

Notes on African plants

VARIOUS AUTHORS

LAMIACEAE

AEOLLANTHUS RYDINGIANUS, A NEW SPECIES FROM NORTHERN NAMIBIA AND SOUTHERN ANGOLA

INTRODUCTION

The genus *Aeollanthus* Mart. ex Spreng. ranges from tropical to southern Africa. It belongs to the Lamiaceae, subfamily Nepetoideae, tribe Ocimeae, and comprises \pm 43 species. Members of *Aeollanthus* are succulent or semisucculent subshrubs or annual or perennial herbs. In a comprehensive taxonomic revision of the group, Ryding (1981, 1982, 1986) provided seven examples of pairs of closely related systematic entities, each consisting of a perennial and an annual. Two of these pairs, the predominantly East African *A. repens* Oliv. and the more widespread *A. suaveolens* Mart. ex Spreng., the Angolan *A. candelabrum* Briq. and the more widespread *A. neglectus* (Dinter) Launert, consist of distinct species. The Angolan perennial *A. caudatus* Ryding also appears to be distinct but is related to two annual species, the Angolan *A. lobatus* N.E.Br. and the Namibian *A. namibiensis* Ryding. The predominantly south-tropical African *A. serpiculoides* Baker and *A. ukamensis* Gürke were retained as separate species, although they differ only slightly from one another. The same applies to the Ethiopian *A. abyssinicus* Hochst. ex Benth. and *A. pinatifidus* Hochst. ex Benth. In one case, the perennial and annual forms are even less distinct and are included in the same species, *A. buchnerianus* Briq.

The annual *A. elsholzioides* Briq. is considered to be endemic to the Huila Plateau in the vicinity of Lubango, southern Angola. It has a perennial relative represented by a single collection from the same area. Ryding (1986) indicated that this collection most probably represents a separate species, but due to shortage of material, he hesitated to provide a formal name and described and illustrated it under the provisional name *Aeollanthus* sp. A. In July 2002, plants of this perennial taxon were discovered on the Baynes Mountains in northern Namibia by a botanical expedition led by the first author; this material was cultivated at Kirstenbosch. The cuttings rooted rapidly and flowered a year later in June and July. A comparative study of the available live material confirmed its status as a distinct new species. The purpose of this paper is to describe the new species formally and to discuss its relationships, especially with *A. elsholzioides*. We take pleasure in naming this new species for Dr Per Olof Ryding of the Botanical Museum, University of Copenhagen, Denmark, in recognition of the considerable contribution he has made to the classification of the genus *Aeollanthus*.

Aeollanthus rydingianus Van Jaarsv. & A.E. van Wyk, sp. nov., *A. elsholzioides* Briq. similis sed habitu perenni valde maiori usque ad 600 mm alto, indumento plus dense glandulari, foliis maioribus 70–140(–200) \times

40–80 (–100) mm, inflorescentia in forma paniculi laxi terminali usque ad 125 \times 60 mm, spicis breve pedunculatis, bracteis fertilibus maioribus latioribus 5.5–8.0 \times 4.0–5.5 mm, corolla maiori (12–)18–19 mm longa, differt.

TYPE.—Namibia, 1713 (Omavanda): Kaokoveld, Baynes Mountains, Omavanda, growing on ledge of sheer south-facing cliff, 1 800 m, (–AD), *Van Jaarsveld, Voigt & Cilliers 17481* (WIND, holo.).

Aeollanthus sp. A: Ryding (1986: 124).

Icones: Ryding (1986: 125, fig. 48E–G).

Softly semisucculent, herbaceous, branched, erect subshrubs up to 600 mm tall, most parts covered with glandular hairs and sharply aromatic. *Roots* fibrous. *Branches* terete, main branch up to 20 mm diam., with brown, peeling bark at base, younger branches 7–8 mm diam., green and sparsely covered with translucent glandular hairs up to 2 mm long, nodes 20–30 mm long, internodes covered in short, axillary, crowded, leafy branches, each with 3 pairs of leaves overtopped by normal leaves. *Leaves* decussate; those on axillary branches 20–40 \times 15–20 mm (occasionally much shorter), very shortly petiolate; normal leaves spreading, long-petiolate, 70–140(–200) \times 40–80(–100) mm, becoming drooping, often exposing suppressed, axillary branches; lamina broadly ovate to broadly triangular-ovate, fleshy, tomentose, slightly viscous due to glandular translucent hairs; adaxial surface channelled, slightly rugose, densely covered in soft translucent glandular hairs 0.5–2.0 mm long; abaxial surface reticulate; veins prominent, densely beset with glandular hairs, elsewhere hairy; margin dentate with 7–10 pairs of teeth, 5–7 mm long, and each with a secondary tooth at base, decurrent on petiole; apex acute to subacute; base cuneate to attenuate; petiole 15–40 \times 5 mm, subterete. *Inflorescence* a terminal, lax, pyramid-shaped panicle, 100–125(–200) mm high, 60 mm wide at base; spikes becoming gradually smaller towards tip, those of main axis with opposite flowers, other spikes bearing alternately 1 or 2 flowers at each node; lower spikes up to 30 mm long, short-stalked, each with a pair of short side branches at base; rachis 4 mm diam. at base, gradually becoming thinner distally; bracts concave, broadly ovate, densely imbricate, 5.5–8.0 \times 4.0–5.5 mm, surface with 3 obscure veins, covered with short glandular hairs, apex acute, sterile bracts slightly smaller. *Calyx* green, 1.75–2.5 mm long, bell-shaped, basal part circular, 1 mm diam., widening towards apex; upper lip 3-lobed; lower lip infolded. *Corolla* white (Angola) or mauve (Namibia), 12–19 mm long, 2-lipped; tube 8–10 mm long, 1 mm diam. at base, widening to 3.5 mm at throat; upper lip erect, 4-lobed, 8 mm high, bearing



FIGURE 1.—*Aeollanthus rydingianus*. A, flowering branch, $\times 0.7$; B, flower, $\times 2$, scale bar: 15 mm. Artist: Vicki Thomas.

dark purple spots; lower lip 5–9 mm long, horizontal, cymbiform, obtuse at apex. *Stamens* 8–9 mm long, mauve; anthers 1 mm diam.; pollen yellow. *Style* (9–)15–16 mm long, lengthening to up to (11–)17–18 mm long when ripe. *Nutlets* 1.3 \times 1 mm, black, smooth. Figure 1.

Diagnostic features and relationships: *Aeollanthus rydingianus* belongs to section *Rotundobasis* Ryding, a group that also includes *A. elsholzioides* (Angola), *A. rehmannii* Gürke (Namibia and South Africa) and *A. parvifolius* Benth. (South Africa). It is most closely related to the annual *A. elsholzioides*, from which it differs in being a perennial, semisucculent subshrub up to 600 mm high. It furthermore differs from *A. elsholzioides* in having an indumentum that is more densely glandular, long-petioled, ovate leaves that are larger, 70–140(–200) \times 40–80(–100) mm; an inflorescence that is a lax, pyramidal, terminal panicle up to 125 \times 60 mm; short-stalked, dense spikes, larger and broader; subacute, imbricate, fertile bracts, 5.5–8.0 \times 4.0–5.5 mm; and a larger corolla (12–)18–19 mm long. The 4-lobed upper lip of the mauve corolla (white in the Angolan specimen), is densely purple-spotted. In the annual *A. elsholzioides*, the leaves are smaller, up to 28–80 \times 10–40 mm; the fertile bracts are up to 4–7 \times 2.5–3.5 mm, with the apex acuminate; the corolla is violet and smaller, 8–11 mm long. The short, condensed axillary side branches are overtopped by the foliage leaves, the latter becoming drooping and often exposing the upper condensed axillary branches, each with three pairs of leaves.

Aeollanthus rydingianus should not be confused with *A. buchnerianus* and *A. neglectus* which also occur in northern Namibia. The latter two species belong to section *Cuculilabium* Ryding and are at once distinguished by their flowers which have the lower lip hooded and lobed at the base. However, the lobes are relatively small or sometimes indistinct in plants of *A. buchnerianus* from the South African provinces of Gauteng and Eastern Cape.

The two other members of section *Rotundobasis*, *A. rehmannii* and *A. parvifolius*, lack the distinctive overlapping bracts. The remaining Namibian species, *A. namibiensis*, is also easily distinguished by its pinnatifid leaves (section *Cyathobasis* Ryding). The only remaining species in the *Flora of southern Africa* region, *A. suaveolens* (section *Aeollanthus*), is a pleasantly aromatic annual from the province of Limpopo, South Africa.

Because of their close affinity, *A. elsholzioides* and *A. rydingianus* can be referred to as the *A. elsholzioides* group. As in many other members of *Aeollanthus*, these two species have one-sided spikes with alternately one or two flowers at each node, or an all-sided spike with opposite flowers on the main axis. However, the one-sided spikes of the *A. elsholzioides* group differ from the one-sided spikes of the rest of the genus in having a decussate arrangement of the bracts and flowers, apart from the reduction of a flower at each second node (Ryding 1986: fig. 6G). In other *Aeollanthus* species, the flowers and bracts of the 2-flowered nodes are displaced towards one

side of the spikes (Ryding 1986: fig. 6H–K), or the flowers are quite differently arranged. Superficially, the spikes of the *A. elsholzioides* group have an all-sided appearance, as the ordinary bracts are large and broad and the sterile bracts at the back (that do not subtend flowers) are almost as large as the ordinary bracts. Spikes of *A. buchnerianus* have a similar appearance, but those of other *Aeollanthus* species have a clearly one-sided appearance, as their sterile bracts are much smaller, narrower or absent.

Distribution and ecology: at present *A. rydingianus* is known only from two localities ± 300 km apart, one in northern Namibia, the other in southern Angola. At both localities conditions are relatively moist and the soils are suspected to be somewhat acidic due to the presence of quartzitic rocks. The Angolan collection dates from 1968 (Teixeira *et al.* 12533 in LISC, *non vidi*) and comes from a locality between Tundavala and Lubango on the Huila Plateau, where it was collected among rocks at an altitude of $\pm 1\ 800$ m. The Huila Plateau has a high average annual rainfall of up to 1 300 mm and the lush vegetation of the area contains relict enclaves of Afromontane grassland and forest. These climatic conditions are in seemingly stark contrast to the locality of the Namibian record, which is from the arid Kaokoveld in the north-western corner of the country (Figure 2). Here the taxon is confined to the upper quartzite cliffs of the southeastern part of the Baynes Mountains. This rugged range consists of a flat-topped quartzite massif which rises to $\pm 2\ 000$ m and is bordered by sheer cliffs. The mountain can only be reached on foot, after several hours of walking and climbing. Plants of *A. rydingianus* occur in a restricted area on a narrow south-facing ledge at $\pm 1\ 800$ m. The particular site is considerably wetter than what would be expected under the prevailing climate due to the presence of seepage water. Only a small population was found in full flower. Associated species include the trees *Cussonia angolensis*, *Ficus bubu*, *F. glumosa*, *F. ilicina* and *Nuxia congesta*, as well as the pendent cremonophyte *Aloe omavandae*. Although the plants grow in the shade of cliffs in winter, they receive some sunlight for part of the day in summer. The Baynes Mountains are not well explored, and the two first-mentioned associated tree species were new records for Namibia; *Aloe omavandae* turned out to be a new species described in Van Jaarsveld & Van Wyk (2004).

A noteworthy feature observed in cultivated plants of *A. rydingianus* is the development of vegetative propagules at the end of old flowering spikes. After the flowers, fruits and bracts have been shed, the main axis remains alive until the following autumn when small vegetative shoots or propagules appear. Each propagule consists of a leafy shoot, 20–50 mm long (2–7 leaf pairs), and is shed during late autumn. The fallen propagules root below the mother plant, a vegetative reproduction strategy often observed in cliff-dwelling succulents and bulbs (Van Jaarsveld & Van Wyk 2003).

Average annual rainfall in the Kaokoveld varies from less than 50 mm along the coast to 350 mm in the highlands (Mendelsohn *et al.* 2002). Precipitation is erratic and occurs mainly in the form of thundershowers in summer. At Omavanda, where the average annual rainfall is an estimated 250–350 mm, *A. rydingianus* receives sub-



FIGURE 2.—Known distribution of *Aeollanthus rydingianus*.

stantial additional moisture in the form of water that seeps from zones of weakness in the quartzitic rocks. Its habitat clearly represents a restricted, relatively moist refuge in a generally arid area. The habitat preference of *A. rydingianus* in the Kaokoveld reflects an Afromontane affinity rather than an adaptation to the arid semidesert conditions prevailing in the region. Its presence in the Kaokoveld may be an outlier occurrence and this would also support its treatment as a taxon conspecific with *Aeollanthus* sp. A of the Huila Plateau. It is likely that more records of the new species would come from the wetter and botanically still poorly explored Serra da Chella Mountain Range which extends from the Huila Plateau southwards towards the Kaokoveld.

The lower foothills of the Baynes Mountains are covered by arid *Colophospermum mopane*–*Commiphora* savanna. Other characteristic trees in this savanna include *Adansonia digitata*, *Berchemia discolor*, *Boscia albitrunca*, *Commiphora crenato-serrata*, *Diospyros mespiliformis*, *Philenoptera nelsii*, *Ptaeroxylon obliquum*, *Sterculia africana* and *Terminalia prunioides*. The Kaokoveld forms part of the Kaokoveld Centre of Endemism (Van Wyk & Smith 2001), a biogeographical region that includes northwestern Namibia and southwestern Angola. This local centre of endemism is rich in endemic plants, nearly all of which show adaptation to desert and semidesert conditions. Among the endemics are at least three species of *Aeollanthus*, namely *A. caudatus*, *A. lobatus* and *A. namibiensis*. Other endemic Lamiaceae include *Tetradenia kaokoensis* and *Plectranthus unguentarius*. *A. rydingianus*, however, is not a Kaokoveld Centre endemic but, as suggested above, most probably an Afromontane element that managed to establish

itself in an isolated, moist refuge in the Baynes Mountains. Dispersal was most probably facilitated by birds that frequent the local puddles of water that seep from the sandstone rock, a possibility supported by the fact that the seed of most of the associated trees (*Cussonia*, *Ficus*) are bird-dispersed.

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