



Barleria Almughsaylensis Mosti, Raffaelli & Tardelli (Acanthaceae), a New Species from Oman

Authors: Mosti, Stefano, Raffaelli, Mauro, and Tardelli, Marcello

Source: Candollea, 66(1) : 191-197

Published By: The Conservatory and Botanical Garden of the City of Geneva (CJBG)

URL: <https://doi.org/10.15553/c2011v661a21>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Barleria almughsaylensis Mosti, Raffaelli & Tardelli (Acanthaceae), a new species from Oman

Stefano Mosti, Mauro Raffaelli & Marcello Tardelli

Abstract

MOSTI, S., M. RAFFAELLI & M. TARDELLI (2011). *Barleria almughsaylensis* Mosti, Raffaelli & Tardelli (Acanthaceae), a new species from Oman. *Candollea* 66: 191-197. In English, English and French abstracts.

Barleria almughsaylensis Mosti, Raffaelli & Tardelli (Acanthaceae), a new species from Al Mughsayl area in Oman (Central Dhofar) is described and illustrated. It differs from *Barleria acanthoides* Vahl, *Barleria mucronifolia* Lindau and *Barleria hillcoatiae* J. R. I. Wood by some morphological characters mainly concerning the floral and foliar ones.

Key-words

ACANTHACEAE – *Barleria* – Oman – Taxonomy

Résumé

MOSTI, S., M. RAFFAELLI & M. TARDELLI (2011). *Barleria almughsaylensis* Mosti, Raffaelli & Tardelli (Acanthaceae), une nouvelle espèce d'Oman. *Candollea* 66: 191-197. En anglais, résumés anglais et français.

Barleria almughsaylensis Mosti, Raffaelli & Tardelli (Acanthaceae), une nouvelle espèce de la région Al Mughsayl d'Oman (Dhofar Central) est décrite et illustrée. Elle se distingue de *Barleria acanthoides* Vahl, *Barleria mucronifolia* Lindau et *Barleria hillcoatiae* J. R. I. Wood par quelques caractères morphologiques principalement floraux et foliaires.

Address of the authors: Dipartimento di Biologia Evoluzionistica (Biologia Vegetale), Università di Firenze, Via La Pira 4, 50100 Firenze, Italy.

Email (SM): stefanomosti@yahoo.it

Submitted on November 5, 2009. Accepted on March 10, 2011.

Edited by P. Bungener

ISSN: 0373-2967 *Candollea* 66(1): 191-197 (2011)

© CONSERVATOIRE ET JARDIN BOTANIKES DE GENÈVE 2011

Introduction

According to BALKWILL & BALKWILL (1997) and HEDRÉN (2006) *Barleria* L. (*Acanthaceae*) is a genus of perennial herbs or shrubs of about 300 species distributed in tropical and subtropical Africa and Asia, with its greatest centre of diversity in tropical East Africa and one single species (*B. oenotheroides* Dum. Cours.) in Central America. These plants have leaves entire, dentate or transformed into spines; calyx 4-lobed with 2 outer broader lobes and 2 inner more narrow ones. The corolla is slightly irregular to zygomorphic, funnel-shaped or with cylindrical tube.

GHAZANFAR (1992) recorded 5 species of *Barleria* for Oman in Dhofar: *B. acanthoides* Vahl, *B. aucherana* Nees, *B. candida* Nees (North Oman), *B. hochstetteri* DC. (North Oman), *B. proxima* Lindau. Recently KNEES & al. (2007) discovered another new species in Dhofar: *B. samhanensis* Knees, A. G. Mill. & A. Patzelt.

Floristic investigations in Dhofar (2000-2009) have been conducted to explore the hills and valleys surrounding the coastal village of Al Mughsayl. In four different localities specimens of *Barleria* were collected, which appeared quite different in vegetative habit and in flower shape from the other related known species.

Barleria almughsaylensis Mosti, Raffaelli & Tardelli, *spec. nova* (Fig. 1-3)

Typus: OMAN. Dhofar: Al Mughsayl, wadi in fondo alla discesa, pochi km dopo Al Mughsayl, 111 m, 16°52.096'N 53°42.931'E, 15.II.2006, M. Raffaelli, M. Tardelli & S. Mosti 377 (holo-: FT!).

A Barleria acanthoidea corolla minore et lobis calycis superioribus armatis potius quam subinermibus differt. A Barleria mucronifolia fistula corollae omnino cylindrata potius quam in parte superiore infundibuliforme ac indumento foliorum differt.

Spiny shrub up to ca. 40-50 cm tall, branched from the base. *Branches* light grey-brown, sparsely to densely pubescent (in the young parts) with hairs 0.1-0.2 mm long. *Leaf-blades* entire, ovate to suborbicular, 4-17 × 3-11 mm; adaxial surface grey-green with hairs 0.1-0.2 mm long and sparse hairs 0.5 mm long; abaxial surface grey with dense and appressed hairs 0.1-0.2 mm long and sparse acicular hairs with a slightly bulbous base, 0.5-0.7 mm long, placed along the venations and the margin; apex mucronate, with a spine 0.5-1 mm long. *Leaves on axillary shoots* pubescent, pungent with a very reduced blade, up to 28 × 1.5(-3) mm including the long apical spine (ca. 20 mm) and with 2(-3) pairs of lateral spines up to ca. 5 mm long. *Flowers* in dense scorpioid cymes (in the leaf-axils). *Bracts* leaf-like. *Bracteoles* with a more or less reduced blade, up to 35 × 8 mm including the long apical spine (ca. 20 mm) and with 5-11 pairs

of lateral spines up to 5 mm long. *Calyx lobes* 4, pubescent in the abaxial side and sparse pilose or subglabrous in adaxial side. *Upper lobe* (of the 2 outer calyx lobes) up to ca. 27 × 14 mm long including an apical spine (ca. 8-9 mm long) and up to 9 pairs of lateral spines up to 4 mm long. *Lower lobe* ovate-acute up to 19 × 13 mm without an apical spine but with 8-10 pairs of very short lateral spines 0.5-1 mm long. *Inner calyx lobes* 2, linear-acute up to 9 × 1.5 mm. *Corolla* white, turning blue on drying, 38-52 mm long, with a cylindrical tube 35-49 mm long and 5 obovate-elliptical lobes up to 12 × 7 mm, almost perpendicular to tube. *Capsule* 4-seeded, up to 14 × 5 × 2 mm, ellipsoidal with a conical apical beak ca. 1 mm long; pale to medium brown with 3 darker stripes, glabrous or with sparse short hairs. *Seeds* ca. 4 × 4 mm, trapezoidal-suborbicular, flattened, brown with a thick horn-coloured margin, sometimes showing sparse protuberances; seeds surface covered with dense, intricate hairs, white-beige in colour and hygroscopic.

Phenology. – Reproductive stage in January-February and September-November.

Etymology. – Named from Al Mughsayl area where it was discovered.

Distribution and ecology. – Up to now *B. almughsaylensis* has been collected in the above mentioned localities. 'Locus classicus' is placed inside an arid sparse shrubland of *Boswellia sacra* Flueck (the frankincense tree). Other shrubby and herbaceous species living in the area were: *Caesalpinia erianthera* Chiov., *Euphorbia uzmuk* S. Carter, *Polygala* cf. *obtusissima* Chod., *Campylanthus pungens* O. Schwartz, *Echiochilon arabicum* (O. Schwartz) I. M. Johnst., *Lavandula macra* Baker, *Iphiona senecionoides* (Baker) Anderb., *Tetraena alba* (L. f.) Beier & Thulin, *Fagonia mahrana* Beier and the rare *Desmidorchis adenensis* (Defl.) Meve & Liedt.

Taxonomical notes. – In our opinion these specimens can be referred to a new species related to sect. *Barleria* L. (such as *B. acanthoides*) because of the number of seeds in the capsule (4), the shape and the size of the spines that are 2, branched and sessile. Among the other *Barleria* of Oman, *B. candida*, *B. proxima* and *B. samhanensis* belong to sect. *Prionitis* (Nees) Lindau, having only 2 seeds instead of 4, 4 simple spines together on a short common stalk; while *B. aucherana* and *B. hochstetteri* belong to sect. *Somalia* (Oliv.) Lindau being unarmed plants.

Barleria almughsaylensis is added to the 17 species (7 endemic) widespread in the Arabian Peninsula and Socotra (BALKWILL & BALKWILL, 1997). The new species belongs to sect. *Barleria*, the more widespread in the genus (absent only in the New World), in all including 79 species, 6 of which are now found in Arabia and Socotra. Among the species of sect. *Barleria*, *B. almughsaylensis* is related to those with spinescent habits and/or weakly zygomorphic flowers (BALKWILL & BALKWILL, 1997).



Fig. 1. – Holotypus of *Barleria almughsaylensis* Mosti, Raffaelli & Tardelli.
[Raffaelli, Tardelli & Mosti 377, FT] [© Centro Studi Erbario Tropicale]



Fig. 2. – Details of *Barleria almughsaylensis* Mosti, Raffaelli & Tardelli.

[Raffaelli, Tardelli & Mosti 377, FT]

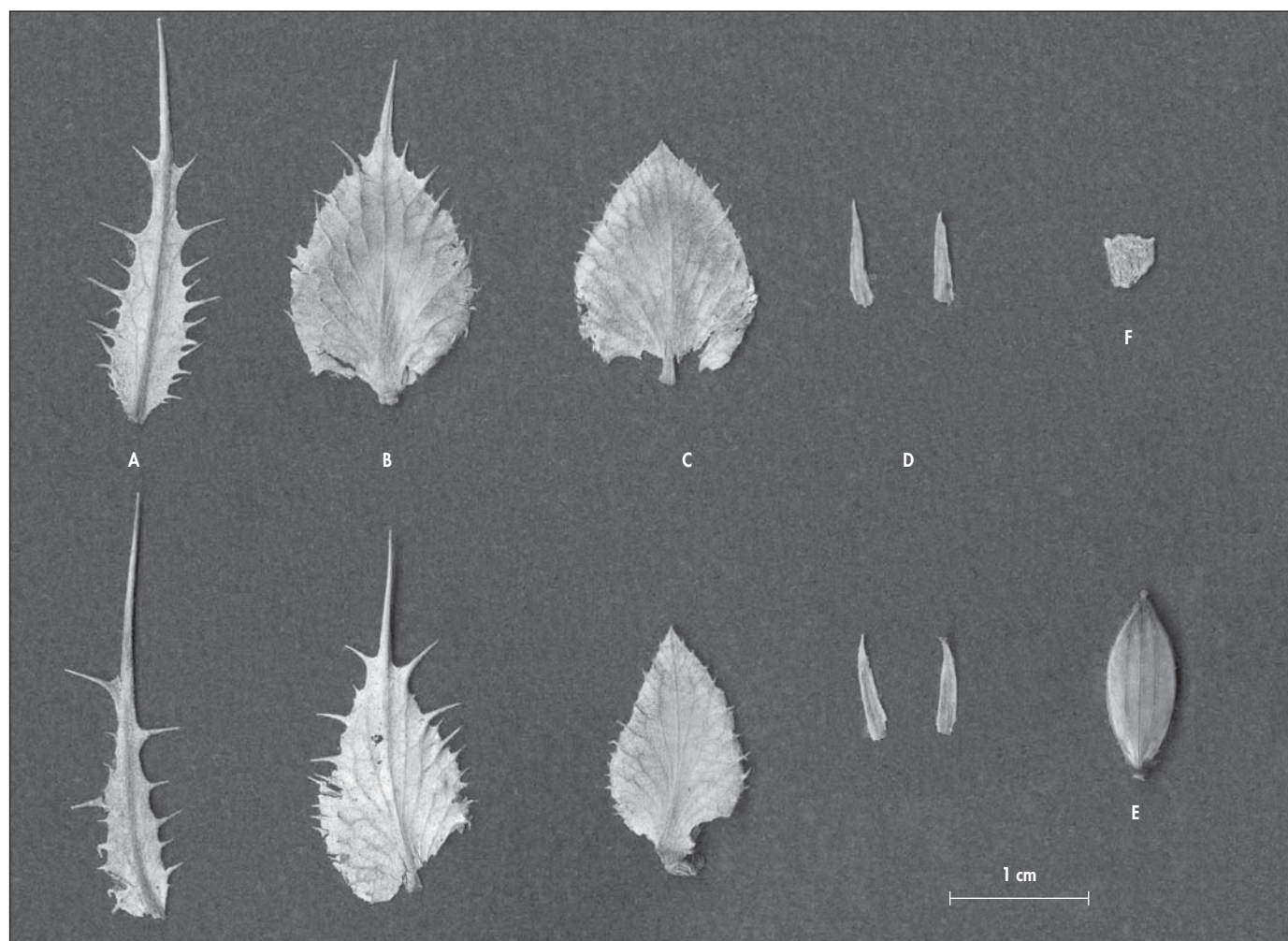


Fig. 3. – Details from the inflorescence of *B. almughsaylensis* Mosti, Raffaelli & Tardelli. **A.** Bracteoles; **B.** Upper outer lobes of calyx; **C.** Lower outer lobes of calyx; **D.** Inner calyx lobes; **E.** Capsule; **F.** Seed.

Barleria almughsaylensis differs from *B. acanthoides* Vahl in having the upper of the 2 outer calyx lobes spiny, the tube of corolla shorter and some other different morphological characters, as shown in Table 1 (as the specimens of *B. acanthoides* and *B. mucronifolia* kept in FT have leaves on axillary shoots (spines) and narrower bracteoles compared with the descriptions reported in HEDRÉN (1997), it should be important to verify this character on a larger number of specimens of *B. acanthoides* Vahl and *B. mucronifolia* Lindau). It shows also affinity with *B. mucronifolia* Lindau., a species from Yemen, Somalia and Ethiopia that, in the opinion of HEDRÉN (2006), includes also *B. homotricha* C. B. Clarke and *B. jodocephala* Chiov. Nevertheless, *B. mucronifolia* is characterized by a widened and funnel-like (in the upper part) corolla, by a longer mucro on the leaf apex and by a different indumentum on the leaves (see Table 1). Finally

a comparison should be made with *B. hillcoatiae* J. R. I. Wood from Yemen (WOOD, 1984), but this last species has the upper of the 2 outer calyx lobe with only 2 pairs of lateral spines (up to 9 pairs in *B. almughsaylensis*), the lower of the outer calyx lobes with an apical spine (the lower lobe is without an apical spine in *B. almughsaylensis*) and with 2 pairs of lateral spines 0.8-10 mm long (in the *B. almughsaylensis* these are 8-10 pairs but only 0.5-1 mm long). Besides the leaves of *B. hillcoatiae* have dense white marginal hairs (WOOD, 1997), segments of the calyx white-villose and the corolla tube longer: up to 120 mm.

The taxonomic comparison between *B. almughsaylensis* and the above mentioned closely related species has been made by analysing the characters of taxonomic importance (such as the calyx and the corolla morphologies) according to BALKWILL & BALKWILL (1997) and HEDRÉN (1997). Moreover also

Table 1. – Main differential characters between *Barleria almughaylensis* Mosti, Raffaelli & Tardelli, *B. mucronifolia* Lindau and *B. acanthioides* Vahl.

	<i>B. almughaylensis</i>	<i>B. mucronifolia</i>	<i>B. acanthioides</i>
Shapes of leaves (leaf-blades)	ovate to suborbicular	narrowly ovate	narrowly obovate to obovate
Mucro of leaf blades	0.5-1 mm long	1-3 mm long	1-1.5 mm long
Indumentum of leaf-blades (adaxial surface)	hairs 0.1-0.2 mm long and sparse hairs 0.5 mm long	hairs 0.1-0.2 mm long and numerous hairs 0.7 mm long	hairs 0.1-0.2 mm long and sparse hairs 0.5 mm long
Indumentum of leaf-blades (abaxial surface)	appressed hairs 0.1-0.2 mm long and sparse acicular hairs with a slightly bulbous base, 0.5-0.7 mm long	not appressed hairs 0.1-0.7 mm long and acicular hairs without bulbous base up to 1 mm long	not appressed hairs 0.1-0.2 mm long, acicular hairs without bulbous base 0.5 mm long and glandular hairs
Leaves on axillary shoots (spines)	up to 28 × 3 mm including an apical spine (up to 20 mm long) and with 2-3 pairs of lateral spines up to 5 mm long	up to 20 × 13 mm including an apical spine (up to 14 mm long) and with 1-2 pairs of lateral spines up to 7 mm long	up to 15 × 6 mm including an apical spine (up to 11 mm long) and with 1 or more lateral spines up to 9 mm long
Bracteoles: size and length of the apical spine	up to 35 × 8 mm including a long apical spine (up to 20 mm) and 5-11 pairs of lateral spines	up to 30 × 18 mm including a long apical spine (up to 16 mm) and 2-3 pairs of lateral spines	up to 27 × 20 mm including a long apical spine (up to 11 mm) and 2 pairs of lateral spines
Upper of outer calyx lobes: shape and size	ovate-pointed, up to 27 × 14 mm including an apical spine c. 8-9 mm long and up to 9 pairs of lateral spines up to 4 mm long	ovate-pointed, up to 20-30 × 10-15 mm including an apical spine 3-6 mm long and several (c. 4) pairs of lateral spines up to 4 mm long	ovate, up to 22 × 16 mm, including an apical spine c. 2 mm long and without lateral spines or sometimes reduced to a few soft bristles
Shape and length of corolla	cylindrical, 38-52 mm long, with a tube of 35-49 mm	funnel-like in upper part and cylindrical in lower part, 35-64 mm long, with a tube of 25-42 mm	cylindrical, 65-100 mm long, with a tube of 60-90 mm
Seeds	brown with horn-coloured thick margins and dense, intricate, appressed, white-beige hygroscopic hairs	pale brown without thick margins, with sparse, white translucent, appressed hairs	dark brown with ivory-horn coloured thick margins and appressed, grey hygroscopic hairs

the indumentum of the leaves (length and shape of the hairs) has been taken into account, being considered a species-specific character by AHMAD (1978). Finally, the difference in colour of the hygroscopic hairs of the seed is useful for distinguishing closely related species in this group (BALKWILL & BALKWILL, 1997).

Relationships. – The new species appears closely related to *B. acanthoides* Vahl (among the species of Oman) and to *B. mucronifolia* Lindau, a wide range species known for Yemen, Somalia and Ethiopia. These three species belong all to sect. *Barleria*.

Additional material examined. – **OMAN. Dhofar:** Mugsail. 16°45'N 53°40'E, 13.XI.1984, I. McLeish 327 (sub *B. acanthoides*) (E!); Wadi Afal, ca. 40 km of Mugsail on new road to West., 200 m, 16.IX.1989, A. G. Miller & J. A. Nyberg M. 9404 (sub *Barleria acanthoides*) (E!); strada Al Mughsayl-Salalah, 5 km dopo Al Mughsayl: costone roccioso, 45-100 m, 16°53'76"N 53°48'95"E, 27.IV.2001, M. Raffaelli, M. Tardelli & S. Mosti 588 (FT!); dopo Al Mughsayl verso Ajdarawt, costone roccioso versante a mare, 476-965 m, 16°49.785'N-16°51.305'N 53°43.275'E-54°40.006'E, 15.II.2006, M. Raffaelli, M. Tardelli & S. Mosti 367 (FT!); dopo Al Mughsayl lungo la strada verso Ajdarawt, rilievi del versante a mare poco prima del posto di blocco, 965 m, 16°49.785'N 53°40.006'E, 27.II.2007, M. Raffaelli, M. Tardelli & S. Mosti 38 (FT!).

Acknowledgments

Thanks are due to the Office of the Adviser for Cultural Affairs, Sultanate of Oman, for logistic assistance during our visit to Dhofar. Thanks also to the Royal Botanic Garden Edinburgh-Herbarium for sending us the specimens of *Barleria* from Al Mughsayl.

References

- AHMAD, K. J. (1978). Epidermal hairs of Acanthaceae. *Blumea* 24: 101-107.
- BALKWILL, M.-J. & K. BALKWILL (1997). Delimitation and infra-generic classification of *Barleria* (Acanthaceae). *Kew Bull.* 52: 535-573.
- GHAZANFAR, S. A. (1992). An annotated catalogue of the vascular plants of Oman and their vernacular Names. *Scripta Bot. Belg.* 2.
- HEDRÉN, M. (1997). *Barleria* L. In: THULIN, M. (ed.), *Fl. Somalia* 3: 427-441.
- KNEES, S. G., L. LASER, A. G. MILLER & A. PATZELT (2007). A new species of *Barleria* (Acanthaceae) from Oman. *Edinburgh J. Bot.* 64: 107-112.
- WOOD, J. R. I. (1984). Eight new species and taxonomic notes on the flora of Yemen. *Kew Bull.* 39: 123-139.
- WOOD, J. R. I. (1997). *A handbook of the Yemen Flora*. Royal Botanic Gardens, Kew.