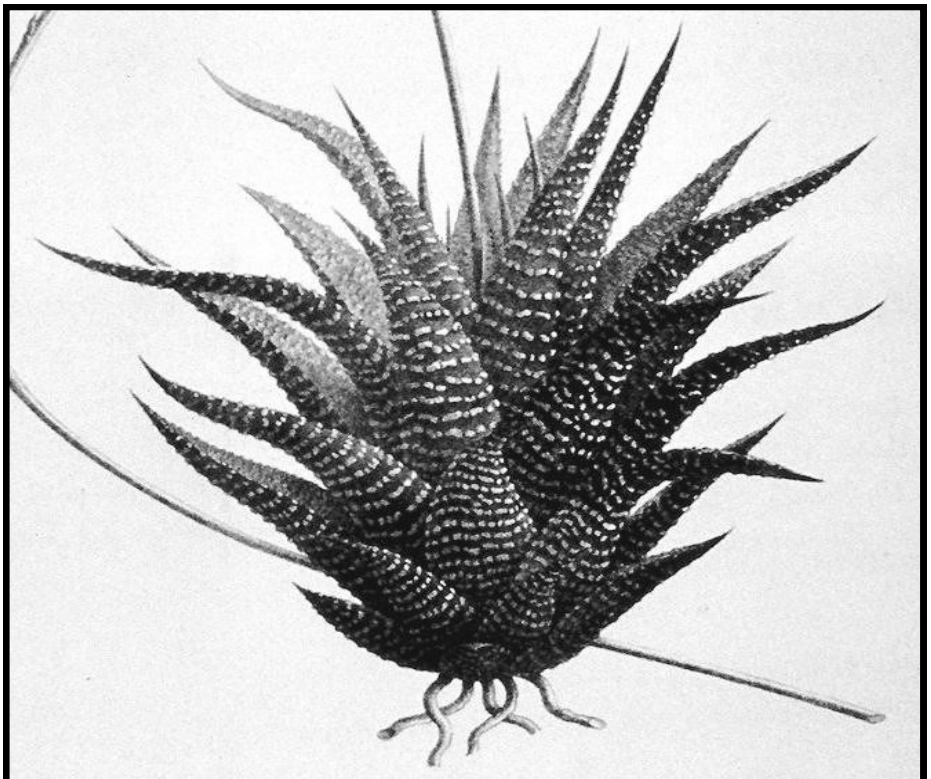
# ALSTERWORTHIA INTERNATIONAL

**The**

## SUCCULENT ASPHODELACEAE

## journal



**Monogr. Gen. Al. 1 :Aloe t.11 Aloe clariperla Salm-Dyck 1836**

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**A L S T E R W O R T H I A  I N T E R N A T I O N A L**
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Articles on any subjects relative to the genera of the Asphodelaceae (please see *From the Editor* page 3) are always welcome.

Articles should, preferably, be submitted as files attached to e-mail or on disc (floppy, Zip 100 or CD). If you send colour photographs as attached files, please despatch them on a Friday or a Saturday so that they arrive on a Saturday or Sunday, as down load time is less expensive at weekends. In some instances down load time can be half an hour or more. For best results, however, it is better to send slides or colour prints by post as they can then be scanned at a higher resolution or send high resolution scans on disc.

Please ensure that photographs are correctly exposed, in focus and that the subject fills the frame. Whilst it is possible to edit out some imperfections, it is time consuming and expensive to do so.

Articles may also be submitted in typed or printed form, but please ensure that a large font size is used (at least 11) as scanners do not cope well with small fonts.

If you do not have access to a printer or typewriter, *clear*, hand-written articles/notes are acceptable.
Some subscribers, for whom English is not their first language, may feel reluctant to submit articles in what they conceive to be imperfect English. Please, please, please do not let this discourage you. You will have interesting information to impart just as do those subscribers for whom English is their first language. Language difficulties should not be a barrier to your articles being published. English will be revised as necessary during the editing process. The edited article will be sent to you for approval before it is printed.

If you still feel reluctant to produce an articles in what you consider to be imperfect English, the alternative is to send notes, and photographs if appropriate. These will be used to prepare an article, which will be sent for your approval before it is printed.

The heart of a journal is its authors and the life giving blood is the flow of articles. I hope that this young journal will have a vigorous heart and a strong flow of articles.

At this point, I should like to express my sincere gratitude for the support authors and subscribers have given in a relatively short period of time to *Alsterworthia International*. They have made it possible.

**The views expressed by contributors to *Alsterworthia International* are their own and do not necessarily agree with those of the editor.**

## CONTENTS

# From the editor

A distinctive name was required for this journal, one which would avoid confusion with any other. Out of a number suggested, *Alsterworthia International* was selected. The title is made up of parts of the names of three genera, Aloe-gaSTERia-haWORTHIA, and reflects the international nature of the journal.

*Alsterworthia International* will be devoted to the succulent Asphodelaceae as defined by RMT Dahlgren, HT Clifford and PF Yeo in *The Monoctyledons: Structure, Evolution and Taxonomy*, 1985. This classification includes two widely recognised families, Aloaceae Batsch and Asphodelaceae Juss, as the subfamilies Alooideae and Asphodeloideae respectively.

The main genera to be featured in *Alsterworthia International* will be *Haworthia, Aloe, Astroloba, Gasteria, Bulbine* (the highly succulent forms reminiscent of *Haworthia* and the "caudiciform" types), Lomatophyllum, Chamaealoe, Poelnitzia (which some authorities include in the first two genera) and their hybrids and cultivars. The Asphodelaceae family comprises ca. 17 genera so authors are free to search out additional succulent plants for articles!

Policy will be to promote the dissemination of information and views on any subject relative to the genera concerned. This will be done by publishing *Alsterworthia International* every four months and by making appropriate books and, with the permission of the authors and publishers, reprints of important papers, which are not readily accessible, available to subscribers.

Each issue of *Alsterworthia International* should have a minimum of 16 A4 pages (one A4 is equal to two A5).

From time to time, it is hoped to arrange packages which will save subscribers some money. Present circumstances make it appropriate to acknowledge and commemorate the first specialist society. Therefore, for those subscribing to *Alsterworthia International* for 2001, the subscription will be reduced by £4.00 when a copy of the *Succulent Liliaceae League of America and the Haworthia Review* is ordered with payment of the subscription.
The *Succulent Liliaceae League* was formed in the USA in 1946, at a time when there were no books available for the genera, in order to make more serious information available for the genus *Haworthia* and related genera.

The *Succulent Liliaceae League of America and the Haworthia Review* has 98 A4 pages. The *Haworthia Review* was produced by cutting a stencil and duplicating the issues. Desk top computers did not exist in those days. However, the reprint has been computer produced on gloss paper, consequently the quality is an improvement on the original. The contents are the same except that a few additional papers not actually circulated and an index have been included.

Both Jay W. Dodson and Paul Hutchison played major rolls in the League. Paul Hutchinson was editor for a short time, and Jay Dodson for the remainder. Jay Dodson will also be remembered for the major role he played in forming and operating the ISI (*International Succulent Institute* now *International Succulent Introductions)*
To take advantage of this offer, order a copy of the *Succulent Liliaceae League of America and the Haworthia Review* when you subscribe to *Alsterworthia International* for 2001, deduct £4.00 from your journal subscription and enclose payment for both. Please see page 16. The Succulent Liliaceae League of America and the Haworthia Review will be sent with the first issue of *Alsterworthia international.*

# Stroke your plants!

In the USA, experiments have been carried out in a hay field to ascertain if plants could benefit from being visited and stroked. A comparison of visited and stroked plants with plants in a control, which were not visited and not stroked, indicated that visitation and stroking had no beneficial effects on some plant, but did have on others.

As succulents, including cacti, did not grow in the meadow, the experiment is not of any importance for the succulents we grow, though it is by no means uncommon for the results of research on one group of plants to be applied to another, not always with justification.

Some two decades ago, talking to plants was perceived as beneficial to growth and this notion even caught on with some succulent collectors. Some may now be tempted to stroke their plants, particularly the soft leaved ones, but do not let the spinier ones put you off. The creeping thistle was stroked, but with no beneficial results.

Regular visitation and inspection to maximise watering, temperature and ventilation and curtail pathogens and predators might be more beneficial to the growth of your succulents and, if only to vent your feelings, you can curse the predators!
But do not be too dismissive. Stroking a plant may stimulate it to produce chemicals which inhibit predators!

# Reflections on the relief of stress

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Frequently I have to consider how important one particular aspect of cultivation is, particularly when there is a need to establish plants in a collection quickly. A newly acquired plant, desirable and long awaited, is in my hands, but what then? Sometimes stress is imposed on plants (and on the collector too) by delayed delivery of mail orders. This occurrence is particularly tricky when the plants are smaller than one has hoped for, or sometimes when they have lost their roots during the trip in the unnatural environment provided by a cardboard box, without soil, light, free air circulation and with sudden changes in temperature. Similar stress occurs when a plant has fed a multitude of parasites with an insatiable appetite for its juiciest parts.

The first weeks of recovery are critical. The plant has to contend with a new environment, which is your choice, not the plant's, and also a different watering regime, a new growing medium and a considerably modified climate. To an already deprived plant, this all adds up to stress. So when taking possession of new material, we ought to stop for a while and first assess the situation. Basically, a stressed plant is a living creature that has spent most of its resources and energy to face adverse conditions, so that little is left to establish it. It needs help.

Our plant requires a suitable environment in which to recover and grow. The first factor to consider is air, and we need to provide plenty of moving and preferably dry air to assist the exposed parts to stay dry and resistant to pathogens. A simple domestic oscillating fan ensures continuous air circulation. A shaded or semi-shaded spot is to be preferred, which does not mean darkness. Light is essential, and haworthias usually enjoy stronger light than we might expect, since they come from a country where the solar radiation is much more intense than that we have in north and central Europe. We must also take care to avoid water dripping (condensation or rain) from the roof or benches, and keep the recovery area as hygienic and clean as possible, which means no dirt, no dead leaves or roots etc. Bearing in mind that our first aim is to help the plant to produce a new and efficient root system, we must choose the right medium. Over the years I have experimented with many different materials for this purpose, but under my conditions nothings has produced better results than pure pumice. I am aware that this volcanic material is not readily available everywhere, and is sometimes quite expensive. Nonetheless, I recommend keeping a small reserve of it. Other have obtained very good results with pure peat, but it has the disadvantage of being difficult to wet once it dries out, which means constant attention and frequent spraying. As containers, I use polystyrene trays that come gratis from supermarket products, and can be readily discarded after use. It is good practice to sterilise both the medium and the container with boiling water, then allow them to cool for some time.

The plant we wish to establish must be prepared in advance by discarding all dead and damaged parts (leaves, roots, offsets). If necessary, that's when I suspect the presence of pests or eggs of parasites. I clean the plant with hose and soft brush. Once everything is ready, the plant is placed right on the top of the recovery medium, pumice or whatever you elect to use. This must always be moist, not soggy. It requires periodical inspection and spraying with warm water. The addition of a systemic fungicide is optional. This will at least destroy any fungi that the plant may come in contact with via the soil, water or air.

What happens then, nobody can say. The end results are a matter of patience and luck. I always observe how plants perform, and comparing what I have read with what I see, hoping to learn something more. In some respect the performance of many plants under recovery treatment justify the oft-repeated old saw that most of them should not be cared for too much. Some plants die even though placed in perfect conditions, while others thrive when horribly mistreated.

If these musings tell you anything, it should be that your plants will surprise you by doing the unexpected.

## *Haworthia* 'Moori Nosono'

*Haworthia* 'Moori Nosono' is shown in Fig. 27. Page 9.

The leaves are pale green with dull white variegation, subdued reticulation and windowed ends. They are highly succulent, but the upper surface is flat to very slightly convex. On the edges and upper keel are small spines, which are dull white, but (reflect) somewhat greenish white when they emerge from green, not variegated, tissue. Each leaf has a much longer, incurving, somewhat flexible, light brown, terminal spine. The variegation generally forms broad, but sometimes narrow, stripes on both the upper and lower faces

*(Continued on page 5)*

# Toxic Soils

A. Bulworth

Soils are known to be variable. They contain elements essential for plant development, but they may also contain elements which are toxic to plant life. Toxic elements interfere with biochemical pathways, which can result in modification of the plant or death. Plant life on such soils is limited to that which can deal with toxicity in one way or another. The toxicity may be neutralised, it may be isolated and accumulated or it may be "utilised". Hyperaccumulators have the potential for phytomining, crop growing on toxic soils for the harvesting of valuable elements. Plants which succeed in growing on toxic soils may be tolerant of them or have a dependency on them. The former may grow in your usual compost, but the latter will require a special formula.

Essential soil elements include carbon, sulphur, potassium, magnesium, calcium (macronutrients), molybdenum, cobalt, manganese and boron (micronutrients). An element in minute quantities may be an essential trace element, but in larger quantities it may be toxic, as the excess may interfere with biochemical processes. Although an element may be available in an adequate quantity, the plant's utilisation of it may be inhibited by the excess presence of another.

In South Africa both gabbroic intrusions and serpentines contain toxic quantities of certain elements. Gabbro is a course-grained, basic, igneous rock rich in elements known as heavy metals (copper, nickel etc). High concentrations are toxic to plants. Serpentine is a metamorphosed (changed by heat and/or pressure) basic igneous rock and these too have high concentrations of toxic metals.

In an article "Toxic Soils and Aloe Colours" in Veld & Flora March 2000, Elize Cloete and Emile Plumstead drew attention to the variability of *Aloe ferox* with particular reference to the flowers. In the majority of populations, over an extensive range, the flower colour is golden-orange to bright scarlet with orange-red being the most common, but north of Grahamstown populations of *Aloe ferox* display a predominance of pale colours. These pale flowered populations are growing on soils associated with gabbroic intrusions, which are known to be rich in nickel, copper etc. High concentrations are toxic to plants and have various effects on them. In this area the observable effects on *A. ferox* are lighter flower colours. There is no visible evidence that the plants are affected in any other way. Does the toxic soil cause this interesting variation in flower colour?

They point out that much research remains to be done as it is not known, for example, whether colour changes are permanent, whether genes for paler colours have spread from the gabbroic intrusions, whether there are discrete flower colours, whether gabbroic intrusions are the epicentre of non-red flowers and how many genes code for flower colour.

Gael J. Campbell-Young and Kevin Balkwill in the same issue of Veld & Flora have an article on "Serpentines of the Barberton Greenstone Belt" in South Africa. They report that there are approximately 620 serpentine-tolerant taxa of 298 genera in seventyfour plant families. In the Liliaceae they record only one taxon, *Aloe thorncroftii,* south west of Barberton. In "Guide to the Aloes of South Africa", *A. thorncroftii* is said to be "more difficult to cultivate than the closely related *A. suprafoliata* and is not often encountered in collections". Perhaps the adaptation of *A. thorncroftii* to serpentine necessitates a specific soil type in cultivation? If any reader has been successful in growing this taxon, perhaps he/she could describe the compost used and indicate for how long the plant flourished.

As *Aloe suprafoliata* does not grow on serpentine and is tolerant of low temperatures and atmospheric moisture (at least with free air movement), it should not give any difficulties in cultivation under normal succulent cultivation conditions.

Fig. 27 Page 9 Flowers of *A. ferox* north of Grahamstown.

*(Continued from page 4)*

of the leaf as well as on the edges, though the occurrence on the edges is at a greater frequency than elsewhere.

The plant has all the features of an *Haworthia cymbiformis,* but whether the variegation has occurred spontaneously or whether it has been introduced by hybridisation, with back crossing to the species to eliminate all but the non-variegated features of the pollen donor, is not known.

The variegation is certainly different from that found on other variegated *cymbiformis,* such as ISI 94-28 (Fig. 25, page 9), which has very plump, rounded leaves with more variable variegation, creamy white in colour with a touch of pink in strong light.

ISI 94-28 is recorded as a Hummel selection without further details, but all attempts to establish the origin and published description of *H.* 'Moori Nosono' have failed. Though the cultivar name is Japanese sounding, contacts in Japan confirm it is not a Japanese name. *H.* 'Moori Nosono' is occasionally available in the UK, but it may have originated in the USA. If you have any information which would reveal the source of the plant or its published description please do let the editor know.

# Variability within and between species. Part 1.

The meaning of morphological features for further taxonomic studies

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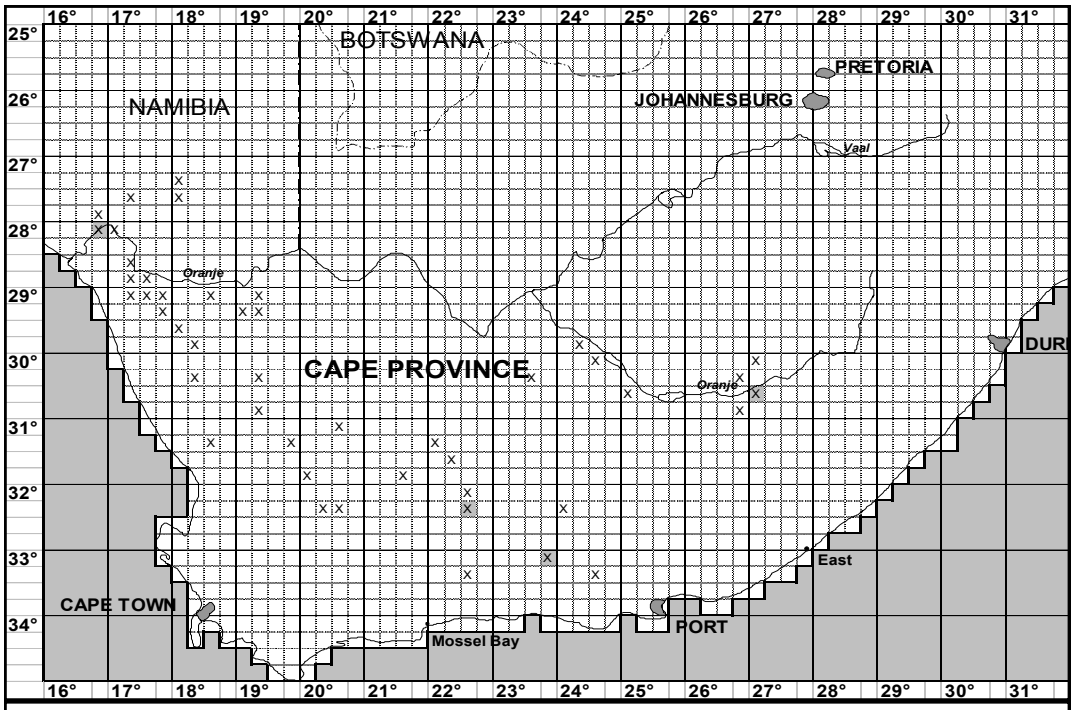
**Introduction.**

Structure and forms are the result of the everlasting developmental processes in nature.Within *Haworthia* the features with the highest degree of variability are the shape of leaves and the structure of leaf surfaces. Several examples will be shown to demonstrate variability.




Map 1. Distribution of *Haworthia venosa* ssp. *tessellata.* Locations of specimens illustrated are highlighted in grey.

The variability of habit, the nature of proliferation and the shape of roots are relatively small in relation to the variability of leaves. *H. viscosa* is an example, showing the different arrangement of leave within a species. Rather little explored, and therefore not finally discussed, is the range in variation of the inflorescences, flowers, seed capsules and seeds. The first comparisons which have been made let us speculate that there will be many more types of flowers than the 3 recognised ones, which are used for division of the taxa into 3 subgenera. Examples of *H. nortieri* var. *globosiflora* and *H. pehlemannii* show extreme divergence in the structure of flowers and leaves.

**A. Distribution area and the variability of species.**

Examples of two "extreme" cases of distribution area and variability of morphological characters within a taxa are shown here.

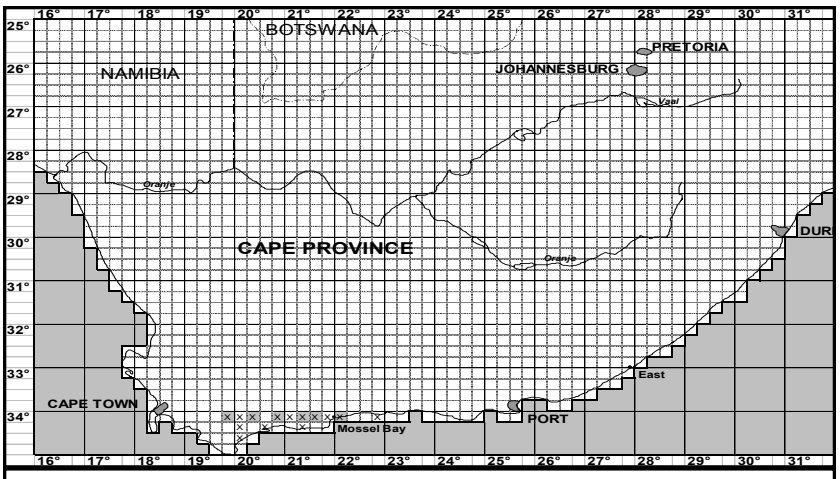
**A.1** ***H. venosa ssp. tessellata***

Specimens in my collection with known records match the 27 grid squares marked x in Map 1. Four plants from populations with great distances between them are shown in Figs 1-4 page 8. In relation to the large distribution area, this species shows a rather moderate variability.

**A.2** *H. turgida*

The known locations of specimen in my collection are shown in Map 2 in 4 adjacent grid squares. The localities of the 6 specimen in figs 5-10 page 8 are highlighted in grey. In relation to the rather limited distribution area, this species shows a great range of variation, but is also integrated by intermediate forms with several other taxa. A possible explanation for this can be found in Hayashi (1999). This means, that some of the intermediate forms of *H. turgida* will develop into separate species by the time they have evolved into a "settled" state.

**B. Variation in leaves**




Map 2. Distribution of *Haworthia turgida.* Locations of illustrated specimens are highlighted in grey.

**B.1 *H. arachnoidea***

All structures of the leaf surface and the margins originate from the outer cells of the epidermis. These seem to be the most variable features within a taxon and between taxa. *H. arachnoidea* is an example with a high variability of these features. There are forms with leaves bearing very strong and stiff, spine-like bristles (*H. arachnoidea* var. *scabrispina* [*gigas*]) on their margins and keels, and forms with softer bristles (*H. arachnoidea* var. *setata*), as well as with weaker hairs (*H. arachnoidea* var. *aranea*). These variable features are spread over several taxonomic units within *H. arachnoidea.*

On the basis of Bayer's 1999 concept, one can also add forms with glabrous leaves (*H. arachnoidea* var. *nigricans* [*venteri]*). Figures 11-14 page 8 illustrate variability in var. *scabrispina* [IB5533], and var. *arachnoidea* [IB5115, 5118, 5117].

**B.2 *H. cooperi***

Examples of glabrous and completely pubescent leaf surfaces are to be found in *H. pubescens* and *H. cooperi. H. cooperi* var. *livida* is glabrous [Fig 15] and, in contrast, *H. cooperi* var. *venusta* is pubescent [Fig 16]. The latter is shown here, because it is very impressive! Forms of *H. cooperi* with glabrous leaf surfaces and toothed margins and keels can be found, but no toothed intermediates are known between the pubescent forms and the glabrous ones. *H. pubescens* and *H. cooperi* var. *venusta*, are the only two pubescent taxa known so far.

**B.3 *H. herbacea***

Another example of a structure of the leaf surface with a great range of gradation is found in *H. herbacea* and *H. reticulata*. Here we find not a pubescent, but a setose leaf surface. As you can see from the sequence of the 6 pictures (Figs 17 - 22 pages 9), it starts with a very heavily bristled form, where the bristles originate from swollen ± translucent spots and ends with a form bearing flat translucent flecks on the surface. This example shows also a clear transition from *H. herbacea* to *H. reticulata,* which are nevertheless upheld as two species. The occurrence of pellucid flecks maybe the starting point of the development of translucent end-areas. In *H. reticulata, H. maculata*, *H. globosiflora* and other taxa with pellucid flecks, there is still a tessellate-like structure of clearly visible veins remaining between the flecks. One can imagine how the development of the feature of translucent end-areas could have started by the bases of the flecks connecting. But for now this is only speculation and has to be examined more carefully.

**B.4 H. pygmaea**

This species is one of several examples of taxa with translucent end-areas. These end-areas can be completely smooth and sometimes also glossy, with changes to very rough forms bearing ± long papillae. In *H. pygmaea* there are several intermediate forms, not only in the structure of the surface, but also in the shape of the end-area, which can be very acuminate to rounded. Figs. 23 & 24 page 9 are two examples

# Pests and diseases - insecticides and fungicides

Few who have been growing succulents for any period of time will not have had plants attacked by fungus and/ or pests. Mealy bug attacks are by no means uncommon. Scale insects and mites disfigure and weaken plants. Weavils and their grubs can do extensive damage. Aphids and white fly attack soft tissue. Fungi can invade plants which are not grown hard through soft tissue and open stomata and cause rot and there are many more pathogens with which succulent plants have to contend. But if plants are correctly grown and hygienic conditions maintained, fungal and insect attacks can be much rarer. Nevertheless they do occur and fungicides and insecticides are commonly used to defeat them.

Because active ingredients in chemicals can adversely affect humans as well as the pests they are designed to kill, countries have legislation in force to restrict the sale of insecticides and fungicides on health grounds. The restrictions vary from country to country, but there are movements in train to standardise the availability of "safe" remedies. For example, the European Union has stepped up its policy of harmonising the availability of plant protection chemicals in EU countries. They are drawing up a list of approved chemicals which individual governments are free to adopt or reject as they wish, but no country will be allowed to have an unapproved chemical on sale. Before a product is approved it has to undergo an extensive and costly review, for which the manufacturer has to bear the cost.

The cost is reported to be around £120,000 per product with no guarantee that approval will be given. Because the horticultural market is relatively small compared with the agricultural, manufacturers are not submitting some currently available "home-use" products for testing , with the result that these products will have disappear from sale by 2004. It is widely expected that the control of such common pests as scale insects and mealy bugs will become increasingly difficult to control as a result.

The agricultural market is vast compared with the horticultural, so the expense of the review is not a burden of the same magnitude and as chemicals can be used in agriculture only by trained operatives wearing fully protective closing as necessary, the danger to

*(Continued on page 14)*

Fig. 1. *Haworthia venosa* ssp. *tesselata* IB5152.
5 km S. of Ochta, RV. [2816BB]

Fig. 2. *Haworthia venosa* ssp. *tesselata* IB 422.
Lady Grey [3027 CA]

Fig. 3. *Haworthia venosa* ssp. *tesselata* IB5456.
Molteno Pass, N. of Beaufort West [3222BC]

Fig. 4. *Haworthia venosa* ssp. *tesselata* IB6125.
N. of Fullerton, 40 km NE of Willowmore[3323BB]

Fig. 5. *Haworthia turgida* IB4521.
IRiversonderend, SE of McGregor [3419BB]

Fig. 6. *Haworthia turgida* IB4215.
N2 bridge across Breede River [3420AB]

Fig. 7. *Haworthia turgida.* IB53.
Brakfontein, SW of Heidelberg [3420BB]

Fig. 8. *Haworthia turgida.* IB4853.
Valschrivier, NE of Albertinia [3421AB]

Fig. 9. *Haworthia turgida* IB176
NW of Albertina [3421 BA]

Fig. 10. *Haworthia turgida.* IB 172.
Brandwag, NE of Mossel Bay [3422AA]

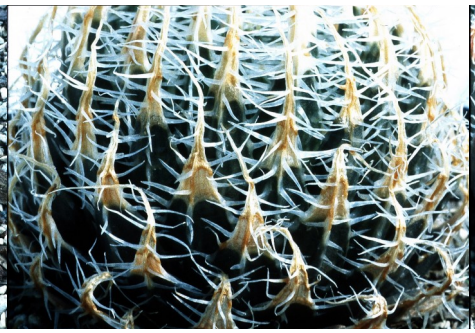


Fig 11. *Haworthia arachnoidea* IB5533
40 km E. of Laingsburg

Fig. 12. *Haworthia arachnoidea* IB5112
Matjiesfontein [3320BA]

Fig. 13. *Haworthia arachnoidea.* IB5118.
Oude Muragie, W. of de Rust [3322AD]

Fig. 14. *Haworthia arachnoidea* IB5117.
Ouberg, W. of Sutherland [3220AD]

Fig. 15. *Haworthia cooperi* v. *livida.* IB6144.
Tablefarm, NW. of Grahamstown [3326AD]

Fig. 16. *Haworthia cooperi* v. *venusta* IB6130.
Kenton on Sea [3326DA]

Fig. 17. *Haworthia herbacea* IB4515
SE. of Worcester [3319DC]

Fig. 18. *Haworthia herbacea.* IB4517
Between Worcester and Robertson [3319DA]

Fig.19. *Haworthia herbacea.* IB6157
Brandvlei Dam outside Worcester [3319CB]

Fig. 20. *Haworthia reticulata.* IB5471.
Buitenstekloof [3319DB]

Fig. 21 *Haworthia reticulata.* IB3280
Walfkloof [3319DC]

Fig. 22. *Haworthia reticulata.* IB5717.
Terras. E. of Worcester [3319DA]

Fig. 23. Haworthia pygmaea. IB6171.
Great Brak [3422AA]

Fig. 24. *Haworthia pygmaea.* IB4523.
NW of Klein Brak [422AA]

Fig. 25. Haworthia cymbiformis variegated.
ISI 94-28

Fig. 26. Haworthia 'Hakuteijoh'.

Fig. 27. Haworthia 'Moori Nusono'

Aloe ferox
Fig 28. Flowers with different colours at two locations north of Grahamstown

# A framework for Haworthia

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## 1. Introduction

Since 1990, I have written a number of articles on *Haworthia* and readers may, with right, ask which classification I follow. In order to address this question and to give clarity on the framework within which future articles will be written, I have decided (rather I am obliged) to publish my views and the framework within which I operate

In her book *Succulent flora of Southern Africa,* Doreen Court wrote "The name *Haworthia* was first used in 1809 by Henri Auguste Duval in honour of the English botanist, Adrian Hardy Haworth. It is certain that Duval could have had any idea that he had named a problematical genus, which was to lead to a mass of largely inaccurate literature, the sifting of which still proceeds today".

Indeed, the sifting is still underway and as long as there is no shared mind-set on fundamental questions such as what constitutes a *Haworthia* species, sections and sub-genus, the debate will continue. Once a shared mind-set has been reached on critical questions, a significant contribution to the modern day study of the genus will have been made

This framework is an integrated approach based on that of Scott, Bayer and Pilbeam and years of field work.

Characteristics of the framework are:

Bayer's division of the genus into three subgenera according to floral character. The sections and characteristics are largely based on Scott's interpretation. Pilbeam's approach of putting sections under subgenera is used to do justice to the system. Some of the species put under the different sections differs from those of Scott and Pilbeam

It addresses Court's concern that closely related, geographically aligned plants often find themselves in separate sections. Sections are based on logical groupings of different species. Species in the different sections are arrange according to their distribution - from east to west.

Relationship should first be sought within the different sections. Consistency has formed part of the basis on which the framework is based

## 2. Definition of a species



The definitions used by Scott, Bayer and Van Jaarsveld were examined and eventually the author worked according to the following definitions.

**Radford (1986).** "A species as a biologic, genetic and evolutionary product of speciation can be considered a basic, discrete biological unit with a distinctive set of correlated characters that are fixed for a moment in evolutionary time".

**Clive A. Stace. 1980**. "There have been many attempts to define a species, none totally successful. This difficulty has led to the cynical definition of a species as a group of individuals sufficiently distinct from other groups to be considered by taxonomists to merit specific rank. The crux of the question does of course, lie in the term 'sufficiently distinct', since, from what has been said above, there is no magic formula to decide the issue. Most taxonomists use one or more of four main criteria

- The individuals should bear a close resemblance to one another such that they are always readily recognisable as members of that group.

- There are gaps between the spectra of variation exhibited by related species; if there are no such gaps then there is a case for amalgamating the taxa as a single species.

- Each species occupies a definable geographical area (wide or narrow) and is demonstrably suited to the environmental conditions, which it encounters.

- In sexual taxa, the individuals should be capable of interbreeding with little or no loss of fertility and there should be some reduction in the level or success (measured in terms of hybrid fertility) of crossing with other species."

**Bayer's view on varieties and subspecies**.

Normally a plant species can and should be considered to consist of several groups (populations) growing at different sites (localities). If one of these groups is considered to be sufficiently different from the others, then it may earn recognition as a variety. If several groups are different in this way, then they may be referred to as subspecies.

# 3 Genus, Subgenus, Section and Subsection concept

### The Genus Haworthia

Plants small succulent perennials, often suckering and forming small or large clusters. Stems erect or creeping. Leaves imbricate, spirally arranged or multifarious, or forming basal rosettes, succulent or leathery, variously shaped, deltoid-acuminate or linear, flat or canaliculate; apex acute or truncate; bases clasping, margin toothed, smooth, denticulate or ciliate; surface smooth, striate, tessellate or verrucose, very rarely pubescent. Flowers unscented, small ascending, in apparently axillary, simple or panicled racemes, occasionally with accessory branchlets or buds in the axils. Peduncle smooth, naked or with a few sterile bracts; floral bracts small; pedicels short ascending. Perianth bilabiate, tube straight or curved, oblong cylindrical; base obtuse, segments sub-equal, 6, fused below, contiguous above; limb short, rarely regular, with marked keels, deciduous; stamens 6, shorter than the perianth, hypogynous, included; filaments filiform; anthers small, versatile, interorse. Ovary sessile, oblong, trisulcate, with numerous axile ovules; style subulate; stigma apical, small. Capsule oblong to obtuse in outline or avoid to acuminate, woody or chartaceous, loculicidally 3 valved; seeds small, with the angles sharply winged. Type ***H. arachnoidea*** (L. Duval)

### Subgenus Haworthia

Perianth at base triangular or rounded-triangular, the tube obclavate; perianth bilabiate; type ***H arachnoidea***

**Section: Loratae (Salm Dyck) Berger** (Strap-shaped) Leaves spirally arranged in a stemless rosette, narrow, triangular-subulate or ovate-lanceolate, not truncate above, mucronate, rather firm, erect, margins glabrous, often armed with minute teeth. Type species *H chloracantha* Haw.

**Section: Retusae Haw** (Bent back) Upper leaf inflated to form more or less distinct end-area, tip somewhat transparent with green lines.

**Subsection: Retusae** Leaves spirally arranged in a stemless rosette, rather firm, erect, mostly with minute teeth on the margins, more rarely smooth, truncate-recurved above, the terminal areas thus produced being somewhat transparent, with few or several green stripes, glabrous, tuberculate or rarely with minute teeth.Type species *H. retusa* (L.) Duval

**Subsection: Muticae** Berger (Variable) Leaves spirally arranged in a stemless rosette. Upper surface flat towards the base, somewhat inflated towards the apex and thus appearing recurved, equally coloured or lighter towards the apex, or half-transparent, margins glabrous or with minute, often with a very short terminal bristle, more rarely without. Type species ***H reticulata*** Haw.

**Section: Limpidae Berger** . (Transparent) Leaves in a stemless rosette, spirally arranged, lower portion green upper part sharply defined, wholly transparent with a few green, longitudinal stripes in the lighter parts. Type species *H cooperi* Barker.

**Section: Haworthia** Leaves uniformly covered, gradually becoming nearly transparent towards the apex, narrow, often with a short terminal bristle, margins and keel with small bristles and teeth, not truncate – recurved towards the tip. Type species *H arachnoidea* (L.) Duval

**Section: Fusiformis Barker** (Spindle-shaped) Roots thick fusiform: stem short, leaves linear, acute erect or spreading from a broad base, firm, glabrous, green, margins with minute, horny teeth. Type species *H blackurniae* (Baker)

**Section: Fenestratae v. Poell**. (Ending abruptly)Leaves distichous or spirally arranged, erect, ovate-triangular or ovate – elongate, horizontally truncate above, the truncate portion transparent, covered with numerous, tiny, transparent tubercles. Type species *H truncata* (Schonland)

### Subgenus Hexangulares Uitew.

Perianth at base hexangular or rounded-hexangular, gradually narrowing to junction with pedicel, the tube curved; type ***H coarctata***

**Section: Coarctatae Berger.** (Compressed) Incurving, compressed leaves and columnar stems; or recurving, attenuate leaves, more or less acaulescent.

**Subsection: Coarctatae**. Stem elongated, densely spirally leafy; leaves erect, mostly somewhat curved inwards, smooth or tuberculate on both sides or only on the upper surface. Type species *H reinwardtii* (Salm-Dyck) Haw.

**Subsection: Attenuatae**.Leaves recurving attenuate, rosettes usually acaulescent, mature rosettes sometimes short-stemmed Type species *H attenuata.*

**Section:** Limifoliae G.G. Smith (Callose leaves)Plant stoloniferous, forming offsets; leaves in a stemless rosette,spirally arranged, ovate -lanceolate tapering, uniformly coloured, set with transverse or longitudinal, confluent or solitary, similarly coloured or lighter tubercles.Type species *H limifolia* Marloth

**Section: Tessellatae** (Salm- Dyck) Berger (With network). Plants forming clumps, buried in the ground except the upper surface of the leaves; leaves spirally arranged in a stemless rosette, fleshy, firm, triangular or lanceolate-triangular, spreading, recurved often somewhat erect during the resting period, upper surface somewhat transparent and with longitudinal lines, mostly less perceptible in the native country than in cultivated plants Type species *H. venosa* (Lam.) haw.

**Section: Trifariae Haw** (3-sided) Shoots elongated, forming stems; leaves in three somewhat twisted longitudinal series, thick, firm, fleshy, dark green, rough, covered with tubercles. Type species *H viscosa* (L.) Haw.

**Section: Scabrae** v. Poelln. (Rough) leaves spirally arranged, ovate-lanceolate or nearly triangular, long or short- tapering, firm, unicoloured, somewhat rough or minutely tuberculate, margins and keel without teeth. Type species *H scabra* Haw.

### Subgenus Robustipedunculares(Uitew.) Bayer

Perianth at base hexangular or rounded-hexangular, abruptly joined to pedicel, the tube straight, perianth regular; type *H maxima*

**Section: Margaritiferae** Haw (Pearl bearing) Stemless or very short stemmed; leaves spirally arranged, firm, nearly lanceolate or ovate triangular, tuberculate on both sides or only on the lower surface. Type species *H maxima.*

## 4 Classification of species according to Subgenus, Sections and Subsections

### Subgenus Haworthia

**Section: Loratae** (Salm Dyck) Berger (Strap-shaped)
*H. angustifolia Haw., H. zantneriana* v. Poelln., *H. monticola* Fourc., *H. helmiae* v. Poelln., *H. vlokii Bayer, H asema* (Bayer) Esterhuizen, *H. chloracantha* (Haw), *H. parksiana* V. Poelln., *H. floribunda* V. Poell.,. *H. variegata* Bolus, *H. modesta* (Bayer) Esterhuizen

**Section: Retusae** Haw (Bent back)
**Subsection: Retusae.** *H . springbokvlakensis* Scott, *H. correcta* v. Poelln, *H . picta* v. Poelln., *H. pygmaea* v. Poelln., *H.. paradoxa* V. Poelln, *H. asperula Haw., H. heidelbergensis* G.G. Smith, *H. serrata* Bayer , *H. multifolia* (Bayer) Esterhuizen, *H. mirabilis Haw., H. retusa* (L.) Duval, *H. mutica* ***Haw.,*** ***H*** *turgida* ***Haw.***
**Subsection: Muticae** Berger (Variable). *H. meiringii* (Bayer) Esterhuizen, *H. herbacea* (Mill.) Stearn, *H. maculata* (V. Poelln.) Bayer, *H. reticulata* ***Haw.,*** *H. pubescens* ***Bayer.***

**Section: Limpidae** Berger (Transparent). *H. cymbiformis* (Haw.) Duv., *H. cooperi* Bak., *H. pilifera Bak., H. gordoniana* V Poelln, *H. bolusii* Bak. *H semiviva* (V. Poelln.) Bayer, *H. gracilis* V. Poelln., *H. decipiens* V. Poelln.,, *H. habdomadis* V. Poelln., *H. mucronata* Haw., *H. rooibergensis* Esterhuizen &Battista, *H. lockwoodii* Arch.

**Section: Haworthia.** *H. xiphiopylla* Baker, *H. arachnoidea* (L.) Duval, *H. integra* V. Poelln, *H. pehlemanniae* Scott, *H. globosiflora.* Smith, *H. nortieri.* Smith, *H. pulchella* Bayer, *H. wittebergensis* W.F. Barker, *H. marumiana* Uitewaal, *H. archeri* W.F. Barker.
**Section: Fusiformis** Barker (Spindle-shaped). *H blackburniae* W.F. Barker
**Section: Fenestratae** v. Poell. (Ending abruptly). *H truncata* Schoenland *H maughanii* v. Poelln.

**Subgenus Hexangulares Uitew.**

**Section: Coarctatae** Berger (Compressed)
**Subsection: Coarctatae.** *H .reinwardtii* (Salm-Dyck)Haw., *H. coarctata* Haw., *H. glauca* Bak.
**Subsection: Attenuatae.** *H. attenuata* ***Haw.*** *H. faciata* (Willd) Haw., *H. longiana* v. Poelln.
**Section: Limifoliae** G.G. Smith (Callose leaves). *H. limifolia* Marloth, H. koelmaniorum Obermeyer & Hardy
**Section**: **Tessellatae** (Salm- Dyck) Berger (With network). *H. woolleyi* v. Poelln., *H tessellata Haw.,* H. granulata Marloth, *H. venosa* (Lam.)Haw.
**Section: Trifariae** Haw (3-sided). *H viscosa* (L.) Haw., *H. nigra* (Haw.) Bak.
**Section: Scabrae** v. Poelln. *H. bruynsii* Bayer *H sordida* Haw. *H scabra* Haw. *H starkiana* v. Poelln.

**Subgenus Robustipedunculares(Uitew.) Bayer**

*H. kingiana* v. Poelln., *H. minima* (Ait.) Haw., *H. marginata* (Lam.) Stearn, *H. maxima* (Haw) Duval.

## 5 Genus Haworthia: Detail classification of species and varieties

### Subgenus Haworthia

### Section: Loratae (Salm Dyck) Berger (Strap-shaped)

**1 H angustifolia**
1.1 H angustifolia var. angustifolia
1.2 H angustifolia var. altissima
1.3 H angustifolia var. baylissii
**2 H zantneriana**
**3 H monticola**
3.1 H monticola var. monticola.
3.2 H monticola var. bronkhorstii
**4 H helmiae** .
**4.1** H helmiae var. helmiae
4.2 H helmiae var. outeniquensis
**5 H vlokii**
**6 H asema**
**7 H chloracantha**
7.1 H chloracantha v. chloracantha.
7.2 H chloracantha var. subglauca
7.3 H chloracantha var. denticulifer
**8 H parksiana**
**9 H floribunda**
9.1 H floribunda var. floribunda
9.2 H floribunda var. dentata
9.3 H floribunda var. major
**10 H variegata**
10.1 H variegata var. variegata
10.2 H variegata var. hemicrypta
**11 H modesta**
11.1 H modesta var. modesta
11.2 H modesta var. petrophila

### Section: Retusae Haw (Bent back)

**1 H springbokvlakensis**
**2 H correcta**
**3 H picta**
3.1 H picta var. picta
3.2 H picta var. comptoniana
3.3 H picta var. furgusoniae
**4 H pygmaea**
4.1 H pygmaea var. pygmaea
4.2 H pygmaea var. argenteo-maculosa
**5 H paradoxa**
5.1 H paradoxa var. paradoxa
5.2 H paradoxa var. parisii
**6 H asperula**.
6.1 H asperula var. asperula
6.2 H asperula var. dekenahii
6.3 H asperula var. maraisii
6.4 H asperula var. splendens
6.5 H asperula var. major
**7 H heidelbergensis**
7.1 H heidelbergensis var. heidelbergensis
7.2 H heidelbergensis var. scabra
7.3 H heidelbergensis var. toonensis
**8 H serrata**
8.1 H serrata var. serrata
8.2 H serrata var. calcarea
9 H mirabilis
**9.1 H mirabilis var. mirabilis**
9.2 H mirabilis var. badia
9.3 H mirabilis var. beukmannii
9.4 H mirabilis var. minor
9.5 H mirabilis var. sublineata
**10 H multifolia**
1**1 H retusa**
11.1 H retusa var. retusa
11.2 H retusa var. nigra
11.3 H retusa var. geraldii
**12 H mutica**
**13 H turgida**
13.1 H turgida var. turgida
13.2 H turgida var. longibracteata
13.3 H turgida var. acuminata
13.4 H turgida var. suberecta
13.5 H turgida var. caespitosa
13.6 H turgida var. compacta

### Subsection: Muticae Berger (Variable)

**1 H meiringii**
1.1 H meiringii var. meiringii
1.2 H meiringii var. flavida
**2 H herbacea**
2.1 H herbacea var. herbacea
2.2 H herbacea var. lupula

**3 H intermedia**
3.1 H intermedia var. intermedia
3.2 H intermedia var. maculata
3.3 H intermedia var. notabilis
3.4 H intermedia var. livida

**4 H reticulata**
4.1 H reticulata var. reticulata
4.2 H reticulata var. hurlingii
**5 H pubescens**

## Section: Limpidae Berger (Transparent)

**1 H cymbiformis**
1.1 H cymbiformis var. cymbiformis
1.2 H cymbiformis var. obtusa
1.3 H cymbiformis var. ramosa
1.4 H cymbiformis var. transiens
**2 H cooperi**
2.1 H cooperi var. cooperi
2.2 H cooperi var. blackbeardiana
**3 H pilifera**
3.1 H pilifera var. leigthtonii
3.2 H pilifera var. pilifera
3.3 H pilifera var. venusta

**4 H gordoniana**
**5 H bolusii**
**6 H semiviva**
**7. H gracilis**
7.1 H gracilis var. gracilis
7.2 H gracilis var. isabellae
7.3 H gracilis var. incurvula
7.5 H gracilis var. picturata
7.6 H gracilis var. tenera
7.7 H gracilis var. viridis
**8 H decipiens**
8.1 H decipiens var. decipiens
8.2 H decipiens var. cyanea
8.3 H decipiens var. minor
8.4 H decipiens var. pringlei
**9 H habdomadis**
**10 H mucronata**
10.1 H. mucronata var. mucronata
10.2 H mucronata var. morrisiae
11 H rooibergensis
12 H lockwoodii

## Section: Haworthia

**1 H xiphiopylla**
**2 H arachnoidea**
2.1 H arachnoidea var. arachnoidea
2.2 H arachnoidea var. aranea
2.3 H arachnoidea var. aristata
2.4 H arachnoidea var. gigas
2.5 H arachnoidea var. setata
**3 H integra**
3.1 H integra var. integra
3.2 H integra var. standeri
3.3 H integra var. unicolor
**4 H pehlemanniae**
**5 H globosiflora**.
**6 H nortieri**.
**7 H pulchella**
7.1 H pulchella var. pulchella
7.2 H pulchella var. globifera
**8 H wittebergensis**
**9 H marumiana**
9.1 H marumiana var. maru miana
9.2 H marumiana var. batesiana
9.3 H marumiana var. viridis
9.4 H marumiana var. reddii
**10 H archeri**
10.1 H archeri var. archeri
10.2 H archeri var. dimorpha

## Section: Fusiformis Barker (Spindle-shaped)

**1 H blackburniae**
1.1 H blackburniae var. blackburniae
1.2 H blackburniae var. graminifolia

## Section: Fenestratae v. Poell. (Ending abruptly)

**1 H truncata** **2 H maughanii**

# Subgenus Hexangulares

## Section: coarctatae Berger (Compressed)

**Subsection :coarctatae**
**1 H reinwardtii**
1.1 H reinwardtii var. reinwardtii
1.1.1 H reinwardtii var. reinwardtii f. zebrin
1.1.2 H reinwardtii var. reinwardtii f. chalumnensis
1.1.3 H reinwardtii var. reinwardtii f. kaffirdriftensis
1.1.4 H reinwardtii var. reinwardtii f. olivacea
1.2 H reinwardtii var. brevicula
**2 H coarctata**
2.1 H coarctata var. coarctata
2.2 H coarctata var. adelaidensis .
2.3 H coarctata var. tenuis
**3 H glauca**
3.1 H glauca var. glauca
3.1 H glauca var. herrei

**Subsection; attenuatae**
**1 H attenuata**
1.1 H attenuata var. attenuata
1.2 H attenuata var. glabrata
1.3 H attenuata var. radula
**2 H faciata**
**3 H longiana**

## Section: Limifoliae G.G. Smith (Callose leaves)

**1 H limifolia**
1.1 H limifolia var. limifolia
1.2 H limifolia var. keithii
1.3 H limifolia var. ubomboensis
**2 H koelmaniorum**
2.1 H koelmaniorum var. koelmaniorum
2.2 H koelmaniorum var. mcmurtryi

## Section: Tessellatae (Salm- Dyck) Berger(With network)

**1 H woolleyi** **2 H tessellata a** **3 H granulata** **4 H venosa**

## Section: Trifariae Haw (3-sided)

**1 H viscosa**.
1.1 H viscosa var. viscosa
1.2 H viscosa var. beanii
**2 H nigra**
2.1 H nigra var. nigra
2.2 H nigra var. diversifolia

## Section: Scabrae v. Poelln. (Rough)

**1 H bruynsii** .
**2 H sordida**
2.1 H sordida var. sordida
2.2 H sordida var. lavranii
**3 H scabra**
3.1 H scabra var. scabra
3.2 H scabra var. tuberculata
**4 H starkiana**

# Subgenus Robustipedunulares

## Section: margaretiferae Haw (Pearl bearing)

**1 H kingiana** **2 H minima** **3 H marginata** **4 H maxima**

# Aloe haemanthifolia in Baviaan's Kloof

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I have not had much success in growing *Aloe haemanthifolia*. Seed is hard to come by. Seedlings grow OK up to a point, then decide they don't like my company and slowly die. Transplanting just seems to hasten the process. There is scarce information on cultivation requirements, which are primarily inferred from the likely conditions that they are exposed to in habitat. Available information seems to indicate that they come from montane regions with high rainfall, are subject to mist and snow and, as they apparently grow on southern, therefore shady (Southern Hemisphere) slopes, they should like shady, cool/wet growing conditions. However, this treatment does not work for me. Therefore, when the organisers of the South African Succulent Convention (2000) planned a trip to visit these plants in habitat, the opportunity to see how they grow was not to be missed.

Our first stop was to obtain the necessary permits to enter the conservation area where the aloes reside. This was followed by a pleasant scenic drive up Baviaan's Kloof pass, along roads lined with gum trees (eucalyptus) just to make visiting Australians feel at home. A bit over an hour and a half from Cape Town, we found ourselves at the start of the hiking trail. Here, we were presented with a formidable barrier - a locked gate and fencing covered by razor wire (to protect the aloes?). Keyless, an alternative entrance, through a guesthouse, was located. Our next obstacle was a river to be crossed. The water was just a bit deep and the stepping stones a bit far apart for comfort. Nevertheless, we made it across with only a couple of wet feet between us. About two hours later (a fair bit longer for the less fit), after enjoying the sunshine and spectacular views experienced along the walking track, we arrived at the waterfall at the head of the valley. We stopped here for lunch, to take in the scenery and enjoy the aloes.

Aloes in this location are only found in a limited area extending to within a few hundred meters from the head of the waterfall. Vertically, they extended from the high water mark (?) to about three-quarter the way up the slopes. It was also noticeable that they were restricted to particular rock formations in this area. These formed horizontal rocky ledges, creating giant steps, separated by cliffs of 5-20 meters. This pattern of distribution possibly points to specific microclimatic needs which involve suitable rock ledges for them to grow on and verticality, which became less as the valley opened out further away from the waterfall.

The valley runs approximately east-west, presenting north and south facing slopes, which become progressively steeper towards the head of the valley where the waterfall enters. On our visit, the north slopes were hot, dry and rocky. Small clumps of *Aloe haemanthifolia* were found happily baking in full sun and the reflected heat from the rocks. They were growing in shallow gritty soil on cliff ledges as well as amongst the grass/bushes along the walking track itself. These plants, in sunny exposure, had wonderful coloration displaying red leaf edges. While the flowering period is around October, some of those in the sunny positions were commencing to flower in August.

However, by far the largest numbers of plants were growing on the south facing slopes. On these slopes, the aloes receive sun, but obviously less intensely than their northern slope counterparts. The southern slopes were very wet with water on, and in some places flowing over, the rock faces. *Aloe haemanthifolia* were growing in these very wet areas. These aloes formed much larger clumps. In some place up to 20 meters long, along and overhanging the edges on the tops of small cliffs, but not in the presumably deeper soils in from the edge, which were covered in grasses. I did not observe any growing as single plants. Plants here were larger with dark green leaves without red leaf margins. There were also a range of plant sizes present including small seedlings, which found suitable niches in which to grow in rock cracks on these cliffs (impossible to get close to due to steep slippery rock).

Unfortunately, these observations, of two very different growing habits, suggestive of tolerance of a wide range of growth conditions, do not seem to provide any generalisations about their cultivation needs.

*(Continued from page 7)*

people using the chemicals is not so great in agriculture as it is in the domestic market. Chemicals approved for use in agriculture are not on sale for use in domestic circumstances.

Plant chemical products such as pyrethrum and derris are exempt from the review and sulphur, copper and soft soap will remain available. Products based on these (and generally on naturally occurring fatty acids) will therefore continue to be freely available.

Prevention of infestation by way of attention to watering, ventilation, growing hard, proper resting/ growth periods, and regular inspection will become even more important.

# From around the world

**Japan**. Haworthia Study (Japanese with occasional English). Journal of the Haworthia Society of Japan.

Issue No. 3, 2000 contains colour photographs of *H. maughanii* 'Millennium', *H. maughanii* 'Sisigami', *H. maughanii* 'Rainbow', *H.* 'Hakuteijoh' (please turn to page 9, Fig. 25 this journal for a photograph by Dr. Hayashi), *H. picta* 'Kumadori', *H. picta* 'Horikawa picta', *H. picta* 'Marble', *H. picta* 'Chocolate', *H. splendens, H. correcta, H. correcta* 'Daikokuten', *H. truncata* 'Syaraku', *H. truncata* 'Fire Dragon', and three *H. truncata* and two *H. maughanii* cultivars without English names.

There is an extensive article by Dr Hayashi in which he examines Bruce Bayer's species concept and finds it to be unsatisfactory.

**United Kingdon.** BCSS jornal (English)

In the June 2000 Neil Crouch, Gideon Smith, Richard Symmons and Marianna Tomalin publish a comprehensive article covering distribution, conservation, magical properties and propagation under the titled "*Gasteria croucheri* – the magical impundu of the Zulu".

**U.S.A.** Cactus and Succulent Journal September-October, 2000 (English)

In "Superb Succulents", Duke Benadom includes *Gasteria bicolor, Gasteria nitida* v. *armstrongii* and *Haworthia* 'David Grigsby'. This cultivar is believed to be a natural hybrid between *H. pumila* and *H. marginata*, the original material for which came from the Robertson District of the Western Cape. 'David Grigsby' reaches about 25 cm in diameter. The leaf upper surface is virtually devoid of spots, but the lower surface has many white tubercles.

**South Africa**. (English)

In Aloe 37:1:2000, Aloe, Gasteria and Haworthia are featured in "The *iNtelezi* plants of the Eastern Cape: traditional and contemporary medicines" by Tony Dold and Michelle Cocks.

Alex Fick reports "Type locality of *Haworthia springbokvlakensis* preserved" with funds provided by the German Succulent Society.

Aloe 37:2 & 3, 2000 is the Succulenta 2000 edition. Aloaceae related articles include "Rare succulents of the Western and Eastern Cape Provinces of South Africa" by Gerhard Marx, "The Aloes of Malawi" by Stewart Lane and "Very 'Vary-ability' in Haworthia" by M.B. Bayer.

# Aloe clariperla (Haw.) Roem. & Schult.

The front cover illustration is a reproduction of an 1836 drawing of *Aloe clariperla* by Salm-Dyck published in *Monographia Generum Aloes Et Mesembryanthemi 1.*

Haworth published the taxon as *Haworthia clariperla* in 1828, but for some time a number of authors continued to classify haworthias in the then all embracing genus *Aloe.*

In 1804 Haworth described *Aloe attenuata* and reclassified it as *Haworthia attenuata* in 1812.

*Apicra fasciata* was described by Willdenow in 1811. Haworth reclassified it as *Haworthia fasciata* in 1821.

Haworth indicated that *Haworthia clariperla* was very similar to *Haworthia attenuata,* but smaller, with more prominent, pearly tubercles forming compressed bundles in a row at the base of the leaves and similar to *Haworthia fasciata* in size.

Baker made *H. clariperla* a variety of *H. attenuata* in 1880 and in 1976 Bayer classified it as a form, then in 1999 he placed it as a synonym of *H. attenuata* v. *attenuata,* which all authorities appear to accept.

Thus does time and understanding result in the amalgamation of one species with another as a variety of it, then its reduction to a form and finally to its oblivion as a synonym of the type variety of the species. *Clariperla* now remains only as a fine drawing, representing one plant of *H. attenuata* v. *attenuata.*

It is significant that *clariperla* has not been combined with *Haworthia fasciata* in any way.

Bayer states that "Although the normal distinction (of *H. fasciata*) from *H. attenuata* is on the basis of a tubercle-free upper leaf surface, *H. fasciata* has fibres in the leaf which must constitute a profound difference between the two species". However, plants are recorded as variable and some do have tubercles on the upper surface. A few can be seen on the photograph JDV96/58 on page 174 of *Haworthia Revisited*.

Only time will tell *w*hether all populations of *fasciata* have fibres and those of *attenuata* do not and whether or not the suggestion that fibres are important for classification is justified. Could it be that there is still scope for some name changes?

References:
The World of Haworthia Vol. 1 & 2
Haworthia Revisited - A revision of the genus.