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Citation

Walker, Colin C. (2024). Aloe castilloniae J.-B. Castillon - a highly localised dwarf Madagascan endemic. Haworthiad, 38(2) pp. 48–51.

URL

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Aloe castilloniae J.-B. Castillon – a highly localised, dwarf Madagascan endemic

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Introduction

Aloe castilloniae is an attractive dwarf endemic Madagascan species that flowers freely and is readily propagated from cuttings. It has thus become relatively popular in cultivation. Its history, habitat and distribution are discussed and flowering in cultivation is described. It is a distinctive species so its relationships within the genus are uncertain.

History, habitat and distribution

The Mahafaly plateau is found in the southwest of Madagascar spanning north to south from the Onilahy River to the Menarandra River. It extends from the limestone ridge of the Toliara mountain in the north to the limestone plateau of Karimbolea in the south. It is more or less a rectangular area approximately 190 km long and not more than 60 km wide. This plateau, which is formed of Eocene limestone, is separated from the sea by a strip of white sand, at most, 15 km wide covered with shrubby species. There are both sandy and stony areas as well as lapiaz areas of limestone formation that consist of natural gullies, crevices and sinkholes. It is a distinctive rock-formation as a result of erosion to limestone blocks. The dominant vegetation is essentially composed of thorny plants belonging to the Euphorbiaceae, Didiereaceae, Apocynaceae but also Asphodelaceae, Fabaceae, Anacardiaceae, etc. This is an extensive territory of approximately 8,000 km^2, where rainfall is extremely low, generally less than 250 mm per year (Castillon, 2006; Castillon, 2011).

The *Aloe* species previously recorded for the Mahafaly plateau are: *A. acutissima* H. Perrier, *A. antandroi* (Decary) H. Perrier, *A. descoingsii* ssp. *augustina* Lavranos, *A. divaricata* A. Berger, *A. vaombe* Decorse & Poisson, *A. vaotsanda* Decary, *A. viguieri* H. Perrier and also *A. suzannae* Decary (now the monotypic *Aloestrela suzannae* (Decary) Molteno & Gideon F.Sm.). Of these, *A. acutissima*, *A. divaricata* and *A. vaombe* are widespread, whereas the others are endemic to this region (Castillon & Castillon, 2010).

A new *Aloe* was discovered in the middle of the dry season in August 2005 by Jean-Philippe Castillon – son of Jean-Bernard Castillon who described the species – while he was travelling on a motorbike on the countless trails of the Mahafaly plateau. The leaves then appeared very dry and only the terminal leaves of some stems had their natural colour. Leafy stems, brought to Toliara at the end of August and cultivated in full sun in forest sand that was watered every morning, regained their turgor in two weeks. In November, one stem produced an inflorescence with a few flowers. Given the harsh conditions of the Mahafaly plateau, it is possible that flowering occurs between December and April, depending on the abundance of rain and this may not necessarily occur every year. This very attractive little plant with its distinctive growth form is considered to be one of the most remarkable discoveries of recent years (Castillon, 2006).

This new species was named *Aloe castilloniae* J.-B. Castillon (Castillon, 2006). This *Aloe* was dedicated to Bernadette Castillon, wife of the author and horticulturist who, on the island of La Réunion, has been propagating and distributing a number of Malagasy plants (Orchidaceae, Euphorbiaceae, Apocynaceae, Liliaceae, Iridaceae, etc.) for three decades. Her work has thus contributed to the conservation, through cultivation, of unique Madagascan species that are likely to be threatened in the wild.

Currently available information indicates that *A. castilloniae* is endemic to the Mahafaly plateau and it is only known from its type locality (Carter *et al*., 2011), although the precise location of this has not been disclosed (Castillon, 2006). It can therefore, be viewed as a narrow endemic with a very restricted distribution range.

Aloe castilloniae in cultivation

This species has adapted well in cultivation and seems to present few problems. It is a reasonably quick grower and is easily propagated from cuttings. The plant branches freely from the base to form clumps (fig 1). My plant currently has five branches, the longest of which is 18 cm long but these are recorded as growing up to 40 cm long. In habitat it is recorded as forming large groups up to 1 m across (Castillon, 2006). The stems are either prostrate or pendent. The leaves are arranged in five rows along the stem and in this feature it is unique amongst the Madagascan aloes. These are arranged in rosettes roughly 8–10 cm across. The dried leaves tend to be persistent especially at the stem bases. The leaves are roughly triangular in shape, up to 6 cm long and 1.5 cm across at the base. They are adorned with small red spines especially on the lower surface. The marginal teeth are prominent, deltoid in shape, red, up to 6 mm apart and 2 mm long.

When my plant first flowered in 2020 (fig 2) it produced a single unbranched inflorescence about 6 cm long. The original description (Castillon, 2006) states that the inflorescences are simple and unbranched such as in my plant's first flowering. However, in the most recent flowering in September 2023 the two inflorescences have been branched (figs 3 & 4), a feature not previously recorded for this species as far as I am aware. The largest of these at 8 cm long has three branches bearing racemes 4 cm long each with up to eight flowers. Floral bracts are very small, only 2 mm long and the pedicels are 6-8 mm long. Flowers (figs 2–4) are bright orange-red, paler towards the mouth, slightly curved, 23 mm long, 6 mm across the ovary, constricted to 4 mm above the ovary, about 8 mm across at the mouth; outer tepals are free, to shortly above the base.

Fig 1. *Aloe castilloniae* in an attractive handmade pot. *Photo: Tina Wardhaugh*

Relationships

Madagascar is a centre of diversity for *Aloe* with around 130 species currently recognised for this island (Newton, 2020), hence roughly a quarter of all species occur in this single country. Castillon (2006) stated that his new species was truly different from all known Malagasy species and suggested that *A. castilloniae* was reminiscent in its growth form to that of *Aloe juvenna* Brandham & S. Carter from Kenya but that it is also a completely different plant. That was all he initially indicated in terms of relationships.

Fig 2. *Aloe castilloniae* flowering in December 2020 in a 9 cm pot.

However, later (Castillon, 2011) he considered *A. castilloniae* to be close to *A. antandroi* and *A. millotii* Reynolds.

Castillon & Castillon (2010), in their handbook of Madagascan aloes, included *A. castilloniae* in their informal group 8: 'Aloes from the south', recognizable by their flowers with swollen bases. This group included *Aloe antandroi*, *A. castilloniae*, *A. decaryi* Guillaumin, *A. fleuretteana* Rauh & Gerold, *A. isaloensis* H. Perrier and *A. millotii*.

Carter *et al.* (2011) dismissed Castillon's comparison of his new species to *A. juvenna* as being "entirely unrelated to this species". Instead they suggested that *A. castilloniae* "is in fact related to *A. millotii* and, more distantly, to *A. antandroi*. *A. castilloniae* shares its short, unbranched inflorescences, its decumbent habit, and its flower shape with *A. millotii*".

In the most recent survey of aloes Newton (2020) however separated the latter three species into three different informal groups. *Aloe castilloniae* is in group 13: plants with decumbent, sprawling or pendulous stems, whereas *A. antandroi* is in group 14: plants with stems scrambling in or supported by surrounding vegetation, whilst *A. millotii* is in group 11: plants forming low clumps, often dense. These groupings are indeed rather artificial, since *A. castilloniae* could easily be considered alongside *A. millotii* in group 11.

Fig 3. *Aloe castilloniae* flowering in September 2023 in a 10 cm diameter pot.

Aloe castilloniae was not included in recent molecular studies that included Madagascan aloes (Dee *et al.*, 2018; Grace *et al.*, 2015). For now, therefore, in the absence of other evidence, it seems most appropriate to consider *A. millotii* and possibly also *A. antandroi*, to be the closest relatives to this species.

Conservation status

Rakotoarisoa *et al.* (2014) carried out an assessment of the conservation status of Madagascan aloes. They determined that 70 taxa (*ca.* 50%) could be classified as 'Data Deficient' (DD) because most of these species are represented by a single or only two collections. As stated earlier, *A. castilloniae* is recorded from just its type locality and was therefore categorised as DD. This could mean that this species is threatened in the wild but that further data are required to determine whether or not this is the case.

Fig 4. Branched inflorescence of *A. castilloniae*.

Acknowledgements

Trevor Wray is thanked for plant material. Tina Wardhaugh kindly provided a photo of her plant. Thanks go, as always, to my wife Marjorie who read and commented on an earlier draft of this article.

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