

Types of names accepted in *Haworthia* (*Aloaceae*)

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Summary

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Although several revisions of *Haworthia* have been published, less than one third of the names have been typified. In this paper we list all names that will be accepted for species or infraspecific taxa in a forthcoming revision, with full references to their source and type data. Neo-, lecto- and/or epitypes are designated here for 47 previously untypified names.

Duval (1809) transferred to his new genus *Haworthia* several taxa formerly placed in *Aloe*. The ensuing popularity of *Haworthia* in horticulture has led to several revisions of this genus, with 638 names published (397 of them as names of new taxa and 241 as new combinations). Of the 397 names of new taxa only 131 (33 %) are typified. In a forthcoming revision (Breuer, in prep.) based on Bayer's (1982) handbook and including subsequently published taxa, 120 taxa will be accepted. Until now, a type has been designated for only 73 of these names. Bayer (1982), with a few exceptions, abstained from designating neotypes. Similarly, Scott (1985) in his recent revision of the genus, did not effectively typify many of the names he accepted (Terblanche & al., 1993). This unsatisfactory situation is being addressed by the present paper, which, as a first step toward typifying all *Haworthia* names, deals with those currently accepted by us. The typification of synonyms will be dealt with in a later paper (Breuer, in prep.).

The correct names of our accepted taxa are listed in alphabetical order below. Their typification can be assigned to three categories: (1) 53 names (44.2 %) were typified in the original publication; (2) 20 names (16.7 %) have been subsequently lecto- or neotypified; and (3) 47 names (39.2 %) are typified in this paper.

Bayer (1982) and Scott (1985) both cited what they called "representative specimens" or elements "representative for the species" for most of the taxa accepted by them. This action cannot be accepted as an effective designation of types under Art. 7.11 of the *Code* (Greuter & al., 1994; see Terblanche & al., 1993). In general we follow Bayer's (1982) views and, in the case of untypified names, designate his "representative specimens" as neotypes, provided they are indeed preserved at NBG. In some cases, when a specimen cited by Bayer (1982) was not available at NBG, another specimen from the same locality, at BOL or NBG, was chosen.

Sometimes *Haworthia* taxa from different locations can show a striking phenetic similarity even when not closely related (e.g., *H. cymbiformis* and *H. cooperi*). Also, within a section (e.g., *H. sect. Retusae*) taxonomic conclusions may be difficult without a knowledge of geographic distribution. When the locality is unknown, an illustration designated as the type may be insufficient for the precise application of a name. To achieve more precision in the interpretation of names typified by unreliable

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illustrations (whether published or unpublished) we have in such cases designated an epitype, as is now permitted under Art. 9.7 of the *Code*.

All specimens at BOL, NBG and SAM were examined by the first author in 1995, although it was not possible to study some holotypes personally. Originally the types of several names published by G. G. Smith were deposited in the East London Herbarium, which is now incorporated in NBG (Bayer, 1982).

For several names published by Poellnitz photographs exist from his estate, presented by Werdermann to B. Although not all photographs were by Poellnitz himself, some being taken by staff at B of plants sent by Poellnitz to Berlin, several must be considered as original material for names that he published. This is certainly the case when the photographs are dated as being earlier than the corresponding publication of a new name. Also, undated photographs can be considered as original material because von Poellnitz had access to them and used several for his publications.

Haworthia angustifolia Haw. in Philos. Mag. J. 66: 283. 1825. – Neotype (designated here): 30.4 km from Grahamstown to Aicedale, 1977, P. Bruyns 1653 (NBG No. 120017!).

Haworthia angustifolia f. *baylissii* (C. L. Scott) M. B. Bayer, New Haworthia Handb.: 26. 1982 ≡ *H. baylissii* C. L. Scott in J. S. African Bot. 33: 1. 1968. – Holotype: Oudekraal, N. of Zuurberge, 1970, C. L. Scott 796 (PRE; isotypes: NBG!).

Haworthia arachnoidea (L.) Duval, Pl. Succ. Horto Alencon.: 7. 1809 ≡ *Aloe pumila* var. *arachnoidea* L., Sp. Pl.: 322. 1753. – Lectotype (Scott, 1977): [icon in] Commelijn, Praeludia Bot.: t. 27. 1703; epitype (designated here): Buitenkloof, Langvlei, 1971, M. B. Bayer 153 (NBG No. 110455!).

Note: The illustration in Commelijn (l.c.) fits several taxa of *Haworthia* known today. *H. arachnoidea* occurs in a wide area, and without a specified locality no certain identification of the illustrated plant is possible. Therefore designation of an epitype was necessary, to link the name to one of the known populations.

Haworthia aranea (A. Berger) M. B. Bayer, Haworthia Handb.: 98. 1976 ≡ *H. bolusii* var. *aranea* A. Berger in Engler, Pflanzenr. 33: 114. 1908. – Lectotype: [icon in] Engler, Pflanzenr. 33: 114, f. 39 A-E. 1908; epitype (designated here): near Moreas River Drift, Robinson Pass toward Oudtshoorn, 1905, H. Bolus 12372 (BOL!).

Note: The lectotype does not allow the precise application of the name because of the similarity with other, not closely related taxa like some forms of *Haworthia bolusii* and *H. arachnoidea*.

Haworthia archeri W. F. Barker ex M. B. Bayer in J. S. African Bot. 47: 791. 1981. – Holotype: Whitehill, Montagu, 1939, J. Archer (NBG!).

Haworthia archeri var. *dimorpha* M. B. Bayer in J. S. African Bot. 47: 793. 1981. – Holotype: 14 km E. of Touwsrivier, 1977, M. B. Bayer 2092 (NBG!).

Haworthia attenuata (Haw.) Haw., Syn. Pl. Succ.: 92. 1812 ≡ *Aloe attenuata* Haw. in Trans. Linn. Soc. London 7: 11. 1804. – Neotype (designated here): Sandland, 20 km E. of Patensie, P. L. Perry 660 (NBG No. 144672!).

***Haworthia attenuata* f. *britteniana* ('*britteniae*') (Poelln.) M. B. Bayer, New Haworthia Handb.: 63. 1982 ≡ *H. britteniana* Poelln. in Repert. Spec. Nov. Regni Veg. 41: 196. 1937. – Lectotype (designated here): [unpublished photographic icon] "*Haworthia Britteniana* v. P." (B!); epitype (designated here): foot of Pluto's Vale, 1936, G. G. Smith 1118 (NBG No. 68725!).**

Note: "*Haworthia attenuata* f. *britteniae*", as published by Bayer, might be regarded as a deliberate *nomen novum* intended to replace *H. britteniana* Poelln. However, since Bayer writes "stat. nov." and misquotes what he declares as the basionym as "*H. britteniae* V. Poelln.", we prefer to consider "*f. britteniae*" as a correctable error (orthographical variant).

Haworthia attenuata* f. *clariperla (Haw.) M. B. Bayer, Haworthia Handb.: 107. 1976 ≡ *H. clariperla* Haw. in Philos. Mag. Ann. Chem. 3: 186. 1828. – Neotype (designated here): Pluto's Vale, 1934, A. H. Harcourt-Wood (BOL No. 71344!).

Haworthia batesiana Uitewaal in Natl. Cact. Succ. J. 3: 101. 1948. – Holotype: Valley of Desolation, 1947, E. Ferguson (AMD; see Uitewaal, 1952).

Haworthia blackburniae W. F. Barker in J. S. African Bot. 3: 93. 1937. – Holotype: Calitzdorp, 1936, Reynolds 1842 (NBG!; isotype: BOL!, PRE).

Haworthia bolusii Baker in J. Linn. Soc., Bot. 18: 215. 1880. – Holotype: Graaff-Reinet, 1890, *H. Bolus* 158 (K; see Scott, 1985; isotype: BOL!).

Haworthia bolusii* var. *blackbeardiana (Poelln.) M. B. Bayer, New Haworthia Handb.: 31. 1982 ≡ *H. blackbeardiana* Poelln. in Repert. Spec. Nov. Regni Veg. 31: 82. 1933. – Lectotype (designated here): ex cult. K. v. Poellnitz 1932 (B!).

Haworthia bruynsii M. B. Bayer in J. S. African Bot. 47: 789. 1981. – Holotype: Weymouth, 20 km S.E. of Steytlerville, 1979, G. J. Rossouw 456 (NBG!).

Haworthia chloracantha Haw., Saxifrag. Enum. 2: 57. 1821. – Neotype (designated here): N. of Herbertsdale, 1975, M. B. Bayer ex cult. KG 411/75 (NBG No. 126673!).

Haworthia chloracantha* var. *denticulifera (Poelln.) M. B. Bayer, Haworthia Handb.: 112. 1976 ≡ *H. angustifolia* var. *denticulifera* Poelln. in Repert. Spec. Nov. Regni Veg. 41: 194. 1937. – Lectotype (designated here): [unpublished photographic icon] "*Haworthia angustifolia* var. *denticulifera* v. P." (B!).

Haworthia chloracantha* var. *subglaucā Poelln. in Kakteenk. & Kakteenfr. 1937: 137. 1937. – Neotype (designated here): Great Brak, 1934, Hurling & Neil (BOL!).

Haworthia coarctata Haw. in Philos. Mag. J. 64: 301. 1824. – Neotype (designated here): 16 km from Grahamstown to Bathurst, 1947, G. G. Smith 7092 (NBG No. 68473!).

Haworthia coarctata* subsp. *adelaidensis (Poelln.) M. B. Bayer in Natl. Cact. Succ. J. 28: 86. 1973 ≡ *H. reinwardtii* var. *adelaidensis* Poelln. in Beitr. Sukkulantenk. Sukkulantenpflege 1940(2): 43. 1940. – Lectotype (designated here): [unpublished photographic icon] "*Haworthia Reinwardtii* Haw. var. *adelaidensis* v. P." (B!).

Haworthia coarctata* var. *greenii (Baker) M. B. Bayer in Natl. Cact. Succ. J. 28: 80. 1973 ≡ *H. greenii* Baker in J. Linn. Soc., Bot. 18: 202. 1880. – Holotype: Cape, without locality, 1860, T. Cooper (K; see Scott, 1985).

Haworthia coarctata var. *tenuis* (G. G. Sm.) M. B. Bayer in Natl. Cact. Succ. J. 28: 80. 1973 ≡ *H. reinwardtii* var. *tenuis* G. G. Sm. in J. S. African Bot. 14: 51. 1948. – Holotype: on farm “Harvest Vale”, Alexandria, 1940, G. G. Smith 3420 (NBG!; isotype: NBG!).

Haworthia comptoniana G. G. Sm. in J. S. African Bot. 11: 76. 1945. – Holotype: Willowmore District, 1940, G. G. Smith 3433 (NBG!; isotype: NBG!).

Haworthia cooperi Baker in Refug. Bot. 4: 233. 1871. – Holotype: Cape, without locality, 1860, T. Cooper (K; see Scott, 1985).

Haworthia cooperi var. *leightonii* (G. G. Sm.) M. B. Bayer, Haworthia Handb.: 128. 1976 ≡ *H. leightonii* G. G. Sm. in J. S. African Bot. 16: 10. 1950. – Holotype: on Kayser’s Beach Road, East London, 1947, G. G. Smith 6938 (NBG!; isotype: NBG!).

Haworthia cymbiformis (Haw.) Duval, Pl. Succ. Horto Alencon.: 7. 1809 ≡ *Aloe cymbiformis* Haw. in Trans. Linn. Soc. London 7: 8. 1804. – Neotype (designated here): Walmer, Port Elizabeth, 1945, G. G. Smith 2844 (NBG No. 68015!).

Haworthia cymbiformis f. *ramosa* (G. G. Sm.) M. B. Bayer, Haworthia Handb.: 149. 1976 ≡ *H. ramosa* G. G. Sm. in J. S. African Bot. 10: 22. 1944. – Holotype: near Wooldridge, 1940, G. G. Smith 3168 (NBG!; isotypes: NBG!, PRE).

Haworthia cymbiformis var. *incurvula* (Poelln.) M. B. Bayer, Haworthia Handb.: 124. 1976 ≡ *H. incurvula* Poelln. in Repert. Spec. Nov. Regni Veg. 31: 85. 1933. – Neotype (designated here): Pluto’s Vale, 1939, G. Britten (BOL No. 71307!).

Haworthia cymbiformis var. *transiens* (Poelln.) M. B. Bayer, Haworthia Handb.: 162. 1976 ≡ *H. planifolia* var. *transiens* Poelln. in Repert. Spec. Nov. Regni Veg. 45: 163. 1938. – Lectotype (designated here): [unpublished photographic icon] “5479 *Haworthia planifolia* var. *transiens* v. P. Typ!” (B!).

Haworthia cymbiformis var. *umbraticola* (Poelln.) M. B. Bayer, Haworthia Handb.: 164. 1976 ≡ *H. umbraticola* Poelln. in Kakteenk. & Kakteenfr. 1937: 134. 1937. – Lectotype (designated here): [photographic icon] “*Haworthia umbraticola* v. P.” (B!); later published in Kakteenk. & Kakteenfr. 1937: 134. 1937).

Haworthia decipiens Poelln. in Repert. Spec. Nov. Regni Veg. 28: 103. 1930. – Neotype (designated here): Zuurberg at Georgida, 1932, H. G. Fourcade 4637 (BOL!).

Haworthia divergens M. B. Bayer, Haworthia Handb.: 113. 1976. – Holotype: Molen River, N. of the National Road from Oudtshoorn to Uniondale, 1976, M. B. Bayer 175 (NBG!).

Haworthia emelyae Poelln. in Repert. Spec. Nov. Regni Veg. 42: 271. 1937. – Lectotype (designated here): [unpublished photographic icon] “*Haworthia Emelyae* v. P.” (B!).

Haworthia emelyae var. *multifolia* M. B. Bayer in Natl. Cact. Succ. J. 34: 28. 1979. – Holotype: E. of Springfontein, 1976, M. B. Bayer 1558 (NBG!).

Haworthia fasciata (Willd.) Haw., Saxifrag. Enum. 2: 54. 1821 ≡ *Apicra fasciata* Willd. in Ges. Naturf. Freunde Berlin Mag. Neuesten Entdeck. Gesammten Naturk. 5: 270. 1811. – Neotype (designated here): Hankey, 1962, F. J. Stayner, (NBG No. 110360!).

Haworthia fasciata f. *browniana* (Poelln.) M. B. Bayer, Haworthia Handb.: 105. 1976 ≡ *H. browniana* Poelln. in Desert Pl. Life 9: 102. 1937. – Lectotype (designated here): [photographic icon] “*Haworthia Browniana* v. P.” (B!; later published in Desert Pl. Life 9: 102. 1937).

Haworthia floribunda Poelln. in Repert. Spec. Nov. Regni Veg. 40: 149. 1936. – Neotype (Bayer, 1982): [unpublished photographic icon] “*Haworthia floribunda* v. P.” (B!); epitype (designated here): Blackdown, 3.2 km N. of Heidelberg, *M. B. Bayer* 158 (NBG No. 110465!).

Note: The poor photograph in B, designated as neotype by Bayer (1982), shows a plant which could also be identified as *Haworthia chloracantha* or *H. angustifolia* because of phenetic similarity. For a precise application of the name the designation of an epitype is necessary.

Haworthia glabrata (Salm-Dyck) Baker in J. Linn. Soc., Bot. 18: 206. 1880 ≡ *Aloe glabrata* Salm-Dyck, Hort. Dyck.: 325. 1834. – Neotype (Smith & Greyling, 1990): [icon in] Salm-Dyck, Aloes Mesembr. 3: *Aloe* t. 7 [sect. 6: 13]. 1840.

Haworthia glauca Baker in J. Linn. Soc., Bot. 18: 203. 1880. – Holotype: Cape, without locality, 1862, *T. Cooper* (K; see Scott, 1985).

Haworthia glauca var. *herrei* (Poelln.) M. B. Bayer, Haworthia Handb.: 122. 1976 ≡ *H. herrei* Poelln. in Repert. Spec. Nov. Regni Veg. 26: 24. 1929. – Neotype (designated here): Camperspoort, 1947, *W. F. Barker* 5069 (NBG No. 68132!).

Haworthia glauca f. *armstrongii* (Poelln.) M. B. Bayer, Haworthia Handb.: 99. 1976 ≡ *H. armstrongii* Poelln. in Kakteenk. & Kakteenfr. 1937: 152. 1937. – Lectotype (designated here): [photographic icon] “*Haworthia Armstrongii* v. P.” (B!; later published in Kakteenk. & Kakteenfr. 1937: 152. 1937).

Haworthia graminifolia G. G. Sm. in J. S. African Bot. 8: 247. 1942. – Holotype: near Cango Caves, Oudtshoorn, 1941, *G. G. Smith* 5222 (NBG!; isotype: NBG!).

Haworthia habdomadis Poelln. in Repert. Spec. Nov. Regni Veg. 46: 271. 1939. – Neotype (designated here): Sevenweeksport, 1932, *W. F. Barker* & *J. Lewis* ex cult. NBG 2764/32 (BOL!).

Haworthia habdomadis var. *inconfluens* (Poelln.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. altilinea* f. *inconfluens* Poelln. in Repert. Spec. Nov. Regni Veg. 45: 169. 1938. – Lectotype (designated here): [unpublished photographic icon] “*Haw. altilinea* var. *Morrisiae*” (B!).

Haworthia habdomadis var. *morrisiae* (Poelln.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. altilinea* var. *morrisiae* Poelln. in Repert. Spec. Nov. Regni Veg. 45: 168. 1938. – Lectotype (designated here): [unpublished photographic icon] “*Haw. altilinea* var. *Morrisiae*” (B!).

Haworthia heidelbergensis G. G. Sm. in J. S. African Bot. 14: 42. 1948. – Holotype: 0.4 km W. of Heidelberg, 1946, *G. G. Smith* 6566 (NBG!; isotype: NBG!).

Haworthia herbacea (Mill.) Stearn in Cact. J. (Croydon) 7: 40. 1938 ≡ *Aloe herbacea* Mill., Gard. Dict., ed. 8: *Aloe* No. 18. 1768. – Lectotype (Bayer, 1972b): [icon of] “*Aloe*; *afra*; *minima*; *atroviridis*: spinis herbaceis numerosis ornata.” Boerhaave, Ind. Alter Hort. Lugd.-Bat. 2: ad p. 131. 1720; epitype (designated here): 0.8 km N. of Ribbokkop, 19.2 km S.W. of Worcester, 1970, *M. B. Bayer* 161 (NBG No. 92508!).

Haworthia joeyae C. L. Scott in Bradleya 13: 80. 1995. – Holotype: N.E. of Cookhouse, 1979, C. L. Scott 2800 (GRA).

Haworthia kingiana Poelln. in Repert. Spec. Nov. Regni Veg. 41: 203. 1937. – Neotype (designated here): Great Brak, 1950, J. Dekena 201 (NBG No. 68719!).

Haworthia koelmaniorum Oberm. & D. S. Hardy in Fl. Pl. Africa: ad t. 1502. 1967. – Holotype: near Groblersdal, 1966, Hardy & Mauve 2267 (PRE).

Haworthia limifolia Marloth in Trans. Roy. Soc. South Africa 1: 409. 1910. – Holotype: W. of Delagoa Bay, 1908, Marloth 4678 (PRE; see Scott, 1985).

Haworthia limifolia var. *gigantea* M. B. Bayer in J. S. African Bot. 28: 215. 1962. – Holotype: Nongoma, 1962, M. B. Bayer 112 (PRE).

Haworthia limifolia var. *ubomboensis* (I. Verd.) G. G. Sm. in J. S. African Bot. 16: 4. 1950 ≡ *H. ubomboensis* I. Verd. in Fl. Pl. South Africa: ad t. 818. 1941. – Holotype: Ubombo Mts, 1937, D. R. Keith (PRE).

Haworthia lockwoodii Archibald in Fl. Pl. South Africa: ad t. 792. 1940. – Holotype: Laingsburg, 1939, S. Lockwood Hill 215 (GRA).

Haworthia longiana Poelln. in Repert. Spec. Nov. Regni Veg. 41: 203. 1937. – Lectotype (designated here): [unpublished photographic icon] “*Haworthia Longiana* v. P.” (B!).

Haworthia maculata (Poelln.) M. B. Bayer, Haworthia Handb.: 130. 1976 ≡ *H. schuldtiana* var. *maculata* Poelln. in Repert. Spec. Nov. Regni Veg. 49: 25. 1940. – Lectotype (designated here): Worcester, 1939, H. Venter 6 (BOL!).

Haworthia magnifica Poelln. in Repert. Spec. Nov. Regni Veg. 33: 240. 1933. – Lectotype (designated here): Riversdale, 1933, E. Ferguson (BOL!).

Haworthia magnifica var. *atrofusca* (G. G. Sm.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. atrofusca* G. G. Sm. in J. S. African Bot. 14: 41. 1948. – Holotype: 6.4 km from Riverdale on National Road to Heidelberg, 1945, G. G. Smith 6169 (NBG!); isotype: NBG!).

Haworthia magnifica var. *major* (G. G. Sm.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. schuldtiana* var. *major* G. G. Sm. in J. S. African Bot. 12: 1. 1946. – Holotype: 25 km from Riversdale to Ladismith, 1942, G. G. Smith 5370 (NBG!); isotype: NBG!).

Haworthia magnifica var. *maraisii* (Poelln.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. maraisii* Poelln. in Repert. Spec. Nov. Regni Veg. 38: 194. 1935. – Lectotype (designated here): [unpublished photographic icon] “*Haw. Maraisii* v. P.” (B!).

Note: The illustration designated as lectotype by Bayer (1982) is dated from 1937 and is not therefore original material in sense of the *Code*, but is in fact a neotype (Art. 9.8.). A lectotype, here chosen from the existing original material in B, takes precedence over a neotype.

Haworthia magnifica var. *meiringii* (M. B. Bayer) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. maraisii* var. *meiringii* M. B. Bayer, Haworthia Handb.: 134. 1976. – Holotype: 0.4 km E. of Bonnievale, hill above station, 1970, M. B. Bayer (NBG!).

Haworthia magnifica var. ***notabilis*** (Poelln.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. notabilis* Poelln. in Repert. Spec. Nov. Regni Veg. 44: 134. 1938. – Lectotype (designated here): [unpublished photographic icon] “*Haw. notabilis* v. P. typ.” (B!).

Haworthia magnifica var. ***paradoxa*** (Poelln.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. paradoxa* Poelln. in Repert. Spec. Nov. Regni Veg. 33: 239. 1933. – Neotype (designated here): Riversdale, 1933, E. Ferguson (BOL!).

Haworthia margaritifera (L.) Haw., Suppl. Pl. Succ.: 55. 1819 ≡ *Aloe pumila* var. *margaritifera* L., Sp. Pl.: 322. 1753. – Lectotype (Wijnands, 1984): [icon in] Commelijn, Horti Med. Amstelod. 2: t. 10. 1701; epitype (designated here): Karoo Garden ground, Worcester, 1946, R. H. Compton 18963 (NBG No. 68120!).

Haworthia marginata (Lam.) Stearn in Cact. J. (Croydon) 7: 34. 1938 ≡ *Aloe marginata* Lam., Encycl. 1: 89. 1783. – Lectotype (Scott, 1985): [icon in] Commelijn, Praeludia Bot.: t. 30. 1703.

Haworthia marumiana Uitewaal in Cact. & Vtpl. 6: 33. 1940. – Holotype: Ladismith, 1940, ex hort. Stellenbosch sub No. 6610 (AMD; see Uitewaal, 1952).

Haworthia maughanii Poelln. in Repert. Spec. Nov. Regni Veg. 31: 85. 1933. – Neotype (designated here): Calitzdorp, 1940, M. J. Malherbe ex cult. NBG 307/40 (NBG No. 68307!).

Haworthia mcmurtryi C. L. Scott in Cact. Succ. J. (Los Angeles) 56: 69. 1984. – Holotype: S.W. of Loskopdam, 1984, C. L. Scott 7450 (PRE).

Haworthia minima (Aiton) Haw., Syn. Pl. Succ.: 92. 1812 ≡ *Aloe margaritifera* var. *minima* Aiton, Hort. Kew. 1: 468. 1789. – Lectotype (Scott, 1985): [icon in] Dillenius, Hort. Eltham.: t. 16, f. 18. 1732.

Haworthia mirabilis (Haw.) Haw., Syn. Pl. Succ.: 95. 1812 ≡ *Aloe mirabilis* Haw. in Trans. Linn. Soc. London 7: 9. 1804. – Neotype (Bayer, 1977): [icon in] Bot. Mag.: ad t. 1354. 1811; epitype (designated here): Skuitsberg between Caledon and Greyton, 1980, M. B. Bayer 2453 (NBG No. 133027!).

Note: Because of phenetic similarity the neotype designated by Bayer may be confused with *Haworthia retusa*. Confusion is avoided by designation of an epitype from a known locality.

Haworthia mirabilis subsp. ***badia*** (Poelln.) M. B. Bayer, Haworthia Handb.: 101. 1976 ≡ *H. badia* Poelln. in Kakteenk. & Kakteenfr. 1938: 76. 1938. – Lectotype (Bayer, 1977): [icon in] Kakteenk. & Kakteenfr. 1938: 76. 1938.

Haworthia mirabilis subsp. ***mundula*** (G. G. Sm.) M. B. Bayer, Haworthia Handb.: 139. 1976 ≡ *H. mundula* G. G. Sm. in J. S. African Bot. 12: 8. 1946. – Holotype: on Elin Road, Bredasdorp District, 1942, G. G. Smith 5479 (NBG!; isotype: NBG!).

Haworthia mutica Haw., Saxifrag. Enum. 2: 55. 1821. – Lectotype (Bayer, 1978): [icon] (K; later published in Excelsa 8: 50. 1978); epitype (designated here): 22.4 km from Bredasdorp to Swellendam, N.E. of Soesrivier Bridge, 1969, M. B. Bayer ex cult. KG 623/69 (NBG No. 109712!).

Note: Phenetic similarity with some infraspecific taxa of *Haworthia retusa* requires the designation of an epitype.

Haworthia nigra (Haw.) Baker in J. Linn. Soc., Bot. 18: 203. 1880 = *Apicra nigra* Haw. in Philos. Mag. J. 64: 302. 1824. – Neotype (designated here): Campher-spoort, 1947, W. F. Barker 5099 (NBG No. 68251!).

Haworthia nortieri G. G. Sm. in J. S. African Bot. 12: 13. 1946. – Holotype: on Doorn River, between Clanwilliam and Vanrhynsdorp, 1945, G. G. Smith 6115 (NBG!; isotype: NBG!).

Haworthia nortieri var. *globosiflora* (G. G. Sm.) M. B. Bayer, Haworthia Handb.: 119. 1976 = *H. globosiflora* G. G. Sm. in J. S. African Bot. 16: 11. 1950. – Holotype: 8 km from Doorn River Bridge to Nieuwoudtville, 1948, G. G. Smith 7198 (NBG!; isotype: NBG!).

Haworthia parksiana Poelln. in Repert. Spec. Nov. Regni Veg. 41: 205. 1937. – Lectotype (designated here): [photographic icon] “*Haw. Parksiana* v. P.” (B!; later published in Desert Pl. Life 10: 48. 1938).

Haworthia pehlemanniae C. L. Scott in Cact. Succ. J. (Los Angeles) 54: 70. 1982. – Holotype: 5 km W. of Laingsburg, 1981, C. L. Scott (PRE).

Haworthia poellnitziana Uitewaal in Cact. & Vetcpl. 5: 137. 1939. – Holotype: Drew, near Bonnievale, 1937, ex hort. Stellenbosch sub No. 7796 (AMD; see Uitewaal, 1952).

Haworthia pringlei C. L. Scott in Bradleya 12: 103. 1994. – Holotype: 40 km S. of Adelaide, 1994, C. L. Scott 8970 (PRE).

Haworthia pubescens M. B. Bayer in J. S. African Bot. 38: 125. 1972. – Holotype: Sandberg Hills, 12 km S.S.E. of Worcester, 1970, M. B. Bayer 161 (NBG!).

Haworthia pulchella M. B. Bayer in J. S. African Bot. 39: 232. 1973. – Holotype: Avondrust, S.E. of Touwsrivier, 1971, M. B. Bayer 162 (NBG!).

Haworthia pygmaea Poelln. in Repert. Spec. Nov. Regni Veg. 27: 132. 1929. – Neotype (designated here): hills E. of Great Brak River, 1932, H. G. Fourcade 4759 (BOL!).

Haworthia radula (Jacq.) Haw., Syn. Pl. Succ.: 93. 1812 = *Aloe radula* Jacq., Pl. Hort. Schoenbr. 4: 11. 1804. – Lectotype (Scott, 1985): [icon in] Jacquin, Pl. Hort. Schoenbr. 4: t. 422. 1804; epitype (designated here): 1.6 km from Hankey to Thornhill, 1940, G. G. Smith 3190 (NBG No. 115013!).

Note: Because of phenetic similarity the lectotype might be assigned to either *Haworthia radula* or, e. g., *H. glabrata*.

Haworthia reddii C. L. Scott in Cact. Succ. J. (Los Angeles) 66: 182. 1994. – Holotype: South slopes on hills at Waterdown Dam, 1995, C. L. Scott 8968 (PRE).

Haworthia reinwardtii (Salm-Dyck) Haw., Saxifrag. Enum. 2: 53. 1821 = *Aloe reinwardtii* Salm-Dyck, Observ. Bot. Horto Dyck: 37. 1821. – Neotype (Scott, 1981a): [icon in] Salm-Dyck, Aloes Mesembr. 1: *Aloe* t. 12 [sect. 6: 16]. 1836; epitype (designated here): near top of hill above Ncera River Bridge, 1940, G. G. Smith 3563 (NBG No. 68556!).

Note: Although the neotype can be clearly identified as belonging to this species, designation of an epitype from a known locality is necessary to allow unambiguous application of names at infraspecific ranks.

Haworthia reinwardtii* var. *brevicula G. G. Sm. in J. S. African Bot. 10: 11. 1944. – Holotype: between Fraserskamp and the old fort, 1940, *G. G. Smith* 3138 (NBG!; isotypes: NBG!, PRE).

Haworthia reinwardtii* f. *chalumnensis (G. G. Sm.) M. B. Bayer, Haworthia Handb.: 106. 1976 ≡ *H. reinwardtii* var. *chalumnensis* G. G. Sm. In J. S. African Bot. 9: 99. 1943. – Holotype: Chalumna River, 48.3 km W. of East London, 1934, *G. G. Smith* 513 (NBG!; isotypes: NBG!, PRE).

Haworthia reinwardtii* f. *kaffirdriftensis (G. G. Sm.) M. B. Bayer, Haworthia Handb.: 126. 1976 ≡ *H. reinwardtii* var. *kaffirdriftensis* G. G. Sm. in J. S. African Bot. 9: 96. 1943. – Holotype: near Kaffirdrift, E. side of Fish River 22 km S.S.W. of Peddie, 1940, *G. G. Smith* 3364 (NBG!; isotypes: NBG!, PRE).

Haworthia reinwardtii* f. *olivacea (G. G. Sm.) M. B. Bayer, Haworthia Handb.: 142. 1976 ≡ *H. reinwardtii* var. *olivacea* G. G. Sm. in J. S. African Bot. 10: 16. 1944. – Type: S.E. of Kaffirdrift, 1942, *G. G. Smith* 5260 (NBG!; isotypes: NBG!, PRE).

Haworthia reinwardtii* f. *zebrina (G. G. Sm.) M. B. Bayer in Natl. Cact. Succ. J. 32: 18. 1977 ≡ *H. reinwardtii* var. *zebrina* G. G. Sm. in J. S. African Bot. 10: 18. 1944. – Holotype: Fish River, S. side on Road from Peddie to Kaffirdrift, 1942, *G. G. Smith* 5258 (NBG!; isotypes: NBG!, PRE).

Haworthia reticulata (Haw.) Haw., Syn. Pl. Succ.: 94. 1812 ≡ *Aloe reticulata* Haw. in Trans. Linn. Soc. London 7: 9. 1804. – Neotype (Bayer, 1972a): [icon in] Bot. Mag.: ad t. 1314. 1810; epitype (designated here): Ribbokkop, 19,2 km S.W. of Worcester, 1970, *M. B. Bayer* 160 (NBG No. 92511!).

Note: Because of phenetic similarity the neotype designated by Bayer might also be assigned to *Haworthia herbacea*, which will be avoided by designation of an epitype from a known locality.

Haworthia reticulata* var. *hurlingii (Poelln.) M. B. Bayer, New Haworthia Handb.: 52. 1982 ≡ *H. hurlingii* Poelln. in Repert. Spec. Nov. Regni Veg. 41: 202. 1937. – Lectotype (designated here): [photographic icon], “*Haw. Hurlingii* v. P. ‘Co-Typ’ Photo: Uitewaal, Amsterdam, 1937” (B!); later published in Desert Pl. Life 10: 125. 1938).

Haworthia retusa (L.) Duval, Pl. Succ. Horto Alencon.: 7. 1809 ≡ *Aloe retusa* L., Sp. Pl.: 322. 1753. – Lectotype (Scott, 1985): [icon in] Commelin, Horti Med. Amstelod. 2: t. 6. 1701; epitype (designated here): Blikbonnie, 2 km E. of Riversdale, 1971, *J. Dekenah* (NBG No. 144772!).

Note: Although the lectotype can be identified as belonging to this species, designation of an epitype from a known locality is necessary to allow unambiguous application of names at infraspecific ranks, and also to prevent possible confusion with the similar *Haworthia mutica*.

Haworthia retusa* var. *acuminata (M. B. Bayer) M. B. Bayer, New Haworthia Handb.: 53. 1982 ≡ *H. retusa* f. *acuminata* M. B. Bayer, Haworthia Handb.: 94. 1976. – Holotype: N. of Gouritzmond, 1973, *M. B. Bayer* (NBG; specimen not found by the first author in 1995).

Haworthia retusa var. *dekenahii* (G. G. Sm.) M. B. Bayer, New Haworthia Handb.: 53. 1982 ≡ *H. dekenahii* G. G. Sm. in J. S. African Bot. 10: 140. 1944. – Holotype: on farm Draaihoek, E. of Riversdale, 1942, G. G. Smith 5489 (NBG!; isotypes: NBG!, PRE).

Haworthia rycroftiana M. B. Bayer in J. S. African Bot. 47: 795. 1981. – Holotype: on Gouritz River, between Vanwyksdorp and Herbertsdale, 1975, M. B. Bayer 1701 (NBG!).

Haworthia scabra Haw., Suppl. Pl. Succ.: 58. 1819. – Lectotype (Scott, 1980): [icon] [K; later published in Cact. Succ. J. (Los Angeles) 52: 274. 1980].

Haworthia scabra var. *morrisiae* (Poelln.) M. B. Bayer, Haworthia Handb.: 137. 1976 ≡ *H. morrisiae* Poelln. in Kakteenk. & Kakteenfr. 1937: 132. 1937. – Lectotype (designated here): [photographic icon] *Haworthia morrisiae* “Type! Photo: v. P. VI. 1937.” (B!; later published in Kakteenk. & Kakteenfr. 1937: 132. 1937).

Haworthia semiviva (Poelln.) M. B. Bayer, Haworthia Handb.: 153. 1976 ≡ *H. bolusii* var. *semiviva* Poelln. in Repert. Spec. Nov. Regni Veg. 44: 40. 1938. – Lectotype (designated here): [photographic icon] “*Haw. Bolusii* var. *semiviva* v. P. Typ.” (B!; later published in Succulenta (Netherlands) 22: 25. 1940).

Haworthia serrata M. B. Bayer in J. S. African Bot. 39: 249. 1973. – Holotype: Oudekraalkop, 40 km S.W. of Heidelberg, 1971, M. B. Bayer 166 (NBG!).

Haworthia sordida Haw., Saxifrag. Enum. 2: 51. 1821. – Neotype (Scott, 1985): [icon in] Salm-Dyck, Aloes Mesembr. 7: Aloe t. 1 [sect. 7: 2]. 1863.

Haworthia springbokvlakensis C. L. Scott in J. S. African Bot. 36: 287. 1970. – Holotype: on the farm Springbokvlakte, Steyterville, 1970, C. L. Scott 245 (PRE).

Haworthia starkiana Poelln. in Repert. Spec. Nov. Regni Veg. 33: 73. 1933. – Lectotype (designated here): [unpublished photographic icon] “*Haw. Starkiana* v. P.” (B!).

Haworthia starkiana var. *lateganiae* (Poelln.) M. B. Bayer, Haworthia Handb.: 128. 1976 ≡ *H. lateganiae* Poelln. in Desert Pl. Life 9: 103. 1937. – Lectotype (designated here): [photographic icon] (B!; later published in Desert Pl. Life 9: 103. 1937).

Haworthia translucens (Haw.) Haw., Suppl. Pl. Succ.: 52. 1819 ≡ *Aloe translucens* Haw. in Trans. Linn. Soc. London: 10. 1804. – Neotype (designated here): 2 km E. of Hankey, 1976, M. B. Bayer 4476 (NBG No. 133041!).

Haworthia translucens subsp. *tenera* (Poelln.) M. B. Bayer, Haworthia Handb.: 161. 1976 ≡ *H. tenera* Poelln. in Repert. Spec. Nov. Regni Veg. 31: 86. 1933 – Neotype (designated here): on farm “Glenelg”, S.-facing krantz, 1942, G. G. Smith 5416 (NBG No. 115210!).

Haworthia truncata Schönland in Trans. Roy. Soc. South Africa 1: 391. 1910. – Holotype: on a farm 11.2 km from Oudtshoorn, 1909, L. Britten (K; see Scott, 1985).

Haworthia turgida Haw., Suppl. Pl. Succ.: 52. 1819. – Neotype (designated here): Breede River Bridge, Swellendam, 1969, M. B. Bayer 2420 (NBG No. 132378!).

Haworthia unicolor Poelln. in Kakteenk. & Kakteenfr. 1937: 154. 1937. – Lectotype (designated here): [icon in] Kakteenk. & Kakteenfr. 1937: 133. 1937.

Haworthia unicolor var. *helmiae* (Poelln.) M. B. Bayer, Haworthia Handb.: 121. 1976 ≡ *H. helmiae* Poelln. in Repert. Spec. Nov. Regni Veg. 41: 201. 1937. – Lectotype (Bayer, 1982): [unpublished photographic icon] “*Haworthia Helmae* v. P.” (B!).

Haworthia unicolor var. *venteri* (Poelln.) M. B. Bayer, Haworthia Handb.: 166. 1976 ≡ *H. venteri* Poelln. in Cact. J. (Croydon) 8: 19. 1939. – Lectotype (designated here): Caledon, 1939, *H. Venter* 9 (BOL!).

Haworthia variegata L. Bolus in J. Bot. 67: 137. 1929. – Holotype: Botterkloof, on limestone hills, a few miles inland from Still Bay, 1928, *E. Ferguson* (BOL!).

Haworthia venosa (Lam.) Haw., Saxifrag. Enum.: 51. 1821 ≡ *Aloe venosa* Lam., Encycl. 1: 89. 1783. – Lectotype (Scott, 1978): [icon in] Commelijn, Praeludia Bot.: t. 29. 1703; epitype (designated here): Swellendam, W. of Breede River Bridge, 1970, *M. B. Bayer* 168 (NBG No. 110636!).

Note: Although the lectotype can be identified as belonging to this species, designation of an epitype from a known locality is necessary to allow unambiguous application of names at infraspecific ranks.

Haworthia venosa subsp. *granulata* (Marloth) M. B. Bayer, Haworthia Handb.: 120. 1976 ≡ *H. granulata* Marloth in Trans. Roy. Soc. South Africa 2: 39. 1910. – Neotype (designated here): Verlate Kloof, S. of Sutherland, 1968, *H. Hall* 3168 (NBG No. 87961!).

Haworthia venosa subsp. *tessellata* (Haw.) M. B. Bayer, New Haworthia Handb.: 76. 1982 ≡ *H. tessellata* Haw. in Philos. Mag. J. 64: 300. 1824. – Lectotype (Scott, 1978): [icon] [K; later published in Cact. Succ. J. (Los Angeles) 50: 75. 1978].

Haworthia viscosa (L.) Haw., Syn. Pl. Succ.: 90. 1812 ≡ *Aloe viscosa* L., Sp. Pl.: 322. 1753. – Lectotype (Scott, 1981b): [icon in] Commelijn, Praeludia Bot.: t. 31. 1703; epitype (designated here): Blackburn Valley, Calitzdorp, 1947, *W. F. Barker* 5073 (NBG No. 68204!).

Note: Although the lectotype can be identified as belonging to this species, designation of an epitype from a known locality is necessary to fix the application of several published infraspecific names (although such taxa are not accepted here).

Haworthia wittebergensis W. F. Barker in J. S. African Bot. 8: 245. 1942. – Holotype: Witteberg, 1942, *L. Pieterse* (NBG!).

Haworthia woolleyi Poelln. in Repert. Spec. Nov. Regni Veg. 42: 269. 1937. – Lectotype (designated here): [photographic icon] “*Haworthia Wolleyii* v. P.” [B!; later published in Cact. J. (Croydon) 7: 3, 1938].

Haworthia xiphophylla Baker in Thiselton-Dyer, Fl. Cap. 6: 254. 1896. – Holotype: Uitenhage district, 1895, *C. Howlett* (K; see Scott, 1985).

Haworthia zantneriana Poelln. in Repert. Spec. Nov. Regni Veg. 41: 217. 1937. – Lectotype (designated here): [photographic icon] “*Haworthia Zantneriana* v. P.” (B!; later published in Desert Pl. Life 9: 90. 1937).

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