

Fernando Lucchese

***Campanula reatina*, a new species restricted to some cliffs in the Sabina area (Lazio, central Italy)**

Abstract

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Campanula reatina, a new species of the "garganica" group, is described and illustrated. Quite distinct characters makes it unique relatively to other species in the group. Ecological and systematic comments are discussed.

Introduction

The Italian rupicolous, isophyllous *Campanula* species belong to two different groups: the "fragilis" group (*C. isophylla* Moretti from Liguria and *C. fragilis* Cyr., with two subspecies, found from Abruzzo to Calabria) and the "garganica" group (*C. garganica* Ten. from Apulia, *C. elatinoidea* Moretti of the southeastern Alps in Lombardia, and *C. elatines* L. of the western Alps in Piedmont). All these species are Italian endemics and all grow on limestone, except *C. elatines* L. that is found on siliceous rocks (Damboldt 1965; Pignatti 1982; see also De Candolle 1830).

During our study of central Italian rupicolous vegetation we discovered isolated and localized populations of an isophyllous *Campanula*, that was clearly different from the other isophyllous species known to date. Having compared our specimens with material from the herbaria of Geneva (G), Florence (FI) and Rome (RO), we had to conclude that they belong to a species new to science.

Campanula reatina Lucchese, sp. nova — Holotypus: Latium, Rieti Province, Turano Valley, rocky crevices near Casale Fiocca, 20 June 1992, F. Lucchese (RO); isotypes: FI, G, K, PAL. — Fig. 1.

Reatina appellatur e Reate (Rieti), urbe insigni et antiquissima in Sabina regione sita.

Planta perennis, glaberrima. *Caudex* lignosus (4-20 cm), simplex vel ramosus, vestigiis foliorum veterum persistentibus tectus, apice rosulatum foliatus. *Caules floriferi* 8-20 (-40) cm longi, 2-3 mm crassi, penduli vel recurvi, flexuosi, fragiles. *Folia rosularum* glabra et lucida, longe petiolata, petiolis (2-) 5 (-9) cm longis; lamina 1-2 (-4) cm longa, 1.5-2.5 (-4.5) cm lata, reniformis et obtuse crenata, lobis mucronatis, sinu basali lato. *Folia floralia* inferiora breviter petiolata, petiolis 1.5-2 cm longis, lamina 0.7-0.9 cm longa, 1.4-2 cm lata, reniformis vel cordiformis, basi cordata, margine subintegro,

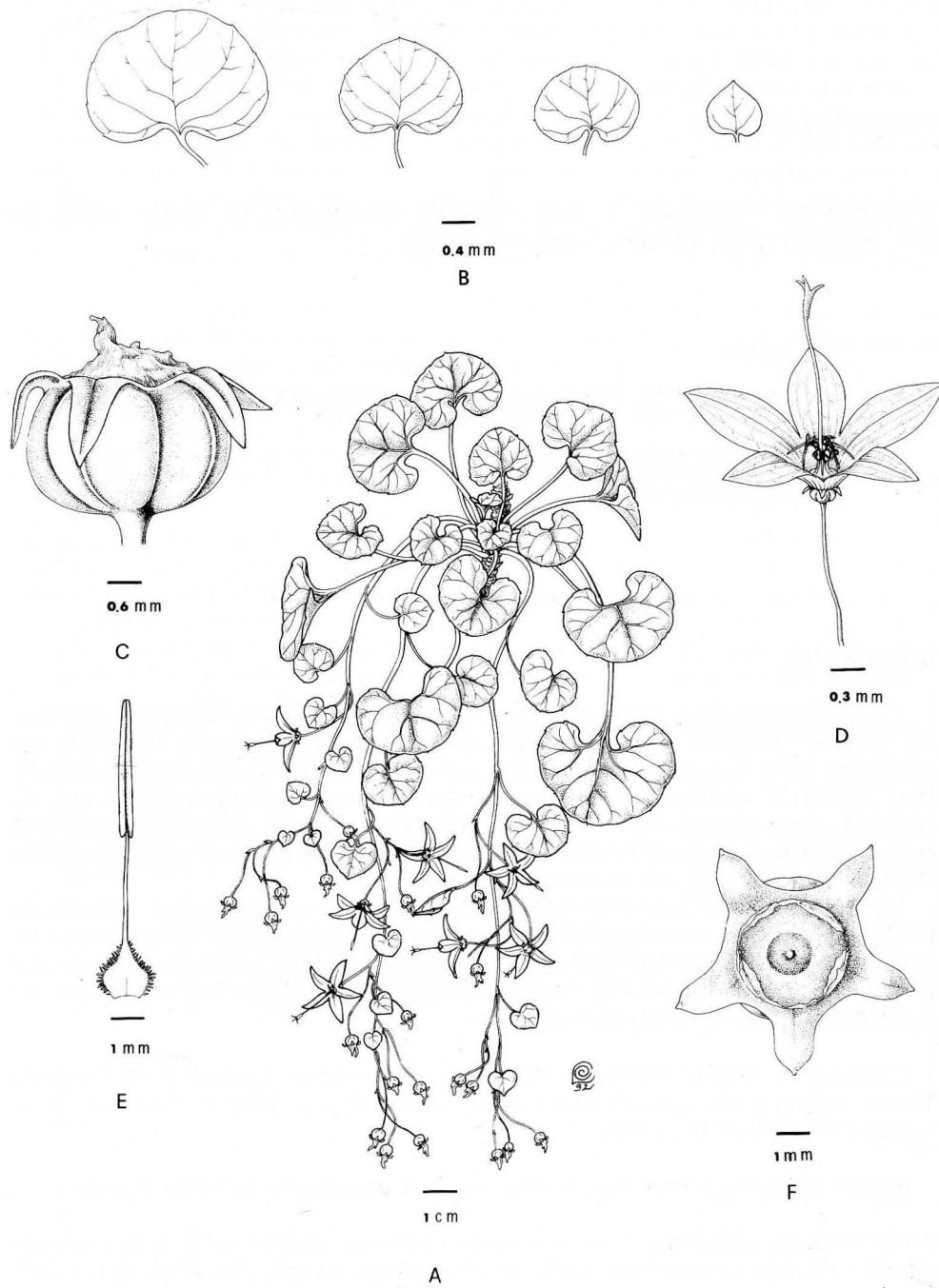


Fig. 1. *Campanula reatina*. A: Habit; B: Cauline leaves; C: Capsule; D: Flower; E: Stamen; F: Calyx-teeth.

superiora sensim decrescentia. *Inflorescentia* paniculata vel racemosa, plerumque 5-15 flora, ramulis 1-3 floris, axillaribus, filiformibus-flexuosis et bracteolatis. *Calycis* lobi lingulati, 1.5-2 mm longi et 0.7-1 mm lati, patentes, reflexi vel appressi. *Corolla* caerulea, glabra, late infundibuliformis, obconico-campanulata, usque ad 2/3 5-partita, 1-1.5 cm longa et 1.5-2 cm lata, lobis divaricatis, lanceolatis, 8-12 mm longis et 4-5 mm latis. *Ovarium* triloculare, stylus e corolla protrusus, 12-15 mm longus, stigma trilobum 1.5-2 mm longum. *Staminum* squamae angulatae 1.5 mm x 1.2 mm, margine ciliis obtusis 0.2-0.3 mm; filamentum 2.5-3 mm longum; antherae caeruleae, 3.5-4 mm longae. *Capsula* trilocularis, valvis basalibus non dehiscentibus, 2-2.5 mm longa et (2.5-) 3-3.5 (-4) mm lata. *Semina* lucida brunnea, elliptico-oblonga, 0.5 mm longa et 0.3 mm lata.

Description

Plant glabrous, perennial. Woody stem (4-20 cm), covered with the remains of persistent foliar petioles, simple or branched, each branch ending in a rosette of leaves and bearing 2-6 floriferous axillary, fragile, pendulous or recurved stems 8-20 (-40) cm long and 2-3 mm thick. Basal *leaves* glabrous and shiny, somewhat fleshy, with a petiole (2-) 5 (-9) cm long; lamina 1-2 (-4) cm long and 1.5-2.5 (-4.5) cm wide, reniform, with obtusely 5-6 crenate margins, the crenations weakly mucronate at the tip or also in the incisions; or on other plants lamina cordate, with more acutely crenate margins; basal sinus wide. Cauline *leaves* similar to the basal ones, but with a more rounded, reniform to cordate lamina, the lower ones with a petiole 1.5-2 cm and lamina 0.7-0.9 x 1.4-2 cm, gradually decreasing upwardly and bracteiform towards the apex of the leafy inflorescence. *Inflorescence* a narrow panicle or a raceme with 5-15 flowers, with simple pedicels or branched peduncles arising from the leaf axil, each bearing 1-2 bracteoles and 1-3 flowers. *Calyx-teeth* lingulate, mucronate, 1.5-2 mm long, 0.7-1 mm wide, patent to reflexed. *Corolla* blue, rarely white, 1-1.5 cm long, 1.5-2 cm in diameter, broadly funnel-shaped, with a short (2.5-3.5 mm), obconical tube, ciliate inside at the base, and divided for 2/3 of its length into 5 patent, lanceolate, oneveined, glabrous, acute lobes 8-12 mm long and 4-5 mm wide, somewhat narrowed at the base. *Style* exerted, 12-15 mm long, pale violet with 3 (rarely 2) stigmas, 1.5-2 mm long. *Stamens* 5; filament base widened, angular 1.5 x 1.2 mm, fringed with obtuse cilia 0.2-0.3 mm long; whole filaments 2.5-3 mm long; anthers 3.5-4 mm long; pollen blue. *Capsule* globose, glabrous, trilocular (rarely 2- or 5-locular), with 5 ribs, 2-2.5 mm long and (2.5-) 3-3.5 (-4) mm wide, not dehiscing by pores. *Seeds* brown, shiny, ovoid, mucronate, 0.5 mm long and 0.3 mm wide.

The chromosome number ascertained for *C. reatina* on root tips in cultivated plants is $2n = 34$; two B chromosomes were also observed (Fig. 2).

Flowering: June-July in limestone rock crevices in the Turano and Salto Valleys near Rieti.

The characters that clearly distinguish *Campanula reatina* from other isophyllous bell-flowers, and in particular from *C. garganica*, are:

— Small, tongue-shaped calyx teeth, that are shorter than the capsule or equalling. In *C. garganica* they are linear-subulate with lance-shaped points, 5-6 mm longer, i.e. longer than the capsule and equal to half of the corolla length ("corolla dimidio brevioribus.."—Tenore, 1824-1829).

— Basal leaves cordate with mucronate crenation tips. The shape of the lamina is variable: heart-shaped and acutely crenate forms with a narrow sinus occur alongside with typically reniform ones with obtuse crenations and a wide sinus, within one and the same

population or even on the same individual plant. Similar variation is observed in other bell-flowers, particularly in *C. garganica*. Cauline leaves reniform or cordate, their margin subentire to weakly crenate. In *C. garganica* the margin is dentate-serrate in both basal and cauline leaves.

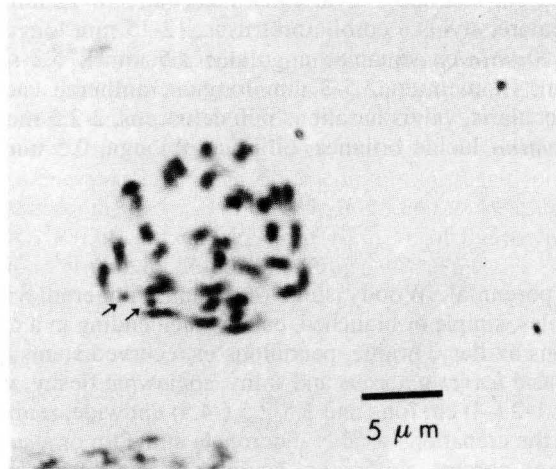


Fig. 2. Mitotic metaphase plate of *Campanula reatina* ($2n = 34$); B chromosomes indicated by arrows.

— Plants always glabrous, shiny. Glabrous and hairy plants occur in *C. fragilis* and in *C. garganica*.

— Corolla segments with a single median main vein, but three-veined in *C. garganica*.

— Ring of hairs inside the corolla base.

— Base of filament pentagonal in outline; cilia obtuse as in *C. garganica*, but longer.

— Pollen blue (yellow in *C. garganica*).

Specimens seen — Lazio (Rieti): Valle del Turano, sulle rupi presso Casale Fiocca, 20.6.1992, F. Lucchese (RO, FI, G, K, PAL; type); Valle del Turano, Casale Bruciato, 20.6.1992, F. Lucchese (RO); Valle del Turano, Grotte Celanti, 4.7.1992, F. Lucchese (RO); Valle del Turano, sotto Le Grotte, 7.6.1993, F. Lucchese (RO); Valle del Salto, Ponte Figureto, 27.6.1992, F. Lucchese (RO); Valle del Salto, Fosso Pozzera, 19.6.1992, F. Lucchese (RO); Valle del Salto, km 8 tra P. Figureto e Grotti, 29.6.1992, F. Lucchese (RO); Valle del Salto, Fosso Dannote, 19.6.1992, F. Lucchese (RO); F. Salto tra Cenciara e Rieti, 8.6.1901, Pappi (RO).

Distribution and ecology

Campanula reatina was searched for over a large part of the Reatino basin, but was found only in two limited areas of the Turano and Salto Valleys, just before they open into the Reatino plain (Fig. 3). This area was visited by Pappi in 1901 and Montelucci in 1953, with members of Italian Botanical Society, who reported only few species from rocky vegetation, without mentioning any *Campanula* species (Montelucci 1960). Our

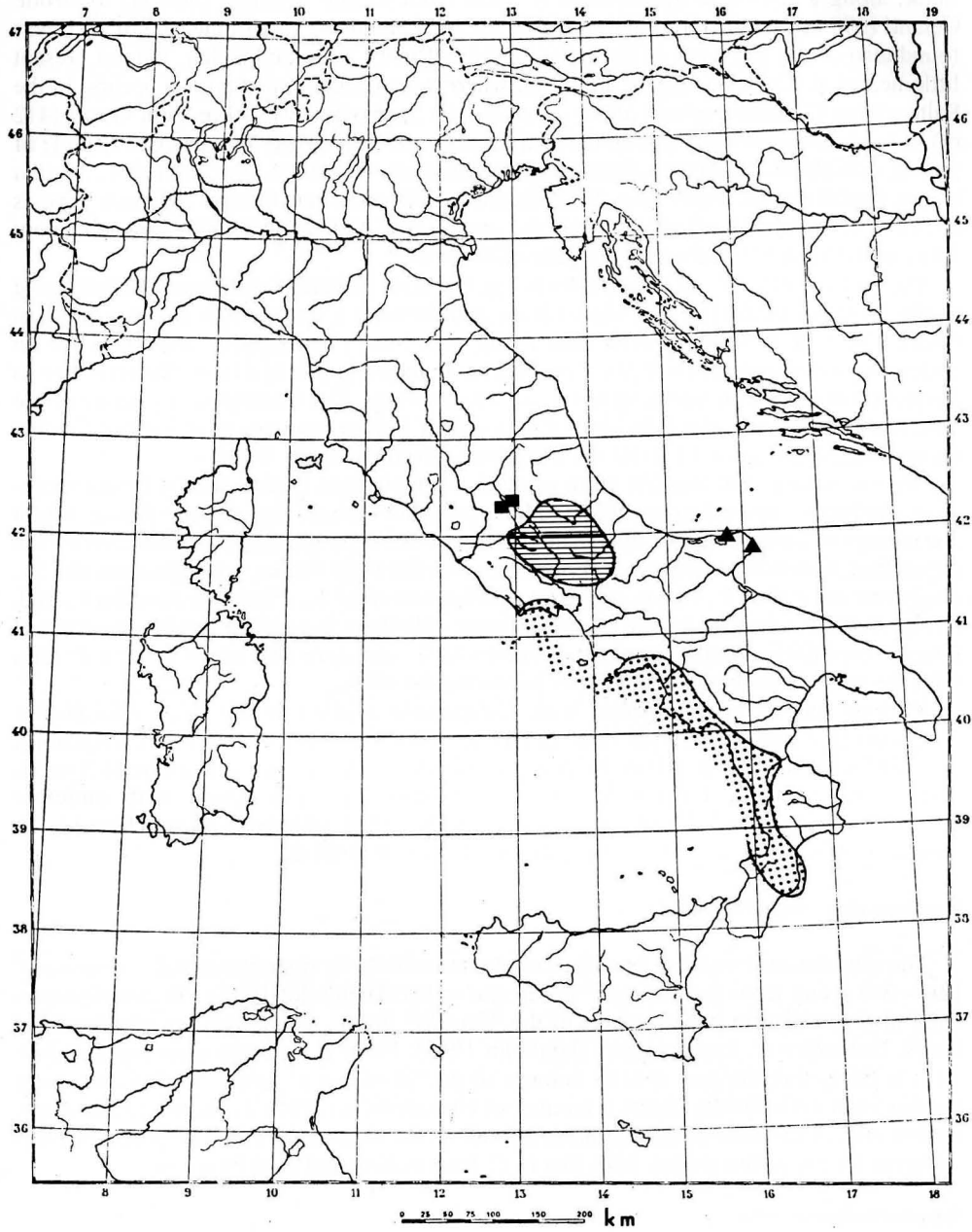


Fig. 3. Distribution of ■ *Campanula reatina* and (after Pignatti, 1982) of: ≡ *C. fragilis* subsp. *fragilis*; ⋯ *C. fragilis* subsp. *cavolinii*; ▲ *C. garganica*.

search was hindered by the dense vegetation covering the steep slopes, making access to the cliffs difficult and dangerous. In the Turano valley *C. reatina* is found on the right flank, along a stretch of approximately 5 km from Casale Bruciato (400 m) to Grotte Celanti (399 m), on the cliffs that overlook the road and up to an altitude of 550 m. It was found also on the left flank of the valley in the cliffs of Le Grotte locality, but not present little nearer at Colle S. Angelo at 500 m, where only *Campanula tanfanii* occurs. In the Salto valley *C. reatina* grows along a stretch of a approximately 4 km from Grotti (412 m) to Ponte Figureto (404 m), on the cliffs that overlook the road and up to an altitude of 530 m, a fairly neat, perhaps climatically conditioned, altitudinal limit. Indeed *C. reatina* is not found on the cliffs near Ville Grotti at 600 m, even though the rock type is identical. On the left flank of the valley the species was detected at a single location, about 1 km from Ponte Figureto, at an altitude of 406 m.

The rock on which *C. reatina* grows is a polygenous cemented conglomerate belonging to the Pliocene lacustrine deposits of Rieti and forming a narrow belt running north to south. The rock is highly porous and, along with local clay deposits and thanks to an underlying calcareous marle layer, they form an abundant hydric reservoir that gives rise to frequent wet spots with thickling water and small springs. The heterogeneous nature of the rock has also favoured the formation of humid, half-hidden grottoes, a habitat that favours the growth of this species hanging in dense tufts from the shady walls.

The two valleys run roughly north to south but their right flanks, mainly facing southwest, are better exposed to sunlight and have a milder climate than the left flanks, which are subject to more frequent frost. The difference between the flanks is reflected by the vegetation. Extended evergreen oak forests cover the right flanks, with *Quercus ilex* L., *Juniperus oxycedrus* L. subsp. *oxycedrus*, *Viburnum tinus* L., *Phillyrea latifolia* L. and, rarely, *Arbutus unedo* L., while on the opposite side there is a mixed forest consisting of *Ostrya carpinifolia* Scop., *Carpinus orientalis* Mill. and *Acer obtusatum* Waldst. & Kit., with the most thermophile components bordering the cliffs.

Various species grow together with *Campanula reatina* on the cliffs: *Phagnalon sordidum* (L.) Reichenb., *Teucrium flavum* L., *Dianthus sylvestris* Wulf., *Campanula tanfanii* Podl., *Parietaria judaica* L., *Asperula aristata* L. fil. subsp. *scabra* (Presl) Nyman, *Adiantum capillus-veneris* L. (in more humid recesses), along with endemic thermophilous species such as *Galium aemicum* Biv. and *Cymbalaria pilosa* (Jacq.) L. H. Bailey, which in this area are found up to an altitude of 1000 m.

Systematic relationships

The chromosome number has been used successfully to distinguish the "garganica" ($2n = 34$) group from the "fragilis" group ($2n = 32$) (Damboldt 1965). B chromosomes were also recorded in two members of the "fragilis" group, *Campanula isophylla* and in the N. Dalmatien *C. fenestrellata* (Damboldt 1965). From the chromosome number $2n = 34$ it is likely that the new species belongs to the "garganica" group. With *Campanula garganica* it undoubtedly shares a number of characteristics, such as growth form, shape, obtuse cilia at the base of the filament, as well as the absence of capsular pores, but it is different for the pollen colour, blue, like in *C. fenestrellata* and *C. debarensis*.

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References

- Damboldt J. 1965: Zytotaxonomische Revision der isophyllen *Campanulae* in Europa. — Bot. Jb. **84**: 302-358.
- De Candolle A. L. 1830: Monographie des Campanules. — Paris.
- Montelucci G. 1960: Piante del territorio Cicolano (Lazio orientale-Abruzzo). — Nuovo Giorn. Bot. Ital., n.s., **67** (1-2): 342-356.
- Pignatti S. 1982: Flora d' Italia, **2**: 682. — Bologna.
- Tenore M. 1824-1829: Flora Napolitana, **2**: 203-204. — Napoli.

Address of the author:

Dr. F. Lucchese, Facoltà di Agraria, Università del Molise, via Cavour 50, I-86100 Campobasso.