

Aloe pulcherrima – a beautiful Ethiopian endemic

Colin C Walker

Aloe pulcherrima is a large-growing, cliff-dwelling species from high altitudes in Ethiopia with a unique stem branching pattern. It is described both in cultivation and in habitat. Photos by Janet Haresnape and the author.

Introducing Ethiopian aloes

Aloe is a very large genus; even with the excision of some species into the segregate genera *Aloiampelos*, *Aloidendron*, *Aristaloe*, *Gonialoe* and *Kumara*, the genus still has around 500 species and about 60 subspecies and varieties (Carter et al, 2011). The genus is widespread throughout Africa, Arabia and the Indian Ocean islands, notably Madagascar.

Ethiopia and Eritrea formed one country until 1991, but the two now independent countries are usually treated as a single entity in terms of their flora (Edwards et al, 1997). Ethiopia is now a land-locked nation, since the northern coastal region became



Fig. 1 *A. pulcherrima* in a 30cm-diameter pot, with the blue-grey foliage contrasted attractively against the black glaze



Fig. 2 *A. pulcherrima* showing the dichotomous branching of the stem at a younger age in an 18cm pot

independent Eritrea. Here these countries are treated as a single phytogeographical unit in terms of the aloes that occur there.

The aloes of Ethiopia and Eritrea are moderately diverse. Edwards et al (1997) recognised 38 species, including *Aloe vituensis* which has yet to be located north of Ethiopia's border with Kenya, so it is not, as yet, an Ethiopian *Aloe*. The most recent complete survey of aloes in Ethiopia and Eritrea (Sebsebe Demissew & Nordal, 2010) recognised 46 species, again including *A. vituensis*. Since that book was published (and even before), five additional species have been described from Ethiopia and Eritrea: *Aloe djiboutiensis*, *downsiana*, *montis-nabro*, *neosteudneri* and *omoana*. Not counting *A. vituensis*, the current total for Ethiopia and Eritrea is therefore 50 species, representing approximately 10% of the total for the genus, so these countries together account for a substantial number of *Aloe* taxa.

Within this total, *Aloe* diversity is somewhat limited compared to other countries, since there are no really big tree aloes, no grass aloes and only a limited number



Fig. 3 *A. pulcherrima* in flower, showing the characteristic U-shaped peduncle

recently (Gilbert & Sebsebe Demissew, 1997), but it was quickly brought into cultivation in the USA and Europe. I have grown this species successfully over a long period and in 2015 my colleague Janet Haresnape visited and examined this species in habitat in the central highlands of Ethiopia.

***Aloe pulcherrima* in cultivation**

I obtained my plant in April 2004 and it has grown steadily since then (Fig. 1). The name '*pulcherrima*' means very beautiful and the plant does indeed live up to its name.

of spotted-leaved (maculate) aloes. Most aloes from Ethiopia and Eritrea have large or even massive rosettes and some have very stout stems; many are pendulous or obligate cliff-dwellers (cremnophytes); none have small, stemless rosettes. This is accounted for by the fact that Ethiopia in particular – Eritrea less so – has a very mountainous, varied topography, with much of the interior consisting of high plateaux bisected by deep valleys and gorges (Edwards et al, 2010). Only the northern coastline of Eritrea is low-lying with *Aloe eumassawana* being endemic and growing at sea level. Sebsebe Demissew et al (2001) tabulated the 40 aloes known at that time and found that, in addition to *A. eumassawana*, only *A. bertemariae* and *A. citrina* grow at low altitudes. Consequently, the vast majority of aloes from these countries, namely 37 of the 40 species or 93%, are high altitude mountain-dwellers, growing at over 1,000m above sea level.

Endemism within Ethiopian and Eritrean aloes is high – around 75% for the 50 species. This compares with 100% for Madagascar and around 60% for South Africa. My figure differs from the 87% calculated by Sebsebe Demissew et al (2001) because their figure was calculated on the basis of just 40 species known at that time and does not take into account the 10 species described since then, some of which are non-endemic.

Of the aloes endemic to Ethiopia one of the most interesting and attractive is *Aloe pulcherrima* Gilbert & Sebsebe featured here. It was described only relatively



Fig. 4 Fruit of *A. pulcherrima*

The rosettes are large and dense. The leaves are up to 50cm long and 6cm wide at the base, blue-green in colour, slightly glaucous, with fine but clearly distinct parallel lines (striae). The leaf margin is prominently red when grown in full sun (not the case for my plant) and carries very small (0.2–0.3mm long) teeth, such that it could nearly be described as being toothless. Aloes with entire, ie toothless or nearly toothless, leaf margins are rare in Ethiopia and Eritrea. A particularly characteristic feature of the leaves is that they dry to a dark purple colour, and indeed the fresh sap that exudes from a cut leaf is also dark purple. In my experience the plant is virtually impossible to keep in anything approaching show-worthy condition because the leaf tips dry up remarkably easily and old leaves rapidly dry up completely, making the plant appear somewhat untidy.

A potentially unique feature of this *Aloe* is that the stems are not only long, up to 1m according to Gilbert & Sebsebe Demissew (1997), but they branch dichotomously as shown by my plant (Fig. 2), which produced the branching around six years ago. Dichotomous branching is a characteristic feature of the tree aloes now segregated into the genera *Aloidendron* and *Kumara* and for which an iconic species is named *Aloidendron dichotomum* (formerly *Aloe dichotoma*). I am unaware of other true aloes that exhibit dichotomous branching, although I suspect that this feature may also occur in other high altitude, closely-related species.

My single specimen has been very reluctant to flower, although it did oblige four years ago for the first time (Fig. 3). The inflorescences were unremarkable for such a large plant, being up to 43cm



Fig. 5 *A. pulcherrima* in habitat at the Asheton Maryam Monastery near Lalibela in northern Ethiopia, June 2015 (Photo: Janet Haresnape)

long, unbranched but with a characteristic U-shape. Flowers were 4.0–4.3cm long with deep coral red tepals.

In 2014 my plant not only flowered again but also produced some fruits. Since these have not been described and illustrated before, I am providing this new information here. The fruits were pale glaucous green in colour, obclavate (club-shaped, wider at the base than at the tip), 2.4–3.2cm long and 0.7–1.0cm wide at the base (Fig. 4). I did not harvest the seed so I cannot comment about its viability.



Fig. 6 *A. pulcherrima* in habitat showing the thick stem (Photo: Janet Haresnape)



Fig. 7 *A. pulcherrima* in habitat with one exceptionally long pendent stem (Photo: Janet Haresnape)

A. pulcherrima (Figs. 5–9). Gilbert & Sebsebe Demissew (1997), when they first described this species, recorded it from several locations in north-central Ethiopia at 2,480–2,750m, growing on “steep basalt slopes or cliffs with sparse cover of evergreen bushland”. However, as far as I can tell from the data available, Janet’s locality is a new record for this species, and is almost certainly an altitudinal record at nearly 4,000m. At the Asheton Maryam Monastery the plants are indeed growing on cliffs (Figs. 5–8), so this species can be described as cliff-dwelling or as a cremnophyte. Stems

A final comment about my plant is that it was bought from a Dutch nursery in 2004 labelled as *Aloe schelpei*. From growing this plant it is evident to me that the identification is wrong. The main distinguishing features are that *A. schelpei* has spotted, prominently-toothed leaves and orange-red not coral-red flowers. Most importantly of all, *A. schelpei* does not have the characteristic dichotomous branching pattern of the stems of *A. pulcherrima*, but produces shoots at the base of the stem or randomly along the stem, so forming dense clumps (Reynolds, 1961; Reynolds, 1966; Glen & Hardy, 1986; Gilbert & Sebsebe Demissew, 1997).

***Aloe pulcherrima* in habitat**

My colleague Janet Haresnape visits African countries regularly, both for work and leisure, and I have asked her to photograph any aloes she encounters. In 2015 Janet revisited Ethiopia on a teaching project with The Open University and, during leisure time after completion of the work, she was able to visit a number of aloes in habitat. Most exciting for me and unbeknown to her at the time, she encountered *A. pulcherrima* in its natural environment.

Janet visited the Asheton Maryam Monastery, which lies at an altitude of almost 4,000m on Abuna Yoseph, the high mountain overlooking the town of Lalibela in north-central Ethiopia. There she encountered plants which I have since identified as



Fig. 8 *A. pulcherrima* in habitat growing in association with *Aeonium leucoblepharum* (Photo: Janet Haresnape)

were originally described as being thick, up to 8cm across, and at this site they are indeed thick (Fig. 6). Stems were also described as being pendent or prostrate and up to 1m long, but one plant photographed by Janet has a stem that might be up to 2m in length (Fig. 7). Some of the plants were observed growing with another succulent, *Aeonium leucoblepharum* (Crassulaceae; one of just two species of this genus occurring in East Africa; Fig. 8). Some plants were also growing together in close association with another high altitude *Aloe*, namely *A. debrana* (Fig. 9), distinguished, for instance, by having prominently-toothed leaves (Verdoorn & Christian, 1947; Reynolds, 1966). This association between these two high-altitude-growing aloes has already been recorded (Sebsebe Demissew & Nordal, 2010: Fig. 41). However, no hybrids between these two species have, as yet, been observed.



Fig. 9 *A. pulcherrima* growing in association with *A. debrana*, centre-left top (Photo: Janet Haresnape)

Relatives of *Aloe pulcherrima*

As mentioned earlier, 93% of Ethiopian and Eritrean aloes are high altitude species, and indeed *A. pulcherrima* grows at exceptionally high altitudes. The closest relatives of *A. pulcherrima* are *A. ankoberensis* Gilbert & Sebsebe and *A. steudneri* Schweinfurth, both cliff-dwelling (cremnohytic) Ethiopian endemics. *A. pulcherrima* differs from these other two species which have the following features: they offset from the stem base (ie lack dichotomous branching); have leaves that are not or are only slightly glaucous; have leaf margins with prominent teeth over 2mm long; and brown (not purple) dead leaves (Sebsebe Demissew & Nordal, 2010). All three species have the characteristic U-shaped peduncle of the inflorescence: the peduncle initially grows downwards, then turns upwards to produce erect racemes (Fig. 3). All three species also flower in the rainy season, July to September, unlike other high altitude species such as *A. debrana* which flower in the dry season, from December to February (Gilbert & Sebsebe Demissew, 1997; Sebsebe Demissew & Nordal, 2010). This difference in flowering seasons for *A. pulcherrima* and *A. debrana* undoubtedly accounts for the absence of hybrids between these two sympatric species.

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LITERATURE:

- Carter, S, Lavranos, JJ, Newton, LE & Walker, CC (2011) *Aloes. The definitive guide*. Kew Publishing, Royal Botanic Gardens, Kew/British Cactus & Succulent Society.
- Edwards, S, Sebsebe Demissew & Hedberg, I (1997) *Flora of Ethiopia and Eritrea Volume 6*. The National Herbarium, Biology Department, Science Faculty, Addis Ababa University, Ethiopia/The Department of Systematic Botany, Uppsala University, Sweden.
- Glen, HF & Hardy, DS (1986) *Aloe schelpei*. *Flow. Pl. Afr.* 49: t.1935.
- Gilbert, MG & Sebsebe Demissew (1997) Further notes on the genus *Aloe* in Ethiopia and Eritrea. *Kew Bull.* 52: 139–152.
- Reynolds, GW (1961) A new *Aloe* from Ethiopia. *S. Afr. J. Bot.* 27: 1–3, tt.I–II.
- Reynolds, GW (1966) *The Aloes of Tropical Africa and Madagascar*. The Trustees, The Aloes Book Fund, Mbabane, Swaziland.
- Sebsebe Demissew & Nordal, I (2010) *Aloes and lilies of Ethiopia and Eritrea*. Shama Books, Addis Ababa, Ethiopia.
- Sebsebe Demissew, Nordal, I & Stabbetorp, OE (2001) Endemism and patterns of distribution of the genus *Aloe* (Aloaceae) in the flora of Ethiopia and Eritrea. *Biol. Skr.* 54: 233–246.
- Verdoorn, IC & Christian, HB (1947) *Aloe debrana*. *Flow. Pl. Afr.* 26: t.1016.

Dr Colin C Walker

School of Environment, Earth & Ecosystem Sciences,
The Open University, Milton Keynes, MK7 6AA

Email: c.walker702@btinternet.com

Layout by Alice Vanden Bon