

ALSTERWORTHIA INTERNATIONAL

THE SUCCULENT ASPHODELACEAE JOURNAL



Aloe bakeri
I.S.I. 447

Contents

Alsterworthia International renewal of membership and payment methods	2
Tulista and the Partridge-Breasted Aloe. G. D. Rowley. U.K.	3-8
Photographic Presentation of some species of the Revised Genera Continued from Alsterworthia International 14(2)23-28 (July, 2014) Rowley et al.	Front cover, 9-13, back cover
The International Society for Horticultural Science has appointed the Haworthia Society of Japan International Cultivar Registration Authority for the genera Haworthia (including Haworthiopsis & Tulista), Astroloba and Chortolirion	14-16
<i>Aloe ferox</i> Mill. in Lesotho. Bruce J. Hargreaves, USA.	17
Alooiidae classification. Dr. M. Hayashi, Japan	18-20
Japanese Haworthia Society	21-22
Nomina Nova recorded for the Asphodelaceae for 2012 & 2013 in the Repertorium Plantarum Succulentarum LXII & LXIV	23
ASPHODELACEAE - REPERTORIUM 2012	24-25
ASPHODELACEAE - REPERTORIUM 2013	25-27

Alsterworthia International.

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Tulista and the Partridge-Breasted Aloe.

G. D. Rowley.

Summary: The expanded genus *Tulista* Raf. 1840 is recognised with four subgenera, with attention to its longest known, most decorous and widely cultivated species, *T. variegata*.

This paper with some differences is in press with Cactus & Co.

The genus *Tulista* is an alliance of at least 17 species at the tip of the family tree so ably revealed for us by John Manning and his team of South Africa collaborators (Manning 2014). The name began as one of many small generic splits made by Rafinesque in 1840 with minimal discussion, and I am indebted to Urs Eggli for suggesting its origin from the Greek *tylas*, tyle, a knob, callus or lump, alluding to the prominent white tubercles covering leaves of the type species *T. pumila* (alias *Aloe pumila* var. *margaritifera* of Linnaeus). He cites other examples of where a *y* has been changed to *u* in translation.

Manning and his co-workers adopt a narrower view of genera and recognise four, where I prefer a less radical approach and treat these as subgenera:-

		SUBGENERA
A	Flowers declinate to pendent, 2cm long or more, pink or orange to red	B
	B Leaves in 3 series, rigid, V-section with white horny margins, dappled with cross-banding of ± confluent white spots	Gonialoe
	<i>Aloe</i> Subg. <i>Gonialoe</i> Baker in J. Linn. Soc. Bot. 18:155 1880	
	Type: <i>T. variegata</i> (L.) Rowl. Species: <i>T. dinteri</i> , <i>T. sladeniana</i> , <i>T. variegata</i>	
	BB Leaves spiralled, flexible, covered in small white flaccid prickles and with a soft bristly tip	Aristaloe
	<i>Aristaloe</i> Boatwr. & Mann. In Syst. Bot. 39(1): 69, 2014 pro gen.	
	Type: <i>T. aristata</i> (Haw.) Rowl. Monotypic	
AA	Flowers erect or inclined, less than 2cm long, off-white flushed green or brown (red and c. 2.5 cm long in <i>T. rubriflora</i>)	C
	C Rosettes Stemless, spiralled, usually solitary; flowers oblique-limbed with ± recurved tepal tips	Tulista
	Type: <i>T. pumila</i> (L.) Rowl. Species <i>T. kingiana</i> , <i>T. koelmaniorum</i> , <i>T. marginata</i> , <i>T. minima</i> , <i>T. pumila</i> , <i>T. pungens</i>	
	CC Rosette becoming columnar and 5-seriate, offsetting from the base; flowers radially symmetrical with ± erect tepal tips	Astroloba
	Type: <i>T. spiralis</i> (L.) Rowl. Species: <i>T. bullulata</i> , <i>T. congesta</i> , <i>T. corrugata</i> , <i>T. foliolosa</i> , <i>T. herrei</i> , <i>T. rubriflora</i> , <i>T. spiralis</i> .	

The “partridge breast aloe” has been ably written up by Paul Forster in 2001, with a fine array of habitat photographs credited to Harry Mays and a review of some recent hybrids. When Harry Hall led Len Newton and me to see it at Beukesfontein in 1971 it had already become much depleted in habitat and it took us some time to find a flowering specimen worth photographing (Fig. 1. overleaf). Earlier it has been abundant over a wide areas (Fig. 2 overleaf) but has suffered from over-collection. Its unique visual appeal combined with remarkable resistance to drought and neglect make it a popular garden subject in hot, dry, frost-free areas. Eva Palmer (1966) writes: “We have several aloes on Cranemere....among them,the tiny *Aloe variegata* or Guinea-fowl Aloe, with its charming speckled leaves. This is one of the earliest Karoo plants ever cultivated abroad, for it grew in an English garden 1720. The popular name for it is Kanniedood, or Never Die, and die it seldom does except from old age.”

Testament to this durability came from Marloth (1915 4:90). “We have kept a plant suspended in air for four years and it continued to grow when replaced into soil. The plants do not obtain any water from the air, as is sometimes thought, but use very economically what they possess.” Its reputation for long life leads *T. variegata* to being planted so often on graves in the Karoo.

One feature of this species rarely seen in European collections is the fruit figured by Salm-Dyck 1840 (Fig. 4). It is a three-winged capsule up to 25-30 mm long, with thin papery seeds to 18 mm (fig. 4 previous page). Like most tulistas and aloes it is self-incompatible, so two different clones are needed if you wish to get true-breeding seed. However, hybridization is made easier, as we shall see.

Subgenus *Gonialoe* by common consent covers three species: one perhaps the most durable, common and

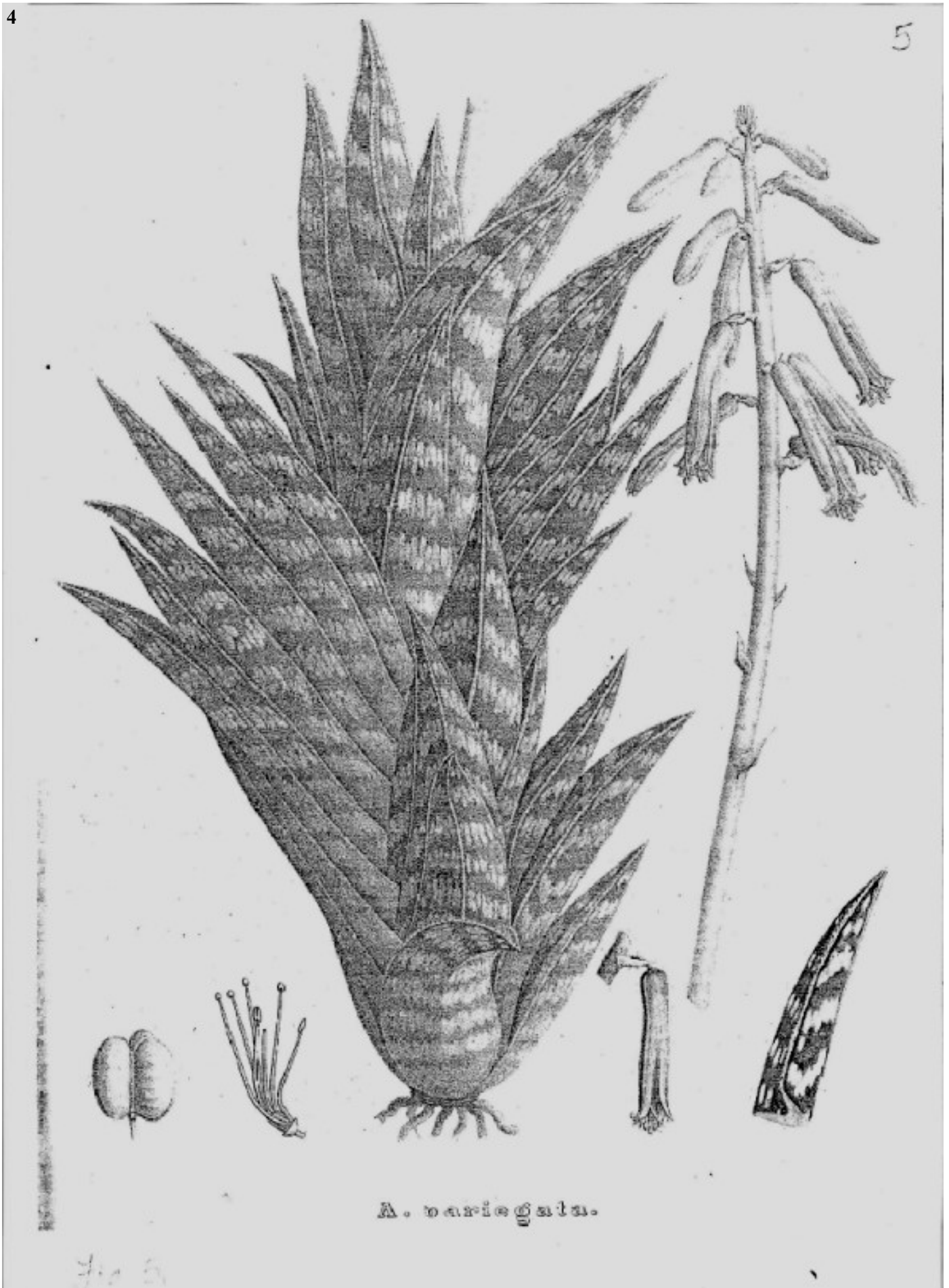


1. *Tulista variegata* in habitat at Beukesfontein, South Africa in 1971, one of few survivors in this area.

2. A better example from the same area, photographed earlier by Harry Hall.



3. Distribution map of *Tulista variegata* in south Africa (after Glen & Hardy 2000).



4. Fine portrait of *Tulista (Aloe) variegata* by Salm-Dyck in 1840 showing full details and 3-winged capsular fruit.

widely grown of the aloe complex *Tulista variegata*: the other two rare, local and notoriously sparse in cultivation: *T. sladeniana* from central Natal and *T. dinteri* in northern Namibia. Reynolds (1970) and Glen & Hardy (2000) do full justice to botany and ecology. Here I merely venture a key to help distinguish them:

		Species
A	Plants offsetting freely, with slim roots and leaves 4-12 x 3-4 cm, navicular (boat shaped) and keeled, ascending; inflorescences to c. 30 cm tall, with 0-2 branches and with 1-veined bracts	B
	B Leaves 10 or more, suberect, straight or only slightly recurved 10-12 x 3.5 cm; keel smooth	<i>T. variegata</i>
	BB Leaves 10 or fewer, inclined, short and squat, deltoid (V-shaped) , 4-9 x 3-4 cm; keel denticulate	<i>T. sladeniana</i>
AA	Plants solitary, with thick, fleshy roots and leaves 20-30 x 8 cm, falcate (sickle shaped) and recurving, spreading; inflorescences 50-75 cm tall, with 3-8 branches and 3-veined bracts	<i>T. dinteri</i>

Variation & Hybridization.

Philip Miller (1768) records: "I have raised a variety of this from seeds which I received from the Cape of Good Hope with triangular leaves which spread much more.....and are not so spotted: the flower stalks also grow much taller." Berger named *Aloe variegata* var. *haworthii* with ovate-deltoid leaves, smaller white flecks in fewer, narrower cross-bands, collected by Sheldon from the Cape, and Dinter (1931) described *Aloe ausana* from Aus, Namibia, with wider white horny margins. Both names have been assigned synonymy today, but are worth retaining at the cultivar level 'Haworthii' and 'Ausana' for use by collectors who need to distinguish minor shades of variation in the garden plants. Is there a sharp line distinguishing them from *T. sladeniana*?

Towards the end of the nineteenth century hybrids involving *T. variegata* began to appear in collections; some arisen by chance, others from controlled pollination - a situation parallel to that for *T. aristata*. Documentation leaves much to be desired, and many of the crosses were intergeneric, involving species of *Gasteria*. These would also be regarded as intercladal hybrids since *Gasteria* and *Tulista* occupy separate major clades on their family tree. A list follows in the hope that some at least of these novelties still exist. Jacobsen's Handbook Vol. I of 1960 gives them good coverage.

X ALTULISTA (*Aloe* x *Tulista*).

X ALTULISTERIA (*Aloe* x *Gasteria* x *Tulista*)

Cultivar Name	Pedigree	References
'Dapple Green'	<i>Aloe striata</i> x <i>Tulista variegata</i>	A 9(2); 22, 2009
'Desmetiana'	<i>Aloe humilis</i> x <i>Tulista variegata</i>	Fl.Cap. 6: 329, 1896
'Henzei'	<i>Aloe</i> × <i>grusonii</i> x <i>Tulista variegata</i>	Jacobsen 1960; 172
'Imbricata'	<i>Aloe</i> sp? X <i>T. variegata</i>	Berger 1908; 192
'Lysa'	<i>Aloe bakeri</i> x <i>T. variegata</i>	Forster & Cumming 1998
'Midas'	(<i>Aloe rauhii</i> x <i>bellatula</i>) x <i>T. sladeniana</i>	A 2(1): 3, 2002
'Tiny Gem'	<i>Aloe descoingsii</i> x <i>T. sladeniana</i>	A 2(1): 5, 2002
'Twister'	<i>Aloe pictifolia</i> x <i>T. variegata</i>	A 9(2): 18, 2009
'Versad'	<i>Aloe</i> sp.? X <i>Tulista variegata</i>	Forster & Cumming 1998
'Weingartii'	<i>Aloe humilis</i> x <i>T. variegata</i>	Berger 1908: 191
'Anuvha'	× <i>Gasteraloe</i> 'Manik Anita' x (<i>Aloe descoingsii</i> x <i>Tulista variegata</i>)	A 10(2): 17 2010

×**Gastulista** (*Gasteria* x *Tulista*)

Cultivar name	Pedigree	Reference
‘Agate Chips’	<i>Gasteria bicolor</i> x <i>Tulista variegata</i>	A 3(3); 16, 2003
‘Black Snake’	<i>Gasteria baylissiana</i> x <i>Tulista variegata</i>	A 2(1); 4, 2002
‘Goliath’	<i>Gasteria brachyphylla</i> x <i>Tulista. variegata</i>	A Hyb. & Cult Vol. 1:48, 2003
‘Green Ghost’	<i>Gasteria</i> ‘Old Man Silver’ x <i>Tulista variegata</i>	A 3(3): 16, 2003
‘Green Ice’	Mutation of ‘Green Ghost’	A 3(3): 16, 2003
‘Mortolensis’	<i>Gasteria</i> ? <i>acinacifolia</i> x <i>Tulista variegata</i>	Berger 1908: 191
‘Orella’	<i>Gasteria batesiana</i> x <i>Tulista variegata</i>	A 3(3): 16, 2003
‘Pethamensis’	<i>Gasteria carinata</i> or <i>verrucosa</i> x <i>T. variegata</i>	F1.Cap 6. 301, 1897
‘Pfrimmeri’	<i>Gasteria</i> sp. x <i>Tulista variegata</i>	Guillaumin 1931: 339-340
‘Radlii’	<i>Gasteria</i> sp. x ? <i>Tulista variegata</i>	Newton 1997; 34
‘Rebutii’	<i>Gasteria</i> sp. x ? <i>Tulista variegata</i>	Berger 1908: 191
‘Smaragdina’	<i>Gasteria</i> ? <i>acinacifolia</i> x <i>Tulista variegata</i>	Berger 1908: 190-191
‘Sculptilis’	<i>Gasteria</i> × <i>cheilophylla</i> x <i>Tulista variegata</i>	Poindexter 1935: 162
‘Syrah’	<i>Gasteria nitida</i> x <i>Tulista sladeniana</i>	A 6(3): 22, 2006

Abbreviation: A = Alsterworthia International

In captivity *Tulista variegata* is remarkable at adapting well to windowsill cultivation in dry, centrally heated rooms, where it can flourish even better than in the glasshouse. Fairchild grew it commercially in Bradley’s day; it was approved in Victorian conservatories in England, and in Philadelphia. Albert Blanc wrote; “We have never been able to supply the demand for this beautiful plant, which always sells on sight. Its flower spikes are really magnificent”. He goes on to call it: “Very rare”. Provided that *T. variegata* is protected from frost, given a reasonable exposure to sun and a porous, nutritious compost it should do well and prove long-lived. It can then be watered freely in summer and sparingly in winter. Every few years it is advisable to repot and check the roots. Doreen Court states that “It does not take kindly to wet climate”, the reason being the thick, soft, fleshy stem and roots that rot off if waterlogged. This caused such losses in American nurseries that in the 1940’s Baker and Cummings (1943) made some tests based upon the observation that the fungus *Pythium*, that caused the decay, was intolerant of the high temperature that the host plant could survive. Hence they recommended hot water treatment: exposure of infected plants to water at c. 46° C. for 20-40 minutes, depending on the age and size of the plants. Today, I imagine, we would call for systemic fungicides if facing a similar problem.

“Tiger Aloe”, *Aloe/Tulista/Gonialoe variegata* by any other name remains a striking and recognisable addition to the short list of trouble-free house plants, as well as an adornment for collections of smaller aloes under glass. It is co-operative and easy to work with as a parent of hybrids, and carries obvious visual merits as yet little explored. If it were rare, hard to multiply and challenging to keep alive we could surely cherish it and pay dearly for good specimens.

Acknowledgment. As ever I am indebted to Peter Arthurs for help with the photography and for the loan of plants from his fine collection.

Editor’s notes. All photographs supplied by Gordon Rowley except where indicated.

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Please renew your membership for 2015 as early as possible as this will greatly assist

- i. your Honorary Representative - he/she will not then have to send out reminders.
- ii. Alsterworthia International - as sending journals for late renewals is more costly.
- iii. You - as you will receive your March 2015 journal on time.

It would be extremely helpful if you could also help with the following please:

- a writing articles for Alsterworthia International - no limit on the number of good photos per article.
- b. spreading the news that that the Japanese Haworthia Society is the new International Cultivar Registration Authority for Haworthia, Astroloba and Chortolirion.

Photographic Presentation of some species of the Revised Genera

See also *Alsterworthia International* 14(2)23-28 (July, 2014)

Note: Because of some differences in classification by Manning et al and Rowley some species will be included in different genera.

Differences in the classifications by Manning et al and Rowley.		
Genus.	Manning et al.	Rowley.
Aloiampelos	The same	The same
Aloidendron	The same	The same
Kumara	The same	The same
Astroloba	Genus in its own right	Included in the genus <i>Tulista</i> as Subgenus
Gasteria	The same	The same
Haworthia	Subgenus <i>Haworthia</i>	Subgenus <i>Haworthia</i>
Haworthiopsis	Subgenus <i>Hexangularis</i> including <i>Haworthia koelmaniorum</i> & <i>Haworthia pungens</i>	Subgenus <i>Hexangularis</i> excluding <i>Haworthia koelmaniorum</i> & <i>Haworthia pungens</i> which are included in <i>Tulista</i>
Tulista	Subgenus <i>Robustipedunculatae</i>	Subgenus <i>Robustipedunculatae</i> plus <i>Haworthia koelmaniorum</i> & <i>Haworthia pungens</i> from Subgenus <i>Hexangularis</i> , <i>Astroloba</i> , <i>Aloe variegata</i> and <i>Aloe aristata</i> .
Poellnitzia	Included in <i>Astroloba</i>	Not recognised, included in <i>Tulista</i> Subgenus <i>Astroloba</i> .
Aristaloe	<i>Aloe aristata</i>	Not recognised. Included in <i>Tulista</i> as Subgenus
Gonialoe	<i>Aloe variegata</i> and allies	Not recognised. Included in <i>Tulista</i> as Subgenus

1. *Aloiampelos ciliaris*



2. *Aloiampelos commixta*.





3. *Aloiampelos striatula*.



4. *Kumara plicatilis*.



5. *Tulista* Subgenus *Astroloba* species.



6. *Tulista* Subgenus *Gonialoe variegata*. Photo H Mays.



7. *Tulista* subgenus *Astroloba* species (except bottom left *Haworthiopsis viscosa* - heads of plant only).



8. *Tulista* Subgenus *Tulista pumila* Photo H. Mays.



9. *Tulista* Subgenus *Aristaloe aristata*.



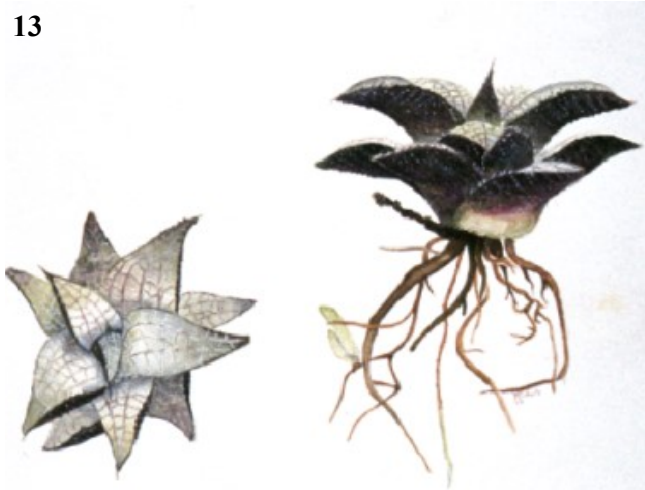
10. *Haworthiopsis coarctata* v. *tenuis*. M. Roberts.



11. *Haworthiopsis coarctata*. Diploid. M Roberts.



12. *Haworthiopsis coarctata*. Tetraploid.



13. *Haworthiopsis tessellata*. M Roberts.



14. *Haworthia* species.



Gasteria species and cultivars.



Aloe vera. H. Mays.



Aloe maculata. H. Mays.



Aloe arenicola. H. Mays.



Aloe nobilis variegated. H. Mays.



Aloe arborescens. H. Mays.



Aloe distans. H. Mays.



Aloe juvenna. H. Mays.



Aloe jacksonii. H. Mays.



Aloe veseyi.

The International Society for Horticultural Science
has appointed the Haworthia Society of Japan
International Cultivar Registration Authority
for the genera
Haworthia (including Haworthiopsis & Tulista),
Astroloba and Chortolirion.
Registrar: Dr.M. Hayashi

The Haworthia ICRA appointed representative for western countries is Harry Mays.

The function of an ICRA is to register cultivars published in accordance with the International Code of Nomenclature for Cultivated plants. Registration “..does not imply judgment on the distinctness of that particular cultivar or Group,..” Division IV 5, ICNCP.

Anyone intending to publish a cultivar in accordance with the ICNCP is advised to read that code. A copy maybe consulted at http://www.actahort.org/chronica/pdf/sh_10.pdf and copied/downloaded free of charge by clicking on the left buttons of the tool bar which appears from time to time at bottom of a page.

Some readers may be somewhat confused by the genera the ICRA embraces because recent revisions stemming from DNA studies have resulted in two subgenera of the genus *Haworthia* being removed from *Haworthia* to become new genera, *Haworthiopsis* and *Tulista*. *Chortolirion* has been included in *Aloe* and *Astroloba* is either a genus in its own right or a subgenus of *Tulista* depending on which authority you follow.

Article 21.1 of the ICNCP states “The name of a cultivar is a combination of the correct name of the genus or lower taxon to which it is assigned under the ICBN...”. That code does not define a genus, consequently any classification which complies with it is valid and correct; you may attach your cultivar epithet to a genus in any valid classification. At a practical level there are four major classifications: one by Manning & Bayer the others by Ingo Breuer, Dr Hayashi and Gordon Rowley. Dr. Hayashi is well aware of this problem and has written a paper (pages 18-20 this journal) to explain his position as Registrar and the

genera he will use when recoding cultivars. You may use any validly published genera when naming cultivars, but for record purposes cultivars will be recorded in the ICRA records under the genera accepted by The Registrar.

For full details about the ICRA for *Haworthia*, *Astroloba* and *Chortolirion* please go to the Japanese Haworthia Society’s web page < www.haworthia.net > and click on Registration. For ease of reference a copy of the “Application for Registration of a Haworthia Cultivar Name”, which you will find on the web pages, follows. A separate form should be used for each cultivar. A copy of the “The Guide for Completing....” also follows. It too can be found on the web pages.

Where should you publish your new cultivar? The choice is yours provided what is published satisfies the provisions of the ICNCP. Whilst the Code does not make it compulsory, we urge you to include as many photographs as you wish to enable the cultivar to be identified. Assistance is always at hand. If you wish to publish in English (or other western languages) it can be included in *Alsterworthia International*. Please contact me at hmays@freenetname.co.uk If you wish to publish in Japanese please contact info@haworthia.net

Please note that Alsterworthia’s Cultivar Project is unaffected by the appointment of the ICRA. We simply forward details to them for recording.

(Marked item with * will be published as registered information.) Fill all items in English.

1	APPLICATION DATE	
2*	NAME OF APPLICANT	(MALE/FEMALE)
3*	RESIDENCE (COUNTRY)	
4	ADDRESS	
5	TELEPHONE/MOBILE PHONE	
6	E-MAIL	

7*	NAME OF CULTIVAR/GROUP	
8	LANGUAGE (USED IN ITEM 7)	
9*	NAME IN ROMAN ALPHABET / ENGLISH (ITEM 7)	
10*	PHONETIC SYMBOLS	
11*	MEANING OF CULTIVAR NAME	
12	ESTABLISHER (NAME* / ADDRESS)	
13*	AUTHOR	

14*	SPECIES/SEED PARENTS	
15*	TYPE OF SPECIES/GROUP	(1) SINGLE CLONE (2) CULTIVAR INCLUDING A FEW SIMILAR CLONES (3) GROUP OF MANY SIMILAR CLONES
16	ORIGIN/SOURCE	
17*	INDENTIFICATION POINTS OF THE CULTIVAR FROM ITS CLOSEST CULTIVAR OR GROUP	

18*	PHOTOGRAPH OF WHOLE PLANT (DIAMETER: cm)	19*	PHOTOGRAPH OF CHARACTERISTIC POINTS OF THE CULTIVAR FOR IDENTIFICATION

20*	DATA OF PUBLICATION / PLANT PATENT / TRADEMARK, IF ANY	
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* ALL ITEMS ARE REQUIRED ENTRY, PLEASE FILL EVERY SECTIONS.

GUIDE FOR COMPLETING

THE APPLICATION FOR REGISTRATION OF A HAWORTHIA CULTIVAR NAME

(Marked item with * will be published as registered information.) Fill all items in English.

1	APPLICATION DATE	Month, Date, Year (e.g. : August 20, 2014)
2*	NAME OF APPLICANT	Family name, First name (e.g. : Haworth, Adrian) Put circle on MALE or FEMALE
3*	RESIDENCE (COUNTRY)	Residence at present, not your nationality
4	ADDRESS	Address including zip code (not for publication)
5	TELEPHONE/MOBILE PHONE	Required entry (not for publication)
6	E-MAIL	Required entry (not for publication)

7*	NAME OF CULTIVAR/GROUP	Any language is acceptable. In case of other than English or Japanese, please attach the cultivar name as a picture also write in Unicode and send the application by e-mail.
8	LANGUAGE (USED IN ITEM 7)	The language used for the cultivar name (e.g. : English, English + Japanese)
9*	NAME IN ROMAN ALPHABET OR ENGLISH (ITEM 7)	Show the cultivar name in Roman alphabet or English. In case the name is other than Latin alphabet, use Modified Hepburn for Japanese, Pinyin for Chinese, Modified McCune-Reischauer for Korean.
10*	PHONETIC SYMBOLS	In case of the language other than English, show the pronunciation by phonetic symbols. In case of Japanese, show it by Hiragana. In case of the cultivar name is a proper noun in English, same is also required.
11*	MEANING OF CULTIVAR NAME	Meaning of the cultivar name. e.g. : name of a song, name of a person, etc.
12	ESTABLISHER (NAME* /ADDRESS)	The name and address of person who fixed (confirmed) the distinction of the cultivar. The address shall not be published in public. Add the name of pollinator, if available.
13*	AUTHOR	The name of person who named the cultivar or group.

14*	SPECIES/SEED PARENTS	The species name the cultivar belongs to or its seed parents. It is possible to make the seed parents confidential (not open to the public).
15*	TYPE OF SPECIES/GROUP (Circle a correspond number)	(1) SINGLE CLONE : A cultivar of single clone. In case there are some unidentifiable clones from each other, they shall be considered as the same clone.
		(2) CULTIVAR INCLUDING A FEW SIMILAR CLONES : Consists of less than 10 clones similar but able to be identified each other. Identification to be such as 'XX' A, 'XX' B, with alphabet attached after the cultivar name.
		(3) GROUP OF MANY SIMILAR CLONES : Over 10 similar clones.
16	ORIGIN/SOURCE	E.g. : a seedling by myself, purchased from Mr. XX, purchased from XX nursery. In case this application is presented by other than establisher, also show the authorization (e.g. : authorized by the establisher, asked authorization to the establisher but not received the reply, no information of establisher, etc.)
17*	IDENTIFICATION POINTS OF THE CULTIVAR FROM THE SIMILAR CULTIVAR OR GROUP	Detailed explanation of the cultivar which points are different from the closest cultivars or group. Two closest cultivars must be given for comparison.

18*	PHOTOGRAPH OF WHOLE PLANT (DIAMETER: cm)	19*	PHOTOGRAPH OF CHARACTERISTIC POINTS OF THE CULTIVAR FOR IDENTIFICATION
Clear photograph of the cultivar taken from the diagonal top of the plant. It must be zoomed as the tip of the leaves arrive at the edge of this box. Plant size photographed must be given.		Detailed zoomed photograph of the characteristic point of the cultivar.	

20*	DATA OF PUBLICATION / PLANT PATENT / TRADEMARK, IF ANY	In case the cultivar name is already published, fill the name, year, issue and page of the publication. Also in case its plant patent / trademark was registered /applied, fill the registration number or receipt (application) number.
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*** ALL ITEMS ARE REQUIRED ENTRY, PLEASE FILL EVERY SECTIONS.**

***Aloe ferox* Mill. in Lesotho.**

Bruce J. Hargreaves, USA.



Aloe ferox. Maseru.



Aloe ferox. Quithing,

Most of the population of *Aloe ferox* is in South Africa, but there are some plants in Lesotho. Most of these are in the Senqu (Orange) and Quthing River Valleys, but it has been reported from the slopes of Likhoele Mountain near Mafeteng and David Ambrose of the National University of Lesotho said the northernmost locality was at Lifateng. They are also planted at the traffic circle in Maseru.

Although *ferox* means fierce, the leaves on Lesotho plants are smooth with only a few dorsal spines and a median line of spines near the apex. This is like the eastern plants in South Africa. Further west plants are smaller with leaves spiny on both sides. They also have fewer and shorter racemes.

It generally has one stem with a rosette of leaves at the top. At 2 to 3 meters (and sometimes up to 5) it is the tallest aloe in Lesotho. The old, dry leaves are retained which serves to protect the stem. The branched flower head has long, dense, erect spikes of scarlet flowers. Although plants in the east bloom as early as May and June, in Lesotho they bloom as late as November.

In Sesotho it is known as hlaba (to pierce), lekhala le leholo (the “true” aloe), lekhala la Quithing (the aloe of Quithing), and mohalakane. Although there are many uses of these aloes in South Africa, the only use I know of for Lesotho is as a treatment for eye disease (Watt & Breyer-Brandwijk, 1962). The commercial juice and gel from South Africa is sold at pharmacies in Lesotho.

Reference

Watt, J.M. and M.G. Breyer-Brandwijk, 1962. *The Medicinal and Poisonous Plants of Southern and Eastern Africa*, ed. 2. E. & S. Livingstone, Edinburgh.

Alooiidae classification.

Dr. M. Hayashi

Several new revisions of the Alooiidae, in particular *Haworthia*, have been presented recently by Manning et al and G. Rowley. These revisions were all based on cladistical analysis using a few DNA regions, mainly of chloroplast DNA.

As the studies used a considerable quantity of material, and were based on DNA, these revisions look to be true for many people. But these studies or revisions have many defects or problems such as follows.

(A) Problems of basic hypotheses or premises in cladistical analysis.

The opinions of Manning & Rowley are ONLY based on cladistical analysis of DNA data. Cladistical analysis is based on some important hypotheses or premises. They are;

(A-1) a group always developed dichotomously,

(A-2) a group must be monophyletic = a paraphyletic group must be divided into several monophyletic groups.

(A-1) Problem of dichotomous hypothesis.

If a group developed polytomously or is of hybrid origin, cladistical analysis cannot correctly analyse phylogenesis.

In my view (observation) on *Haworthia*, most groups (series) had developed polytomously at their initial stage. Polytomous speciation is not rare, it is rather common. Furthermore, in early stages of speciation of a group, speciation may have developed reticularly = hybridized with each other, rather freely. Introgressive hybridization is very common in this stage.

This is the main reason why classification of *Haworthia* is so difficult. Most other groups had evolved in very old geological time, and almost all such reticularly/polytomously developed species may have become extinct without leaving any fossils in most cases. Consequently, they seem to have developed very simply = only dichotomous phylogenesis pattern can be recognized.

Haworthia is a very young group. Major groups in subgenus *Haworthia* may have developed only after the Last Ice Age (it finished 10,000 years ago). Therefore we can see many intermediate demes of speciation in *Haworthia* developing

In the groups of Alooiidae, *Poellnitzia* is clearly of hybrid origin, perhaps between *Gasteria* (*G. distica*?) and *Astroloba* (*Astroloba hallii*?). I believe that cladistical analysis including *Poellnitzia* is very

unstable, as it has many contradictory characters.

Astroloba itself may be also of hybrid origin between *H. maxima* and *H. viscosa* (in case of *Astroloba bullulata* via *H. skinneri*) or *H. carinata* n.n. (*H. maxima*/ *marginata* at Ashton) and *H. viscosa* (in case of *Ast. hallii*).

The biggest problem is *Gasteria*. In *Aloe* and *Haworthia*, there are some very old groups with grassy, soft and long leaves. But there is no such group in *Gasteria*. Based on their distribution range, *Gasteria* may have evolved in similar geological time with *Haworthia*. Therefore, if *Gasteria* developed independently from its ancestor, grassy forms of *Gasteria* should have survived to date like *Haworthia*.

This means that *Gasteria* should be of hybrid origin between *Aloe* and *Haworthia*. The speciation centre of *Gasteria* seems to be the Baviaanskloof area. So, initial hybridization may have happened near this area. Perhaps it happened between *H. radula* (or *H. attenuata*) and *Aloe reynoldsii* (or *A. striata* or *A. maculata*).

If *Gasteria* is of hybrid origin between *Aloe* and *Haworthia*, it is well understand why *Gasteria* can hybridize with both *Aloe* and *Haworthia*, when intrageneric hybridisation is usually very difficult or (nearly) impossible.

If so, all hard leaf groups, hard leaf *Haworthia*, *Gasteria*, *Astroloba* and *Poellnitzia*, have the same common ancestor, that is hard leaf *Haworthia* (*H. radula/attenuata* and *H. viscosa*). This may be the reason why all these groups were put closely in DNA (cladistical) analysis, especially in chloroplast DNA. As I mentioned previously, cladistical analysis cannot correctly analyse the DNA "of hybrid origin" groups.

Also in the genus *Aloe*, I presume there are many hybrid origin groups as in *Haworthia*. Most groups of Alooiidae may have developed very recently, though some very old species still survived in the group. Therefore, it includes many groups/species of hybrid origin and those by reticular speciation. To analyse such young groups, the hypothesis and premise of cladistical analysis is too simple and unrealistic. Maximum parsimony method (or any other calculation methods) can be incorrect in such reticularly developed groups.

Most cladists may not see any localities from which their material came nor cultivate them with careful observation of their characters. They may only see patterns of electrophoresis in their laboratories. It is a rather easy and rough way to analyse a very young group like Alooiidae.

Cladistics is not equal to taxonomy. The latter is based on a far broader data base such as morphological, geographical or genetical. Cladistical data is one of them and has many hypothesis and premise (many of them are too simple and unrealistic for Alooideae) as mentioned above. Taxonomic system only based on cladistical analysis misunderstands the principle that cladistics is not equal to taxonomy.

(A-2) Problem of “monophyletic” premise.

Another big problem with cladistical analysis is the paraphyletic group. Many scientists argue whether they should allow the paraphyletic group or not, as in the case of Reptiles and Birds. But I would like to indicate a more serious point (which some scientists have also pointed out).

Cladistical analysis hypothesises that an ancestor species dichotomously developed into 2 descendant species and, when the 2 descendant species had become established, their ancestral species should have become extinct, otherwise the ancestral species would have become a paraphyletic group. Therefore, “common ancestor” is always a supposition (uncertain) in cladistical analysis.

However, this hypothesis is very different from real speciation. In the case of *H. cretacea* n.n. (*H. minima* in Blue Crane, Heidelberg), it obviously had developed from *H. minima* and further developed to *H. albicans* (*H. marginata* of Heidelberg). A special, very glabrous clone in *H. cretacea* may have settled in another site by seed and formed a new deme = *H. albicans*. This is the typical case of speciation.

A similar case is *H. albida* n.n. (*H. minima* so called hybrid deme with *H. marginata* north-east of Heidelberg, in town). There are also some very glabrous clones in the deme and I suppose they may have developed into *H. laevis* (very pungent “*H. marginata*” S. Swellendam, IB 17092, JDV 90-109). *H. laevis* may have also developed into *H. mertonii*.

H. smitii is another case of speciation like this. It may have originated from a special clone in *H. scabra* at Schoemanspoort. A seed of this clone may have settled into a deme by self-fertilization in Kammanassie area resulting in a new species = *H. smitii*. (*H. smitii* is self-compatible, at least partly.)

These cases are not rare in *Haworthia*. I can present many other cases of budding style speciation, but difficult to show cases of fission style speciation. Speciation may mostly happen by budding style, not by fission, at least in *Haworthia* and perhaps also in other Alooideae groups.

All the ancestral species in the above cases still exist to date. In such cases, a new species had developed from a part (clone) of the ancestral species. So, an ancestral species always becomes a paraphyletic group (species)

when a new species had developed from it. But such paraphyletic group (ancestral species) is false?

All the phylogenesis is based on speciation. Therefore, if an ancestral species is not false, then all the paraphyletic group should be a true group. Concept of monophyletic/paraphyletic should be re-arranged based on real speciation.

Therefore, splitting many genera in Alooideae based on the principle that “a group should be monophyletic” is not necessarily correct.

(B) Problem of compatibility.

Apart from the defect of cladistical analysis, there are some more points I want to indicate.

The first one is genetic compatibility among the groups/species. It is well known that all species in a genus of Alooideae can easily pollinate with other species in the same genus. *Aloe aristata* easily hybridizes with other aloes such as *A. pratensis*. Though there may be few hybridisation trials between some *Aloe* groups split by Manning etc., all *Aloe* species may easily hybridize with other aloes. Species in different subgenera of *Haworthia* (both sensu Bayer or Hayashi) can also hybridize easily. It was said pollination among different subgenera of *Haworthia* is difficult, but now we can say it is rather easy. *Gasteria* too.

However, it is also well known that intrageneric hybrid in Alooideae is very difficult, except those with *Gasteria* (presumably due to its hybrid origin). So, if *Aloe* was divided into several genera, and *Haworthia* divided into 3 genera, there may be large difference in the compatibility among these new genera in Alooideae, some genera easily hybridize with certain other genera, but are difficult with some others. It seems very curious.

There is no established standard for a genus which would determine when we should separate/split a genus. But genetic compatibility is recognized as a rough standard; a plant species in a genus is compatible with other species in the same genus, but it is very difficult to make a hybrid with those in different genera.

Compatibility is recognized as being the result of genetic relationship among groups. There is no contradiction in the compatibility among major groups of Alooideae, *Aloe*, *Haworthia* and *Gasteria*. *Gasteria* hybridize with *Aloe* and *Haworthia* but it is not necessarily easy. There are some very distinct, rather isolated groups in *Aloe* and *Haworthia*. But they have still good compatibility with other species of the same genus. They also have many common characters (especially in flower) with other species in the same genus. Uniqueness or isolation of a group is not necessarily enough reason to split (separate) a genus.

(C) Problem in floral structure.

It is well known that a botanist who is well

acquainted with the Aloioideae can easily identify the genus of a plant when he sees a flower without seeing any vegetable parts of the plant. This means there are some very distinct differences among the flower of Aloioideae. They are i.e. comparative length of style against ovary length, position of stigma against anther (*Aloe haworthioides* is the only exception), stigma size to style thickness, stamen length against ovary length, etc. As these differences are very clear and stable in Aloioideae, a botanist can easily identify its genus only by seeing a flower. Therefore, there are firm morphological reasons to arrange Aloioideae into 3 major genera, *Aloe*, *Haworthia* and *Gasteria*.

Duval's standard to arrange 3 basic genera in Aloioideae was rather superficial, but now we can say it lies in inner floral structures mentioned above. It is difficult to presume that these floral distinctions of 3 basic genera were caused only by accident. Therefore, there are firm morphological bases to arrange Aloioideae into 3 major genera sensu Duval.

(D) Problem in splitting process.

There are many cases where DNA analysis has resulted in change to previous taxonomic systems. In these cases, classification based on cladistical analysis seems strange and contradictory to the traditional system at first, but other morphological or genetic evidences supporting new arrangement has been found or re-evaluated subsequently. Consequently, most researchers who are well acquainted with the subject group agree that the new classification system based on DNA analysis is correct.

Taxonomy is a total science not only based on

Two Roberts Worth

David Cumming, South Africa.

There have been many name changes mooted in recent years, many solely based on DNA analysis. Are we to believe that all of these 'proposed' changes are warranted? Many are in line with 'traditional' taxonomic paradigms, some are not. A recent article (Rowley 2014) raises some questions, though I am of the opinion that Rowley may be somewhat mischievous or 'tongue in cheek' with his proposed name changes that appear to fly in front of one of the tenants of taxonomy that any classification should be 'natural'. To place *Gonialoe*, *Aristaloe*, *Tulista* sensu stricta, *Astroloba* including *Poellnitzia* all into *Tulista* with such a diverse floral presentation seems to be without any basis whatsoever, not even a thumbsuck could arrive at such a 'conclusion', or is the ulterior motive to subsume everything under *Aloe*, which certainly, in my

cladistics, but also on genetics, morphology and ecology (distribution etc.). Scientists who insist on changing a classification system must present evidences not only in cladistics but also in genetics, morphology or ecology. Only when most of the evidences from these categories agree with each other, will the new system becomes acceptable.

Current opinion to change Aloioideae system based ONLY on DNA analysis seems very crude, impatient and immature.

opinion, would be more acceptable.

It should be noted that the results presented in any DNA analysis as the most parsimonious option are just that; application of Occam's Razor does not necessarily mean that this is the only solution, just that it is the 'simplest'. The simplest may not always be the correct one. Why should simplicity be considered in evaluating the plausibility of results/conclusions? The author is of the opinion that all taxonomic tools should be used to come to more acceptable/conventional solutions. DNA analysis being only one of these.

Japanese Haworthia Society

Journal: Haworthia Study

Editor: Dr. M. Hayashi. World Agent Harry Mays

Because of the production of that mammoth work "Total List of Haworthia Cultivars" (TLHC), which was given the number 28 in the journal series though not included in the annual subscription, the publication of the Haworthia Study journal itself suffered a publication gap - no number 28 and a period without the publication of a journal because of the work involved in producing the TLHC. This has now come to an end with the publication of Haworthia Study No. 29, copies of which are included with this journal for those of you who subscribe to Haworthia Study.

The Japanese Haworthia Society was formed about the same time as Alsterworthia International. In a large area devoid of a prominent journal in a "local" language it has been well accepted and has prospered.

It seems to me to reflect the Japanese eye for beauty and fine detail. In this connection I venture to draw attention to two articles in Haworthia Study No. 29: "Two new species from Potberg area" by Dr. Hayashi and "Photos of *H. bobii*". The following are extracts:

H. bobii Hayashi spec. nov. Type: MH 10-30-1, Lower Breede River.
Affinis *H. wimii*, sed spinis fenestrae pubescentibus differ.

Looks like *H. wimii*, but spines on the window are thinner and softer (pubescent). It is closer to *H. paradoxa* or *H. (triebneriana v.) diversicolor* than *H. wimii* or *H. maraisii*. This plant was named after Mr. Bob (Robert) Kent, a well known Haworthia

Haworthia Study. Renewal subscriptions:

UK members:

£20.00 + £2.50 P & P. Total = £22.50.

All other countries:

£20.00 + £4.50 P & P. Total £24.50.

U.K. non-members:

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breeder of USA.

H. joleneae Hayashi spec. nov. Type: MH 13-163 (MBB 7609), Melkhoutrivier.

Proxima *H. bobii*, sed foliis perfecte glabris differ.

Very close to *H. bobii*, but leaves are completely glabrous. Plant form, leaf shape and basic floral characters are very similar to *H. bobii*. *H. bobii* has only one locality as far as known to date, but there are plural localities of *H. joleneae* with minor (but considerable) difference from each other.

In a separate articles by Yu Hanai titled "Variation of *H. bobii*" 12 photos of variability are presented - overleaf.



H. bobii in habitat
Ballyfar. By Mr. Marx



H. bobii holotype clone
MH 10-30-1, Ballyfar



H. joleneae in habitat
Melkhoutrivier. By Mr. Marx



H. joleneae holotype clone
MH 13-163, Melkhoutrivier

Type specimens of these two new species were stored in The University Museum, The University of Tokyo, Tokyo. Previous type specimens described by the author will be moved to this museum subsequently.

Photo of *H.bobii*



Fig. 2. 標準的なタイプ。Average dome-shape clone.



Fig. 3. ドーム型で艶窓タイプ。Dome-shape, glossy leaf clone.



Fig. 4. バディ (*H. badia*) 型の個体。A clone with *H. badia*-like form.



Fig. 5. 葉姿はいまいちだが、荒い毛が葉裏にまで生える個体。



Fig. 6. 紫の発色が強い個体。Purplish color clone.



Fig. 7. 黒い太線が入る個体。A clone with thick, dark lines.



Fig. 8. 白く細かい毛がびっしり生える個体。With white, fine hairs.



Fig. 9. 白さと葉の内側から入る黒い切れ込みが目立つ個体。



Fig. 10. Mr. G.Marx's collection 'Aluminum Star' 様に白く輝く。



Fig. 11. Mr. G.Marx's collection Densely covered by white hairs.



Fig. 12. Mr. G.Marx's collection 'Dracula' series 様の赤銅色の個体。



Fig. 13. Mr. G.Marx's collection Densely covered by pinkish hairs.

Nomina Nova recorded for the Asphodelaceae for 2012 & 2013 in the
Repertorium Plantarum Succulentarum LXII & LXIV
Published by the I.O.S.

The Rep is compiled by:

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Editors notes.

The Rep is invaluable. It records species names published under the provisions of the International Code of Nomenclature for..... (ICN, previously ICBN) as valid (**Bold type**) or invalid (*italics*). The article(s) under which the names are rejected are quoted. Authors may subsequently validate these names in later publications.

Authors sometimes first publish species names provisionally. These names are not, therefore, valid at the time of publication under the ICN and are usually followed by n.n. (nomina nova) to indicate they are provisional and not validly published.

Readers will note that the Rep does not include Bruce Bayer's species names comprised of three Latin names e.g. *H. retusa* 'nigra', as these are knowingly published outside the provisions of the ICN. He takes exception to many of the provisions of the ICN and publishes his species names based on what he considers to be a more acceptable form.

For Bruce's species please see his Haworthia Updates, all of which except No. 1 have been published by Alsterworthia International. These modify his classification in Haworthia Revisited wherein the species were published in accordance with the ICBN.

With the cooperation of John Manning, SANBI, Bruce Bayer produced a list of Haworthia names under the provisions of the ICN in Alsterworthia International 12(1)7-17 (March 2012). Amendments were published in Alsterworthia International 13(1)27. This ensured that the classification complied with the ICN, which resulted in it being used in the reclassification based on DNA studies of the alooids. See "Aloe and Goodbye: a new evolutionary classification of the alooids by John Manning, James S. Boatwright and Barnabas H. Daru, South Africa Biodiversity Institute in Alsterworthia International 14(2)14 (July 2014).

Readers will be well aware that different methods are used to classify plants. These result in much discussion but, in time, all *may* come together to present a more acceptable classification. Alsterworthia International continues to maintain impartiality; freedom of expression is all important. It contributes comprehensibly to our knowledge.

I have recently been informed that a study on "Nuclear genome sizes of 343 accessions of wild collected Haworthia and Astroloba (Asphodelaceae, Alooideae), compared with the genome sizes of Chortolirion, Gasteria and 83 Aloe species" has been carried out by BJM Zonneveld, Naturalis, Herbarium section, The Netherlands. A paper is in print. I hope to be able to let members have details when available.

The Rep for 2012 was published at the end of 2013. Regrettably details could not be published in Alsterworthia International in 2014 until now, along with those for 2013, because of competition for space. Names published in 2014 will be listed by the IOS in their Rep. for 2014 to be published at the end of 2015.

The work involved in preparing the annual Rep is considerable. It involves not only publication in printed form throughout the world in many languages but also digital publication combined with printed where there may be differences between the two, differences in publication date and amendments issued with ease digitally. The Compilers and all who assist them are doing a marvellous job. You can download their annual Reps free of charge from [rps64-final.pdf: 0.3 Mbytes] This will be particularly important for those of you who are interested in plant families additional to Asphodelaceae

ASPHODELACEAE - REPERTORIUM 2012

Aloe analavelonensis Letsara & al., *Malagasy Nat.* 6: 47, ill. (pp. 48, 50), 2012. Typus: *Letsara & al.* 938 (TAN, CAS, K).

Aloe ×anosyana J.-P. Castillon, *Adansonia*, n.s. [ser. 3], 34(1): 20, fig. 5, 2012. Typus: *Decary* 10778 (P). [= *Aloe helenae* × *A. divaricate* ssp. *vaotsohy*.]

Aloe beankaensis Letsara & al., *Malagasy Nat.* 6: 49, ill. (pp. 50-51), 2012. Typus: *Letsara* 937 (TAN, CAS, K). [Name first used as provisional name (*nom. inval.*, ICBN Art. 29.1, 36.1, cf. RPS 62) in figure caption only by J.-B. & J.-P. Castillon, *Aloe Madagascar*, Addendum No. 1: 13, ill., 2011.]

Aloe braamvanwykii G. F. Smith & Figueiredo, *Bradleya* 30: 162-165, ill., 2012. Typus: *Smith & Figueiredo* 1 (PRE).

Aloe condyae van Jaarsveld & P. Nel, *Bradleya* 30: 169, ill. (pp. 168, 170), 2012. Typus: van *Jaarsveld & Nel* 24252 (PRE).

Aloe divaricata ssp. **tulearensis** (T. A. McCoy & Lavranos) J.-P. Castillon, *Adansonia*, n.s. [ser. 3], 34(1): 18-19, fig. 4, 2012. Basionym: *Aloe tulearensis*. [First published provisionally (*nom. inval.*, ICBN Art. 34.1b, 33.4) in *Aloe Madagascar*, 27, 2010 (cf. RPS 61).]

Aloe divaricata ssp. **vaotsohy** (Decorse & Poisson) J.-P. Castillon, *Adansonia*, n.s. [ser. 3], 34(1): 18, fig. 1 (p. 15), 2012. Basionym: *Aloe vaotsohy*.

Aloe huntleyana van Jaarsveld & Swanepoel, *Bradleya* 30: 3-6, ill., 2012. Typus: van *Jaarsveld & al.* 18805 (WIND).

Aloe ikiorum Dioli, *Cact. Succ. J.* (Los Angeles) 83 (6): 271-274, ill., 2012. Typus: *Dioli* 116 (ABH, EA [photo], FT [photo]). [Volume for 2011, publ. 9. 1. 2012 [inside front cover].]

Aloe ivakoanyensis Letsara & al., *Malagasy Nat.* 6: 52, ill. (pp. 50, 53), 2012. Typus: *Letsara & Andriamihajarivo* 624 (TAN).

Aloe maculata ssp. **ficksburgensis** (Reynolds) G. F. Smith & Figueiredo, *Bradleya* 30: 15, ill. (pp. 14, 16), 2012. Basionym: *Aloe saponaria* var. *ficksburgensis*.

Aloe mandrarensis J.-P. Castillon, *Cactus-World* 30 (3): 168-169, ill., 2012. Typus: *Castillon* 55 (TAN).

Aloe mocamedensis van Jaarsveld, *Bradleya* 30: 173-177, ill., 2012. Typus: van *Jaarsveld* 22622 (LUB).

Aloe nugalensis Thulin, *Nordic J. Bot.* 30: 729-730, ill., 2012. Typus: *Thulin & Warfa* 5420A (UPS, K).

Aloe virginiae J.-P. Castillon, *CactusWorld* 30(3): 164-165, ill., 2012. Typus: *Castillon* 54 (TAN, TAN).

Haworthia attenuata var. **glabrata** (Salm-Dyck) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 37, 2012. Basionym: *Aloe glabrata*. [Republished in *Alsterworthia Int.* 12(1):14, 5. 3. 2012.]

Haworthia cooperi var. **minima** M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 32, 2012. Based on Tuck s.n.

Nom. inval. (ICN Art. 41.5). [Based on *Haworthia minima* Baker 1880 (*nom. illeg.*, Art. 53.1). Repeated in *Alsterworthia International* 12(1): 9, 2012, and in *Haworthia Nomenclator*, 7, 2012, but all are invalid for

lack of a direct reference to the replaced name. In addition, the name would be incorrect as a prioritable name at the same rank is enumerated as synonym.]

Haworthia maculata var. **livida** (M. B. Bayer) M. B. Bayer, *Haworthia Nomenclator*, 10, 2012. Basionym: *Haworthia pubescens* var. *livida*. [Repeated in *Alsterworthia Int.* 13(1): 27, 2013.]

Haworthia marumiana var. **reddii** (C. L. Scott) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 34, 2012. Basionym: *Haworthia reddii*. [Republished in *Alsterworthia Int.* 12(1): 11, 5. 3. 2012.]

Haworthia mirabilis var. **atrofusca** (G. G. Smith) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 34, 2012. Basionym: *Haworthia atrofusca*. [Republished in *Alsterworthia Int.* 12(1): 11, 5. 3. 2012.]

Haworthia mirabilis var. **heidelbergensis** (G.G. Smith) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 34, 2012. Basionym: *Haworthia heidelbergensis*. [Republished in *Alsterworthia Int.* 12(1): 11, 5. 3. 2012.]

Haworthia mirabilis var. **magnifica** (von Poellnitz) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 34, 2012. Basionym: *Haworthia magnifica*. [Republished in *Alsterworthia Int.* 12(1): 11, 5. 3. 2012.]

Haworthia mirabilis var. **maraisii** (von Poellnitz) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 34, 2012. Incorrect name (ICN Art. 11.4), based on *Haworthia maraisii*. [Republished in *Alsterworthia Int.* 12(1): 11, 5. 3. 2012. Incorrect because several prioritable names from 1940 are cited as synonyms.]

Haworthia mirabilis var. **meiringii** (M. B. Bayer) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 35, 2012. Basionym: *Haworthia maraisii* var. *meiringii*. [Republished in *Alsterworthia Int.* 12(1): 12, 5. 3. 2012.]

Haworthia mirabilis var. **mundula** (G. G. Smith) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 35, 2012. Basionym: *Haworthia mundula*. [Republished in *Alsterworthia Int.* 12(1): 12, 5. 3. 2012.]

Haworthia mirabilis var. **notabilis** (von Poellnitz) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 35, 2012. Incorrect name (ICN Art. 11.4), based on *Haworthia notabilis*. [Republished in *Alsterworthia Int.* 12(1): 12, 5. 3. 2012. Incorrect because the prioritable *H. schuldtiana* var. *erecta* Triebner & von Poellnitz 1940 is cited as synonym.]

Haworthia mirabilis var. **scabra** (M. B. Bayer) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 35, 2012. Basionym: *Haworthia heidelbergensis* var. *scabra*. [Republished in *Alsterworthia Int.* 12(1): 12, 5. 3. 2012.]

Haworthia mirabilis var. **splendens** (S. A. Hammer & J. D. Venter) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 35, 2012. Basionym: *Haworthia magnifica* var. *splendens*. [Republished in *Alsterworthia Int.* 12(1): 12, 5. 3. 2012.]

Haworthia mirabilis var. **toonensis** (M. B. Bayer) M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 35, 2012. Basionym: *Haworthia heidelbergensis* var. *toonensis*. [Republished in *Alsterworthia Int.* 12(1): 12, 5. 3. 2012.]

Haworthia nortieri var. **albispina** (M. Hayashi) M. B.

Bayer, *Haworthia Update* Vol. 7, Part 4, 35, 2012.

Basionym: *Haworthia albispina*. [Republished in *Alsterworthia Int.* 12(1): 12, 5. 3. 2012.]

Haworthia nortieri var. **devriesii** (Breuer) M. B.

Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: ` [Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia pygmaea var. **acuminata** (M. B. Bayer)

M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: *Haworthia retusa* fa. *acuminata*.

[Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia pygmaea var. **dekenahii** (G. G. Smith) M.

B. Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: *Haworthia dekenahii*. [Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia pygmaea var. **fusca** (Breuer) M. B. Bayer,

Haworthia Update Vol. 7, Part 4, 36, 2012. Basionym:

Haworthia fusca. [Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia pygmaea var. **vincentii** (Breuer) M. B.

Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: *Haworthia vincentii*. [Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia retusa var. **longibracteata** (G. G. Smith)

M. B. Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: *Haworthia longibracteata*. [Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia retusa var. **nigra** (M. B. Bayer) M. B.

Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: *Haworthia mutica* var. *nigra*. [Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia retusa var. **suberecta** (von Poellnitz) M.

B. Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: *Haworthia turgida* var. *suberecta*.

[Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia retusa var. **turgida** (Haworth) M. B.

Bayer, *Haworthia Update* Vol. 7, Part 4, 36, 2012.

Basionym: *Haworthia turgida*. [Republished in *Alsterworthia Int.* 12(1): 13, 5. 3. 2012.]

Haworthia rossouwii var. **minor** (M. B. Bayer) M. B.

Bayer, *Haworthia Update* Vol. 7, Part 4, 36-37, 2012.

Basionym: *Haworthia heidelbergensis* var. *minor*.

[Republished in *Alsterworthia Int.* 12(1): 13-14, 5. 3. 2012.]

ASPHODELACEAE - REPERTORIUM 2013

Aloe Sect. Chortolirion (A. Berger) Boatwright & J. C. Manning, *Taxon* 62(1): 74, 2013. Basionym:

Chortolirion.

Aloe aestivalis Boatwright & J. C. Manning, *Taxon* 62(1): 75, 2013. Based on *Fritz* 1025. Nom. illeg. (ICN Art. 52.1). [*Nom. nov. pro Chortolirion latifolium* Zonneveld & G. Fritz 2010 (*non Aloe latifolia* Haworth 1812). Predated by *Aloe jeppeae* Klopper & G. F. Smith (7. 1. 2013) (see G. D. Rowley, *Alsterworthia Int. Special Issue* 10: 4, 2013, and Manning & al., *Syst. Bot.* 39: 68, 2014).]

Aloe barbara-jeppeae T. A. McCoy & Lavranos, *Cact. Succ. J. (Los Angeles)* 85(4): 156-158, ills. (pp. 154, 157, 159), 2013. Typus: *Lavranos* 26380 (FT).

Aloe barendii Klopper & G. F. Smith, *Phytotaxa* 76(1): 12, 2013. Typus: *Marloth* 1049 (B, PRE). [*Nom. nov. pro Haworthia tenuifolia* Engler 1889. The name is available and legitimate at the place of publication, but if *Chortolirion bergerianum* Dinter 1914 is treated as synonym at the rank of species, that epithet has priority (see J. C. Manning & al., *Syst. Bot.* 39: 68, 2014).]

Aloe conifera ssp. pervagata J.-B. Castillon, *CactusWorld* 31(1): 45-46, ills., 2013. Typus: *Reynolds* 7692 (P).

Aloe delicatifolia J.-B. Castillon, *CactusWorld* 31(4): 260, ills. (pp. 259-261), 2013. Typus: *Castillon* 58 (TAN, TAN).

Aloe fievetii ssp. johannis-baptistei J.-B. Castillon,

CactusWorld 31(1): 47-48, ills., 2013. Typus: *Castillon* 56 (TAN).

Aloe graniticola Rebmann, *Cact. Succ.* 5(2): 55-57, ills., 2013. Typus: *Rebmann* 24 (BR).

Aloe jeppeae Klopper & G. F. Smith, *Phytotaxa* 76(1): 12, 2013. Typus: *Fritz* 1025 (PRE). [*Nom. nov. pro Chortolirion latifolium* Zonneveld & Fritz 2010 (*non A. latifolia* Haworth 1812).]

Aloe subspicata (Baker) Boatwright & J. C. Manning, *Taxon* 62(1): 75, 2013. Basionym: *Haworthia subspicata*.

Aloe tenuifolia (Engler) Boatwright & J. C. Manning, *Taxon* 62(1): 75, 2013. Nom. illeg. (ICN Art. 53.1), based on *Haworthia tenuifolia*. [*Non Aloe tenuifolia* Lamarck 1783. The valid name for this taxon is *Aloe barendii* Klopper & G. F. Smith 2013.]

Aloe welwitschii Klopper & G. F. Smith, *Phytotaxa* 76(1): 12, 2013. Typus: *Welwitsch* 3756 (BM). [*Nom. nov. pro Haworthia angolensis* Baker 1878. Treated as illegitimate under ICN Art. 52.1 vs. *Aloe subspicata* (Baker) Boatwright & J. C. Manning by G. D. Rowley, *Alsterworthia Int. Special Issue* 10: 4, 2013, but this is erroneous since the combining authors treat *H. angolensis* and *H. subspicata* as different taxa.]

Aloiampelos ciliaris (Haworth) Klopper & G. F. Smith, *Phytotaxa* 76(1): 10, 2013. Typus: *Aloe ciliaris* Haworth.

Aloiampelos ciliaris (Haworth) Klopper & G. F. Smith, *Phytotaxa* 76(1): 10, 2013. Basionym: *Aloe*

ciliaris.

Aloiampelos ciliaris var. **redacta** (S. Carter) Klopper & G. F. Smith, Phytotaxa 76(1): 10, 2013. Basionym: *Aloe ciliaris* var. *redacta*.

Aloiampelos ciliaris var. **tidmarshii** (Schönland) Klopper & G. F. Smith, Phytotaxa 76(1): 10, 2013. Basionym: *Aloe ciliaris* var. *tidmarshii*.

Aloiampelos commixta (A. Berger) Klopper & G. F. Smith, Phytotaxa 76(1): 11, 2013. Basionym: *Aloe commixta*.

Aloiampelos decumbens (Reynolds) Klopper & G. F. Smith, Phytotaxa 76(1): 11, 2013. Basionym: *Aloe gracilis* var. *decumbens*.

Aloiampelos gracilis (Haworth) Klopper & G. F. Smith, Phytotaxa 76(1): 11, 2013. Basionym: *Aloe gracilis*.

Aloiampelos juddii (van Jaarsveld) Klopper & G. F. Smith, Phytotaxa 76(1): 11, 2013. Basionym: *Aloe juddii*.

Aloiampelos striatula (Haworth) Klopper & G. F. Smith, Phytotaxa 76(1): 11, 2013. Basionym: *Aloe striatula*.

Aloiampelos striatula var. **caesia** (Reynolds) Klopper & G. F. Smith, Phytotaxa 76(1): 11, 2013. Basionym: *Aloe striatula* var. *caesia*.

Aloiampelos tenuior (Haworth) Klopper & G. F. Smith, Phytotaxa 76(1): 11, 2013. Basionym: *Aloe tenuior*.

Aloidendron (A. Berger) Klopper & G. F. Smith, Phytotaxa 76(1): 9, 2013. Basionym: *Aloe* Sect.

Aloidendron. (Klopper & G. F. Smith, Phytotaxa 76(1): 9, 2013. Basionym: *Aloe* Sect. *Aloidendron*.

Aloidendron barberae (Dyer) Klopper & G. F. Smith, Phytotaxa 76(1): 9, 2013. Basionym: *Aloe barberae*.

Aloidendron dichotomum (Masson) Klopper & G. F. Smith, Phytotaxa 76(1): 9, 2013. Basionym: *Aloe dichotoma*.

Aloidendron eminens (Reynolds & P. R. O. Bally) Klopper & G. F. Smith, Phytotaxa 76(1): 9, 2013. Basionym: *Aloe eminens*.

Aloidendron pillansii (L. Guthrie) Klopper & G. F. Smith, Phytotaxa 76(1): 9, 2013. Basionym: **Aloe pillansii**.

Aloidendron ramosissimum (Pillans) Klopper & G. F. Smith, Phytotaxa 76(1): 9, 2013. Basionym: *Aloe ramosissima*.

Aloidendron tongaense (van Jaarsveld) Klopper & G. F. Smith, Phytotaxa 76(1): 10, 2013. Basionym: *Aloe tongaensis*.

Haworthiopsis attenuata (Haworth) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Nom. inval. (ICN Art. 41.8a), based on *Aloe attenuata*. [The place cited for the basionym is a later publication with a reference to the actual place of valid publication (fide IPNI; accessed Aug. 2014).]

Haworthiopsis attenuata var. *glabrata* (Salm-Dyck) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Nom. inval. (ICN Art. 35.1), based on *Aloe glabrata*.

Haworthiopsis attenuata var. *radula* (Jacquin) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Nom. inval. (ICN Art. 35.1), based on *Aloe radula*.

Haworthiopsis bruynsii (M. B. Bayer) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia bruynsii*.

Haworthiopsis coarctata (Haworth) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia coarctata*.

Haworthiopsis coarctata var. **adelaidensis** (von Poellnitz) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia reinwardtii* var. *adelaidensis*. [Basionym erroneously given as *H. coarctata* var. *adelaidensis*, but with the correct page reference.]

Haworthiopsis coarctata var. **tenuis** (G. G. Smith) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia reinwardtii* var. *tenuis*.

Haworthiopsis fasciata (Willdenow) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Apicra fasciata*.

Haworthiopsis glauca (Baker) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia glauca*.

Haworthiopsis glauca var. *herrei* (von Poellnitz) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia herrei*.

Haworthiopsis granulata (Marloth) G. D. Rowley, Alsterworthia Int. 13(2): 25, 2013. Basionym: *Haworthia granulata*. [First proposed simultaneously with *Haworthiopsis venosa* var. *granulata* (Marloth) G. D. Rowley (both based on the same basionym) in Alsterworthia Int. Spec. Issue 10: 4, 2013.]

Haworthiopsis limifolia (Marloth) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia limifolia*.

Haworthiopsis limifolia var. **arcana** (G. F. Smith & N. Crouch) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4, 2013. Basionym: *Haworthia limifolia* var. *arcana*.

Haworthiopsis limifolia var. **gigantea** (M. B. Bayer) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 4-5, 2013. Basionym: *Haworthia limifolia* var. *gigantea*.

Haworthiopsis limifolia var. **glaucophylla** (M. B. Bayer) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 5, 2013. Basionym: *Haworthia limifolia* var. *glaucophylla*.

Haworthiopsis limifolia var. **ubomboensis** (I. Verdoorn) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 5, 2013. Basionym: *Haworthia ubomboensis*.

Haworthiopsis longiana (von Poellnitz) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 5, 2013. Basionym: *Haworthia longiana*.

Haworthiopsis nigra (Haworth) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 5, 2013. Basionym: *Apicra nigra*.

Haworthiopsis nigra var. **diversifolia** (von Poellnitz) G. D. Rowley, Alsterworthia Int. Spec. Issue 10: 5, 2013. Basionym: *Haworthia diversifolia*.

Haworthiopsis nigra var. **elongata** (von Poellnitz) G.

- D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia schmidtiana* var. *elongata*.
- Haworthiopsis reinwardtii** (Salm-Dyck) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Aloe reinwardtii*.
- Haworthiopsis reinwardtii** var. *brevicula* (G. G. Smith) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia reinwardtii* var. *brevicula*.
- Haworthiopsis scabra** (Haworth) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia scabra*.
- Haworthiopsis scabra** var. *lateganiae* (von Poellnitz) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia lateganiae*.
- Haworthiopsis scabra** var. *morrisiae* (von Poellnitz) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia morrisiae*.
- Haworthiopsis scabra** var. *starkiana* (von Poellnitz) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia starkiana*.
- Haworthiopsis sordida** (Haworth) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia sordida*.
- Haworthiopsis sordida** var. *lavrani* (C. L. Scott) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia sordida* var. *lavrani*.
- Haworthiopsis venosa** (Lamarck) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Aloe venosa*.
Haworthiopsis venosa var. *granulata* (Marloth) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. *Nom. inval.* (ICN Art. 36.2), based on *Haworthia granulata*. [Proposed simultaneously with *Haworthiopsis granulata* (Marloth) G. D. Rowley, and based on the same basionym.]
- Haworthiopsis viscosa* (Linné) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. *Nom. inval.* (ICN Art. 36.2), based on *Aloe viscosa*. [Proposed simultaneously (and repeated in *Alsterworthia Int. 13(2): 26*, 2013) with *Tulista viscosa* (Linné) G. D. Rowley, and based on the same basionym.]
- Haworthiopsis woolleyi** (von Poellnitz) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia woolleyi*.
- Kumara plicatilis** (Linné) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 3*, 2013. Basionym: *Aloe disticha* var. *plicatilis*. [Dated April 2013. Repeated by Klopper & al. in *Phytotaxa 115(2): 59-60*, July 2013, and also by G. D. Rowley in *Alsterworthia Int. 13(2): 24*, 2013.]
- Tulista aristata** (Haworth) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Aloe aristata*. [Repeated, together with numerous further combinations, in *Alsterworthia Int. 13(2): 26*, 2013.]
- Tulista** × **bicarinata** (Haworth) G. D. Rowley, *Alsterworthia Int. 13(2): 26*, 2013. Basionym: *Apicra bicarinata*.
- Tulista bullulata** (Jacquin) G. D. Rowley, *Alsterworthia Int. 13(2): 26*, 2013. Basionym: *Aloe bullulata*.
- Tulista congesta** (Salm-Dyck) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Aloe congesta*.
- Tulista corrugata** (N. L. Meyer & G. F. Smith) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Astroloba corrugata*.
- Tulista foliolosa** (Haworth) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Aloe foliolosa*.
- Tulista herrei** (Uitewaal) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Astroloba herrei*.
- Tulista kingiana** (von Poellnitz) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5*, 2013. Basionym: *Haworthia kingiana*.
- Tulista koelmaniorum** (Obermeyer & D. S. Hardy) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 5-6*, 2013. Basionym: *Haworthia koelmaniorum*.
- Tulista koelmaniorum** var. *mcmurtryi* (C. L. Scott) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 6*, 2013. Basionym: *Haworthia mcmurtryi*.
- Tulista marginata** (Lamarck) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 6*, 2013. Basionym: *Aloe marginata*.
- Tulista pumila** (Linné) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 6*, 2013. Basionym: *Aloe pumila*.
- Tulista pungens** (M. B. Bayer) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 6*, 2013. Basionym: *Haworthia pungens*.
- Tulista rubriflora** (L. Bolus) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 6*, 2013. Basionym: *Apicra rubriflora*.
- Tulista spiralis** (Linné) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 6*, 2013. Basionym: *Aloe spiralis*.
Tulista viscosa (Linné) G. D. Rowley, *Alsterworthia Int. Spec. Issue 10: 6*, 2013. *Nom. inval.* (ICN Art. 36.2), based on *Aloe viscosa*. [Proposed simultaneously (and repeated in *Alsterworthia Int. 13(2): 26*, 2013) with *Haworthiopsis viscosa* (Linné) G. D. Rowley, and based on the same basionym.]



Aloe hereroensis H. Hall 516