

## STUDIES IN THE FLORA OF ARABIA: IV A NEW CAMPANULA FROM OMAN

A. G. MILLER & R. P. WHITCOMBE\*

ABSTRACT. *Campanula akhdarensis* Miller & Whitcombe (Campanulaceae) of sect. *Rupestres* (Boiss.) Charadze is described from Oman. It is related to the SW Asiatic species *C. incanescens* Boiss.

### *Campanula akhdarensis* Miller & Whitcombe, sp. nov. Fig. 1a-c, 2.

*C. incanescens* Boiss. affinis sed indumento (praecipue corollae) exiliore, floribus minoribus, stylo post anthesim longe exsert et filamentis anguste triangularibus versus apicem longe attenuatis differt.

Herba perennis in fissuris rupium crescens, laxe caespitosa, pluricaulis, ad basin plus minusve lignosa. *Caules* graciles, usque ad 15cm longe,  $\pm$  inferioramiferi, hirsuti vel interdum scabridi, acetate albescentes et glabrescentes. *Folia* anguste obovata vel elliptica,  $3-28 \times 1-3(-8)$ mm, apice acuto, margine remote dentato-crenato dentibus 5-8 obscuris, basi attenuato, inferiora breviter petiolata, superiora sessilia, glabrescentia vel hirsuta, interdum secus marginem pilis basibus bulbosis vestita. *Inflorescentia* 1-5-flora. *Flores* pauci, in statu fructifero nutantes; pedicelli quam flores breviores. *Calyx* externe hirsutus, interdum area circa valvas capsulae glabra; tubus obconicus, 1-1.5mm longus, laciniae oblongae ad triangulares apice acuto,  $2-3(-5) \times 1.25-2.5$ mm; appendix obscura, usque ad 0.5mm longa; sinus rotundatus, breviter recurvatus. *Corolla* lazulina vel pallide violacea, tubuloso-campanulata, 6-10mm longa, externe sparsim hirsuta, interne glabra; lobi oblongi,  $3-6 \times 1.5$ mm, obtusi, quam tubus, 2-3-plo breviores. *Stamina* 6-8mm longa; anthera lineares, filamentum  $\pm$  aequantes; filamentum anguste triangulare, versus apicem longe attenuatum et lineare, margine inferne ciliato. *Stylus* quam corolla sesquialongior, post anthesin exsertus, versus stigma trilobatum crassior. *Capsula* nutans, hemisphaerica, valvis tribus basilaribus dehiscens; valvae glabrae vel hirsutae. *Semina* ellipsoidea, pallide brunnea, c.0.6mm longa.

Chasmophytic, laxly caespitose, somewhat woody-based herb. *Stems* several, slender, up to 15cm long, somewhat branched below, hirsute or sometimes scabrous, becoming glabrous and white with age. *Leaves* narrowly obovate to elliptic, tip acute, margin remotely dentate-crenate with 5-8 obscure teeth, base attenuate, shortly petiolate below, sessile above,  $3-28 \times 1-5(-8)$ mm, smaller above, glabrescent to hirsute, sometimes with bulbous-based hairs on margin. *Inflorescence* 1-5-flowered. *Flowers* nodding in fruit, pedicels shorter than flowers. *Calyx* hirsute externally, sometimes area of capsule valves glabrous; tube obconical, 1-1.5mm long; laciniae oblong to triangular, tip acute,  $2-3(-5) \times 1.25-2.5$ mm; appendage obscure, to 0.5mm, sinus rounded, shortly recurved. *Corolla* bright blue to pale violet, tubular-campanulate, 6-10mm long, sparsely hirsute externally, glabrous within; lobes, oblong, obtuse,  $3-6 \text{ mm} \times 1.5 \text{ mm}$ , one-third to one-half as long as tube. *Stamens* 6-8 long; anthers linear,  $\pm$  as long as filament; filaments narrowly triangular, long attenuate, linear above, margin ciliate below. *Style* 1.5  $\times$  as long as corolla, exserted after anthesis, becoming thickened towards the trilobed stigma. *Capsule* nodding, hemispherical, dehiscing by 3 basilar valves; valves glabrous or hirsute. *Seeds* ellipsoidal, pale brown, c.0.6mm long.

\* Dept of Zoology, University of Durham, Durham.



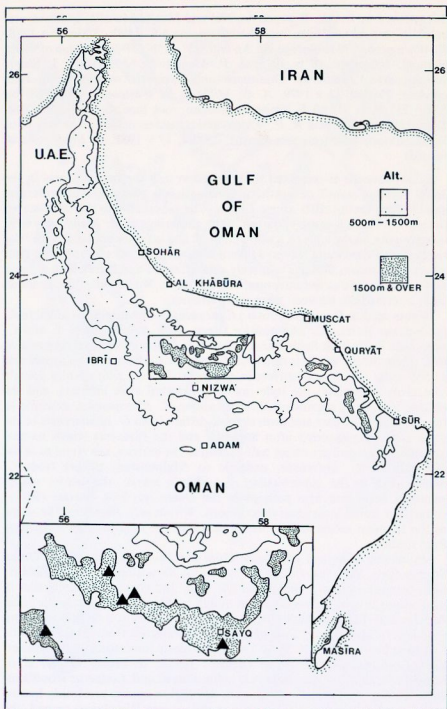
FIG. 1. *Campanula akhdarensis*: a, habit  $\times 3$ ; b, flower  $\times 4$ . c, d & e, anthers: c, *C. akhdarensis*  $\times 4$ ; d, *C. incanescens*  $\times 5$ ; e, *C. polyclada*  $\times 4$ .

SULTANATE OF OMAN. Between An Nid and Masjid Mu'allā, in horizontal crack in vertical rockface, very shaded, facing NE, 1400–1500m, 4 x 1978, *R. Whitcombe* 379 (holotype E); An Nid, 23° 13' N 57° 19' E, edge of water channel, 800–900m, 9 iv 1975, *J. P. Mandaville* 6395 (BM); *J. Kawr*, summit area, *Juniperus*, *Dodonaea* and *Sageretia* woodland, in rock crevices, 2900m, 22 x 1979, *A. G. Miller & R. Whitcombe* 2788 (E); Nr Sayq, 23° 04' N 57° 40' E, limestone plateau, rock face above pool, 1900m, 28 vii 1980, *P. Boyles & R. P. Whitcombe* (visual record); *J. Akhdar*, W of Wadi Sahtan, limestone escarpment, 2000m, 17 v 1982, *P. Boyles* (visual record).

*C. akhdarensis* is restricted to Jabal Kawr and the highest areas in the Jabal Akhdar massif of northern Oman. It is a chasmophyte preferring shady north-facing cliffs above 1400m. The mountains in this area are all limestone. There is some variation in the gatherings cited: *Mandaville* 6395 was growing on the edge of a water channel and is rather etiolated with relatively large flowers and leaves; *Miller & Whitcombe* 2788 was collected after a very dry season, and has relatively small flowers and leaves with a dense and rather scabrous indumentum; the holotype, *Whitcombe* 379, is somewhat intermediate between these two extremes.

Within section *Rupestres* (Boiss.) Charadze, *C. akhdarensis* is allied to *C. incanescens* Boiss., *C. khorasanica* (Rech. f. & Aellen) Rech. f. and *C. polyclada* Rech. f. & Schimann-Czeika. It is probably most closely related to *C. incanescens* which is distributed from the Caucasus to the mountains of SW Iran: this species differs in the larger flowers with corolla densely tomentose externally, the style not long exerted after anthesis, and the oblong filaments, narrowing abruptly above. *C. khorasanica*, endemic to the mountains of east and central Iran, differs from *C. akhdarensis* in the style, (not long exerted after anthesis) and the filaments which narrow abruptly above and are about half as long as the anthers, not equal as in the new species. *C. polyclada*, endemic to Afghanistan, differs from *C. akhdarensis* in the suborbicular, not elliptic leaves, the dense, many-stemmed habit and also perhaps in the cream not blue flowers (flower colour not stated in original description). Within sect. *Rupestres* the shape of the filament seems to be a useful character, at least in separating these four species.

*Mandaville* (Plants in *The Oman Flora and Fauna Survey* 1975. *J. Oman Studies Spec. Rep.* No. 1: 253, 1977) recently drew attention to the floristic links between northern Oman and SW Iran, and also to the similarities in the composition of the vegetation at middle and higher altitudes in the Jabal Akhdar and that at altitudes between 800 and 1300m in E Afghanistan and the western Himalayas. Two of the plants collected from Arabia for the first time by one of us (*R. P. W.*) are particularly interesting in this respect. First *Leptorhabdos parviflora* (Benth.) Benth. (N-facing ravine, E of Masjid Mu'allā, in *Olea*, *Reptonia* [*Monothea*] and *Juniperus* woodland, 2000–2200m, 6 x 1978, *R. Whitcombe* 418 (E)), a species previously known only from NE Iran and Afghanistan to the western Himalayas; second, the Himalayan *Plectranthus rugosus* [Wall. ex] Benth. (Masjid Mu'allā, 1900m, 4 x 1978, *R. Whitcombe* 390 (E)), with its closest station to Arabia in NW Pakistan (Hedge, I. C. in *Notes RBG Edinb.* 40: 68–69, 1982). These

FIG. 2 Distribution of *C. akhdarensis* ▲.

two species occur in both areas in similar communities dominated by *Monothea (Reptonia) buxifolia* (Falconer) A. DC, *Sageretia thea* (Osbeck) M. C. Johnst., *Olea europaea* L.s.l., *Dodonaea viscosa* Jacq. and *Heteropogon contortus* (L.) Beauv.

Mandaville (op. cit.) did not record *Campanula akhdarensis* from Jabal Aswad in the eastern Hajar, though major components (e.g. *Monothea*, *Olea*, *Sageretia*, *Dodonaea*) of the Jabal Akhdar vegetation do occur there (at approx 2,000m). Other Jabal Akhdar species, such as the *Juniperus*, however, have not been found there and it is possible that *C. akhdarensis* is absent too, perhaps because of the isolation and greater aridity of Jabal Aswad.

We would like to thank Jenny Ryrie for the illustration and Dr Robert Mill for checking the Latin description. R. Whitcombe was employed by the Oman Ministry of Agriculture & Fisheries when the *Campanula* collections were made and then financed at Durham University by the Shell International Petroleum Company; both are gratefully acknowledged.