

The taxonomy of *Aloinella*, *Guillauminia* and *Lemeea* (Aloaceae)

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Summary

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The recent reinstatement of the genera *Guillauminia* and *Lemeea* (*Aloinella* Lemée non Cardot) in the Aloaceae is discussed. It is concluded that both should remain in the synonymy of *Aloe* L.

Introduction

The Aloaceae, with seven genera and about 450 species, are a fairly small family of rosulate leaf succulent plants, centred in southern Africa. The names of genera belonging here are cited in the *Index nominum genericorum* (Farr & al., 1979), with some omissions recently pointed out by Smith & al. (1994). Generic delimitation and species concepts in the Aloaceae have been the subject of much discussion (Rowley, 1976a, b, c; Smith & Wyk, 1991). Many genera display unusual patterns of variation. Intergradations among populations may further complicate the assessment of the significance of reproductive and vegetative character variation for the alpha-taxonomy of the group.

Aloe L. is the largest genus in the family, and has the most diverse morphology. Fourteen generic names are currently included in the synonymy of *Aloe*. Two of these names were established for species from Madagascar: *Aloinella* (A. Berger) Lemée (1939) non Cardot (1909) for *Aloe haworthioides* Baker, and *Guillauminia* A. Bertrand (1956) for *A. albiflora* Guillaumin. Neither name has been widely accepted and both were included in the synonymy of *Aloe* by Reynolds (1958, 1966), who revised the genus on a global scale.

Recently, without a supporting argument, Heath (1993, 1994) reinstated both of these monotypic Madagascan genera. *Aloinella*, being a later homonym, was named *Lemeea* P. V. Heath. In addition to *Aloe haworthioides*, *A. boiteui* Guillaumin and *A. parvula* A. Berger were also transferred to *Lemeea*. *A. bakeri* Scott-Elliot, *A. bel-latula* Reynolds, *A. calcairophylla* Reynolds, *A. descoingsii* Reynolds, and *A. rauhii* Reynolds were transferred to *Guillauminia*.

Discussion

There is no single criterion which by itself can be regarded as unfailing for recognizing a genus. For practical purposes the genus should be regarded as an inclusive category whose species have more characteristics in common with each other than with species of other genera within the same family. There should be a clear morpho-

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Table 1. Morphological features used by Lemée (1939) to establish the genus *Lemeea* (as *Aloinella*) and shared with taxa of *Aloe*.

Diagnostic features	Selected taxa of <i>Aloe</i> sharing the features
Rosette small, dense	<i>A. aristata</i> Haw., <i>A. humilis</i> (L.) Mill.
Leaves narrowly linear	<i>A. sect. Graminialoe</i> Reynolds
Pedicels negligible	<i>A. insonspicua</i> Plowes, <i>A. bowiea</i> Schult. & J. H. Schult.
Outer perianth segments free	<i>A. broomii</i> Schönl., <i>A. saundersiae</i> (Reynolds) Reynolds
Filaments broad	–
Anthers exerted	<i>A. bowiea</i> , <i>A. sect. Anguialoe</i> Reynolds
small	–
bright orange	<i>A. ferox</i> Mill.
“Ovary acute” (erroneous)	–

logical break between the members of a particular genus and the members of other related genera. Past and current practice are also important, since a major change in classification and naming can create communication problems and result in loss of information (Jeffrey, 1968).

Our investigation has shown that *Aloe* is polymorphic in most of the characters used by Lemée (1939) and Bertrand (1956) to segregate *Lemeea* and *Guillauminia*, and that these supposedly diagnostic features are found elsewhere in *Aloe* (Table 1-2).

The only characters that separate *Lemeea* from similar miniature *Aloe* species are its small anthers and the broad, bright orange filaments which form a “tube” at anthesis (Fig. 3, Table 1). Anther size varies widely in *Aloe* and can hardly be used as a diagnostic character at generic level. Lemée’s (1939) description of the ovary as acute is erroneous: each flower we examined had a rounded ovary.

The genus *Guillauminia* has been distinguished by its campanulate flowers and apparent lack of nectar production. Somewhat less distinctly campanulate flowers are also found in *Aloe* sect. *Anguialoe* (Table 2).

Table 2. Morphological features used by Bertrand (1956) to establish the genus *Guillauminia* and shared with taxa of *Aloe*.

Diagnostic features	Selected taxa of <i>Aloe</i> sharing the features
Inflorescence lax	<i>A. bowiea</i> , <i>A. gracilis</i> Haw.
Peduncle slender	<i>A. bowiea</i> , <i>A. tenuior</i> Haw.
Perianth segments free	<i>A. myriacantha</i> (Haw.) Schult. & J. H. Schult.
white	<i>A. albida</i> (Stapf) Reynolds
campanulate	<i>A. sect. Anguialoe</i>
Anthers exerted	<i>A. bowiea</i> , <i>A. sect. Anguialoe</i>

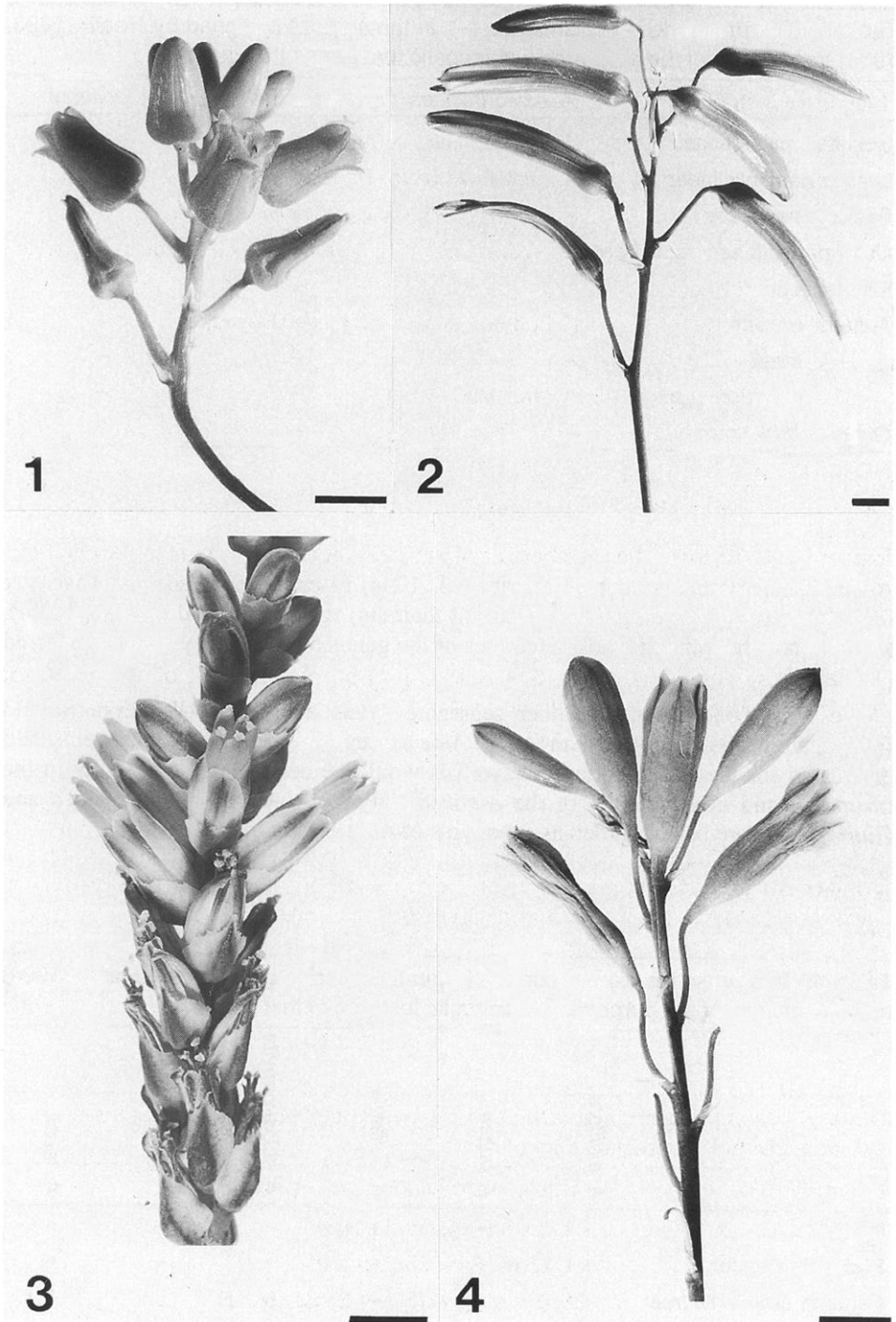


Fig 1-4. Inflorescences of selected Madagascan species of *Aloe* recently transferred to *Lemeea* (3) and *Guillauminia* (1, 2, 4). 1, *A. descoingsii*; 2, *A. rauhii*; 3, *A. haworthioides*; 4, *A. bellatula*. The morphology of the flowers and inflorescences varies widely and inconsistently. *A. rauhii* stands out by its pendulous flowers. – Scale bar = 5 mm.

Table 3. The presence (+) or absence (–), in the species assigned by Heath (1993, 1994) to *Lemeea*, of the purportedly diagnostic features of that genus.

	<i>A. haworthioides</i>	<i>A. parvula</i>	<i>A. boiteaui</i>
Rosette small, dense	+	+	–
Leaves narrowly linear	+	+	+
Pedicels negligible	+	–	–
Outer perianth segments free	+	–	–
Filaments broad	+	–	–
Anthers exserted	+	–	+
small	+	–	–
bright orange	+	–	–
Ovary acute	–	–	?

The species transferred by Heath (1993, 1994) to either genus do not have any features that might even remotely warrant their segregation from *Aloe* (Fig. 1, 2, 4). Most do not show the diagnostic features of the genus to which they were transferred (Table 3-4).

We must conclude that neither segregate genus deserves recognition. Should Heath’s views be followed, many more *Aloe* segregates would have to be reinstated or created for the sake of consistency. This would be detrimental to stability in the taxonomy and nomenclature of the *Aloaceae*. We conclude that both *Lemeea* and *Guillauminia* are best regarded as synonyms of *Aloe*.

Table 4. The presence (+) or absence (–), in the species assigned by Heath (1994) to *Guillauminia*, of the purportedly diagnostic features of that genus.

	<i>A. albiflora</i>	<i>A. bakeri</i>	<i>A. bellatula</i>	<i>A. calcairophylla</i>	<i>A. descoingsii</i>	<i>A. rauhii</i>
Inflorescence lax	+	+	+	+	+	+
Peduncle slender	+	+	+	+	+	+
Perianth segments free	+	+	–	–	–	+
white	+	–	–	+	–	–
campanulate	+	–	–	–	–	–
Anthers exserted	+	+	+	–	–	+

The nomenclature of *Aloe* species assigned by Heath to either *Lemeea* or *Guillauminia* resolves as follows:

- Aloe albiflora* Guillaumin in Bull. Mus. Hist. Nat. Paris, ser. 2, 12: 353. 1940 = *Guillauminia albiflora* (Guillaumin) A. Bertrand in Cactus (Paris) 49: 41. 1956.
- Aloe bakeri* Scott-Elliot in J. Linn. Soc., Bot. 29: 60. 1891 = *Guillauminia bakeri* (Scott-Elliot) P. V. Heath in Calyx 4: 147. 1994.
- Aloe bellatula* Reynolds in J. S. African Bot. 22: 132. 1956 = *Guillauminia bellatula* (Reynolds) P. V. Heath in Calyx 4: 147. 1994.
- Aloe boiteaui* Guillaumin in Bull. Mus. Hist. Nat. Paris, ser. 2, 14: 349. 1942 = *Lemeea boiteaui* (Guillaumin) P. V. Heath in Calyx 4: 147. 1994.
- Aloe calcairophylla* Reynolds in J. S. African Bot. 27: 5. 1961 = *Guillauminia calcairophylla* (Reynolds) P. V. Heath in Calyx 4: 147. 1994.
- Aloe descoingsii* Reynolds in J. S. African Bot. 24: 103. 1958 = *Guillauminia descoingsii* (Reynolds) P. V. Heath in Calyx 4: 147. 1994.
- Aloe haworthioides* Baker in J. Linn. Soc., Bot. 22: 529. 1887 = *Aloinella haworthioides* (Baker) Lemée, Dict. Gen. Pl. Phan. 7, Suppl.: 27. 1939 = *Lemeea haworthioides* (Baker) P. V. Heath in Calyx 3: 153. 1993.
- Aloe parvula* A. Berger in Engler, Pflanzenr. 33: 172-173. 1908 = *Lemeea parvula* (A. Berger) P. V. Heath in Calyx 4: 147. 1994.
- Aloe rauhii* Reynolds in J. S. African Bot. 29: 151. 1963 = *Guillauminia rauhii* (Reynolds) P. V. Heath in Calyx 4: 147. 1994.

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