# *Aloe palmiformis* – an Angolan endemic

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The history and natural distribution of *Aloe palmiformis* are discussed and the species is described both in habitat in Angola where it is endemic and in cultivation where the author has flowered it for the first time. Its relationships to other Angolan aloes are also discussed. Photos by the author and Gideon Smith.

## History

*Aloe palmiformis* was discovered by Friedrich Welwitsch (Fig. 1) in Angola in 1860. Welwitsch arrived in Luanda, the capital, on 29 September 1853 and spent seven years travelling through the present-day provinces of Luanda, Bengo, Cuanza Norte, Malanje, Benguela, Namibe and Huíla (Hiern & Rendle, 1896–1901). His time was exceptionally well spent for he collected in excess of 10,000 plant specimens representing around 5,000 species (Albuquerque et al, 2009). He also collected other natural history specimens, notably animals. Since he was the first European botanist to visit Angola, many of his collections represented new species, around 1,000 having been described so far. Only a relatively few of these were described by Welwitsch himself but many were named on his behalf after his death in London on 20 October 1872, notably in the six-volume work by Hiern & Rendle (1896–1901). Some of these plants commemorate Welwitsch, the most famous and iconic of all being the exceptionally unusual *Welwitschia mirabilis* that he discovered in 1860. Hiern & Rendle wrote that "The sensations of the enthusiastic discoverer, when he first realised the extraordinary character of the plant he had found were, as he has said, so overwhelming that he could do nothing but kneel down on the burning soil and gaze at it, half in fear lest a touch should prove it a figment of the imagination". Hence this notable African explorer and botanist is justifiably commemorated by this remarkable discovery.

**Fig. 1 Friedrich Welwitsch (from Hiern & Rendle, 1896–1901, frontispiece to Vol. 1)**

Welwitsch's Angolan aloes may be less exceptional than his namesake *Welwitschia*, but he was the first botanist to collect aloes in Angola. Baker (1878) named six new Angolan aloes based entirely on Welwitsch collections: *Aloe andongensis* Baker, *A. angolensis* Baker, *A. littoralis* Baker, *A. palmiformis* Baker, *A. platyphylla* Baker and *A. zebrina* Baker. Of these, five are still recognised as distinct with *A. platyphylla* considered to be synonymous with *A. zebrina* (Carter et al, 2011). In the most recent full survey of Angolan aloes, Klopper et al (2009) accepted 26 species for *Aloe* in Angola, together with a heterotypic variety of *A. andongensis*, giving a total of 27 taxa for this country. Since then, three new Angolan species have been discovered and described: *Aloe mocamedensis* Van Jaarsveld (2012), *Aloe varimaculata* T.A.McCoy (2016) and *Aloe uigensis* Gideon F.Sm. & T.Lautenschl. (2021). So, out of the currently recognised total of 29 Angolan species, Welwitsch had discovered a significant 17%.

Angola therefore is home to a significant level of diversity of aloes, of which 19 species or 66% are endemic. For comparison, roughly 60% of South African aloes are endemic, the level rising to around 75% for Ethiopia/Eritrea and Kenya, whilst the highest level of endemism is found in Madagascar and Socotra at 100%.

## *Aloe palmiformis* in Angola

Hiern & Rendle (1896–1901) expanded on Baker's (1878) brief Latin diagnosis by providing a description in English based on Welwitsch's notes and herbarium material, here abbreviated: "HUILLA.– Shrubby, stem simple at the base, erect, 3 to 5 ft., sparsely branched above, branches ascending, with a crowded apical crown of leaves. Leaves glaucous-green, thick, succulent, rigid, brittle, lanceolate from an amplexicaul [clasping the stem] base, long-acuminate, margin sinuately

**Fig. 2** ***Aloe palmiformis*** **at Tundavala, near Lubango, Angola (Photo: Gideon Smith)**

serrate, teeth ending in a hard red mucro... One of the loveliest species, which, when not in flower, resembles a pretty little palm, as the leaves are crowded together at the end of the stem, descending at first, then raised upwards, and finally half-spirally rolled backwards at the tip. Plentiful in the more lofty rocky woods of Morro de Lopollo. In fl. April 1860".

A century later, Gilbert Reynolds, doyen of *Aloe* students, visited Angola in an attempt to recollect all previously-described aloes. Reynolds (1960) wrote that "*A. palmiformis*… was an important species that I wanted to study. Senhor Palma very kindly conducted us to the post of Huíla, fifteen miles south-east of Sá da Bandeira, and to Morro (hill) where the Lopollo stream arises. I did not find what I sought there, so we continued around to Humpata. Seven miles north-east of Humpata, on a spur of the Serra da Chela, at 6,400 ft., I found *A. palmiformis*. Only one

**Fig. 3** ***Aloe palmiformis*** **in habitat in the dry season when the leaves turn uniformly purplish (Photo: Gideon Smith)**

plant was in flower, but that was sufficient. Welwitsch originally stated that this species resembled 'a pretty little palm' – hence the name, but I could see no resemblance".

*Aloe palmiformis* has been revisited in habitat during at least three more recent expeditions: Leach (1974), Van Jaarsveld (2010) and Smith & Figueiredo (2011). My friend Gideon Smith was in Angola in August 2010 during the dry winter season and records that (Smith & Figueiredo, 2011) "Where it occurs at Tundaval, *Aloe palmiformis* is easy to reach as it grows among large boulders next to the road" (Fig. 2). "Plants grow along the top of the plateau, among white and brown, lichen-covered boulders where their purple winter leaf coloration contrasts sharply with the surroundings" (Fig. 3). "As is the case with many species of *Aloe*, the leaves of seedlings of *Aloe palmiformis* are spotted, sometimes copiously so, while those of mature specimens lose this character".

In summary, *A. palmiformis* is confirmed to be endemic to Angola with a limited distribution in the provinces of Huambo, Huíla and Namibe in the west and south-west of the country (Klopper et al, 2009).

## *Aloe palmiformis* in cultivation

My plant of *A. palmiformis* (Figs. 4 & 5) came from Kew with the accession number Kew 1974-2095, via Mike Cullen. This was collected by Leach (1974) with the collection number *Leach & Cannell 14652*, collected west of Sá da Bandeira (now Lubango) on the plateau of Serra da Chela, in the Province of Huíla, Angola. This plant has been in my collection for eight years and in May–June 2022 it flowered for the first time (Figs. 4 & 6). The plant is roughly 65cm tall with a single unbranched woody stem 3cm diameter at soil level. Leaves form a loose rosette (Fig. 4), are up to 20cm long, sheathed (amplexicaul) and striate at the base, tapering and recurved at the tip, mid-green, unspotted with sharp brown marginal teeth 1.0–1.4cm apart. The inflorescence (Figs. 4 & 6) is unbranched, 64cm tall with a dense raceme 44cm long. Compared to many other aloes that I have flowered, the bracts are relatively large, prominent, pale, thin and papery, up to 2.5cm long and 0.7cm broad at the base, tapering to the tip. (Note that these dimensions differ significantly from those given by Reynolds (1966) which are based, like my own, on measurements of a single specimen: "Bracts very small, 2–3mm. long, 2mm. broad, 1-nerved"). The flowers (Fig. 6) are pendulous when mature, cylindric, smooth, 35mm long, slightly swollen at the base, pale peachy-pink with darker stripes towards the tepal tips.

## Relationships

Reynolds (1966) in his monograph of tropical African and Madagascan aloes placed *A. palmiformis* in his informal Group 19: plants of shrubby growth, subgroup C: stems sparingly

**Fig. 4 *Aloe palmiformis* flowering in an 18cm-diameter pot (*Leach & Cannell 14652*)**

branched, 1–1.5m high. The only other species in this subgroup was *A. retrospiciens* Reynolds & P.R.O.Bally, now known to occur in Somalia and Ethiopia (Carter et al, 2011).

Confusingly, though, Reynolds wrote that "*A. gossweileri* appears to be the nearest allied to *A. palmiformis* Bak. near Sá da Bandeira in Huila District, but it differs in having a more branched inflorescence with oblique racemes and subsecund flowers. In *A. palmiformis* the inflorescence is only 1–2-branched, the racemes being erect and twice as long". Klopper et al (2009) and Carter et al (2011) follow Reynolds in giving *A. gossweileri* as the closest relative to *A. palmiformis*.

However, and in contrast, closer relatives of *A. palmiformis* appear to be other Angolan species: *A. lepida* L.C.Leach, *A. littoralis* Baker, *A. rupicola* Reynolds and *A. scorpioides* L.C.Leach. This group of five species was keyed out by Klopper et al (2009) as species with erect, procumbent, ascending or pendent stems bearing non-grass-like leaves. Earlier, Leach (1974) had compared his newly described species *A. scorpioides* to *A. palmiformis* and suggested this as its closest relative. The main distinguishing feature was the scorpioid inflorescence (arcuate or U-shaped) with erect racemes, contrasting with the erect inflorescence of *A. palmiformis* (Figs. 4 & 6).

Most recently, McCoy (2016), when describing his new spotted-leaved species *A. varimaculata*, compared this with just two other shrubby Angolan species: *A. palmiformis* and *A. vallaris* L.C.Leach, of which only the latter has spotted leaves. Molecular evidence is required to resolve these apparently conflicting relationships.

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LITERATURE CITED:

Albuquerque, S, Brummitt, R K & Figueiredo, E (2009) Typification of names based on the Angolan collections of Friedrich Welwitsch. *Taxon* **58**: 641–646.

Baker, J G (1878) Report on the Liliaceae, Iridaceae, Hypoxidaceae and Haemodoraceae of Welwitsch's Angolan herbarium. *J. Linn. Soc. Bot.* 2nd ser. **1**: 245–273, tt. 34–36.

Carter, S, Lavranos, J J, Newton, L E & Walker, C C (2011) *Aloes. The definitive Guide*. Kew Publishing, Kew in association with the British Cactus & Succulent Society.

Hiern, W P & Rendle, A B (1896–1901) *Catalogue of the African plants collected by Dr Friedrich Welwitsch in 1853–1861*. 2 vols. in 6 parts. British Museum (Natural History), London.

Klopper, R R, Matos, S, Figueiredo, E & Smith, G F (2009) *Aloe* in Angola (Asphodelaceae: Alooideae). *Bothalia* **39**: 19–35.

Leach, L C (1974) Notes on the aloes of S. Tropical Africa with four new species and a variety. *J. S. Afr. Bot*., **40**: 101–122.

McCoy, T (2016) A new species of *Aloe* from the Republic of Angola. *Cact. Succ. J. (US)* **88**: 277–280.

Reynolds, G W (1960) Hunting aloes in Angola. *African Wild Life*, **14**(1): 13–25.

- (1966) *The aloes of tropical Africa and Madagascar*. The Trustees, The Aloes Book Fund, Mbabane, Swaziland.

Smith, G F & Figueiredo, E (2011) *Aloe palmiformis*: an endemic krantz aloe from Angola. *Cact. Succ. J. (U.S.)*, **83**: 22–27.

Smith, G F & Lautenschläger, T (2021) *Aloe uigensis* (Asphodelaceae subfam. Alooideae), a new species from northwestern Angola. *Phytotaxa* **521**: 227–231.

Van Jaarsveld, E J (2010) Angola botanical expedition: succulent treasures, January 2009. *Aloe*, **47**: 4–35.

- (2012) *Aloe mocamedensis*, a new species from the Namib Desert, southwestern Angola. *Bradleya* **30**: 173–178.

**Fig. 5 (above) Close-up of a rosette of *A. palmiformis***

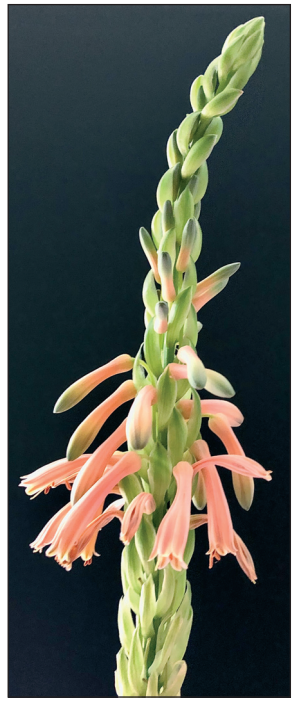

**Fig. 6 (right) Detail of the inflorescence of *A. palmiformis***

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