

ALSTERWORTHIA

INTERNATIONAL

THE

SUCCULENT ASPHODELACEAE

JOURNAL



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Aloe Cultivars. Part 1.

Nature produces many unique forms and displays of colour, all of which are determined by natural opportunities to breed and ability to survive. People can also create unique opportunities for plants to breed and protect the progeny from selective influences, which determine survival. This is the art of cultivar production, which seeks to create new

plants in attractive forms and colours. We are indebted to Jozef Verhoeven, Belgium for all the following photographs of cultivars he and his friends have in cultivation in their glasshouses. Most of the plants are said to be by Kelly Griffin. USA.. Where the names were originally published is not known and parentage is not known in some cases. Help!!



Aloe 'Silver Ridge'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves lanceolate, somewhat recurved, in-rolled when young, upper surface dark green showing as longitudinal interrupted lines and dashes between longitudinal, broader, cloudy-white lines with occasional white teeth, lower surface dark green with scattered white spots and dashes in more or less longitudinal rows; marginal teeth white in molar-like groups. The plant illustrated was purchased from Plant Life Nursery, UK

Propagation. Offsets

Aloe 'Ruby Spear'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves elongated, lanceolate, distinctly concave, recurved and slightly twisted, dark greyish-green with indistinct, darker greyish-green longitudinal lines; terminal spine bright pink, marginal teeth bright pink amalgamating into a bright pink, cartilaginous, lower leaf margins. The plant illustrated was obtained from Bob Weeks.

Propagation. Offsets.



Aloe 'Red Feather'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves more or less vertical with recurved tips, dark-green, both surfaces with many slightly raised, greenish-white, scattered spots and oblongs, a few on the underside with teeth; marginal teeth orange. The plant illustrated was obtained from Bob Weeks.

Propagation. Offsets.





Aloe 'Sun Rise'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves lanceolate, distinctly recurved, leaf edges incurving particularly on the upper half of the leaves, light grey-green; light orange, raised, oblongs of varying length on both surfaces aligned longitudinally and in irregular bands across the leaves; molar like marginal teeth spaced, light orange. On the oldest leaves the light orange tends to become paler. The plant in the photograph was obtained from Bob Weeks.

Propagation. Offsets.

Aloe 'Red Ridge'

Parentage. Not known.

Description. Rosulate, acaulescent; leaf upper surface slightly concave, short lanceolate with a broad base, slightly yellow-green with many raised oblong tubercles ranging from whitish-green (young leaves) to reddish green (old leaves) more or less aligned longitudinally; marginal teeth pinkish-red tending to coalesce towards the lower half of the leaf. The plant photographed was obtained from Bob Weeks.

Propagation. Offsets.



Aloe 'Peppermint'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves more or less vertical, incurving, somewhat boat shaped, light green with vertical, pale-pinkish-grey raised oblongs in more or less vertical rows and irregular horizontal rows, margins interrupted cartilaginous, orange. Plant illustrated obtained from Bob Weeks.

Propagation. Offsets.

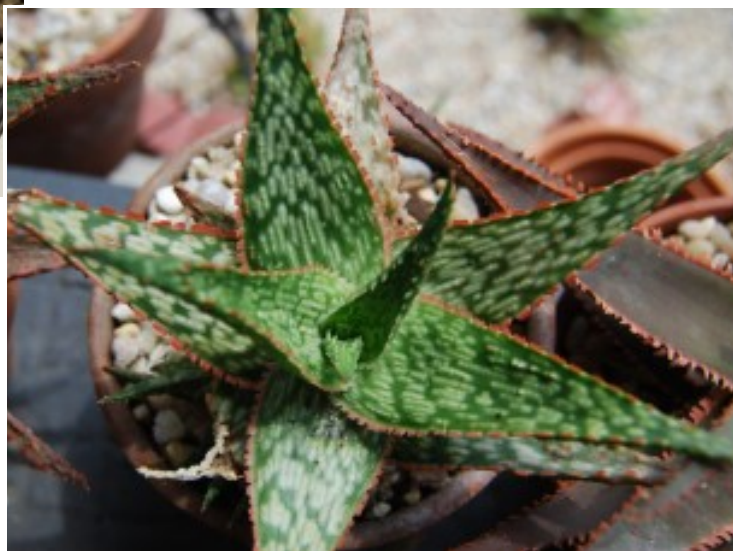


Aloe 'Neon Lights'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves very dark green with slightly raised greenish-white spots and oblongs on both surfaces, base broad narrowing to a lanceolate upper half, margins serrate, red. Plant illustrated was obtained from Robert Wellens, Netherlands

Propagation. Offsets.



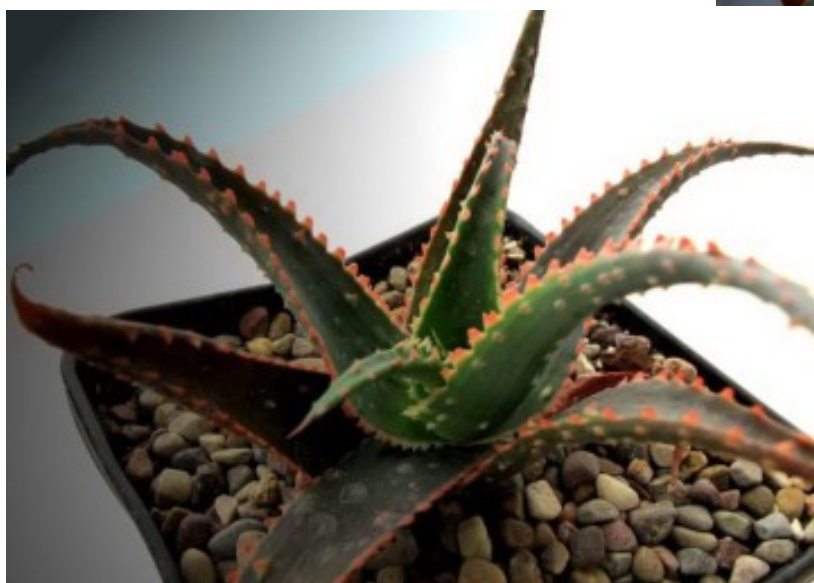


Aloe 'Gold Nugget'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves bright, light green, lanceolate, upper surface mildly concave, both surfaces studded with many light orange tubercles and longitudinal oblongs, marginal teeth light orange. The plant photographed was obtained from Bob Weeks.

Propagation. Offsets.



Aloe 'Skywalker'

Parentage. Not known.

Description. Rosulate, short caulescent; leaves more or less vertical, strongly recurved, margins above the base incurved vertically, marginal teeth large, spaced, orange; leaves dark green with scattered whitish to faintly pink tubercles on both leaf surfaces; apical spine pinkish-brown. The plant photographed was obtained from Bob Weeks.

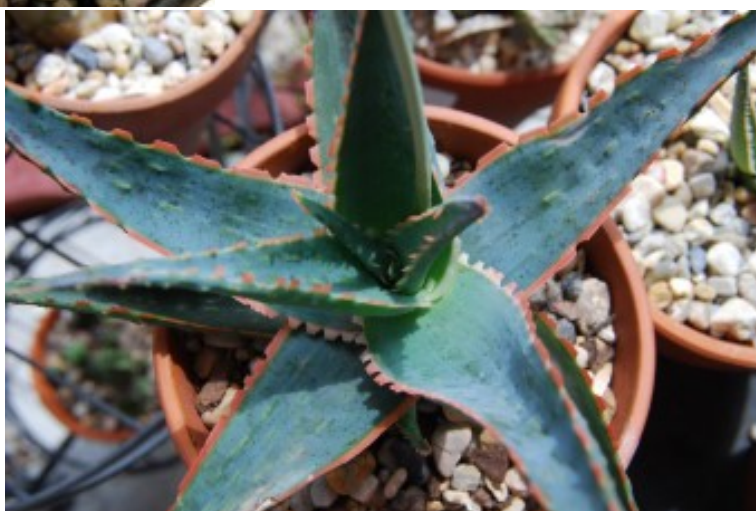
Propagation. Offsets.

Aloe KG-14

Parentage. Not known.

Description. Rosulate, acaulescent; leaves lanceolate, blue with a few tubercle like surface projections, marginal teeth single or grouped, orange. The plant photographed was obtained from Bob Weeks.

Propagation. Offsets.



What do collectors need?

M. B. Bayer,
PO Box 960, Kuilsriver, 7595, South Africa.

I ask this question because too often the views of the collector are espoused as an excuse or defence for some or other argument about classification. It has often been said to me that collectors are not interested in taxonomy and they are, at the most, happy just to have a name. This argument does not impress me because as a society we have a trust and a belief in science and whatever is written, outside of fiction, should seriously address the truth. It should not matter what the reader may want to make of the product other than that the reader may just by chance really want to know and understand something. On reflection, one writes for the reader who must surely be reading because he/she wants to know something and names are the key to the “something”? This is why I have responded to reviews of my writing that have been published at various times. I have written as a communication and am glad to know what the reception or rejection has been. Recently Steven Hammer wrote what is listed under the title of “Book Review” comment on a recent book by Ingo Breuer and of Update Vol. 6 by me. It is a wonderful piece of prose and worth every bit of reading and appreciation, but it does not pass as a Review. Or does it? I feel that it has a few mis-takes as well as passing over the very real differences between the two publications. So I wrote a response in the way I treat any publication as an invitation to think and form an opinion; and express it. Passing a draft of this response to a competent observer, I got this reply “Fortunately, there is little expectation of a review. The point is: was the review positive or negative? Did the reader learn something and gain deeper appreciation, or not? Will they buy the book, or did the review satisfy their curiosity? For most readers, the details are unimportant, as much as you may hate this very concept.”

Why I should hate the concept of most readers regarding the questions of detail unimportant I do not know. But I do think the accuracy, in respect of detail or general, is very important. What my commentator was implying is that the review met the requirements that he was suggesting and he added that my response was “nit-picking” and would only be seen as criticism of someone who is widely held in high esteem. The fact is that Steven Hammer is also held in very high esteem by me and I am so glad to be able to say that he expressed to me personally that his “review” was rather a literary fantasy. What Steven does comment on is a view of the needs of collectors. That they care little about schemes of classification and that labels are necessary irritants. I do not question the truth of this view. But would not accept that this is a justification for the imposition of just any kind of scheme because that is what a writer wishes to propound for reasons of his/her own.

These then are the points I made in my response that I think Steven should have addressed. The “mistakes” are a). The Audensberg population was actually shown to

me by Elsie Esterhuizen many years ago and it is not the place where any haworthiophile would ordinarily look for plants.

b). The reference to *Drosanthemum bellum* is odd because Steven describes this as a “niche-sensitive species”. This “species” is at the heart of a very long and detailed story of *Drosanthemum micans* that I once wrote and lies unpublished. I would surely have used this as an example of the way in which botanical science has also failed us. *D. bellum* is a pink flowered variant in a much localized population of *D. micans* that also has white, purple and red variants. This tiny population sits among a larger widespread population of yellow flowered variants that go by the name of *D. hallii*. This in turn has variants that include the typical bi-coloured flower of the older *D. micans* that is common north of Worcester. Further variants occur north-east of Montagu to Oudtshoorn and then south to Mossel Bay (*D. edwardsii*) back west to Bredasdorp, (*D. lavisii*, *D. aureopurpureum* and *D. croceum*?). The problem here is the failure to establish what is meant by “species”. To refer to *D. bellum* as a species is a misconstruction of science, or an example of the liberties that are taken with Latin names – botanists and collectors alike.

c). Chameleons. Wonderful words of Steven’s, but not quite complete. The story about chameleons parallels that of the very low non-tech problem of impossible identification even when there are heaps of “characters” to use. It fortuitously exposes the probability that we are being led up a garden path by high-tech. I have used chameleons in the same way that I studied *Oxalis* ultimately demonstrating that species are complex systems of variables!

d). Kaboega is not the only area I know exceptionally well and it also figures in practically all the other volumes of Updates of which there are six (now 7 Ed.) I doubt if these have ever had much coverage, but they are an account of my voyage of exploration and discovery that is the concern of mine in respect of omission. In the Updates I discuss the populations and their variants as they occur at many different places, and show this impact on the application and use of Latin binomials. There is a prevailing misconception that this is only a problem within *Haworthia*. I show that this is not so. I also make several references to the fact that *Haworthia* is by no means an integral single genus and that the nature of genera in the Aloioideae needs proper attention based on a lot more than the fact that the *Haworthia* subgenera have small flowers.

e) “Shaggy dog” for *H. mirabilis* Ballyfar is not a name I coined but Steven himself.

I do think the omission is in the comparison of the books where there is in fact none. My Update Volumes revolve around the way that science has let us down to the extent that any pretender can take up the mantle of taxonomic expert. Botany provides no species definition and hence the Latin binomial is not

required to carry any meaning other than a guise of authority. Whatever collectors may require has no import whatsoever in a process of classifying plants as biological entities. They are focal points for the collection and storage of knowledge indicated by Latin binomials and these are not simply and only intended as labels. Even I recognized this as a child when I wanted to know what the plant actually was that my father called *H. chalwinii* and where it came from. Every collector who refers to names at all surely expects and believes that there is some mystic or real knowledge associated with the names he is given and uses. It is an injustice to any collector to coin Latin names outside of the context of science where the collector is entitled to believe they belong.

The only predicable thing about Breuer's system, which is a watered down version of a much more focused and detailed one by Hayashi, is that there are going to be a lot more names. This is not only when someone else climbs the Audensberg, or recollects the Sandhills population, or drifts across into the Heatley Peak area. Throughout the Updates, I warn and demonstrate that character fixated taxonomy may be very misleading. Vavilov was a Russian botanist who pointed out that variations in a genus may be expected in all the members of that genus. Species are therefore to be seen as systems that are natural assemblages of plants that can be associated in respect of ALL the forces, factors and features that generate them – not propagules of single clones that fill availability lists and price catalogues. *Drosanthemum bellum* is just such an example of how Latin binomial names are used to describe variation within species, rather than to properly organize the basic entities that make up the entire living system.

I have, even in the Updates, shown how the watchdogs of science let us down. I have tried to communicate my experience and observations to a wider and expectedly interested audience. This, in the hopes that it would lead to greater understanding and comprehension of the problems of finding names as the backbone of communication, appreciation and understanding. It is a huge disappointment to me that I have achieved very little other than to grow wiser myself. One of my many critics makes a show of taking up middle ground between me and other *Haworthia* taxonomists. My response is that taking up middle ground between myself and the ignorant is not going to be very productive. In the first place there is not much space there as I am quite aware of my intellectual limitations. In the second place I have not actually been all that certain that my overview is entirely correct. Despite being credited with a lot of field work (and no good sense to go with it) I am extraordinarily aware of how much I have not seen. This adds to my discomfort as I see a proliferation of new names, gaily forgetting the multitude that I moved aside in my Revision. These are often based on propagules from my own collections (concealed by the

creation of new collecting numbers that are not mine). I recognize that the only predictive element in this kind of science is that we can expect many more Latin binomials in a collector driven system rather than one of botanical science. So indeed I see no change from the failed methodology of Von Poellnitz, Smith and Scott.

There is no comparison at all between the two books that a true review might have suggested. One book (Breuer) is a collector's guide to a limited range of variants (albeit 336?) while the other (Bayer) is an account of a very wide range of variants and a hypothesis (not a statement) of how they are related. The latter also throws some light on the universal quandary knowledgeable observers soon come to experience viz. Elton Roberts in the same edition of the Journal where he questions the identity of *Mammillaria lasiacantha*. The problem he has is a classification fixated on superficial small differences rather than one based on the realities of the variation that should be expected in any system arising from, and actively responding to, differences related to time and space. The essence of science is that an experimental method is applied to a sample and repeated, the result will be the same. If every one is coming up with a different plant classification, it should occur to us that there is something wrong with the method and perhaps also the hypothesis that is being tested.

I am curious why my commentator dismissed all the above as "nit-picking" when myself I feel that they deal with the most significant elements of writing at all. Especially, they touch on the very core of why we even classify and name plants in the first place. My response should not be seen as a criticism of my commentator, or of Steven, a remarkable man who is also very dear to me. I also respect him enormously for his empathy with plants because if there is anyone who projects my view that this is a conscious creation all the way down to its rocks, it is him. There is surely purpose in creation if only that we should seek and find what that is.

Two Impressive Haworthia Cultivars with Impressive Pots.

Photographs and information received from Hiroshi Yabe

As far as is known *Haworthia* 'Azuma-Murasaki' was created in the USA. Its parents are unknown, but it is guessed to be a *Haworthia wimii* hybrid. It has a sister, *Haworthia* 'Kyou-Murasaki'. Both were unnamed when they were imported into Japan and I understand they were named by a Japanese. 'Kyou' is 'Kyoto (京都)', which was the old capital and is a world famous historical city. 'Murasaki' means violet-purple. Purple has been treated as a noble colour in Japan. Thus 'Kyou- Murasaki' means a classical and noble appearance

Haworthia 'Azuma-Murasaki'



Haworthia 'Kyou-Murasaki'



Three New Nothogenera Cultivars

Jean-André Audissou.

<http://www.audissou.com>



×*Astroworthia* 'Nain Jaune'

Parentage. *Astroloba bullulata* x *Haworthia minima*.

Description. Rosette caulescent; leaves erect to spreading with age, dark green, all surfaces covered in small, scattered, white spots, prominent tubercles in recognisable vertical and horizontal rows mainly on the under sides, occasionally on the upper, tip mucronate, brown.

Propagation. Offsets.



×*Gasterhaworthia* 'Herr Bat'

Parentage. *Gasteria batesiana* (Barberton form) x *Haworthia glauca* v. *herrei*.

Description. Rosulate, leaves erect to spreading, linear to lanceolate, terminating in a small, brown spine; dark green; scattered, dense, white tubercles on both leaf surfaces; margins many, small white teeth.

Propagation. Offsets and leaf cuttings.

×Gasterworthia 'Figaro'

Parentage. *Gasteria batesiana* (Barberton form) x *Haworthia scabra*.

Description. Rosulate; leaves elongated lanceolate, spreading, reclinate, dark green, both surfaces many scattered, prominent, green tubercles, margins with distinct rows of tubercles.

Propagation. Offsets and leaf cuttings



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Books and journals

Editor's note. Mrs. Ivana Richter's first plants were 3 small haworthias, when she was a little girl.
Today she still grows the same clones.

Haworthia - Fission or Fusion

A comment on the ongoing naming problems

G. D. Rowley

The present turbulent situation of classification of the genus *Haworthia* calls to mind what happened to some of the larger genera of flowering plants in the nineteenth century when new introductions of species and cultivars flooded the market and collector mania set in. New societies and periodicals sprang up and of course there was a rush to get in first with new names. *Rosa* suffered just such a fate at the hands of Almquist in Sweden and Gandoger in France and other long-forgotten botanists. The latter is credited with creating in all 150,000 binomials, valid under the laxer Code of the day although fortunately outlawed today. Hours were spent counting the teeth and glandular hairs on herbarium sheets of roses to create matrices of characters, with a new Latinised name in every box to cover every permutation and combination. Inevitably reaction set in, common sense prevailed, and by the time Alfred Rehder was compiling his still useful Manual of Cultivated Trees and Shrubs (Edn.2 is 1940) the number of planetary species was down to 72 with a sprinkling of varieties and satellite species of dubious status. Overall an identification key was compiled giving the whole set-up practical usefulness, which was the main reason to produce it in the first place.

It will be evident from this that I welcome the conservative approach to *Haworthia* by Bruce Bayer and John Manning in the March 2012 issue pp.7-17, and their recommendation for cultivar names for "specially selected or human-altered plants." It remains only to add that a start on this was made four years ago (Rowley 2008) with 252 cultivar names from Latinised originals, and Harry Mays is valiantly cataloguing and illustrating the remaining and more

recent additions.

But despite this dual approach we are not out of the woods yet. Overall hangs the threat of DNA data, like a sword of Damocles ready to split the genus *Haworthia* into fragments, or alternatively to submerge it within the already huge genus *Aloe*. If the former option is pursued we shall have to rename species of Subgenus *Robustipedunculares* as species of *Tulista* Rafinesque (1840) which has priority (see Rowley 1976). I cannot enthuse over either prospect, since I still believe that a classification serves only if it provides easy retrieval and recognition. Phylogenetic groupings based upon common ancestry can be difficult or impossible to characterise on readily recognisable features. The only answer to satisfy everybody would seem to be two separate systems: one labelling the clades on the family tree, the other maintaining the old, imperfect but workable procedure based upon morphology. Is there a better solution?

References.

Rowley, G. D. 1976. Generic Concepts in the Aloineae*. Nat. Cact. Succ. J. 31(2): 26-31; 31(3): 54-56.

----- - - 2008. Haworthias in cultivation - conserving names of cultivars. Alsterworthia International 8(1): 7-12, 17-19.

*Alooideae by today's standards.

Increases in British postal charges.

The British Post Office has increased its charges.

Quoted charges depend on the type of item posted, its weight and destination.

Alsterworthia International is concerned primarily with postage for printed paper - for journals, special issues and books.

Uninsured printed paper rates, usually cheapest, apply to weights over 100g up to 5000g*.

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For air mail £2.93 Europe, £3.86 World Zone 1 & £3.90 World Zone 2.

World Zone 2 mainly Australia and New Zealand.

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The charge for surface mail for weights from 400g up to 500g is £4.86. For heavier weights you have to visit or ring the Post Office as they are not published in their leaflets!!!! Air mail postage for items weighing from 1000g up to 1100g (some books) is £7.82 Europe, £14.08 Zone 1 and £14.66 Zone 2.

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Aloe 'Christmas Carol' KG

In the article "New *Aloe* cultivars from the USA, South Africa & Australia" in *Alsterworthia International* 12(1)2 (March 20012), fig. 1 is quoted for *Aloe* 'Christmas Carol'. Please note that figure 1 is another example of *Aloe* 'Green Sand'. This error only appeared in journals in the initial posting. In

subsequent postings the correct photo of *Aloe* 'Christmas Carol' replaced the duplicate photo of *Aloe* 'Green Sand'. The correct photograph of *Aloe* 'Christmas Carol' and the replaced photo of *Aloe* 'Green Sand' are below as figs. 1 & 2.

With apologies from the editor.



Plant Names - a word of warning.

Alsterworthia International has always published information for *Aloe*, *Gasteria*, *Haworthia*, related small genera, nothogenera and cultivars without favour, believing that freedom of information is vitally important. Readers should be able to make up their own minds about the relative merits or otherwise of what is published, always provided that there is a balance of opposing views. This policy will continue, but a situation has developed which does require a decision by the Editor with some explanation.

Regardless of which species definition an author uses, authors publish their species names in accordance with the International Code of Botanical Nomenclature, with one exception. All names published under the provisions of that code are listed annually in the *Repertorium Plantarum Succulentarum* (Rep.), published by the International Organisation for Succulent Plant Study (IOS), either as valid or invalid. Any names not published under the ICBN are simply ignored by the scientific world and others, are not published in the Rep even as invalid and are not generally used.

Bruce Bayer's field research is widely recognised as methodical, efficient and valuable. It has produced much new information and continues to do so. Over the years he has published many books on haworthias. At the outset, he published species names in accordance with the provisions of the ICBN, but in later years he has taken exception to that Code and published names outside its provisions. These names take the form of trinomials, consisting of the genus name, the species name he accepts to cover a much broader spectrum of plants, followed by species names in single inverted commas of species he regards as forming an integral, inseparable part of the species he accepts. All these names have been ignored by the scientific community and are not recorded in the Rep. etc even as invalid.

Bruce is on record as rejecting subdivisions of haworthia species, but last year when a request was put out for up-to-date revisions of genera for a replacement Illustrated Handbook of Succulent Plants he cooperated with Dr

Manning to produce a revision in accordance with the ICBN. This was published in *Alsterworthia International* 11(3)7-17 - *A rationalization of names in Haworthia. A list of species with new combinations and new synonyms* by M.B. Bayer and J.C. Manning (November, 2011).

Subsequent to this Bruce sent me material for Update 8 which deals with haworthia flowers. As one would expect, it contains much new information which is well worth consideration even if you disagree with his views. Unfortunately the species names he uses do not always follow his November, 2011 revision, as he continues to use his trinomials. He has declined my request to use the valid names he published and justifies the continued use of his trinomials as follows: "I have omitted the word variety (and) used inverted commas: 7780 *H. retusa* 'geraldii', Komserante; 7781 *H. retusa* 'foucheii', Komserante; 7920 *H. retusa* 'nigra', Van Reenens Crest. The omission of the word variety is for two reasons 1. economy 2. to convey the idea that the actual indication of status is not certain as I have used the name to indicate a population or populations rather than a single described plant (see later Ed.). The use of commas reinforces what I want to convey. This is that the individual plants in the populations are variable and it may not be easy to always identify the plants (individual or population) according to a more formal classification. Any departure from the ICBN or the way the names are treated in formal botany conveys the difficulty that I personally find in trying to reconcile formal nomenclature with names that are so often tied to single plants." **This seems to me to be a rejection of his revision of November 2011, which is acceptable to everyone under the ICBN!!!!** I consulted two well known "referees" who (I summarize) were not in favour of his reversion to his trinomials. One reminded me that as editor I had the final decision not to print Update 8 on the grounds that names did not comply with the ICBN.

My decision is to publish Update 8 as written by Bruce Bayer, but to make it quite clear that names do not

(Continued on page 14)

Haworthia Update

Essays on Haworthia
Volume 7. Part 1

Bruce Bayer



Haworthia Update Essays on Haworthia. Volume 7. Bruce Bayer.

Publication date: 20th February, 2012.

Update 7 is printed on A3 paper, stapled
and folded to A4 size.
It is divided into four parts.

Part 1. 63 A4 pages, Part 2. 83 A4
pages, Part 3. 57 A4 pages and
Part 4. 48 A4 pages.

Bruce has continued his field research and
reviewed more species populations.

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- Alsterworthia International bank details will be sent to you on receipt of your order.

Non-members may order Update 7 direct from book sellers
or in case of difficulty from
Harry Mays.

The photographs opposite, a copy of page 23 of Part 1. of Update 7,
show some of the variability of *H. retusa* 'nigra'
at the location Heuningklip 2, MBB7897.

Haworthia Update

Essays on Haworthia
Volume 7. Part 2

Bruce Bayer



Haworthia Update

Essays on Haworthia
Volume 7. Part 3

Bruce Bayer



Haworthia Update

Essays on Haworthia
Volume 7. Part 4

Bruce Bayer





A very impressive, new, *Haworthia* cultivar from India

Haworthia 'Love Me Once'

Soumen Aditya.

Email-soumen_ad001@yahoo.co.in



Eventually, after a long time, I started creating *Haworthia* cultivars by hybridization in our garden. I had little success. Last year I lost many seedlings due to fungal root rot in the month of August. I did select a few of the best clones for development. In January 2009 I cross pollinated *Haworthia* 'Shanker' [seed parent] with *H. emelyae* var. *comptoniana*. [Pollen parent]. I tried pollinating several flowers but not with much success as only one seed pod was produced. There were 14 seeds in it but only 5 germinated. Last year I found that one had developed a very nice net-like pattern. I selected it for cultivar status and now name it *Haworthia* 'Love Me Once'. It may make a good parent for a further cross.

Parentage. *Haworthia* 'Shanker' ♀ x *Haworthia emelyae* var. *comptoniana* ♂.

Description. Rosette compact, stemless.

Leaves very glossy green; upper surface reticulate (3-5 longitudinal lines randomly linked horizontally), lines thick, white; lower surface with white dots and irregular short lines; leaf end abruptly acute; strong, brown terminal spine short; marginal spines white, recurved; keel teeth sharp.

Propagation: Offsets.

Front Cover Photograph.

The photograph shows a frog surveying the world from the rosettes of a *Haworthia cymbiformis*. It is clearly not a British frog, but as I cannot identify the person who let me have the photo I am unable to thank him/her and locate the country of origin. My apologies to the photographer in advance. Harry Mays.

(Continued from page 11)

always comply with the ICBN, that these are unacceptable under the Code's provisions and should not be used to identify plants outside of Bruce's writings. Always use ICBN names and equate Bruce's invalid names with them where possible for clarity.

This decision may not be approved by everyone, but it does allow the publication of Bruce's valuable work in the absence of his non-compliance with the ICBN and at the same time it stresses names not in accordance with the ICBN are invalid. It is notable that other authors (Ingo Breuer, Dr Hayashi, S.D. Gildenhuys, Gerhard Marx etc) all comply with the ICBN and their species names are recorded in the Repertorium Plantarum Succulentarum as either valid or invalid. The fact that there are different classifications with different names complying with the ICBN does not make it easy for collectors to identify a species and Bruce's non-ICBN names add further to the difficulty.

Under the ICBN it is possible to follow a broad species concept and comply with that Code. The all-embracing species can be published and described as species with others recorded as synonyms, but this seems not to be open to Bruce because of his "...to convey the idea that the actual indication of status is not certain ... I have used the name to indicate a population or populations rather than a single

described plant.". The single described plant is a reference, I assume, to the herbarium specimen which has to be deposited for a described species. However, the herbarium specimen does not itself define the species, which is defined by a printed description. This can be as broad or narrow as necessary. There is no one universal species definition.

I would like all authors who write for *Alsterworthia International* to comply with the ICBN (and the Cultivar Code), but for any who have good reason for not complying I will continue to print their articles stressing at the same time that species names not complying are invalid. Original thought sometimes results in non-compliance. It should not be discouraged, but upholding the ICBN should be as amendments to it are possible by consent if necessary.

Harry Mays. Editor and member of the IOS.

An honorary *Ariocarpus* in Africa.

Notes and updated information regarding *Haworthia marxii*

S.D. Gildenhuys. Gerhard Marx.

It is both exciting and very frustrating to have such a unique *Haworthia* named after oneself. This species is truly a unique and exciting phenomenon that begs to be properly studied and discussed. For various reasons I remain one of a handful of people who had the opportunity to study it closely in the wild and in cultivation to date. And yet, the frustrating part is that any discussion offered for publication by myself might immediately be interpreted as an egotistical obsession with the plant purely because it was named after me.

A few years ago, after becoming familiar with this strange and unique *Haworthia*, I informally referred to it as *Haworthia ariocarpoides*. That was also the name that I recommended to Sean Gildenhuys when he decided to formally publish the species. Today, five years later, I am even more convinced that *H. ariocarpoides* would have been a very appropriate name. *H. marxii* has proven to be by far the slowest and most challenging *Haworthia* within the subgenus *Haworthia* to grow and propagate. It also shares the flattened spreading ‘tubercles’, dull dark colour and slightly scabrid epidermis of *Ariocarpus* cacti including the feature of having dirt and debris sticking to the newer growth in the wild.

As a result of its slow and difficult propagation, *H. marxii* is still relatively unknown in cultivation and enthusiasts can’t be blamed for not knowing what to think of it. Recent publications were not any help either, as it is clear that several present-day authors also do not quite know what to make of it and the easiest solution seemed to be to reject it as synonymous with *H. bayeri* on basis of a few shared features or the geographically closer *H. emelyae/picta*. However, the term “geographically close” is used sardonically here as the closest known *H. emelyae* grows about 75 km to the south-east near Vanwyksdorp. There were some unconfirmed reports, however, that *H. emelyae* can be as close as 30km to the south in the area west of Ladismith. But, as will be explained below, even if the latter report of *H. emelyae* occurring only 30km away may indeed become confirmed, then the relationship with *H. marxii* would still remain very distant because of numerous different morphological and flower characters. In one publication *H. marxii* was even declared to be “*H. pygmaea* var. *splendens* (sic)”. One can only wonder in amusement how on earth such a far-fetched combination was reached!

Fact remains, time will gradually reveal the truth once *H. marxii* becomes more available as more people will grow and propagate it. Meanwhile, let me briefly share my experiences and observations to date:

Habitat and geography:

The history of the discovery of this species was fully discussed in an article in ALOE 44:2:2007 (34-37). In short, it was first found during the late 1980’s but not successfully grown or properly studied and

efforts to recollect it were unsuccessful. It seemed to have become largely forgotten during the 1990’s although Bayer briefly referred to it as a form of *H. bayeri* in *Haworthia Revisited* (1999).

The locality was given as the Rooinek pass, south of Laingsburg, which is more than 150 km to the north-west of the known distribution of *H. bayeri*. This seemed such an unusual occurrence, which begged for proper investigation. As a result I did numerous and unsuccessful searches for a number of years before finally locating it during 2006.

The main reason for my many fruitless pursuits was that I was searching for the usual type of habitat that retuse-leaved species like *H. bayeri* and *H. emelyae* generally occupy: gentle slopes that are densely covered with quartzite or ferricrete pebbles. In contrast, *H. marxii* grows on rather steep vertical south-facing rock walls and deeply hidden amongst crevices and small pockets of soil. As a result, the plants are mostly growing rather squashed and uncomfortably flattened in these crevices, fig 1. Only rarely can one encounter a plant that developed in a large enough space to spread its leaves to full extent. More than 80% of the plants never receive any direct sunlight and most other retuse-leaved haworthias growing in such shady situations would be fresh green and etiolated. However, *H. marxii* features a distinct dark purplish-black-green colour despite growing in such very shady situations, fig 2.

Haworthia wittebergensis also grows in the same general area and a small number of *H. wittebergensis* plants occur even amongst *H. marxii*. On an adjacent hill *H. wittebergensis* grows a bit more numerous and together with a form of *H. arachnoidea* (= *H. isomorpha*



Fig 1: A common situation for *H. marxii* in the wild: tightly compressed in a narrow rock crevice.

Breuer). Intensive searches in the surrounding area yielded several more populations of *H. wittebergensis* as well as the *H. arachnoidea*, but *H. marxii* seems very rare and has not been found elsewhere apart from in two small areas about 1km apart, figs 3.

The semi vertical rocks at these habitats are Witteberg quartzitic sandstone and *H. marxii* shares its habitat with several other succulents like *Euphorbia multifolia*, a miniature *Gasteria* (probably *disticha*), *Astroloba smutsiana*, *Crassula hemisphaerica* and *Aloe comptonii*, fig 4.

The co-occurrence of *H. marxii*, *H. wittebergensis* and *H. arachnoidea* presents us with an unsolved mystery: All three of these elements are members of the subgenus *Haworthia* and all three share more or less the same flowering period! Which means there seems to be no clear reproductive isolation mechanisms at work to prevent these three components from interbreeding in the wild. Yet, not a single natural

hybrid has been seen to date. For example, near Dysselsdorp where *H. arachnoidea* grows close to *H. truncata*, quite a few natural crosses have been observed.

The other big question that remains concerns the

Fig. 2: Hiding in a dark sheltered situation on a south-facing slope. This plant is one of many that never receives any direct sunlight in habitat

Fig. 3a: Photographed on an adjacent slope to a *H. marxii* population: *H. arachnoidea* (*isomorpha*) (top centre) and *H. wittebergensis* (below slightly to the left).

Fig. 3b: *Haworthia wittebergensis* is growing in the same situation and same locality as *H. marxii*.

Fig. 3c: The attractive dark form of *H. arachnoidea* (= *H. isomorpha* Breuer) grows commonly on hills surrounding the populations of *H. marxii*.





closest relationships of *H. marxii*. Is it a retusoid element that found an unusual home in rock crevices in the mountains or could it be a *H. archeri* relative that mimics the retuse-leaved habit?

The possible, but unconfirmed, report of *H. emelyae* ca 30 km to the south near Ladismith was mentioned above. However, a close relationship with *H. emelyae* does not seem obvious due to the various morphological and flower differences which will be

discussed below. A more likely retusoid link seems possible with the *H. maraisii-mirabilis* complex. *H. marxii* shares to some extent the dark colour normally associated with *H. maraisii* as well as the thin flower peduncles and mid-summer flowering habit. The closest *H. maraisii*-like element can be found 60 km to the south on Klein Doringrivier farm east of Barrydale, fig 5. South-westwards towards Montagu *H. maraisii* occurs again, but this is a good 80 km away. However, in terms of flower similarity, it is the form of *H. maraisii* growing even further away on the Rooiberg west of Robertson that comes closest to that of *H. marxii*, fig. 6a for comparison.

Another comparison would be to link *H. marxii* to the *H. archeri-nortieri* group. There is a collection of Peter Bruyns (PVB 1405) of a *H. archeri*-like plant only 20 km to the south-east of the Rooinek Pass. I have not been able to locate this population although it is widespread in cultivation and was given the name *H. nudata* by Dr Hayashi. Typical *H. archeri* grows much closer and can be found only 10km north of the Rooinek Pass at Viskuil (JDV 89-62) . These plants also share the same



Fig. 4: *Aloe comptonii* growing at a population of *H. marxii*.

Fig. 5: *Haworthia maraisii* growing at Klein Doornrivier, ca. 60 km to the south of the Rooinek Pass. Many plants here are identical to *H. maraisii* as found at Stormsvlei.

flowering time and some flower features with *H. marxii* as well as, to some extent, the dark leaf colour, figs. 7.

However, all the above comparisons with geographically close haworthia populations remain very speculative and none truly convincing. Let us take a closer look at other possible associating characters:

Morphology:

H. marxii is characterized by having very dark-coloured and somewhat flattened swollen leaves, spreading outward as generally found in retusoid species. The rosette of *H. marxii* is therefore much more flattened when viewed from the side than the average retuse-leaved Haworthia. The photos, figs. 8 a - d, show such comparisons with *H. bayeri*, *H. emelyae* and *H. maraisii* as examples. In *H. emelyae*, *H. bayeri* and *H. maraisii* the leaves re-curve abruptly to form a flattened end area above. In *H. marxii* the recurved angle is rather gradual and less abrupt, .

On the above photographs another distinct difference is also visible and that is the poor root system of *H. marxii* in comparison with the others. It is also this fact that causes *H. marxii* to be of such slow growth and rather difficult to maintain in cultivation.

Seen from above, the facial lines and patterns of *H.*

marxii do remind more of *H. bayeri* than of *H. emelyae* or *H. maraisii*. The facial lines are generally thinner and more numerous in *H. marxii* and the variation in patterning on leaves of the same plant is very noticeable in *H. marxii* and much less so in *H. bayeri*. No two leaves are exactly the same in *H. marxii*. Features shared with *H. emelyae* are that *H. marxii* also has some small floating flecks in-between the facial lines which are lacking in *H. bayeri* and occasionally the facial lines of *H. marxii* may also have opaque islands inside the lines as in *H. emelyae* fig 9, page19.



Fig. 6a. Flowers of *H. maraisii* (JDV 95-1, Rooiberg, Robertson) on the left and *H. marxii* (GM 623) on the right. Virtually identical except for the slightly upward curving upper perianth lobes in *H. maraisii*.

Fig. 6b. A typical plant of *H. maraisii* JDV 95-1 in cultivation.

Fig. 7a. *Haworthia archeri* in habitat at Baviaan Station, ca 20 km north-west of the Rooinek Pass. The dark leaf colour, flowers and flowering time as well as slow growth link somewhat with *H. marxii*.

Fig. 7b: Flower comparisons between *H. archeri* JDV 89-62 from Viskuil, Laingsburg (below) and *H. marumiana* GM 525 Perdeberg, north Aberdeen (top). One of several good reasons why *H. archeri* should be seen as very weakly linked to *H. marumiana*.



Figs. 8: Side-view plant profile comparisons between *H. emelyae* (8a), *H. marxii* (8b), *H. bayeri* (8c) and *H. maraisii* (8d).

Fig. 9: Detail of a rosette to show that some leaves of *H. marxii* can have dark opaque islands inside the lighter facial lines.



Flower features.

During my initial observations and experiences with *H. marxii*, and before having seen its flowers, I was convinced for several months that it was a member of the subgenus *Hexangulares*. This was due to its slow growth, weak roots and vague resemblance to species like *H. koelmaniorum*, particularly its variety *mcmurtryii*. Even when the flower peduncles developed for the first time, the very thin flower peduncle was a further reminder of the type found in the *Hexangulares*. But then the flower buds appeared and opened and I had to stare in amazement that those were not *Hexangulares* flowers, but typical subgenus *Haworthia* florets.

The florets seemed closer in appearance to those of *H. truncata* than to *H. emelyae* or *H. bayeri*. The upper perianth lobes are not curved upwards like in *H. bayeri* or *H. emelyae* but straight. This drew attention back towards *H. archeri* and in particular its variety *dimorpha* that also has such straight upper perianth lobes, figs 10.

those of *H. bayeri* and *H. emelyae*. In fact, even from the stage when the inflorescence bud first appears from amongst the leaves, the differences are already drastically obvious: those of *H. bayeri* and *H. emelyae* are three times thicker and more robust than the inflorescence buds of *H. marxii* and *H. maraisii*, figs 11, a, b, c and fig 12.

Then, of course, the time of flowering in the wild is also of significant importance as it is part of nature's way of keeping elements reproductively isolated.

H. marxii forms part of the summer-flowering group which includes amongst the retusoid species the entire *H. mirabilis-magnifica-maraisii* group as well as *H. truncata* and its variety *maughanii*. The first *H. marxii* flowers open each year during the first week of February if there had been sufficient rainfall.

H. emelyae and *H. bayeri* start flowering in August and flowering can continue throughout September into early October.

It should be mentioned that the above discussion of *H. marxii* was presented in the logical sequence which involves the discovery and familiarizing oneself with



Figs. 10. Flower comparisons between *H. marxii* (10a), *H. emelyae* (10b), *H. truncata* (10c) and *H. bayeri* (10d).

In most populations of *H. maraisii* the flowers also have upward-curving upper lobes and the flowers are generally smaller with narrower lobes than those of *H. marxii*. Only recently did I notice the rather close resemblance between the flowers of *H. marxii* and those of the *H. maraisii* form growing on the Rooiberg west of Robertson (=JDV 95-1). The upper perianth lobes of the *H. maraisii* are still a bit upward curving, but less so than in other populations of *H. maraisii*. The flowers of JDV 95-1 are also larger than the average *H. maraisii* and compare very close in size to those of *H. marxii*.

As mentioned above, the thin peduncle of *H. marxii* also compares closer to *H. maraisii* and allies than to

any newly discovered element. First one is naturally confronted with the specific geographical situation which should obviously be considered against the presence of other known haworthia populations in the surrounding area. At the same time one inevitably studies and compares the plants' morphological features to other known species. However, often the plants as encountered in the wild do not reveal the full extent of their inherent features and those may only become apparent after observing it in cultivation over time. One can't for example tell from brief habitat observations what the growth rate of a plant is and how easy or difficult propagation from seeds might be. Then, lastly, detailed observation of flowers and



Figs. 11. Comparison of developing inflorescence peduncles in *H. bayeri* fig 11a, *H. marxii* fig 11b and *H. emelyae* fig 11c). The peduncles are three times thicker in the cases of *H. emelyae* and *H. bayeri*.

Fig. 12. Similar peduncles and also developing during the exact same time of the year: *H. archeri* var. *dimorpha* (left) and *H. marxii* (right).



flowering time needs to be documented as this is often the most important barrier used by nature to ensure reproductive isolation.

Therefore, when it finally comes to any taxonomic decisions to be made, the above-discussed sequence of discovery and familiarizing automatically gets turned around and the formal documentation involves working backwards through these facts, from the less obvious and finer specific details of the reproductive organs to the obviously observable general plant features and geography. With other words, flowers and flowering time needs to be considered first, then plant morphology and lastly the geographical situation.

***Haworthia marxii* in cultivation.**

Anyone who propagates haworthias from seeds will know that most summer-flowering species are a bit more reluctant to produce lots of fruit and seeds. The only exceptions are *H. truncata* and it var. *maughanii*. Most of the *H. magnifica* and *H. mirabilis* members tend to produce rather thin peduncles bearing fewer and more delicate flowers and fewer fruits. This is why, for example, that very few growers have problems producing and propagating seeds of the spring flowering species like *H. bayeri*, *H. emelyae*, *H. mutica*, *H. retusa*, etc.



But when it comes to *H. splendens*, *H. badia*, *H. maraisii* and *H. magnifica*, few people manage to propagate them in large quantities from seed.

The reasons are numerous. In some areas the ambient air humidity during mid-summer may be too dry or too humid. In very dry areas, the *Haworthia* pollen simply desiccates and 'crystallizes' into useless granules. In areas with high summer rainfall and air humidity, the flower peduncles of many *haworthias* may wilt and collapse before flowers can develop.

In the wild there are more fruit pests around during mid-summer. *Haworthia* fruits are a favourite of a small fruit fly that bores holes in the fruit wall and lays eggs inside the seeds.

In the South-Western Cape Province and Little Karoo mid-summer is the dry season which also means that browsing animals are more likely to eat the pregnant peduncles of *haworthias*. Field mice are particularly fond of *haworthia* fruits.

I often said that it is a miracle that most of these summer-flowering *haworthias* manage to reproduce from seed in the wild with so many hindering factors.

In the case of *H. marxii*, all these mid-summer obstacles apply. Furthermore, the germination rate of *H. marxii* seeds in cultivation proved to be considerably less than those of other summer-flowering elements. And if that is not bad enough, it has become indisputably clear that the growth rate of *H. marxii* seedlings is the slowest in the entire subgenus *Haworthia*.

Seedlings sown on May 7th 2008 still measure 3.5 cm wide and have not reached flowering maturity after 4 years. Seedlings of *H. splendens* and *H. badia* sown on the exact same date are now fully mature plants, flowering already for their second season.

Fortunately it is possible to propagate *H. marxii* from leaves and although it takes about a full year before the leaf starts producing offsets, they do develop a bit faster than seedlings, fig 13.

Gariëp plants in Pretoria soon realized that the best way to produce *H. marxii* in quantity would be with the use of tissue culture. For a few years all tried and tested techniques to propagate *H. marxii* from tissue culture failed, but finally during 2010 the tissue culture laboratory was successful.

Successful maintenance of *H. marxii* in cultivation is also dependent upon realizing the specific requirements of the species. Quite a few essential pointers can be obtained by studying how these plants grow in habitat.

Not only do these plants grow on relatively steep shady south slopes, but they even hide well hidden in crevices or underneath shrubs. When grown in strong light in cultivation, *H. marxii* will shrivel and turn brown and lose roots. To bring such a plant back to plump healthy condition is difficult and can take many months. In contrast to most other *haworthias* that are quick to regrow roots, *H. marxii* is very slow and reluctant to do so.

This shade-loving character may ironically mean

that growers in areas of the northern hemisphere who normally struggle to give their plants enough light may find *H. marxii* quite happy in a relatively dark greenhouse.

The area south of Laingsburg is transitional in more than one aspect. It is the transitional area between the Little Karoo and the Great Karoo and also the beginning of a gradual change between summer and winter rainfall areas. To the north of Laingsburg summer rainfall starts to dominate while to the south most rainfall occurs during the cooler months. Rainfall



Fig. 13. *H. marxii* leaf-propagations in progress.

peaks occur during late fall and early spring.

Although the average rainfall in the specific mountainous habitat area of *H. marxii* is higher than in the very arid surrounding flats, it is still quite low, roughly between 8 inches (200mm) and 12 inches (300mm) per year.

Therefore, although water must be given very sparingly, watering throughout the year may be necessary for *H. marxii*. It grows near the top of the Rooiberg Mountains south of Laingsburg at 1100 m altitude and surrounded by lots of solid rock surface. This means that the plants must surely benefit from water runoff during rainfall and even condensation on these rocks during misty weather conditions. Being on a slope, the drainage must also be quite significant which means the plants are never in a soggy wet situation.

Summer temperatures at 1100m altitude are also a bit less severe than on the lower lying areas, where it can regularly climb to over 40°C during January to March. In addition and as mentioned, *H. marxii* hides well-shaded on the cooler south-facing slopes.

The minimum temperatures experienced at the specific habitat may also be less severe than in some flatter areas at that altitude. The 1100m altitude is a bit too low to receive snow during winter although it may probably happen once or twice during a century. Still, winter nights drop regularly to below freezing at that height during mid-winter and might even fall as low as minus 4°C. But, being situated on a slope and on a high

hill-slope, it is unlikely that it may get so cold where the plants hide. I would therefore not recommend allowing *H. marxii* to experience temperatures below 0°C in cultivation, probably better to keep them above 4°C. It must also be remembered that although many haworthia populations in the wild may regularly experience 0°C or a little lower in the wild, the duration of such low temperatures is very short, only about two to three hours before sunrise, and, as soon as the sun rises, the temperatures rapidly climb to above freezing. Such frosty nights always occur during cloudless weather that allows such severe heat loss radiation to take place overnight, but that also guarantees a sunny day to follow with a midday temperature of just above or below 20° C.

Another important factor is ventilation. It is clear that these plants demand a situation where air can flow freely and in the wild there is almost constant air movement. During a visit to the habitat Martin Scott and I tried to determine why it was that the population of *H. marxii* suddenly stops at a certain point westwards along the hill slope despite the fact that the habitat continues unchanged. Then we realized that at that specific point the wind breaking effect of a parallel and adjacent hill to the south-west could be felt. This suggested that *H. marxii* is only growing where there is direct effect from the regular and cooling south-westerly wind.

The soil mix for *H. marxii* should be very well drained, more so than for the average Haworthia. Best results were obtained in a mix of 80% perlite with the remaining 20% being sifted leaf mould or sifted loam. Both loam and well broken down leaf compost work equally well.

In conclusion:

Although *Haworthia marxii* is not outstandingly attractive in terms of collectors appeal it must be one of the most interesting and puzzling elements within the genus. It's unexpected and unusual geographical situation, in addition to a combination of unique morphological and flower features that are not clearly linked to any known species, places it in the same category as *H. springbokvlakensis* for example. In fact, it may be easier to justify the inclusion of *H. springbokvlakensis* into *H. emelyae* than it would make sense to attempt a forceful inclusion of *H. marxii* into the latter.

References:

Gildenhuys, S.D. 2007. *Haworthia marxii* (Asphodelaceae, Aloaceae), a new species from the Little Karoo, South Africa. ALOE 44(1) : 4 -8.

Marx. G. 2007. The hidden mystery *Haworthia* of the Rooinek Pass revealed. ALOE 44(2) : 34 – 37.

Photographic Supplement.

Figs. 14 - 26

The selected photographs on the following pages further illustrate *Haworthia marxii*, the habitat in which it grows and the effect the habitat has on the plants.



Fig. 14. The Rooiberg Mountains south of Laingsburg, habitat of *H. marxii*.
Fig. 15. Looking eastwards from the top of the hill slope where *H. marxii* grows.





Fig. 16. *H. marxii* growing together with *Astroloba smutsiana*. This plant grows near the upper part of the hill slope and receives some filtered sunlight, resulting in a smaller and more compact rosette reminding somewhat of *H. venosa* subsp. *tessellata*.

Fig. 17. Having both germinated inside this partly hidden pocket amongst the rocks, the *Astroloba* seemed to have attempted an escape while *H. marxii* appears quite content in the shaded shelter.

Fig. 18. The small *Gasteria* species is seen here growing a few centimetres below *H. marxii*. The *Gasteria* is either a small form of *G. disticha* or a western form of *G. brachyphylla* var. *bayeri*.





Fig. 19. A large and old plant hiding deeply tucked away amongst leaf debris below the overhang of a large rock.

Fig. 20. Branches of a shrub moved aside to reveal a large specimen of *H. marxii* growing below it.

Note the flattened habit of the rosette.

Fig. 21. Dead leaves removed to show another well hidden plant.

Fig. 22. No more space for expansion. *H. marxii* tightly packed inside a small opening amongst the rocks.

Fig. 23. Two plants growing together inside a narrow crevice.





Fig. 24. A remarkably clean and glossy plant showing intricate leaf markings.



Fig. 25. An attractively marked plant with a smaller one nearby growing half hidden below numerous shrub stems and branches.



The largest and most impressive plant encountered in habitat. The elongated leaves remind a bit of *H. badia*.