Minuartia glomerata subsp. trichocalycina comb. & stat. nov. (Caryophyllaceae), a Central Apennine endemic

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Source: Willdenowia, 27(1/2) : 73-79

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: https://doi.org/10.3372/wi.27.2707

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Abstract

Conti, F.: *Minuartia glomerata* subsp. *trichocalycina* comb. & stat. nov. *(Caryophyllaceae)*, a Central Apennine endemic. – Willdenowia 27: 73–79. – ISSN 0511-9618.

Minuartia glomerata (s.l.) has systematically been studied and because of the considerable affinities found between subsp. *glomerata*, subsp. *macedonica* and the Abruzzo (Central Italy) population previously referred to as *M. trichocalycina*, this latter species is classified as a subspecies of *M. glomerata.* A description, distribution map and lectotypification of the basionym of *M. glomerata* subsp. *trichocalycina* as well as a key to the three subspecies are provided.

Introduction

Minuartia glomerata subsp. *trichocalycina* was discovered by Tenore and Gussone in Abruzzo (Central Italy) and described in Tenore (1835) as *Arenaria trichocalycina.* Subsequently, Cesati (1872) referred to it as *Alsine trichocalycina* and finally Grande (1912) as *Minuartia trichocalycina.*

Fiori (1923–25) considered it a variety of "*Alsine mucronata* L.", whereas Pignatti (1982) followed Grande (1912) and distinguished it from *Minuartia mutabilis* (*M. mucronata* auct. non L.) on the basis of the petal length, erroneously attributing to *M. trichocalycina* petals of less than half the sepal length and to *M. mutabilis* petals just shorter than the sepals. Grande (1912), however, correctly indicated that the petals of *M. trichocalycina* are just shorter, equal to, or longer than the sepals, and he also correctly described it as an annual, or exceptionally perennial species of grassy stony-calcareous areas. Having been interpreted in various ways in the past, its true identity has been obscured, apart from frequent misapplications of the name, by errors in describing its habitat and certain characters.

Whereas recently *Minuartia trichocalycina* has been recorded as a doubtful species by Greuter & al. (1984), it is sunken in the synonymy of *M. mutabilis* (Lapeyr.) Schinz & Thell. ex Becherer in "Flora europaea, ed. 2" (Halliday 1993; although not indicated in this edition, Halliday (pers. comm.) is only responsible for the account in the first edition but not for the changes in the second). Apart from that the taxon clearly differs from *M. mutabilis* in having glandular hairs and dense cymes, the treatment in "Flora europaea, ed. 2" is confusing: *M. trichocalycina* is nevertheless included in the key, as no. 21, but also indicated as no. 21, in the key, is *M. confusa*, a Greek endemic to which previously the name *M. trichocalycina* was misapplied and whose description actually corresponds to that number.

The confusion about the identity and the doubts existing about the distinctiveness of this taxon were the reasons for the present study.

Investigation of original material and other specimens of *Minuartia trichocalycina* and specimens from throughout the range of *M. glomerata* (M. Bieb.) Degen revealed that *M. trichocalycina* actually is very similar to *M. glomerata*, which is divided into two subspecies: subsp. *glomerata*, recorded from the Crimea, Ukraine, Turkey, Bulgaria, Romania, Greece, Albania?, Yugoslavia, Hungary and S Slovakia, and subsp. *macedonica* (Degen & Dörfl.) McNeill (= subsp. *velutina* (Boiss. & Orph.) Mattf.), recorded from Greece, Albania and a few localities in Romania, Bulgaria and Serbia near the border with Greece (Jalas & Suominen 1983).

Material and methods

Specimens of *Minuartia glomerata* s.l. from the herbaria B, CAME, FI, G, K, NAP, RO, and WU (herbarium abbreviations after Holmgren & al. 1990) were examined. The following floral characters were found to be most significant and measured in 81 specimens of *M. glomerata* s.l.:

1. number of flowers per cluster (choosing the most developed)
2. length of the lowermost pedicel
3. length of the uppermost pedicel
4. sepal length
5. sepal width
6. petal length
7. petal width
8. filament length
9. anther length
10. ratio sepal length to petal length
11. ratio petal length to petal width.

Only fully open flowers were chosen and the measurements were taken after soaking the flowers in water for a few minutes.

Results

The analysis of the above morphological features (Tab. 1) allows the recognition of three well distinct and geographically separated taxa. The presence of intermediate forms and the overlapping of some measurements means, as McNeill (1963) pointed out for subsp. *glomerata* and subsp. *macedonica*, that the most appropriate taxonomic rank is the subspecies. *M. glomerata* subsp. *velutina* (Boiss. & Orph.) Mattf. was found not to be distinct from subsp. *macedonica.*

The main differences are given in the key below. There are further differences in the axillary leaf fascicles of the main leaves, which are usually falcate in subsp. *macedonica* and in subsp. *trichocalycina*, but erect in subsp. *glomerata.* Nevertheless, occasionally falcate leaves can also occur in subsp. *glomerata.* The anther colour is yellow in subsp. *glomerata*, yellow or pink in subsp. *macedonica*, and red in subsp. *trichocalycina.*

Subsp. *macedonica* is perennial while subsp. *glomerata* is usually annual or biennial (McNeill 1963) as is also subsp. *trichocalycina.* Since occasionally occurring pauciennial individuals of subsp. *glomerata* and subsp. *trichocalycina* could cause confusion, this character has been omitted from the key.

Subsp. *glomerata* proved to be very variable. In particular, the petal length and the ratio between sepal and petal length as well as between petal length and width could be useful characters for separating two subpopulations of this subspecies: it seems that the specimens from the Crimea, Ukraine and Romania usually have longer petals (2.4–4.4 mm, mean 3.51 mm) than those from Hungary (1.2–3.3 mm, mean 2.33 mm); also the sepal to petal length ratio seems significantly different (1.52 in the former; 2.23 in the latter). Nevertheless, for the moment, pending further studies, no taxonomic rank is assigned to these subpopulations.

Tab. 1. Means, standard deviation and ranges (in parenthesis) for floral characters in *M. glomerata* (s.l.); dimensions in mm.

Features	subsp. *trichocalycina*	subsp. *glomerata*	subsp. *macedonica*
Number of flowers	18.87 ± 14.20 (5–50)	26.53 ± 18.55 (9–80)	6.15 ± 2.21 (3–10)
Lowermost floral pedicel length	3.47 ± 1.10 (1.5–5.8)	3.03 ± 1.47 (0.9–6.0)	4.69 ± 1.61 (2.4–8.6)
Uppermost floral pedicel length	1.17 ± 0.33 (0.4–2.0)	0.97 ± 0.22 (0.4–1.5)	2.06 ± 0.73 (1.0–4.5)
Sepal length	3.88 ± 0.51 (3.1–5.1)	4.89 ± 0.67 (3.3–6.8)	5.00 ± 0.57 (4.2–6.0)
Sepal width	0.96 ± 0.16 (0.8–1.3)	1.03 ± 0.14 (0.8–1.2)	1.16 ± 0.13 (0.9–1.4)
Petal length	3.20 ± 0.72 (2.2–4.8)	2.81 ± 0.75 (1.2–4.4)	4.24 ± 0.76 (3.1–5.6)
Petal width	1.27 ± 0.29 (0.7–1.8)	0.78 ± 0.16 (0.5–1.3)	1.34 ± 0.29 (0.9–2.0)
Filament length	2.36 ± 0.26 (1.9–2.9)	1.97 ± 0.57 (0.7–3.0)	3.17 ± 0.36 (2.8–4.0)
Anther length	0.46 ± 0.08 (0.3–0.6)	0.33 ± 0.09 (0.2–0.5)	0.65 ± 0.09 (0.5–0.7)
Sepal length/petal length	1.24 ± 0.17 (0.93–1.52)	1.86 ± 0.55 (1.10–3.75)	1.20 ± 0.17 (0.96–1.54)
Petal length/petal width	2.55 ± 0.43 (1.87–3.69)	3.66 ± 0.91 (2.22 ± 6.0)	3.22 ± 0.44 (2.38 ± 4.1)

Key to the subspecies

1. Sepals distinctly longer than petals (mean: 1.9×); cymes dense, terminal clusters with (9–)20–33(–80) flowers; sepals (3.3–)4.7–5.1(–6.8) mm; petals 3.4–4 times as long as wide . . . . . subsp. *glomerata*
– Sepals usually only slightly longer than petals (mean: 1.2×); petals 2.3–3.4 times as long as wide 2
2. Cymes dense, terminal clusters with (5–)11–26(–50) flowers; sepals (3.1–)3.7–4.1(–5.1) mm; petals 2.3–2.7 times as long as wide . . . . . subsp. *trichocalycina*
– Cymes lax, terminal clusters with (3–)5–7(–10) flowers; sepals (4.2–)4.7–5.3(–6) mm; petals 3–3.4 times times as long as wide . . . . . subsp. *macedonica*

Minuartia glomerata subsp. ***trichocalycina*** (Ten. & Guss.) F. Conti, **comb. & stat. nov.** – Fig. 1 ≡ *Arenaria trichocalycina* Ten. & Guss. in Tenore, Syll. Pl. Fl. Neapol., App. 4: 16. 1835 ≡ *Alsine trichocalycina* (Ten. & Guss.) Cesati, Piante Majella: 9. 1872 ≡ *Minuartia trichocalycina* (Ten. & Guss.) Grande in Bull. Soc. Bot. Ital. 1912: 179. 1912 ≡ *Alsine mucronata* var. *trichocalycina* (Ten. & Guss.) Fiori, Nuov. Fl. Ital. 1: 459. 1923. – Lectoypus (designated here): Piano di Cinquemiglia, presso la chiesa della Madonna della Portella, 24.7.1834, *Tenore & Gussone* (NAP!).

Ic: Tenore (1835–36: t. 237, fig. 3; the anthers are, however, red, not yellow as illustrated).

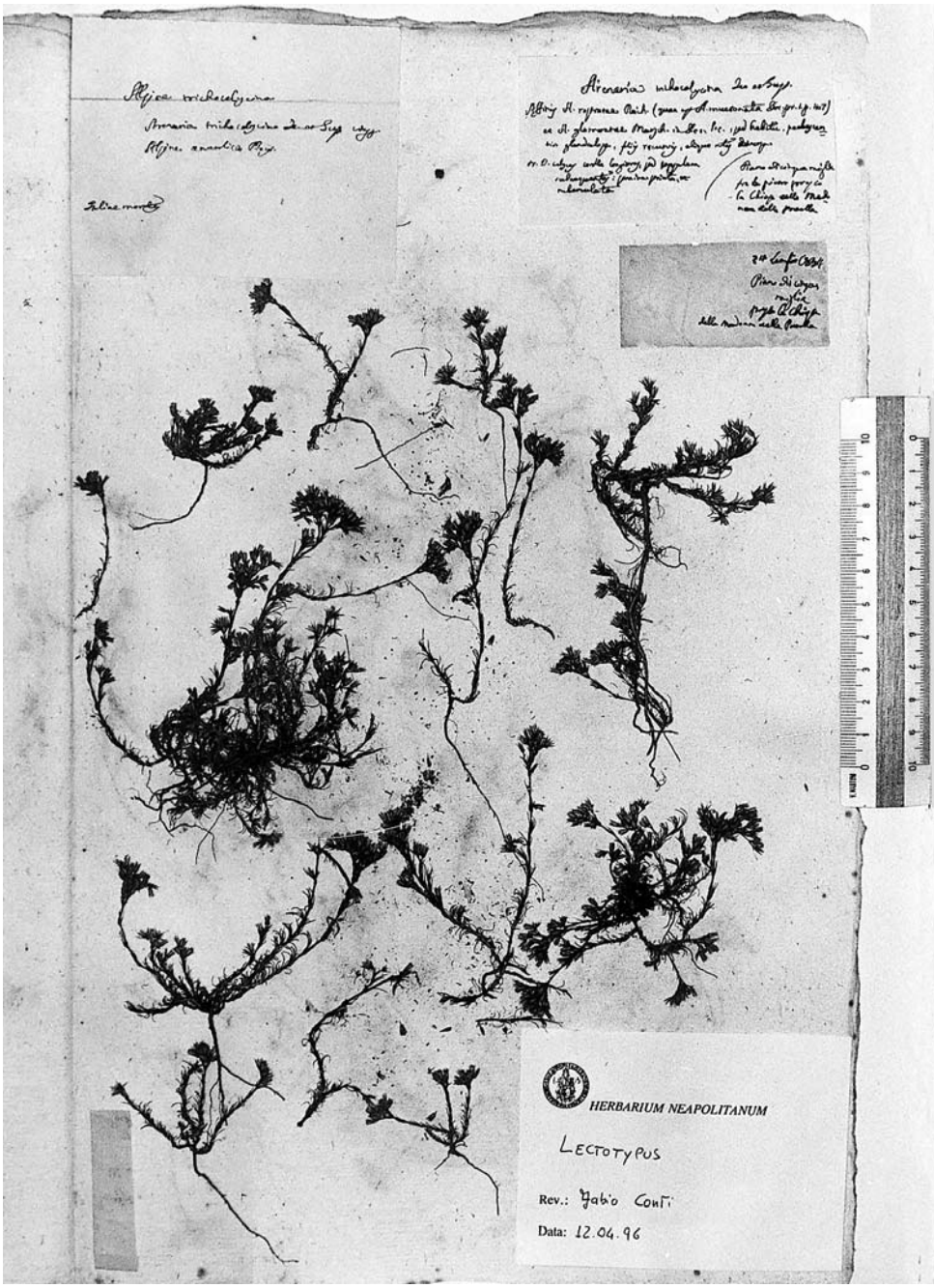

Fig. 1. *Minuartia glomerata* subsp. *trichocalycina* (lectotype, NAP).

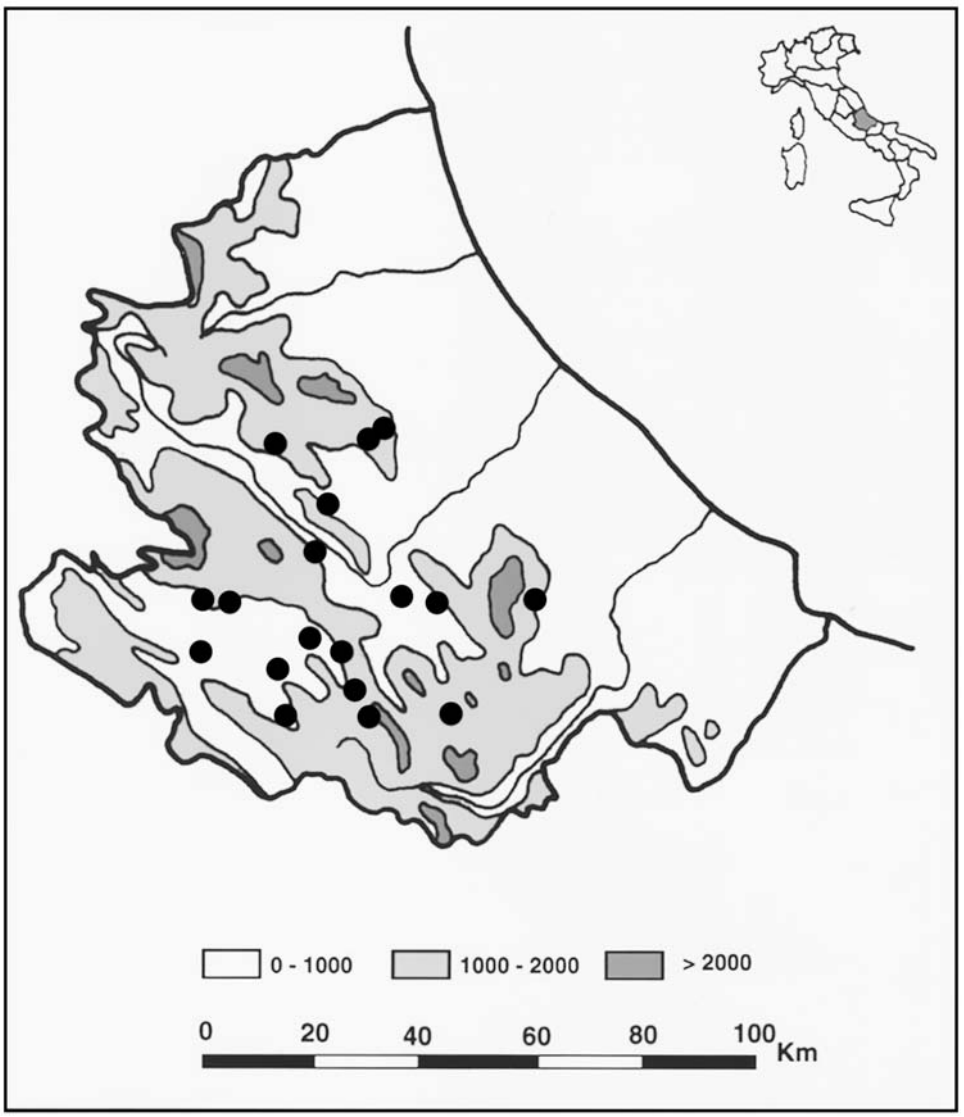

Fig. 2. Distribution of *Minuartia glomerata* subsp. *trichocalycina.*

Description

Caespitose annual or biennial. Flowering stems ascending or suberect, 7–17 cm long, densely glandular-pubescent above, sparsely so below. Stem leaves 5–14 mm long, with axillary fascicles of falcate leaves present at the main leaves. Inflorescence dense, with short pedunculate cymes, each with (5–)11–26(–50) flowers; upper pedicels (0.4–)1–1.2(–2) mm, lowermost (1.5–)3.1–3.8(–5.8) mm. Sepals (3.1–)3.7–4.1(–5.1) mm, linear-lanceolate, acuminate, 1-veined, glandular-pubescent, with wide membranous margins; petals elliptical, slightly shorter than sepals. Anthers red, (0.3–)0.4–0.5(–0.6) mm. Capsule shorter than sepals. Seeds 0.7–1 mm, tuberculate, brown.

Chromosome number: n = 15 (Favarger 1975); this number differs from that of subsp. *glomerata* and subsp. *macedonica*, where usually 2n = 28 (Favarger 1967, van Loon 1980, Çelebioğlu & Favarger 1982, 1983) have been counted; however, occasionally also cytotypes with n = 15 occur in subsp. *glomerata* (Favarger, pers. comm. 1997).

Status: Rare (Conti & al. 1992).

Distribution: Endemic to the Central Apennines (Abruzzo) (Grande 1912, Favarger 1975, Lucchese & Lattanzi 1993, Conti 1995) (Fig. 2).

Additional specimens examined
Prope Aquilam in herbosis aridis, in cacumine collis dicti M. Bazzano, solo argillaceo, 900 m, 6.1914, *Béguinot & Fiori* (FI, RO); Sirente in Aprutio, saxosis Monte Canale, 7.1876, *Groves* (FI); Collarmele (Abruzzo), declivi erbosi, 900 m, *Calestani* (FI); Piano di 5 miglia, *ex herb. Gussone* (RO); presso Trasacco, in aridi rupestri, 950 m, *Grande* (RO); presso Trasacco nella Marsica (Abruzzo), 16.10.1925, *Grande* (RO); tra Tristeri e la Costa d'Arciprete, forra ventilata, in aridi erboso-rupestri, con *Silene conica, Helianthemum salicifolium, Tunica saxifraga, Thymus serpyllum, Scandix australis,* 16.10.1925, *Grande* (RO); Gran Sasso, sotto Rocca Calascio, pascoli aridi, vers. SSW, 1230 m, 15.7.1994, *Ballelli* (CAME); Gran Sasso, Campo Imperatore, a 2 km da S. Stefano di Sessanio, vers. S, 1170 m, 5.7.1987, *Ballelli* (CAME); Gran Sasso, Voltigno, poco sotto F.te Aciprano, pascoli 1370–1390 m, 17.8.1994, *Ballelli* (CAME); Gioia Vecchio, loc. Civita, pascoli aridi, 1350 m, 29.5.1995, *Conti* (CAME); Pescina, rupi sulla riva destra del F. Giovenco, c. 750 m, 18.6.1995, *Conti* (CAME); Sperone, rupi, 1250 m, 6.10.1995, *Conti* (CAME); Gioia dei Marsi, pendii rupestri presso il paese, 750 m, 29.5.1995, *Conti* (CAME); Ortona dei Marsi, pendii rupestri presso il castello, c. 1000 m, 30.5.1995, *Conti* (CAME); Majella, presso Lama dei Peligni, sul sentiero per F.te Tarì, pendii rupestri, c. 800 m, 22.7.1995, *Conti* (CAME); Bominaco, prati aridi e sassosi presso il Castello, 1000 m, 31.3.1997, *Conti* (CAME); Celano, 1969, *Senaud* (plantes cultivées à partir des graines de Celano, au Jard. Bot. Neu. récoltée au Jard. Bot. le 28.5.1973) (NEU); Garrigue méditerranéenne au dessus de Sulmona, au pied du M. Morrone, c. 900 m, n = 15, 5.7.1971, *Favarger* (NEU).

Acknowledgements

Thanks are due to the Directors and Curators of the herbaria B, CAME, FI, G, K, NAP, NEU, RO, WU for the loan of specimens and for hosting me at their institutions. Special thanks are due to Dr Annalisa Santangelo, Curator of the Naples herbarium, for her help in identifying the lectotypus and providing photographs of it, to Prof. Claude Favarger for the loan of his herbarium material and communication of an unpublished chromosome number of *M. glomerata*, and to Prof. Aldo Brilli-Cattarini for valuable advice. I am also grateful to the referees, Prof. Geoffrey Halliday and Prof. Georgia Kamari, for constructive criticism on an earlier version of this paper. Financial support by the National Park of Abruzzo is gratefully acknowledged.

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