INTRODUCTION

The Republic of Angola covers an area of ± 1 246 700 km² in southwest-central Africa. Its western boundary is 1 650 km along the Atlantic Ocean and it is bordered by Namibia in the south, the Democratic Republic of Congo in the north and northeast, and Zambia in the east. The detached province of Cabinda has a border with the Republic of Congo in the north and the Democratic Republic of the Congo in the southeast (http://www.angola.org) (Figure 1).

The geography of Angola is extremely varied. The flat coastal part has a few shallow bays and is bordered by a sparsely vegetated coastal plain that extends inland for 45–165 km. This coastal belt is separated from the central plateau by an intermediate mountain belt of irregular terraces, running mostly parallel to the coast. Water is more abundant in these mountain chains and the vegetation is therefore lush. The central plateau has an altitude of 1 200–1 800 m and consists of rolling plains and low hills with scanty vegetation. The plateau falls away in the east to the basins of the Congo and Zambezi Rivers and merges with the barren, sandy Namib Desert in the south. Several small rivers arise in the mountain belt and drain westward to the sea. The largest of these are the Cuanza and Cunene Rivers. From the plateau, the Cuango and other rivers flow northwards to join the Casai River, one of the largest tributaries of the Congo River. Rivers in the south of the country either belong to the Zambezi River system or, like the Okavango, drain to Lake Ngami in Botswana (http://www.biocrawler.com/encyclopedia/Geography_of_Angola).

Angola is situated in a subtropical zone, but owing to several factors, the climate of the country is not typical of such areas. Angola’s climate is influenced by the cold Benguela Current along the southern part of the coast, the highlands in the interior and the Namib Desert in the southwest.

The country has two distinct seasons: the rainy season from October to May, with average coastal temperatures of around 21°C and the drier season with lower average coastal temperatures of around 16°C and mist or Cacimbo from June to September. The heaviest rains occur in April and are accompanied by violent storms. Rainfall along the coast is high and gradually decreases from 800 mm in the north to 50 mm in the south. The interior can be divided into three zones: the North, with very heavy rains and high temperatures; the Central Plateau, a dry area with average temperatures; and the South with temperature fluctuations due to the proximity of the Kalahari Desert and the influence of tropical air currents (http://www.biocrawler.com/encyclopedia/Geography_of_Angola).

The vegetation of Angola is predominantly Zambesian and falls mainly within the Tropical Grassland (Savanna) zone. Six of White’s phytochoria are represented in the country (White 1983). Humid tropical rainforest occurs in the north of the country and the arid Namib Desert and Karoo-Namib shrubland occur in a narrow coastal strip in the southwest. Elsewhere the vegetation consists mostly of miombo woodland, dry evergreen forest, dry deciduous forest, grassland and savanna with Afrot闷ntane formations in the highlands (Airy Shaw 1947; Costa et al. 2004). In a recent classification of terrestrial ecoregions based on ecological features, climate, and plant and animal communities, 15 regions are represented in Angola (World Wildlife Fund 2001).

The geography and unique climatic characteristics of the area provide Angola with a rich biodiversity. However, the flora of the country remains poorly known, a situation recently addressed by Figueiredo & Smith (2008). Although the first botanical specimens from Angola were collected towards the end of the 18th century and various explorations were carried out during the 18th, 19th and 20th centuries, the Angolan Civil War (1975–2002) prevented the country from being properly surveyed for almost three decades. After the end of the civil war, some areas are still inaccessible owing to the threat of landmines (Costa et al. 2004). Even before the war, the poor condition of some roads prevented explorers from reaching many isolated habitats in this country. This situation still prevails to some extent today. With certain areas of the country becoming increasingly accessible, a new interest in the botanical wealth of Angola is surfacing.
In 2006, a project on the flora of Angola, Flora of Angola Online (FLAN) was initiated in the South African National Biodiversity Institute (SANBI), with the collaboration of the Instituto de Investigação Científica Tropical in Lisbon, Portugal, and the Instituto de Investigação Agronómica in Angola. The project had the objective of producing a compilation of plant names with associated specimen data, with the collaboration of 32 botanists. As a result of this joint effort, a comprehensive list of the vascular plants of Angola was compiled (Figueiredo & Smith 2008).

The results of that project (Figueiredo & Smith 2008; Figueiredo et al. in press) provide the following data for the plant diversity of the country: a total vascular flora of 7 296 taxa, consisting of 6 961 species (of which 6 735 are indigenous) and 335 infraspecific taxa (of which 331 are indigenous), belonging to 250 families; 997 species and 72 infraspecific taxa are endemic.

This manuscript provides a complete treatment of the known Aloe L. taxa in Angola. It is the culmination of research done for the Angolan Flora Project and also forms part of the Aloes of the World Project, which is funded by the Andrew W. Mellon Foundation. Its objectives are to compile as much information as possible on representatives of the genus Aloe and to make this data available to a broad range of stakeholders through the internet as part of the African Plants Initiative of Aluka (Smith et al. 2008a, b).

MATERIALS AND METHODS

Geo-referencing of specimens was undertaken for all the specimens examined. The co-ordinates of the collecting locality of each specimen were determined using the Angolan map collection kept at the Instituto de Investigação Científica Tropical. Distribution maps are based on the type specimens and those cited under Additional specimens examined. These specimens are mainly housed in LISC and PRE, but also in BM, BR, E, G, K, LISU, M and MO (acronyms as in Holmgren et al. 1990). Specimens not housed at LISC, LISU or PRE were viewed on the Aluka website (http://www.aluka.org) of the African Plants Initiative. Specimens housed at B were viewed on the virtual herbarium website of the Herbarium Barolinense (Ropert 2000). Further distribution records for taxa with a distribution range extending outside Angola, were obtained from specimens cited in treatments of the genus in Flora zambesiaca (Carter 2001) and Flora of tropical East Africa (Carter 1994), as well as specimens housed at PRE.

This treatment includes a summary of the discovery of aloes in Angola, as well as identification keys to the taxa using either field or herbarium characters. For each taxon a description, based on the abbreviated description template of the Aloes of the World Project (Smith et al. 2008a, b), is provided. Other information that is supplied for each taxon includes the protologue citation, type specimen information, diagnostic characters and specimens investigated, as well as notes on habitat, flowering time, distribution and endemism (indicated by * in front of the taxon name). Each taxon is further accompanied by a distribution map.

HISTORY OF ALOE DISCOVERY IN ANGOLA

The known Aloe taxa in Angola currently number 27, of which at least 16 (59%) are endemic to the country. Only five of the 27 Angolan aloes (A. bulbicaulis Christian, A. christiansii Reynolds, A. dinteri A.Berger, A. héroeroensis Engl. and A. nuttii Baker) do not have their type localities within Angola. The other 22 Aloe taxa occurring in the country were described from material collected during plant collecting surveys or expeditions to Angola from the mid-1800s up to as recently as 1973. Important collectors of Aloe in Angola were Dr Friedrich Welwitsch (1853–1861), Lieut. Wissmann & P. Pogge during their expedition through Angola and the Democratic Republic of Congo (1881–1882), Hugo Baum during the Kunene-Zambezi Expedition (1889–1900), John Gossweiler (1903–1944), Edgar Milne-Redhead (1938), Eduardo J. Mendes (1955–1956 and 1959–1960), Gilbert W. Reynolds (1959), Larry C. Leach & I. C. Cannell during the early 1970s and Baptista de Sousa (1973). Botanical exploration and the possible discovery of new Aloe taxa ceased with the advent of the 27-year-long Angolan Civil War. As a result of vast areas of the country remaining unexplored, it is likely that more taxa will be found once detailed botanical surveys of these areas are resumed.

The first Aloe specimens from Angola were collected by Welwitsch during 1853–1861. From these collections Baker (1878) described six new species, of which only A. platyphylla Baker was later reduced to synonymy under A. zebrina Baker, and A. angolensis Baker is sometimes considered to be either a hybrid between A. zebrina and A. littoralis Baker or to be a synonym of the latter species (Glen & Hardy 2000; Carter 2001). A further species, A. venenosa Engl., was described by Engler (1893) from material collected by Wissmann & Pogge during their expedition through Angola and the Democratic Republic of Congo in 1881–1882. This species has not been collected since and remains insufficiently known. During the Kunene-Zambezi Expedition
of 1899 to 1900, Baum collected *Aloe* specimens from which three new species were described by Engler & Gilg (1903). However, only *A. metallica* Engl. & Gilg is still regarded as a valid species, whereas *A. brunneco-punctata* Engl. & Gilg and *A. baumii* Engl. & Gilg have been reduced to synonymy under *A. nutilii* Baker and *A. zebrina*, respectively.

In 1903, Gossweiler collected material that was later described by Berger (1906) as *Aloe paedogona* A. Berger. Christian (1936) described *A. bulbculaulis* Christian from material collected by Porter in Zambia, but Reynolds (1966) later established that it is a later synonym of *A. paedogona*. The latter species is, furthermore, considered by some (Reynolds 1966; Keay 1968) as a synonym of *A. buettneri* A. Berger, although more recent views (Carter 1994) consider the three as separate taxa. Milne-Redhead collected a further *Aloe* in 1938 that was subsequently described by Christian (1940a) as *A. milne-redheadii* Christian.

Reynolds visited Angola during June and July of 1959, but could not reach certain areas in the northeast and southeast of the country due to the inaccessibility of these areas. During his journey he established that *A. hereroensis* Engl., from Namibia and the Northern Cape Province of South Africa, also occurs in Angola. An additional six species were described by Reynolds (1960, 1961, 1962, 1964) after his Angolan travels, all of which are still upheld.

During the early 1970s, Leach & Cannell collected *Aloe* material in Angola from which Leach (1971, 1974) described five new species and a new variety of *A. andongensis* Baker. At the same time Leach (1974) also described a further species of which the material was collected and given to him by Baptista de Sousa in 1973. All seven of these taxa are still considered current, although *A. esculenta* L.C. Leach is sometimes considered to be synonymous with *A. angolensis* (Glen & Hardy 2000).

**Identification Keys**

Two identification keys are presented below. The first uses field characters for the identification of living plants, whereas the second uses mostly leaf and inflorescence characters (flowers, pedicels and floral bracts) and is aimed at identifying herbarium specimens. *Aloe venenosa* is not included in the identification keys owing to lack of information for this insufficiently known species.

**Key using field characters**

1a Acauleascent or with very short stem:

1a Stems erect, procumbent or ascending;

1b Stems unbranched:

1b Stems with persistent dried leaves; leaves obscurely lineate with few small, whitish, I-shaped spots; spots more numerous and in transverse bands on lower surface ........................................ *A. nutti* var. *mendesi*

1b Stems branched:

1b Leaves not trifarious:

2a Leaf bases markedly enlarged below ground to form bulb-like swelling:

3a Leaves with marginal teeth ± 1 mm long, densely crowded; floral bracts ovate-acuminate ................................................................. *A. bulbculaulis*

3b Leaves with marginal teeth 3–4 mm long, 5–40 mm apart; floral bracts linear-lanceolate ................................................................. *A. paedogona*

2b Leaf bases not markedly enlarged to form bulb-like swelling:

4a Flowers vertically disposed (second) when open:

5a Inflorescence up to 1 m high; racemes subdense; flowers scarlet with a bloom, 40 mm long ..................................................................................... *A. guerriec*

5b Inflorescence 2.20–2.75 m high; racemes lax; flowers dull reddish purple, 28–33 mm long ....................................................................................... *A. procura*

4b Flowers horizontally or pendulously disposed when open:

6a Racemes capitata:

7a Leaves with copious small, white, circular spots near base on lower surface; leaf margin with small crowded teeth that are sometimes almost serrate .................................................................................... *A. grata*

7b Leaves obscurely lineate, with few to many whitish spots scattered or arranged in transverse bands on lower surface; leaf margin with pungent, red-brown teeth .......................................................................................................................... *A. hereroensis* var. *hereroensis*

6b Racemes acuminata:

8a Leaves not marked with whitish spots on either surface:

9a Inflorescence < 0.9 m long; flowers yellow, 20–25 mm long ................................................................................................................................. *A. angolensis*

9b Inflorescence longer than 1 m; flowers reddish pink, longer than 30 mm ................................................................................................................. *A. metaliica*

10a Flower buds at first covered by densely imbricate, long, white, prominently nerved bracts .................................................................................. *A. christiana*

10b Flower buds not covered by dense floral bracts ............................................................................................................................................................

8b Leaves marked with whitish spots on one or both surfaces:

11a Leaves trifarious ................................................................................................................................................................................................. *A. dinteri*

11b Leaves not trifarious:

12a Leaves with prickles along median line of lower leaf surface ............................................................................................................................ *A. esculenta*

12b Leaves without prickles along median line of lower leaf surface:

13a Leaves copiously white-spotted on upper surface, usually obscurely spotted on lower surface; marginal teeth 4–7 mm long ............................................................................................................................... *A. zebrina*

13b Leaves densely white-spotted on both surfaces, especially on lower surface; marginal teeth 2–3 mm long .................................................. *A. milne-redheadii*

11b Leaves not trifarious:

12a Leaves with marginal teeth 2–3 mm long; floral bracts linear-lanceolate ............................................................................................ *A. palmiformis*

12b Leaves with marginal teeth > 3 mm long; floral bracts ovate-acuminate .................................................................................................................. *A. tusiama*
20b Stems procumbent, ascending:
22a Stems slender, branched, forming thickets:
23a Stems without persistent dried leaves
23b Stems with persistent dried leaves
22b Stems branched, but not slender, not forming thickets:
24a Inflorescence 0.5–0.9 m high, unbranched or branched once, with lax racemes
24b Inflorescence 0.3–0.4 m high, branched, with dense racemes:
25a Flowers sometimes sparsely spotted on lower surface, with many crowded spots near base, 200–250 × 60–70 mm, with marginal
tooth 2–3 mm long, 5–7 mm apart; ovary pale green
25b Leaves more copiously white-spotted with spots tending to be arranged in wavy transverse bands, smaller and narrower than
above, with marginal teeth smaller and more crowded; ovary brownish orange

Key using herbarium characters

1a Floral bracts longer than pedicels at anthesis:
2a Flowers 20–24 mm long; outer perianth segments free for < 10 mm; leaves 40–50 mm wide
2b Flowers longer than 25 mm; outer perianth segments free for > 10 mm; leaves wider than 60 mm:
3a Floral buds and open flowers not secund:
4a Racemes ≤ 200 mm long; flowers 20–33 mm long, 8–11 mm across ovary; floral bracts 3–5 mm long; leaves 65–70 mm wide, with
marginal teeth 1–2 mm long
4b Racemes 250–400 mm long; flowers 28–33 mm long, 5–6 mm across ovary; floral bracts 5–6 mm long; leaves 80–95 mm wide, with
marginal teeth 4–5 mm long
5a Leaves with reddish brown marginal teeth and similar spines along median line of lower leaf surface; pedicels longer than 6 mm;
6a Leaves up to 600 × 100–130 mm, with marginal teeth 3–4 mm long; inflorescence much-branched and rebranched; floral bracts
12–18 mm long
6b Leaves 250–400 × 70–90 mm, with marginal teeth 2–3 mm long; inflorescence sparsely branched; floral bracts 18–20 mm
long
A. metallica
1b Floral bracts shorter than or equal to pedicels at anthesis:
7a Floral bracts about as long as pedicels at anthesis:
8a Floral bracts almost equal to or slightly shorter than pedicels at anthesis; leaves < 50 mm wide
9a Inflorescence up to 0.15 m long, simple or 1- or 2-branched, descending at base and then curving upwards; racemes rather dense;
flowers 21–28 mm long, well constricted above ovary; outer perianth segments free for 8.5–10.0 mm
9b Inflorescence 0.5–0.6 m long, simple or 1-branched, oblique or suberect; flowers 20–25 mm long, only slightly constricted above
ovary, outer perianth segments free for 4.5–6.0 mm
6b Floral bracts almost equal to pedicels at anthesis; leaves > 50 mm wide, usually > 60 mm wide:
10a Leaves 100–120 mm wide, unspotted; flowers 35–40 mm long, not constricted above ovary
10b Leaves < 80 mm wide, spotted on both surfaces; flowers up to 35 mm long, abruptly constricted above ovary:
11a Leaf margin narrow, white, with minute white teeth, ± 0.5 mm long, 1–2 mm apart, edge of keel white cartilaginous with similar
teeth
11b Leaf margin cartilaginous, with stout, pungent, red-brown teeth, 4–7 mm long, 10–15 mm apart, no spines on median line
A. zehirina
7b Floral bracts markedly shorter than pedicels at anthesis:
12a Outer perianth segments free for ≥ ½ or > ½ its length:
13a Pedicel > 25 mm long at anthesis
14a Flowers 25–33 mm long; outer perianth segments free for 14–16 mm
15a Leaves 35–42 mm long; outer perianth segments free almost to base, or for ¾ of its length
13b Pedicel < 20 mm long at anthesis:
15b Flowers ≤ 42 mm long
16a Pedicels 18–20 mm long; floral bracts ≥ 12 mm long
16b Pedicels 14–18 mm long; floral bracts 5–8 mm long
17a Leaves 200–250 × 60–70 mm, with marginal teeth 2–3 mm long, 5–7 mm apart
17b Leaves smaller and narrower than above, with marginal teeth smaller and more crowded
A. andongensis var. andongensis
18b Leaves with marginal teeth up to 1 mm long:
19a Flowers 35–40 mm long; pedicels ≥ 20 mm long; leaves ≤ 150 mm wide; acaulose plant with leaf bases enlarging below
ground to form bulb-like swelling
19b Flowers 26–29 mm long; pedicels 22–27 mm long; leaves 40–50 mm wide; plants with branched stem, growing pendent on
cliff faces
A. inamara
18b Leaves with marginal teeth > 2 mm long:
20a Flowers 25–28 mm long; pedicels ≥ 25 mm long; acaulose plants with leaf bases enlarging below ground to form bulb-
like swelling
20b Floral bracts < 7 mm; pedicels usually < 20 mm; shrubs or if acaulose, then leaf bases not enlarging below ground to form
bulb-like swelling:
21a Floral bracts up to 3 mm long:
22a Leaves 70–80 mm wide; flowers 25–28 mm long
22b Leaves 50–80 mm wide; flowers 30–40 mm long
23a Flowers subsecund when open; pedicels ≥ 10 mm long; leaves with marginal teeth spaced ≥ 15 mm apart
23b Flowers nodding topendulous, not subsecund when open; pedicels 13–15 mm long, leaves with marginal teeth spaced ≤
10 mm apart
21b Floral bracts 5 mm or longer:
24a Leaves ≤ 35 mm wide; racemes up to 160 mm long; pedicels ≥ 10 mm long
24b Leaves > 60 mm wide; racemes 200 mm or longer; pedicels longer than 15 mm
25a Leaves with marginal teeth 3–7 mm long; flowers 25–29 mm long, ± 5.5 mm across ovary; outer perianth segments free
for 5–6 mm
25b Leaves with marginal teeth 2–3 mm long; flowers 28–35 mm long, ± 8 mm across ovary; outer perianth segments free for
± 10 mm
A. milne-redheadii
TAXONOMY

A. andongensis Baker var. andongensis in Transactions of the Linnean Society of London 1: 263 (1878). Type: Angola, Pungo Andongo, Welwitsch 3729 (BM, holo.!, K!, LISC!, LISU!, iso.).

Branched shrub. Stem short or 0.3–0.6 m high, branched, ascending, sometimes becoming decumbent, with persistent dried leaves. Leaves rosulate at branch apices, varying from spreading and slightly recurved to suberectly spreading and compact, dull grey-green, upper surface mostly without spots, sometimes sparsely spotted, lower surface usually with many crowded spots near base, lanceolate-attenuate, 200–250 × 60–70 mm; margin slightly cartilaginous, with brownish teeth 2–3 mm long, 5–7 mm apart; leaf exudate crusty when dry. Inflorescence 0.3–0.4 m high, erect, 2- or 3-branched. Raceme subcapitate to cylindrical-acuminate, 60–120 mm long, dense. Floral bracts 5–8 × 3 mm. Pedicels 14–18 mm long. Flowers: perianth pale orange-scarlet, paler at tips, 25 mm long, 5–6 mm across ovary, narrowed above ovary, widening toward mouth giving a clavate appearance, cylindric and very slightly decurved; outer segments free for 17 mm. Stamens exerted up to 1 mm. Style exerted up to 1–2 mm. Flowering time: January to April.

Diagnostic characters: upper leaf surface mostly without spots, sometimes sparsely spotted, lower surface usually with many crowded spots near the base. Buds all spread somewhat horizontally or slightly deflexed. Inflorescence subdense, subcapitate, with flowers lacking a basal swelling.

Relationships with other species: Reynolds (1966) placed Aloe andongensis in his Group 19: Plants of shrubby A. lepida L.C. Leach and also shows a strong link in vegetative characters with A. squarrosoa Baker from Socotra (Leach 1974).

Habitat: exposed rocky places.
Distribution: endemic to Angola (Cuanza Sul) (Figure 2).

Additional specimens examined

A. angolensis Baker in Transactions of the Lin­nean Society of London 1: 263 (1878). Type: Angola, Barra do Bongo, between Quisoma and Cacuaco at Mutolo in District Quicuxe, 1858, Welwitsch 3728 (BM, holo.!, K!, LISC!, LISU!, iso.).

Branched shrub, forming large spreading clumps. Stem up to 0.6 m high, branched freely from base and above, prostrate, with persistent dried leaves. Leaves rosulate at branch apices, widely spreading, dull grey-green, upper surface mostly without spots, sometimes sparsely spotted, lower surface usually with copious crowded spots near base, spots tend to be arranged in wavy transverse bands, lanceolate-attenuate, smaller and narrower than typical variety; margin slightly cartilaginous, with brownish teeth smaller and more crowded than typical variety; exudate crusty when dry. Inflorescence 0.3–0.4 m high, erect, 2- or 3-branched. Raceme subcapitate to cylindrical-acuminate, 60–120 mm long, dense. Floral bracts 5–8 × 3 mm. Pedicels 14–18 mm long. Flowers: perianth pale orange-scarlet, paler at tips, 25 mm long, 5–6 mm across ovary, narrowed above ovary, widening toward mouth giving a clavate appearance, cylindric and very slightly decurved; outer segments free for 17 mm. Stamens exerted up to 1 mm. Style exerted up to 1–2 mm. Flowering time: February to April.

Diagnostic characters: prostrate habit. Stems up to 0.6 m long, branching freely from the base and above, thus forming large spreading clumps. Stems foliate for greatest part of their length. Leaves much smaller, narrower, and more widely spreading than typical variety of species, also more copiously white-spotted with spots tending to be arranged in wavy transverse bands, with smaller, more crowded marginal teeth. Buds all spread somewhat horizontally or slightly deflexed. Inflorescence subdense, subcapitate, with flowers lacking a basal swelling. Ovary brownish orange.

Relationships with other species: see comments under Aloe andongensis subsp. andongensis.

Habitat: slopes of rounded granite hills.
Distribution: endemic to Angola (Cuanza Sul) (Figure 3).

Additional specimens examined
Stem very short or up to 0.7 m high. Leaves densely rosulate, suberect, glaucous, not spotted below, very fleshy, lanceolate-ensiform, 600 × 40–50 mm; margin with teeth, 2 mm long, 15–20 mm apart. Inflorescence 0.9 m high, erect, simple or up to 3-branched. Raceme cylindrical, slightly acuminate, 100 mm long, dense. Floral bracts 10 mm long. Pedicels 3–6 mm long. Flowers: perianth sulphur-yellow, 20–24 mm long; outer segments fused to beyond middle (free for less than 10 mm). Stamens and style scarcely exserted. Flowering time: unknown.

Diagnostic characters: thick leaves and branched inflorescence with dense racemes of sulphur-yellow flowers.

Relationships with other species: Reynolds (1966) stated that the affinities of this species are uncertain, but noted that the thick leaves and type of inflorescence suggest a link with the Aloe littoralis-complex. Reynolds (unpublished notes at PRE) further speculated that A. angolensis might be a natural hybrid between A. littoralis and A. zebrina Baker. This view is upheld by Glen & Hardy (2000), although they regarded it as conspecific with A. esculenta L.C.Leach. Carter (2001) considered it as a synonym of A. littoralis.

Habitat: low hills facing the Bengo River valley, not far from the sea.

Distribution: endemic to Angola (Bengo) (Figure 2).

Notes: this species has not been found again since Welwitsch collected the type specimen. A specimen collected on steep limestone slopes facing the sea between the Dande River Mouth and the road to Caxito, north of Luanda [Barbosa & Santos 10833 (LISC)] is considered to possibly be Aloe angolensis. However, this specimen was not in flower and had dry, dehisced capsules. Until such time as flowering plants are found at this locality, it is not possible to say if this specimen belongs to A. angolensis or not (Reynolds 1966; Reynolds, unpublished notes at LISC).


Acaulescent, up to 0.5 m high, with leaf bases enlarged below ground to form bulb-like swelling; rosettes solitary. Leaves rosulate, deciduous, spreading, bright green, longitudinally striate, slightly fleshy, surface smooth, ovate-lanceolate, up to 500 mm long, 150 mm wide at middle; margin white, cartilaginous, with densely crowded, fairly evenly-spaced, whitish teeth, 1 mm long, 1–5 mm apart. Inflorescence up to 0.6 m high, erect, 3- or 4-branched. Raceme cylindrical, 100–200 mm long, lax below, more dense above. Floral bracts 8–15 × 5–8 mm. Pedicels ± 20 mm long. Flowers: perianth pale yellow to pinkish or brownish yellow with darker nerves, 35–40 mm long, 8–10 mm across ovary, slightly constricted above ovary, widening towards wide-open mouth, cylindrical; outer segments free for one-third (12–13 mm). Stamens scarcely exserted. Style slightly exserted. Flowering time: February.

Diagnostic characters: underground bulb. Leaves up to 500 mm long. 150 mm wide in middle, with densely crowded teeth of 1 mm long. Floral bracts ovate-acuminate, 8–15 mm long.

Relationships with other species: Reynolds (1966) considered Aloe bulbicaulis to be conspecific with A. buettneri together with A. paedogona. Carter (1994) stated that the three taxa are morphologically clearly distinct and also separated geographically and therefore does not agree with Reynolds’s opinion that the three taxa are conspecific.

Habitat: seasonally wet grassland in open woodland.

Distribution: Eastern Angola (Moxico), southeastern Democratic Republic of the Congo (Katanga), northern Malawi, northwestern Mozambique, southwestern Tanzania, northern Zambia (Figure 2).

Illustration: Lane: 17 (2004).

Notes: cited in Carter (1994) to occur in western Angola. This is clearly a mistake and should be eastern Angola. It has been collected in western Zambia, at Matonchi Farm [Milne-Redhead 29034 (K–PRE, photo.)]. Christian 868 (PRE) very close to the Angolan border.


Shrub, forming dense, tangled thickets of 1–2 m across. Stem 1.5–2.0 m long, simple or branching low down, slender, ascending, divergent or sprawling, dried leaves not persistent. Leaves rather laxly rosulate on apical 0.3 m of stem, spreading to deflexed near base, pale yellowish grey-green, with copious, very pale green lenticular spots on both surfaces, more numerous towards base, narrowly lanceolate-attenuate, ± 300 × ± 35 mm; sheath lineate, 15–20 mm long; margin with firm, pale, reddish brown-tipped teeth, 3 mm long, 8–10 mm apart. Inflorescence 0.4 m high, erect or suberect, slender, divaricately about 6-branched. Raceme cylindrical-acuminate, terminal raceme longest, 160 mm long, erect, lateral racemes shorter, oblique, rather lax, flowers sub-
secund on lateral racemes. **Floral bracts** 5 × 3 mm. **Pedicels** 10 mm long. **Flowers**: perianth dull scarlet, 28 mm long, 7 mm across ovary, slightly narrowed above ovary, slightly enlarging towards mouth, cylindric, slightly decurved; outer segments free for 10 mm. **Stamens** exerted 1–2 mm. **Style** exerted up to 2 mm. **Flowering time**: March to July.

**Diagnostic characters**: forms dense, tangled thickets. Stems slender. Leaves pellucid pale yellowish grey-green, usually copiously spotted on both surfaces. Inflorescence slender and divaricately branched. Racemes vary from terminal erect with flowers evenly distributed around axis, to oblique with flowers somewhat secund.

**Relationships with other species**: its closest ally is *Aloe palmiformis* (Reynolds 1961).

**Habitat**: hot, arid bush country and quartzitic sandstone cliffs.

**Distribution**: western Angola (Benguela, Namibe), northern Namibia (Figure 3).


**Notes**: this species was previously only known from the type locality and considered to be endemic to Angola. However, it has recently been discovered in the Kaokoveld in Northern Namibia [*E. van Jaarsveld 18805* (WIND)].


Acaceous; rosettes usually solitary, up to 1 m across, or in small groups, rarely suckering. **Stems** develop in older plants, up to 1 m long, erect or decumbent, with persistent dried leaf bases. **Leaves** densely rosulate, erectly spreading, dull green above, dull bluish green below, tinged pinkish in dry conditions, unspotted but often obscurely lineate, lancolate-attenuate, 300–600 mm long, 100–120 mm wide at base; margin cartilaginous, with pungent, pinkish to pale brown, brown-tipped teeth, 2–5 mm long, 10–20 mm apart. **Inflorescence** 2–3 m high, erect, compactly 6–10-branched, lower branches sometimes 1- or 2-branched. **Raceme** cylindric-acuminate, 150–300 mm long, terminal raceme the longest, lax. **Floral bracts** 7–12 × 2 mm. **Pedicels** 10–15 mm long. **Flowers**: perianth pale rose-pink with bluish bloom, pale to almost white at mouth, 28–30 mm long, ± 6.5 mm across ovary, abruptly narrowed above ovary, enlarging towards mouth, slightly decurved; outer segments free for 5–10 mm. **Stamens** included or exerted up to 1 mm. **Style** exerted up to 1 mm. **Flowering time**: January to March.

**Diagnostic characters**: acutely folded, trifarious, chocolate-brown leaves of up to 300 mm long, with margins finely toothed. **Inflorescence** 3–8-branched and up to 0.85 m high. **Floral bracts** 3-nerved.

**Relationships with other species**: *Aloe dinteri*, together with its close relatives, *A. sladeniana* Pole Evans from central Namibia and *A. variegata* L. from southern, western and central South Africa and southern Namibia, forms the Section *Serrulatae* Salm-Dyck (Glen & Hardy 2000).

**Habitat**: usually wedged firmly in cracks in limestone in areas of very low summer rainfall. Sometimes on granite, in bushveld near edge of Namib Desert.

**Figure 4.— Distribution of Aloe dinteri**, ◇; *A. gossweileri*, ■; and *A. grata*, ▲.
Distribution: southwestern Angola (Namibe, Cunene), northern Namibia (Figure 4).

Illustrations: Reynolds: t. 637 (1936b); Reynolds: 211 (1950); Rothmann: 58, 59 (2004).

Note: this species was previously considered to be endemic to northern Namibia and occurs near the Cunene River west of Ruacana. Due to its frequent proximity to the river, it was believed likely to occur north of the Cunene River in Angola (Hardy 1992). In fact, a few plants were reportedly seen near Namibe (Moçamedes) on low stony ridges and in stony desert areas (Downs 1970). However, no herbarium specimens could be found to confirm this distribution. Clair Bell (pers. comm.) saw this species north of the Cunene River in Angola in 1996. A plant collected during this expedition is currently growing in the Botanical Society Conservatory at Kirstenbosch National Botanical Gardens, Cape Town (SW Angola, July 1996, Clair Bell 1120/96). However, opinions are divided on the correct identification of this taxon in Angola. According to John Lavranos (pers. comm.) a plant collected inland from Namibe by Dr Philip Downs in 1971 suckered freely and did not have the solitary rosettes characteristic of Aloe dinteri. Furthermore, it bore leaves of no longer than 50–70 mm and consistently produced simple inflorescences. Lavranos, therefore, considers it to be closer to A. sladeniana.


Acaulescent or sometimes with short, thick, often decumbent stem, up to 0.4 m long, rosettes suckering to form dense clumps. Leaves condensed rosulate, erectly spreading or recurved, greyish green, with pinkish brown tinge in dry conditions, densely white-spotted on both surfaces, spots more copious on lower surface, arranged in irregular transverse bands. Strong blackish brown spines along median line, lanceolate, up to 500 mm long, 80 mm wide at base; margin with pungent, blackish brown teeth, ± 300 mm long, 50 mm wide at base; margin with pale deltoid teeth, 3–4 mm long, 15 mm apart. Exudate not bitter.

Diagnostic characters: spotted aloe. Acaulescent plants forming clumps, frequently of shrubby habit. Leaves copiously white-spotted, with large spots along median line on underside of leaf. Flowers densely white-spotted; stigma exerted up to 8 mm.

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Additional specimens examined

ANGOLA.—1515: Huila, (–AC), Carrisio & Sousa 193 (LISC), 1614: Huila, Roçadas, (–DB), 8 July 1970, Meneses 3384 (K, LISC, PRE, SRGH); Cunene, Cuamato, Roçadas, entre Dinha e Humbe, (–DB), 20 July 1970, Santos & Barroso 2761 (LISC, PRE). 1715: Baixo Cunene, Cuamato, Roçadas, a 34 km para a Missão do Cuamato, (–AA), 1 July 1970, Santos & Barroso 2963 (LISC, PRE); Huila, Roçadas, Cuamato, (–AA), 4 July 1970, Meneses 3579 (LISC, PRE); Baixo Cunene, Cuamato, Pereira d'Eça, entre Namacunde e Chiede, (–BB), 9 July 1970, Santos & Barroso 2717 (LISC, PRE).

Additional specimens examined


Thicket-forming shrub. Stem 1.0–1.5 m long, branching from ground level only, ascending or divergent, without persistent dried leaves. Leaves subdensely rosulate at branch apices, spreading to slightly recurved, green, mostly without spots, lanceolate-attenuate, ± 300 mm long, 50 mm wide at base; margin with pale deltoid teeth, 3–4 mm long, 15 mm apart. Inflorescence 0.4–0.5 m high, erect, pyramidal, divaricately 6–8-branched.

Diagnostic characters: forms thickets. Stems branched at ground level only, 1.0–1.5 m long. Inflorescence divaricately branched, pyramidal with almost horizontal racemes with subsecund flowers.

Relationships with other species: its closest ally appears to be Aloe palmiformis (Reynolds 1966).
tinged reddish brown, without spots, lower surface paler glaucous green, with many crowded, pale green, circular, 1 mm spots in lower quarter, lanceolate-attenuate, 200–250 \( \times \) 70–890 mm; margin sinuate-dentate, sometimes almost serrate, with teeth 2–3 mm long, 5–8 mm apart; leaf exudate drying pale yellow. **Inflorescence** 0.7–0.9 m high, erect, simple, in young plants, up to 3-branched in older plants. **Raceme** capitulate or subcapitate, 80–100 mm long, fairly dense. **Floral bracts** 2 \( \times \) 1.5 mm. **Pedicels** \( \pm \) 20 mm long. **Flowers**: perianth scarlet, 25–28 mm long, 6 mm across ovary, slightly narrowed above ovary, enlarging towards middle, slightly narrowing at mouth, trigonous; outer segments free for 7 mm. **Stamens** exserted 1–2 mm. **Style** exserted 2–3 mm. **Flowering time**: June.

**Diagnostic characters**: leaves with small crowded marginal teeth that are sometimes almost serrate, lower surface with copious white, small, circular spots near base. **Inflorescence** simple in young plants, forked in older plants, 2- or 3-branched in largest specimens. **Racemes** capitulate or almost so. Perianth scarcely trigonously indented above ovary. **Floral bracts** 2 mm long, 1-nerved.

**Relationships with other species**: the nearest ally to this species seems to be *Aloe mzimbana* Christian from central and southeastern tropical Africa (Reynolds 1966).

**Habitat**: grassland with scattered bushes.

**Distribution**: endemic to Angola (Benguela, Huambo) (Figure 5).

**Illustration**: Reynolds: 229 (1966).

**Additional specimens examined**

ANGOLA.—1214: Balombo, 23 miles [37 km] E of Monte Belo, 6 miles [9.6 km] W of Balombo, (-BC), 3 July 1959, Reynolds 9325 (PRE). 1215: Benguela, Nova Lisboa, (-AA), 9 May 1937, Exell & Mendonça 1677 (LISC); Benguela, Calupingos, (-AD), 31 May 1940, Gossweiler 12600 (LISC); Bié Province, Posto do Cunje, near Silva Porto, (-BD), 1 August 1955, Reynolds 6885 (PRE).

*A. hereroensis* Engl. in Botanische Jahrbücher 10: 2 (1888), var. *hereroensis*. Type: Namibia, Usakos, 28 May 1886, Marloth 1438 (B, holo.!, NBG!, PRE!, iso.).

Acaulescent; rosettes solitary or suckering to form small clumps. Stem sometimes develops in older plants, up to 1 m long, simple or branched, procumbent, with persistent dried leaves. Leaves densely rosetulate, suberect, with recurved apical portion, dull green, obscurely lineate on upper surface, grey-green with no markings on lower surface, lanceolate-attenuate, \( \pm \) 400 mm long, 60–70 mm wide at base; margin with pungent, pale brown or reddish brown teeth, 4–5 mm long, 10–15 mm apart; leaf exudate drying yellow. **Inflorescence** 0.9–1 m high, erect, divaricately 8–10-branched, lower branches sometimes rebranched. **Raceme** cylindrical, \( \pm \) 200 mm long, oblique to almost horizontal, dense, buds and flowers second, almost erect. **Floral bracts** 6–8 \( \times \) 4 mm. **Pedicels** \( \pm \) 5 mm long. **Flowers**: perianth scarlet with a bloom, 40 mm long, 8 mm across ovary, scarcely narrowed above ovary, cylindric-trigonal towards slightly upturned mouth, straight or slightly curved; outer segments free for 10–12 mm. **Stamens** exserted up to 2 mm. **Style** exserted up to 3 mm. **Flowering time**: May to June.

**Diagnostic characters**: inflorescence divaricately branched with oblique to subhorizontal racemes of second flowers.

**Relationships with other species**: its nearest ally is *Aloe secundiflora* Engl. from eastern and northeastern Africa (Reynolds 1966).
D.S.Hardy and is closely allied to A. viridiflora Giess from central Namibia (Glen & Hardy 2000).

Habitat: arid, stony desert conditions with very low rainfall. Usually grows on quartzite, but has been found on dolomite in the Kalahari. Confined to summer rainfall area.

Distribution: southwestern Angola (Huambo, Namibe), from central Namibia (Glen & Hardy 2000).

Additional specimens examined

ACGOLA.—1215: Huambo, entre Alto Hama e Águas Quentes, (BA), 20 August 1967, Silva 2104 (LISC); 1512: Moçâmedes, andados 30 km de Moçâmedes para Dois Irmãos, (AB), 2 May 1960, Mendes 3898 (LISC); Benguela Province, 20 miles [32 km] NE of Moçâmedes, (AB), 28 May 1959, Reynolds 9283 (PRE); Moçâmedes, Caraculo, a ± 25 km para Moçâmedes, (AB), 2 May 1960, Santos 1007 (LISC, SRGH); Moçâmedes, Reserva de Moçâmbe junto ao limite NE, (DA), 5 March 1969, Teixeira 12871 (LISC); Moçâmedes, Reserva de Moçâmbe, (DA), 11 April 1969, Teixeira 12942 (LISC).


Plants hanging on cliff faces. Stem up to 2 m long, pendent, branching at base and more sparsely above, forming dense mats, without persistent dried leaves. Leaves rosulate on branch apices, widely spreading, rigidly strongly recurved, bright to dark yellowish deep green, conspicuous but irregular white spots in wavy transverse bands, spots smaller and more numerous on lower surface, broadly ovate-attenuate, 200–280 × 75–90 mm; margin with pungent, brown-tipped teeth with whitish base, 3–7 mm long, 6–12 mm apart; exude crusty when dry. Inflorescence 0.3–0.5 m high, erect, 1- or 2-branched. Raceme cylindrical-acuminate, ± 200 mm long, lax. Floral bracts 6–7 × 3.0–3.5 mm. Pedicels 15–20 mm long. Flowers: perianth pale orange-scarlet, somewhat yellowish striped, 25–29 mm long, ± 5.5 mm across ovary, narrowed above ovary, enlarging towards wide open mouth, cylindric, slightly curved; outer segments free for 5–6 mm. Stamens not exerted. Style only occasionally very shortly exerted. Flowering time: February to May.

Diagnostic characters: leaves dark yellowish green, strongly recurved, conspicuously marked with irregular transverse wavy bands of whitish spots, armed with large marginal teeth. Inflorescence with lax, cylindric-acuminate racemes, with buds quickly nodding. Flower slender with outer segments free for 5–6 mm, with mouth widely open, stamens included and stigma only occasionally very shortly exerted.

Relationships with other species: Aloe lepida seems to be closely related to A. andongensis and also shows a strong link in vegetative characters with A. squarrosa Baker from Socotra (Leach 1974). Habitat: rocky slopes in shade of trees.

Distribution: endemic to Angola (Huambo) (Figure 6). Illustrations: Leach: 103, 104, 105 (1974).

Additional specimen examined


Low, much-branched shrub, up to 0.3 m high. Stem branching at base, stout, erect, without persistent dried leaves. Leaves densely rosulate at branch apices, widely spreading, rigidly strongly recurved, bright to dark yellowish deep green, conspicuous but irregular white spots in wavy transverse bands, spots smaller and more numerous on lower surface, broadly ovate-attenuate, 200–280 × 75–90 mm; margin with pungent, brown-tipped teeth with whitish base, 3–7 mm long, 6–12 mm apart; exude crusty when dry. Inflorescence 0.3–0.5 m high, erect, 1- or 2-branched. Raceme cylindrical-acuminate, ± 200 mm long, lax. Floral bracts 6–7 × 3.0–3.5 mm. Pedicels 15–20 mm long. Flowers: perianth pale orange-scarlet, somewhat yellowish striped, 25–29 mm long, ± 5.5 mm across ovary, narrowed above ovary, enlarging towards wide open mouth, cylindric, slightly curved; outer segments free for 5–6 mm. Stamens not exerted. Style only occasionally very shortly exerted. Flowering time: February to May.

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Additional specimen examined

Bothalia 39,1 (2009)


A. rubrolutea Schinz: 39 (1896). Types: Namibia, Rehoboth, Fleck 4979a, Namibia, K'uisib, Fleck 472; Botswana, Olifantskloof, Fleck 263 (Z, syn.).

Additional specimens examined

Cambambe-Dondo, (-CB), 18 August 1931, (LISC); Cuanza Norte, Dondo. Rio Cuanza, (-CB), March 1938, densely rosulate, erectly spreading to slightly recurved, 263


Plants growing pendent on vertical cliff faces. Stem usually unbranched, up to 1 m long, pendant, without persistent dried leaves. Leaves rosulate at stem apex, hanging downwards, green, obscurely lineate, without spots, eniform, falcately decurved, 500 × 70–80 mm; margin narrow cartilaginous edge, with blunt, cartilaginous teeth, 1–2 mm long, 10–15 mm apart. Inflorescence up to 0.6 m long, pendant, 3- or 4-branched. Racemes cylindrical-acuminate, 100 mm long, arcuate-ascending, dense; buds hidden by imbricate bracts. Floral bracts 12 × 5 mm. Pedicels 18–20 mm. Flowers: perianth scarlet, 25 mm long, 4 mm across ovary, enlarging towards mouth, narrowing just below mouth, cylindrical, slightly ventricose; outer segments free for 20 mm. Stamens exserted 2–3 mm. Style exerted up to 3 mm. Flowering time: April to July.

Diagnostic characters: plants growing pendent on vertical cliff faces. Stem usually unbranched, up to 1 m long, pendant, without persistent dried leaves. Leaves rosulate at stem apex, hanging downwards, green, obscurely lineate, without spots, eniform, falcately decurved, 500 × 70–80 mm; margin narrow cartilaginous edge, with blunt, cartilaginous teeth, 1–2 mm long, 10–15 mm apart. Inflorescence up to 0.6 m long, pendant, 3- or 4-branched. Racemes cylindrical-acuminate, 100 mm long, arcuate-ascending, dense; buds hidden by imbricate bracts. Floral bracts 12 × 5 mm. Pedicels 18–20 mm. Flowers: perianth scarlet, 25 mm long, 4 mm across ovary, enlarging towards mouth, narrowing just below mouth, cylindrical, slightly ventricose; outer segments free for 20 mm. Stamens exserted 2–3 mm. Style exerted up to 3 mm. Flowering time: April to July.

Relationships with other species: appears to be closely allied to Aloe veseyi Reynolds from Zambia (Reynolds 1966).

Habitat: vertical cliff faces.

Distribution: endemic to southwestern Angola (Huila, Namibe) (Figure 6).


Notes: this species is sometimes wrongly recorded as occurring in northwestern Namibia (Newton 2001). The species in Namibia with which it is mistaken is the Kaokoland endemic A. corallina L. Verdoorn.

Additional specimens examined

ANGOLA.—1123: Moxico District, between River Zambezi and River Lusavo, (-DA), material from type plant, 7 July 1941, Verdoorn PRE29368 (PRE).

A. nuttii Baker in Hooker’s. Icones planatarum: t. 2513 (1897). Type: Zambia, Fwambo, South of Lake Tanganyika, 1896, Nutt s.n.; Zambia, Fwambo, 1894, Carson 29 (K, syn.!, PRE, photo.!).

A. brunneo-punctata Engl. & Gilg: 189 (1903). Type: Angola, Longa, oberh. Minnesera, 2 February 1900, Baum 698 (B, holo.!, BR!, K!, M!, iso.-PRE, photo.).


A. mktiensis Christian: t. 785 (1940b). Type: Tanzania, Iringa District, Saa Highlands, north of Mkett, 17 June 1938, Pole Evans & Evans 765 (PRE24881) (PRE, holo.!).

Grass aloe, growing singly or with 2 or 3 stems, sometimes up to 12 and more tufted stems. Stems very short or up to 0.2 m long, erect. Leaves rosulate, erectly spreading, sometimes deflexed at about middle, green, upper surface sometimes obscurely lineate, usually with few pale spots near base, lower surface usually copiously spotted near base, spots occasionally spinulescent, grass-like and subfleshy, linear, 400-500 mm long, up to 40 mm at dilated base, abruptly narrowed to 15-20 mm, tapering towards apex; margin very narrow, white, with densely crowded, minute, white, soft, cartilaginous teeth, up to 1 mm long. Inflorescence 0.6-0.8 m high, erect, unbranched. Raceme cylindrical-acuminate, 150-200 mm long, dense; buds entirely covered by large imbricate bracts. Floral bracts 15-25 x 10-20 mm. Pedicels 25-35 mm long. Flowers: perianth coral-pink to orange-red with green tips, 35-42 mm long, 7-9 mm across.
ovary, not narrowed above ovary, cylindrical-trigonous, base tapering into pedicel; outer segments free almost to base or for ¼ of length. Stamens not exerted. Style exerted 0–1 mm. Flowering time: January to March, depending on locality and rainfall.

**Diagnostic characters:** leaves grass-like, rosulate. Flowers salmon-pink.

**Relationships with other species:** its nearest ally is *Aloe buchananii* Baker from Malawi (Reynolds 1966).

**Habitat:** montane grassland, often on rocky slopes. **Distribution:** southeastern Angola (Cuando-Cubango), southern Democratic Republic of the Congo, Malawi, southwestern Tanzania, northern Zambia (Figure 8). **Illustrations:** Christian: t. 762 (1940c); Reynolds: 33, 34 (1966); Lane: 9 (2004).

**Additional specimens examined**


**A. paedogona** A.Berger in Journal of Botany, British and Foreign 44: 57 (1906). Type: Angola, Malange, June 1903, Gossweiler 946 (BM, holol.; K, iso.).

Acaulescent, with leaf bases enlarged below ground to form bulb-like swelling; rosettes single, rarely succumbing to form small groups. Leaves rosulate, usually deciduous, erectly spreading to slightly recurved, green, obscurely lineate, sometimes with few scattered whitish spots, surface smooth, ensiform, 450 x 50–60 mm; margin whitish, cartilaginous, with firm unevenly spaced teeth, 3 mm long, 5–40 mm apart. **Inflorescence** up to 2 m high, erect, 3–5-branched. **Raceme** cylindrical-conical to subsaccateip, 70 mm long, dense. **Floral bracts** 15–25 x 4–6 mm. **Pedicels** 25–30 mm long. **Flowers:** perianth yellow-green, ± 35 mm long, 9–11 mm across ovary, constricted above ovary, forming globose basal swelling, enlarging towards middle, narrowing towards mouth; outer segments free only at tips. Stamens not exerted. Style exerted up to 2 mm. **Flowering time:** September to April.

**Diagnostic characters:** underground bulb. Leaves ± 450 x 50–60 mm, with firm teeth of ± 3 mm long. Unusual shape of flowers with globose basal swelling. Floral bracts linear-lanceolate, long-acuminate, 15–25 mm long. **Relationships with other species:** Reynolds (1966) considered *Aloe paedo gnova* to be conspecific with *A. buettneri* together with *A. bulbicaulis*. Carter (1994) stated that the three taxa are morphologically clearly distinct and also separated geographically and therefore does not agree with Reynold’s opinion that the three taxa are conspecific.

**Habitat:** floodplains, woodland, savanna and grassland. **Distribution:** Angola (Bié, Huambo, Huila, Malange), northern Namibia (Figure 8). **Illustrations:** as *Aloe buettneri* in Rothmann: 46, 47 (2004).

**Additional specimens examined**


**A. palmiformis** Baker in Transactions of the Linnean Society of London 1: 263 (1878). Type: Angola, Huila District, Morro de Lopolho, April 1860, Welwitsch 3726 (BM, holol.; K, LISU; iso.).

Shrubby plants. **Stem** very slender, 1.0–1.5 m long, erect, sparingly branched mostly at base, with persistent dried leaves. Leaves rosulate at branch apices, arcuate-ascending-recurred or spreading-recurred, dull green with reddish tinge, lower surface with many small, crowded, pale green almost white spots towards base, narrowly lanceolate-attenuate, up to 300 x 50 mm; sheath lineate, 10 mm long; margin with prominent, pungent, pale brown teeth, 4–5 mm long, 10 mm apart; leaf exudate crusty when dry. **Inflorescence** 0.4–0.5 m high, erect, up to 4-branched, sometimes simple in young plants. **Raceme** cylindrical, slightly acuminate, 100–150 mm long, lax. **Floral bracts** 2–3 x 2 mm. **Pedicels** 13–15 mm long. **Flowers:** perianth rose-scarlet, 30 mm long, 5.5 mm across ovary, slightly enlarging towards mouth, cylindrical-trigonous; outer segments free for 10 mm. **Stamens** exerted up to 1 mm. **Style** exerted up to 2 mm. **Flowering time:** April to June.

**Diagnostic characters:** stems very slender, usually sparingly branched. Leaves sometimes unspotted on both
sides, usually copiously spotted on lower surface near base. Marginal teeth prominent. Inflorescence usually 2- or 3-branched, 0.4–0.5 m high.

Relationships with other species: It is closely allied to Aloe grossweileri (Reynolds 1966). Habitats: Among standstone rocks in woodland. Distribution: Endemic to Angola (Huambo, Huila, Namibe) (Figure 8).


Additional specimens examined

Low scrambling shrub, up to 0.5 m high, rarely up to 1 m. Stem branching at base and above, slightly divergent, usually widely spreading, only rarely erect, with persistent dried leaves. Leaves rosulate at branch apices, more cauleine dispersed below, spreading or somewhat recurved, yellowish green, upper surface without spots, lower surface darker, obscurely lineate, rarely with few spots near base, very narrowly ovate-acute, up to 300 x 25–35 mm; sheath striate, 10–20 mm long; margin with pungent, yellowish or brownish tipped teeth, somewhat forward-hooked, 2–3 mm long, 10–15 mm apart; leaf exude crusty when dry. Inflorescence ±0.15 mm long, descending at base and curving upwards, simple or 1- or 2-branched. Raceme narrowly conical or cylindrical-acute, 110–250 mm long, laterals usually shorter, dense. Floral bracts ±6.5 x up to 3.5 mm. Pedicels 6–10 mm long. Flowers: perianth scarlet, yellow-striped with green at base, 21–28 mm long, ± 7 mm across ovary, narrowed above ovary, enlarging towards wide-open mouth, cymid-trigonoous; outer segments free for 8.5–10.0 mm. Stamens exserted. Style exserted up to 2.5 mm. Flowering time: April to May.

**Diagnostic characters:*** plants scrambling and shrubby in habit. Leaves yellow-green, almost invariably imma­culate, with small marginal teeth. Inflorescence with very slender peduncle, which is at first usually descending, then arculate-ascending, with the rather dense, narrow, acuminate racemes held erect. Buds suberect. Flowers curved. Bracts large, prominently nerved, orange-brown.

**Relationships with other species:** its closest relative seems to be Aloe palmiformis Baker (Leach 1974).

**Habitat:** rocky slopes, often in shade of woodland.

**Distribution:** endemic to Angola (Huila, Namibe) (Figure 9).

**Illustrations:** Leach: 107, 108 (1974).

**Additional specimens examined**


Shrubby plant, ±0.3–0.5 m high. Stem branched from base; rosettes tilted to one side, greyish or greenish blue to bluish green. Leaves rosulate at branch apices, more widely spaced below, few small, oval or round, whitish spots near base, more spots on lower surface, narrowly ovate-attenuate, 220–340 x 40–50 mm; sheath copiously spotted; margin narrow, yellowish, with pungent, yellowish, orange- or brown-tipped teeth, 2.0–2.5 mm long, 10–12 mm apart; leaf exude frothy, drying to opaque, crystalline, yellow crust. Inflorescence 0.5–0.6 m, oblique or suberect, simple or divaricately 1-branched. Racemes narrowly elongate cylindrical-acute, terminal raceme 250–450 mm long, lateral raceme 170–300 mm long, oblique, lax. Floral bracts up to 4.5 x 2.5 mm. Pedicels 4.0–4.5 mm long. Flowers: perianth bright scarlet, somewhat purplish at apex, mouth becoming yellowish at maturity, 20–25 mm long, ± 5 mm across ovary, narrowed slightly above ovary, enlarging slightly towards open mouth, slightly curved, cymbid; outer segments free for 4.5–6.0 mm. Stamens and style not or scarcely exserted up to 1 mm. Flowering time: April.

**Diagnostic characters:** very shrubby plant of relatively dwarf stature, with stem branched from base. Rosettes of grey-blue to blue-green leaves tilted to one side. Inflorescence simple or 1-branched from low down, with narrow acuminate racemes. Short, bright scarlet flowers with outer segments free for only 4.5–6.0 mm carried on relatively short pedicels.

**Relationships with other species:** it appears to be most closely allied to Aloe gossweileri and A. catengiana (Leach 1974).

**Habitat:** cliffs.

**Distribution:** endemic to Angola (Namibe) (Figure 5).

**Illustrations:** Leach: 113 (1974).

**Notes:** this species is only known from the type locality.

**A. venenosa** Engl. (insufficiently known sp.) in Botanische Jahrbucher 15: 471 (1893). Type: Angola, Lunda, between Quimbundo and Nyangwe, 20 May 1882, P. Pogge 1460 (B, holo.–LISC, photo.!).


**Relationships with other species:** unknown.

**Distribution:** endemic to Angola (Lunda Norte or Lunda Sul).

**Notes:** this species has not been located since the type specimen was collected by Pogge in May 1882. The true identity of this species, therefore, remains a mystery. Furthermore, the type locality is extremely vague: Quimbundo is in northeastern Angola, whereas Nyangwe is in the eastern Democratic Republic of the Congo. It is therefore possible that this species was not collected in Angola, but in the Democratic Republic of the Congo.

**A. zebrina** Baker in Transactions of the Linnean Society of London 1: 264 (1878). Type: Angola, Loanda District, Barra do Bengo, Quicuxe towards Cacuaco, July 1879, Welwitsch 3721 designated by Reynolds (1866) (LISU, lectotype; BM!, G!, K!, isotype–LISC, photo.).

**A. platyphylla** Baker: 264 (1878). Type: Angola, Pungo Andongo, 1879, Welwitsch 3722 (K, lectotype; BM!, G!, LISU, isotype).}

**A. consticta** Baker: 168 (1880). Type: Mozambique, near Sena, 8 April 1860, Kirk 34 (K, holotype).


**A. baumii** Engl. & Gilg: 191 (1903). Type: Angola, Chirumbi, 14 October 1899, Baum 275 (B, holotype; E, isotype).

**A. bamyangwatisensis** Schönbl. 122 (1904). Type: Botswana, Palapye Road, March 1904, Schönbl. 1656 (GRA, holotype; PRE, isotype).

Acaulescent; rosettes sometimes solitary or usually suckering to form groups. Leaves densely rosulate, spreading, dull green, upper surface with transverse bands of conspicuous, whitish, oblong spots, lower surface usually obscurely or copiously spotted, lanceolate, usually dried...
and twisted at apex, 150–350 mm long, 60–70 mm wide at base; margin with stout, pungent, red-brown teeth, 4–7 mm long, 10–15 mm apart; leaf exudate yellowish, drying purplish or orange. Inflorescence 0.75–2 m high, erect, 4–12-branched, lower branches often rebranching. Racemes narrowly cylindrical-acuminate, 300–400 mm long, very lax. Floral bracts 6–15 × 2–3 mm. Pedicels 6–15 mm long. Flowers: perianth dull red to pinkish red or coral-coloured with paler segment margins, 6–15 mm long, basally inflated to 7–9 mm across ovary, 35 mm long, exserted up to 2 mm. Stamens free for 7–11 mm. Style abruptly constricted just above ovary, widening towards segments free for 7–11 mm.

Diagnostic characters: spotted aloe. Upper leaf surface always conspicuously spotted, spotting on lower surface varies. Very laxly flowered racemes, 300–400 mm long; pedicels 6–15 mm long; perianth averaging 30 mm.

Distribution: Angola (Bengo, Cuando-Cubango, Cuanza Sul, Cunene, Huambo, Huila, Luanda, Lunda Sul, Malange, Mexico, Botswana, western Mozambique, Malawi, northern Namibia, South Africa (North-West), Zambia, Zimbabwe (Figure 10).

Additional specimens examined

ANGOLA.—0813: Luanda, entre a foz do Dande e a estrada de Caxito, (–AD), 18 July 1964, Barbosa 10831, 10832 (LISC); Luanda, Queixe, (–BD), Welwitsch 3720, 3724 & 3725 (K, LISU); Luanda, Caxito, praia de S. Tiago a caminho do Dande, (–CB), 8 May 1956, Monteiro, Santos & Murtã 119 (LISU, LISC); Luanda, near Caluaco, 10 miles [16 km] NE of Luanda, (–CD), 12 July 1959, Reynolds 9406 (PRE); Luanda, lóca e Bengo, near Dande River, (–DA), June 1944, Gossweiler 13299 (LISC). 0817: Malange, Cambo. Montalegre, (–DA), 25 April 1937, Exell & Mendonça 1134 (LISC); Huila, Sã de Bandeira, Hoque, (–DB), 2 June 1966, Henriques 1022 (LISC, LISU); Huila, Lubanga, Sã de Bandeira, arredores, próximo da estrada do Marquês, (–DC), 7 March 1972, Couto 192 (LISC); Huila, Sã Da Bandeira, Vio, (–DC), 4 May 1965, Henriques 378 (LISC, LISU). 1417: Menongue, entre Cuchi e Vila Serpa Pinto, vale do Luassenha, (–CA), 4 April 1960, Mendes 3460 (LISC) 1418: Cuito-Cuanavale, andados 40 km de Longa para Cuango, (–BD), 18 March 1960, Mendes 3175 (LISC). 1513: Huila, Humpata, Thievinguivo, (–AB), 24 April 1972, Meneses 4087 (LISC); Huila, Lubanga, ao km 17 da estrada para a Chibia, (–BA), 24 April 1965, Meneses 1590 (LISC); Huila, próximo da Missão Católica, (–BA), 10 February 1956, Santos 182 (LISC). 1515: Guingaual, entre os Rios Cubango e Cunene, Rio Oxo, (–BA), 4 August 1905, Gossweiler 1834a (LISC). 1516: Menongue, Cuito, vale de Sobi, (–BD), 15 March 1906, Gossweiler 3704 (LISC). 1519: Cuando-Cubango, Cuito-Cuanavale, sede, (–AA), July 1967, Pereira e s.n. (LISC); Huila, Lubango, ao km 17 da estrada para a Chibia, (–BA), 24 April 1965, Meneses 1590 (LISC); Huila, próximo da Missão Católica, (–BA), 10 February 1956, Santos 182 (LISC). 1523: Menongue, entre Cuchi e Vila Serpa Pinto, vale de Luassenha, (–CA), 2 May 1956, Monteiro, Santos & Murtã 119 (LISU, LISC); Huila, Lubanga, Sã de Bandeira, arredores, próximo da estrada do Marquês, (–DC), 7 March 1972, Couto 192 (LISC); Huila, Sã Da Bandeira, Vio, (–DC), 4 May 1965, Henriques 378 (LISC, LISU).

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References


