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Four clones of *H. mirabilis,* Eastern Zone of distribution - M.B. Bayer, Update 8.

Contents

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Aloe Cultivars. Part 2.

For Part 1 please see the July 2012 Journal.

Aloe 'Guido'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves lanceolate, slightly twisted, medium green with longitudinal oblongs of white on both leaf surfaces, margins with cartilaginous, sometimes teeth-like, blocks of white. The plant photographed was obtained from Plantlife Nursery, UK

Propagation. Offsets.

Aloe 'Moondance'

Parentage. Not known.

Description. Rosulate, acaulescent; leaves lanceolate, recurved, twisted, dark green but covered in minute white spots, which give the plant a light grey appearance, the dark green is visible only as occasional spots and dashes. The plant in the photograph was obtained from Eunie Thompson, USA

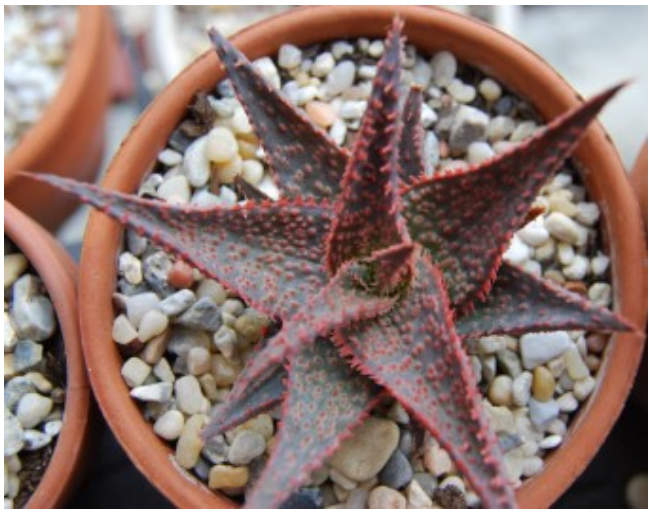
Propagation. Offsets.

Aloe 'Medium Well Done'

Parentage. Not known.

Description. Rosulate, acaulescent; young leaves lanceolate, older leaves lower half broad, upper half abruptly narrow, all dark bluish-grey-green, both surfaces with scattered, dense red tubercles, marginal spines red. The plant in the photograph was obtained from Tim Harvey, USA.

Propagation. Offsets.



Aloe parvula x *Aloe descoingsii*

Description. Rosulate, acaulescent; leaves lanceolate, more or less vertical, tip twisted, grey-green, white tubercles on both surfaces some with spines, marginal teeth somewhat curved, large, spaced, white. The plant in the photograph was obtained from Cok Grotscholten, Netherlands. This clone has apparently not been given a cultivar name.

Propagation. Offsets.

***Aloe* 'Pink Fang'**

Parentage. Not known.

Description. Rosulate, acaulescent; leaves lanceolate, tip slightly twisted, dark-green with many white spots and short oblongs arranged longitudinally, marginal white teeth single or in groups. These may become slightly pink in good light. The plant in the photograph was obtained from Al Lauis, UK

Propagation. Offsets.

***Aloe isaloensis* x *Aloe* 'Cha Cha'**

Description. Rosulate, acaulescent; leaves medium green with a few white spots and tubercles on both surfaces in longitudinal rows, marginal teeth small, white.

The plant has been recorded as having been obtained from Harry Mays at the ELK in 2010 but he has no recollection of having produced such a cross.

Propagation. Offsets.

***Aloe* 'Hyaline Edge'**

Parentage. Not Known.

Description. Rosulate, acaulescent; leaves elongated lanceolate, bluish-green, occasional white spots on both surfaces, margins serrate, white. The plant in the photographs was obtained from Eunice Thompson, USA.

Propagation. Offsets.

***Aloe* 'Dragon' K. Zimmerman**

Parentage. Two F1 hybrids, clones 1 & 2 of *A. divaricata* x *A. parvula* were crossed to produce this F2 hybrid. Distributed as ISI 2010-11.

Description. Rosulate, acaulescent; leaves elongated lanceolate, slightly twisted, upper surface flat to slightly convex, milky blue, heavily studded with pinkish teeth, marginal teeth pinkish.

Propagation. Occasional offsets. The Huntington Botanical Gardens tissue culture the ISI plants to ensure early release to the public.

***Aloe* 'Blue Boy'**

Parentage. Not known.

Description. Leaves broad at the base tapering to a point, bluish; low, concoloured tubercles, central row of few, somewhat spiny, tubercles; young leaves concave, erect to spreading, older lightly recurved; marginal spines whitish.

Propagation. Offsets.

***Aloe* 'Somaowiae'**

Parentage. *Aloe somaliensis* x *Aloe bowiea*

Description. Rosulate, acaulescent; leaves elongated lanceolate, margins slightly incurved, marginal teeth small, pinkish-red, leaf base bright green, upper grey-green, white flecks in longitudinal rows, the number of which decreases towards the narrow upper part. Full sun may increase the intensity of the leaf colour. The plant illustrated was obtained from Tanguy, France.

Propagation. Offsets.

If you have any further information about any of these cultivars - parentage, by whom created, where the original description was published etc - do please send details to the editor at: hmays@freenetname.co.uk

***Aloe* 'Bronze Star'**

Parentage. Not known.

Description. Leaves long, narrow, tapering to a point, the ends lightly recurved; surface caniculate, spotted white in vague longitudinal and latitudinal lines; margins red, toothed; leaf colour dark bluish-green.

Propagation. Offsets.

***Aloe brevifolia* v. *postgenita* variegated**

Description. As for the variety except that the leaves are stiated in white and light greyish-green. Leaf margins and spines and keel teeth are white.

Propagation. Offsets.

Haworthia marxii and *H. truteriorum* in relation to rational classification.

M B Bayer

Explanatory note: In a rationalised list of names I wrote and had published in *Haworthia Update Vol. 7* I made two political decisions. One of these was in respect of *H. marxii* and the other in respect of *H. truteriorum*. In the case of *H. marxi* I included it under *H. emelyae* and in the case of *H. truteriorum,* I placed this under *H. bayeri*. In neither case did I have good evidence for doing so, much other than my conviction that a classification is intended to reflect origins and relationships. This is why I say my decisions were political, because in formalizing names one perforce is pressured into making decisions that you are not informed enough to make. The authors of the two species would also not be adequately informed enough either. I think their account of *H. mutica* (their *H. groenewaldii)* at Buffeljags demonstrates this. *H. marxii* presents particular problems that I simply do not have any substantial data that I can process. In the case of *H. truteriorum* I did have some to which I can now add. This suggests as Breuer and Marx indirectly indicate, that *H. truteriorum* relates to my concept of *H. mirabilis*. I concede that I may be quite wrong in attributing it to *H. bayeri.* I find it very difficult to see the decision to describe it as a distinct species as a logical scientific action. This article does not extol any imagined virtues or skills of mine. It is only intended to further project my opinion that we urgently need to work towards a classification that does satisfy scientific principle and not novelty or commercial ends. It is also a counter to some very negative opinion aimed in my direction.

At a level above classification lies respect for people and their feelings. Therefore this writing should not be seen as anything but a commentary on the classification process and not how this can also denigrate people as much as honour them. *H. marxii* is described by S Geldenhuys in **ALOE 44.1:5,** 2007 from apparently 2 populations in a confined area in the north and east of the Little Karoo. Placing it with *H. emelyae* simply reflects doubts that need to be expressed about how this oddity has come about and respect lost for reasons not necessary to explain. *H. truteriorum* is described by Ingo Breuer and Gerhard Marx in **ALOE 48.3:54,** 2010 and refers to a single population of plants southeast of Oudtshoorn. That this latter population is singular and extremely interesting goes without question except for how it is explained. Despite much correspondence with both authors and after reading their published works, I am not aware that either has a concept of what a species is any better than what may have been held by either K. Von Poellnitz or G.G. Smith. Ingo Breuer particularly has published what he refers to as a species concept of *Haworthia*, and it is nothing more than a long list of Latin binomials and we have to assume that this is then also a list of real species. Gerhard Marx maintains that my attempt at a species definition is so broad as to be meaningless.

H. truteriorum is described in a popular journal that has been approached by at least one botanist not to publish new species as there is no official review process. However, the response was that the journal does have its own in-house authorities that cover the possibilities of scientific lapse. I note that the article is specifically foot-noted to indicate an editorial review. There are some lapses that I will deal with but recognizing that these might not be the same ones that a properly qualified botanist (a minimum of a recognized 4-year degree course), nor those that an experienced and knowledgeable botanical taxonomist may have corrected. More important though is the population itself and where it fits into the overall *Haworthia* picture.

The most substantial gain that we can make is to arrive at a species definition. It is evident to me that species are complex systems in which there are variations that have arisen from earth differences and must continue to exist to facilitate response. Therefore a species will have a geographic distribution across which individuals and populations will vary and be different from one another. Geology and geomorphology will be strong factors influencing plants like *Haworthia* that are associated with skeletal soils and rocky habitats. This means that we have to look for associations in respect of distributions and the driving forces that affect even vegetation. Thus in the case of *H. marxii* (known from 3 populations in a small area south of Laingsburg) the vegetative appearance of the plants cannot be seen in any other species geographically closer than *H. emelyae,* which is quite a long distance away southwards. The presence of *H. pumila* in the same area as *H. marxii* suggests that the *Haworthia* presence there could extend from the Worcester/ Robertson Karoo. Hence *H. mirabilis,* also present in the Montagu area, cannot be ruled out in seeking a relation to *H. marxii*. There is much more to this issue of *H. mirabilis* in respect of its variability and its distribution into the Little Karoo that impacts directly on this suggestion. It also impacts on the real identity of *H. truteriorum*.

Where I see a real problem with *H. marxii* is in floral morphology. I gather that the flower very much resembles that of *H. marumiana dimorpha.* In the same way that the flower of *H. pulchella globifera* is identical to that of *H. cymbiformis incurvula* at Plutos Vale, there is a massive problem in drawing conclusions from flowers as a character for the level at which all role players are trying to identify species. But so-much for *H. marxii*.

The case of *H. truteriorum* is more manageable. I have been speculating for a long time that *H. mirabilis* and *H. emelaye* may in fact be the same species. This may be the proper level at which we should be recognizing species as systems. I extend the argument even to say that it is not inconceivable that *H. retusa* and *H. mirabilis* are one species. This means that I have to bury my long-held objection to the view that "*Haworthia* is a genus in a state of active evolution". My objection being that this is an obvious aspect and that in any case all species are faced with the inevitable need for change and adaptation. But this does not weaken my view that species are chaotic, fractal systems that vary around a point of attraction according to the stability of their genetic bases and mutating rate. How strong I am on the technicalities of DNA and evolutionary theory may be problematic, but there is no evidence that other authors even contemplate the issues.

Gerhard is a remarkable observer and I have huge respect for his many skills. Ingo is a really competent compiler too. I do not question what they say about the characters of the plants and their observations. What I doubt is their knowledge and insight into broader botany and the distribution and variation in *Haworthia* however much more they know than the above average collector.

My prime objection is that the description involves a single localized population. This in itself creates huge doubts in my mind because on this basis, Ingo' several hundred species is conservative.

I will only dwell on three other points. The one is their very trite "Never before have retusoid type Haworthias been found growing in shale in the Little Karoo". The second point if the habitat description in relation to geology. The third is the flower and flowering time. The fourth is about the illustrations and the art work.

Haworthia mirabilis was recorded in shale at Barrydale by Smith prior to 1947. It was recorded at two places in shale or shale derived soils prior to 1999 and I can add that I have seen it at two new occasions in shale in the Montagu area

since. The second point is their description where they refer to *H. bayeri* and *H. emelyae* occurring in quartzite and quartzite conglomerates. As in the description of *H. groenewaldii,* this is simply a very crude and inaccurate account of a very important issue. I am no geologist but I do know what quartz is and that it occurs in both shale and sandstone formations. Conglomerate is another issue as it seems to me that the rock inclusions in a conglomerate are by and large quartzitic because of their position in the weathering and subsequent secondary rock formation processes. Furthermore, I do know that the Oudtshoorn area has an incredible geology with ancient and recent geological formations adjoining as a consequence of faulting and folding. Quartz is Silicon oxide and is apparently soluble in water at high temperature and pressure formation so that it can accumulate in fissures and bands in parent rock. In both sandstone and shale the quartz varies in purity, and the crystals in size. South of the Langeberg the shales are covered in an extensive layer of tertiary gravels that are far less extensive north of the mountains. But the main point is that the vast quartz patches of the Little Karoo are actually associated with quartz existent in the Bokkeveld shale. The "species" need to be properly looked at in their relation to the complex geology that exists there and their habitats not dismissed so inaccurately. It can be shown that both *H. bayeri* and *H. emelyae* have historically been confused with *H. mirabilis* and there may be good reason for this.

The flower and flowering time is part of the myth of a non-existent species definition and this is confounded by the concept Ingo and Gerhard have of the nature of *Haworthia* species. Ingo has attempted to jump this issue by the recognition of "aggregates" and the two authors use the fob of "the *mirabilis/maraisii/magnifica* complex". This complex I presume covers a list of names only. This I do think is based on an ignorance of a real knowledge of field botany generally and of *Haworthia* in particular. I say this with great emphasis and conviction because it is something I am still working towards. I have just completed a very thorough look at a the flowers of a very small fragment of populations driven by the expressed opinions of both these authors in diverse places, that flowers are significant with the import that I have ignored them. The fact is that if the flowers are considered then we have a bigger problem than before – not a solution. The flowering time of *H. truteriorum* is very possibly an indicator of behaviour rather than a species differentiator. Why they emphasize it is most probably, as J Manning pointed out, that most observers (taxonomists) have a subconscious belief that species are things that do not interbreed and so flowering time is seen as such a great barrier to interbreeding that it MUST be a major species indicator. My observation is that this is not true and that species are inherently highly variable systems with great capacity to respond to environmental drama that may threaten their continued existence.

There is a very good description of the flower and its character, but the illustration and the art work is poor. The photograph of the flower is of a single dissected flower to show an internal structure that could be of any species in the subgenus. That flower does not look to me like the perhaps longer, narrower flower of *H. mirabilis* (real) which is largely recognizable on the arrangement of the petal tips in the bud-stage. This '*mirabilis'* character should be apparent in the way the petal tips display and we have only a painting to judge this by. Despite Gerhard's draftsmanship I am not sure if his flower picture is a true image. I do have a problem with Gerhard's outstanding art. Many years ago, photography was a bit of a handicap when it came to illustration of floral and other plant detail. Historically artists were used to capture detail that could not be described or otherwise illustrated. In the present age this is a bit of a myth and it lives on simply because of the skill that is involved in the production of a good piece of botanical art. Gerhard's art is up there with the very best. But good art does not equate to good science.

I have no confidence in Ingo's taxonomic judgments based not only on the massive number of species. If Gerhard, as a very competent grower, observer and artist is going to follow this example and continue to denigrate my opinions, I fear for where classification of *Haworthia* is headed.

Note. See "An honorary Ariocarpus in Africa. Notes and updated information regarding Haworthia marxii S.D. Gildenhuys & Gerhard Marx." July journal 2012, p 15-28.

Bruce Bayer's acceptance of *Haworthia marxii* as a good species.

Bruce Bayer has posted the following message on Facebook. "This is a good time to concede that *H. marxii* is a very good and distinctive species and I apologise unreservedly to Sean Gildebhuys for even suggesting otherwise. My action was just political to expose the misconceptions evident when flower morphology and relationships (in this case with *H. marumiana 'archeri'*) get dragged into the picture. The overriding character to me is what Al Laius tells me i.e. that marxii has fibrous roots. The work of Schneider showed that this is a significant difference between sg Hexangulares and sg Haworthia. Geographic position is also of course crucial. My actions were driven by considerations also relating to other "species" and "aggregates".

Species are determined by the author's species definition. There is no one universally accepted definition and no evidence that there is any possibility of one being agreed. Authors will, therefore, continue to define species in different ways.

The naming of species is determined by the International Code (of botanical nomenclature) which determines the validity of names. All authors comply with this Code, but Bruce Bayer rejects it. The result is that his tripartite names e.g. *H. marumiana 'archeri'* are invalid. See *Plant Names - a word of warning* Alsterworthia International 12(2)11 & 14 (July, 2012).

Using "political decisions" to help determine species is not a normal classification practice. Editor.

Haworthia jakubii I. Breuer.

Gerhard Marx.

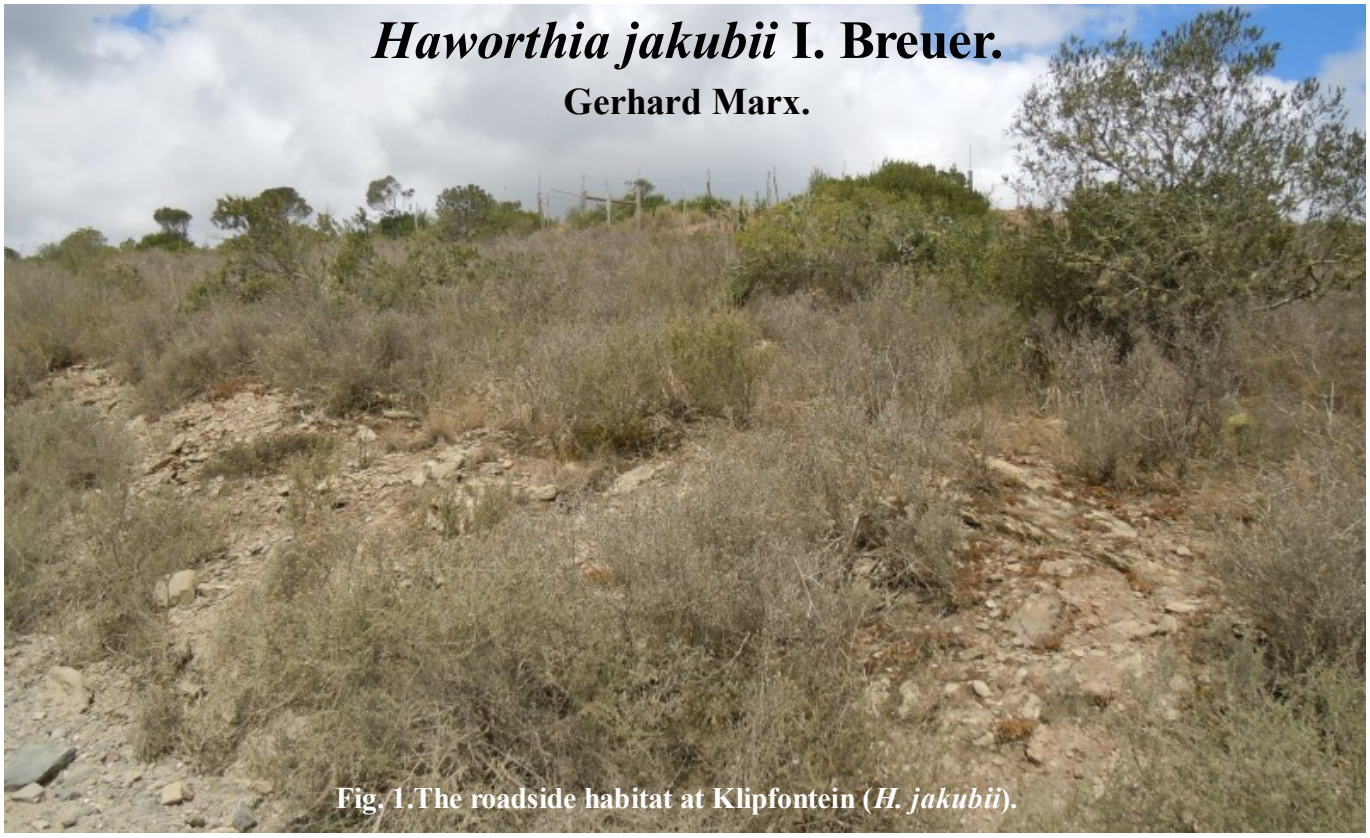


Fig. 1.The roadside habitat at Klipfontein (*H. jakubii*).

During early March 2008 I joined Bruce and Daphne Bayer and Kobus Venter to explore the area north-west of Still Bay with the main purpose to look for *H. jakubii*. Details of the habitat had been kindly provided by Jakub Jilemicky after whom the plant was named.

Finding the *H. jakubii* habitat was quite easy as the population is on a road reserve (Fig 1) and not far from the where the road crosses the Kafferkuilsrivier. Upon seeing the plants in the wild, Bruce explained that they were identical to plants that he had seen ca 5 km to the north on the farm Windsor. Later he took us to the farm to see the them.

Soon afterwards Bruce Bayer published an account of these habitat visits in chapter 14 of Haworthia Update Volume 5, part 2, titled *Haworthia jakubii – another new species*? The article features several habitat photographs of MBB 7818, Windsor and MBB 7820 Klipfontein. The latter locality, Klipfontein, refers of course to the *H. jakubii* type locality which was given by Ingo Breuer as 'Melkhoutkraal'. On a map the locality looks indeed to be closer to the farm Melkhoutkraal than to Klipfontein, but strictly speaking the spot falls within the Klipfontein farm boundaries. Or, perhaps, it should say 'just outside the Klipfontein fence', since it is on the road reserve.

In Update 5, Bayer goes ahead and answers the question in the title in a characteristically dismissive discussion, concluding that the plants should just be referred to as "*H. mirabilis* '*jakubii*'" and that although it is a "significant population" it is not worthy of recognition within the nomenclatural system of formal botany.

This may all seem quite convincing to many readers who have no other information on which to base a decision. At first glance the habitat pictures published with the article seem to support the arguments. In fact this article is the perfect example of how easily one can be misled by such commanding arguments based upon and supported by a few brief snapshots of the appearance of haworthia plants in habitat.

In previous articles I have pointed out repeatedly that one cannot learn a great deal about the true identity of haworthias by only doing brief field observations. It is a necessary part of the natural and inherent protective measures of these plants to present themselves with a certain amount of humble disguise and indistinctness in the wild. Hence the confusing similarity with which geographically adjacent different elements often imitate each other in the wild. The case of these Windsor and Klipfontein plants is a good example.

Figs. 2-3 opposite were taken by me on 8 March 2008, of plants in the wild and are therefore very similar to the ones in the Haworthia Update article. Both the Klipfontein and Windsor plants seem to display a somewhat similar dull grey-red and grey-green range of colours and no drastic differences are apparent.

Fig. 4 below shows plants from these two localities after being grown for three years under similar light and watering conditions next to each other in cultivation. The Windsor plants are seen on the left and the *H. jakubii* plants from Klipfontein on the right. A totally different picture indeed! It is hardly necessary to add much of a discussion as the photos tells it all. They reveal that there are two quite different plants. Based on closer observation and looking at the leaf morphology alone, perceived differences are listed between the Windsor plants and the Klipfontein plants (*H. jakubii*) in Table 1 overleaf.

With the above facts in mind and looking back at the habitat pictures of both, one can start to see the differences even in the habitat plants to some extent, but the situations in the wild involve numerous disguising factors. In this particular case these pictures were taken during early March which is the dry and dormant season for these plants. This means that even a bright green plant like *H. jakubii* will generally be grey-brown and suntanned and somewhat shrivelled in the wild at this time of the year. A second important and 'unnatural' factor in this case is that the *H. jakubii* locality at Klipfontein is less than a metre from the side of a dusty gravel road and these plants are covered with dust most of the time, but particularly so during the dry summer. The Windsor plants are growing far from a road on a remote upper slope of a west-facing river bank, fig. 5, and although dry and shrivelled, there is not the dust factor.

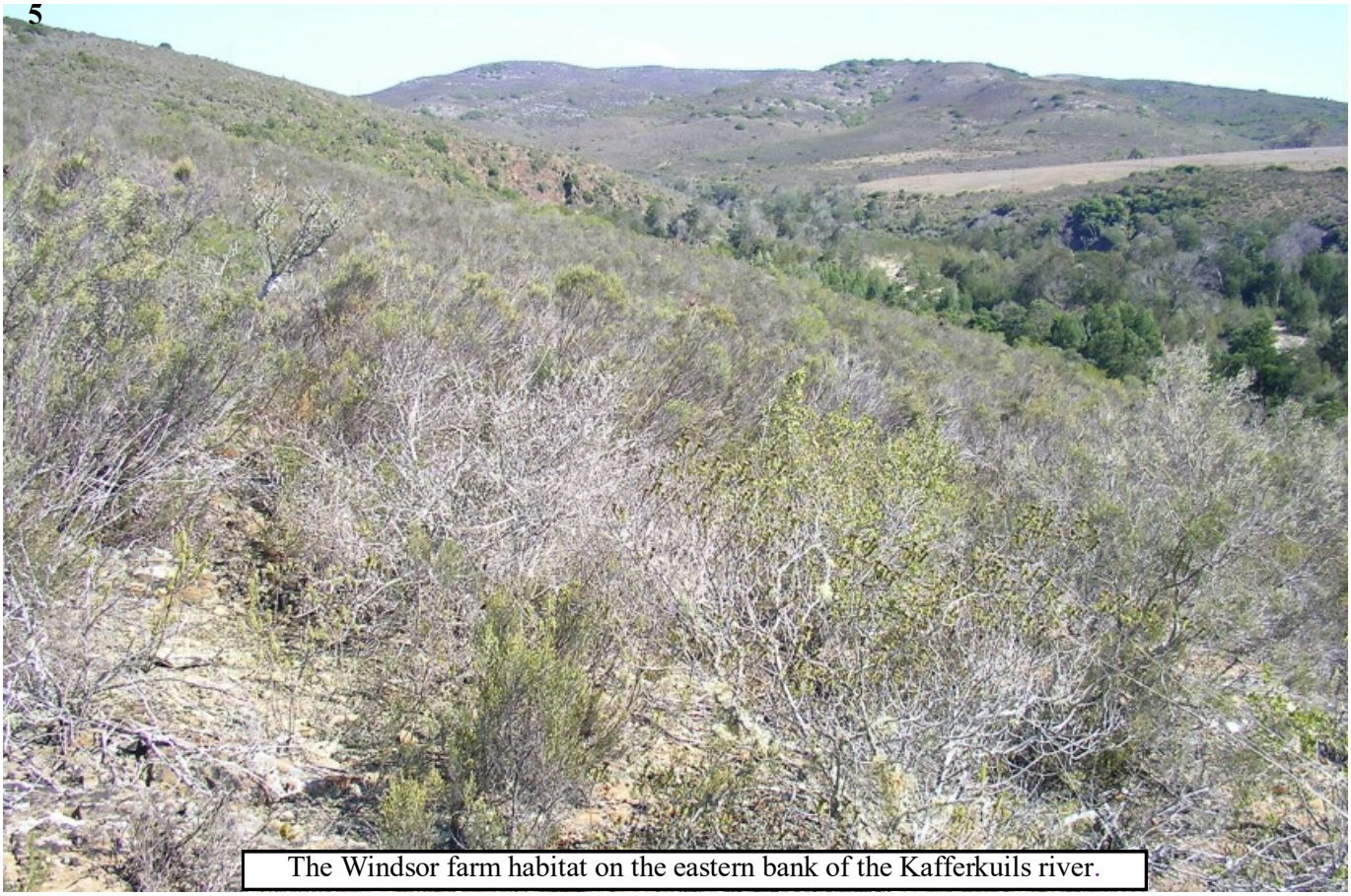
Fig. 4. After three years in cultivation under identical conditions. Windsor plants on the left *H. jakubii* Klipfontein on the right.

These Windsor plants (figs 7 - 9) compare very well with the *H. magnifica* populations (figs. 10 & 11) ca 20 km to the north in the Platkop and Soetmelksrivier areas, as well as with the well-known '*asperula*' form at Komserante near Riversdale. As can be seen from obvious features on the photographs, the Windsor plants do not differ significantly enough from the latter to justify a separate formal reference.

Windsor	**Klipfontein**
Leaf margins smooth or lined with numerous very small teeth.	Leaf margins have fewer and larger teeth.
Leaves wider and dull grey-brown in colour.	Leaves narrower and bright green in colour.
Leaves acuminate with flat to subtly convex upper areas.	Leaves strongly acuminate with long end-awn and distinctly convex above.
Leaves per rosette up to 18 in number.	Leaves per rosette up to 26 in number.

Table 1. Comparison of leaf morphology.

In the case of *H. jakubii* from Klipfontein/ Melkhoutkraal area, the determination of the closest ally is less easy. Both Breuer and Bayer linked it to the *paradoxa* variety occurring 25 km to the west at Vermaaklikheid (Fig. 12). Breuer lists it as *H. jakubii*



The Windsor farm habitat on the eastern bank of the Kafferkuils river.

Figs. 6 & 7. More habitat pictures of *H. jakubii* (left) and *H. magnifica* at Windsor (right).

Figs. 8 & 9. More habitat pictures of *H. jakubii* (left) and *H. magnifica* at Windsor (right).

Figs. 10 & 11. *H. magnifica* (= *subsplendens* sensu Bayer) in habitat, NE of Platkop, east of Riversdale.

within *Aggregate Paradoxa* while Bayer views it along with *H. bobii* from Infanta as synonymous with *H. mirabilis* var. *paradoxa*.

The comparisons with *paradoxa* seems to be mainly influenced by the geographical proximity of the two, because the morphological differences between *jakubii* and *paradoxa* are certainly unconcealed enough for them to be distinguish at a glance. In fact, the comparison of the two also brings up the necessity to define and evaluate the differences between *H. magnifica* and *H. mirabilis*. The roughly tubercled leaf -sides of *paradoxa* links it convincingly to *H. mirabilis* while the silvery-white flecks in the leaves of *H. jakubii* suggest connections to *H. magnifica* and *H. pygmaea*.

However, perhaps no further verbal elaboration is needed at this point as the main purpose of this article is just to emphasize the existence of an attractive and most interesting and rather distinct haworthia variety that has not been given deserved attention to date. To what species it needs to be linked is a question that can only be answered after the currently continuing cluttered concept of *H. mirabilis* has been fully clarified. *Haworthia mirabilis* as presently applied seems to be flawed at its very basis and needs redefinition, but that is another lengthy discussion.

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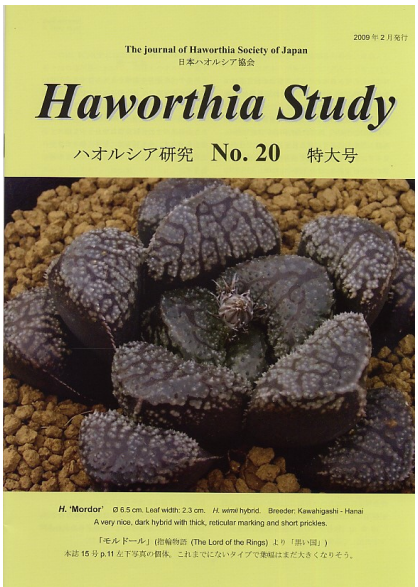
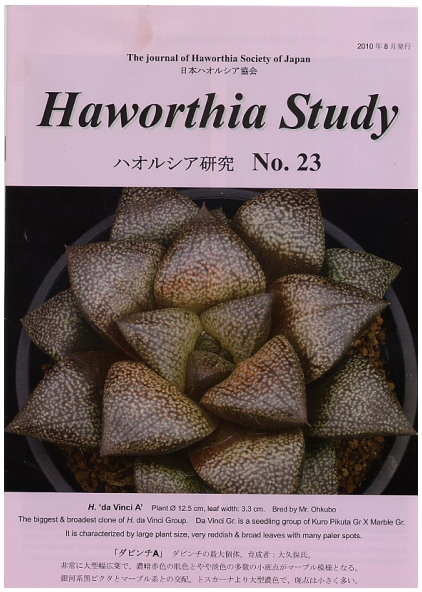
Fig. 12. *H. mirabilis* var. *paradoxa* in habitat, SE of Vermaaklikheid.

Fig. 13. Close-up view of the leaves of *H. jakubii*. Note the sparse but larger teeth on the leaf margins, white flecks inside the leaf windows and opaque leaf sides.
Fig. 14. A Windsor plant close-up. Note the very small and more numerous suppressed teeth along the margins.



Haworthia Study. Revision of Prices.



Since the prices for Haworthia Study outside Japan were fixed some years ago changes have taken place in both the cost of production and exchange rates. For example, as stocks of back issues of Haworthia Study were exhausted some time ago, back issues have to be printed more or less "on demand". The cost of producing Haworthia Study back issue is now about twice the price originally fixed and exchange rates have also changed. ***The package prices for back issues of Haworthia Study are therefore discontinued***.

The current price of membership for the Japanese Haworthia Society is about £42.00 (exchange rate dependent). The basic price of their journal, Haworthia Study, for subscribers outside Japan is now fixed at £20.00 per volume (one year, two issues) world wide for all volumes i.e. including back issues. This is less than half the Japanese membership fee. The amount for postage and packing to be added is destination dependent. All current year Haworthia Study are sent by bulk surface mail to Harry Mays for despatch to subscribers. Alsterworthia International members' Haworthia Study will be sent with the next Alsterworthia International Journal by surface mail; non-members' will be sent immediately by surface mail.

The following are the new prices for Haworthia Study for the various categories and destinations *for current year subscribers*:

1. **UK Alsterworthia International members**. £20.00 + £2.00 p&p = £22.00.
2. **Rest of the World Alsterworthia International members**. £20.00 + £4.50 p&p = £24.50.
3. **UK non-Alsterworthia International members**. £20.00 + £4.00 p&p = £24.00.
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Subscriptions may be paid world wide by PayPal to alsterworthia@freenetname.co.uk, but please add 4% to the sum due to compensate Alsterworthia International for the deduction made by PayPal; by bank transfer to Alsterworthia International (bank details page 2, but please note that bank transfers from banks outside the UK may attract high bank charges, which must be paid by the payer); by cheque/bank draft drawn on a UK bank payable to Alsterworthia International or to an Alsterworthia International Honorary Representative if your country has one.

The price for back issues, 2 per year, (all before 2013) is £20.00 per year plus Japanese postage. They will be sent direct from Japan to the subscriber by recorded air mail if more than two copies (one year) are ordered. The price for postage will be determined in Japan and added to the back issue price. When Harry Mays confirms that this payment has been made, the back issues will be sent from Japan direct to subscribers .

Please note that all communications should be sent to Harry Mays, not to Japan.

The Opuntiad Web Site

Joe Shaw - shawjoe@gmail.com

We are enthusiastic about opuntias and enjoy travelling to see and photograph them in habitat and to write about them. We have produced a web site www.opuntiads.com which provides information for over 100 species of Opuntia, Cylindropuntia, and Grusonia of the United States. The plants are described and illustrated with multiple large photographs and, where possible, original descriptions of the plants are provided. The goal is to make identification of this group of plants easier and promote appreciation of them.

As a separate, but related, project, we maintain a cactus and succulent blog (www.opuntiads.com/oblog) and invite hobbyists to provide short articles with photos.

Additionally, the Opuntiad's Web has separate sections that feature some succulents and cacti as well as Opuntia literature. We are pleased to have a page displaying images from Alsterworthia International (http://opuntiads.com/O/more/other-succulents/alsterworthia-international/).

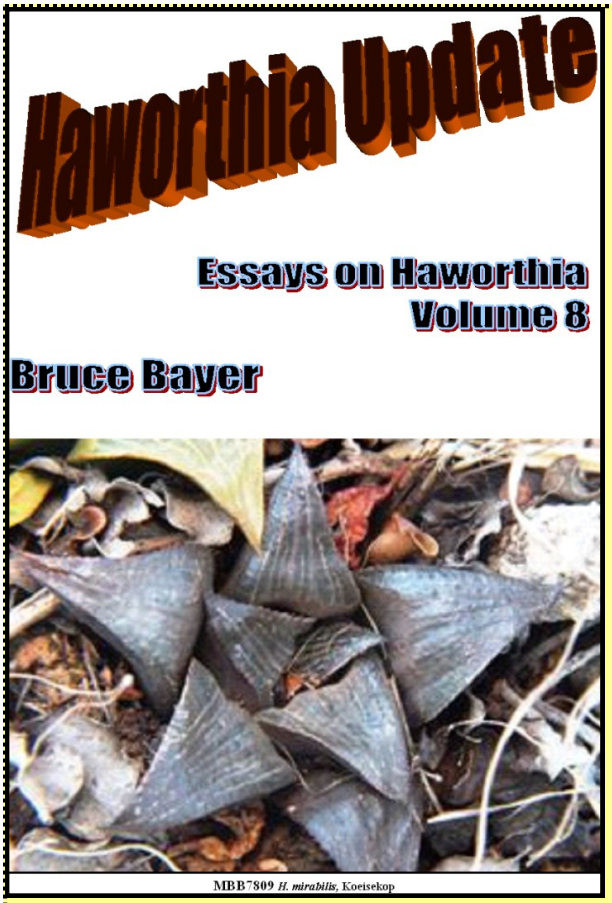
We hope you will visit us sometime in the future and perhaps make a contribution to our blog.

Opuntia macrocentra

***Opuntia aciculate* in winter**

Joe in Del Rio, Texas

Joe with a tree-like *Opuntia* in Texas



Haworthia Update
Essays on Haworthia
Volume 8.
Bruce Bayer.

Publication date: 31 July, 2012.

Update 8 is printed on A3 paper,
stapled and folded to A4 size.
There are 68 A4 pages including the cover.

Bruce has continued his field research, this time concentrating on haworthia flowers and the relevance he considers they have to classification.

The populations he has studied are:

SET 1. *H. mirabilis*, Eastern Zone. Figs 1-20.
SET 2. *H. mirabilis*, Central Zone. Figs. 21- 58
SET 3. *H. mirabilis*, Western Zone. Figs. 59 - 76
SET 4. *H. mutica* in its NE zone, Swellendam. Figs 77-88
SET 5. *H. floribunda* in its western zone, Swellendam. Figs. 89-104
SET 6. Outliers *H. mirabilis* and some relevant populations. Figs. 105-123

His report is divided into:
Habitat plants with 123 colour photos and
Raceme, Bracts, Buds and Flowers the latter subdivided into Face, Profiles, Capsules and Seeds with *innumerable* colour photographs, almost all of habitat material

A colour map showing the area covered and the locations of populations forms the back page of the cover.

Recommended retail price is £36.00 + p & p surface mail.

Member's price is £19.00 + £3.50 p & p UK, + £6.00 p & p rest of the world.
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The photographs on page 16 are page 4 of Update 8.
Those on the next page are page 52 of Update 8.
Please also see front cover.


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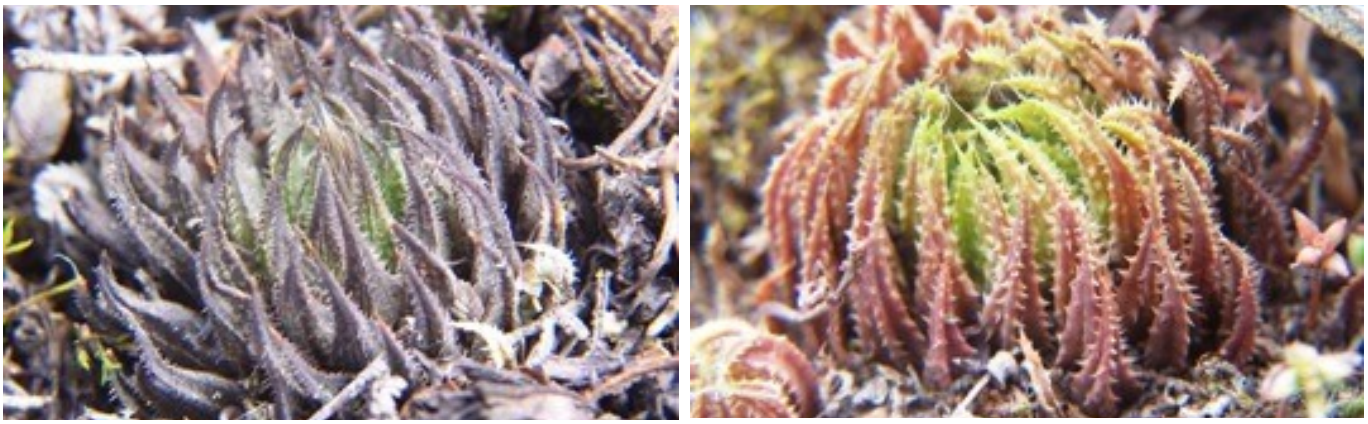


7269 *H. mirabilis* '*meiringii*', Edendale, E Bonnievale

7269 *H. mirabilis* '*meiringii*', Edendale, E Bonnievale

6509 *H. mirabilis meiringii*, W Bonnievale

Fish Tails and Fish Tales.
Some comments upon *Haworthia mirabilis* (Haw.) Haw.

Gerhard Marx

Years ago there used to be a South African TV advertisement that featured a boy enjoying Wedwo-fishpaste-covered-toast and indicating that he called his dog, his pussycat, his tricycle and even his mom 'Wedwo' because, he clarifies, he called everything he loves 'Wedwo'.

I can't help but be reminded of that Redro fishpaste advertisement each time I notice what a liberally applied umbrella name *Haworthia mirabilis* has becoming. Fish paste is a wonderful treat but a name, so wide and liberally applied, can only lead to miscommunication, impracticality and confusion. The name *H. mirabilis,* as encountered in recent publications, seems to involve many hundreds of haworthia populations stretching from the extreme south-western districts of the Western Cape Province eastwards to Albertinia and northwards into the Little Karoo. The species includes such a wide range of plant sizes, shapes and textures that there is no clear image any more that jumps to the mind when the name '*mirabilis*' is mentioned. What could be the unifying factor that can bind such a wide variety together? Could it be the presence of fish tail flower buds or is there another elusive factor hiding from anyone fishing for the truth? All this leave an ordinary dry land-dwelling bony fish like me a bit confused.

Setting aside corny fish puns, let's take a few brief short and summarized glimpses into the history of the species. The name *Haworthia mirabilis* has its origins with Haworth who described it in 1804 as *Aloe mirabilis* from plants received from Francis Masson and without any specific habitat data. Haworthia described the plants as "*an Aloe with leaves in 5 rows, retuse-deltoid, cuspidate; margins and keel ciliate-spinose, face glabrous, back little tuberculate and hardly reticulate.*" Haworth referred to it informally as the 'rough-cushion aloe" and added that "*Aloe mirabilis is a connecting but very distinctive link between the clearly distinct species retusa and pumila (=H. herbacea)".*

Fig. 1. An example of the various and different elements all currently being considered synonymous with *H. mirabilis* var. *paradoxa* by Bayer and Manning.
Back row: left to right: *H. jakubii*, *H. mirabilis* var. *paradoxa*, *H. bobii* var. nov. (glabrous).
Front row: *H. bobii*, *H. magnifica* (Windsor) and *H. mirabilis* var. nov. (Sandhoogte, Infanta).

Let's not dwell upon the above formal details too much. All that is important is that it was clearly a *Haworthia* with somewhat retuse leaves, stacked in five rows with teeth on the margins and finely tubercled on the leaf sides, hence the 'rough cushion' reference.

Both of the two oldest illustrations of *Aloe mirabilis*, the Ker Gawler illustration in Curtis' Botanical Magazine (1811) and particularly the illustration in the Salm-Dyck Aloe Monograph (1836) give a reasonably good idea of just how the plant looks. Figs. 2-4. (View 4 at an angle in strong light.)

A problem was that there was no type specimen preserved and no specific habitat data given.

In 1977 Bruce Bayer wrote an excellent and detailed

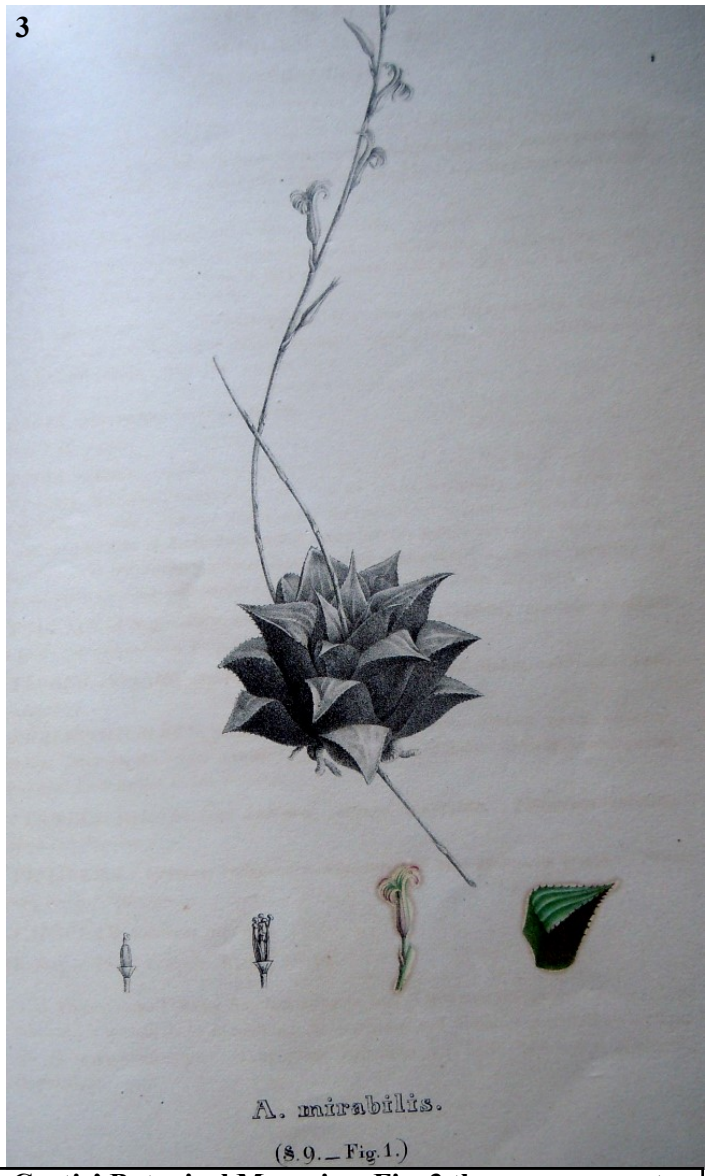


Fig. 2. The Ker Gawler illustration from Curtis' Botanical Magazine. Fig. 3 the more accurate and informative illustration in the Salm-Dyck Aloe Monograph on the right.

article about *H. mirabilis* and its history. In the article he mentioned: "*No imagination was required to envisage specimens particularly from around Greyton and Genadendal agreeing favourably with the illustrations of the species in Curtis' Botanical magazine and Salm-Dyck's Monograph*". In the same article he then formally suggests the Curtis' Botanical Magazine illustration as the Pictotype while he declares *H. triebnerana* and all its varieties (var. *depauperata*, var. *multituberculata*, var. *sublineata*, var. *napierensis*, var. *lanceolata*, var. *rubrodentata*, var. *subtuberculata*, var. *turgida* and var. *pulchra*) as well as *H. willowmorensis*, *H. rossouwii* and *H. nitidula* as synonymns of *H. mirabilis*. In the same article he lists two subspecies of *H. mirabilis*, subsp. *mundula* and subsp. *badia*.

The inclusion of the latter two as geographical variants of *H. mirabilis* was a most unfortunate error in an otherwise admirable summary of the history, characters and distribution of *H. mirabilis*. Both *H. mundula* and *H. badia* do not correspond well at all with the original description of '*Aloe mirabilis'*. The most outstanding differences between the *H. mundula* - *H. badia* duo and *H. mirabilis* are the total lack of tubercles on the leaf sides and the flatter habit of the rosettes of the two subspecies. Neither of the latter could be described as a 'rough cushion' for example!

However, there can be no absolute denial that *H. badia* and *H. mundula* are to some extent related to *H. mirabilis* as the flowers and flowering time coincide and there is also the shared feature of bifid perianth buds ("fish-tail buds"). But this same fish tail bud feature can be found throughout all the *H. maraisii* and *H. magnifica* related elements as well and even in *H. retusa, H. heidelbergensis* and the much debated *H. groenewaldii* (= *H. mutica* 'Buffelags' sensu Bayer). Also, the general

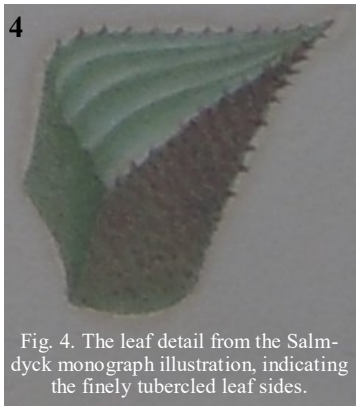


Fig. 4. The leaf detail from the Salm-dyck monograph illustration, indicating the finely tubercled leaf sides.

***H. mirabilis* "beukmanii" on the farm Nethercourt S/E Greyton.**
These plants correspond perfectly with the illustration in the Salm-Dyck publication. **5**

6

inflorescences of *H. mundula* and *H. badia* are a bit larger than those of all other *H. mirabilis* members and both have the differentiating feature of having very large and dark coloured elongated seeds.

Unfortunately with the publication of *Haworthia Revisited* in 1999 the whole situation got even more confusing when Bayer declared *H. mundula* to be the type *for H. mirabilis* var. *mirabilis* and discarded the name '*mundula*' altogether! It was indeed very unfortunate to have an element that corresponds very poorly to the original description of the species as type! I assume that the main motivation behind this was that the rather poor 1811 Ker Gawler illustration in Curtis' Botanical magazine was interpreted to represent *H. mundula.* Unfortunately the stacked and semi-erect leaves as well as the tubercles on the leaf sides were very poorly indicated in the drawing, which can indeed vaguely remind of *H. mundula.* However, the illustration in Salm-Dyck's Monograph leaves no doubt that the original plant described could not have been *H. mundula*.

Ever since 1999 the confusion simply escalated and the name '*mirabilis*' became so widely applied that the main stem of the messy and multi-branched 'mirabilis tree' became totally obscured. Recently it became clear that Bayer must have realized his error in considering *H. mundula* as the type form of *H. mirabilis,* because in his latest dispensation published in *Alsterworthia* 12 (1) of March 2012 he re-instates '*mundula*' as a variety of *H. mirabilis*. He also lists *badia* as a variety. In the latter article he conveniently makes no reference to his 1999 designation of *mundula* as type of the species, but only refers back to his 1977 suggestion of the Curtis Botanical magazine illustration as Neotype.

7

Fig. 7. Typical 'fish tail' flower buds as photographed on the recently described *H. groenewaldii*.

The type form of *H. mirabilis*.

As mentioned, the Ker Gawler illustration in Curtis' Botanical magazine of 1811 is a rather crude and unskilled illustration that may be open for subjective interpretation. Even the flower buds as depicted do not show the characteristic bifid buds that one would expect in *H. mirabilis*. However, despite the clumsiness of the details, it does clearly show a retusoid plant with acuminate leaves having numerous teeth on the margins and along the leaf sides are indicated some rounded tubercles. These can be interpreted as pellucid dots or raised tubercles. Whatever the case, the latter feature excludes *H. mundula* which has smooth and opaque leaf sides and which normally has less obvious teeth along the margins, sometimes lacking them completely.

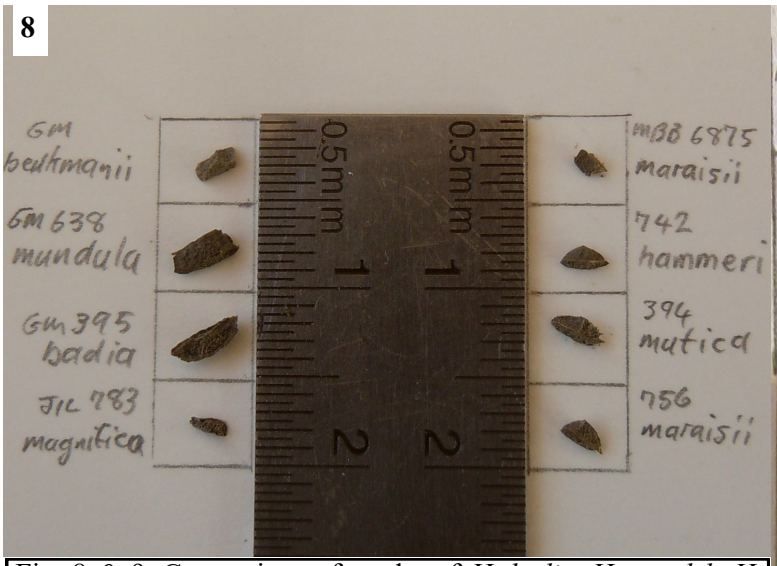
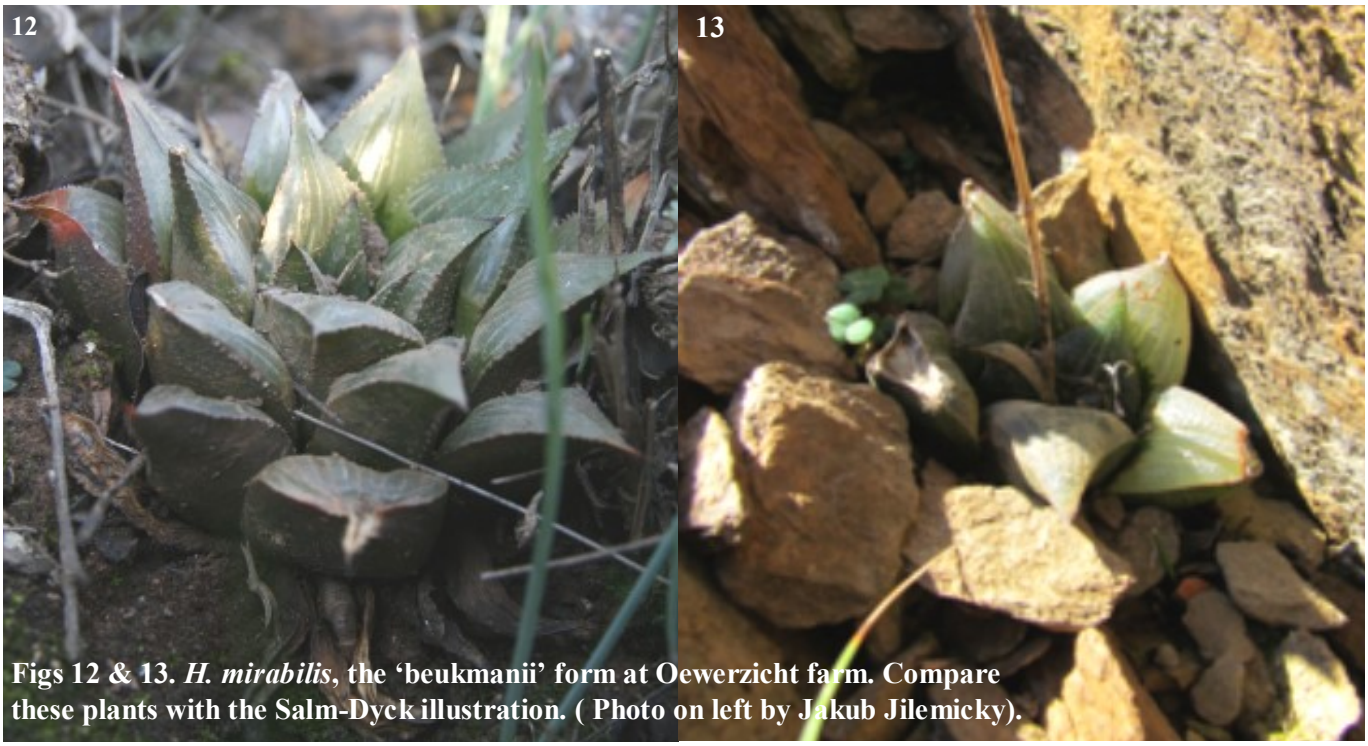


Fig. 8 & 9. Comparison of seeds of *H. badia*, *H. mundula H. magifica*, *H. maraisii*, *H. mirabilis* as well as *H. mutica*. The seeds of the badia-mundula duo are significantly larger.

A far better illustration of '*Aloe mirabilis'* is the illustration in the Salm-Dyck Aloe Monograph (1836) which clearly shows a typical example of the well-known plants occurring in the triangle bordered by Caledon, Greyton and Riviersonderend. The populations at the adjacent farms Schuitsberg and Nethercourt are well known, but recently Jakub Jilemicky found a large population of these plants very close to the town of Greyton. Some of these plants corresponds 100% to the illustration in the Salm-Dyck monograph.

This form of *H. mirabilis* is of course the one also known as the variety *beukmanii*. This adds unfortunately more irritating complications and confusion because what clearly seems to be the type form of *H. mirabilis* is being recognized as a distinct variety of it! The name '*beukmanii*' originated in the publication of these plants as '*H. emelyae* var *beukmanii*' by Von Poellnitz in 1940. No explanations are needed to point out why these plants are not related to *H. emelyae* and it was also repeatedly and fully explained by Bayer in his various publications. And yet, somehow and unfortunately, he failed to see the undisputed similarities between these plants and the type illustrations and description for *H. mirabilis*. There is no doubt, for example, that the rough-tubercled leaves with toothed margins of these

Fig. 10 & Fig. 11 *H. mundula* in habitat. Note the more flattened rosettes and glabrous leaf sides.



Figs 12 & 13. *H. mirabilis*, the 'beukmanii' form at Oewerzicht farm. Compare these plants with the Salm-Dyck illustration. (Photo on left by Jakub Jilemicky).

'*beukmanii*' type plants correspond perfectly with the original type description for *H. mirabilis*. Figs. 6, 12 &13.

Limitations of the '*mirabilis*' label.

Now that we have established the location and details of where the main stem of the *H. mirabilis* tree is, the next question is, 'how far does its branches spread?' This brings us of course very close to one of the core problems in *Haworthia* nomenclature.

In the very Haworthia-rich south-western parts of the Western Cape Province it is often very difficult to determine where one element stops and where another starts. The situation is like a forest of trees with many of the finer branches intertwined and often one is not sure to which tree a certain small branch is connected.

Haworthia nomenclature is currently burdened by a system that gives geographical distribution patterns priority. This involves purely the comparison of the most observable plant features and a plant's 'address and neighbours' in the wild. Arguments to support this involve various speculative evolutionary processes that might have taken place.

Fig. 14 & fig. 15. In the Greyton-Genadendal areas *H. mirabilis* presents itself in various forms, often with semi-erect, sharply acuminate and roughly tubercled leaves. On the left is such a form growing on Breëkraal farm (photographed by Jakub Jilemicky) and on the right is the '*rubrodentata*' form from s/w of Genadendal in cultivation.

If it was the case that Haworthia field populations were 'logically' arranged, then one could perhaps only look at the geographical patterns in the wild. But alas, there are no clear and rationally simple patterns. A certain element can re-appear almost unchanged distantly beyond an area filled with numerous remotely

Figs. 16 & 17. *H. badia* in habitat. Note the lack of teeth on the leaves and smooth leaf-sides. Some plants of *H. badia* can have 'pimples' on the upper leaves though.

related and unrelated elements. In addition, frequently unrelated elements mimic each other in the wild while the opposite is also found where the same element can appear in various differing disguises. A good example of unrelated and almost identical-looking elements occurring together is the case of *H. pehlemanniae* (*H. albispina* Hayashi) growing together with *H. arachnoidea* var. *scabrispina* at Koup Station. For many years those students of the genus who take no notice of flowers and flowering times did not even realize that there were two entirely different elements growing together at Koup Station.

In terms of *H. mirabilis* there is the temptation to restrict the name application to only the real 'rough-cushion' type of haworthias with semi-erect acuminate -tipped leaves that have toothed margins and tubercled to scabrid leaf-sides. Varieties that fall most comfortably into this description would include elements like *sublineata*, *triebneriana*, *rubrodentata* and *paradoxa* as outlier to the east. The *beukmanii* variety must fall away as that clearly represents the type form of the species. A most welcome recent correction was the removal of the var. *calcarea* from *H. mirabilis* and it lives much more comfortably now as a variety of *H. rossouwii*.

Bayer has also been quite correct to point out the close relationship there is between *H. maraisii* and *H. mirabilis.* West of Swellendam on the farm Diamant, for example, is a clearly intermediate form between *H. maraisii* and *H. mirabilis*. It is only the dark leaf colour of the Diamant plants that really excuses a stronger association with *H. maraisii*. Some forms of *H. magnifica* also fall within a rather puzzling transitional border area with *H. mirabilis.*

All this simply suggest a vast amount of study left to be done to fully understand and determine the relationships in subgenus *Haworthia*, particularly because the current system of names that is most commonly applied is only based upon superficial plant features in combination with geographical distribution patterns.

The main purpose of this article is merely to point out a fundamental error in terms of the application of the name '*H. mirabilis'*, particularly since it has become the basis for such a towering skyscraper of names which it simply cannot support.

The first step towards corrective action is to realize that the *H. mundula* and *H. badia* elements do not belong with *H. mirabilis* and deserve to be accepted as a separate species complex. The appropriate action would be to consider *H. mundula* as a variety of the older species *H. badia.* Ingo Breuer did a very sensible step in the right direction by listing *H. badia* separately under his *Aggregate Badia* under *Section Retusae*.

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Photographic Supplement.

18

H. mirabilis. **Several plants growing side by side in a rock crevice at Nethercourt**

19

H. mirabilis **at the Snyerskraal koppe south of Genadendal.**

20

A form of *H. mirabilis* with longer, narrower, semi-erect leaves growing on a steep roadside bank south-west of Genadendal.

21

H. mirabilis **wedged amongst rocks at Nethercourt farm. The habitat is a small rocky island amongst cultivated fields.**

Figs. 22 & 23. *H. mirabilis* **in the late afternoon sun at Oewerzicht. Note the tubercled leaf-sides.**

Figs. 24 & 25. *H. mirabilis* at Oewerzicht farm, south of Greyton. Plants at this locality are frequently larger than the typical 'beukmanii' forms at Schietpad and Nethercourt.
Left a large plant of *H. mirabils* with recurved leaves growing at Oewerzicht.

Figs 26 & 27. *H. mirabilis* growing a few kilometres west of Greyton. These plants are smaller than the Oewerzicht plants and more blue-green in colour.

Spotted Aloes in Botswana

Bruce J. Hargreaves
5817Pryor St., Bakersfield CA 93308 USA

The spotted or maculate aloes (section Pictae) are an extremely difficult group to differentiate. They are distinguished by the irregular bands of spots on the leaves and the basal swelling of the flowers. Hybridization and suspected continuing evolution are responsible for the difficulties. Two of the most common aloes in Botswana are particularly difficult to circumscribe: *Aloe zebrina* and *Aloe greatheadii.* (*Aloe parvibracteata* is also a problem, but does not occur in Botswana.)

Aloe zebrina **Baker**

This difficulty is shown by the fact that *Aloe zebrina* has eleven synonyms. This species is distinguished by the narrow flowers which are useless to bees! I have seen a number of birds feeding on these in the Botanic Garden in Gaborone: Marico sunbird: 9, 13, 14, 15, 17, 20, & 22 Aug 1990; 26 & 27 Aug 1991. Black sunbird: 28 Aug. 1991. Mousebirds: 11 Sept. 1991. I also observed a vervet monkey eating flowers and leaves 16 Aug. 1990. On 20 Aug he also ate parts of a hybrid with *A. lutescens.*


Aloe zebrina

The racemes are long and cylindric, lax and terminal. The flowers are very pale to deep pink and dull or glossy. As Glen & Hardy (2000) say, "*Aloe zebrina* is a member of a difficult complex which would repay intensive study".

It is found in all parts of Botswana except the southwest. It is also found in all the neighbouring countries. Story (1958) records the San names as Xganja (Qhong San), Nxoru (Xganahwe San), Nxuru (Cgikwe San) and Nxoru (Naron San). Story says the San claim it is a good source of water. He tasted the leaves and found the sap had a not bad taste, but the sap was a thick revolting slime. Boiling or roasting did not make it more palatable. Either the San are confusing species, or it is eaten only in times of greatest need. Reynolds (1974) quotes W.B. Hooker who says the flowers may be eaten after boiling. Glen & Hardy (2000) say the names are Enudu (Kwanyama), Cganya (Qho), Xnoru, Xnuru and Cgikwe (Naro). They say the flowers are eaten fresh or dried in Owambo.

There are a number of medicinal uses for this species. van Wik & Gericke (2000) gives the Tswana


Aloe zebrina

names Kgopalmabalamantsi and Kgope and say a decoction of the powdered stem and leaf is given to "cleanse" systems. The sap and roots are also used as a dye in basketry. A traditional healer Galetilwe Samokgotho says the Setswana is Kgopa and the fresh or boiled leaf is used for constipation if the navel is not "working" (in babies only). He also says to smear the juice (or powder soaked in lots of water) into eyes when sore. Another healer, Mr. Matsume gives the Setswana name as Segolobe and says to squeeze the juice into the eye when sore. He also gives the name as Kgopa (mbalmantsi) and says the root bark and leaf base may be used fresh or dried, powdered, boiled and used for any problem with any part of the body, particularly sexual problems. It is also used to cleanse a woman internally after giving birth. (The leaves are boiled with ash and water and drunk.)

***Aloe greatheadii* Schonlandii**

This is very similar to *A. zebrina* but differs by the dense conical to capitates terminal raceme. It is less common than *A. zebrina* in Botswana. It is said to bloom in March rather than July, but there is much overlap in flowering time. The flowers are a dull flesh-pink to almost white. The sap usually dries yellow rather than purple. A subspecies Davyana has been found in the southwest of Botswana. It has an acute apex on the raceme.

I did observe a Marico sunbird feeding on this species in the Botanic Garden in Gaborone on 23 Feb. 1991

***Aloe grandidentata* Salm-Dyck (Not illustrated).**

This species is known from the Southwest of Botswana and does not occur with the other maculate species. It is the only one with clavate flowers. The flowers are dull reddish.

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Aloe greatheadii

Haworthia jakubii in flower during late January.