

Aloe pendens Forsskål – a cliff-dwelling species from the Yemen

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Introduction

Aloe pendens was amongst the earliest species to be discovered from the Arabian Peninsula, first named in 1775. It was, however, not re-collected and brought into cultivation for another 200 years. Its history is discussed together with details of its distribution, habitat and relationships. A flowering plant in cultivation is described and illustrated.

History

Aloe pendens was one of the first Arabian aloes to be discovered, described and published posthumously by Pehr Forsskål (1732–1763). He was born in Helsinki, Finland but later moved to Sweden where, at only ten years old, he was registered as a student at the University of Uppsala. There he principally studied theology, philosophy and oriental languages but he also attended lectures on botany given by Carl Linnaeus. His interest in Arabia and knowledge of Arabic led to a recommendation for a place on the Royal Danish expedition to Arabia Felix (modern day Yemen). In addition to Forsskål, the members of the expedition included Carsten Niebuhr (astronomer and mathematician), George Baurenfeind (artist), together with a linguist and a physician. Forsskål spent a year preparing for the expedition with Linnaeus at Uppsala. The expedition was abroad from 1761 to 1763 and travelled to Egypt then onwards to the Yemen. It was ill fated since all but one of the participants died en route, Forsskål succumbing to plague in July 1763 (Hepper & Friis, 1994).

Niebuhr eventually returned to Copenhagen in 1767. He was not a botanist, but he worked as editor on Forsskål's rough manuscript notes and herbarium material, together with an unknown collaborator, to publish Forsskål's Egyptian-Arabian flora (Forsskål, 1775). There was also a separate volume of illustrations by Baurenfeind but that does not include any

aloes. Despite the flaws resulting from the absence of input from Forsskål during its production, it is a milestone representing the first Arabian flora.

Forsskål's flora includes seven species of *Aloe*: *A. arborea*, *A. inermis*, *A. maculata*, *A. officinalis*, *A. pendens*, *A. vacillans* and *A. variegata*. Of these, four are currently recognised as distinct species: *A. inermis* Forsskål, *A. officinalis* Forsskål, *A. pendens* Forsskål and *A. vacillans* Forsskål (McCoy, 2019; Newton, 2020). The other three species are either invalid synonyms or of uncertain status. Despite this, Forsskål can be duly credited as the first discoverer and author of Arabian aloes (Walker, 2005).

Of these first Arabian aloes, *A. pendens* was collected by Forsskål in the mountains of Hadiyah, Yemen, in 1763 and briefly described in his flora (Forsskål, 1775). He described it as a plant with subdistichous leaves (i.e. arranged roughly in two parallel rows), narrowly finger-like, sheathed and scattered along the stem. The flowers were described as racemose and importantly, yellow, hanging down from the ascending (i.e. turned upward) peduncle. Unfortunately, the herbarium specimens from Forsskål that were deposited in Copenhagen did not include one clearly labelled as *A. pendens*. This made future interpretation of this species problematic.

The true *A. pendens* only appears to have been re-collected over 200 years after Forsskål

visited the Yemen. In 1975 John Wood followed in Forsskål's footsteps to study Yemeni aloes and he revisited the Forsskål type locality and found a dwarf, pendent *Aloe* in great abundance (Wood, 1983). He assigned a specimen of *A. variegata* Forsskål to *A. pendens*, making the former species a synonym. (Note: this is not the same species as *Aloe variegata* L., which is an earlier name that makes the name *A. variegata* Forsskål illegitimate.) One of the Wood collections of *A. pendens* was subsequently first illustrated in colour in his *Handbook of the Yemen Flora* (Wood, 1997) (fig 1).

Most recently, *A. pendens* is treated fully by McCoy (2019) in his monograph of Arabian aloes, which deals with 50 species.

Distribution and habitat

It appears that John Wood and Tom McCoy have been the only western botanists after Forsskål to have revisited *A. pendens* in its remote mountainous habitat (Carter *et al.*, 2011).

McCoy (2019) records this species as being endemic to Yemen. More precisely it could be described as a narrow Yemeni endemic since he further describes its distribution as “confined to a small section of the Great Arabian Escarpment, from Al-Hadiyah eastwards to near Qosmah (Kusmah) and north towards the mountain massif that includes Jabal Raymah”. He describes the species in habitat as being “found on steep cliffs or infrequently on rocky slopes bordering these rock faces, which are made of superimposed basalt sheets. On Jabal Raymah *A. pendens* is found on dramatic columnar basalt outcrops... *Aloe pendens* grows from 1,500–2,300 m”. It is therefore predominantly a cremno-phyte (cliff-dwelling). This species is likely to encounter modest amounts of rainfall in the region of 300–500 mm per annum and fog is frequent at its habitat. It has been recorded as growing in association with other succulents: *Adenia venenata* Forsskål, *Crassula alba* Forsskål, *Euphorbia inarticulata* Schweinfurth and *Huernia mccoyi* Plowes.

Walker (2005) and McCoy (2019) both include photos of this species in habitat.

Aloe pendens in cultivation

My cultivated plant (fig 2) is from a Wood collection and grows easily and prolifically. The plant has erect to pendent, thin graceful stems (hence the name ‘*pendens*’) up to 20 cm long. It branches freely from the base (fig 3) and sends out underground shoots from which it is readily propagated. The leaves are up to 15 cm long and narrow, up to 1 cm across, scattered along the stems, usually light green with pale circular to oval spots prominent on the lower surface, less so on the upper surface. Interestingly, spotted leaves were not recorded as a feature by Forsskål. Leaves are slightly concave to channelled on the upper surface and



Fig 1. Watercolour painting of *A. pendens* by Hugo Haig-Thomas (first published in Wood, 1997).

convex on the lower surface, hence roughly U-shaped in cross-section. The leaf margins are armed with very small teeth, less than 1 mm long. Leaf bases are sheathing with prominent spots and variegation, whilst the leaf tips are pointed. The ascending to erect inflorescences are roughly a broad U-shape, up to 28 cm long and are unbranched with racemes up to 15 cm long. Bracts are relatively prominent, pointed, thin, dry and papery, up to 10 mm long and 3 mm across. Pedicels are 6 mm long. The flowers of this clone (figs 4

and 5) are, as is typical, lemon yellow with pale green mid stripes and tepal tips, up to 23 mm long and not constricted above the ovary. Wood (1983), however, records that unusually some clones have orange-red flowers. These are always glabrous (i.e. smooth and hairless), in contrast to a few other Arabian aloes which have prominently hairy flowers such as *Aloe tomentosa* Deflers (Walker, 2016).

The plant grows well in cultivation and its pendulous stems make it an ideal subject for a hanging basket. It seems to benefit from some shade, otherwise the pale green leaves can become reddened, less fleshy and more prominently channelled when grown in full sun. It is a prolific flowerer and in the UK it starts flowering in late spring. It can have flowers right through the summer and into the autumn. Indeed Wood (1983) observed that “unlike other aloes, it can be found flowering sporadically at any time of the year”.

Relationships

Georg Schweinfurth (1836–1925) also visited the Arabian Peninsula and studied aloes there. He did not revisit Forsskål's type locality for *A. pendens* but sent material to Europe of another plant. This was misinterpreted,



Fig 2. *Aloe pendens* in cultivation from a Wood collection without further data. For scale the plant is shown in an 18 cm diameter pot.

described and illustrated by Berger (1902) and Reynolds (1966) as *A. pendens*. Wood (1983) re-interpreted the Schweinfurth material and described it as a distinct species, *A. yemenica* J.R.I. Wood. This is a much larger-growing,



Fig 3. Basal branching of the plant shown in fig 2.



Fig 4. *Aloe pendens* in flower.



Fig 5. Close up of the flowers of *A. pendens*.

pendulous plant with stems up to 50 cm long and branched inflorescences up to 40 cm long. Most significantly, this species always has red flowers.

In terms of relationships, Wood (1983) grouped *A. pendens* and *A. yemenica* together with *Aloe rivierei* Lavranos & Newton, in his informal group 4, characterized by cliff-dwelling plants with erect or trailing stems and glabrous flowers with distinct pedicels.

Carter *et al.* (2011) included *A. pendens* in their informal group G: pendulous or sprawling aloes and gave its nearest ally as *A. yemenica*.

In the molecular family tree of Grace *et al.* (2015), *A. pendens* occurs in a branch (clade) that includes other Arabian species but not exclusively so, since some Madagascan species are also included. It is, however, sister to and hence apparently most closely-related to the Arabian *A. inermis*. This is a larger-growing plant with erect to sprawling stems up to 50 cm long, with longer, wider leaves and large, well-branched inflorescences up to 70 cm long. Currently available evidence, therefore, indicates that the closest relative to *A. pendens* is *A. inermis* and not *A. yemenica*.

Most recently, McCoy (2019) did not discuss the relationships of *A. pendens*, whilst Newton (2020) included it in his informal group 13: plants with decumbent, sprawling or pendulous stems.

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