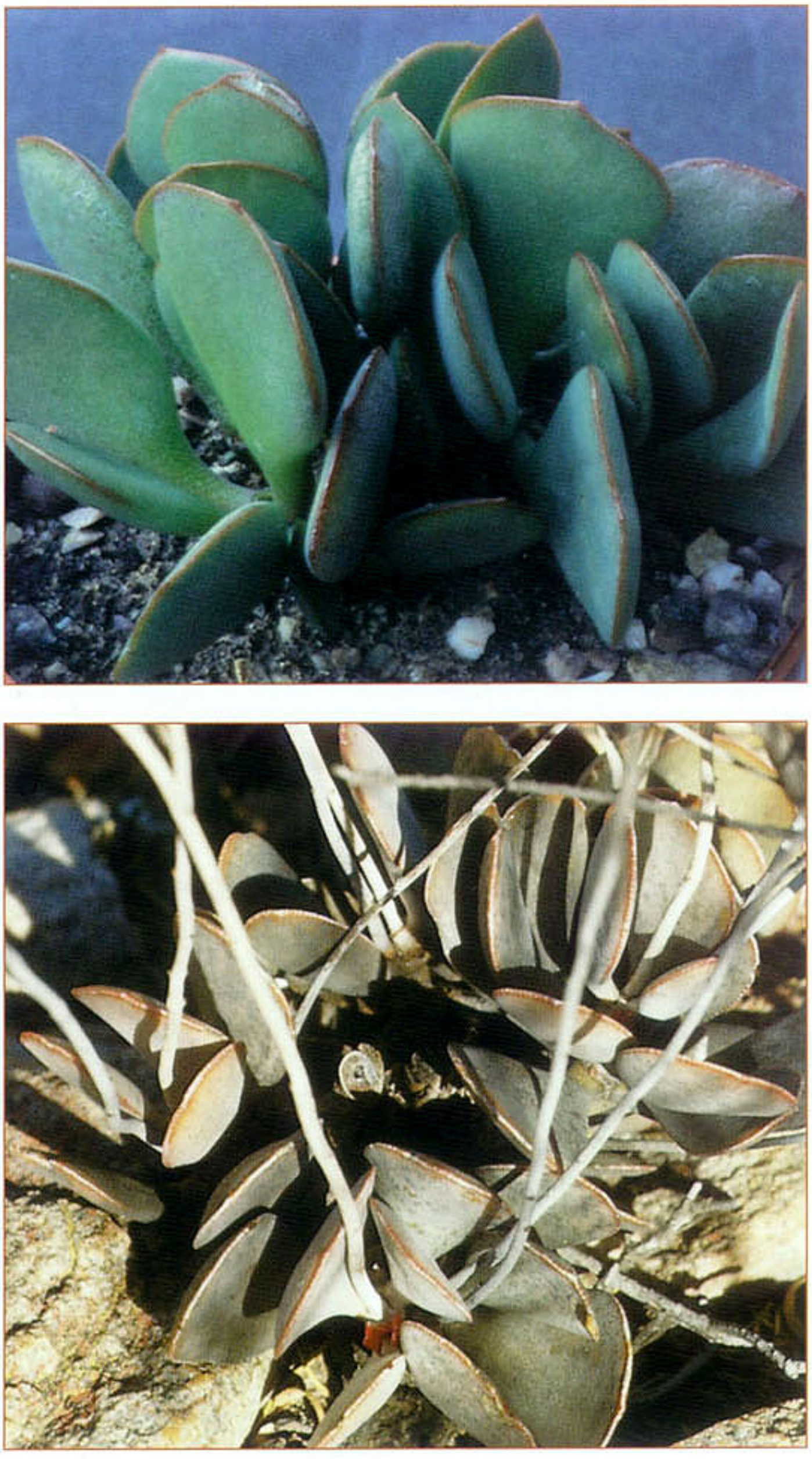
Section 4 – *Incisilobati*

This unappealing name is applied to a small, unassuming, 'not beautiful' (inamoenus) plant. It is rare in cultivation as yet, and virtually all the material in cultivation in the UK has come from discoveries by Derek Tribble. It forms branching stems, sprawling under their own weight, and getting up to about 20cm long, although plants in cultivation are nowhere near this size as yet.

Tölken speculates that since in some areas this species is not uncommon, the low number of known records of it is indicative of its unattractive leaves; these are described as 20 to 28 (to 32)mm long by 15 to 25mm wide, oblanceolate to spathulate, wedge shaped to subpetiolate, obtuse or rounded and sometimes mucronate, flattened, and with a horny margin above the middle of the leaf, grey-green, sometimes tinged brown and usually without purple spots. Inflorescence is 20 to 30 cm long, grey-green. Corolla is greyish-green, lobes white often tinged pink and with a deep mauve line along the margins.

Reported from Eastern Cape Province, from mountains around Grahamstown, and at intervals to near Willowmore, growing usually on sheltered rock outcrops. It has now been found as far west as Cloetes Pass near Herbertsdale.

Type: Cape, 1km north of Salem, Tölken 5508 (PRE, holotype).



(Top) *A. inamoenus* DT 4919 from Bergkloof, north of Herbertsdale

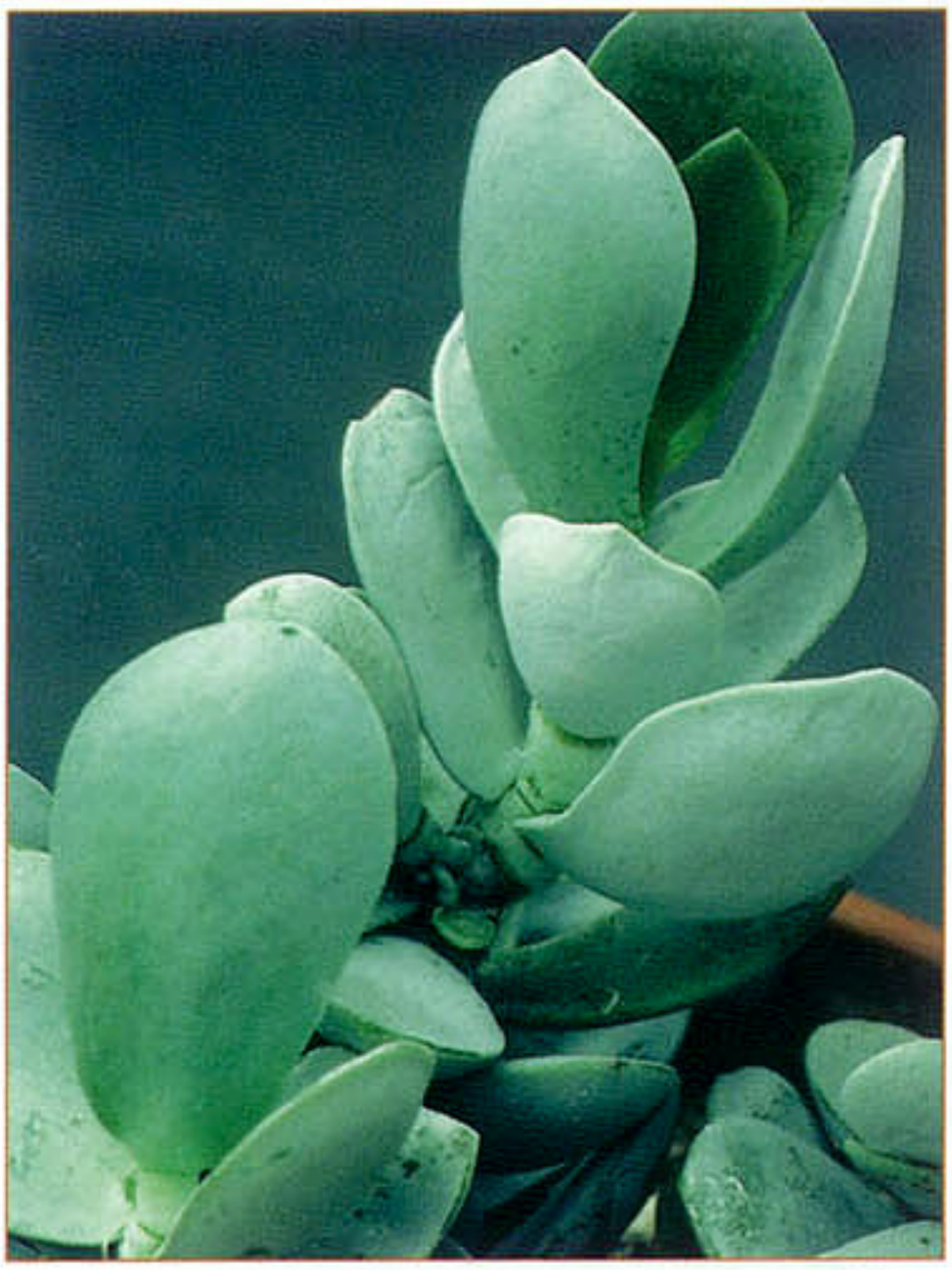
(Bottom) *A. inamoenus* at Ghwarrieport, SW Willowmore

# Adromischus leucophyllus

*A. leucophyllus* Uitewaal, Nat. Cact. Succ. J. 9:58 (1954); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:54 (1985); Bruyns, S. Afr. J. Bot. 58(1):50-55 (1992)

Section 5 – *Longipedunculati*

This is a beautiful, thin-stemmed plant which struggles to remain upright, sooner or later sprawling, with very distinctive farina covering the leaves to give them a completely white aspect; this makes it a popular species with collectors, especially since it is easy, if slow, to grow and to propagate from the easily detached leaves.



The short branches are up to about 10cm long, branching freely; the roots are fibrous. Leaves are described as oblanceolate to obovate or orbicular, usually 20 to 30 (rarely 16 to 35)mm long, and 15 to 25 (rarely to 30)mm wide, abruptly wedge-shaped, usually rounded at the apex, flattened with little thickness, with a distinct horny margin all around the leaf, whitish-green with thick farina, and occasionally darker spotting (the Anysberg form). But they do vary in size somewhat more than this description implies, with some forms from near Ladismith having leaves less than 10mm long and wide. Plants seen at Montagu Springs were growing in rock crevices in shallow soil, in full sun, which made the farina on the leaves even thicker than normal. It grows alongside *A. maculatus* and *A. filicaulis* subsp. *marlothii*, with both of which it hybridizes naturally. The inflorescence is whitish-green with a white bloom, 20 to 35cm long. Corolla is slightly widened at the mouth, white or pale pink, with quite long lobes, white with pink median stripe.

Tölken placed this species in this Section because of detailed flower characteristics, rather than the Section *Brevipedunculati,* where the superficial appearance of the flowers might suggest it should be placed.

Reported from the mountains between Robertson and Montagu, and around the Little Karoo; by Bruyns from near the summits of most of the high, quartzite-topped hills of the Witteberg series from Touwsriver to Laingsburg, and eastwards to the Gamka Poort Dam (Bosluiskloof).

Type: Cape, Montagu, Hall NBG 855/33 (AVU 10015, holotype).

(Top) *A. leucophyllus* in cultivation

(Left) *A. leucophyllus* growing in a rock crevice at Montagu Springs

# Adromischus liebenbergii

*A. liebenbergii* P. C. Hutchison, Cact. Succ. J. (US) 31(3): 81 (1959); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:44 (1985)

Section 1 – *Adromischus*

This is a dull, green species with an immediately recognizable leaf-shape, having a long petiole. It is not very well represented in cultivation, no doubt because of its lack of appeal, and because only a few collections have been made from its very localized occurrence around the Laingsburg area. *A. liebenbergii* shows very little in the way of variation. It has plain green leaves of a very individual shape, a little like some forms of *A. triflorus* in Section 4, but much fatter. It is not a quick growing plant and takes a couple of years to grow into small plants from leaves.

It is described as making stems up to about 20cm long, decumbent to prostrate, little branching, and with fibrous roots. Leaves are rhombic-spathulate, 15 to 20 (exceptionally 12 to 25)mm long, 12 to 15 (to 20)mm wide, usually truncate and with mucro, compressed to almost terete in the middle, distinctly flattened towards the horny ridge at the apex, narrowing to a characteristic petiole up to10mm long, grey-green, unspotted. Inflorescence is green, 15 to 20cm long, with single-flowered fertile bracts. Corolla is pale green sometimes tinged red, lobes white to pale pink with darker mucro.

Reported by Tölken from near Laingsburg and Whitehill, where it grows on exposed rocky slopes. This distribution has now been found to extend both westwards and eastwards, from near Jan de Boers to Koup stations.

Type: Cape, Varsbokkraal near Laingsburg, Liebenberg 6186 (BOL, holotype).

(Top) *A. liebenbergii* DT 3690 from north-north-east of Koup Station

(Bottom) *A. liebenbergii* DT 5760 from south of Laingsburg, growing in cultivation

# Adromischus maculatus

*A. maculatus* (Salm-Dyck) Lemaire, Jard. Fleur. 2, Misc. 60 (1852); Illustr. Hort. 7, Misc. 70 (1870); Salm-Dyck, Obs. 5 (1820) – as C. maculata; Haworth, Rev. Pl. Succ. 21 (1821) – as C. maculata; De Candolle, Prodr. 3:398 (1828) – as C. maculata; Schonland & Baker fil., J. Bot. Lond. 40:92 (1902) – as C. maculata; C. A. Smith, Bothalia 3:622 (1939); von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:99 (1940); Uitewaal, Succulenta 1949:37 (1949); Nat. Cact. Succ. J. 6(2):34-37 (1951); Tölken, Bothalia 12:388 (1978); Fl. Pl. Afr. 45, pl.1776 (1978); Fl. Southern Afr. 14:53 (1985)
(Syn. C. alternans Haworth, Suppl. 26 (1819) non Vahl; A. rhombifolius sensu C. A. Smith, Bothalia 3: 625 (1939), non (Haworth) Lemaire)

Section 4 – *Incisilobati*

This species, especially in popular literature, has been confused with *A. trigynus*, but it is well represented in the literature listed above, and there is no doubt about the proper application of the name. It is related, and somewhat similar to *A. sphenophyllus*, and these two can be difficult to separate, although leaves of *A. sphenophyllus* are usually much longer than broad.

(Top) *A. maculatus* CR 1189 growing at Kogmanskloof near Montagu
(Bottom) An immaculate form of *A. maculatus* DT 4972 from south of Prince Albert

With a horny margin usually all around the leaf, different forms of *A. maculatus*

Correctly identified, *A. maculatus* is an attractive and popular species in cultivation, making a strong, tall, substantial plant with large leaves. Most plants in cultivation have large, blue-grey leaves, unspotted or few to many red spots, mostly on the upper half of the leaves. It is very slow, but well worth the effort to keep it growing well, as it makes an impressive plant.

Plants seen in the wild, south east of Robertson, were on high, north facing, gravel slopes. Further east at Kogmanskloof, near Montagu, the sunny northern facing slopes were also favoured. It is sometimes difficult to differentiate smaller forms from *A. triflorus*, but the horny margin in that species does not extend right around the edge of the leaf.

It makes stems to about 15cm tall, becoming eventually decumbent or prostrate, little branching, with fibrous roots. The leaves are flattened and with a horny margin right around the leaf (a useful distinguishing characteristic from similar species), green, grey-green to greyish-brown, usually with dark purple spotting, described as obovate to oblanceolate, (25 to) 30 to 70 (to 100)mm long by (15 to) 20 to 35 (to 40)mm wide, usually abruptly wedge-shaped, rarely subpetiolate, rounded or obtuse and often mucronate. Inflorescence is 20 to 35cm long, grey-green, fertile bracts each with 1 (to 2) flower(s). Corolla is pale yellowish-green, lobes pale pink with mauve margins.

*A. maculatus* growing alongside *A. leucophyllus* at Montagu

Reported at high altitudes from the Langeberg Mountains from near Worcester to north of George, usually in rock outcrops on higher slopes. It also occurs along the Swartberg Mountains from Prince Albert to around Willowmore, and on the northern side of the Great Karoo near Beaufort West. Uitewaal received plants of this species from the University of Stellenbosch, collected at Bonnievale (SUG 6889), and from between Steinkopf and Breekpoort (SUG 6079) — this last report is very much doubted, as this is *A. alstonii* country.

Type: without locality, Salm-Dyck sub Haworth without number (OXF, lectotype).

# Adromischus mamillaris

*A. mamillaris* (Linnaeus fil.) Lemaire, Jard. Fleur. 2, Misc. 60 (1852); Linnaeus fil. Suppl. 242 (1782) – as C. mamillaris; Thunberg, Prodr. 83 (1794) – as C. mammillaris; Fl. Cap. edn. Schultes 397 (1823) – as C. mammillaris; Haworth, Suppl. 22 (1819) – as C. mammillaris; Rev. Pl. Succ. 21 (1821); P. C. Hutchison, Cact. Succ. J. (US) 25(1):3-5 (1953) = A. filicaulis; C. A. Smith, Bothalia, 3:630-631 (1939) – as A. mammillaris; Tölken, Bothalia 12:382,388 (1978); Fl. Southern Afr. 14:52 (1985) – as A. mammillaris – in error

N.B. the original spelling is quite correctly 'mamillaris', from 'mamilla', a nipple, i.e. 'mamillaris' means nipple-like.

Section 4 – *Incisilobati*

There has been considerable confusion over the proper identity of this species, which has been expounded upon by several students of the genus over the years.

As with most confused species, the root of the trouble is the difficulty of determining what was originally described in 1782, with minimum detail, and with no accompanying illustration or deposition of plant material.

The original brief description by the younger Linnaeus merely told us that the leaves are alternate, terete-ovate, smooth; the flowers alternate, pedunculate – and that was all!

This was followed in 1794 by a more full description by Thunberg, which added that the stems are prostrate and rooting down; the leaves secund (on only one side), spiralling, nipple-like, tapering at both ends, rounded.

It was reported to come from near Olifantsbad, which Tölken interprets as being near Calitzdorp.

Authors after Thunberg confused this species with *A. filicaulis*, particularly subsp. *marlothii*, which is not too surprising in view

*A. mamillaris* BM 421 from west of Calitzdorp – very different from *A. filicaulis* subsp. *marlothii* which often masquerades under the name of *A. mamillaris*

firstly of the name, 'mamillaris', and Linnaeus the younger's description of the leaves as 'teretiovatis, glabris', i.e. round in section, ovate and smooth, and secondly the apparent over-lapping of the two in the wild. C. A. Smith, who from his text was clearly **not** confusing it with *A. filicaulis, A. filicaulis* subsp. *marlothii* and *A. kleinioides,* compared it in habit and foliage to *Senecio/Kleinia radicans*. He added that distinction between non-flowering specimens of these two species is nearly impossible, but that when turgid, the turpentine flavour and the midstripe distinguish the *Senecio.* This gives a clear idea of his concept of this species.

This muddled situation reigned for many years, until Tölken examined Thunberg's holotype deposited at the Herbarium Uppsala, and reported damningly, that this type specimen did not seem to have been consulted since deposited, and that it was not possible to establish when the much more common but also terete-leaved *A. filicaulis* reached Europe and the confusion between the two species started. The confusion still goes on.

Unfortunately we have been unable to access, without considerable cost, the Thunberg herbarium specimen, to help resolve our doubts about the identification of this species. The discrepancies between what was originally described by the younger Linnaeus, what Thunberg described 12 years later, and how various students of the genus have interpreted this taxon since then, leave considerable doubt as to what this species really constitutes.

According to Tölken it is a comparatively rare species, from eastern parts of the Little Karoo, east of Calitzdorp. It is reckoned by Tölken to be a much closer relative to *A. triflorus* in the same area, (described originally also by the younger Linnaeus at the same time), but considered by Tölken **not** to be 'merely a narrow-leaved form of the very variable *A. triflorus*, as it does not produce the typical curved buds of that species' — a small consideration for separation, and perhaps too tenuous to maintain. But it does give a clear idea of what Tölken considers this plant to look like.

Bryan Makin, who explored briefly in this area, believed that Tölken got it right, and confirmed that what he found in that area were plants of this description; that pictured bears his acquisition number BM 421 and the collection number Liebenberg 6159, reported from near Calitzdorp. Although this collection number is ascribed, according to Tölken, to *A. triflorus*, the plant matches his description of *A. mamillaris* well, and the link with *A. triflorus* is underlined, since the attribution to *A. triflorus* (albeit as *A. procurvus*) was most likely made by Liebenberg.

Tölken described it as a sparsely branched plant with decumbent stems to 15cm long, with fibrous roots. Leaves are grey-green, sometimes tinged brown, usually without purple spots, linear-lanceolate, 20 to 40 (to 50) mm long, 5 to 11mm wide, usually abruptly wedge-shaped, acute, slightly compressed to almost terete, with hard margin only at the apex. Inflorescence is grey-green, 25 to 35 cm long, with 1 (to 3) flowered fertile bracts. Corolla is greyish-green, lobes white often tinged pink and with a mauve line along the margin.

Reported from eastern parts of the Little Karoo, east of Calitzdorp, growing on lower, gravelly slopes. By C. A. Smith in a poort on Bokkeveld series, between Oudtshoorn and Montagu Pass, April 1930, van Nouhuys, without number (Pa). Robertson district: on karoo-like hills, near Robertson, Galpin 10334 (Pa). Ladismith district: on hills near Ladismith, 1926, Liebenberg 620 (Pa).

Type: Cape, Oudtshoorn district, near Olifantsbad, Thunberg in Herb. Thunberg 11006 (UPS, holotype). Herre in SUG 5403 (BOL); Oddie, NBG 304/37 (NBG); UCBG 51.581? – as *A. procurvus*; UCBG 56.304 (Liebenberg 6159) – as *A. procurvus* (UC).

# Adromischus marianiae

*A. marianiae* (Marloth) Berger, Nat. Pflanzenfam. ed. 2, 18a:416 (1930); Marloth, Trans. S. Afr. Phil. Soc. 18:47 (1907) – as C. marianiae; Schonland, Rec. Albany Mus. 3:153 (1915) – as C. marianae; C. A. Smith, Bothalia 3:639 (1939) – as A. marianae; von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:109 (1940) – as A. marianae; Tölken, Bothalia 12:391 (1978) – as A. marianae; Pilbeam, Nat. Cact. Succ. J. 36(2):34 (1981) – as A. marianae; Tölken, Fl. Southern Afr. 14:57 (1985); Pilbeam, Cactus File 1(2):4-8(1991) – as A. marianae

N.B. The original spelling *A. marianiae* has now been restored after years of mis-spelling as *A. marianae*.

Section 5 – *Longipedunculati*

This species in its incredible variety of beautiful forms, has brought more enthusiasts for this genus into the fold than any other. The leaves are a pleasing shape, and are often delightfully marked with spotting and marbling, giving them a most attractive appearance. In some of its variations it presents a degree of difficulty in cultivation, or is extremely slow growing, or susceptible to rot in the tuberous roots, which perhaps adds to its appeal for those collectors who like a challenge.

An old plant of *A. marianiae*, in cultivation since the 1960s

Tölken drastically reduced a number of species to synonyms of this species, acknowledging only three at varietal level, apart from the type. We have included descriptions of others, which collectors will undoubtedly continue to seek, with just the name under which they were originally described; to call them subspecies, varieties, forms, or cultivars, would excite those who get excited about such matters, and the scheme adopted here leaves the collector with at least some handle for these distinctive lovely variations of this desirable species. We have also treated Tölken's three varieties (*hallii, immaculatus* and *kubusensis*) in the same way, as the complexity of this species as observed in the field does not warrant their separation any more than all the other names associated here.

Those which are named below represent the more distinctive variations which have captured the imagination of students of the genus sufficiently to prompt their description, often as species, which indicates the diversity of the species as now accepted. Even these names represent only part of the wealth of variation exhibited, and we have included above a picture of leaves to illustrate some of the variability of this species not represented by those named.

Numerous forms of *Adromischus marianiae* that do not sit well with any of the formally described variations of this bewilderingly variable species

Two new names (*A. marianiae* "tanqua" and *A. marianiae* "little spheroid") are used here pending further evaluation, but are not intended as cultivars or botanical taxa. Further extensive fieldwork may reveal a pattern which can justify a more accurate division of this species than hitherto, but it will be a brave person who attempts it.

marianiae (the type)

## *A. marianiae* (the type)

The type of *A. marianiae* is one of the most beautiful, forming a thick, tuberous root, from which the short stems arise, and fibrous roots grow below. Leaves are smooth, grey-green, more or less covered with dark, red-brown spotting, oblanceolate to elliptic, rarely lanceolate, 35 to 60 (to 100)mm long, about 10mm wide, slightly less thick, concave on the upper surface, with a horny ridge from about the middle of the leaf and around the apex, or sometimes extending all the way down the leaf, especially in the classic forms found near Clanwilliam. In the Pakhuis Pass, just outside Clanwilliam, it grows in deep shade under large bushes. Further east towards Uitspankraal in the Biedouw Valley, it is a lovely bluish-green. The forms at Vredendal (which Tölken referred to var. *immaculatus*) are very like the Clanwilliam form of the type, in colour, patterning etc., except that the horny ridge does not extend more than halfway down the leaf. The forms found at Klawer are intermediate between those found at Clanwilliam and Vredendal, as one might expect, since the locality is about halfway between them.

The inflorescence is up to 35cm long, grey-green with a thick bloom, fertile bracts each with 1 (to 3) flower(s); corolla is pale pink to white and with a thick bloom, lobes white with purple margins.

Reported by Tölken from between Clanwilliam and Klawer, usually in the shade of other plants, on dry, lower, west-facing slopes.

Type: Cape, Clanwilliam, Marloth 3489 (PRE, holotype; GRA; K).

## marianiae "alveolatus"

*A. marianiae "alveolatus"* P. C. Hutchison, Cact. Succ. J. (US) 28(6):183, figs.150,151 (1956) – as A. alveolatus; Pilbeam, Nat. Cact. Succ. J. 36(2): 34-5,fig.4 (1981) – as A. marianae var. antidorcatum forma alveolatus; Tölken, Bothalia 12:391 (1978) – in error as A. alveotatus and A. aveolatus, and synonymous with var. immaculata (sic!); Fl. Southern Afr. 14:59 (1985) – as synonymous with var. immaculatus; Pilbeam, Cactus File 1(2):4-8 (1991) – as A. marianae var. antidorcatum forma alveolatus

For the reasons stated above, this lovely plant will continue to have a place in our collections, and so is worth including here, although most plants in cultivation are probably from a single clone which has been widely propagated. An almost perfect *"alveolatus"* match has been found by Graham Williamson (GW 4411) on Kinderlé, about 50km north of Springbok.

The description by Hutchison was detailed, and well illustrated. In brief it is as follows, with our observations in brackets: an erect stem (later branching to form low clumps of tightly packed leaves), 1 to 2cm long, 5mm wide, pale tan-green or yellow-green, sometimes whitish, rugose, on a tuberous root. Leaves whitish green, unspotted, horizontal to erect, usually symmetrical, shortly petiolate, rotund to obovate or lanceolate, longer than broad, to 3.5cm long, 2cm wide, 12mm thick, convex on lower surface, broadly and shallowly canaliculate (grooved) on the upper face, the epidermis roughened, often alveolate (pitted), sometimes with small tubercles, the apical margin sometimes obscurely thickened, the apex often subacute. Inflorescence is up to 17cm long, glaucous, sometimes zig-zag, with single-flowered fertile bracts. Corolla is yellowish at base, green above, maroon at apex, bright green inside, lobes pale whitish-maroon the margin darker.

*A. marianiae "alveolatus"*, a form from Gladdekop, Grootberg

Reported from Cape, Namaqualand, 32km north of Springbok and 13km north of Concordia on the road to Goodhouse, collected by Harry Hall in 1952 and 1956. Hall reported it as growing 'in fissures of granite, over an almost bald sloping rock face, with very little other vegetation. A species of fern shared the same small cracks.'

Type: from type locality (see paragraph above) collected in 1952 by Hall (Kirstenbosch 194.52) (UC 54.116-1, holotype) (UC).

## marianiae "antidorcatum"

*A. marianiae "antidorcatum"* von Poellnitz, Fedde's Rep. Spec. nov. Regni. veg. 44:61(1938); 47: 2(1939); Cact. J. 7:18-19 (1938) – as A. antidorcatum; Pilbeam, Nat. Cact. Succ. J. 36(2):34,fig.2 (1981) – as A. marianae var. antidorcatum; Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – incorrectly as 'antidorcadum' (see below), and as synonymous with A. marianiae var. immaculatus; Pilbeam, Cactus File 1(2):4-8 (1991) – as A. marianae var. antidorcatum; A. R. Mitchell, Cactus File 1(3):28 (1991)

Firstly the epithet, as ably explained both in *The Cactus Journal* by von Poellnitz and more recently by Anthony Mitchell (reference above), is correctly spelled as shown, being a pun on the place name from where it came (Springbok), the Latin name of the springbok antelope being *Antidorcas marsupialis*.

This is a wonderful collectors' plant for its longish, clustering, densely and colourfully marked leaves, reminiscent of Asclepiad seed-horns. The description is as follows: stems to about 4cm tall, branching. Leaves 20 to 35mm long, 5 to 12mm wide, and about as thick as wide, ovate-lanceolate or narrow-oblong, nearly terete but a little flattened on the upper surface, where there is a narrow furrow broadening towards the apex, less distinct in older leaves and on plants in cultivation, inclined to be obtuse or acute at the tip and a little recurving, dirty green mostly with brownish-red to brownish flecks, and with a waxy covering, this often not evident on cultivated plants. Flowers not described, similar to the type, but smaller.

Reported from south of Springbok.

Type: Cape, 48km south of Springbok, Triebner 1324 (= SUG 1324 = SUG 6431) (BOL, clonotype).

*A. marianiae "antidorcatum"* – an old plant in cultivation since the 1950s, and thought to be type material

## marianiae "blosianus"

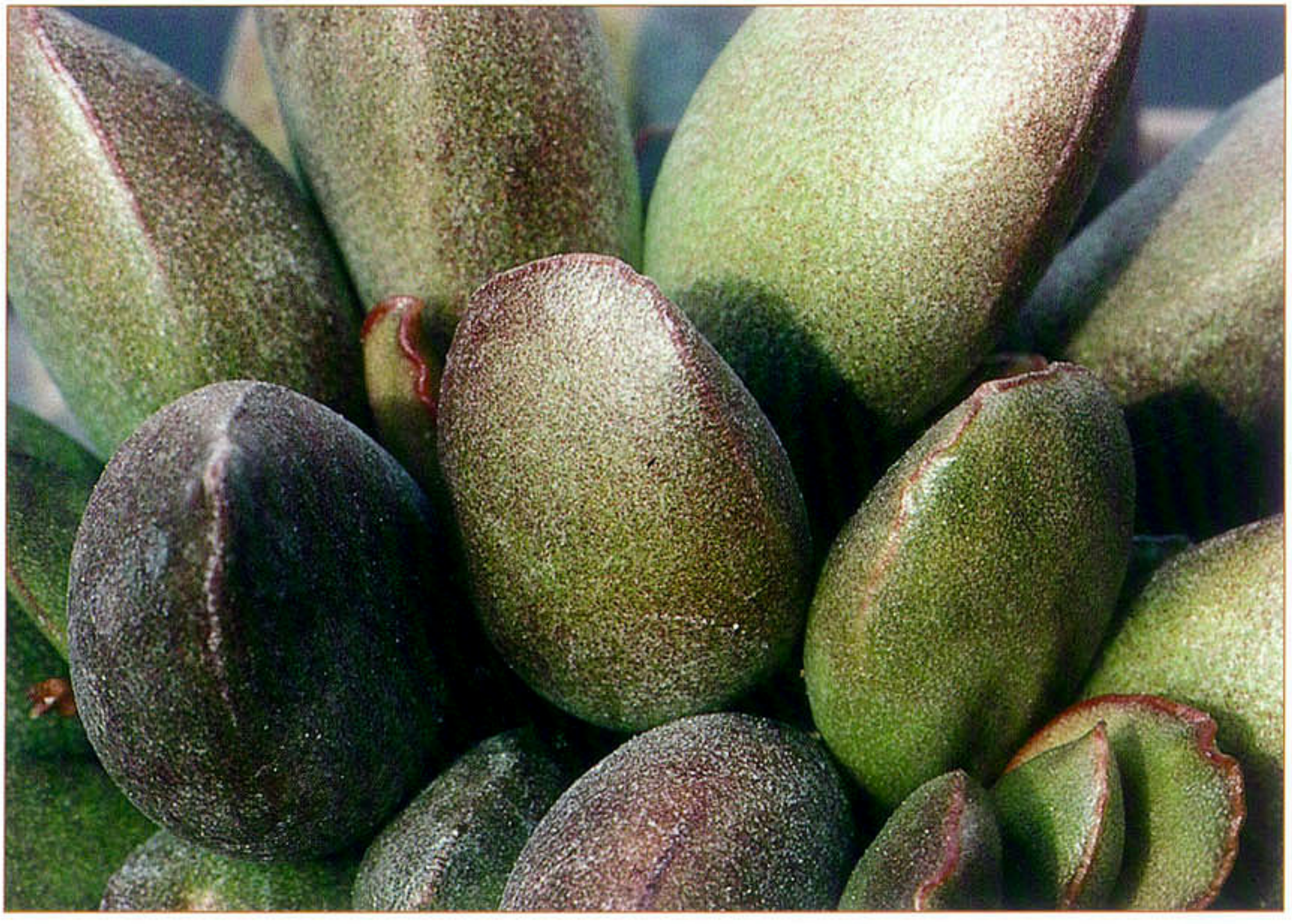
*A. marianiae "blosianus"* P. C. Hutchison, Cact. Succ. J. (US) 29(2):35, figs.23,24 (1957) – as A. blosianus; Tölken, Bothalia 12:391 (1978) – as synonymous with A. marianae var. kubusensis; Tölken, Fl. Southern Afr. 14:59 (1985) – synonymous as above; Pilbeam, Cactus File 1(2):6-7 (1991)

This variation of *A. marianiae* colours beautifully in good light to a warm brown with dark red, crisped upper margins. It is low-growing, forming a mat of tightly packed, smooth-surfaced leaves, the colour varying with the changing light levels during the year. It comes from the ultra-arid coast of Namibia.

The description by Hutchison is briefly as follows: almost smooth stem, to 1cm thick, 1 to 2cm long, grey to grey-green, on tuberous root (later lowly clustering). Leaves forming a tight rosette, horizontal to erect, grey-green tinged reddish-purple, unspotted, on the upper half with a thick margin, crispate-undulate, blackish red, shortly petiolate, symmetrical, obovate, oval in section at any point, acute, usually longer than broad, to 3.5cm long, 2.5cm broad, 15mm thick or more, convex on both faces, upper face less convex. Inflorescence to about 25cm long, grey-purple, with 10 or more erect flowers on single-flowered fertile bracts. Corolla is glaucous-green tinged purplish near base on the outside, bright pale green inside, lobes white with red margins.

Type: Cape, Namaqualand, Richtersveld, Holgat, midway between Port Nolloth and Alexander Bay, Hall NBG 723/53 (UC 54.111-1); BOL, holotype; NBG; K; PRE; UC).

*A. marianiae "blosianus"* — an old plant in cultivation since the 1960s, thought to be type material



## marianiae "Bryan Makin"

*A. marianiae* "Bryan Makin" Pilbeam, Cactus File 1(2):6 (fig.),8 (1991); (Syn. A. marianae forma makinii A. R. Mitchell, Cactus File 1(3):28 (1991))

This is a wonderful variation of this species, whose origins in the wild were undoubted, but whose exact whereabouts were unknown until it was recently rediscovered by Steven Hammer and Chris Barnhill at Breekriet, west of Steinkopf, in the southern part of the Richtersveld; they also found it further north at Anenous, on upper slopes, but it was rare.

It was brought to England in 1962 from South Africa by Bryan Makin, a long-time enthusiast for this genus. He was given it as a parting gift by the Hester Malan Nature Reserve, having made appropriate murmurs of appreciation of this plant in their keeping. The only available information about it then was that it was collected from the southern Richtersveld. It has crowded leaves, very short, to about 10mm long and a little wider, and nearly as thick as wide, a little flattened towards the apex on the upper side, with a greyish-green base colour and sunken red-brown markings on a rough surface, and a pale horny ridge running to nearly halfway down the leaf-sides. It is probably closely related to *A. marianiae "hallii"*.

*A. marianiae* "Bryan Makin" – a plant in cultivation, from stock brought to England by Bryan Makin

## marianiae "geyeri"

*A. marianiae "geyeri"* P. C. Hutchison, Cact. Succ. J. (US) 32(3):89, figs.45-47 (1960); Friedrich, Prodr. Fl. Südwestafrika 52:3 (1968); Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – as synonymous with A. marianiae var. kubusensis; Pilbeam, Cactus File 1(2):6-7 (1991)

Although this taxon is far less known than the other variations of this species, it is worth repeating Hutchison's description, as it is distinctive and well worth obtaining, although it seems somewhat more difficult to grow than most.

Hutchison's description in brief is as follows: stem suberect, 1 to 5cm long, up to 1cm in diameter, purplish-brown, rough, at first coated with white wax, on a tuberous root. Leaves are velvety whitish-grey, irregularly

*A. marianiae "geyeri"* UCBG 56.826 – type material, in the collection of Myron Kimnach

spotted reddish-brown, suberect to horizontal, symmetrical, obovate, subacute or rounded at the apex, somewhat broadly channelled above, up to 3.5cm long, 2.5cm wide, in cultivation up to 8cm long, 1 to 2cm thick at the midpoint, tapered at both ends, almost terete (especially so in cultivation), the apex subacute or rounded, (the channelling less apparent). Inflorescence is up to 40cm long, glaucous, with single flowered fertile bracts. Corolla is glaucous, yellowish at base, greenish above, purplish at apex, green inside, lobes white.

Type: South West Africa (Namibia), Sperrgebiet, south of Luderitz, Geyer, SUG 30216, UCBG 56.826 (BOL, holotype; UC). This is within the restricted access diamond mining area, and is therefore unlikely to be easily recollected. No plants are known to have been collected or even seen there in recent years, although surprisingly, Steven Hammer reports similar plants in the western Knersvlakte.

marianiae "hallii"

*A. marianiae "hallii"* (P. C. Hutchison) Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985); P. C. Hutchison, Cact. Succ. J. (US) 28(5):144, figs. 111-115 (1956) – as A. hallii

(Syn. A. nanus (N. E. Brown) von Poellnitz, Desert Pl. Life 10:228 with fig. (1938), in part; Fedde's Rep. Spec. nov. Regni veg. 48:92 (1940) in part – Triebner 1318; A. casmithianus von Poellnitz, Beitr. Sukkulent-enk. 1940:64 (1940))

This is one of the most difficult and slow-growing variations of the species, and is not often seen in cultivation. It is widespread, in very small, localized populations, and has been seen in recent years at Skimmelberg, Rietkloof, Augrabies, Umdaus, Lorelei, near Kon Kyp, and Smorenskadu. There have been collections also by Peter Bruyns, Steven Hammer, John Lavranos and others, adding to the pool of available plants. It is a real collector's plant, almost the *Ariocarpus* of the genus; not difficult to grow from leaves, but painfully slow, and rotting off too easily in the cold English winter months, although the thick leaves resist drought better than most.

It has short, thick stems on tuberous roots. Leaves are whitish, greyish-brown, rarely with faint reddish-purple spots, usually with a bloom (the type was so described; plants found at Umdaus are whitish; those at Skimmelberg are plain or with thick, red spotting, one clone was almost entirely red), obovate to almost orbicular, rarely oblanceolate, often wider than long, about 15 to 25mm long, about 20 to 25mm wide, thick, compressed, slightly concave at the apex, with a marginal ridge at the apex, often undulate. Inflorescence as for the type, but smaller.

Reported along the coast to the north and south of the Orange River mouth, Namibia and Cape Province, usually growing in rocky outcrops, in sandy pockets in rocks, associated with quartz. More recently reported from further inland, as far as 100km or more from the coast.

Type: Cape, Buchu Twins (south of Alexander Bay), Hall 75.5 in NBG 75/33, UCBG 53.1115 (BOL, holotype; PRE; UC).

(Top)
Leaf variation between different forms of *A. marianiae "hallii"*. The dark spotted one CR 1235 is closer to *A. marianiae* "Bryan Makin"

(Middle)
*A. marianiae "hallii"* from the Aurus mountains in Namibia

(Bottom)
Two clones of *A. marianiae "hallii"* CM 121 from Lorelei, Namibia – the thin leaves are not typical

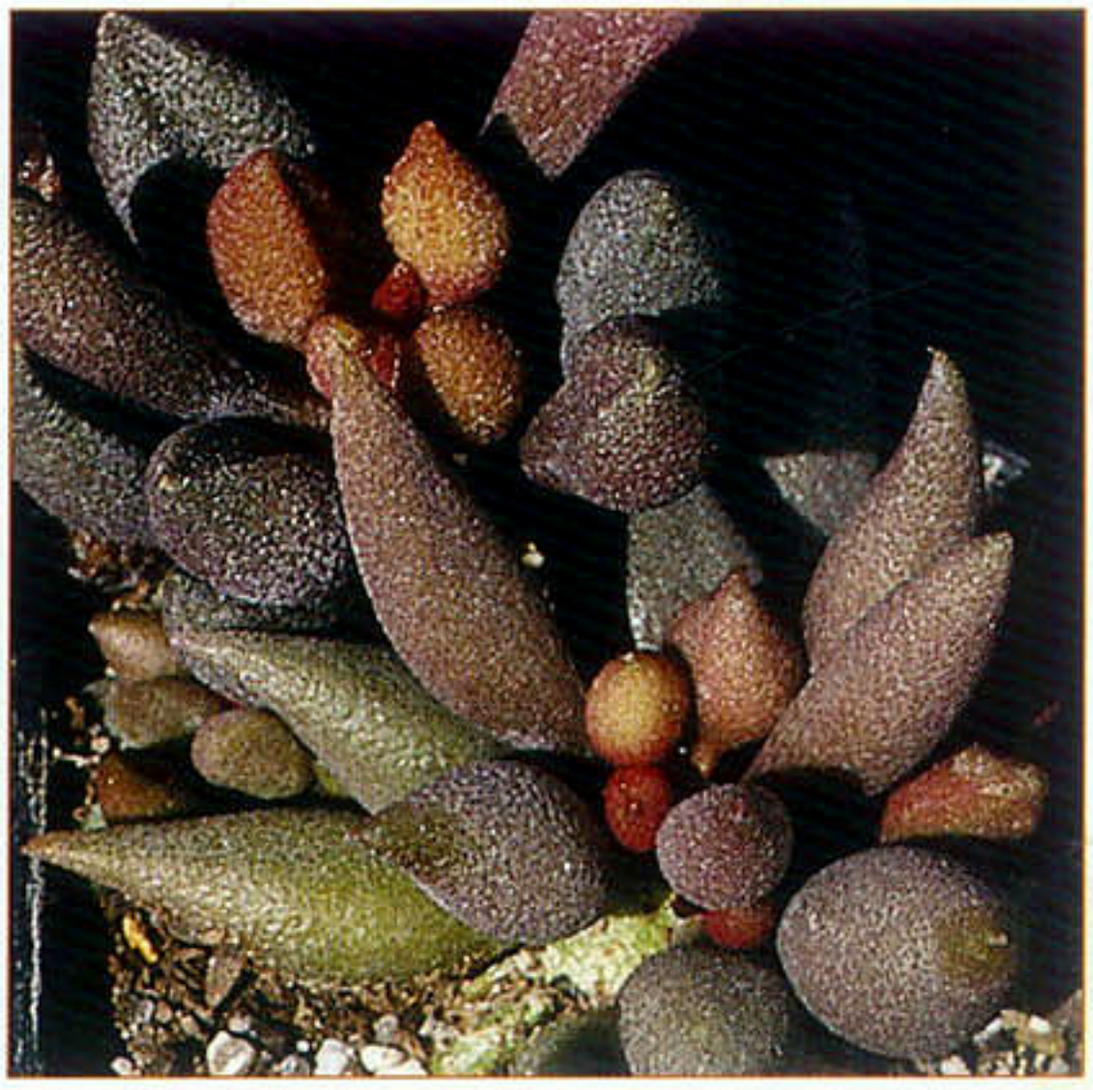
# marianiae "herrei"

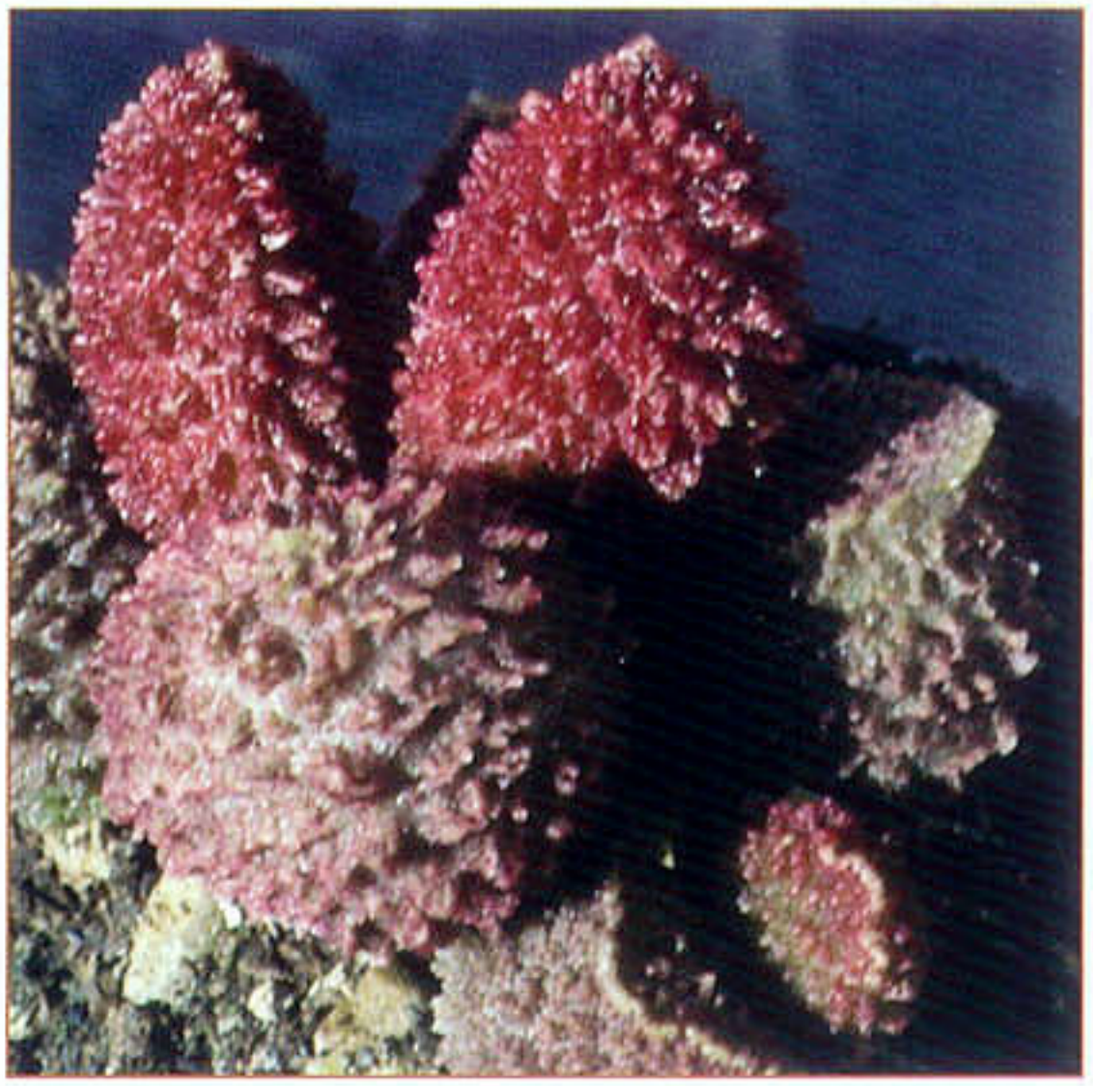
*A. marianiae "herrei"* (W. F. Barker) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:62 (1938); 48:90 (1940) – as A. herrei; W. F. Barker, S. Afr. Gardening & Country Life 21:247 (1931) – as C. herrei; Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – as synonymous with A. marianiae var. immaculatus; Pilbeam, Nat. Cact. Succ. J. 36(2):34, fig.3 (1981); Cactus File 1(2):4-8 (1991) – as A. marianae var. antidorcatum forma herrei; Rodgerson, Cactus File 2(6):5-8 (1995)

This is one of the smallest of the variations of *A. marianiae*, and it is much sought after by collectors in its various colour forms, from greenish, to brown, rusty-red, bright deep red or almost black. But its slow growth and consequently painfully pedestrian production of new leaves, mean that you have a good friend indeed in someone who will take off a leaf for you, from which you may be able to produce a plant.

It is still uncommon in cultivation, which gives some idea of its difficulty to grow well considering that it was found almost 70 years ago in 1929! Herre's notes are worth quoting in this context, from the original description in 1931: 'We found it first on the second of October, 1929. In October 1930 I found it again and think that all the plants . . . are from Maerpoort and its vicinity, and are the same as the one photographed from Nutabooi . . The Buffels River seems to be the centre of its distribution. The plant grows easily in cultivation and does not need any special soil or treatment.'! We wonder what his secret was to find it so easy — living in South Africa must have helped!

Variations of *A. marianiae "herrei"*:
(Top left) The commonest of the forms in cultivation, without details of provenance
(Bottom left) – A clone from the original Herre collections (BM 2199)
(Bottom right) – *A. marianiae "herrei"* DT 6010, from north of Maerpoort se Berg





(Top left) EvJ 11504, from Rosyntjieberg in the Richtersveld – probably the most northerly population (Top right) *A. marianiae "herrei"* a beautiful form from the Kourkammaberg

(Bottom left) A pale form of *A. marianiae "herrei"*

(Bottom right) A chunky, green variation of *A. marianiae "herrei"*

In recent years considerable variation in colour and texture have been found. Around Maerpoort plants are small and dark, but barely rough when compared with the 'older' clones which are extremely rough from their covering of raised tubercles, like southern forms. Northern forms are more delicate, with thin stems, compared with much thicker stemmed and tuberous based forms in the south of the range, similar to the habit of *A. marianiae "alveolatus"*.

It was described as about 9cm in height, bearing up to seven very fleshy leaves which are spirally arranged, these greenish-yellow tinged with red or red brown, becoming entirely rusty brown with age, and with a waxy roughened surface. This appears wrinkled and granulated due to prominent tubercles which occur all over the leaf. The usual shape is either globosely ovate, or elliptical in outline and tapering to a finely pointed apex. At the base it tapers into a petiole. The thin peduncle produces two or three flowers which are nearly erect. The corolla is green tinged with red and grey, and the lobes purplish red or pink.

Reported originally from Nutabooi, Buffels River, west of Springbok, also from Maerpoort, and since by Peter Bruyns from the Kourkammaberg mountain range, 30 miles south of Herre's localities, and by Emile Heunis just north of Komaggas. Rodgerson and Tribble confirm it from around Maerpoort, and at Harras, west of Steinkopf. And a "fantastic" giant form was recently reported from Rietkloof by Marx and Hammer. There are also reported to be propagations made available from leaves of original clones given by Herre to Lavranos.

Type: Cape, Namaqualand, Nutabooi, Buffels River, Herre SUG 5800 (BOL, holotype; GRA; K).

## marianiae "immaculatus"

*A. marianiae "immaculatus"* Uitewaal, Succulenta 1953:10 (1953) – as var. immaculatus; Tölken, Bothalia 12:391 (1978) – incorrectly as immaculata; Fl. Southern Afr. 14:57 (1985)

(Syn. (acc. to Tölken) A. alveolatus P. C. Hutchison, Cact. Succ. J. (US) 28(6):183 (1956); A. marianae forma alveolatus (P. C. Hutchison) Pilbeam, Nat. Cact. Succ. J. 36(2):34 (1981); A. antidorcatum von Poellnitz, Fedde's Rep. Spec. nov. Regni. veg. 44: 61(1938); 47: 2(1939); A. marianae var. antidorcatum (von Poellnitz) Pilbeam, Nat. Cact. Succ. J. 36(2):34 (1981); A. herrei (W. F. Barker) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44: 62 (1938); 48: 90 (1940); W. F. Barker, S. Afr. Gardening & Country Life 21: 247 (1931) – as C. herrei; A. marianae forma herrei (W. F. Barker) Pilbeam, Nat. Cact. Succ. J. 36(2):34 (1981); A. marianae var. antidorcatum forma multicolor Pilbeam, Nat. Cact. Succ. J. 36(2):35 (1981); – but see below)

This variation, if Tölken were to be believed, covers a multitude in leaf-shape, leaf marking, leaf epidermis and habit of growth, from the plain, rough-textured, unspotted almost spherical leaves of *A. marianiae "alveolatus"*, and the tiny, highly tuberculate covered leaves of *A. marianiae "herrei"*, to the heavily marked in dark maroon, granulated longer leaves of *A. marianiae "antidorcatum"*, or to the fatter and longer, smooth leaves of the type.

*A. marianiae "immaculatus"* as described by Uitewaal, with smooth, immaculate green leaves

At this point it is worth pointing out that Uitewaal when describing *A. marianiae* var. *immaculatus*, included a photograph which showed what appears distinctly to be a smooth surfaced leaf, that is to say not rough-surfaced, and differentiated it from the type only in its being not spotted. Also it has been recently confirmed that all *A. marianiae* found in the Vredendal area are smooth, although varying from spotted to unspotted; Uitewaal may well have been sent only unspotted forms, or picked them out as different from the type.

So, *"immaculatus"* is taken here to refer to plants described by Uitewaal in the narrow sense, i.e. smooth and unspotted, with the habit of the type. The photograph accompanying the original description shows leaves with the typical shape of the type but a little fatter, varying from quite squat, almost ovate at the base of the plant, to later developing, longer leaves, four or five times longer than broad. The horny margin extends only about a quarter to a third down the sides of the leaves. This description matches closely plants found by Steven Hammer at Vredendal.

Type: Cape, Vredendal, AVU 10014 (holotype) and SUG 5932.

marianiae "kubusensis"

*A. marianiae "kubusensis"* (Uitewaal) Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985); Uitewaal, Succulenta 1953:7 (1953) – as A. kubusensis

(Syn. A. kubusensis Uitewaal, Succulenta 1953: 7 (1953); and (according to Tölken) A. blosianus P. C. Hutchison, Cact. Succ. J. (US) 29(2): 35 (1957); A. geyeri P. C. Hutchison, Cact. Succ. J. (US) 32(3):89 (1960); A. rodinii P. C. Hutchison, Cact. Succ. J. (US) 25(5):136 (1953))

This variation makes many short branches with thick stems, with fibrous roots becoming thick when they are older. Leaves are light brown to darker brown, pale whitish-brown in the very large forms around Remhoogte in the Richtersveld, mostly plain, but occasionally spotted, oblanceolate, rarely elliptic, (30 to) 40 to 70 (to 90)mm long, smooth according to Tölken, (or rough surfaced, see photograph accompanying the original description), somewhat convex on both sides to terete, with a marginal ridge at the apex, often brown but little raised and not horny. Inflorescence as for the type, but smaller.

Type: Cape, Kubus, Herre in SUG 6104 (AVU 10012, holotype).

One of the many forms of *A. marianiae "kubusensis"* – a plant in cultivation in Steven Hammer's collection

Variation in leaf shape and size between different populations ascribed by Tölken to a wider concept of *A. marianiae "kubusensis"* than that adopted herein

## *A. marianiae* "little spheroid"

This is a delightful and vigorous, miniature variation which has recently appeared in cultivation. It has smooth, matt leaves, almost completely spherical, but with a short petiole, about 5 to 15mm in diameter, and coloured grey-green to light brown, with no markings, except for a slightly darker raised marking barely extending more than a third of the way from the almost indiscernible tip. The peduncle is very thin, as in *"herrei"*. In its geography and its form it is close to *"kubusensis"*. The name reflects the small size of the leaves and their shape.

**marianiae "little spheroid"**

Reported from Northern Cape Province, Little Namaqualand, near Naroegas, north-east of Kleinsee and to the west of Springbok, growing on a single ridge.

*A. marianiae* "little spheroid" growing (left) in cultivation, and (right) in habitat near Naroegas, west of Springbok


## marianiae "multicolor"

*A. marianiae "multicolor"* Pilbeam, Nat. Cact. Succ. J. 36(2):35 (1981) – as A. marianae var. antidorcatum forma multicolor; Tölken, Fl. Southern Afr. 14:59 (1985) – as synonymous with var. immaculatus; Pilbeam, Cactus File 1(2):7-8 (1991) – as A. marianae var. antidorcatum forma multicolor; Rodgerson, Cactus File 2(6):7 (1995)

The plants in cultivation under this name seem to be propagations from a one-off collection, with no information as to who collected it or where it came from. Hopefully with keen students of this genus combing the broad area of *A. marianiae* its locality may yet emerge. It does have the disconcerting habit of making a short stem of up to about 5cm long or a little more, which other variations of this species seldom do, except *"herrei"* and the mysterious *A. rodinii* (see page 89). The flowers clearly align it with *A. marianiae*.

It is a lovely plant for collectors, showing a changing range of leaf colours during the year, unrivalled by any other *Adromischus*, except perhaps that immediately preceding, from green, grey-green, to varying shades of lilac, merging to dull rust-red.

It was described as differing from "*antidorcatum*" in its unspotted leaves, and from other variations ("*alveolatus*" and "*herrei*"), by the longer, multicoloured leaves and stronger growth. Roots tuberous; stems very short; leaves ovate-lanceolate or narrowly oblong, with a gradually narrowing petiole, nearly terete but a little flattened on the upper surface and narrowly furrowed, lower surface convex, up to 4 cm long, 1.5 cm broad, 12 mm thick, roughened with papillae, often rugose, green, grey-lilac and purple-red. Flowers are as in the type.

Type: locality unknown, Pilbeam, without number (K), 1981. Similar plants have been found west of Maerpoort (CR 1263, DT 6090).

*A. marianiae "multicolor"* – the type plant

marianiae "tanqua"

## *A. marianiae* "tanqua"

We have named this new variation of the species as it is a distinctive, small form worth the attention of growers.

It is shown on page 58 of Tölken's 1985 map of the variation within *A. marianiae* as the most southerly variation (nos. 22 and 23). It has virtually no stem, but a spreading, tuberous rootstock. The leaves are small, matt, grey-green with no markings, from nearly spherical to three times as long as wide, in cultivation from 10 to 25mm long, 5 to 15mm wide, with a horny margin on the upper third or so. The inflorescence is typically 15 to 20cm high in cultivation.

Reported from Western and Northern Cape Province, at both high and low altitudes around the Tanqua Karoo. It occurs from near Nieuwoudtville and Middlepos in the north, to near Skittery Kloof in the Swartruggens mountains in the south.

*A. marianiae* "tanqua" Lav. 28196– the most southerly known variation of this incredibly variable species

Two more of the myriad variations of *A. marianiae:*
left – DT 5397 from east of Port Nolloth; right – DT 4235 from west of Numeesberg

# Adromischus maximus

*A. maximus* P. C. Hutchison, Cact. Succ. J. (US) 31(5):133 (1959); Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:53 (1985)

Section 4 – *Incisilobati*

This is a majestic species, making huge plants eventually. A leaf received from Bryan Makin in 1985 is now a four-stemmed plant over 30cm tall in a 25cm pot. The flower stems are short by comparison, only 25 to 35cm, where one might expect from such a large and powerful plant a much greater effort and a magnificent, towering flower-spike. Plants of this species seen by the Doring River, north of Clanwilliam, at low levels, below the Nardousberg escarpment, had dropped many leaves, but none had tried to root, the leaves curling upwards at both ends. However, a couple of broken stems did have adventitious roots appearing. In cultivation leaves will root, but it is not easy to induce them to do so. Best results have been obtained by leaving them to callus for a few days, before planting in the mother plant's pot, so that they get water only when the plant is watered. 'Plant it and forget it' seems to work better than individual attention. Pot up detached leaves before they deign to show roots in the air, as other species so readily do, since this species seems not to do this.

*A. maximus* (BM 2034-2) is the largest growing member of the genus

It has the distinction of being the species with the largest leaves, with a potential of up to 16cm in length, according to Tölken, who distinguishes it from *A. sphenophyllus*, a very similar looking plant, by its very short and usually densely clustered flowers, and its quite separate, restricted distribution.

Hall reported that plants in the wild got to 30cm tall, without flowers, and 45cm wide. In cultivation it will make such a size slowly but steadily, and plants of this height are sometimes seen, but few would grow it to the width of the wild plants reported by Hall.

Leaves are pale yellowish-green, unspotted, erect to spreading, oblong-spathulate, (6 to) 8 to 13 (to 16)cm long or more, 25 to 45 (to 60)cm wide, thickest below the middle, to 1.5 cm thick, usually slightly convex above and below, but flattened towards the apex, with a similarly coloured, horny margin at least around the upper half of the leaf, sometimes all the way around. Inflorescence is grey, usually glaucous, fertile bracts each with 1 to 3 (to 7) flowers. Corolla is grey-green, lobes white or cream with pale pink tinge.

Reported from the sandstone mountains between Vanrhynsdorp and Clanwilliam, usually growing on or near rocky outcrops, with a north-facing aspect, also near the top of the Gifberg mountains according to Hall.

Type: Cape, Gifberg, Hall in NBG 475/53 (BOL, holotype).

# Adromischus montium-klinghardtii

*A. montium-klinghardtii* (Dinter) Berger, Nat. Pflanzenfam. ed. 2, 18a:416 (1930); Dinter, Beiträge Fl. Südwestafr./Rep. Spec. nov. Regni veg. 19:147 (1923) – as Cotyledon; Friedrich, Prodr. Fl. Südwestafr. 52:4 (1968); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:46 (1985)

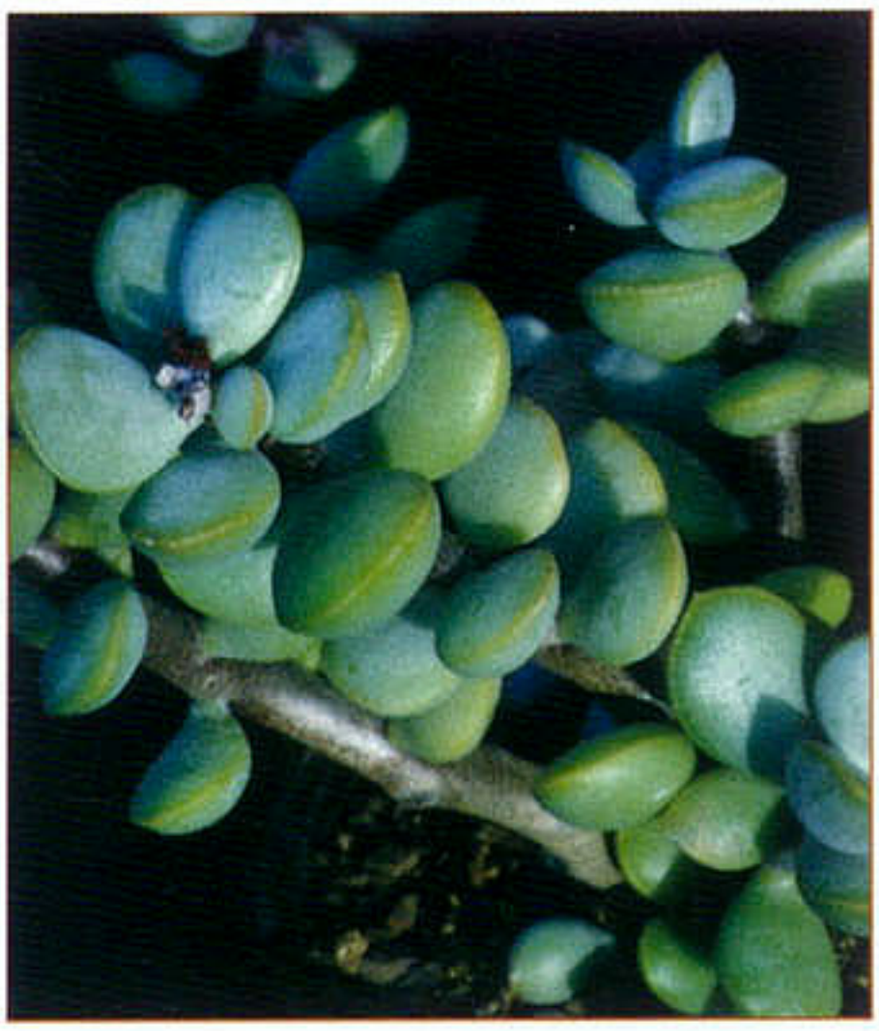
Section 1 – *Adromischus*

In spite of its description over 70 years ago, this unassuming species has come into cultivation only recently. Tölken distinguishes it from *A. hemisphaericus* by its non-cracking wax covering (almost invariably cracking in *A. hemisphaericus*) and the horny margin around the leaf, but this distinction breaks down with some variations of both species. Rare plants of this species with elliptic-oblong leaves (Tölken 5273) are distinguished from the similarly leaved *A. filicaulis* by their compressed leaves which scarcely curve upwards.

Once you get to know it, it is one of those plants that you just look at and know what it is. This is mainly because of its habit, which is different from *A. filicaulis* or *A. hemisphaericus*, with branches which usually grow outwards, nearly at right-angles to the main stem, only occasionally upwards as in the other two species, and also because of its roundish, flat, thick, usually unmarked leaves.

(Top) *Adromischus montium-klinghardtii* DT 3669 from Holgat River south of Alexander Bay

(Bottom) Usually plain but occasionally spotted leaves from various clones of *A. montium-klinghardtii*



It seems to be restricted to near the coast of the Richtersveld and Namibia, but does vary in the size of the leaves and markings. It favours rocky outcrops and generally grows fully exposed. It grows near to the coast in some larger forms at Augrabies and the Holgat River, but is smaller at Alexander Bay and in the diamond area, north into Namibia. Although a fairly slow growing species, its larger forms seem to settle finally in about a 12cm pot, but do take a few years to get there. The smaller, more attractive forms seem happy in a 7cm pot. Coming from arid areas, it can certainly withstand drought better than most; it has to be really thirsty before it drops leaves! It is another good subject for a hanging pot placed near the glass. One of its better attributes is the production of very neat and short flower spikes.

It makes erect, rarely decumbent stems to 20cm long, little branched from the base, and with fibrous roots. Leaves are greyish-green to greyish-brown without spotting, obovate to orbicular, rarely elliptic, slightly cuneate, rounded and rarely mucronate, flattened, somewhat convex and with an indistinct hard margin around the whole leaf, (10 to) 15 to 30 (to 35)mm long, (8 to) 12 to 20 (to 25)mm wide. Inflorescence is grey-green, with single-flowered fertile bracts. Corolla is green, lobes pale yellow to white with pink mucro.

Reported from the coastal area from the Klinghardt Mountains and Namaiskloof in south-western Namibia to the Holgat River mouth, and further south to Augrabies in South Africa, growing on exposed rocky outcrops.

Type: Namibia, Klinghardt Mountains, Dinter 4265 (B, destroyed).

# Adromischus nanus

*A. nanus* (N. E. Brown) von Poellnitz, Desert Pl. Life 10:222 (1938); N. E. Brown, Gard. Chron. 30:270 (1901) – as C. nana; Schonland & Baker fil., J. Bot. Lond. 40:93 (1902) – as C. nana; Tölken, Bothalia 12:387 (1978); Fl. Southern Afr. 14:49 (1985)

(Syn. A. pauciflorus P. C. Hutchison, Cact. Succ. J. (US)32(2):63 (1960).)

Section 3 – *Brevipedunculati*

This is a collectors' species of the highest order, growing slowly but not by any means easily in cultivation. It requires well-drained soil and a light hand with the water. It is best kept on the dry side during autumn and winter, when botrytis can kill it very quickly. It is a dwarf gem of a plant, producing mats of small, light green leaves above thick, fleshy roots. It can be flush with the surface if grown in good light and indeed, this is how it grows in the wild. It creeps around and under quartzite pebbles and in narrow crevices, usually fully exposed, but getting the benefit of the strong sun diffused by the white quartz. The flowers are quite beautiful, white and dark reddish, on short stems.

As the name implies it is one of the smallest species, with stems to 4cm long, little branching, with fleshy roots. Leaves are described as grey-green to brown without markings (usually plain green in cultivation), obovate, rarely orbicular or broadly elliptic, (6 to) 8 to 14mm long, 4 to 9 (to 11)mm wide, abruptly cuneate, rounded to truncate, compressed but somewhat convex or slightly concave above, with usually a horny margin near the apex. The thin, dark brown inflorescence has only 1 (occasionally 2) fertile bracts, each with 1 or 2, rarely 3 flowers. Corolla has a funnel-shaped tube, grey-green, lobes white often tinged pink with mauve central stripe.

*A. nanus* CR 1276 from north-east of Kon Kyp

As indicated in the text relating to *A. diabolicus*, it is doubtful if that species stands separate from this one. *A. diabolicus* was differentiated from *A. nanus* by Tölken principally in its 'extensively branched base, forming mats up to 0.15m in diameter', compared with the little branched habit of *A. nanus*. The name *A. nanus* has priority.

Reported from north of Steinkopf, according to Tölken very rare, growing in exposed quartz rock crevices, but often south or west facing and so shady. It has since been discovered to be quite widespread, extending as far west as Kabies se Berg, north to N'Guroebees, near the Orange River, to as far south as the Morenskadu farm, east of Springbok. At the eastern

extremity of *A. nanus*, Steven Hammer has discovered what seems to be a new variation of this species, growing on Achab se Berg, with an almost underground habit and waxy, grey, distichous leaves. It is very difficult in cultivation, and is painfully slow-growing. The short, stout, waxy, dark red flowers are borne singly, but apart from being thicker and more waxy they do not differ markedly from those of 'typical' *A. nanus*.

Type: Cape, without exact locality, MacOwan without number (K, holotype).

*A. nanus* growing amid quartz rocks north-east of Kon Kyp

## Adromischus phillipsiae

*A. phillipsiae* (Marloth) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:88 (1940); Marloth, Trans. S. Afr. Phil. Soc. 18:46 (1907); Fl. Southern Afr. 2, 1:17, t.3c, fig. 5 (1926) – as C. phillipsiae; Schonland, Rec. Albany Mus. 3:151 (1915); Tölken, Bothalia 12:387 (1978); Fl. Southern Afr. 14:50 (1985); Pilbeam, Cact. Succ. J. (US) 56(2):51 (1984); Rodgerson, Cactus File 1(8):4 (1993)

Section 3 – *Brevipedunculati*

This species is the odd one out in the genus, with orange, pendant flowers, reminiscent of species in the genus *Cotyledon*, and yet the flowers have more in common with *Adromischus* in their structure. There is often one species in a genus that seems to be transitional to a closely related genus; the result is sometimes that such a species ends up in an uncomfortable genus of its own, and is constantly sniped at by those who find these wayward stragglers an uncomfortable anomaly. Fortunately this has not applied with this species, and so it is included happily in this genus; if nothing else it adds some drama and colour to a genus otherwise struggling to impress for the quality of its flowers.

As with the other two related species, *A. humilis* and *A. fallax*, this species will grow quite easily from stem cuttings. The remaining stem will sprout new shoots, which can also be taken as cuttings; leaves reportedly will root, but not easily. Shrivelling of leaves will take place sometimes when the tall flower-spike is forming, unless adequate watering is given (more than usual).

It makes short stems, 20 to 50mm long, branching from the base, sometimes from beneath the soil level; it has fibrous roots. Leaves are oblanceolate to elliptic, green to grey-green, (15 to) 20 to 30 (to 45)mm long, 4 to 8 (to 13)mm wide, without a hard margin, concave above, convex below, soft and fleshy, breaking easily. The tall inflorescence is green to brown, 20 to 35cm long, with several subsidiary stems, each with

(Above) Grown in full sun, the leaves of some forms of *A. phillipsiae* can attain attractive colouring and markings

1 to 5 flowers, these more or less pendulous. Corolla is cylindrical to slightly broadened from the middle to form a funnel-shaped tube, orange-red, lobes deep orange-red with yellow around the throat.

Reported from the southern Roggeveld mountains, growing in sheltered rock crevices, and known for many years only from its original locality of Verlatekloof, but it has recently been discovered elsewhere. Peter Bruyns has found it further south near Matjiesfontein and nearly 200km north, near Loeriesfontein in the Kubiskouberg (PVB 6079), also east of the Langeberg and north-east of Garies (PVB 6108). These more recently found forms are somewhat different from those originally found, having longer leaves with more marking by way of reddish striation. The flower colour too is often different, with yellow and pale orange known. There are probably many more suitable habitats between these distant localities.

Type: Cape, southern Roggeveld, Marloth 3912 (PRE, lectotype; BOL; GRA; SAM).

(Left) The large, pendulous flowers of *A. phillipsiae* – unique in *Adromischus,* and possibly bird pollinated

(Above) The leaf rosette of *A. phillipsiae* MBB 5365 from Verlatekloof

# Adromischus roanianus

*A. roanianus* Uitewaal, Nat. Cact. Succ. J. 7(4):69 (1952); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:44 (1985) – all erroneously as A. roaneanus – see below

Section 1 – *Adromischus*

Named by Uitewaal in honour of H. M. Roan (without an 'e'), the spelling is here corrected.

This is a popular plant, which has been common in collections for some years. It is sometimes seen as an impressive, large panful of zig-zagging, stems sprawling over the surface to form a low, tangled mat, with erect, beautifully shaped and coloured leaves. Because it has become widespread from only one introduction, it has become somewhat rigidly fixed in collectors' minds as to its form. But recent collections which have become available have revealed it to be more variable than has been supposed.

It is found around the Nieuwouldtville and Vanrhyn's Pass area (on and below the plateau). Usually exposed, but sometimes found in the shade of bushes, the rounded, flattish leaf size varies from 1 to 5cm in diameter. Spotted forms are rare, but it does get very silvery in strong light, and makes a colourful, hanging plant.

Three forms of *A. roanianus* (left to right): DT 4135 from the top of Vanrhyn's Pass; SUG 6058A from Vanrhyn's Pass (type material); and BM 85/34 from Grasberg farm

It is described as having erect or decumbent, slender stems, to 25 cm long, branching sparingly, zig-zagging, with fibrous roots. Leaves are grey-green to grey (in cultivation often silvery greenish-brown with tinges of mauve), with a thick bloom, rarely with small purple spotting, oblanceolate, rarely obovate or linear-oblanceolate, more or less strongly cuneate, acute, obtuse or cuspidate, flattened, slightly convex, more so on the lower half of the leaf, with horny margin, usually only in the upper half of the leaf, but, as originally described almost entirely encircling the leaf, and flattened in the upper part to form a distinct flattened edge to the leaf. Inflorescence is grey-green to grey, 25 to 38 cm long, with single-flowered fertile bracts. Corolla is pale green, lobes white to cream often tinged pink, with mauve mucro.

Reported from between Brandkop and Vanrhynsdorp, on sandstone outcrops.

Type: Cape. Vanrhyn's Pass, Herre in SUG 6058 (AVU 110011, holotype).

# Adromischus schuldtianus

*A. schuldtianus* (von Poellnitz) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:110 (1940); Jahrb. Deutsch. Ges. 1:95 (1936) – as Cotyledon; Friedrich, Prodr. Fl. Südwestafr. 52:4 (1968); Tölken, Bothalia 12:386 (1978); Fl. Southern Afr. 14:49 (1985); Rodgerson, Brit. Cact. Succ. J. 12(2):42,44,45 (1994)

Section 2 – *Boreali*

This is a squat, crevice plant usually associated with quartzite, and has been seen filling deep, narrow fissures; at one site, west of Grunau, in Namibia, a thin quartz vein was followed for a hundred metres or more and this species was present the whole way!

In all its known forms it makes a very attractive pot plant. The size of the leaves and the markings vary considerably, and the crinkled edges to the leaves of most forms add to the general attraction. It is not a speedy grower, but, given ample root room, the low tuberous root will expand as much as the grower will permit. A plant will last for years in a 5cm pot, but can outgrow a 10cm pot. In either it will show its impatience to be repotted by distorting the pot.

*A. schuldtianus,* a beautiful form from south of Warmbad

Care must be taken during the darker months in England to prevent rot. Water should never be allowed to remain among the leaves in autumn and winter. A plant can be lost in just a couple of days as rot can travel that quickly down into the tuberous root. The flower stems of this species are often very wiry and delicate, covered in a white bloom, with generally white to pink flowers. It is closely related to and merges with *A. trigynus* in the wild, but exactly where one starts and the other ends is difficult to determine.

Tölken divides it into two subspecies:

## schuldtianus subsp. schuldtianus

subsp. *schuldtianus*

This, the type, makes small, highly desirable collectors' plants with beautiful, varied leaves, from spotted to entirely unspotted, from green base colour to a lovely milky-green with pinkish tints; and often with an attractive, crinkled edge coloured red or brownish-red.

It is described as having short, erect branches, 10 to 30mm long, branching freely, and with tuberous roots. Leaves are oblanceolate, rarely linear or obovate, grey-green, usually spotted, (10 to) 15 to 20 (to 40)mm long, (4 to) 6 to 15mm wide, flattened to a little convex below, with horny margin around at least the upper half of the leaves. Inflorescence is grey-green to almost white, 25 to 35 (to 40)cm long.

(Right) One of the spotted forms of *A. schuldtianus*

*A. schuldtianus* in cultivation – a form collected in the field by Frank Horwood

Corolla pale green to almost white, with thick bloom, lobes white to pale pink and deep mauve in the throat.

Reported from central Namibia from the Brandberg (big leaves, green, red-spotted, no crimping – PVB 2838, from Orabeskop), Erongo Mountains and Auas Mountains in the north (it is the northernmost species) to Aus and Karas Mountains in the south, and southwards as far as the Tantalite Valley, only 15km north of the Orange River, 30km south of Warmbad. It is found usually in south-facing rock crevices.

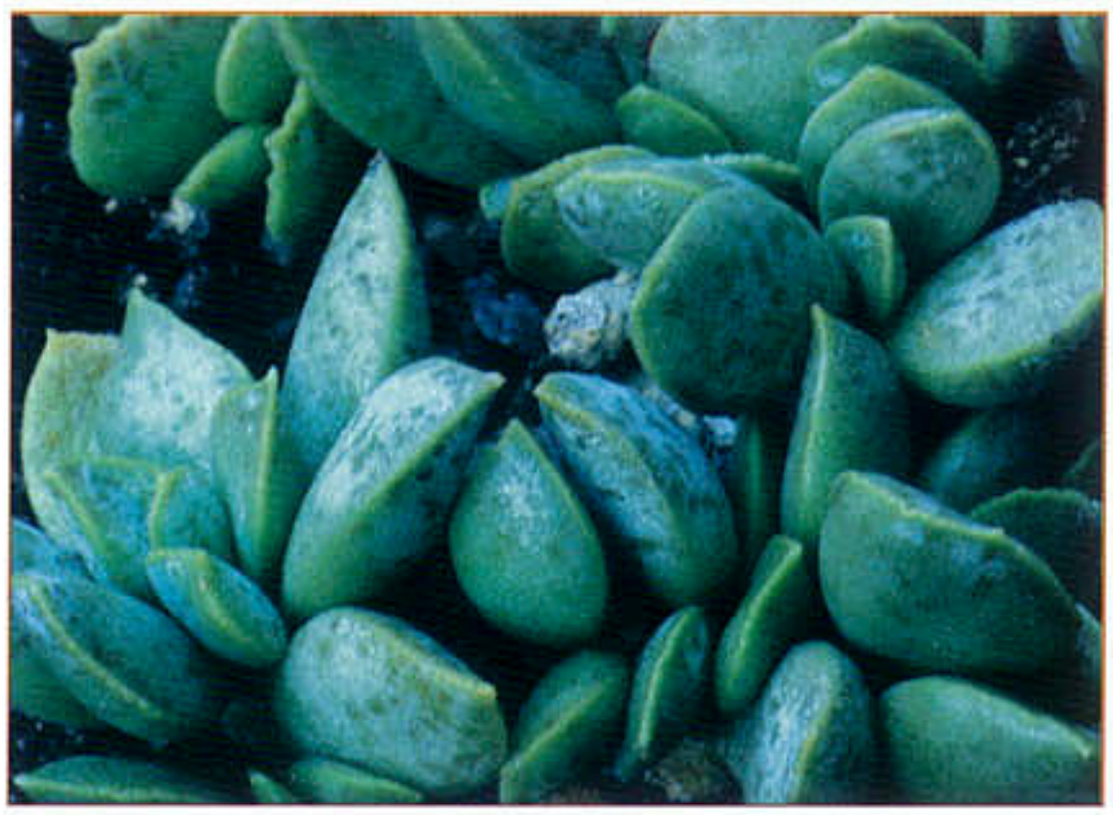
Type: without locality or legend (B, destroyed).

## schuldtianus subsp. juttae

subsp. *juttae* (von Poellnitz) Tölken, Bothalia 12:386 (1978); von Poellnitz, Kakteenkunde 1939:52 (1939) – as A. juttae; Tölken, Fl. Southern Afr. 14:49 (1985)

This little known subspecies is, according to Tölken, known only from a few plants collected in the Karasberg mountains in southern Namibia; von Poellnitz in his original description gave Triebner's localities as Garub, in the Karasberg mountains, Norachus, near the Namib border, and south of Gamoep. It is differentiated from the type by having longer branches, and it is doubtful if such a small difference from such a small population area justifies its separation. Little, if any, material exists in cultivation, and further investigation in the field is needed.

As indicated, it was described as differing in having longer branches, 40 to 80 (to 100)mm long, sparsely branched. Von Poellnitz's figure shows a plant with thick, short stems, spathulate leaves about three times as long as broad, with no apparent crimping of the upper part of the leaf (but see below), with fairly large dark spots in the upper half of the leaves. It was described by von Poellnitz as a dwarf, upright shrub, strongly branching, with crowded leaves, spathulate to obovate-cuneate to almost oblong, at the apex deltoid to ovate-deltoid, acute to shortly acuminate, rarely circular, towards the base usually subpetiolate, convex on both sides of the leaves, green, somewhat shining, often with a somewhat undulating edge.



Syntypes: Namibia, Garub, Triebner 1305 (B, destroyed); Namibia, Norachus, Triebner 1315 (B, destroyed); live material was also sent to Kiel, Kew, Bremen, and Darmstadt.

*Adromischus schuldtianus* from north of Aus in Namibia; not the type locality for subsp. *juttae*, but matching closely the plant illustrated in von Poellnitz's original description

# Adromischus sphenophyllus

*A. sphenophyllus* C. A. Smith, Bothalia 3:624 (1939); Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:54 (1985)

(Syn. C. rhombifolia sensu Baker fil., Refug. Bot 1, t.36 (1869); sensu Schonland & Baker fil., J. Bot., London 40:92 (1902) in part; sensu Schonland, Rec. Albany Mus. 3:154 (1915); A. rhombifolius var. bakeri von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:102,110 (1940))

Section 4 – *Incisilobati*

This is the species that is according to Tölken a doppel-gänger (a double) for *A. maximus*, except for some difference in its size, flowers and its different locality. Plants of this species never reach the stature of *A. maximus*, and it is altogether a much smaller growing plant. Nevertheless they do eventually make plants large enough to fill a pot 20 to 25cm in diameter, but the plants are in every way smaller than *A. maximus*, in stem length, size of leaf, and with a tendency to branch more freely to make a plant like a more dainty *Crassula ovata*. Unlike *A. maximus* they do grow readily from leaves, rooting easily and quickly.

Four forms of *A. sphenophyllus*, showing the considerable variation: back left – DT 4786 from east of Hankey; back right – DT 3694 from east-north-east of Steytlerville; front left – DT 4818 from north of Riebeek East; front right – DT 4849 from north-west of Graaf-Reinet

Plants in the wild from above Kouga Dam in the Baviaanskloof, are large and silvery leaved, the surface of the leaves flaking. Near Grahamstown, the plants are slimmer and more green, but sometimes with red edges. Around Steytlerville grow the superb, undulate forms, which are thick and chunky, with dark green leaves having a very wavy or crinkled edge.

The species is described as having stems to 20cm long, with fibrous roots. Leaves are grey-green, rarely green, unspotted, oblanceolate, flattened, with a horny margin all around, the sides a straight line from the base to the broadest part of the leaf near the apex, rounded there to rarely obtuse and mucronate, (25 to) 35 to 70 (to 100)mm long, (10 to) 18 to 34mm wide. Inflorescence 20 to 45cm long, grey-green, with 1 or 2-flowered fertile bracts. Corolla is pale green sometimes tinged red, lobes white often tinged pink with deep mauve margin.

Reported from between Steytlerville, Graaff-Reinet, East London and Humansdorp, growing in dry bush vegetation, occasionally also on rock outcrops in lusher vegetation.

Type: Cape, without exact locality, Cooper 2338 (K, lectotype).

# Adromischus subdistichus

*A. subdistichus* Makin ex Bruyns, South Afr. J. Bot. 58(1):50-55 (1992)

Section 1 – *Adromischus*

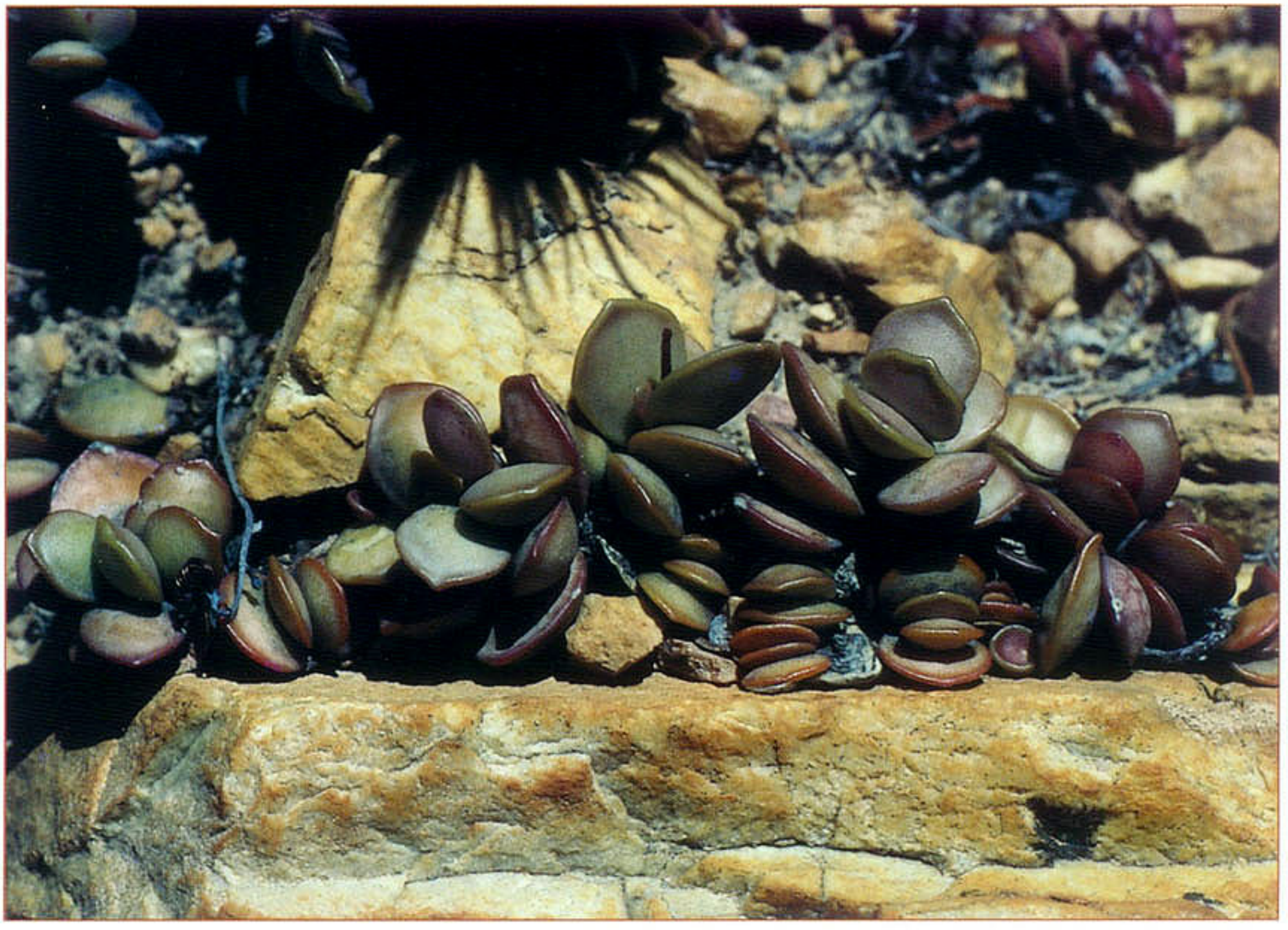
Although this tiny species has been in cultivation for some time under this name, it was described only recently. Peter Bruyns happily used the name which Bryan Makin had coined for it because of the distichous habit in its young stages.

Bruyns originally compared and considered it most closely related to *A. leucophyllus*, which it adjoins in the wild. The main differences are the white farina covering in *A. leucophyllus*, not present in *A. subdistichus*, and floral differences; also (but uncommonly in cultivation) Bruyns reports that *A. leucophyllus* may develop a dense beard of many fine adventitious roots from some of its stems, which has not been observed on *A. subdistichus*.

It has become apparent since the description that the flowers place it in Section 1, not alongside *A. leucophyllus* in Section 5.

*A. subdistichus* DT 4881 growing at Nuwekloof, south-east of Willowmore

It is described as having erect to decumbent branches up to 12cm long, mainly branching from the base, with fibrous roots, and not forming supporting (stilt) roots. The leaves are obovate to orbicular (rarely oblanceolate), 12 to 27mm long, 10 to 22mm wide, abruptly cuneate and



clasping the stem, rounded or with an obtuse mucro at the apex, dorsiventrally flattened, the dorsal surface flat, the ventral distinctly convex, with distinct translucent horny margin right around the leaves, dark green to brownish-green and without a waxy bloom or wax flakes, sometimes with a few purplish markings. The short inflorescence has 1 to 2 flowered cymes 8 to 14mm long, reddish-purple. Corolla is red-purple striped on green-yellow background, inside pale yellow-green; lobes pink with dark brownish medial stripe.

Reported from Prince Albert to Willowmore, and southwards to near Uniondale, growing mostly near tops of sandstone and quartzite ridges, filling up crevices in slabs of rock or, on summits, often growing between large stones in shallow soil, where it forms irregular and extensive mats apparently propagated mainly by fallen leaves.

Type: Cape, Tierberg, east of Prince Albert, Bruyns 2887 (BOL, holotype).

Four forms of *A. subdistichus:* back left – DT 3693 from west-north-west of Willowmore; back right – a form from Prince Albert, collected by Peter Bruyns; front left – EvJ 7661 from Nuwekloof; front right – RL 101/62 from Vondeling, west of Willowmore

# Adromischus subviridis

*A. subviridis* Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:55 (1985); Rodgerson, Aloe 31(2):39 (1994)

Section 5 – *Longipedunculati*

This handsome species has not yet got into wide circulation, and is one of those which Tölken described with no illustration in his first major work on this genus. It is a desirable plant for collectors, and it has taken diligent work by Chris Rodgerson to make it recently available.

Although geographically separate from *A. leucophyllus*, this species would seem to be (vegetatively at least) its closest relative. In the smaller forms it is similar in leaf form, but larger forms from around Nieuwouldtville are huge by comparison. In addition *A. subviridis* is generally blue, carries less farina and has much more spotting, often heavily red, than *A. leucophyllus*, which at most has dark spots obscured by the thick farina covering. In cultivation, the contrasting red spots are liable to fade each winter, but will return with the stronger sunlight in summer.

*A. subviridis* growing in habitat at Bloukrans Pass

Since Tölken's publication this species has been discovered in many more locations by Peter Bruyns and others, extending its known distribution considerably. Plants at Bloukrans Pass are fairly small and compact, with leaves about 25 to 30mm long, whereas plants from just east of Nieuwouldtville have huge leaves, to about 100mm long. Plant material first introduced into cultivation by Bryan Makin from near Nieuwouldtville proved very difficult to cultivate and many leaves died without rooting. Even those which did root produced slow and difficult plants to grow. Fortunately plants

*A. subviridis* CR 1179 from Bloukrans Pass

from Bloukrans Pass are much more amiable in cultivation, and leaves root and grow easily, as do the resulting plants. Unfortunately the beautiful red markings which show up so well against and through the blue farinose background are often weaker on plants grown under glass, so that it is worthwhile keeping the plants in full sunshine or even outside the glasshouse when possible, to improve the colouring.

It is described as having decumbent or scrambling branches to 25cm long, much branched from the base mainly, and with fibrous roots. Leaves are pale to yellowish green with a moderate amount of bloom, and often with irregular reddish spots, oblanceolate, rarely obovate, cuneate, usually acute, 30 to 55 (to 60)mm long, 14 to 20 (to 25)mm wide. Inflorescence is 15 to 25cm long, white, with 1 or 2-flowered fertile bracts. Corolla is apple green and covered with a thick bloom, lobes pale yellow often tinged pink.

Reported by Tölken from Bloukrans Pass, south of Calvinia, Northern Cape Province, growing on gravelly slopes, usually in the shade of other plants or rocks, and by Rodgerson and Tribble at the same locality growing on shale. Since found above and below the Bokkeveld escarpment and in the northern Tanqua Karoo.

Type: Cape, Bloukrans Pass, Tölken 5349 (PRE, holotype).

# Adromischus triflorus

*A. triflorus* (Linnaeus fil.) Berger, Nat. Pflanzenfam. ed. 2, 18a:416 (1930); Linnaeus fil., Suppl. 242 (1781) – as C. triflora; Thunberg, Prodr. 83 (1794) – as C. triflora; Fl. Cap. ed Schultes 396 (1823) – as C. triflora; Salm-Dyck, Obs. Bot. 6 (1920) – as C. triflora; Haworth, Rev. Pl. Succ. 19 (1821) – as C. triflora; Schonland & Baker fil., J. Bot. Lond. 30:91 (1902) – as C. triflora; C. A. Smith, Bothalia 3:623 (1939); von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:103 (1940); Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:52 (1985)

(Syn. C. bolusii var. karrooensis Schonland, Rec. Albany Mus. 1:119 (1904); C. procurva N. E. Brown, Kew Bull.1912:276 (1912); A. procurvus (N. E. Brown) C. A. Smith, Bothalia 3:641 (1939); A. subcompressus von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:62 (1938) in part (Lauder without number); A. subpetiolatus von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:61 (1938))

Section 4 – *Incisilobati*

This is an easy-going species, liking plenty of water and fertilizer in the growing season. It has a colourful, large flower for the genus, with pinks and reds abounding, and its recurved petals are very attractive. Smaller forms are quite dainty with somewhat crinkled top edges to the triangular leaves, while larger, stronger growing forms can make quite substantial sized plants, to 15cm or more in height. It propagates very readily from leaves.

Four forms of *A. triflorus,* showing some of the variation within this species, from broad to narrow leaves: back left – DT 4955 from west of De Rust; back right – DT 4968 from north of Oudtshoorn; front left – DT 3697 from east of Vanwykesdorp; front right – DT 4475 from east-north-east of Montagu

*A. triflorus* DT 4083 growing in the wild, alongside a species of *Crassula*, at Avondrust, south-east of Tousrivier

Despite being such an old name, there is still some confusion as to the correct application, which is mainly due to its extreme variability. It may be confused with *A. maculatus*, but the horny edge to the leaves of that species, which runs all around the circumference contrasts with the horny edge being present only in the upper part of the leaf in *A. triflorus*, which distinguishes them.

It is described by Tölken as having decumbent or prostrate stems to 20cm long, little branched, and with fibrous roots. Leaves are grey-green to greyish-brown sometimes with purplish-red spotting in the upper half, oblanceolate-spathulate or obtriangular, rarely oblanceolate-rhombic, cuneate to shortly petiolate, usually truncate, rarely obtuse, compressed to somewhat convex on both sides, and with a horny margin usually just in the upper half, 30 to 50 (to 70)mm long, (10 to) 15 to 25mm wide. Inflorescence is grey-green, (18 to) 25 to 35cm long, with 1 to 3 (to 5)-flowered fertile bracts. Corolla is yellowish-green, lobes white, or slightly tinged pink, with deep mauve line along the margin. Tölken adds that this is the most common species in the Little Karoo and adjoining areas, and can be distinguished from all other species by the curved apices of the buds. He also adds that the shape and size of leaves is very variable, and a number of local forms can be recognized.

A strongly marked form of *A. triflorus* growing at Skittery Kloof

Reported from the south-western Great Karoo and the adjoining Little Karoo from near Worcester to Willowmore and Mossel Bay, growing on stony lower slopes or rocky outcrops.

Type: Cape, Zeko River, Thunberg 11016, in Herb. Thunberg (UPS, holotype).

# Adromischus trigynus

*A. trigynus* (Burchell) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:61 (1938); l.c. 48:111 (1940) in part; Burchell, Trav. 2:226 (1824) – as C. trigyna; De Candolle, Prodr. 3:398 (1828) – as C. trigyna; Schonland & Baker fil., J. Bot. Lond. 40:91 (1902) – as C. trigyna; Schonland, Rec. Albany Mus. 3:153 (1915) – as C. trigyna; C. A. Smith, Bothalia 3:642 (1939); Uitewaal, Nat. Cact. Succ. J. 55(2):34-37 (1951); Tölken, Bothalia 12:386 (1978); Fl. Southern Afr. 14:47 (1985)

(Syn. C. rhombifolia var. spathulata (N. E. Brown) Marloth Fl. Southern Afr. 2,1:15,t.2d (1925) nom. nud.; A. nanus sensu C. A. Smith, Bothalia 3:640 (1939); A. rupicola C. A. Smith, Bothalia 3:640 (1939); A. subcompressus von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:62 (1938) in part – Triebner 1330)

Section 2 – *Boreali*

This is one of the most well-known *Adromischus* species in cultivation, but has for many years been confused with *A. maculatus*, a quite different species.

*A. trigynus* SL 24 (Seymour Linden) from between Trompsburg and Philippolis

In the wild it is very widespread, and consequently varies considerably. Plants from the type locality at Griekwastad are unique in form, very small and wonderfully coloured, with very heavily red and purple marked leaves. In Bushmanland this species grades into *A. schuldtianus* as it crosses the Orange River and moves north. It is a typical rock-crevice

(Above) *A. trigynus* Lieb. 5955 (UCBG 54-005-4 & BM 716) from the type locality at Griekwastad (Below) Usually spotted, but occasionally plain, leaves from different forms of the widespread *A. trigynus*

plant and makes squat, fat, tuberous roots. It has been found growing on Dolerite rocks near Steynsburg in the Great Karoo. These south-eastern forms, described superfluously as *A. rupicolus*, are particularly heavily spotted, with broad leaves. The leaves of all forms of *A. trigynus* are usually well marked with red blotches and it is easily recognized, having a thin horny margin all the way around the leaf. It is an easy species to cultivate.

It is described by Tölken as forming low clumps of many branches with very short stems arising direct from a branching tuberous base, with fibrous roots. Leaves are grey-green, usually with more or less dark spotting, obovate to orbicular, rarely oblong to oblanceolate, rounded and rarely mucronate, flattened, usually concave above, more or less convex below, with a horny margin right around the leaf, (15 to) 20 to 30 (to 40)mm long, (8 to) 12 to 20 (to 30)mm wide. Inflorescence is grey-green, 15 to 25 (to 35cm long, with 1 or 2-flowered fertile bracts. Corolla is pale yellowish-green with a thick bloom, lobes off white to slightly tinged pink or deeper pink in throat.

Reported from eastern parts of the Northern Cape, from near Pofadder to near Aliwal North and into the Free State, growing in sheltered rock crevices.

Type: Cape, at Klaarwater, near Griekwastad, Burchell 1898 (K, holotype!).

# Adromischus umbraticola

*A. umbraticola* C. A. Smith, Onderstepoort J. vet. Sci. Anim. Ind. 1: 174 (1933); Bothalia 3: 643 (1939) – in error as A. umbraticolus ; Letty, Wild Flow. Transv.t.75 fig. 4 (1962); Tölken, Bothalia 12:386 (1978); Fl. Southern Afr. 14:48 (1985)

(Syn. C. trigyna sensu Burtt Davy, Fl. Transv. 143 (1926); A. saxicola C. A. Smith, Bothalia 3:647 (1939))

Section 2 – *Boreali*

This species really is out on its own, as it is the only one to be found in the old Transvaal area. Consequently, it is not all that well known in the field. But there are some really attractive forms in cultivation, including one with powdery, white leaves, whose origins are long forgotten, although it matches a collection made at Breedtsnek Pass, in the Magaliesberg, which also has magnificent white leaves. Another old timer in horticulture (without data) has long, red-spotted leaves, but this is unusual. Most forms have squat, spreading tuberous bases. It is not one of the easiest species to cultivate, and it is not quick to grow; leaves are also sometimes slow or reluctant to root.

Tölken divides it into two subspecies.

umbraticola
subsp. umbraticola

subsp. *umbraticola*

The type was described originally as sometimes without stems (this is usually the case in cultivation), but sometimes (rarely according to Tölken) developing stems up to 12cm tall, 2cm thick, with thinner branches sometimes developing up to 3cm tall, glabrous (smooth) in all parts but covered with a thin, white, waxy bloom. The leaves are oblong to obovate-cuneate, usually rounded at the apex, or narrowed to a subacute apex, slightly crisped especially in the younger stage, to 5cm long and 2cm wide, green often flushed purple-red at the apex, but not spotted, convex on the lower surface, convex on the upper surface or flattened towards the apex. Tölken amends the description sligshtly, as regards the branches, which he describes as 20 to 40 (to 60)mm long, much branched and tuberous at base; the leaves, describing them as oblanceolate, rarely linear-oblanceolate or obovate, (15 to) 20 to 50 (to

*A. umbraticola* subsp. *umbraticola* DT 4751 from Breedtsnek Pass Magaliesberg, west of Pretoria

The usually waxy leaves of different forms of *A. umbraticola*

65)mm long, 5 to 14 (to 21)mm wide, obtuse or rounded, grey-green or glaucous, often tinged brown and sometimes with faint purplish spots (resembling some forms of *A. schuldtianus*). Inflorescence is grey-green, 15 to 25 (to 35)cm long, with single flowered fertile bracts. Corolla is pale green more or less tinged pink and with bloom, lobes off-white to slightly tinged pink or deep mauve in the throat.

Reported from the Highveld region around Pretoria, between Potchefstroom, Heidelberg, Cullinan and sometimes as far west as Zeerust, growing in south-facing rock crevices, or in shallow gravel on rocks, often in shade of other plants.

Type: Transvaal, Silikaatsnek, Smith 3432 (PRE, holotype).

umbraticola subsp. ramosus

subsp. *ramosus* Tölken, Bothalia 12:386 (1978) – as subsp. ramosa; Fl. Southern Afr. 14:48 (1985), spelling corrected

This subspecies is known even less than the type. Plant material in cultivation is supposedly from the type locality of Chunies Poort in Northern Province. The plant which carries an early UCBG designation (see page 103) is similar to a recent collection by David Cumming. Both are much smaller in all respects than the type, contrasting with Tölken's description of this subspecies as larger than the type. Recent collections from near Verena have long, plain, pale, unmarked leaves arising from somewhat tall, tuberous stems. These develop a beautiful pink edge to the leaves when given good light, and are close to subsp. *ramosus*. More field work is needed to determine the standing of this subspecies or the extent of the species as a whole.

Described as having branches (40 to) 60 to 120mm long, little branching, tuberous at base, Leaves green often tinged brown, rarely grey-green, without spots. Corolla without trichomes.

Reported rare between Middelburg, the Soutpansberg and Blouberg, usually growing in shallow soil or in rock crevices in large rock outcrops.

Type: Transvaal, Chunies Poort, Tölken 1215 (PRE, holotype).

*A. umbraticola* subsp. *ramosus* DMC 1771 from Chunies Poort

# Superfluous and dubious names

*Cotyledon (Adromischus) alternans* Haworth, Suppl. 26 (1819) non Vahl; Tölken, Bothalia 12:388 (1978); Fl. Southern Afr. 14:53 (1985)

Referred to *A. maculatus*.

*A. alveolatus* P.C. Hutchison, Cact. Succ. J. (US) 28(6):183 (1956); Tölken, Bothalia 12: 391 (1978) – as A. alveotatus and A. aveolatus, in error; Fl. Southern Afr. 14: 59 (1985) – referred to A. marianiae var. immaculatus.

See under *A. marianiae "alveolatus"*.

*A. anticordatum* von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:61 (1938) (caption only) – spelling in error

See under *A. marianiae "antidorcatum"*.

*A. antidorcadum* (von Poellnitz) Tölken, Bothalia 12:391 (1978); Fl. Southern Afr.14:59 (1985) – spelling in error

See *A. marianiae "antidorcatum"*.

*A. antidorcatum* von Poellnitz, Fedde's Rep. Spec. nov. Regni. veg. 44:61 (1938); l.c. 47:2 (1939); Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1986) – as A. antidorcadum, in error, referred to A. marianiae var. immaculatus

See under *A. marianiae "antidorcatum"*.

*A. blosianus* P. C. Hutchison, Cact. Succ. J. (US) 29(2):35 (1957); Tölken, Bothalia, 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – referred to A. marianiae var. kubusensis

See under *A. marianae "blosianus"*.

*A. bolusii* (Schonland) Berger, Nat. Pflanzenfam. ed. 2. 18a:416(1930); Tölken, Bothalia 12:387 (1978); Fl. Southern Afr. 14:51 (1985)

Type: Cape, Mossel Bay, Bolus 8648 (BOL, holotype).

Referred to *A. caryophyllaceus*.

*Cotyledon (Adromischus) bolusii* var. *karrooensis* Schonland, Rec. Albany Mus. 1:119 (1904); Tölken, Fl. Southern Afr. 14:52(1985)

Type: Cape, Laingsburg, Marloth 2915 (GRA, holotype).

Referred to *A. triflorus*.

*A. casmithianus* von Poellnitz, Beitr. Sukkulentenk. 64 (1940), nom. inval

Referred to *A. marianiae "hallii"*.

*A. clavifolius* Haworth, Phil. Mag. 274 (1827)

Type: Haworth plate (K, lectotype!)

See under *A. cristatus* var. *clavifolius*.

*Cotyledon (Adromischus) cooperi* var. *immaculata* Schonland & Baker fil., J. Bot. Lond. 40:91 (1902); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

Type: Cape, Graaff-Reinet, Rattray without number (GRA, holotype).

Referred to *A. cooperi*.

*Cotyledon (Adromischus) crassifolia* Salisbury, Prodr. 3078 (1796); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:46 (1985)

Type: unknown.

Referred to *A. hemisphaericus*.

*A. cuneatus* (Thunberg) Lemaire, Jard. Fleur. 2, Misc. 60 (1852); Thunberg, Prodr. 83 (1794) – as C. cuneata; Uitewaal, Succulenta 1950:36 (1950); Kimnach Cact. Succ. J. (US) 25(2):47 (1953); Tölken, Fl. Southern Afr. 14:15 (1985)

Referred to *Cotyledon cuneata*.

*A. cuneatus* von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:102 (1940) non (Thunberg) Lemaire; Uitewaal, Succulenta 1950:36 (1950); Kimnach, Cact. Succ. J. (US) 25(2):47 (1953); Tölken, Bothalia 12:390 (1978)

Type: Cape, Halesowen near Cradock, Herre in SUG 6866 (B, destroyed).

Referred by Uitewaal, because of the prior use of the name (see above) to A. *halesowensis*; the latter then referred by Tölken to *A. cooperi*, but see comments below under *A. halesowensis*.

*A. deserticola* nom.nud., annotated herbarium specimen, not described, UCBG 55.604 (SUG 30157) (UC)

There are not believed to be any plants in cultivation of this taxon, and no drawings by May Blos are held at Berkeley Garden, as there are for other unnamed depositions there. It is therefore not possible to even guess at its affinities.

*A. ernianus* nom.nud., annotated herbarium specimen, not described, UCBG 56.692 (UC), ex Erni

As for the immediately preceding taxon, with no plants or drawings available we have no idea of this plant's affinities.

*A. esterhuysenii* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 53.331 (Esterhuysen 21090) (UC)

The May Blos drawing held at the Berkeley Garden indicates that this is probably referable to *A. hemisphaericus*.

*A. farinosus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 61.305 (ex Hall, no number) (UC)

This was Paul Hutchison's proposed name for what was subsequently described as *A. subviridis*; perhaps it would have been a better, more appropriately descriptive name.

*A. festivus* C. A. Smith, Bothalia 3:633 (1939); von Poellnitz, Fedde's Rep. Spec. nov. Regni. veg. 49:60 (1940); Uitewaal, Nat. Cact. Succ. J. 4(2):35 (1949); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

Type: Cape, Graaff-Reinet, Smith in PRE 8876 (PRE, holotype). Other herbarium or garden specimens: UCBG 37.501 (UC).

Referred to *A. cooperi*.

*A. fragilis* P. C. Hutchison, Cact. Succ. J. (US) 31(6):167 (1959)

Type: Cape, Richtersveld, Hellsberg, Rodin 1620 (BOL, holotype). Other herbarium or garden specimens: UCBG 50.1180 (Rodin 1620) (UC).

Referred to *A. filicaulis*.

*A. fragilis* var. *numeesensis* P. C. Hutchison, Cact. Succ. J. (US) 31(6):168 (1959)

Type: Cape, Richtersveld, Numees, Hall in NBG 692/53 (BOL, holotype; PRE). Other herbarium or garden specimens: UCBG 54.113 (Kirstenbosch 692.53) (UC).

Referred to *A. filicaulis*.

*A. fusiformis* (Rolfe) Berger, Nat. Pflanzenfam. ed. 2. 18a: 416 (1930); Rolfe, Kew Bull. 229 (1916) – as C. fusiformis; C. A. Smith, Bothalia 3:614-620 (1939); Kimnach, Cact. Succ. J. (US) 25(2):44 (1953)

Type: Cape, without exact locality, Pearson 5585 (K, holotype)

Referred to *A. filicaulis*.

*A. geyeri* P. C. Hutchison, Cact. Succ. J. (US) 32(3):89 (1960); Tölken, Bothalia12:391 (1978); Fl. Southern Afr. 14:59 (1985) – referred to A. marianiae var. kubusensis

See under *A. marianiae "geyeri"*.

*A. grandiflorus* Uitewaal, Succulenta 33(1):8 (1953); Tölken, Fl. Southern Afr. 14:51 (1985)

This is an altogether smaller form of *A. caryophyllaceus*, with more erect stems to about 10cm tall, and with leaves more or less round, or wider than long, about 10 to 15mm long and wide, coloured similarly to the description above, but less inclined to become reddened. Flowers are similar to the type but on a shorter stem. It is not considered to differ significantly from *A. caryophyllaceus*, in view of the variation encountered in this species, but it is worth seeking out for its attractive form.

Type: Cape, Bonnievale, without collector in SUG 6879 (AVU 10013, holotype). Other herbarium or garden specimens: UCBG 50.2076, 58.1021 (ex Boshoff, no number) (UC); DT 4474.

Referred to *A. caryophyllaceus*.

*A. grasbergensis* P. C. Hutchison, nom. nud., annotated herbarium or garden specimens, not described, UCBG 52.1716 (Stellenbosch 5881) (UC); Tölken, Bothalia 12:385 (1978).

This appears in cultivation. It is the 'standard' form of *A. roanianus* from around the Vanrhyn's Pass area. Grasberg is a farm to the north-east of Nieuwouldtville, on the plateau above Vanrhyn's Pass.

*A. halesowensis* Uitewaal, Desert Pl. Life 20:142(1948); Succulenta 1950:36 (1950); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:57 (1985)

Type: Cape, Halesowen, near Cradock, Herre in SUG 6866 (as *A. cuneatus*); (B, destroyed); UCBG 50.2287 (UC).

This name replaced *A. cuneatus* von Poellnitz, as there was prior use of that name by Lemaire (albeit for a taxon which was subsequently returned to *Cotyledon*), which invalidated von Poellnitz's use of it.

Although Tölken refers this taxon to synonymy with *A. cooperi*, plants commonly in cultivation under this name (which match very well the May Blos drawing held at the Berkeley Garden (UCBG 50.2287) and contemporary with Uitewaal's naming), do not match well that species. They have long, slender leaves, nearly four times longer than wide, greyish-green, unspotted, about as thick as broad, slightly wider at the centre, with a horny margin at the obtuse-triangular apex. The flowers place these plants in Section 4.

*A. hallii* P. C. Hutchison, Cact. Succ. J. (US) 28(5):144 (1956); Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – referred to A. marianiae var. hallii

See under *A. marianiae "hallii"*.

*A. herrei* (W. F. Barker) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:62 (1938); l.c. 48:90 (1940); W. F. Barker, S. Afr. Gardening & Country Life 21:247 (1931) – as C. herrei; Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – referred to A. marianiae var. immaculatus.

See under *A. marianiae "herrei"*.

*A. hoerleinianus* (Dinter) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:91 (1940); Dinter, Fedde's Rep. nov. Spec. Regni veg. (Beih.) 23:44 (1923), nom. nud.; Fedde's Rep. nov. Spec. Regni veg. 30:193 (1932) – as C. hoerleiniana; Tölken, Fl. Southern Afr. 14:31 (1985)

Type: South West Africa/Namibia, Halenberg, Dinter without number (BOL, holotype).

Referred to *Tylecodon schaeferianus*.

*A. jasminiflorus* (Salm-Dyck)Lemaire, Jard. Fleur. 2 Misc. 60 (1852); Salm-Dyck, Obs. 38 (1820) – as C. jasminiflora; Haworth, Rev. Pl. Succ. 20 (1821) – as C. jasminiflora; De Candolle, Prodr. 3:398 (1828) – as C. jasminiflora

Type: without locality, Salm-Dyck sub Haworth (OXF, lectotype). Other herbarium or garden specimens: UCBG 54.311, 58.400 (Esterhysen 23360) (UC).

Referred to *A. caryophyllaceus*.

*A. juttae* von Poellnitz, Kakteenkunde 1939:52 (1939); Tölken, Bothalia 12:386 (1978); Fl. Southern Afr. 14:49 (1985)

Referred to *A. schuldtianus* subsp. *juttae*.

*A. karooensis* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 54.003 (Kirstenbosch 1423.5), 55.232, 60.665 (ex Hall, no number), 61.306 (Hall 2060) (UC)

Hutchison applied this name to plants from two different localities, Loerisfontein and the Tanqua Karoo. It is therefore not clear to which it applies.

*A. keilhackii* Werdermann, Fedde's Rep. nov. Spec. Regni veg.30:52 (1932); Kakteenkunde 1934:13 (1934); Tölken, Fl. Southern Afr. 14:31 (1985)

Type: South West Africa/Namibia without exact locality, Keilhack without number (B, destroyed).

Referred to *Tylecodon schaeferianus*.

*A. kesselringianus* von Poellnitz, Kakteenkunde, 1940:64 (1940); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

Type: Cape, without locality or legend (B, destroyed). Other herbarium or garden specimens: UCBG 55.704 (Kitching 19) (UC).

Referred to *A. cristatus*.

*A. kitchingii* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 55.663, 55.663.6 (UC), Kitching 8, from the farm 'be Toorn', 6 miles from Nieu Bethesda

This appears in cultivation, often with the number ISI 1538, with possibly the smallest leaves in the genus. It is a Section 2 plant, and can only be related to *A. trigynus*. It makes very compact, small mounds of tiny, pale green leaves with faintly red tips, which detach and root easily.

*A. kleinioides* C. A. Smith, Bothalia 4:631 (1939); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:43 (1985)

Type: Curtis's Bot. Mag. 99: t.6020 (1873).

Referred to *A. filicaulis*.

*A. kubusensis* Uitewaal, Succulenta 1953:7 (1953); Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – referred to A. marianiae var. kubusensis

See under *A. marianiae "kubusensis"*.

*A. kubusensis* var. *imitans* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 55.605 (SUG 30159) (UC) – as A. kubusensis var. imitans

The May Blos drawing held at the Berkeley Garden shows a plant close to *A. marianiae "kubusensis"*.

*A. leucothrix* C. A. Smith, Bothalia 3:637 (1939); Tölken, Bothalia 12:379 (1978); Fl. Southern Afr. 14:32 (1985)

Type: Bothalia 3: 637, t.1 (1939) (lectotype).

Referred to *Tylecodon leucothrix*.

*A. libanoticus* nom.nud., annotated herbarium specimen, not described, UCBG 58.1007 (UC) ex Makin; Higgins, Succ. Plants Illustr. plate 1B (1949)

With no live plant or drawing at the Berkeley Garden, we do not know the affinities of this plant.

*A. luteus* P. C. Hutchison, nom.nud., annotated herbarium specimen, not described, UCBG 56.1268 (SUG 30229) (UC)

The May Blos drawing at the Berkeley Garden shows a plant belonging to Section 1, probably referable to *A. alstonii*.

*A. mamillaris* (sensu Berger, Nat. Pflanzenfam. ed. 2,18a:416 (1930); sensu von Poellnitz, Desert Pl. Life 10:112 (1938), Fedde's Rep. nov. Spec. Regni veg. 48:109 (1940); sensu C. A. Smith, Bothalia 3:631 (1939); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:43 (1985)

Referred to *A. filicaulis* subsp. *marlothii*.

*A. mamillaris* var. *cinereus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 50. 2068 (UC)

Referred to *A. filicaulis*.

*A. mamillaris* var. *filicaulis* (Eckler & Zeyher) Jacobsen, Sukk. Lex. 29 (1970), no type was cited; Eckler & Zeyher, Enum. 307 (1837); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:43 (1985).

Referred to *A. filicaulis* subsp. *filicaulis*.

*A. mamillaris* var. *fusiformis* (Rolfe) Jacobsen, Sukk. Lex. 29 (1970), no type was cited; Rolfe, Kew Bull. 1916:229 (1916) – as C. fusiformis; Tölken, Bothalia 12:385 (1978); Fl. Southern Afr.14:43 (1985)

Referred with some reservations to *A. filicaulis* subsp. *filicaulis*.

*A. mamillaris* var. *marlothii* (Schonland) Jacobsen, Sukk. Lex. 29 (1970); Tölken, Fl. Southern Afr.14:43 (1985)

Referred to *A. filicaulis* subsp. *marlothii*.

*A. mamillaris* var. *rubra* von Poellnitz, Desert Pl. Life 10:112 (1938); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:43 (1985)

Referred to *A. filicaulis* subsp. *filicaulis*.

*A. marginatus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 52.1729, 52.1729-1, 53.1105 (Kirstenbosch 491.53), 53.1105-3 (UC)

This appears in cultivation, and the May Blos drawing held at the Berkeley Garden indicates that this is probably referable to *A. sphenophyllus*.

*A. marianae* var. *antidorcatum* (von Poellnitz) Pilbeam, Nat. Cact. Succ. J. 36(2):34 (1981); Tölken, Fl. Southern Afr.14:59 (1985)

See under *A. marianiae "antidorcatum"*.

*A. marianae* var. *antidorcatum* forma *alveolatus* (P. C. Hutchison) Pilbeam, Nat. Cact. Succ. J. 36(2):34 (1981); Tölken, Fl. Southern Afr.14:59 (1985)

See under *A. marianiae "alveolatus"*.

*A. marianae* var. *antidorcatum* forma *herrei* (W. F. Barker) Pilbeam, Nat. Cact. Succ. J. 36(2):34 (1981); Tölken, Fl. Southern Afr.14:59 (1985)

See under *A. marianiae "herrei"*.

*A. marianae* var. *antidorcatum* forma *multicolor* Pilbeam, Nat. Cact. Succ. J. 36(2):35 (1981); Tölken, Fl. Southern Afr.14:59 (1985)

See under *A. marianiae "multicolor"*.

*A. maritimus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 50.2040 (UC)

The May Blos drawing held at the Berkeley Garden indicates that this is probably referable to *A. alstonii* or *A. hemisphaericus* — *A. hemisphaericus* occurs nearer the sea.

*A. marlothii* (Schonland) Berger, Nat. Pflanzenfam. ed. 2,18a:416 (1930); Schonland, Rec, Albany Mus. 1:59 (1903) – as C. marlothii; Tölken, Bothalia, 12:385 (1978); Fl. Southern Afr. 14: 43 (1985)

Referred to *A. filicaulis* subsp. *marlothii*.

*A. mucronatus* (Lamarck) Lemaire, Jard. Fleur. 2, Misc. 60 (1852); Lamarck, Encycl. 2:142 (1786) – as C. mucronata; Tölken, Fl. Southern Afr. 14:9 (1985)

Referred to *Cotyledon orbiculata*.

*A. nanus* sensu C. A. Smith, Bothalia 3:640 (1939); Tölken, Bothalia 12:386 (1978); Fl. Southern Afr. 14:47 (1985)

Referred to *A. trigynus*.

*A. necopinus* P. C. Hutchison, nom.nud., annotated herbarium specimen, not described, UCBG 50.2036 (UC)

The May Blos drawing held at the Berkeley Garden indicates that this is probably referable to *A. alstonii* or *A. hemisphaericus*.

*A. nussbaumerianus* (von Poellnitz) von Poellnitz, Jahrb. Deutsch. Kakt. Ges. 1:95 (1936); Fedde's Rep. Spec. nov. Regni veg. 48:109 (1940); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

Type: Cape, without locality or collector (B, destroyed). Other herbarium or garden specimens: UCBG 51.803, 54.459 (Pienaar 4) (UC).

Referred to *A. cristatus*.

*A. oblongatus* P. C. Hutchison, nom.nud., annotated herbarium specimen, not described, UCBG 50.2054 (UC)

The May Blos drawing held at the Berkeley Garden is difficult to relate to known species.

*A. pachylophus* C. A. Smith, Bothalia 3:633 (1939); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

Type: Cape, Graaff-Reinet, Rattray without number, (GRA, holotype).

Referred to *A. cooperi*.

*A. pauciflorus* P. C. Hutchison, Cact. Succ. J. (US) 32(2):63 (1960)

Type: Cape, near Steinkopf, Hall in NBG 205/56 (BOL, holotype; UC).

Referred to *A. nanus*.

*A. pienaarii* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described; UCBG 54. 493 (Pienaar 29) (UC), from Luisvale, near Upington

The May Blos drawing held at the Berkeley Garden and plants in cultivation confirm that this is a dainty plant in Section 2, with affinity to *A. trigynus*, with pale green leaves marbled with red. It makes short branches from a thick base, and leaves are readily detached. Forms of *A. schuldtianus* (*trigynus*?) collected from near Kakamas (some 75km to the west of *A. pienaarii*) by Hammer and Lavranos are crinkled edge forms. *A. pienaarii* differs considerably from these.

*A. poellnitzianus* Werdermann, Fedde's Rep. nov. Spec. Regni veg. 39:270 (1936); von Poellnitz, Cact. J. 6: 68 (1938); Fedde's Rep. Spec. nov. Regni veg. 48:97 (1940); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

Type: Cape, near East London, Kluth without number (B, destroyed). Other herbarium or garden specimens: UCBG 50.1695 (ex Brown, no number).

Referred to A. *cristatus*.

*A. procurvus* (N. E. Brown) C. A. Smith, Bothalia 3:641 (1939); N. E. Brown, Kew Bull.1912:276 (1912) – as C. procurva; Schonland, Rec. Albany Mus. 3:154 (1915) – as C. procurva; von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:109 (1940); Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:52 (1985)

Type: South Africa, without locality and collector (K, holotype); UCBG 50.2055, 50.2082, 51.581, 56.300 (Liebenberg 6154), 56.304 (Liebenberg 6159), 63.375 (Rauh 3455) (UC).

Referred by Tölken to *A. triflorus*. The May Blos drawings held at the Berkeley Garden confirm this placing.

*A. pulchellus* P. C. Hutchison, Cact. Succ. J. (US) 31(4):118 (1959); Tölken, Bothalia 12:384 (1978); Fl. Southern Afr. 14:47 (1985)

Type: Cape, Bowesdorp, Hall in NBG 761/53 (BOL, holotype); (PRE). Other herbarium or garden specimens: UCBG 54.110 (Kirstenbosch 761.53) (UC).

Referred to *A. alstonii*.

*A. rhombifolius* (Haworth) Lemaire, Jard. Fleur. 2, Misc. 60 (1852); Haworth, Phil. Mag. 1825:33 (1825) – as C. rhombifolia; De Candolle, Prodr. 3:398 (1828) – as C. rhombifolia; Schonland & Baker fil., J. Bot. Lond. 40:92 (1902) – as C. rhombifolia; Tölken, Bothalia 12:393 (1978); Fl. Southern Afr. 14:60 (1985)

No specimen or illustration of Haworth's plant is preserved;

Herbarium or garden specimens: UCBG 53.335 (SUG 6935), 54.1071, 54.1071-1, 58.1032 (Stayner 114) (UC).

Tölken maintains that Haworth's description of the leaves could apply to several species (*A. alstonii, A. liebenbergii, A. roanianus* or *A. triflorus* are mentioned as possibilities), and without further information he dismisses it as insufficiently known. In cultivation this name is often applied to a reddish-leaved form of *A. sphenophyllus*. This too is where the UCBG specimens listed above seem to belong, after looking at the May Blos drawings held at the Berkeley Garden — see next.

*Cotyledon (Adromischus) rhombifolia* sensu Baker non Haworth, Refug. Bot. 1, t.36 (1869); & sensu Schonland and Baker fil. non Haworth, J. Bot. Lond. 40,92 (1902) in part; & sensu Schonland non Haworth, Rec. Albany Mus. 3:154 (1915); Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:54 (1985)

Referred to *A. sphenophyllus*.

*A. rhombifolius* sensu C. A. Smith non (Haworth) Lemaire, Bothalia 3:625 (1939); Tölken, Bothalia 12:388 (1978); Fl. Southern Afr. 14:53 (1985)

Referred to *A. maculatus*.

*A. rhombifolius* var. *bakeri* von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:102,110 (1940); Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:54 (1985)

Type: the same as for *A. sphenophyllus*.

Referred to *A. sphenophyllus*.

*Cotyledon (Adromischus) rhombifolia* var. *spathulata* (N. E. Brown) Marloth Fl. South Afr. 2,1:15,t.2d (1925) nom. nud.; Tölken, Bothalia 12:386 (1978); Fl. S. Africa 14:47 (1985)

Referred to *A. trigynus*.

*A. rhynsdorpensis* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 51.801 (SUG 5887) (UC).

With no May Blos drawing held at the Berkeley Garden, and no remaining living plant there, it is difficult to determine the relationships of this taxon.

*A. robustus* Lemaire, Jard. Fleur. 2, Misc.60, figs.1-5 (1852); Tölken, Bothalia 12:393 (1978); Fl. Southern Afr. 14:60 (1985)

Tölken maintains that although illustrations of the flowers of this taxon indicate that it belonged to the Section *Adromischus*, no specimen could be found and the description of the leaves merely as broad, left considerable doubt as to its placing; he mentions *A. alstonii, A. roanianus* or forms of *A. hemisphaericus* as possibilities, but dismisses it as insufficiently known.

*A. rodinii* P. C. Hutchison, Cact. Succ. J. (US) 25(5):136 (1953); Friedrich, Prodr. Fl. Südwestafr. 52:4 (1968); Tölken, Bothalia 12:391 (1978); Fl. Southern Afr. 14:59 (1985) – referred to A. marianiae var. kubusensis

Type: Cape, near Hellsberg in the Richtersveld, Rodin 1617, UCBG 50.1181 (UC, holotype); Herre, Helskloof, UCBG 51.808 (UC) (SUG 6065). Other herbarium or garden specimens: UCBG 50.1181, 54.455 (Pienaar 40), 54.484 (Pienaar 42) (UC).

There are anomalies in the description, particularly the character of the stems, which initially are described as 'at first erect, later prostrate, rooting at nodes, thick, brownish, smooth, somewhat contorted', and later as 'short, almost obsolescent'. It is referred to synonymy with *A. marianiae "kubusensis"*.

*A. rotundifolius* (Haworth) C. A. Smith, Bothalia 3:627 (1939); Haworth, Phil. Mag. 1827:273 (1827) – as C. rotundifolius; von Poellnitz, Kakteenkunde 1940: 7 (1940); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:46 (1985)

Type: without locality, Haworth without number, (OXF, holotype); UCBG 51. 808 (UC).

Referred to *A. hemisphaericus*.

*A. rupicola* C. A. Smith, Bothalia 3:640 (1939) – as A. rupicolus in error; Tölken, Bothalia 12:386 (1978); Fl. Southern Afr. 14:47 (1985)

Type: Cape, Fauresmith, Smith 5603 (PRE, holotype). Other herbarium or garden specimens: UCBG 50.2113, 53.1301 (Liebenberg 5929), 55.228 (ex Hall) (UC).

Referred to *A. trigynus*.

*A. saxicola* C. A. Smith, Bothalia 3:647 (1939) – as A. saxicolus in error; Tölken, Bothalia 12:386 (1978); Fl. Southern Afr. 14:48 (1985)

Type: Transvaal, Baviaanspoort, Smith 3424 (PRE, lectotype). Other herbarium or garden specimens: UCBG 53.968 (Liebenberg 5193), 53.968-4, 53.1159 (Liebenberg 5938), 58.392 (SUG 30241) (UC) – as *A. saxicola*.

Referred to *A. umbraticola* subsp. *umbraticola*.

*A. schaeferianus* (Dinter) Berger, Nat. Pflanzenfam. ed. 2,18a:416 (1930); Dinter, Rep. nov. Spec. Regni veg. (Beih.) 19:145 (1923) – as C. hoerliniana var. schaeferi; W. F. Barker, Flower. Pl. Afr. t.394 (1930) – as C. schaeferiana; von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:93 (1940); Friedrich, Prodr. Fl. Südwestafr. 52:10 (1968) – as C. schaeferiana; Jacobsen, Sukk. Lex. 135, t.40,3 (1970); Lex. Succ. Plants (Engl. ed.) 151 (1974) – as C. schaeferana; J. R. Brown, Cact. Succ. J. (US) 36(5):136 (1964); Tölken, Fl. Southern Afr. 14:31 (1985)

Type: Namibia, Lüderitz Bay, Dinter 4449 (B, destroyed).

Referred to *Tylecodon*.

*A. schaeferianus* var. *keilhackii* (Werdermann) von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:94 (1940); Tölken, Fl. Southern Afr. 14:31 (1985)

Type: Namibia, without exact locality, Keilhack without number (B, destroyed).

Referred to *Tylecodon schaeferianus*.

*A. schonlandii* (Phillips) von Poellnitz, Cact. J. 6:68 (1938); Phillips, Fl. Pl. S. Afr. 9,t.328 (1929) – as Cotyledon; von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 48:97 (1940); Uitewaal, Nat. Cact. Succ. J. 7(1):33 (1952); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

Referred to *A. cristatus* var. *schonlandii*.

*A. sphaerophyllus* C. A. Smith, Bothalia 3:620 (1939) nom. nud.

Mentioned only in Smith's key to the genus, but not then or subsequently described.

*A. spathulatus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 54.487 (UC)

It is difficult to determine from May Blos's drawing of this, held at the Berkeley Garden, what it is referable to, but the flower places it in Section 5, and it may well be a form of *A. marianiae*.

*A. subcompressus* von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:62 (1938) in part because of Triebner 1330, and in part because of Lauder without number; Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:47 (1985)

Von Poellnitz's taxon is regarded by Tölken as belonging to two taxa: that represented by the specimen Triebner 1330 is referred to *A. trigynus*; that represented by the specimen Lauder without number is referred to *A. triflorus*.

Herbarium or garden specimen: UCBG 54.495 (Pienaar 25) (UC).

*A. subpetiolatus* von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 44:61 (1938); Tölken, Bothalia 12:389 (1978); Fl. Southern Afr. 14:52 (1985)

Type: unknown. Other herbarium or garden specimens: UCBG 51.787 (see below), 60.1251 (SUG 30172) (UC).

Although named as *A. subpetiolatus*, the May Blos drawing of UCBG 51.787 shows flowers referable to Section 1, probably *A. hemisphaericus*; there is not a drawing of UCBG 60.1251.

Referred by Tölken to *A. triflorus*.

*A. subrubellus* von Poellnitz, Fedde's Rep. Spec. nov. Regni veg. 50:319 (1941); Tölken, Bothalia 12:384 (1978); Fl. Southern Afr. 14:46 (1985)

Type: Cape, 30km north-west of Vanrhynsdorp, Triebner 1351 (B, destroyed).

Referred to *A. hemisphaericus*.

*A. sutherlandensis* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 50. 2047 (SUG 5888) (UC)

The May Blos drawing held at the Berkeley Garden indicates that this is probably referable to *A. filicaulis* subsp. *marlothii*.

*A. tricolor* C. A. Smith, Bothalia 3:632 (1939); Tölken, Bothalia 12:385 (1978); Fl. Southern Afr. 14:43 (1985)

Type: Cape, on dry hills near Brandvlei, Schlechter 9933 (PRE, holotype; BOL; K). Other herbarium or garden specimens: UCBG 50.2051, 53.1100 (UC).

Although referred to *A. filicaulis* subsp. *marlothii* by Tölken, this fits more appropriately under the type of *A. filicaulis*.

*A. triebneri* von Poellnitz, Beitr. Sukkulentenk. 1939:18 (1939); Friedrich, Prodr. Fl. Südwestafr. 52:5 (1968); Tölken, Bothalia 12:384 (1978); Fl. Southern Afr. 14:46 (1985)

Type: Cape, Springbok, Triebner 1331 (B, destroyed). Other herbarium or garden specimens: UCBG 60.1207 (SUG 30309) (UC).

Referred to *A. alstonii*.

*A. uitewaalianus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 51.792 (Uitewaal 11) (UC)

This is in cultivation and is an individual, attractive, blue-leaved plant with red spotting, often with the number ISI 1729. It is slow-growing and makes short branches from a stout rootstock. Its affinities lie with *A. alstonii*, but without collection data, it is of little value unless rediscovered.

*A. umbraticola* var. *galbinus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 50.2074, 55.780 (Liebenberg 6077) (UC)

The May Blos drawing held at the Berkeley Garden shows little difference from the type.

*A. undulatus* P. C. Hutchison, nom. nud., annotated herbarium specimen, not described, UCBG 58.1030 (Stayner 112) (UC), ISI 97-49.

There is no drawing held at Berkeley Garden of this taxon. It is suggested that it may be referable to *A. sphenophyllus*.

*A. van der heydeni* Hort, ex Berger, Nat. Pflanzenfam. ed. 2,18a:416 (1930); C. A. Smith, Bothalia 3:637 (1939); Uitewaal, Nat. Cact. Succ. J. 7(1):33 (1952)

Herbarium or garden specimen: UCBG 54.1065 (UC).

Referred by Berger to *A. cristatus* var. *clavifolius*. However, the plant commonly seen under this name, and that depicted in the May Blos drawing held at the Berkeley Garden, are believed to be of hybrid origin. It rarely flowers, but when it does shows affinity to Section 5.

*A. violaceus* P. C. Hutchison, nom. nud., annotated herbarium or garden specimens, not described; UCBG 53. 1117 (UC); Tölken, Bothalia 12: 385 (1978)

Referred by Tölken to *A. roanianus*. The May Blos drawing held at the Berkeley Garden endorses this placing.

*A. zeyheri* (Harvey) von Poellnitz, Cact. J. 6:68 (1938); Fedde's Rep. Spec. nov. Regni veg. 48:98 (1940); Harvey, Fl. Cap. 2:377 (1862 – as Cotyledon; C. A. Smith, Bothalia 3:635 (1939); Tölken, Bothalia 12:390 (1978); Fl. Southern Afr. 14:56 (1985)

See under *A. cristatus* var. *zeyheri*.

Quartz covered hill in the western Knersvlakte, home to many dwarf succulents and geophytes

# FIELD COLLECTION AND ACCESSION NUMBERS

## PART 1

The field collection and accession numbers listed here are those most likely to be encountered in cultivation. Others not listed here include: MBB (Bruce Bayer), SB (Steven Brack), PVB (Peter Bruyns), DMC (David Cumming), HH (Harry Hall), EvJ (Ernst van Jaarsveld), Lav. (John Lavranos), RL (Roy Littlewood), BM (Bryan Makin), CM (Cathryn Mangold), SUG/STE (Herbarium, University of Stellenbosch), UC/UCBG (University of California Botanical Garden, mostly acquired by Paul Hutchison); for details of some of these field collections, see Part 2 of this Chapter.

### Hammer (Steven Hammer) and associates

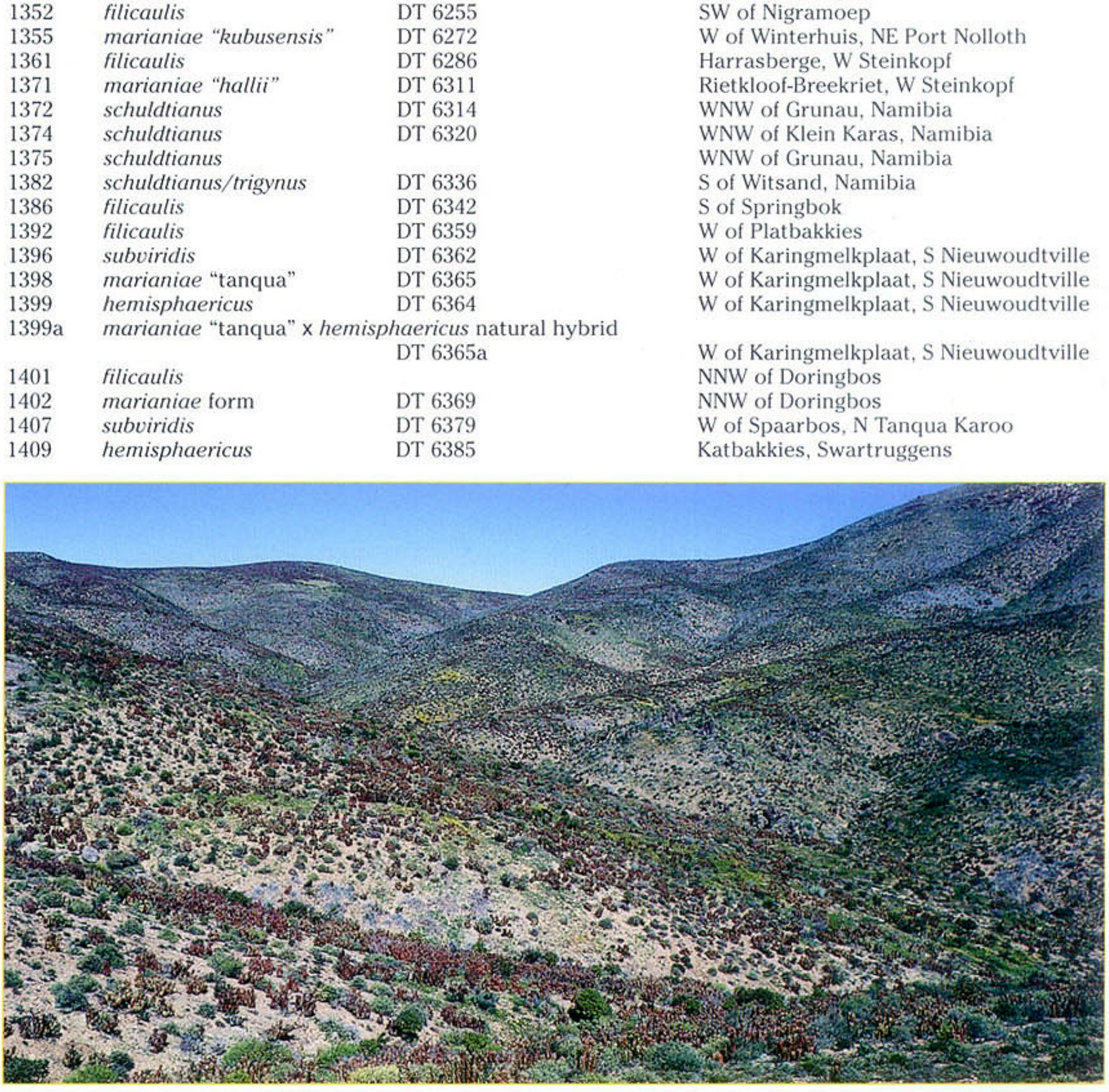
| Hammer No. | Name | Locality |
|---|---|---|
| 309a | Section 1 (aff. *hemisphaericus*) | Matsikamma, S Vanrhynsdorp |
| 360a | *nanus* | Achab, Bushmanland |
| 360b | *schuldtianus/trigynus* | Achab |
| (& Sauer) 473/87 | *schuldtianus/trigynus* | Maraisvlei, SW Kakamas |
| (& Liede) 513 | *marianiae* form | Grootgraafwater, Knersvlakte |
| (& Liede) 537 | *schuldtianus/trigynus* | E Pofadder |
| (& Liede) 550 | *schuldtianus/trigynus* | Grootberg, Rosynebos |
| (& Liede) 551 | *diabolicus* | Grootberg, Rosynebos |
| (& Liede) 570 | *marianiae "hallii"* | Smorenskadu, E Springbok |
| (& Liede) 587 | *alstonii* | Springbok Hill |
| (& Liede) 597 | *marianiae* form | Ratelkraal, E Springbok |
| (& Liede) 623 | *marianiae* form | E Springbok |
| (& Williamson) 718 | *marianiae "blosianus"* | Skilpad, Namibia |
| (& Williamson) 900a | *marianiae "hallii"* | Rooiberg, Namibia |
| (& Williamson) 900b | *montium-klinghardtii* | Rooiberg, Namibia |
| (& Williamson) 903 | sp. nov. Section 4 | Rooiberg |
| (& Williamson) 907 | *marianiae "hallii"* | E Rooiberg, Namibia |
| (& Brack) 1229 | *alstonii* | Animub, N Steinkopf |
| (& Brack & Athy) 1376 | *marianiae* form | Lorelei, Namibia |
| (& Brack & Athy) 1382 | *marianiae "kubusensis"* | Kuboos |
| (& Brack & Athy) 1383 | *schuldtianus/trigynus* | Naip plateau, ENE Springbok |
| (& Brack) 1388a | *filicaulis* | Jakkalskoppie, Kliprand |
| (& Williamson) 1484a | *marianiae "hallii"* | near Sargdeckel, Namibia |
| 2019b | *marianiae "kubusensis".* | Quachous Pass |
| 2020 | *marianiae "kubusensis"* | Schaaprivier, NW Springbok |
| 2021 | *nanus* | N Jakkalswater |
| (& Barnhill) 2192b | *marianiae* form | Dous the Glim, N Vanrhynsdorp |
| (& Barnhill) 2226 | Section 1 (aff *hemisphaericus*) | Tierberg, NE Vanrhynsdorp |
| (& Barnhill) 2268 | *marianiae* "Bryan Makin" | Anenous Pass, W Steinkopf |
| (& Barnhill) 2416 | *marianiae* "Bryan Makin" | Breekriet, W Steinkopf |
| (& Barnhill) 2281 | *marianiae "herrei"* | Harrasberge, W Steinkopf |
| (& Barnhill) 2288 | *marianiae "hallii"* | Breekriet, W Steinkopf |
| (& Barnhill) 2343 | *marianiae "kubusensis"* | Harrasberge |
| (& Barnhill) 2344 | *marianiae "kubusensis"> "herrei"* | Harrasberge |
| (& Barnhill) 2345 | *alstonii*? | Harrasberge |
| (& Barnhill) 2350 | *marianiae* | SE Harrasberge |
| (& Barnhill) 2361 | *alstonii* | Leliefontein |
| (& Marx) 2464 | *marianiae "herrei"* | E Harras |
| (& Opel) 2502 | *marianiae "alveolatus"* | near Khurisberg, Concordia |
| (& Opel) 2524 | *schuldtianus/trigynus* | near Kangnas, E Springbok |

## CR (Chris Rodgerson)

| CR No. | Name | Alternative no. | Locality |
|---|---|---|---|
| 1001 | *hemisphaericus* | DT 5298 | St. Helena Bay |
| 1003 | *hemisphaericus* | | West Point, St. Helena Bay |
| 1005 | *hemisphaericus* | DT 5293 | S of Elands Bay |
| 1008 | *hemisphaericus>roanianus* | | W of Clanwilliam Road junction |
| 1011 | *marianiae* form | DT 5304 | E on road to 'Douse the Glim', Knersvlakte |
| 1013 | *marianiae* form | DT 5310 | SSW of Quaggaskop, Knersvlakte |
| 1016 | *roanianus* | | W side Moutonsberg, below Steenkampskop |
| 1017 | *marianiae* form | DT 5313 | S Grootdrif |
| 1018 | *roanianus* | | S Grootdrif |
| 1021 | *marianiae* form | DT 5319 | Foot of Vanrhyns Pass |
| 1023 | *roanianus* | | N of Nieuwouldtville |
| 1025 | *alstonii* | DT 5330 | Brakfontein, N Loriesfontein |
| 1026 | *filicaulis* | | W of Brakfontein |
| 1027 | *marianiae* form | DT 5344 | SW of Brakfontein |
| 1030 | *filicaulis* | | SW of Brakfontein |
| 1032 | *filicaulis* | | Bloubok, SE of Brakfontein |
| 1035 | *filicaulis* | | Dooddrink, N of Kliprand |
| 1037 | *alstonii* | DT 5365 | N of Springbok |
| 1040 | *marianiae* form | DT 5370 | SSE of Concordia |
| 1043 | *alstonii* | DT 5372 | Leeupoort, N Concordia |
| 1047 | *marianiae "hallii"* | DT 5376 | S of Umdaus, NW Steinkopf |
| 1048 | *alstonii* | | S of Umdaus, NW Steinkopf |
| 1061 | *alstonii* | | Anenous Pass, W Steinkopf |
| 1063 | *marianiae "kubusensis"* | DT 5397 | Farquharson se Kop, E Port Nolloth |
| 1065 | *filicaulis* | | Augrabies, E Port Nolloth |
| 1076 | *marianiae "hallii"* | | Augrabies, E Port Nolloth |
| 1077a | *marianiae "kubusensis"* | | E end of Karrachabpoort |
| 1081 | *marianiae "kubusensis"* | DT 5428 | N of Gemsbokvlei |
| 1083 | *marianiae "kubusensis"* | | N of Gemsbokvlei |
| 1086 | *montium-klinghardtii* | DT 5437 | SW of Grootderm, E Alexander Bay |
| 1089 | *montium-klinghardtii* | | S of Anniskop, W Kubus |
| 1091 | *montium-klinghardtii* | | Remhoogte, south side |
| 1092 | *marianiae "kubusensis"* | | Remhoogte, south side |
| 1095 | *montium-klinghardtii* | | Remhoogte, north side |
| 1096 | *marianiae "kubusensis"* | DT 5455 | Remhoogte, north side |
| 1099 | *marianiae "kubusensis"* | | W of Numees |
| 1099a | *filicaulis* | | W of Numees |
| 1102 | *filicaulis* | DT 5466 | Doringpoort, SW Kubus |
| 1102a | *marianiae "kubusensis"* | | Doringpoort, SW Kubus |
| 1103 | *marianiae "kubusensis"* | DT 5471 | S of Dolomite Peaks |
| 1104 | *filicaulis* | DT 5474 | N end Wildeperderant |
| 1106 | *alstonii* | DT 5478 | Skouerfontein, NW Eksteenfontein |
| 1108 | *marianiae "kubusensis"* | | SE of Eksteenfontein |
| 1111 | *marianiae "kubusensis"* | DT 5481 | SE of Eksteenfontein |
| 1119 | *alstonii* | | S of Animub, N Steinkopf |
| 1120 | *alstonii* | DT 5500 | N Eenriet foothills, NE Steinkopf |
| 1125 | *nanus* | DT 5503 | Achab se Berg, SW Pofadder |
| 1134 | *marianiae "hallii"* | | Bakenskop, Areb, E Springbok |
| 1135 | *filicaulis* | DT 5522a | W of Koringhuis |
| 1136 | *filicaulis* | | Koringhuis, S Springbok |
| 1142 | *marianiae "kubusensis"* | DT 5532 | Kourkammaberge, SW Springbok |
| 1144 | *marianiae "kubusensis"* | | Kourkammaberge, SW Springbok |
| 1145 | *filicaulis* | | Kourkammaberge, SW Springbok |
| 1150 | *filicaulis>montium-klinghardtii* | DT 5543 | NE of Riethuis |
| 1160 | *marianiae* form | | W Flaminksvlakte, Knersvlakte |
| 1160a | *filicaulis* | | W Flaminksvlakte, Knersvlakte |
| 1162 | *filicaulis* subsp. *marlothii* | | N Hol River Station, Knersvlakte |
| 1165 | *filicaulis* | | N Hol River Station, Knersvlakte |
| 1167 | *marianiae* form | | NE Hol River Station, Knersvlakte |

| CR No. | Name | Alternative no. | Locality |
|---|---|---|---|
| 1168 | *maximus* | DT 5567 | S of Klawer |
| 1170 | *hemisphaericus>roanianus* | | S of Klawer |
| 1172 | *hemisphaericus>roanianus* | DT 5570a | Lower Pakhuis Pass |
| 1176 | *roanianus* | | N of Wuppertal, Biedouw Valley |
| 1177 | *marianiae* | DT 5577 | N of Wuppertal, Biedouw Valley |
| 1178 | *filicaulis (tricolor)* | DT 5579 | Botterkloof Pass, NE Clanwilliam |
| 1179 | *subviridis* | DT 5582 | Bloukrans Pass, S Calvinia |
| 1180 | aff. *triflorus* | DT 5592 | Skittery Kloof |
| 1184 | *marianiae* "tanqua" | DT 5590 | Skittery Kloof |
| 1184a | aff. *triflorus* x *marianiae* "tanqua" | (natural hybrid) DT 5594 | Skittery Kloof |
| 1185 | *filicaulis* | | N of Worcester |
| 1187 | *maculatus* | | SE of Robertson |
| 1189 | *maculatus* | | Kogmans Kloof |
| 1190 | *maculatus* | | S of Zolani |
| 1191 | *hemisphaericus* | | Signal Hill, Capetown |
| 1192 | *hemisphaericus* | | Sea Point, Capetown |
| 1193 | *hemisphaericus* | DT 5943 | Northern Perdeberg |
| 1194 | *hemisphaericus* | DT 5947 | Southern Perdeberg |
| 1196 | *hemisphaericus* | DT 5952 | Piekeniers Pass, SW Citrusdal |
| 1198 | *hemisphaericus>roaneanus* | | S of Clanwilliam |
| 1200 | *roanianus* | | SE of Palmiesfontein, Moutonsberg |
| 1201 | *marianiae* form | | SE of Palmiesfontein, Moutonsberg |
| 1202 | aff. *hemisphaericus* | | Southern Moutonsberg (low level) |
| 1206 | aff. *hemisphaericus* | DT 5967 | Southern Moutonsberg (plateau) |
| 1207 | *filicaulis* subsp. *marlothii* | | N of Hol River Station, Knersvlakte |
| 1211 | *filicaulis* subsp. *marlothii* | | N of Hol River Station, Knersvlakte |
| 1213 | *marianiae* form | | N of Hol River Station, Knersvlakte |
| 1216 | *marianiae* form | DT 5980 | E of Bitterfontein |
| 1219 | *filicaulis* | | Garies |
| 1220 | *marianiae* form | DT 5990 | Garies |
| 1221 | *alstonii* | | W of Nababeep |
| 1227 | *marianiae "herrei"* | DT 6010 | N of Maerpoort se Berg |
| 1229 | aff. *alstonii* | DT 6015 | SW of Steenbok |
| 1231 | *marianiae* "little spheroid" | DT 6016 | SW of Steenbok |
| 1235 | *marianiae "hallii"* | DT 6028 | NE Skimmelberg |
| 1236 | aff. *filicaulis* | | NE Skimmelberg |
| 1237 | *marianiae 'kubusensis'* | | SE of Eksteenfontein |
| 1250 | *filicaulis* | DT 6051 | NE top of Helskloof |
| 1252 | *marianiae "kubusensis"* | DT 6056 | NW of Kubus |
| 1254 | *marianiae "kubusensis"* | DT 6069 | S of Lekkersing |
| 1257 | *marianiae "kubusensis"* | DT 6075 | S of Lekkersing |
| 1261 | *marianiae* "little spheroid" | DT 6088 | SW of Steenbok, E Port Nolloth |
| 1263 | *marianiae "multicolor"* | DT 6090 | W of Maerpoort se Berg |
| 1265 | *filicaulis* | DT 6091 | Southern Harrasberge, W of Steinkopf |
| 1267 | *marianiae "herrei"* | DT 6094 | Southern Harrasberge, W of Steinkopf |
| 1269 | *marianiae "hallii"* | DT 6105 | NE of Umdaus, NW Steinkopf |
| 1271 | *alstonii* | | W of Umdaus, NW Steinkopf |
| 1272 | *marianiae "hallii"* | | NE of Umdaus |
| 1274 | *alstonii* | DT 6109 | Duke's Kop, N Steinkopf |
| 1276 | *nanus* | DT 6115 | NE of Kon Kyp |
| 1279 | *marianiae "hallii"* | | NE of Kon Kyp |
| 1283 | *trigynus>schuldtianus* | DT 6121 | NE of Pofadder |
| 1288 | *trigynus>schuldtianus* | DT 6125 | WNW of De Rust |
| 1292 | *alstonii* | | NW of Leliefontein |
| 1295 | *alstonii* | DT 6139 | SSE of Leliefontein |
| 1297 | *filicaulis* | | S of Hoedberg |
| 1301 | *filicaulis* | | WSW of Kliprand |
| 1303 | *marianiae* "tanqua" | DT 6150a | Bloedzuigersfontein, SW Calvinia |
| 1304 | *filicaulis (tricolor)* | DT 6158 | Lokenburg, S Nieuwoudtville |
| 1307 | *marianiae* | DT 6160 | N of Clanwilliam |
| 1308 | *leucophyllus* | | Montagu Springs |
| 1309 | *filicaulis* subsp. *marlothii* x *leucophyllus* natural hybrid | | Montagu Springs |

| CR No. | Name | Alternative no. | Locality |
|---|---|---|---|
| 1310 | *filicaulis* subsp. *marlothii* | | Orange Grove, N of De Wet |
| 1311 | *hemisphaericus* | DT 6190 | Top of Dasklip Pass, S Citrusdal |
| 1313 | *hemisphaericus* | DT 6199 | N Lamberts Bay |
| 1315 | *hemisphaericus*>*roanianus* | | Holbak, SW Vredendal |
| 1317 | *filicaulis* | | Strandfontein |
| 1323 | *filicaulis* | | Roodekloof, SE Kliprand |
| 1326 | *alstonii* | DT 6211 | E of Matjiesfontein, NW Kliprand |
| 1333 | *filicaulis* | DT 6222, 6226 | Witwater, NE Garies |
| 1336 | *marianiae "kubusensis"* | DT 6233 | SW of Steinkopf |
| 1338 | *nanus* | DT 6235 | NE of Jakkalswater |
| 1339 | *filicaulis* | | NE of Jakkalswater |
| 1341 | *nanus* | | N'Guroebees, NE of Jakkalswater |
| 1344 | *nanus* | DT 6247 | NW of Kweekfontein, NE Springbok |
| 1347 | aff. *filicaulis* | DT 6249 | W of Kweekfontein |
| 1349 | *alstonii* | | W of Bulletrap |
| 1350 | *alstonii* | | W of Nababeep |
| 1352 | *filicaulis* | DT 6255 | SW of Nigramoep |
| 1355 | *marianiae "kubusensis"* | DT 6272 | W of Winterhuis, NE Port Nolloth |
| 1361 | *filicaulis* | DT 6286 | Harrasberge, W Steinkopf |
| 1371 | *marianiae "hallii"* | DT 6311 | Rietkloof-Breekriet, W Steinkopf |
| 1372 | *schuldtianus* | DT 6314 | WNW of Grunau, Namibia |
| 1374 | *schuldtianus* | DT 6320 | WNW of Klein Karas, Namibia |
| 1375 | *schuldtianus* | | WNW of Grunau, Namibia |
| 1382 | *schuldtianus/trigynus* | DT 6336 | S of Witsand, Namibia |
| 1386 | *filicaulis* | DT 6342 | S of Springbok |
| 1392 | *filicaulis* | DT 6359 | W of Platbakkies |
| 1396 | *subviridis* | DT 6362 | W of Karingmelkplaat, S Nieuwoudtville |
| 1398 | *marianiae* "tanqua" | DT 6365 | W of Karingmelkplaat, S Nieuwoudtville |
| 1399 | *hemisphaericus* | DT 6364 | W of Karingmelkplaat, S Nieuwoudtville |
| 1399a | *marianiae* "tanqua" x *hemisphaericus* natural hybrid | DT 6365a | W of Karingmelkplaat, S Nieuwoudtville |
| 1401 | *filicaulis* | | NNW of Doringbos |
| 1402 | *marianiae* form | DT 6369 | NNW of Doringbos |
| 1407 | *subviridis* | DT 6379 | W of Spaarbos, N Tanqua Karoo |
| 1409 | *hemisphaericus* | DT 6385 | Katbakkies, Swartruggens |



Hellskloof in the Richtersveld, home to several *Adromischus*, including *A. alstonii, A. filicaulis*, and *A. marianiae "kubusensis"*; the hillsides are red with *Aloe pearsonii*

## DT (Derek Tribble)

DT accession numbers start at DT 1001 and have four-digits. But in 1980 and 1984, temporary numbers from DT 1 to DT 157 were used, and some plants have been circulated under these now replaced numbers; see DT 3661 to DT 3699 for the correct equivalents. Some DT numbers represent the same plants as CR numbers — see CR listing.

| DT No. | Name | Alternative no. (or source) | Locality |
|---|---|---|---|
| 2064 | *hemisphaericus* | | Piketberg |
| 2495 | *marianiae* | | Pakhuis Pass, NE Clanwilliam |
| 2496 | *hemisphaericus* | | Top of Pakhuis Pass, E Clanwilliam |
| 2499 | *marianiae* | KGW 189/72 | Road Karoopoort to Sutherland |
| 2500 | *leucophyllus* | MBB 1959 | Nougapoort |
| 3408 | *schuldtianus* | Len Newton | N Aurus Mtns, Namibia |
| 3473 | *filicaulis* | Lavranos & Butler 8933 | Sandberg, Komaggas |
| 3474 | *filicaulis* | Hall 2176 | N Stoebatsfontein |
| 3496 | *alstonii* (*pulchellus*) | Gordon Rowley 305 | Khamieskroon |
| 3559 | *humilis* | MBB 2456 | Langberg, between Merweville & Sutherland |
| 3658 | *subdistichus* | EvJ 7661 | Nuwekloof, SE Willowmore |
| 3660 | ? Section 1 | EvJ | |
| 3661 | *hemisphaericus* | DT 9 | S Eendekuil, SW Citrusdal |
| 3662 | *marianiae* form | DT 13 | SE Nuwerus, Knersvlakte |
| 3663 | *alstonii* | DT 17 | Eselfonteinrivier, W Springbok |
| 3664 | *filicaulis* | DT 24 | Foot of Spektakelpas, W Springbok |
| 3666 | *alstonii* | DT 31 | NW Steinkopf |
| 3667 | aff. *montium-klinghardtii* | DT 43 | Augrabies, E Port Nolloth |
| 3668 | *marianiae "kubusensis"* | DT 44 | Augrabies, E Port Nolloth |
| 3669 | *montium-klinghardtii* | DT 47 | Holgat River, S Alexander Bay |
| 3670 | *marianiae "blosianus"* | DT 48 | Holgat River, S Alexander Bay |
| 3671 | *alstonii* | DT 54 (see also DT 5365) | N Springbok |
| 3672 | *marianiae* | DT 60 (see also DT 5370) | SSE Concordia |
| 3673 | ? Section 1 | DT 67 | N Morenskadu Farm, E Springbok |
| 3679 | *filicaulis* | DT 88 | Studer's Pass, NNE Garies |
| 3680 | *marianiae* form | DT 90 | NW Vanrhynsdorp, Knersvlakte |
| 3681 | *filicaulis* | DT 92 | NW Vanrhynsdorp, Knersvlakte |
| 3681a | aff. *hemisphaericus* | DT 92 | NW Vanrhynsdorp, Knersvlakte |
| 3682 | *filicaulis* | DT 96 | NW Vanrhynsdorp, Knersvlakte |
| 3683 | *hemisphaericus* | DT 102 | Pakhuis Pass, NE Clanwilliam |
| 3684 | *hemisphaericus* | DT 108 | Pakhuis Farm, E Clanwilliam |
| 3685 | *hemisphaericus* | DT 109 | Pakhuis Pass, NE Clanwilliam |
| 3686 | aff. *triflorus* | DT 111 | Skittery Kloof, Swartruggens |
| 3687 | aff. *hemisphaericus* | DT 112 (see also DT 4108) | Skittery Kloof, Swartruggens |
| 3688 | *filicaulis* subsp. *marlothii* | DT 116 | N Matjiesfontein |
| 3689 | *triflorus* | DT 117 | N Matjiesfontein |
| 3690 | *liebenbergii* | DT 124 | NNE Koup Station |
| 3692 | *maculatus* | DT 128 | E Klaarstroom |
| 3693 | *subdistichus* | DT 134 | WNW Willowmore |
| 3694 | *sphenophyllus* | DT 141 | ENE Steytlerville |
| 3695a | ? Section 4 | DT 149 | ENE Oudtshoorn |
| 3695b | *caryophyllaceus* | DT 149 | ENE Oudtshoorn |
| 3697 | *triflorus* | DT 153 | E Vanwykesdorp |
| 3698 | *filicaulis* subsp. *marlothii* | DT 155 | E Montagu |
| 3699a | *maculatus* | DT 157 | E Montagu |
| 3699b | ? Section 4 | DT 157 | E Montagu |
| 3755 | *subdistichus* | Roy Littlewood 101/62 | Vondeling, W Willowmore |
| 3803 | *trigynus* | Anthony Mitchell | Achab se Berge, SW Pofadder |
| 3805 | *montium-klinghardtii* | Anthony Mitchell | Holgat, Richtersveld |
| 3808 | *filicaulis* | Anthony Mitchell | Witvlakte, N Khamiesberge |
| 3879 | *schuldtianus* | Roy Littlewood 624/59 | N Grunau, Namibia |
| 3909 | *bicolor* | Tom Jenkins | E Steytlerville |
| 4083 | *triflorus* | | Avondrust, SE Touwsrivier |
| 4101 | *liebenbergii* | | S Jan De Boers Station |

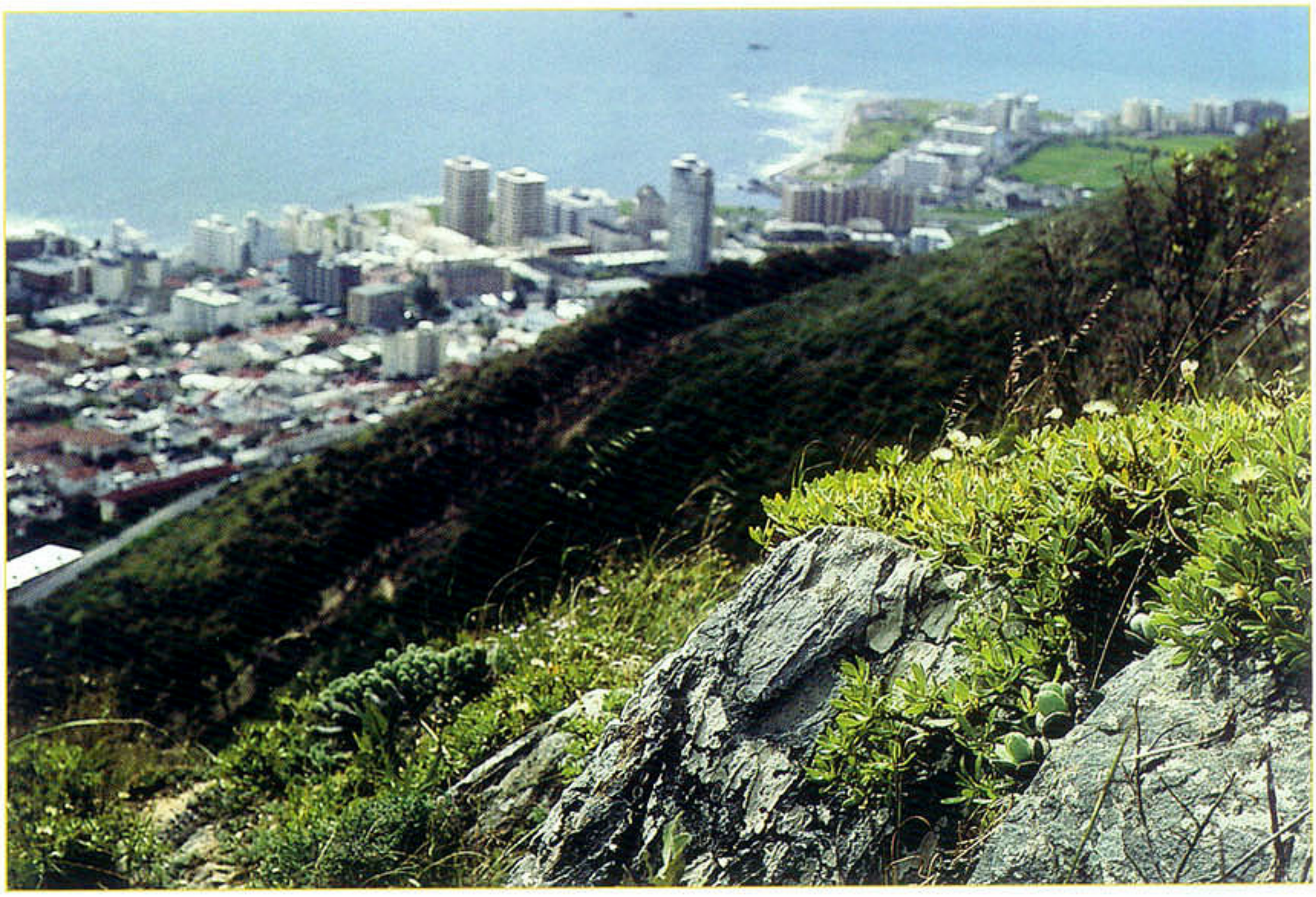
| DT No. | Name | Alternative no. (or source) | Locality |
|---|---|---|---|
| 4108 | *hemisphaericus* | (see DT also 3687) | Skittery Kloof, Swartruggens |
| 4121 | aff. *filicaulis* subsp. *marlothii* | | Ouberg Pass, W Sutherland |
| | (Another *Adromischus* wrongly bears this number in UK) | | |
| 4135 | *roanianus* | | Top of Vanrhyns pass |
| 4175 | *alstonii* | | Top of Grootvleipas, W Khamieskroon |
| 4180 | *alstonii* | | Wildeperdehoek se pas, SW Springbok |
| 4187 | aff. *alstonii* | | Koringhuis, SW Springbok |
| 4203 | *marianiae* | | W Beesbank, E Alexander Bay |
| 4211 | *alstonii* | (see also DT 6054) | Lower part of Helskloof, Richtersveld |
| 4216 | *filicaulis* | | Top of Helskloof, Richtersveld |
| 4228 | *filicaulis* (*fragilis* var. *numeesensis*) (see also DT 6046) | | Top of Numeesberg, Richtersveld |
| 4235 | *marianiae "kubusensis"* | | W Numeesberg, Richtersveld |
| 4244 | *filicaulis* (*fragilis* var. *numeesensis*) | | W Numeesberg, Richtersveld |
| 4250 | aff. *montium-klinghardtii* | | N Rosh Pinah, Namibia |
| 4351 | *umbraticola* | Philip Downs | Mzilikaatsnek, Magaliesberg |
| 4352 | *trigynus* | Philip Downs | Onverwagt, Thaba Nchu, Free State |
| 4353 | *schuldtianus/trigynus* | Philip Downs | Tantalite Valley, SW Warmbad, Namibia |
| 4447 | *schuldtianus/trigynus* | Steven Hammer 473/87 | Maraisvlei, SW Kakamas |
| 4464 | *hemisphaericus* | | Top of Pakhuis Pass, E Clanwilliam |
| 4465 | *hemisphaericus* | | Pakhuis Farm, E Clanwilliam |
| 4466 | *alstonii* | | NE Kuboos, Richtersveld |
| 4468 | *maculatus* | | NW Willowmore |
| 4469 | *inamoenus* | | Prince Alfreds Pass, S Uniondale |
| 4470 | aff. *maculatus* | | E Herold |
| 4471 | aff. *maculatus* | | W Kango Caves |
| 4474 | *caryophyllaceus* (near to *grandiflorus*) | | S Robertson |
| 4475 | *triflorus* | | ENE Montagu |
| 4645 | aff. *montium-klinghardtii* | H Hall 1903 | Lorelei Copper Mine, Namibia |
| 4657 | aff. *montium-klinghardtii* | MBB 3859 | Paradise Valley, Klinghardt Mtns, Namibia |
| 4663 | *phillipsiae* | MBB 5365 | Verlatekloof |
| 4742 | *marianiae "hallii"* | CM 121 | Lorelei, Namibia |
| 4744 | aff. *montium-klinghardtii* | CM 164 | NW Eksteenfontein, Richtersveld |
| 4746 | *marianiae "hallii"* | CM 203 | Hangpaal, NW Steinkopf |
| 4747 | *nanus* | CM 251 | Naip, NW Springbok |
| 4748 | *marianiae* | CM 268 | SE Springbok |
| 4751 | *umbraticola* | | Breedtsnekpas, Magaliesberg, W Pretoria |
| 4773 | aff. *inamoenus* | | W Bethelsdorp, NW Port Elizabeth |
| 4777 | *cristatus* var. *cristatus* | | Gamtoos Ferry, NE Jeffreys Bay |
| 4786 | *sphenophyllus* | | E Hankey |
| 4790 | *cristatus* var. *cristatus* | | W Patensie |
| 4818 | *sphenophyllus* | | N Riebeek East |
| 4823 | *cristatus* var. *clavifolius* | | E Grahamstown |
| 4849 | *sphenophyllus* | | NW Graaff-Reinet |
| 4865 | *bicolor* | | W Springbokvlakte |
| 4881 | *subdistichus* | | Nuwekloof, SE Willowmore |
| 4885 | *filicaulis* subsp. *marlothii* | | SE Willowmore |
| 4890 | ? Section 4 | | SE Willowmore |
| 4894 | *cristatus* var. ?*cristatus* | | Nuwekloof, SE Willowmore |
| 4898 | *inamoenus* | | SW Uniondale |
| 4902 | *caryophyllaceus* | | W Molenriver |
| 4903 | *inamoenus* | | W Molenriver |
| 4906 | *caryophyllaceus* | | NW Mossel Bay |
| 4907 | ? Section 4 | | NW Mossel Bay |
| 4915 | ? Section 4 | | SE Herbertsdale |
| 4917 | ? Section 4 | | N Herbertsdale |
| 4919 | *inamoenus* | | Bergkloof, N Herbertsdale |
| 4922 | *maculatus* | | Gouritz River Bridge, SE Vanwykesdorp |
| 4924 | ? Section 4 | | S Muiskraal, N Riversdale |
| 4928 | *caryophyllaceus* | | Springfontein, NW Riversdale |
| 4931 | *triflorus* | | W Warmwaterberg, Little Karoo |
| 4955 | *triflorus* | | W De Rust |
| 4963 | ? Section 4 | | NW De Rust |

| DT No. | Name | Alternative no. (or source) | Locality |
|---|---|---|---|
| 4968 | *triflorus* | | N Oudtshoorn |
| 4972 | *maculatus* | | S Prince Albert |
| 4975 | *liebenbergii* | | NE Koup Station |
| 4982 | *leucophyllus* (red spotted form) | | Rooinek Pass, S Laingsburg |
| 4983 | *triflorus* | | S Laingsburg |
| 4999 | *maculatus* | | SW Robertson |
| 5000 | *filicaulis* subsp. *marlothii* | | SW Ashton |
| 5000a | *filicaulis* subsp. *marlothii* x *triflorus* | | SW Ashton |
| 5011 | ? Section 4 | Peter Bruyns | E Prince Albert |
| 5015 | *schuldtianus* | Peter Bruyns 3302 | Brandberg, Namibia |
| 5021 | *subdistichus* | Peter Bruyns | Prince Albert |
| 5022 | *nanus* | Peter Bruyns | N Eenriet, N Steinkopf |
| 5031 | *schuldtianus* | H. Tölken 4263 | Auasberge, SE Windhoek, Namibia |
| 5032 | aff. *diabolicus* | Oliver et al. 86 | Gamoep |
| 5097 | *fallax* | Peter Bruyns 2970 | SE Graaff-Reinet |
| 5452 | *filicaulis* | | Remhoogte, Richtersveld |
| 5557 | *marianiae* form | | N Holriver Station, Knersvlakte |
| 5595 | aff. *hemisphaericus* | | Foot of Skittery Kloof, Swartruggens |
| 5681 | *trigynus* | Kobus Venter | Colesberg |
| 5684 | *hemisphaericus* | | Sir Lowry's Pass, E Cape Town |
| 5688 | *maculatus* | | W Barrydale |
| 5689 | *filicaulis* subsp. *marlothii* | | W Barrydale |
| 5713 | *triflorus* | | S Papkuilsfontein, Little Karoo |
| 5744 | *triflorus* | | S Calitzdorp |
| 5760 | *liebenbergii* (with *filicaulis* subsp. *marlothii*) | | S Laingsburg |
| 5775 | aff. *filicaulis* subsp. *marlothii* | | Theekloof Pass, SW Fraserburg |
| 5779 | aff. *filicaulis* subsp. *marlothii* | | Oukloof Pass, SW Fraserburg |
| 5783 | *maculatus* | | Molteno Pass, N Beaufort West |
| 5792 | *maculatus* | | N Beaufort West |
| 5799 | *trigynus* | | 40km SW Britstown |
| 5810 | *trigynus* | | N Danielskuil |
| 5814 | *umbraticola* | | NE Magaliesberg |
| 5819 | *umbraticola* | | E Pretoria |
| 5838 | *cristatus* var. ?*schonlandii* | DM Cumming (ex Kirstenbosch) | Uniondalepoort |
| 5839 | *cristatus* var. *zeyheri* | EvJ 10464 N032 | Mpunzi Drift, Umtamvana, S Natal |
| 5840 | *cristatus* var. ?*zeyheri* | EvJ 11201 | Kouga, NW Humansdorp |
| 5841 | *cristatus* var. *schonlandii* | EvJ 11081 | Kougadam, NW Humansdorp |
| 5842 | *cristatus* var. *cristatus* | EvJ 11186 | Valley of Desolation, Graaff-Reinet |
| 5844 | *umbraticola* subsp. *ramosus* | EvJ 11239 | Blouberg, NW Transvaal |
| 5854 | *marianiae "herrei"* | EvJ 11504 | Rosyntjieberg, Richtersveld |
| 5861 | *trigynus* | Jossie Brandt | Danielskuil |
| 5862 | *trigynus* | Jossie Brandt | Eldorado, Prieska |
| 5863 | *cristatus* var. ? | Jossie Brandt | Cradock |
| 6027 | *alstonii* | | NE Skimmelberg, NE Port Nolloth |
| 6054 | *alstonii* | | Helskloof, Richtersveld |
| 6056a | *filicaulis* | | NW Kubus, Richtersveld |
| 6068 | *alstonii* | | S Lekkersing, Richtersveld |
| 6080 | *marianiae "kubusensis"* | | NW Uitspanpoort, Richtersveld |
| 6082 | aff. *filicaulis* | | SE Port Nolloth |
| 6084 | *marianiae "kubusensis"* | | SE Port Nolloth |
| 6089 | ? Section 1 | | W Maerpoort se Berg |
| 6240 | *alstonii* | | N Guroebees, NE Jakkalswater |
| 6256 | *alstonii* | | SW Nigramoep |
| 6299 | *alstonii* | | NW Kosies, NW Steinkopf |
| 6365a | *hemisphaericus* x *marianiae* | | S Nieuwoudtville |

(See also Alternative no.'s on CR list for most DT 2000+ numbers)
(Multiple clones from one population carry the same DT number, so expect a degree of variation in appearance)

## ISI Introductions

| ISI No. | Year | Name and (distribution name) | Source, or alternative no. |
|---|---|---|---|
| 4 | (1958) | *caryophyllaceus* | Liebenberg 6152 |
| 9 | (1958) | *caryophyllaceus* (*grandiflorus*) | Herre |
| 383 | (1960) | *marianiae "herrei"* (*herrei*) | van Heerde |
| 11 | (1961) | *roanianus* | Stellenbosch 6058 |
| 191 | (1961) | ? Section 1 (aff. *rotundifolius*) | Stellenbosch 30008 |
| 206 | (1961) | *marianiae "alveolatus"* (*alveolatus*) | H. Hall |
| 14 | (1962) | *leucophyllus* | H. Hall |
| 531 | (1968) | *alstonii* (*alstonii "triebneri"*?) | Stellenbosch 30309 |
| 893 | (1975) | *marianiae "blosianus"* (*blosianus*) | H. Hall |
| 1124 | (1979) | *nanus* (*pauciflorus*) | |
| 1376 | (1983) | *marianae* | |
| 1377 | (1983) | *alstonii* (*triflorus*) | Pienaar |
| 1441 | (1984) | *filicaulis* subsp. *marlothii* (*mamillaris* var. *marlothii*) | |
| 1538 | (1985) | *kitchingii* nom. nud. (? Section 2) | Liebenberg 5929 |
| 1630 | (1986) | *marianiae "hallii"* (*hallii*) | H. Hall |
| 1729 | (1987) | *uitewaalianus* nom. nud. – (A.J.A. Uitewaal) | |
| 1822 | (1988) | *marianiae "geyeri"* (*geyeri*) | Geyer |
| 1823 | (1988) | *marianiae* "little spheroid" (sp.) | |
| 91-24 | (1991) | *phillipsiae* | |
| 92-24 | (1992) | *cristatus* 'Indian Clubs' | |
| 92-25 | (1992) | *diabolicus* | |
| 92-26 | (1992) | *schuldtianus/trigynus* (aff. *schuldtianus*) | Hammer 473/87 |
| 96-18 | (1996) | *cristatus* var. *zeyheri* (aff. *cristatus*) | Cumming 336 |
| 97-49 | (1997) | *sphenophyllus* (*undulatus*) | Stayner 112 |



*Adromischus hemisphaericus* and *Euphorbia caput-medusae* growing on Signal Hill, overlooking Cape Town

## PART 2

In this part we list herbarium and garden specimens other than type depositions, along with field collection and accession numbers attributed to each of the taxa.

The various institutions where depositions of material have been made are traditionally abbreviated, and those relevant to this genus are as follows:

| | |
|---|---|
| AVU | Herbarium, Department of Systematic Botany, Vrije Universitit, Amsterdam, Netherlands (transferred to Rijksherbarium, Leiden, Netherlands) |
| B | Berlin-Dahlem Herbarium, Germany |
| BOL | Bolus Herbarium, University of Cape Town, South Africa |
| GRA | Herbarium of the Albany Museum, Grahamstown, South Africa |
| K | Royal Botanic Gardens Herbarium, Kew, London, England |
| NBG | Compton Herbarium, National Botanical Gardens, Kirstenbosch, South Africa |
| OXF | Oxford University Herbarium, Oxford, England |
| PRE | (former) Botanical Research Institute, National Herbarium, Pretoria, South Africa (now National Botanical Institute) |
| S | Botanical Institute, Stockholm, Sweden |
| SAM | South African Museum Herbarium, Cape Town, South Africa |
| SUG | Herbarium, University of Stellenbosch, Stellenbosch, South Africa |
| UC | Herbarium, University of California Botanical Garden, Berkeley, California, USA |
| UCBG | University of California Botanical Garden (live plants) |
| UPS | Institute of Systematic Botany, University of Uppsala, Sweden |
| WIND | South West Africa Herbarium, Department of Agriculture and Nature Conservation, Windhoek, Namibia |

*A. alstonii*

Dinter 8093 (BOL, WIND); Pearson 3060 (BOL); Wisura 3029 (NBG); UCBG 55.681 (Kirstenbosch 453.55) (UC); UCBG 54.110 (Kirstenbosch 761.53) (UC) – as *A. pulchellus*; UCBG 60.1207 (SUG 30309) (UC) – as *A. triebneri*; CR 1025, 1037, 1043, 1048, 1061, 1104, 1106, 1119, 1120, 1221, 1229, 1271, 1274, 1292, 1295, 1326, 1349, 1350, 1409; DT 17, 31, 54, 3496 (Gordon Rowley 305), 3663, 3666, 3671, 4175, 4180, 4187?, 4211, 4466, 5330?, 5365, 5372, 5478?, 5500, 6015, 6027, 6054, 6068, 6109, 6139, 6211, 6240, 6256, 6299; Hammer & Liede 587; Hammer & Brack 1229; Hammer & Barnhill 2361; MBB 3332.

*A. bicolor*

Barker 4996 (NBG); Flanagan 1113 (PRE); Liebenberg 6070 (PRE); UCBG 53.1109, 54.464 (Pienaar 36) (UC); DT 3909 (ex Tom Jenkins), 4865.

*A. caryophyllaceus*

Acocks 19932 (PRE); Galpin 12951 (PRE); Muir 3055 (BOL, GRA); Wisura 441 (NBG); UCBG 56.314 (Liebenberg 6152) (UC); UCBG 50.2076, 58.1021 (ex Boshoff, no number) (UC) – as *A. grandiflorus*; UCBG 54.311, 58.400 (Esterhuysen 23360) (UC) – as *A. jasminiflorus*.; DT 149, 3695b, 4474 (*grandiflorus*), 4902, 4906, 4928.

*A. cooperi*

Bolus 821 (BOL); Esterhuysen 19699 (the same number is used for *A. cristatus*) (BOL); Galpin 2209 (BOL); UCBG 54.56 (Liebenberg 5971), 54.1051 (Liebenberg 6013), 54.1055, 65.1511 (UC); UCBG 37.501 (ex Morgan, no number) (UC) – as *A. festivus*; Lav. 25965; WRB 25.

*A. cristatus* var. *cristatus*

Bolus 442 (GRA); Esterhuysen 19699 (the same number is used for *A. cooperi*) (BOL); MacOwan 1129 (GRA); UCBG 50.2049, 51.579, 56.1269 (SUG 30230) (UC); DT 4777, 4790, 4894?, 5842 (EvJ 11186), 5863? (ex Jossie Brandt).

*A. cristatus* var. *clavifolius*

UCBG 58.1033 (Stayner 115) (UC); UCBG 55.704 (Kitching 19) (UC) – as *A. kesselringianus*; UCBG 50.1695 (ex Brown, no number) (UC) – as *A. poellnitzianus*; UCBG 51.803, 54.459 (Pienaar 4) (UC) – as *A. nussbaumerianus;* DT 4823.

*A. cristatus* var. *schonlandii*

UCBG 51.796, 53.333 (Esterhuysen 16784) (UC); DT 5838? (ex D. Cumming, ex Kirstenbosch), 5841 (EvJ 11081).

*A. cristatus* var. *zeyheri*

DMC 336: DT 5839 (EvJ 10464 N032), 5840 (EvJ 11201); EvJ 3659, 7720.

*A. diabolicus*

Dabenorisberge area in northern Bushmanland, near the Orange River (EvJ 6427, ISI 92-25); Rosynebos, north of Aggenys in Bushmanland (Hammer & Liede 551); DT 5032(?) (Oliver, Tölken & Venter 86 (PRE)).

*A. fallax*

DT 5097 (PVB 2970).

*A. filicaulis*

Giess et al. 5424 (PRE); Rodin 1620 (BOL); Tölken 5128(PRE); UCBG 50.1180 (Rodin 1620) – as *A. fragilis*; UCBG 50.2047 (SUG 5888) – as *A. sutherlandensis*; UCBG 54.113 (Kirstenbosch 692.53) – as *A. fragilis* var. *numeesensis*; UCBG 50.1714 (Kleyn 10), 50.2034 (SUG 5398), 50.2053, 50.2053-1, 50.2073 (SUG 6446), 50.2080 (Wilke 6894), 50.2051, 53.1100, 55.614 (SUG 30171), – as *A. tricolor*, 51.790 (SUG 30322), 51.797, 51.810 (SUG 6242), 53.401 (SUG 30343), 56.808 (SUG 30188), 60.1224 (SUG 6017) – as *A. mamillaris*; 60.1235 (SUG 6949) – as *A. tricolor*; UCBG 50.2068 (SUG, no number recorded) – as *A. mamillaris* var. *cinereus*; UCBG 51.808, 55.682 (Kirstenbosch 525.55) – in error as *A. rotundifolius* – (UC); CR 1026, 1030, 1032, 1035, 1065, 1099a, 1104, 1135, 1136, 1145, 1160a, 1165, 1185, 1219, 1236, 1250, 1265, 1297, 1301, 1304, 1317, 1323, 1333, 1339, 1347, 1352, 1361, 1386, 1392, 1401; DT 24, 88, 92, 96, 3473 (Lav. & Butler 8933), 3474 (Hall 2176), 3664, 3679, 3681, 3682, 3808 (ex Anthony Mitchell), 4216, 4228, 4244, 5222a, 5452, 5466, 5474, 5579, 6051, 6056a, 6082, 6091, 6158, 6222, 6226, 6249, 6255, 6286, 6342, 6359; Hammer & Barnhill 2345; Hammer & Brack 1388, 1388a.

*A. filicaulis* subsp. *marlothii*

Bolus 6706 (BOL); Esterhuysen 27599 (BOL); Schlechter 9933 (PRE); UCBG 60.661 (UC) – as *A. marlothii;* CR 1162, 1178, 1207, 1211, 1310; DT 116, 155, 3688, 3698, 4121?, 4885, 5000, 5689, 5775?, 5779?

*A. hemisphaericus*

Esterhuysen 21090 (BOL), 27598 (BOL); Schlecter 7545 (GRA); UCBG 51.787 (labelled *A. subpetiolatus*), 51.793, 51.794 (SUG 6884), 51.805 (ex Meyer), 53.1119 (Esterhuysen 21707) (UC); UCBG 51.808 (UC) – as *A. rotundifolius;* CR 1001, 1003, 105, 1191, 1192, 1193, 1194, 1196, 1202, 1206, 1311, 1313, 1399, 1409; DT 9, 92?, 102, 108, 109, 112?, 2064, 2496, 3661, 3681a?, 3683, 3684, 3685, 3687?, 4108, 4464, 4465, 5289, 5293, 5298, 5570a, 5595?, 5604, 5605, 5684, 5943, 5947, 5952, 5967, 6190, 6199, 6364, 6385.

*A. humilis*

PVB 2123, 3110; DT 3559 (MBB 2456).

*A. inamoenus*

Esterhuysen 16788 (BOL); Fourcade 2085 (BOL); MacOwan 706 (SAM); DT 4469, 4773?, 4898, 4903, 4919.

*A. leucophyllus*

Esterhuysen 23891 & 25881 (BOL); Hall NBG 779/63 (NBG); UCBG 54.001 (SUG 30135), 60.1249 (SUG 30136) (UC); CR 1308; DT 2500 (MBB 1959), 4982.

*A. liebenbergii*

Barker 5327 (NBG); Compton 15609 (NBG); UCBG 56.76 (Liebenberg 6186) (UC); DT 124, 3690, 4101, 4975, 5760.

*A. maculatus*

Barker 8527 (NBG); Bolus 13044 (BOL); Liebenberg 5991 (PRE); UCBG 50.2041 (SUG 5793), 50.2078, 51.583, 53.329, 54.1056 (Liebenberg 5991) (UC); CR 1189, 1190; DT 128, 157, 3692, 3699a, 4468, 4470?, 4471?, 4922, 4972, 4999, 5599, 5688, 5783, 5792.

*A. mammillaris*

Herre in SUG 5403 (BOL); Oddie, NBG 304/37 (NBG); UCBG 51.581? – as A. procurvus; BM 421; UCBG 56.304 (Liebenberg 6159) – as A. procurvus (UC)

*A. marianiae* (type and unnamed forms)

(type): Leipoldt 409 (BOL, SUG); Marloth 2999 (BOL); Thompson without number (NBG); CR 1177, 1307; DT 60, 2495, 2499 (Karoo Gardens 189/72), 3672, 4204, 4748 (CM 268), 5344, 5370, 5532, 5577, 5590, 6160, 6369; (unnamed forms): CR 1011, 1013, 1017, 1021, 1027, 1040, 1160, 1167, 1201, 1213, 1216, 1220, 1402; DT 3662, 3680, 5304, 5310, 5313, 5319, 5557, 5980, 5990; Hammer & Liede 513, 597, 623; Hammer, Brack & Athy 1376; Hammer & Barnhill 2192b, 2350.

*A. marianiae "alveolatus"*

Hammer & Opel 2502; GW 4411.

*A. marianiae "antidorcatum"*

UCBG 50.2085 (SUG 1324), 54.1496, 62.1100 (Hall 2410) (UC); UCBG 56.590 (ex Irving, no number), 56.1253 (Kirstenbosch 917.55) (UC) – as *A. antidorcatum* x *herrei*

*A. marianiae "blosianus"*

DT 48, 3670: Hammer & Williamson 718.

*A. marianiae* "Bryan Makin"

Hammer & Barnhill 2268, 2416.

*A. marianiae "geyeri"*

UCBG 56-826; ISI 1822.

*A. marianiae "hallii"*

Hall 618 and 2145 (NBG); CR 1047, 1076, 1134, 1235, 1269, 1272, 1279, 1371; DT 4742 (CM 121), 4746, (CM 203) 5376, 6028, 6105, 6311; Hammer & Leide 570; Hammer & Williamson 900, 904, 907, 1484a; Hammer & Barnhill 2288.

*A. marianiae "herrei"*

BM 2199; CR 1227, 1263, 1267; DT 5090, 5280, 5854 (EvJ 11504), 6010, 6094; Hammer & Barnhill 2281; Hammer & Marx 2464.

*A. marianiae "immaculatus"*

Acocks 19422 (PRE); Hall 3490 (NBG); Marloth 3774 (PRE) (these may refer to what we would regard as differing from the correct concept of *"immaculatus"*).

*A. marianiae "kubusensis"*

Hall in NBG 718/53 (BOL); Herre in SUG 5891 (BOL); Müller & Geiss 963 (WIND); UCBG 56.825 (SUG 30204); UCBG 55.605 (SUG 30159) (UC) – as *A. kubusensis* var. *imitans*; CR 1063, 1077a, 1081, 1083, 1092, 1096, 1099, 1102a, 1103, 1108, 1111, 1142, 1144, 1237, 1252, 1254, 1257, 1355; DT 44, 3668, 4235, 4466, 5397, 5428, 5455, 5471, 5481, 5532, 6056, 6069, 6075, 6080, 6084, 6272, 6233; Hammer 2019b, 2020; Hammer & Barnhill 2343; Hammer, Brack & Athy 1382.

*A. marianiae* "little spheroid"

ISI 1823; CR 1231, 1261; DT 6016, 6088; Lav. & Bleck 25703; Lav. 28223.

*A. marianiae "multicolor"*

Similar plants have been found west of Maerpoort (CR 1263, DT 6090).

*A. marianiae* "tanqua"

CR 1184, 1303, 1398; DT 2499 (ex Karoo Gardens, Worcester, no. 189/72), 5590, 6150a, 6365; Lav. 28196 (SSE Middlepos).

*A. maximus*

Hall 1084 & 2077 (NBG); Pillans 7435 (BOL); UCBG 53.1106 (Kirstenbosch 475.53) (UC); BM 2034-2; CR 1168; DT 5567.

*A. montium-klinghardtii*

Tölken 5268 (PRE); CR 1086, 1089, 1091, 1095, 1102; DT 43?, 47, 3667?, 3669, 3805 (ex A.R. Mitchell), 4250?, 4645? (H. Hall 1903), 4657? (MBB 3859), 4744? (CM 164), 5437.

*A. nanus*

Compton in NBG 928/48 (NBG); UCBG 56.711 (Kirstenbosch 205.56) (UC); CR 1125, 1276, 1338, 1341, 1344; DT 4747 (CM 251), 5022 (ex P.V. Bruyns), 5503, 6115, 6235, 6247; Hammer 360a, 2021.

*A. phillipsiae*

Compton 14411 & 15606 (NBG); DT 4663 (MBB 5365).

*A. roanianus*

Hall 1764 (NBG); Tölken 5151 (PRE); Wisura 1319 (NBG); UCBG 50.2060 (SUG 6058) (UC; UCBG 51.575 (SUG 6058) (UC); 53.1117 (Kirstenbosch 909.52) (UC) – as *A. violaceus;* BM 85/34; CR 1016, 1018, 1023, 1176, 1200; DT 4135, 4476, 4658.

*A. schuldtianus* subsp. *schuldtianus*

Giess 9039 and 13672 (PRE); Pearson 8212 (BOL); UCBG 54.382 (Erni 4), 56.1264 (SUG 30225), 59.1110 (SUG 30288), 59.1114 (SUG 30289), 60.530 (ex Walter, no number) (UC); CR 1372, 1375, 1382; DT 340 (ex Len Newton), 3879 (RL 624/59), 5015 (PVB 3302), 5031 (Tölken 4263), 6314, 6320, 6336); Hammer 360b; Hammer & Sauer 473/87; Hammer & Liede 537, 550; Hammer, Brack & Athy 1383; Hammer & Opel 2524.

*A. schuldtianus* subsp. *juttae*

Giess & Muller 11909 and 12060 (WIND); CR 1374?

*A. sphenophyllus*

Bolus 821a (BOL); Esterhuysen 21196 (PRE); Paterson 2205 (BOL, GRA); UCBG 50.1694 (ex Brown, no number) (UC); UCBG 50.1694, 53.335 (SUG 6935), 53.335-3, 54.1071, 54.1071-1, 58.1032 (Stayner 114) (UC) – as *A. rhombifolius*; UCBG 52.1729, 53.1105 (Kirstenbosch 491.53) (UC) – as *A. marginatus*; UCBG 58.1030 (Stayner 112) (UC) – as *A. undulatus*; DT 141, 3694, 4786, 4818, 4849?

*A. subdistichus*

Prince Albert, hill just south of town; Klaarstroom, 1,100m, Bruyns 4045 (BOL); Roy Littlewood 101/62, 7m east of Vondeling, (1962), (DT 3755) (Makin 2145), (NBG); Georgida, Bayer 3366 (NBG); Nuwekloof Pass, EvJ 7074 (NBG); EvJ 7761; DT 134, 3658, 3693, 4881, 5021 (ex Peter Bruyns).

*A. subviridis*

CR 1179, 1396, 1407; DT 5582, 6362, 6379.

*A. triflorus*

Barker 5074 (NBG); Esterhuysen 24255a (BOL); Liebenberg 6159 (PRE); UCBG 50.286, 50.2066, 51.800, 54.451 (Pienaar 41), 54.476 (ex Pienaar, no number), 61.308 (Hall 2179) (UC); UCBG 50.2055, 50.2082, 51.581, 56.300 (Liebenberg 6154), 63.375 (Rauh 3455) (UC) – as *A. procurvus*; UCBG 51.787, 60.1251 (SUG 30172) (UC) – as *A. subpetiolatus;* CR 1180; DT 111?, 117, 153, 3686?, 3689, 3697, 4475, 4931, 4955?, 4968, 4983, 5592, 5713, 5744.

*A. trigynus*

Bolus 187 (GRA); Leipoldt D. 4453 (PRE); Potts 2069 (GRA); UCBG 51.580 (SUG 5204), 54.005 (Liebenberg 5955), 54.45 (ex Human, no number) (UC); UCBG 50.2113, 53.1301 (Liebenberg 5929), 55.228 (ex Hall, no number) (UC) – as *A. rupicola*; CR 1283, 1288; DT 3803 (ex A.R. Mitchell), 4352 & 4353 (ex Philip Downs), 4447 (SH 473/87), 5681 (ex Kobus Venter), 5799, 5810, 5861 & 5862 (ex Jossie Brandt), 6121, 6125.

*A. umbraticola* subsp. *umbraticola*

Galpin 6109 (PRE); Nation 333 (BOL); Thode A420 (PRE); UCBG 51.586 (ex Dinham, no number), 53.1234 (Liebenberg 5923), 53.1237 (Liebenberg 5926), 56.1266 (SUG 30227), 60.1221 (SUG 5920) (UC); UCBG 53.968 (Liebenberg 5193), 53.968-4, 53.1159 (Liebenberg 5938), 58.392 (SUG 30241) (UC) – as *A. saxicola*; UCBG 50.2074, 55.780 (Liebenberg 6077) (UC) – as *A. umbraticola* var. *galbinus;* DT 4351 (ex Philip Downs), 4751, 5814, 5819.

*A. umbraticola* subsp. *ramosus*

UCBG 55.780, with the undescribed name *A. umbraticola* var. *galbinus;* DMC 1771; DT 5844 (EvJ 11239).

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| *Adromischus* folio, Herbarium, Kew | | |

John Pilbeam made a first attempt at a book on Adromischus over 20 years ago, but was dissuaded from proceeding with it by Helmut Tölken who was about to produce his revision of the genus in his major work on the Crassulaceae.

In 1997, inspired by Chris Rodgerson's and Derek Tribble's several forays into Adromischus habitat and their deep interest in the genus, John Pilbeam updated his original manuscript and sent it to Chris as a proposed basis for this book. Equally inspired, Chris contributed much field knowledge gained and the draft began to look like a harmonic whole. Derek came on to the stage at this point to contribute the chapter on geography, many of the photographs, and valuable additional textual material.

After months of adjustment in trying to reconcile three points of view into one (not an easy task) the final product is in your hands. We hope that you find all our efforts worthwhile.