

A NEW SPECIES OF CAMPANULA FROM KURDISTAN, WEST OF IRAN

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Campanula kurdistanica is described as a new species. It has been collected from Kurdistan province on north to north-west slopes of Shahoo Mountain on shady cliffs and rocks crevices. *Campanula kurdistanica* differs from its relative species in Iran mainly by deeply divided lobes of corolla about $\frac{3}{4}$ of its length. It is illustrated and differences from its relatives are discussed.

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Key words: *Campanula kurdistanica*; Section *Saxicolae*; new species; Kurdistan; Iran

گونه جدید *Campanula kurdistanica* (خانواده گل استکانی) از کردستان، ایران

محفوظ ادوایی، کارشناسی ارشد سیستماتیک گیاهی از دانشگاه شهرکرد.

حسین معروفی، عضو هیئت علمی مرکز تحقیقات کشاورزی و منابع طبیعی استان کردستان.

گونه *Campanula kurdistanica* به عنوان گونه جدید برای علم گیاهشناسی از غرب ایران، استان کردستان، جهات شمالی تا شمال غربی کوه شاهو معرفی می گردد. این گونه متعلق به زیرجنس *Campanula* و بخش *Saxicola* می باشد. از این بخش در ایران تعداد ۱۰ گونه که تعداد ۸ گونه از آنها انحصاری ایران هستند یافت می شود. این گونه از محتمل ترین خویشاوند خود *C. cymbalaria* با داشتن صفاتی تفکیک می گردد. ساقه به طول تا ۱۱ سانتیمتر، در حالیکه طول ساقه در گونه *C. cymbalaria* ۱۰ تا ۳۰ و به ندرت تا ۴۰ سانتیمتر می باشد. لوبهای کاسه گل در *C. kurdistanica* به طول ۱/۵ میلیمتر، ولی در گونه *C. cymbalaria* طول لوبهای کاسه ۳ تا ۶ و بعضاً تا ۱۰ میلیمتر می باشد. در *C. kurdistanica* طول جام ۴/۵ تا ۹ میلیمتر و جام در حدود سه چهارم طول بریده شده است ولی در گونه *C. cymbalaria* طول جام ۱۰ میلیمتر و یک سوم تا یک دوم طول جام بریده شده است. گونه *C. cymbalaria* در ترکیه و لبنان رویش دارد. گونه جدید همچنین با گونه های موجود در ایران شامل *C. hermanningii*, *C. escalerae*, *C. perpusilla* و *C. humillima* و خویشاوندی و تشابه دارد با این تفاوت که با داشتن جام گل استکانی پهن و چرخه ای و نیز خامه غیر بیرون زده از جام با گونه *C. perpusilla* و همچنین با داشتن دمگل بدون کرک و لوبهای کاسه کم و بیش هم اندازه با لوله جام و یا اندکی بلندتر از لوله با گونه *C. escalerae* تفاوت دارد.

INTRODUCTION

The genus *Campanula* L. includes approximately 500 species throughout the world, which are distributed in temperate and subtropical zones of the northern hemisphere (Lammers 2007). The center of diversity is in the Mediterranean Region extending to the East Caucasus. Endemic species are particularly concentrated in the eastern Mediterranean Region, the Balkan Peninsula, the Caucasus and Turkey (Borsch et al. 2009; Khansari & al. 2012).

The genus *Campanula* is represented with 5 subgenera, *Campanula*, *Megalocalyx* Damboldt, *Sicyodon* (Free) Damboldt, *Brachycodonia* (Fed.)

Damboldt, and *Rapunculus* (Four.) Charadze., in Flora of Iran (Aghabeigi F. 2010). The subgenus *Campanula* is represented by 9 sections and 32 taxa, subgenus *Megalocalyx* is represented by 3 taxa (species), subgenus *Sicyodon* with 1 species, subgenus *Brachycodonia* by 1 species and subgenus *Rapunculus* with 1 section and 8 taxa in Iran (Aghabeigi 2010). By adding this new species, the number of *Campanula* taxa reaches 46 taxa in Iran and about 14 of them are endemics.

During identification of recently collected plant materials of Campanulaceae from Shahoo Mountain an interesting *Campanula* specimen was observed and

identified as new species.

The aim of this paper is to describe the new species and to compare it with its close relatives.

MATERIALS AND METHODS

The plant specimens collected from north to northwest slopes of Shahoo Mountain in Kurdistan province were studied and identified according to classic methods in taxonomy using identification keys and descriptions in different floras. The materials are deposited in herbarium of Research Center of Agricultural and Natural Resources of Kurdistan Province (HKS) and TARI.

RESULTS

New species

Campanula kurdistanica Advay & Maroofi, sp. nov. (figs. 1 & 2).

Plant tufted perennial, glabrous, prostrate, much branched from the base, up to 11 cm tall, slender, fragile. Radical leaves crowded in rosette, variably shaped including reniform, cordate, orbicular, ovate or rarely triangular, with cordate to reniform base, at the margin mainly with 5-7 angular teeth or subentire to entire, 4-10 mm long and 4-15 mm wide, acute, obtuse or rounded at the tip; petioles thin, 1.5- 4.8 cm long; cauline leaves \pm similar to the basal leaves, smaller, 3-6 \times 3-7 mm, acute; petioles 1-11 mm long. Flowers in lax axillary inflorescence, 1-6 in number, on minute thin bracteolate pedicels. Calyx without appendage, 2-4 mm long; lobes 1.5 mm long and 0.9 mm broad, subulate to triangular, acute; calyx tube 1.1-3 mm long. Corolla broadly campanulate-rotate, white or lilac-pinkish or blue to violet, 4.5-9 mm long, divided about $\frac{3}{4}$, 5- or rarely 7 lobed, glabrous; tube 1.5-2.5 mm long; lobes 4-6.5 mm long, lanceolate, acute, patent, glabrous, initially white, at maturity become blue or violet, in dried material mainly creamy. Stamens 3-5.5 mm; filaments white, 0.5-1.5 mm long, densely hairy at

base; anthers white, 2.5-4 mm long. Style not exerted, equal or slightly shorter than corolla, 6-7 mm long, covered by dense purple papilla. Stigmas 3, 0.7 mm long. Capsule globose, 3-4 \times 4-4.5 mm. Seeds narrowly ellipsoid to oblong, 0.7 mm long, brown, shiny.

Typus: Kurdistan: Marivan to Paveh, north to northwest slopes of Shahoo Mountain, 1800-3000 m, 06. 06. 2014, Advay 12447. (holotypus Kurdistan herbarium HKS; isotypus TARI).

Distribution and ecology: *Campanula kurdistanica* grows on limestone cervices of shady cliffs at 1800–3000 m above sea level, in Shahoo Mountain, west of Iran. Endemic.

Flowering time: May-June.

DISCUSSIONS

The new species "*Campanula kurdistanica*" belongs to sect. *Saxicolae* (Boiss.) Charadze. in subgenus *Campanula*. Section *Saxicolae* is represented by 10 species 8 of which (except *C. conferta* A. DC. and *C. strigosa* Banks & Soland.) are endemic to Iran. *Campanula kurdistanica* seems to be closely related to *C. cymbalaria* Sm. from Turkey and Lebanon, but differs from it by having the stem up to 11 cm long (not 10-30(-40) cm), calyx lobes up to 1.5 mm long (not 3-6(-10) mm), corolla 4.5-9 mm long (not 10 mm long), divided about $\frac{3}{4}$ (not $\frac{1}{3}$ - $\frac{1}{2}$).

The new species is also related to Iranian species *Campanula perpusilla* DC., *C. escalerae* Rech. f. & Schiman-Czeika, *C. hermannii* Rech. f. and *C. humillima* DC., but differs from *C. perpusilla* by broadly campanulate-rotate corolla and style not exerted (not tubular corolla and exerted style), differs from *C. escalerae* by glabrous pedicel and calyx lobes \pm equal to tube or lobes slightly longer than tube (not pedicel hairy-papillose and calyx lobes two times longer than tube). The main different characters among the new species and other two related species *C. hermannii* and *C. humillima* are shown in table 1.

Table 1. Comparison of morphological characters of *Campanula kurdistanica* with two related species.

taxa	<i>Campanula kurdistanica</i>	<i>C. hermannii</i>	<i>C. humillima</i>
characters			
stem length (cm)	up to 11	2-3	up to 8
basal leaves size (mm)	4-10 \times 4-15	5 \times 5	8 \times 4-5
calyx length (mm)	2-4	5	2-4
calyx lobes length (mm)	1.5	about 3	1.5
corolla shape	broadly campanulate-rotate	campanulate	narrow infundibular
corolla length (mm)	4.5-9	6	4
calyx length/corolla length	about $\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{2}$
corolla tube length (mm)	1.5-2.5	about 2	up to 1.3
corolla lobes length (mm)	4-6.5	1.5	about 1.5
style position	not exerted	slightly exerted	equal to exerted

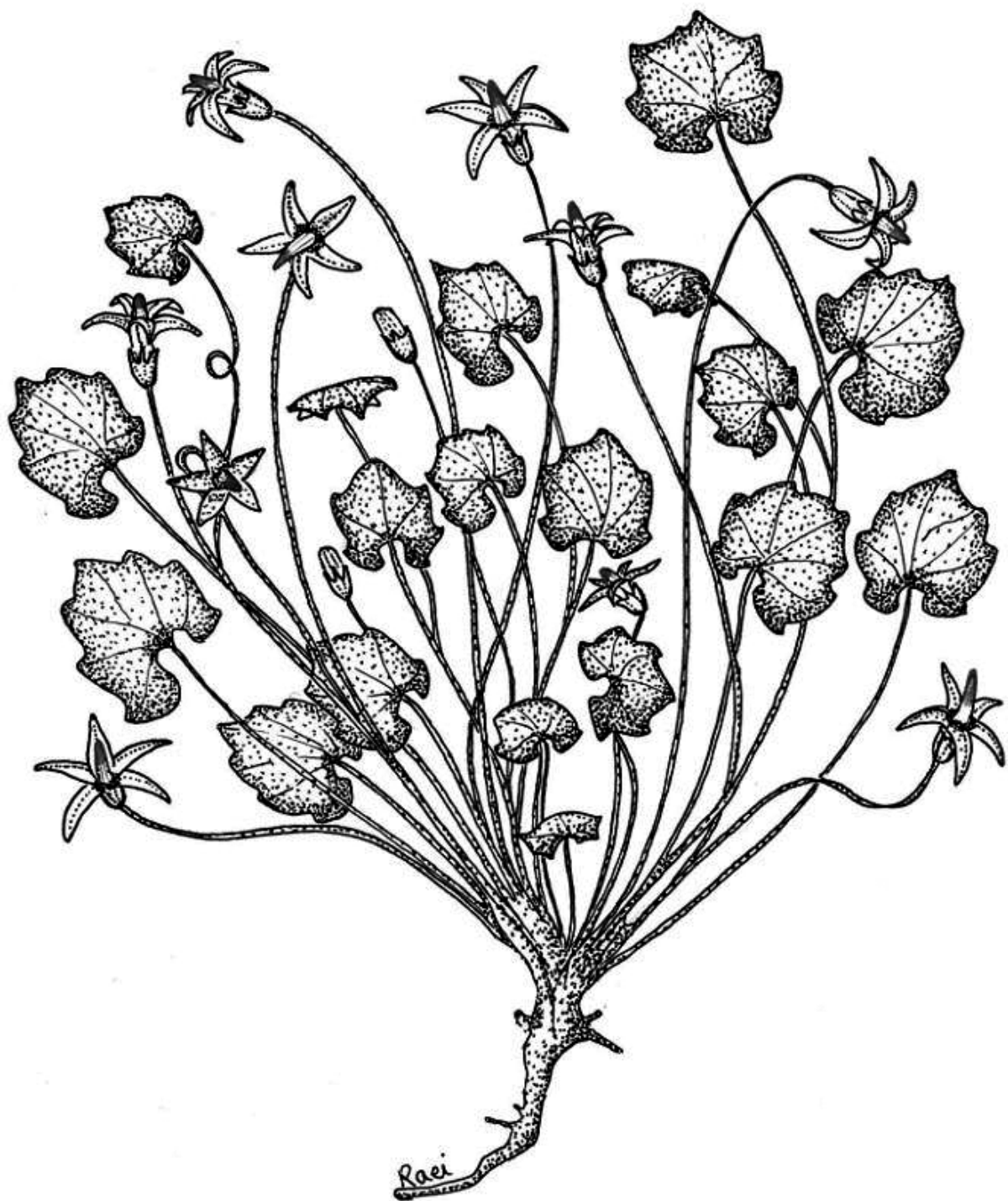


Fig. 1. *Campanula kurdistanica* (x2).



Fig. 2. *Campanula kurdistanica* (photo taken by H. Maroofi in natural habitat of the species).

REFERENCES

- Aghabeigi, F. & Assadi, M. 2008: The genus *Campanula* (Campanulaceae) in Iran.- *Edinb. J. Bot.* 65 (3): 375-385.
- Aghabeigi, F. 2010: *Campanula* in Assadi, M. et al. *Flora of Iran* no. 66, pp. 5-75., Research Institute of Forests and Rangelands publication.- Tehran.
- Damboldt, J. 1978: *Campanula* L. in Davis, PH, (ed.) *Flora of Turkey and the East Aegean Islands*, vol 6, pp. 2-64.- Edinburgh.
- Khansari E, Zarre S, Alizadeh K, Attar F, Aghabeigi F, Salmaki Y 2012: Pollen morphology of *Campanula* (Campanulaceae) and allied genera in Iran with special focus on its systematic implication.- *Flora* 207: 203-211.
- Rechinger K, H. & Schimann Czeika H. 1965: *Campanula* L. in: Rechinger, K H, Schimann Czeika H. (eds.) *Flora Iranica*, no. 13, pp. 7-38.- Graz.