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Contribution to the study of the genus *Armeria* (*Plumbaginaceae*) in the Italian peninsula

Abstract

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The taxonomy of the genus *Armeria* depends strictly on its obligate outbreeding mechanism, a key feature of this group of plants that plays a decisive role in their geographical differentiation. With no breeding barriers it is the geographical isolation that operates in the differentiation processes of species (or subspecies when isolation is not complete and morphological differences are less significant). The exsiccata examined, preserved in the Erbario Centrale Italico of the Museo Botanico dell'Università di Firenze (FI), confirm this taxonomical approach. The genus *Armeria* in Italy exhibits disjunct distribution on isolated mountains. There are 12 taxonomically defined species plus 4 subspecies; they include 1 new species (*Armeria garganica*) and 1 new subspecies (*A. arenaria* subsp. *apeminica*).

Key words: Evolution, Taxonomy, Chorology, Italy.

Introduction

The genus *Armeria* is distinguished by notable morphological and biological homogeneity. The plants are perennials, almost always caespitose, multi-cauliculous, scapose with a rosette of basal leaves, pentamerous flowers in capitulum-shaped glomerules.

In almost all of the species, the plants are diploidal with 18 chromosomes. As noted by Baker (1966), these are obligatory allogamous species, due to the existence of a heteromorphic system of self-incompatibility among the various individuals, which ensures a continuous intra-population and inter-population genetic flow among more or less geographically contiguous populations. The evolution and morphological differentiation of the group thus takes place on the geographic and environmental level. Due to the obligatory allogamy, no sympatric species can exist, except for a few cases in which a presumably long period of evolution has determined reproductive isolation. For example, *Armeria morisii* and *Armeria sardoa* in Sardinia, as well as *Armeria gussonei* and *Armeria nebrodensis* in Sicily, present almost contiguous populations without giving rise to populations with intermediate characters. Note also that, due to the population's miscibility, no hybrid

(sterile) populations can subsist, but only populations with characters intermediate among the presumable parents.

On the taxonomical level, the absence of reproductive barriers has led, in cases of significant geographical isolation, to a widespread differentiation of populations on the regional scale. Thus Bernis (1953-1956) has interpreted the morphological diversity of the Genus *Armeria* populations on the Italian peninsula as a single species (*Armeria maritima* L.), that is, a great cenospecies (Turesson 1922) or hologamous species (Gilmour & Heslop-Harrison 1954) composed of geographically distinct fractions. On this subject, see Fig. 2 on the distribution of the Genus *Armeria* in Italy in Arrigoni (1988).

Differentiation in the genus is caused not only by geographical isolation but also by the capacity for adaption of the populations to environments having different geological substrata or to extreme environments, such as high mountain meadows having only a brief summer vegetative cycle.

On the taxonomical level, obviously there can exist in nature both geographically isolated species and allopatric populations with gradual differentiation, interpretable on the level of subspecies.

Taxonomic background

In examining the studies of the past, we find notable diversity in the taxonomical interpretation of the Italian populations of *Armeria*. Boissier (1848) was the first to recognize several Italian species of the genus. The first monograph on the group is however the quite old one of Janka (1882), in which 12 species relevant to Italy are recognized.

In the census taken by Fiori (1926), only 3 species, but no less than 14 varieties are reported. A detailed monograph on the genus is the one by Lawrence (1940). This author divides the Italian species into 2 series: *Macrocentron* Boiss. with sola *A. pungens* (Link) Hoffmanns. & Link and *Plagiobasis* Boiss., containing 5 species and 7 heterotypical varieties.

In the extensive monograph of Bernis (1953-1956), 2 species are recognized for the Italian territory: *A. pungens* and *A. maritima* L. with 11 heterotypical varieties. However, for the Italian territory, this contribution shows some inadequacies in the scarcity of the materials examined, and consequently in the in-depth study and delimitation of the morphological and geographical diversities of the species. This situation has stimulated an analysis of some territorial differentiations that have been subjected to local investigation (Arrigoni 1970; Bianchini 1982; Martini & Poldini 1987; Brullo & al. 1997, 2004; Selvi 2009).

Pinto da Silva (1972) recognized 7 species (plus another doubtful one) and 2 heterotypical subspecies. In this work, as can be seen, the geographical diversity of the taxa is partially recorded on the sub-species level. A few years later Zangheri (1976: 493) recognized for the national territory 10 species and 4 heterotypical subspecies. Bianchini (1982) reports 13 species and 2 subspecies.

Greuter & al. (1989: 308) list 15 species and 3 heterotypical subspecies. Lastly, in Conti & al. (2005: 56) 14 species and 2 heterotypical subspecies are recorded.

As can be seen, there is notable diversity of interpretation among the various authors, while the number of taxa recognized has gradually increased due to a more thorough investigation of geographical diversity.

The species in the Italian peninsula

In the territory of the Italian peninsula, several geographically and ecologically isolated species have been described: *Armeria helodes* Martini & Poldini on the fresh marshy soil of lower Friuli - *A. denticulata* (Bertol.) DC. on the Tuscan-Ligurian serpentines - *A. saviana* Selvi, on the calcareous terrain of Mt. Labbro, in southern Tuscany - *A. brutia* Brullo & al., on the siliceous mountains of Sila, in Calabria - *A. aspromontana* Brullo & al., on the Calabrian peaks of Aspromonte.

Most of the *Armeria* populations in the Italian peninsula are found however on the high meadows and rocky peaks of the Alps and the Apennines. On the Alps grows its diffusion *A. alpina* Willd., a south-European orophyte, in the western Alps penetrates the geographically heteromorphic complex of *A. arenaria* (Pers.) Schult., extending as far as the northern Apennines. In the central-southern Apennines, *A. canescens* Host, a species described for Dalmatia, allopatric with *A. gracilis* Ten. and *A. majellensis* Boiss, has been observed. Further south, on the calcareous mountains of Campania and Basilicata, appears *A. macropoda* Boiss.

The distribution of these species is fragmentary due to the discontinuity of the stations, confined to the highest mountain peaks, with more or less partial interruptions of the gene flow and some weak and gradual differentiation on the local scale. The complex diversity found here is complicated still further by the greater or lesser distances existing between the populations on the numerous mountain peaks.

For a more analytical study of the species on the peninsula and their distribution, we have reviewed the abundant material found in the “Erbario Centrale Italico del Museo di Storia Naturale” (FI) of the University of Florence, including various personal collections as well. Based on this research, we have been able to exclude some species (see the following list with the relevant motivations) and to confirm those appearing in the list, which includes some newly described taxa. For clearer definition on the territorial scale, the list runs from North to South of the Italian peninsula.

Analytical keys

1. Plants with homomorphic leaves, linear or linear-lanceolate2
1. Plants with dimorphic leaves, the outer or vernal ones more or less wide and short, the inner ones ranging from linear to filiform, longer in general.....3
2. Sheath 0.8-1.5 cm. Outer bracts of the capitulum oval, obtuse, muticate. Calyx lobes muticate or briefly aristate.....*A. alpina*
2. Sheath from 1 to 3.5 cm. Outer bracts of the capitulum oval-oblong, more or less acute. Calyx lobes distinctly aristateRace *A. arenaria*
3. Leaf length 10-20 cm, the outer leaves (vernal) 5-6 mm wide, the inner ones (aestival) 3-4 mm wide, multi-veined. Capitula with outer bracts larger than intermediate ones. Calyx 8-10 mm. Hardy plants, height up to 40-60 cmRace *A. macropoda*

3. Leaf length 5-15 cm, outer leaves less than 5 mm wide. Calyx in general less than 8 mm .4
 4. Outer bracts of calyx larger than inner ones, acuminate-aristate5
 4. Outer bracts of capitulum rather short, less than 10 mm6
 5. Calyx 4-6,5 mm with awns 1-1.3 mm. Plant with long, slender scapes with capitulum of 1-1.2 cm.
 Minutely denticulated vernal leaves.....*A. denticulata*
 5. Calyx 7.5 mm with ciliate awns 2.2 mm. Outer bracts acuminate-cuspidate*A. saviana*
 6. Uninerviate, canaliculated leaves, with narrow hyaline margin. Hemispherical capitula, 2.2-
 2.8 cm.....*A. helodes*
 6. Plant with characters not grouped as above7
 7. Short scapes, 5-15 cm, robust. Sub-spherical capitula, 2-3 cm*A. gracilis* subsp. *majellensis*
 7. Scapes 15-30 cm, fragile or relatively robust. Capitula 1-2 cm.....8
 8. Cuspidate outer bracts, 5.5-20 mm, apiculate inner bracts 3.5-6 mm.....*A. aspromontana*
 8. Outer bracts less than 10 mm, inner ones 2-4 mm.....9
 9. Hemispherical capitula. Outer leaves 3-5 mm wide, inner leaves linear or filiform. Scapes generally delicate, thin*A. gracilis*
 9. Sub-spherical capitula. Outer leaves linear-lanceolate, 6-10 mm, inner leaves linear 2-3.5 mm...*A. brutia*

Armeria alpina Willd. (1809) Enum. pl. Hort. Berol., 1: 333.

Armeria maritima subsp. *alpina* (Willd.) P. Silva (1971) Bot. J. Linn. Soc. 64: 376.

Armeria maritima var. *alpina* (Willd.) Lawrence (1940) Gent. Herb., 4(11): 391-418.

Armeria maritima subsp. *maritima* var. *alpina* (DC.) Bernis (1956) Anal. Inst. Bot. Cavanilles, 14: 335.

Statice armeria var. *alpina* DC. (1805) Fl. Fr., 3: 419.

Armeria elongata var. *alpina* Ces. Pass. Gib. (1886) Comp. Fl. Ital., 2: 289.

Armeria vulgaris var. *alpina* Fiori (1902) Fl. Anal. Ital., 2: 334.

Armeria vulgaris var. *nana* Bolzon (1910) Boll. Soc. Bot. Ital.: 74.

Perennial herb with glabrous scape, 5-25 cm. Homomorphic leaves, linear or sub-lanceolate, 20-80 × 1.5-3(4) mm, flat, glabrous, fleshy, uninerviate, acute, with sub-membranaceous margin. Sheath 0.8-1.5 cm. Capitulum 2-2.5 cm in diameter. Outer bracts of capitulum oval-slightly obtuse, muticate, inner ones largely obtuse, reddish, 9-10 mm. Flowers from pink to purple. Calyx 6.3-8.5 (9) mm, with tube smaller than limb, glabrous in the in the grooves between the ribs.

Iconography – Tab. 1150 in Reichenbach (1855) Icon. Fl. Germ. Helv., 17: 68.

Chromos. Numb. – $2n = 18, 36$.

Chorology – South-European orophyte, *Caricetalia curvulae*/Central-eastern Alps.

Note - The species is quite homogeneous in its characters and in the more or less contiguous distribution of its populations.

Specimina visa (Selection by region).

PIEMONTE e VAL d'AOSTA – Pascoli elevatissimi delle Alpi Cozie, Rostan, VII. 1855 - Alpe di Soleva. Val d'Ala, *Beccari*, 7.VIII.1863 - Passo del Bocchino sopra Viozenne, *Ricca*, 19.VII.1867 – Cima Rovelli presso il Mongioie, Alpi Marittime, 2491 m, *Sommier* 26.VII.1902 – Alpi Cozie. Circondario di Pinerolo. Pral (Prali). Falde della Grande Aiguille, versante settentrionale, *R. Gestro*, 11.VIII.1904 - Prigelato, Punta Rognosa di Sestrieres, *Montali*, VII.1913 – Valle Formazza. Salita al Gries tra il Ponticello e il Passo, m 2300-2450, *Oliviero Boggiani*, 24.VIII.1914 - Limone (Piemonte). Tra Maire del Cros (m 1400) e M. Crest (m 1700), *R. Pichi Sermolli* e *A. Contardo*,

20.VII. 1949 – Macereti sul Colle Ciriegia (m2450-2500 m). Val Gesso (A.M.), *P.G.Bono*
6.VIII.1962 – Val di Cogne (AO). Salendo al Passo dell’Invergneux, versante Sud, 2780 m, *Bovio*,
Broglia, *Soldano*, *Trompetto*, 9.VIII.2011.

LOMBARDIA – Monti della Valtellina, *Moretti*, IX.1842 - Crete di M. Sobretta (2700 m), Val Furva
près Bormio, *E. Levier*, 7.VIII.1870 - Grigna sett. Presso la vetta, vers. di Moncodeno, sopra il neva-
to, *Provasi* 7.VII.1921 - Valle delle Messi (Sondrio). Passo del Gavia, prati umidi e rive nei dintor-
ni del Lago Negro, m 2386, *C. Steinberg* e *C. Ricceri*, 4.VIII.1969.

TRENTINO-ALTO ADIGE – San Martino di Castrozza: salita alla Rosetta, *P. Bargagli* 25.VII.1892
– Val Gardena: Alto valle del Kedul, m 2400 ca., *A. Chiarugi*, VIII.1923 – Val Gardena. Passo Sella,
A. Chiarugi 24.VIII.1932 - V. del Brennero. Cima della Stanga, versante Sud. Calcarì un po’ scisto-
si, q. 2300-2387 *S. Zenari*, 10.VIII.1950 - Alto Adige, Pascoli dell’Alpe di Zirago, micascisti. *S.*
Zenari 17.VIII.1951 - Gruppo del Catinaccio. Dintorni dei rifugi Vajolet ed Heuss (m 1800-2500),
P.V. Arrigoni 22.VIII.1972 - Trento. Marmolada: dal Rifugio Fedaja (m 2000) al Rifugio Pian
Fiacconi (m 2700), *P.V. Arrigoni* 24.VIII.1972 – Prati di Passo Sella (m 2200) *P.V. Arrigoni*
24.VIII.1972 – Dintorni di Passo Pordoi, m 2238, *P.V. Arrigoni*, 26.VIII.1972 - Val di Fassa. Dalla
Stazione della Funivia di Col Rodella lungo il sentiero del Sasso Lungo su terreni vulcanici acidi. *C.*
Ricceri, *C. Steinberg*, 8.VII.1974 – Lago Selvaggio (Bressanone) m 2550, pendici esposte a Nord,
pend. 35°, pascoli su micascisti, *P. Paiero*, 27.VII.1977.

VENETO – In Baldi montis alpina valle delle Ossa, da *A. Manganotti* 9.X.1845 – In glareosis alpi-
nis supra Passo Siola, *E. Levier* 24.VII.1877 - M. Cavallo, *Siemoni* VII.1882 – M. Posta, in glareo-
sis et rupestribus, *A. Goiran* VIII.1887 - Alpi Carniche. Forcella piccola del M. Antelao, 2000 m, *R.*
Pampanini 11.VIII.1899 – M. Cimacuta verso Valmaccon (Carnia) a 1800 m, *R. Pampanini*, 17.VIII.1900
– S. Vito del Cadore, Forcella piccola, 2120 m, *R. Pampanini*, 15.VIII.1900 - Cadore. Dolomiti:
Tondi di Falaria (Cortina d’Ampezzo) m 2343, *Chiarugi*, *Corradi*, *Bavazzano*, 15.VII.1956.

FRIULI-VENEZIA GIULIA – Alpi Giulie. M. Cren, *D. Marchesetti*, 14.VIII.1899 – F.la Brica
(Cimolais), 2000 m, pascolo sassoso a Nord, *P. Paiero*, 22.VIII.1977 – Camporosso (Cimolais) 1900
m s.m., pascolo sassoso a Nord, *Paiero* 22.VIII.1977 – F.la Pregoiane (Claut) m 1700-1900, ghiaio-
ni e macereti calcarei a *S. Paiero* 14.VIII.1977.

Race *Armeria arenaria* (Pers.) Schult.

1. Dimorphic leaves, the outer vernal leaves 3-5 cm wide with evident membranous margin
.....subsp. *marginata*
1. Homomorphic leaves, from lanceolate to sublinear, with greater width, 2-4 mm, in the middle or
the upper third, attenuated or decurrent in the third basal leaf.....2
2. Pauciflorous capitula with precocious white flowers. Outer bracts acuminate, intermediate inner
ones mucronate, upper ones muticate.....subsp. *praecox*
2. Globular aestival capitula with purple-violet flowers.....3
3. Sheath 3-3.5 cm. Outer bracts oval extending to acute apex.....subsp. *arenacea*
3. Sheath progressively reduced to 0.8-1.2 cm. Outer bracts oval-lanceolate
.....subsp. *apennina*

Armeria arenaria (Pers.) Schult. in Roem. & Schult. (1820) Syst. Veg., ed. 15, 6: 771.

Basion.: *Statice arenaria* Pers. (1805) Syn. Pl., 1: 332.

Armeria alliacea subsp. *plantaginea* (All.) O. Bolos & Vigo (1979) Collect. Bot.
(Barcelona), 11: 30, comb. illeg.

Statice plantaginea All. (1785) Fl. Pedem., 2: 90, non *A. plantaginea* Willd.

Armeria vulgaris subsp. *plantaginea* (All.) Syme in Sowerby, comb. illeg.

- subsp. ***arenaria***

Caespitose perennial herb with cylindrical scapes, lightly grooved, up to 60 cm long. Numerous leaves ranging from lanceolate to sublinear, 8-12(18) × 0.2-0.4(0.5) cm wider in the middle or the upper third, attenuated or decurrent in the third basal leaf, with 3(7) principal veins, ciliolate on the margin or along the nervation in the lower part. Sheath 3-3.5(4) cm, lacerated near the bottom. Globose capitula, 1.5-2 cm in diameter, with 2-4 outer bracts, oval-oblong terminating in more or less well-developed acute tip, the others obovate, scarious and obtuse at the apex. Inner bracts obtuse, almost entirely scarious. Calyx 6(7) mm with short tube, 2.5-3 mm and scarious lobes, triangular at the apex, extending in an awn of 1.5-2 mm, with short hairs appressed along the ribs of the tube, none or few in the intercostal space. Violet or bluish flowers. (Description from a topotype existing in FI).

Iconography – Tab. MCLI (I) in Reichenbach (1855) *Icon. Fl. Germ. Helv.* 5 - Fig. 2314 (Pl. 503) in Bonnier (1990) Reprint Jaca Book.

Chromos. Numb. – $2n = 18$.

Chorology – Western Europe/Piemonte, Lombardy, Liguria up to M. Maggiorasca. Bernis (cit.: 191) considers it “dudoso que esta planta habite tambien el tramo mas septentrional de los Apenninos” [doubtful whether this plant also grows in the northernmost part of the Apennines].

Diagnosis: “*Armeria. 2 arenaria, caul. scapo longo, bract. 2-3 capitulo longioris, fol. lineari b rigidulis glabris. Hab. in arenosis (copiosae prope Fontainebleau). A priore (β humilis) specie distincta videtur. Hujus loci videtur Statice elongata Hoffm. l.c., qui vero folia dicit irsuta.*”

Specimina visa.

LIGURIA – Fra il lago Verde di Fontanalba 2300 m e la vetta di S.a Maria, 2700, *Marchesetti* 19.VII.1908.

PIEMONTE e VAL D’AOSTA – Aosta. Val d’Ayas: Graines, sulle rocce serpentose nei pressi del Castello, *O. Vergnano Gambi*, 5.VIII.1977 – Aosta. Val d’Ayas: dintorni di Salamon, m 1600-1700, *O. Vergnano Gambi*, 11.VIII.1977 - Aosta. Val d’Ayas: Fra St. Jacques e Resy, m 1800 ca. *O. Vergnano Gambi* 17.VIII.1977 – Alpi Marittime. Lungo il sentiero tra Terme di Valdieri (S. Giovanni) e Pian del Velasco, alt. m 1710, *Aldobrandi G. e C. Nepi*, 27.VII.1992 – Alpi Marittime. S. Giacomo, lungo il sentiero per Prà del Rasun, alt. m 1310, esp. Ovest, *Aldobrandi G. e C. Nepi* 28.VII.1992 - Val Maira. Al termine della strada provinciale n. 22, prima del tratto sterrato. Esp. Sud, alt. m 1950, *Aldobrandi G. e Nepi C.*, 29.VII.1992.

EMILIA – Bobbio, fraz. Coli. Serpentine alla base del Monte dei Tre Abati, *Arrigoni, Raffaelli, Ricceri, Vergnano*, 15.VII.1977 (forma di transizione alla subsp. *apennina*).

- subsp. ***praecox*** (Jord.) Kerguélen (1987) *Lejeunia* ser. 2, 120: 49.

Basion.: *Armeria praecox* Jord. in Boreau (1857) *Fl. Centre France*, 1: 537.

Armeria alliacea (Cav.) Hoffmanns. & Link (1813-1820) *Fl. Port.* 1: 441.

Armeria plantaginea subsp. *praecox* (Jord.) Nyman (1881) *Consp. Fl. Eur.*: 616.

Hardy plants with long lanceolate leaves, 5-7 veins. Pauciflorous capitula, 1.7-2 cm with white flowers. External bracts acuminate, internal intermediate ones mucronate, upper ones muticate.

Chorology – Western Alps. Not found in Italy for Greuter & al. (1989: 308) and Aeschmann & al. (2004) *Fl. Alp.*, 1: 394.

This finding requires confirmation, however.

- subsp. **apennina** Arrigoni, subsp. nova (Fig. 1)
Armeria seticeps auct. Fl. Ital. p.p. non Rchb. (1827).

Typus – Holotypus in FI: “Emilia-Romagna, Corniglio (Parma). Vaccinieti e rupi della cresta rocciosa tra il M.te Marmagna e M.te Braiola, m 1600-1800. Substr. arenaria. Arrigoni, Foggi e Ricceri, 21.VII. 1986”.

Diagnosis – *Herba perennis caespitosa, caulibus glabris 20-40 cm altis, foliis basilibus rosulatis. Vagina 0,8-1,2 cm longa. Folia linearia, 3-5(7) nervia, apice subobtusata. Capitula 1-1,5(2) cm diametro. Bractee externae ovali-lanceolatae, acutae, margine anguste scariosae, vel ovali-apiculatae, margine late scarioso; internae ovali-rotundatae, muticae, pro maxima parte scariosae. Calix circa 7 mm longus, costis indumento brevi appresso pilosis. Tubus circa 3 mm longus. Lobi scariosi in aristam 1-1,5 mm longam terminantes.*

Caespitose perennial herb with thick woody root often ramified forming on the surface several rosettes and glabrous scapes, 20-40 cm. Sheath 0.8-1.2 cm. Leaves varying in length, 3-10 cm, linear, 3-5(7) veins, sub-obtuse at the apex, at times (e.g., Monte Orsaio) ciliate along the margin and hairy on the veins in the lower parts. Capitula 1-1.5(2) cm. Outers bracts from oval-lanceolate, acute, scarios on the edge, to ovali-apiculate with wide scarios margin, inner bracts oval-rounded, muticate, almost entirely scarios. Calyx approx. 7 mm, briefly hairy, appressed along the ribs. Tube approx. 3 mm. Scarios lobes briefly triangular at the apex, ending in an awn of 1-1.5 mm.

Iconography – Alessandrini and Bonafede (1996) Atl. Fl. Prot. Reg. Em.-Romagna: 34. Our Fig. 1.

Chorology – Endemic to the Tuscan-Emilian Apennines, up to M. Prado to the south. – Orophyte of Apennine meadows and cliffs, above 1200 m.

Note – Taxon intermediate between *A. arenaria* and *A. marginata*, distinguished by the transition of some differential characters typical of the two species:

- transition from leaves that are homomorphic or nearly so to dimorphic leaves, that is, from the vernal outer leaves, in general wider and shorter, to the aestival inner ones, narrower; in particular, by lanceolate leaves with maximum width in the upper half to more or linear, or linear filiform, leaves.
- Progressive reduction in length of the sheath, from 3-3.5 cm to 0.8-1.2.
- transformation of the outer bracts from oval-oblong acuminate to oval, acute or apiculate.
- transformation of the calyx indumentum from short, appressed hairiness to more or less bristling villosity.

Specimina visa:

Pascoli alpini di M. Orsaio presso la Foce di Catelea e la cima. *Parlatore* 21.VII.1838, sub *A. alpina* – Rupi perpendicolari presso la cima del M. Prinzeria reg. delle querce. *Parlatore* 3.VIII.1838 - Alpe di Cusna: Appen. di Reggio E.lia. *Fiori* 8.VIII.1888, sub *A. plantaginea* W. var. *seticeps* (Rchb.) - Lago Santo. Sotto il M. Orsaio sul versante Parmigiano. *Sommier* 28.VI.1902, sub *A. vulgaris* W. var. *majellensis* (Boiss.) *Fiori* Fl. Anal. – Salendo da Pracchiola al M. Orsaio, pascoli verso 1200 m, *Sommier* 28.6.1903, sub *A. majellensis* Boiss. – Emilia. Prov. di Parma, abunde in rupium fissuris montis Prinzeria, solo siliceo. *Bolzon* 20.V.1905 n. 620 Sched. Fl. Ital. Exs. sub *A. plantaginea* - Appennino parmigiano sul M. Rogala (m 1710) nelle fessure del serpentino. *Bolzon* 17.VII.1905, sub *A. seticeps* Rchb. – Luoghi erbosi e substrato argilloso-serpentinoso al M. Prinzeria (Appennino Parmigiano) a 500-700 m, *P. Bolzon* 24.V.1906, sub *A. plantaginea* - Abbondante sotto

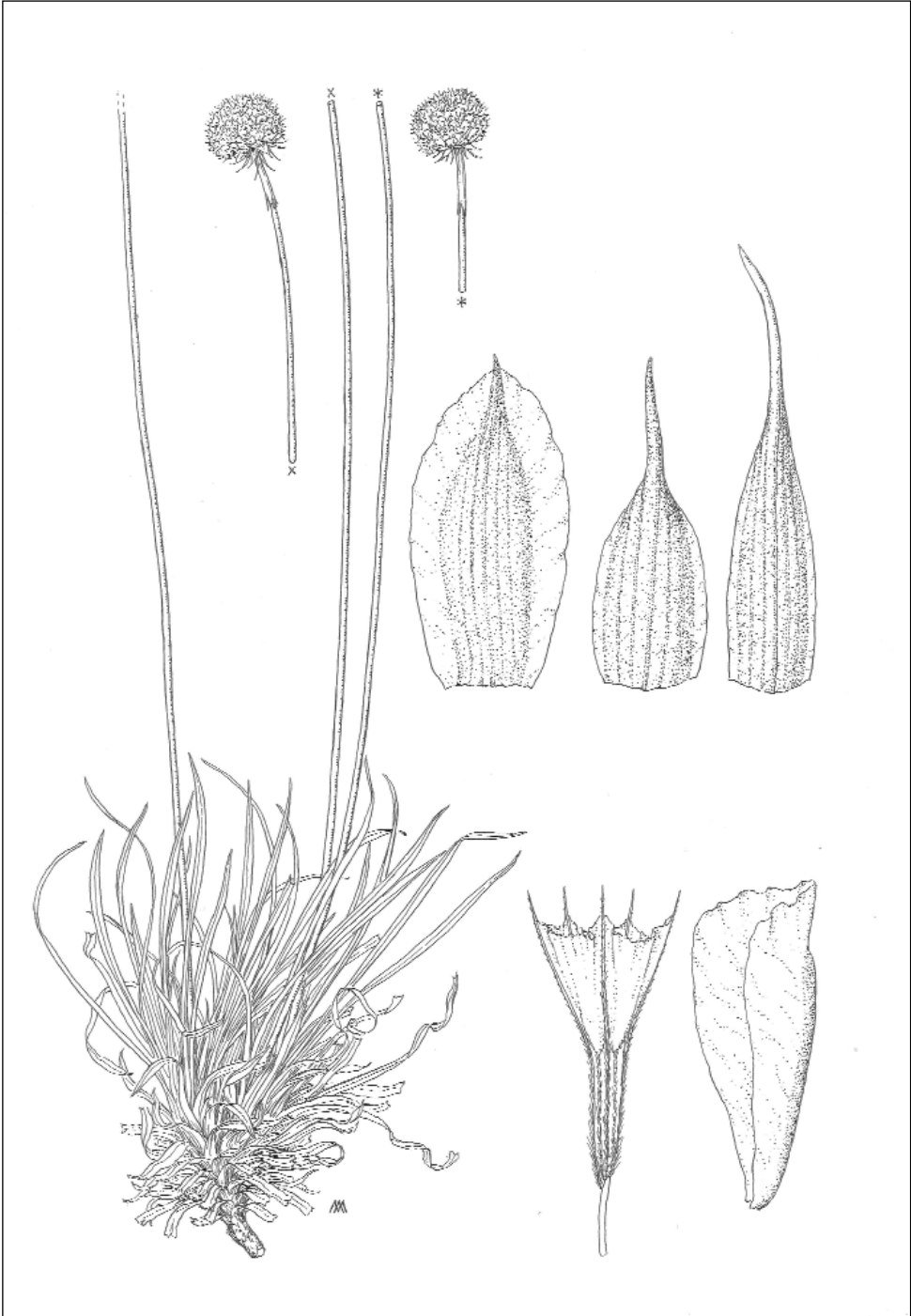


Fig. 1. *Armeria arenaria* subsp. *apennina* Arrigoni $\times 0.65$. Details: Scales and calix $\times 6.5$.

Orsaro (Parma), *Minio* 9.VII.1919 - Reggio Emilia (Prov.), presso il Cusna, m 2000, *Lunardi* 1.IX.1921, sub *A. plantaginea* W. – Emilia, Bobbio, fraz. Coli. Serpentine alla base del Monte dei Tre Abati, *Arrigoni P.V., Raffaelli M., Ricceri C., Vergnano O.*, 15.VII.1977 - Emilia. Ligonchio. M.te Prado. Cresta rocciosa fra lo sprone di Prado e la vetta. Prati e vaccinieti, substrato: arenaria. *B. Foggi, C. Ricceri* 28.VII.1987, sub *A. marginata* – Emilia. Ligonchio. M.te Prado. Pendici rocciose settentrionali fra il Lago di Bargentana e Sella Sprone di Prado. Prati e vaccinieti, alt. M 1800-1950, substrato roccioso: arenaria. *Foggi e Ricceri* 28.VII.1987, sub *A. marginata* - Emilia. Ligonchio. M.te Cusna. Prati rocciosi della vetta. Esp. N. Alt. m 2100. Substrato: arenaria. *Foggi e Ricceri*, 10.VIII.1988, sub *A. marginata* - Appennino settentrionale. Nella brughiera a mirtilli del M. Marmagna sopra il Lago Santo parmense, alt. 1800 m, *Ferrarini* 30.VII.1991, sub *A. vulgaris* var. *marginata* Fiori - Appennino lucchese reggiano, M. Prado, erbosi sul macigno esposti a Sud vicino alla vetta, alt. 2000 m, *Ferrarini* 20.VIII.1992 – Dintorni di Lagosanto-Orsaio 18.VII.?, *Martelli U.* – M. Rogala. Prato Grande, s. coll. s. d. – M. Bue (Emilia), sine coll., sine d. – Lago Santo Parmense. sine coll., sine d.

- subsp. *marginata* (Levier) Arrigoni comb. et stat. nov.

Basion.: *Armeria majellensis* var. *marginata* Levier (1888) Atti Soc. Tosc. Sci. Nat. Proc. Verb., 6: 157.

Armeria marginata (Levier) Bianchini in Pignatti (1977) Giorn. Bot. Ital. 111 (1-2): 49.

Armeria vulgaris var. *marginata* (Levier) Fiori in Fiori e Paol. (1902) Fl. Anal. Ital., 2: 234.

Armeria maritima subsp. *eumaritima* var. *majellensis* subvar. *marginata* (Levier) Bernis (1953) Anal. Inst. Bot. Cavanilles, 11(2): 247.

Armeria plantaginea Bertol. (1832) Mant. Pl. Fl. Alp. Apuan.: 20, num. 30, non Willd. (1809).

Typus - Lectotypus in FI: “*Armeria majellensis* Boiss./var. *marginata* mihi/in monti Libro Aperto, Apennini. Pistoriensis supra Boscolungo, 1700 m, /Jul. 1881 leg. *Levier*”, qui designato.

Perennial herb with mediocre scape, 15-40 cm, glabrous or hairy at the base. Flaccid, dimorphic leaves with scarious margin, the outer ones (wintry) ranging from lanceolate to linear-lanceolate, 3-7 cm, 3-5 mm wide, 1-3(multi) veins, with distinct membranous margin; the inner leaves (aestival) linear, 7-9 cm, 1-5 mm wide. Brown sheath, 1-1.5 cm long. Capitula 1.6-2.5 cm in diameter, with basal bracts oval with acute tip, scarious along the margin, inner bracts oval-rounded with wide scarious margin. Calyxes 6-7 mm, sparsely hairy, with short triangular lobes and awns of 1-1.3 mm. Corolla purple or white.

Iconography - Alessandrini & al. (2003) Fl. Alt. Tuscan-Emilian Apenn.: 49, pro parte.

Chorology - Endemic to the northern and central Apennines, and to some Umbria-Lazio pre-Apennine sectors.

Specimina visa:

EMILIA - Gita del Lago Gradina, *Martelli* 20.VII, sine anno - Ad rupes montis Cimone. Appennino Muticaense, *Fiori* 9.VII.1875 - Sommità del M. Cimone (Appenn. Modenese) *Fiori* 24.VII.1884 - M. te Cimone, *Lunardi* 30.VI.1927 - Appenn. modenese. Libro Aperto, *Cortesi* VIII.1933 - Apenninus Aemilianus M. Cimon in pascuis, alt. 2000 m, *Mori* 27.VIII.1938 - Ligonchio. M.te Cusna. Rocce della vetta. Alt. m 2000-2100, substrato: arenaria, *Foggi e Ricceri* 29.VII.1987 - Fiumalbo. M.te Cimone. Da Pian Cavallaro alla vetta. Prati rocciosi Esp. N-NW. Alt. m 1850-2150, substrato arenaria, *Foggi e Ricceri* 12.VIII.1988.

TOSCANA - In summo vertice montis sassosi Alpium di Mommio, *Calandrini* VII.1851 - Rupi inizio alla cima del Libro Aperto, 1930 m, *Parlatore*, 9.VII.1863 - Alpi Apuane, route vr. Minucciano à Vinca, Prairies env. 1000 m, *Sommier* 2.VII.1871 - Alpi Apuane. Pisanino, prairies alpines env.

1700 m, *Sommier* 9.VII.1871 - Prati d'Annibale, *Cherici* 30.IV.1873 - In M.te Rotondo (pr. M. Libro Aperto) sopra Boscolungo, in Apennino Pistoriense, *F. Major* 20.VII. 1875 - Fra il Pizzo d'Uccello, *Narducci*, IV.1877 - Cimone di Fanano. App. pistoiese, in rupibus editoribus, *F. Major* 6.6.1882 - Rupi arenarie della vetta a ovest del Libro Aperto. App. pistoiese, *Martelli* 22.VII.1882 - Alpe di Caciaia (sopra il Lago Santo) circ. 1800 m, in rupibus *Sommier* 24.VII.1887 - Alpi Apuane. Ultimi prati sotto la cima del Pisanino, *Sommier* 30.VII.1888 - Uccelliera vers. Prà di Lanna, *Levier* 12.VII.1889 - Spigolino del Libro Aperto. Appenn. Pistoiese, *Sommier* 30.VI.1906 - Camaldoli, Mandrioli, *A. Messeri*, 30-31.VII.1934 - Minucciano, sotto l'Orto di Donna, *B. Lanza*, 28.V.1960 - Massa. Alpi Apuane: dalla Serenaia al Rifugio Donegani, *Baccetti* 19.V.1963 - Foce del Cardeto, versante Nord di Orto di Donna, terreno acido da scisti diasprini, alt. 1600 m, *Ferrarini* 5.IX.1991. MARCHE (confine Toscana) Prov. Pesaro, Sasso Simoncello, prati sulla cresta rocciosa calcarea sommitale sul ciglio del dirupo,, rara, *F. Selvi* 30.IV.2007, sub *Armeria canescens* (Host) Ebel.

Race *Armeria denticulata* (Bertol.) DC.

Comprises two similar reproductively isolated species differentiated on substrates of different nature.

Armeria denticulata (Bertol.) DC. (1813) Cat. Pl. Horti Monsp.: 7.

Statice denticulata Bertol. (1806) Rar. Ital. Pl. Dec. Sec., 1: 34.

Armeria denticulata (Bertol.) Bertol. (1819) Amoen. Ital.: 77.

Armeria vulgaris var. *denticulata* (Bertol.) Fiori in Fiori & Bèg. (1902) Fl. Anal. Ital., 2: 334.

Armeria maritima subsp. *maritima* var. *denticulata* (Bertol.) Bernis (1953-1956) Annal. Inst. Bot. Cavanilles.

Typus: "Lectotypus in BOLO: "Legi prope Sarzanam in montibus Nuda, et Brina di Panzano in rupibus serpentinis", designated by Selvi (2009: 129).

Perennial herb, rosulate, glabrous. Slender scapes, 3-4 per plant, 15-40 cm high. Sheath 1-2 cm, 1-1.2 times the diameter of the capitulum. Dimorphic leaves, lanceolate-spathulate, 20-40 × 4-6 mm, uninervial (rarely with 2 minor veins), outer leaves flat, widened, often serrated, inner leaves slightly convolute, narrow, often erect. Capitulum 10-12 mm. Involucral bracts oval or oval-lanceolate, largely scarious, the outer ones long acuminate-cuspidate, the inner ones mucronate. Sub-sessile spikelets (35-70). Calyx 4-6,5 mm with hirsute tube twice as long as the peduncular tube and 1.3 times as long as the s, awns 1-1.3 mm, hairy primary ribs. Pinkish corolla.

Iconography - Arrigoni & al. (1983: fig.2) - Ferrarini & al. 1997, 2: 192, 197 Fig. 40) - Fig. 2.

Chromos. Numb. - $2n = 18$ (Arrigoni & al. 1980: 141), on material from the Sassi Neri dell'Impruneta (Province of Florence).

Chorology – Endemic to Liguria (*locus classicus* Monti Brina and Nuda of Ponzano Magra) and Tuscany, on serpentinous substrates: M. Ferrato of Prato, Montignoso, Impruneta, Montemurlo and Montauto in Val Tiberina, Monterufoli, M. Pelato of Castiglioncello, Pomarance, etc.

Specimina visa (Selection by region):

LIGURIA – Brina di Ponzano in Val di Magra, *Marcucci*, 28.V.1864 - Gambella, presso Beverino, a q. 160 m. Val di Vara (SP). Liguria, su serpentina, *D. Marchetti* 26.V.2008.

TOSCANA – In **Monte Ferrato** agri Florentini, *T. Caruel* 6.VII.1863 - Monte Ferrato presso Prato,

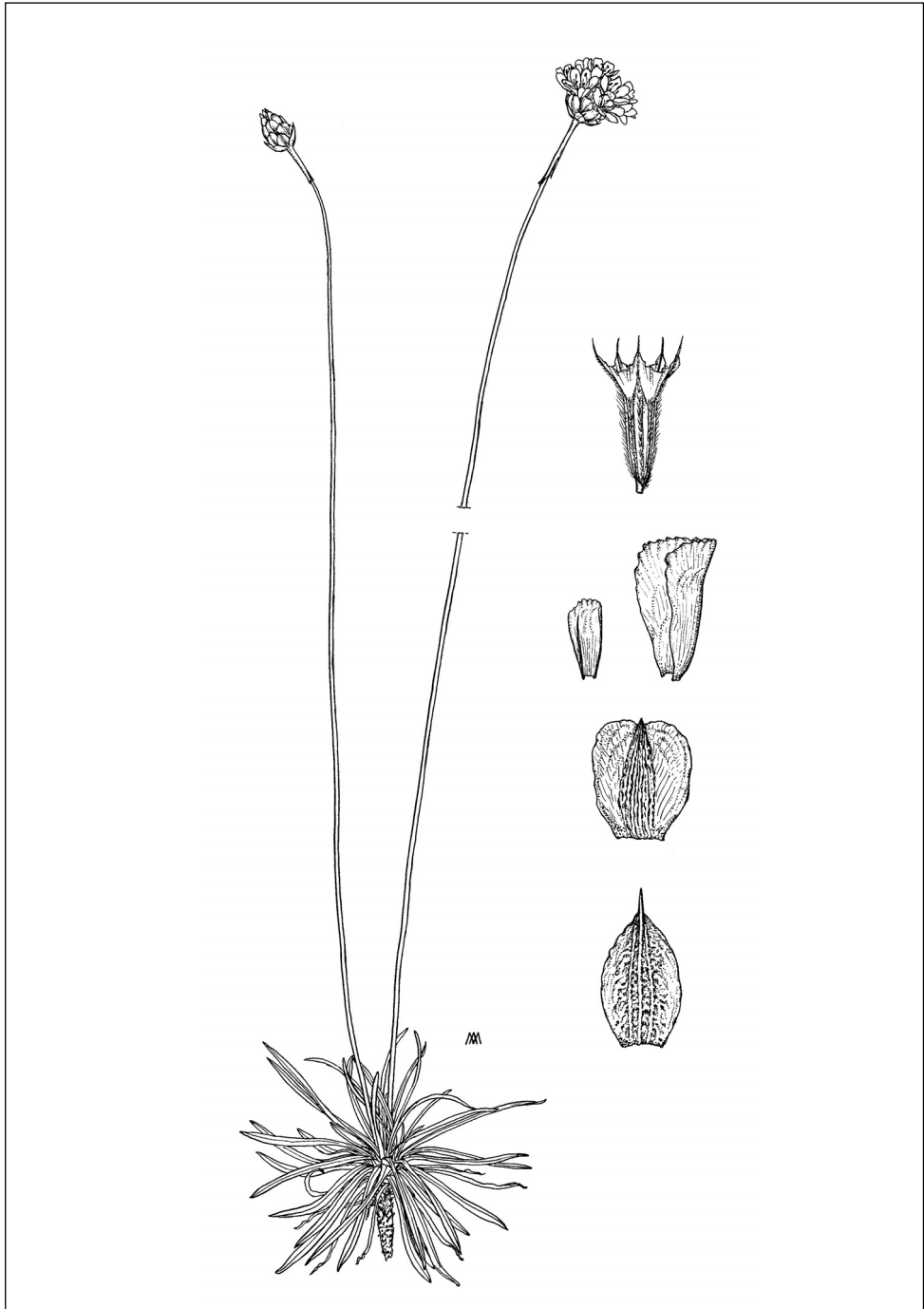


Fig. 2. *Armeria denticulata* (Bertol.) DC., from Arrigoni & al. (1983: 13) $\times 0.65$. Details: Calyx and scales $\times 5.2$.

Beccari V.1869 - Prato, Monte Ferrato, serpentino, *R. Pichi Sermolli* 12.XII.1933.

Impruneta - Inveni in gabbratis Imprunetae, *Bechi* VI. 1843 - Impruneta l. d. Sassi Neri, *Pampanini* 25.V.1912 - Impruneta (Firenze) serpentini, *I. Bargoni* 24.V.1938 - Serpentini dell'Impruneta, *Cei* 23.VI.1939.

Toscana (Prov. Firenze): Montignoso, sui serpentini, *R. Pampanini* 17.VI.1911.

Prov. Di Massa Carrara, Aulla al Castello, suolo serpentinoso, alt. m 100, *A. Fiori* 12.VI.1932.

Alta Val Tiberina. M. Murlo, serpentino, *R. Pichi Sermolli* 25.VII.1932 – Monti Rognosi presso Albiano, serpentino, *R. Pichi Sermolli* 13.VIII.1934 – Pian della Croce, serpentino *R. Pichi Sermolli* 20.XI.1934 - M. Petroso, serpentino, *R. Pichi Sermolli* 29.XI.1934 – Poggio delle Calbane, ofiolite-serpentina, *R. Pichi Sermolli* 7.VI.1935 - Montauto, *A. Chiarugi*, *O. Vergnano*, *R. Corradi*, 23.V.1955.

M. Livornesi, al Gabbro, *Beccari*, 13.VI.1864 – Castiglioncello, *Campana* 30.VII.1865 - M. Pelato (Livorno), *A. Chiarugi* 2.IX.1923.

Prov. di Pisa: Gabbri di Larderello (Volterra), *U. Martelli* 5.VII.1892 - Rocce serpentinoso, Orciatice, Al Renajo, *Stefanini* 15.V.1903 - Colli tra Malavolta e Gabbro, serpentino, m 150 ca. *A. Fiori* 9.VII.1913 - Pomarance a M. Gabbri, sul serpentino, m 350-480, *A. Fiori*, 6.VI.1916 – Rocca di Sillano (Pomarance) sul serpentino, m 500, *A. Fiori* 8.VI.1916 - Serrazzano (Pisa). Serpentini ad Est del paese m 500 ca., *A. Chiarugi*, *O. Vergnano*, *R. Corradi*, 29.VI.1953 – Chianni (Pisa), serpentini oltre il podere Vitalba sopra la Fattoria Mori (Monti fra la Fine e l'Era), *A. Chiarugi* 25.VIII.1955.

Prov. di Grosseto – Roccatederighi verso Poggio Mozzeta, serpentino, m 600, *A. Fiori* 23.VI.1910.

Armeria saviana Selvi (2009) *Nordic J. Bot.*, 27: 125-133.

Typus - Holotypus in FI: “Toscana, Poggio all’Olmo (Arcidosso, GR), pascoli sassosi, 1030 m, suolo calcareo, 42°51’ N, 11°28’ E, *F. Selvi* 2.VI.2008”.

Caespitose perennial herb with hardy, erect stalks, height up to 45 cm. Sheath 1.6-2.5 cm. Capitula 1.8-2.2 cm in diameter with outer bracts acuminate-cuspidate, 1.5-2.8 × 0.3-0.45 mm, 2-3 often longer than the capitulum, purple-rust-coloured, scarious along the margin. Oval inner bracts, 10-11 × 3.9 mm, carinate, distinctly mucronate at the apex, scarious. Calyx 7.5 mm, with tube of 3 mm, pilous also between the ribs, with scarious lobes terminating in ciliate awn of 2.2 mm. Pink corolla, 8-9 mm.

Iconography – Fig. 1 in Selvi (cit.: 127).

Chromos. Numb. – $2n = 18$ (Selvi, cit.).

Growth form-Habitat - Scapose perennial herb heliophilous and calcicolous growing in mountain meadows.

Chorology - Endemic to the Alta Maremma/Monte Labbro, Poggio Volturaie, M. Aquilaia, M. Buceto, Poggio all’Olmo.

Specimina visa:

In pratis montani mente Labro (M. Amiata Etruria) 1000 m ca., *Arcangeli* VI.1888, sub *A. gracilis* Ten. - In herbidis loco dicto Banditella in M. Labro ad 1000 m alt., *Arcangeli* VI.1888 - In pratis montanis montis M. Selva, *Arcangeli* VI.1888 - Monte Labro presso Santa Fiora, Monte Amiata, *Biondi* 8.VI.1888 - Nei prati della Banditella presso Santa Fiora, *Biondi* 15.VI.1888, sub *A. majellensis* Boiss - Toscana (GR) Arcidosso. M. Labro. 1000-1200 m s.m. ca., *Aldobrandi*, *Baldini*, *Nepi*, 25.06.1991 - Toscana (GR) Arcidosso. M. Labro. Settore W, prati-pascolo, 900 m s.m. ca., *Aldobrandi*, *Baldini*, *Nepi*, 25.06.1991 - Toscana (GR) Arcidosso. M. Labro. Versante Est, prato-pascolo, 1000 m s.m. ca., *Aldobrandi*, *Baldini*, *Nepi*, 26.06.1991.

Armeria helodes Martini & Poldini (1987) Candollea, 42 (2): 537.

Typus – Holotypus in TSB: “Flora Italiae: Province of Udine, flat bogs near the illane of Flambro (Udine), località Roggia dei Molini”.

Rosulate perennial herb with erect scapes, 36-52 cm, glabrous. Sheath slighter longer or subequal to the capitulum. Leaves sessile, glabrous, patent or patent-erect, linear, 14-20 × 0.15-0.3 cm, uninerviate, canaliculate with narrow hyaline margin. Capitula 2.2-2.8 cm in diameter, hemispherical. Outer bracts herbaceous, oval-lanceolate, scarious along the margin, mucronulate; inner bracts obovate or obovate-lanceolate, muticate, scarious. Trifoliate spiklets, briefly pedicellate. Calyx pedicellated, 5-7 mm, with lanous ribs. Triangular lobes with awns of 0.2-0.5 mm. Pinkish-white corolla.

Iconography – In Martini and Poldini (cit.: 542).

Chorology – Friuli-Venezia Giulia (Codroipo). Endemic to the karst springs in the lower plains of Friuli. Reported in the past sub *Armeria elongata* (Hoffm.) Koch for the Veneto plains and other Po Valley localities, but its presence in Italy had already been considered doubtful by Bernis (1953-1956: 256).

Specimina visa:

FRIULI-VENEZIA GIULIA - In turfosis Virco, da *Pirona*, VIII.1861 - Castions di Strada (Friuli) nei prarti paludosi, a 25 m, *L. Gortani* 18.VI.1897 - Paludi di Talmassone, *Marchesetti*, 16.V.1875 - Prov. di Udine: in paludosis prope Castions di strada loco dicto il Molino di Sotto, *Brassica palustris*, *Scirpus holoschoeno*, *Cirsio oleraceo* sociis, alt. 15-20 m, *Gortani C.*, 12.V.1905 (Sched. 622) 5 exs. - Friuli. Paludi (risorgive) di Torsa, suolo torboso, m 25, *Fiori* 14.V.1936.

Race *Armeria gracilis* Ten.

1. Fragile, elongated, more or less numerous scapes. Leaves 5-20 cm. Sheaths 1.5-2(3) cm. Hemispherical capitula 1.5-2 cm. Short outer bracts, 6-8 mm, scarious on the edge.....
.....subsp. *gracilis*
1. Scape in general short, often only one per rosette. Leaves in general less than 5 cm. Sheaths 0.5-1.5 cm. Sub-spherical capitula 2-.3 cm di diameter. Outer bracts 2-4 mm, reflexed.....subsp. *majellensis*

Armeria gracilis Ten. (1831) Fl. Neap. Syll.: 158.

Armeria canescens subsp. *gracilis* (Ten.) Bianchini in Pignatti (1977) Giorn. Bot. Ital., 111: 49.

Armeria majellensis subsp. *ausonia* Bianchini (1977) Giorn. Bot. Ital. 111: 49.

Armeria majellensis var. *subalpina* Levier in Arcang. (1888) Atti Soc. Tosc. Sci. Nat., Proc. Verb., 6: 154-158.

Caespitose perennial Herb, multi-stem with erect scape, 30-45 cm, glabrous or pilous (c. *humilis*) at the bottom. Sheaths approx. 1.5-2(3) cm. Leaves dimorphic, glabrous, 5-20 cm: outer leaves lanceolate or linear-lanceolate, 5 × 0.3-0.5 cm, 3(5) veins, acute; inner leaves ranging from linear, 5-20 × 0.1-0.3 cm, to filiform. Capitula 1.5-2 cm, hemispherical. Outer bracts short, 0.6-0.8 cm, smaller than inner ones, oval-acute or mucronulate, scarious on the edge; inner ones almost entirely scarious. Calyx slightly pediculate, approx. 1 mm, hirsute, 6-7 mm, with tube approx. 4 mm extending into limbus. Scarious

limbus with short sub-triangular apex and awn approx. 1 mm. (Description from topotypes of *M. Velino*, locus classicus).

Chromos. Numb. - $2n = 18$ (Brullo & al. 1994: 207), on material of *M. Pollino* (Potenza).

Chorology – Found in general at altitudes lower than 2000 m: *Velino*, Monte dei Fiori, Campo di Giove alla Majella, M. Corno and Morrone in Abruzzo, M. Coccorello, Monti della Duchessa, M. Sirente, Pizzo di Sivo, Villavallelonga, M. Meta, Piano di Ovindoli, Pollino.

Diagnosis – “*I. Armeria gracilis*; scapo tereti basi hirto vel omnino glabro, foliis lanceolato-linearibus trinerviis, involucri foliolis exterioribus cuspidatis, interioribus obtusissimis (nervo ante apicem evanescente) muticis, pedicellis tubi calycis totius villosi longitudine, petalis integris vel subcrenulatis, Ten. *A. vulgaris* Ten. *Fl. Nap.* III p. 353, excl. *Syn. In pascuis montosis passim C. Velino, Monte Corno in Aprutio; Pollino in Calabria. D. Montevegine; in Hirpinis; Morrone; in Aprutio. Lectotypus non designato.*

Specimina visa (Selection by region):

UMBRIA - Montagna delle Rose presso il Castelluccio, *Batelli*, VI.1888 – M. Subasio (Assisi), calcare, 1000 m, *Fiori* 19.V.1916 – Sigillo. Versante SE di Monte Cucco, pascoli sassosi cacuminali su calcare, *C. Ricceri* e *C. Steinberg* 4.IV.1977

MARCHE – A S. Vicino apennini cingolani, *Narducci*, IX.1844 - In herb. mont. Catria. Prati di Campomiele (da *Piccinini*, I.1864) – Pascoli del monte S. Vicino nelle Marche, 1200 m, 4.VII.1867, da *Bucci* - In pratis apricis subapennini, Limite-lungo-frequens, *R. Ricci*, VI.1877 - Monti di Sarniano, prope Macerata (Marche), *Ricci*, VI.1879 - S. Vicino, IX.1879, *Ricci* - M.te S. Vicino (Marche) in prati, da *R. Ricci*, 1880, sub *A. plantaginea* – M.te Pennino, *Batelli* VI.1886 sub *A. plantaginea* - Montagna delle Rose presso il Castelluccio, *A. Batelli* VI.1888 - Monte della Sibilla (prov. Ascoli Piceno) in pascuis circ. 2200 m, *Sommier* 9.VIII.1895 - Montemonaco, M. Vettore: salendo da Forca di Presta verso il Rif. Zilioli dai ravaneti al Rifugio, m 2000-2215. *C. Ricceri*, *C. Steinberg* 6.VII.1977 – Montemonaco, M. Vettore: rupi e breccie ad E del Lago di Pilato, *C. Ricceri*, *C. Steinberg* 6.VII.1977 – Montemonaco. M. Vettore: salendo nei prati fino ai ravaneti da Forca di Presta verso il Rif. Zilioli. *C. Ricceri*, *C. Steinberg* 6.VII.1977 – Montemonaco. M. Vettore: vallette nivali e breccie dal Rif. Zilioli al Lago di Pilato, m 2215-1950, *P.V. Arrigoni*, 6.VII. 1977 – Montemonaco. M.te Porche: falde sassose e prative m 2000-2200. *C. Ricceri*, *C. Steinberg* 9.VII 1977 - Castelsantangelo. Praterie sotto M.te Bove nei pressi della Funivia m 1900, *C. Ricceri*, *C. Steinberg* 9.VII.1977 – Visso. Macereti e rocce di M.te Bove, m 1900-2100, *C. Ricceri*, *C. Steinberg* 9.VII.1977 –

LAZIO - Velletri nei prati, 23.V.sine anno, da *Tanfani* sub *A. elongata* - In collibus Tusculani, *Webb*, 23.V.1848 – Monti Tusculani, *Rolli* 10.VI.1858 - In montosis Campaniae Mainarde, IX,1872, *Tenore* sub *A. denticulata?* - In glareosis Monte Cavallo in Aprutio, 8300 piedi, *H. Groves* VIII.1875 - In collibus Poggi della Pallarispera (?), *Macchiati* 23.V.1880 – Campi d'Annibale presso Albano, *Biondi* V.1886, sub *A. vulgaris* var. *elongata* – Cappuccini di Genzano, sine coll. 30.V.1889 - Rocca di Papa (Frascati) *L. Vaccari*, 15.IV.1902 - M. Guadagnolo. 900-1300, *L. Vaccari*, 1.VI.1902 - Tivoli, fra S. Polo e M. Gennaro, 600-1270, *L. Vaccari* 8.VI.1902 – Cammerata Nuova al fosso Fisis fino allo Stabilimento, 600-800 m, *Vaccari* 28.V.1904 - Dintorni di Tivoli. *L. Vaccari* IV.1907 - Salita Stabilimento di Fosso Fiojo (Lazio), *L. Vaccari* 10.VI.1911 - Da Rocca di Papa al Malepasso, 750 m. Comune nei prati e qua e là al margine del bosco. *L. Senni* 4.VI. 1939, sub *A. vulgaris* var. *plantaginea* W. - Maschis delle Faete. Terreni nudi di crinale. *L. Senni*, 4.VII.1939 – M. Terminillo, colle fra i due coni, sui 1800 m. *Montelucci* 12.VII.1949, sub *A. vulgaris* var. *majellensis* (Boiss) - Faggeta presso la Staz. Infer. Della funicolare del M. Terminillo, *A. Chiarugi*, *R. Corradi*, *A. Contardo* 31.VII.1953 – Da Campo Forogna al Terminilletto, *A. Chiarugi*, *R. Corradi*, *A. Contardo* 31.VII.1953 - Pascoli calcarei nel Comune di Vitucoso (Fr.) ad oltre m 1000 s.m., *Agostini* 10.X.1955.

ABRUZZO:

- **Majella** - Majella (Aprut. citer.) Valle Orfenta, supra Caramanico, *Levier* 2.VII.1872 - Majella (Aprut. citer.) in lapidosis ad radicem montis Majellone, supra Caramanico, *Levier* 8.VII.1872 - Fondo di Majella, Abruzzi, *Groves*, VIII.1873 - Campo di Giove, valle di Fonte Majella, 1800-2000 m, *L. Vaccari*, 29.VI.1906 - Caramanico (Majella) salendo al convento di S. Nicola, 600-700 m, *L. Vaccari* 9.VII.1906 - Majella, boscaglia a *Pinus mugo* e rocce del M. Cavallo, m 2000-2171, *Nardi* e *Bavazzano*, 4.VIII.1970 - Caramanico. Prati della Majelletta. Scendendo lungo il sentiero per Caramanico, 2050-1800 m, *Ricceri e Steinberg* 8.VII.1978.

- **Gran Sasso** - Prov. di Teramo: in jugo montis Gran Sasso d'Italia in pratis di Arapietra, alt. 1200 m, solo calcareo, *Andrea Fiori*, 14.VII.1904 - Vive nei prati di Arapietra, G. Sasso, prov. di Teramo, *Baldrati*, 14.VII. 1967 -

- **M. Velino** - In alpinis editioribus montis Velino (Passo del Vertichio), *Levier* 9.VIII.1875 - Abundi in rupestribus subalpinis declivii aridis montis Velino, *Levier* 15.VII.1876 - Monte Velino (Abruzzo), *U. Martelli* 3.VIII.1903 - Velino, Valle di Teve m 1000-1500, *Vaccari* 9.VII.1911.

- **M. Morrone** - In Monte Morrone, *Sommier* 4.VII.1872 - Monte Morrone, supra Sulmonam. In rupestribus vallis di Mala Cupa, m 1500 ca. *Levier* 1.VIII.1873 - Supra Salle, est. 1875, *Profeta* - Monte Morrone (Abruzzi), *Profeta* estate 1891.

- **M. Sirente** - In alpinis editioribus montis Sirente (salendo da Rovere), *Levier* 1.VIII.1870 - In declivibus Montis Sirente in Aprutio, *Groves* VII.1875 - In pascuis saxosis M. Sirente (Cerretto), *Profeta* VII.1876 - In glareosis Monte Sirente in Aprutio, *Profeta*, VII.1877 - Ai prati di Santa Maria sopra Ajelli, 1500 m, *L. Vaccari*, 30.VI.1904 - Prov. d'Aquila, Pescasseroli, calcareo, m 1250, *A. Fiori*, 23.VI-1.VII.1926 -

- **Monte Coccorello**, in agro marsico ad orientem montis Velino, *Levier*, 13.VIII.1875 - In alpinis et subalpinis montis Coccorello, in silvo Marsico, *Levier*, 13.VIII.1876.

- Avezzano, salita al Convento di Madonna di Pietracquara, 800-1000 m, *L. Vaccari* 20.V.1911 - Roccaraso, pascoli sassosi e rupi di M.te Greco, m 2000-2285, esp. E-NE, *Bavazzano*, *Nardi*, *Ricceri*, 10.VIII.1968 - Piano di Ovindoli (L'Aquila), *Chiarugi* 1.VI.1929 - Ovindoli, Piano di Pezza, *Chiarugi* 2.VI:1929 - Villavallelonga, Taverna degli alpini, *Grande* 29.VII.1904 - Villavallelonga. Monte Serrone. *Nardi* e *Tardelli*, 7.VIII.1977 - Valle Sagittario vers. Scanno, *Levier* 25.VI.1887 - Scanno. Pascoli e rocce di M.te Genzano, m 1850-2170, *Bavazzano*, *Nardi*, *Ricceri*, 11.VIII.1968 - Scanno. Pascoli sassosi e rocce esposte a Nord del valico La Genzana e Serra Leonardi, m 1700-1800, *C. Ricceri* e *C. Steinberg*, 11.VII.1978 - Tagliacozzo (Abruzzo). M. Valminteria presso Petrella, *Vaccari* 28.V.1905 - Pizzo di Sivo/Abruzzi/ presso le Macerie della morte, *Gemmi*, 17.VII.1877 - Montagna dei Fiori (Teramo). Pascoli del versante nord del M.te Piselli, alla base della seggiovia (1450-1550), *G. Aldobrandi*, *G. Padovani*, *E. Tosi*, 26.V.1987, sub *A. seticeps* Rchb.

MOLISE - M. Capraro a 1700 m ca., *A. Villani* VII.1908 - S. Gregorio Matese, M.te Mutria, faggeta rada e pascoli sassosi da Bocce della Selva q. 1590 a q. 1800 lungo il crinale, *Bavazzano* e *Ricceri*, 6.VIII.1968 - San Gregorio Matese, M.te Mutria, pascoli sassosi cacuminali e doline della vetta, q. 1800-1823, *Bavazzano* e *Ricceri*, 6.VIII.1968 - Capracotta. M.te Capraro: faggeta rada e pascoli de La Crocetta alla vetta, m 1450-1730, *Bavazzano* e *Ricceri*, 7.VIII.1968 - Fra S. Massimo e Campitello Matese (Molise), m 1300, *F. Bianchini* 6.IX.1975.

BASILICATA - M. Volturino in pascuis alpinis, alt. 1800-1836, *Gavioli* sine d. - Pignola. Serramatta 1450 m ca., *Gavioli* VII.1908.

- **M. Pollino**: Monte Pollino, *Biondi* VII.1880 - M. Pollino in pascuis loco Piano del Pollino vocato, alt. 1800-1900 m, *Gavioli* 4.VIII.1929 - M. Pollino in herbosis, loco "Piano Cardoso" vocato, alt. 1800 m, *Gavioli* 4.VIII.1929 - M. Pollino. M. Serra delle Ciavole, in rupestribus calcarei alt. 2000 m, *Gavioli* 4.VIII.1929 - Gruppo del Pollino. Gariga presso il Belvedere a SE del Torrione della Capanna. Alt. 1600 ca. *Nardi*, *Bavazzano*, *Posca*, 22.VII.1972 - Gruppo del M. Pollino. Serra del Prete, garighe e pascoli del crinale di SO salendo dal Belvedere tra 1650 e 2000 m, *Nardi*, *Bavazzano*, *Posca*, 23.,VII.1972.

CALABRIA - In pascuis elatis Saggio Sibylla (1500-1800 m s.m.) Calabriae, *E. et A. Huet du Pavillon* 28.VI.1856 - Dirupata di Morano a 1300 m, *Fiori* 19.VI.1899 - Gruppo del Pollino. M. Dolcedorme. Valle dei mali venti, in pascuis saxosis, alt. 1800-2000 m, *Gavioli* 23.VII.1935 - Praterie e garighe del circolo glaciale tra il M. Pollino, Serra Dolcedorme e Serra delle Ciavole (Piano di Toscano, Piano di Pollino e Piana del Pollino). Alt. 1800-2000 m ca., *Nardi, Bavazzano, Posca* 25.VII.1972.

- subsp. *maiellensis* (Boiss.) Arrigoni, comb. nova

Basion. *Armeria majellensis* Boiss. in A. DC. (1848) Prodr. 12: 685.

Armeria alpina Ten. (1831) Fl. Neap. Syll.: 160, non Willd. (1809).

Armeria maritima subsp. *maritima* var. *majellensis* (Boiss.) Bernis (1953) Anal. Inst. Bot. Cavanilles, 11(2): 247.

Multi-stem perennial herb, in small heads, with erect scapes, 10-25 cm, hairy at the base (glabrous in Boissier), with short sheath, 0.5-1.5. Dimorphic leaves: outer ones linear, short, 2-4 × 0.2-0.4 cm, bending toward the ground, 3-5 veins, with undulated cartilaginous margin; inner leaves linear or filiform, 2-4 × 0.1-0.2 cm. Capitula 2-3 cm in diameter, with short outer bracts, shorter than inner bracts, oblong-acute, 0.2-0.5 cm, briefly scarious along the margin, inner bracts oval, 3-7 mm long, with more or less scarious margin. Sessile or sub-sessile calyxes, approx. 7 mm, with tube of 3 mm, hirsute ribs and apex of the lamina scarious, triangular-acute, with awn of approx. 1 mm. Pinkish-white flowers. (From materials typical of the Majella).

Chorology – Majella (locus classicus). Central-southern Apennines: M. Amaro, Gran Sasso, Monte Morrone, Monte Majellese (Martellese), Monte Sirente, M. Meta, M. Zaffinetto (Valle Canneto), M. Cavallo, M. Mucchia, in general at altitudes over 2000 m.

Variability – Stalk sometimes pilous at the base (Majella, Sirente) or glabrous (Gran Sasso), leaves sometimes very short (1-2 cm). Capitula of the Gran Sasso and the Sirente small (1.2-1.5 cm).

Ecology - As correctly noted by Fiori (note to *Armeria gracilis* Ten, no. 1911 Fl. Ital. exs., ser. II) “*majellensis* is the form of the Alpine meadows, *gracilis* that of the meadows and stony places in the sub-Alpine and mountainous zone”.

Notes – It is distinguished from *Armeria gracilis* Ten. by the smaller size of the outer bracts of the capitulum (0.2-0.5 cm, slightly acute), by the leaves, by the sheaths and, in general, by the scape. At anthesis, the capitula are sub-spherical (2-3 cm in diameter) while in *Armeria gracilis* they are hemispherical (1.5-2 cm in diameter). *Armeria majellensis* appears as the product of a hypsophyllic evolution of *A. gracilis*.

Specimina visa (Selection by region):

LAZIO - In glareosis alpinis ad radices montis Zaffiretto, supra vallem Canneto (Campania sept., Prov. di Sora) loco: Passaggio dell’Orso, *Levier* 8.VIII.1872 - In lapidosis alpinis montis Meta Campaniae (Valle del Viscuzzo), *Levier*, 9.VIII.1872.

ABRUZZO - **Majella** (Aprut. Citer.) in lapidosis ad medium montis Majellone supra Caramanico, *Levier* 8.VII.1872 - Monte Amaro specialmente verso la cima, 8000 piedi, *Groves* VIII.1875 - Majella: Monte Amaro verso i 2000 m, *Guadagno* VIII.1899 - Majella, tra Pescofalcone e Rapina, 2500-1900 m, *L. Vaccari* 28.IX.1903 - Majella, tra M. Amaro e quota Pesco Falcone, 2800-2600, *L. Vaccari* 28.IX.1903 - Majella, da Grotta Cavata al Rifugio di M.te Amaro, 2500-2800, *L. Vaccari*,

28.IX.1903 - Majella. Stazione di Campo di Giove, *L. Vaccari* 30.VI.1905 - Campo di Giove, fra Fonte Majella e Femmina Morta, 2000-2500 m, *L. Vaccari*, 1.VII.1905 - Majella, *L. Vaccari* 14.X.1909 - Majella, fra Campo di Giove e M.te Amaro, *L. Vaccari*, 18.X.1909 - Majella, *U. Martelli*, 1923 - M.te Majelletta. Dal Rifugio “La Majelletta” al Blockhaus, m 1892-2142, *Nardi* e *Bavazzano*, 12.VII.1969 - Majella. Pietraia del crinale Nord e della vetta del M. Focalone, m 2450-2676, *Nardi* e *Bavazzano*, 6.VIII.1970 - Majella. Praterie e rocce del circolo glaciale fra M.te Focalone e cima delle Murelle, m 2400-2600 ca., *Nardi* e *Bavazzano* 6.VIII.1970.
 - **Gran Sasso** d’Italia (2934 m), *Marchesetti* 29.VI.1875 - Gran Sasso d’Italia. Rupi della Traversa di Portella, *Martelli*, 14.VIII.1893 - Pascolo del Gran Sasso presso al Rifugio, *Martelli* 15.VIII.1893 - G. Sasso in Campopericoli, *Andrea Fiori* 30.VII.1898 - Gran Sasso d’Italia, in pratis di Campo Pericoli, alt. 2200 m circ., solo calcareo, *Andrea Fiori*, 18.VII.1907.
 In Monte Morrone, *Sommier* 4.VII.1892 - In rupestribus alpinis montis Velino (Passo del Verticchio, 23-2400 metr) *Levier* 9.VIII.1875 - M. Velino (Abruzzi) dai prati di Onscita alla punta 1800-2476, *Vaccari*, 8.IX.1902 - Sirente sopra Gagliano, m 2800-1500, *L. Vaccari* 29.VI.1910 - Monte Viglio fra la fontana degli Scifi e la vetta, m 1600-2158, *L. Vaccari*, 2.VII.1901.

Race *A. macropoda* Boiss.

1. Calyx 8-10 mm. Outer vernal leaves 5-6 mm wide, inner ones 3-4 mm ...***A. macropoda***
1. Calyx 7-8 mm. Outer vernal leaves 2-5 wide, inner ones 1-3 mm.....2
2. Outer bracts lanceolate-acute 0.8-1.5 cm. Inner leaves linear-filiform, 1-2 mm wide
Apulian-Lucanian populations
2. Outer bracts oval-acuminate, 0.8-2 cm. Inner leaves linear-lanceolate, 2-3 mm
***A. garganica***

Armeria macropoda Boiss. in DC. (1848) Prodr. 12: 688.

Armeria morisii var. *macropoda* (Boiss.) Parl. (1866) Fl. Ital., 8: 600.

Armeria maritima subsp. *maritima* var. *macropoda* (Boiss.) Bernis (1953) Anal. Inst. Bot. Cavanilles, 11(2): 246.

Armeria scorzonerifolia Ten. (1831-1842) Syll. Fl. Neapol.: 160, non Willd.

Caespitose perennial herb with erect, robust scapes, 50-60 cm, with sheath di 3-4 cm, lacerated at the base. Dimorphic leaves, 5-20 cm, basilar leaves as wide as 5-6 mm, inner leaves 3-4 mm, decurrent near the bottom, 5-9 veins, glabrous, with scarios margin. Capitula from 2 to 3 cm in diameter, with 2-4 basilar bracts, oval-lanceolate, larger than the inner ones, acute, the others obovate, obtuse, with scarios margin, the inner interfloral bracts entirely scarios. Spikes with peduncle of 2 mm. Trifloreted spikelets, briefly stipitate, the lower flower with pedicel of 3-4(5) mm. Calyx 8-10 mm long including the awn, tube of 3-4 mm, villous, extending into the lamina. Oval-triangular lobes with awn of 1.5-3 mm. White or slightly pink corolla. (Description from topotypes of the locus classicus: M. Vergine).

Note - On Terminio the outer leaves are also 1-1.2 cm wide. In the materials from Monte Alburno the sheath is reduced to 2-2.5 cm, the leaves and the dimensions of the capitulum (2 cm) are highly reduced (the inner leaves almost filiform).

Chorology - Monte Vergine and Terminio in the Province of Avellino. Monte Alburni, Monti Picentini, on calcareous rock. Bernis (cit.) indicates, in addition to Monte Vergine,

the localities of Valle Tretta near S. Angelo (Potenza), Jai (Foi?) in Lucania, Pignola and Monte Impiso near Pietrapertosa.

Specimina visa:

LAZIO - Lungo l'Autostrada del Sole. Tra Roma e Napoli all'altezza dell'uscita di S. Cesareo (coltivata), *P.V. Arrigoni* 24.IV.1975 - Lazio: Attigliano, 6,5 Km a Sud di Attigliano sull'Autostrada del Sole (coltivata), *P.V. Arrigoni* 2.V.1975 - S. Cesareo. Autostrada del Sole Roma-Napoli nella scarpata poco dopo S. Cesareo (coltivata), *C. Ricceri* 21.IV.1978 - Lungo l'autostrada del Sole, tra Anagni e Frosinone (coltivata). *P.V. Arrigoni* 2.V.1995.

CAMPANIA: **Montevergine**: Montevergine, *Pasquale*, VII.1851 - Montevergine pr. Avellino, 1400 m, *M. Guadagno* VII.1900 - Loc. Hirpinia. Prov. di Avellino: communis in saxosis, apricis montis Vergine, alt. 1200 m, solo calcareo, 19.VI.1904, *M. Guadagno* sub 325. *Armeria morisii* Boiss. var. *macropoda* Boiss. (pr. sp.) in DC. Prodr., XII, p. 688 (1848). Schedae Fl. Ital. Exs. - Avellino, Boschi di Montevergine, leg. *G. Pellanda* 12.VII. 1910.

Monte Motola (Salerno) tra Piaggine e Fegiano in pascuis saxosis e 1500 m (flores rosei), *Lacaita* 18.VII.1919 - Monte Motola, interno dell'Abetina, *A. De Philippis*, 9.VI.1948.

Monte Alburno. Da Corleto M. a C. Sierre. Faggeta deteriorata 1200-1420 m, *A. De Philippis*, 12.VIII.1936 - Monte Alburno. Da Sicignano a M.te Panormo. Crinale a 1500, *A. De Philippis*, 16.VIII.1936 - Monte Alburno. Da Postiglione a Campo d'Amore. Cresta rocciosa a 1450 m, *A. De Philippis* 29.VII.1939 - Monte Alburno. Da Sicignano a M.te Tisone. Pascolo roccioso cacuminale (1570 m) *A. De Philippis*, 12.VIII.1941 - Monte Alburno. Da C. Aresta a S. Angelo. Cresta dio Serraventola (1300 m), *A. De Philippis* 14.VIII.1941 - Monte Alburno. Da S. Angelo a C. Farina. Pascolo roccioso (Giammaria), *A. De Philippis* 15.VI.1942 - Monte Alburno. Da S. Angelo a C. Farina. Sopra S. Angelo (fino a 1000 m), *A. De Philippis*, 16.VI.1942 - Monte Alburno. Polla-Vallescura, prato a 800 m, *A. De Philippis*, 7.VI.1948 - Monte Alburno. Lungo la cresta da Costa La Croce a Ottati (600-900 m), 29.V.1951, *A. De Philippis* e *G. Moggi* - Monte Alburno. Pascoli e rocce presso il Figliolo e flora cacuminale, m 1300, 1.VI.1952, *Pichi Sermolli* e *G. Moggi* - Monte Alburno. Pascoli a N di C. Aresta m 1200, 1.VI.1952, *G. Moggi* e *R. Corradi*.

M. Partenio: Terreni calcarei pascolivi del Piano Maggiore (m 1300 s.m.) del M. Partenio (AV), *R. Agostini* 11.VII.1954 -

M. Taburno (Benevento): In montosis Campaniae Taburno, sine coll., sine die - Taburno, *Gussone* X.1849 - Pascoli e rocce del crinale e del versante S tra la Cresta del Taburno e la vetta, m 1150-1394, *Nardi e Bavazzano*, 18.VII.1969.

M. Terminio alle rupi Falconara, pascoli sassosi calcarei m 1100-1300, leg. et det. *Moraldo*, 21.VI.1974.

M. Cervialto, pascoli sassosi m 1600-1800, *Moraldo* 16.VII.1975.

- Pomigliano d'Arco, presso la stazione autostradale della Bari-Napoli, coltivata. *P.V. Arrigoni* 2.V.1975.

BASILICATA - Basilicata, Da *Gasparini* in Ottobre 1845, sub *A. denticulata* Bert. - Pignola in pascuis montis Serranetta, *Gavioli* VII.1907 - Sasso Costaldo in pascuis montis Tempa dell'Olmo, solo calcareo humoso, alt. c. 1250 m, 4.VI.1922, *Gavioli* - Sasso Costaldi in herbosis montis Tempa dell'Olmo, solo calcareo alt. 1200 m, *Gavioli* 4.VI.1922 - Sasso Costaldo, in cacuminis montis Serra della Criva, solo calcareo, alt. 1263 m, 4.VI.1922, *Gavioli* - Pignola in cacuminis montis Serranetta, sol. siliceo, alt. 1470 m, *Gavioli* 24.VI.1923 - Pignola. M. Bernardo in pascuis calcareis, alt. 1200 m, *Gavioli* 7.VII.1925 - Potenza. M. Fai, in herbidis, solo siliceo, alt. 1200-1360 m, *Gavioli* 13.VI.1926 - M. Fai, in pascuis editis alt. 1300 m, *Gavioli* 3.VI.1928.

Notes - Lucanian plants are in general more delicate than those of Campania and have shorter pedicels on the calyx (approx. 2 mm). The calyx lobes are modest.

Armeria macropoda is present also in the Apulian Murge but, as in Basilicata, with less highly developed populations. They could be distinguished on the sub-species level, but the few examples we have examined are not sufficiently convincing. However, we will report their description and exsiccata.

Description - Perennial Herb, multi-stem, with erect scapes, 30-40 cm, hardy. Sheath 1.5-3.5 cm. Outer leaves linear-lanceolate, 5-7 × 0.3-0.4 cm, scarios-marginate; inner leaves linear, 6-12 × 0.1-0.2 cm, very acute at the apex. Capitula 2.5-3 cm in diameter, sub-spherical at anthesis. Outer bracts lanceolate-acute, 0.8-1.5 cm, either longer or shorter than the inner ones. Inner bracts oval-oblong, approx. 1 cm, either very scarios on the border or entirely scarios. Spikelets with pedicles of 1.5-2.5 mm. Calyx 8-9 mm with tube of 3 mm, villous on the veins, and very pronounced scarios lobes, ending in a short awn (1 mm at most). Pink corolla crenulate at the apex.

Specimina visa:

PUGLIE - Nel "Pulicchio" di "Fioriti" alle Murgie di Gravina, *A. Palanza* 5.VI.1898 sub *Armeria plantaginea* W. (Palanza alla Flora della Terra di Bari p. 36) - Martina Franca (Terra di Otranto) nelle macchie della Masseria Cobucci; solo calcareo, c. 450 m (flores albi), 10.V.1920 *C. Lacaita* sub *Armeria canescens* (Host) Born. ad *A. macropodam* Boiss vergens.

Armeria garganica Arrigoni species nova (Fig.3)

Herba caespitosa scapis erectis, 25-50 cm altis, cylindricis, robustis. Vaginae 2-3(4) cm longae. Folia primordialia plana, apice acuta, 3-5 × 0,2-0,5 cm, 5(7)-nervia, interna linearia vel filiformia, 5-15 (20) × 0,2-0,3 cm, conduplicata, plerumque trinervia. Capitula 2-2,5 (3) cm in diametro, hemisphaerica vel subsphaerica sub anthesi. Bracteae exteriores interioribus longiores, duae basales ovali-acuminatae, 8-20 mm longae, ceterae ovali-rotundatae apiculatae margine scariosae, vel rotundato-obtusae totae scariosae. Calyces subsessiles, 7(8) mm longi arista inclusa, tubo brevi (circa 3 mm longo), lobis triangularibus, arista 1-1,5 mm longa. Corolla alba vel rosea.

Typus - Holotypus in Fl: "Ex Itinere I. italico Portae et Rigoi/*Armeria plantaginea* Willd./Italia austral. Apulia: Gargano in herbidis apricis pr. S. Nicandro sol. calcar. 30/6 1874, *Porta et Rigo*."

Caespitose herb with erect scapes, 25-50 cm, cylindrical, hardy. Sheaths 2-3(4) cm. Primordial leaves flat, acute at the apex, 3-5 × 0.2-0.5 cm, 5(7) veins, inner leaves from linear to filiform, 5-15 (20) × 0.2-0.3 cm conduplicate, in general triveined. Capitula 2-2.5 (3) cm in diameter, from hemispherical to sub-spherical at anthesis. Outer bracts longer than inner ones, the two basal ones oval-acuminate, 8-20 mm, the others ranging from oval-rounded, apiculate at the apex, scarios along the edge, to rounded-obtuse, entirely scarios. Sub-sessile calyxes, 7(8) mm with the awn; short tube (approx. 3 mm), triangular lobes and awn of 1-1.5 mm. White or pink corolla.

Chorology – Promontory of Gargano (Apulia).

Note – Simile to *Armeria macropoda* but distinguished from it by narrower leaves, the inner ones ranging from linear to filiform, the basal bracts short and oval, acuminate.

Specimina visa:

GARGANO (Puglie) - Italia austral. Apulia in pascuis circ. M.te St. Angelo Gargani, 1-2000' sol. Calcar, *Porta e Rigo*, 21.VI.1875 - Italia austral. Apulia: Gargano in herbidis apricis pr. S. Nicandro sol. calcar. 31.VI.1876, *Porta e Rigo* - Coste di Manfredonia presso Cagnano, 15.V.1893, *Martelli* - Monte Sacro, *Martelli*, 31.V.1893 - Falde di Monte Calvo, *Martelli*, 27.V.1893 - Madonna degli Angeli presso Monte S. Angelo, *Martelli* 29.V.1893 - Rupi della Madonna degli Angeli, presso Monte S. Angelo, *Martelli* 29.V.1893 - Gargano a M.te S. Angelo, Fiori 14.VI.1898 - Gargano a M.



Fig. 3. *Armeria garganica* Arrigoni $\times 0.59$. Details: Calix and scales $\times 5.9$.

Nero, *Fiori* 16.VI.1898 - Gargano, M. Sacro, calcare, m 900-950, 21.V.1913, *A. Fiori* – Gargano, M. Sacro, calcare, m 900-950, 21.V.1913, *A. Fiori* – Monte S. Angelo (Italie, prov. Foggia, Peuilles), le long de la Route Nationale n. 528 vers la “Foresta Umbra”, près de la ferme Armillotti, alt. env. 670 m, pâturage de montagne, à exposition Sud-est, 11 juin 1996, *Aldobrandi* e *Baldini*.

Armeria brutia Brullo, Gangale & Uzunov (2004) Bot. Jahrb. Syst., 125(4): 465.

Typus – Holotypus in CAT: “Sila, Silvana Mansio 20.VII.1998, Bartolo, Brullo et Gangale”.

Caespitose perennial herb with erect scapes, 10-50 cm, with sheath di 1-2.5 cm. Outer leaves flat, 1.5-3 (5-6) cm, multi-veined, obtuse, inner leaves from linear to filiform, 3-5 veins, from subacute to acute, sometimes as long as 15 cm. Outer bracts from oval-lanceolate to linear-lanceolate, 6-10 mm, scarious on lateral edges, inner bracts from oblong to oval-oblong, triveined, 2-3.5(4) mm wide, with scarious margin. Outer bracts of the spikelets obovate, 7.5-8 × 5-5.5 mm, intermediate ones oblong and obovate-oblong, 5-5.5 × 2.5-3 mm. Calyx 7-8.5 mm with sub-obtuse lobes, with awn of 1 mm. Petals 10-10.5 mm, slightly truncated at the apex.

Chromos. Numb. - $2n = 18$ (Brullo & al., 1994: 207), on material from Sila (Cosenza), sub *A. canescens* (Host) Ebel.

Chorology – Endemic to Sila (Grande and Piccola).

Specimina visa:

CALABRIA – Sila. Habui a Cl. Bivona cui miserat *Thoscos* (?) – Calabria III orient. Distr. Castrovillari in pascuis sylvatic. In M.te Cataracte, solo calc., 900-1000 m, *Huter, Porta, Rigo*, 18.VI.1877 (3 exs.) - Sila al Gariglione, *A. Fiori* 7.IX.1883 - Sila. Fossiatà (Longobucco, m 1300, sol. granitico, *A. Fiori* 29.VII-3.VIII.1918 – La Sila (Calabria). Tra Lorica e Bivio Garga, m 1300. *G. Sarfatti* e *R. Renato*, 9.V.1950 – La Sila (Calabria). Camigliatello: dintorni m 1290, 11.V.1950, *G. Sarfatti* e *R. Corradi* - La Sila (Calabria). Ponticelli (S.S. 107 Km 97) m 1300. *G. Sarfatti* e *R. Corradi*, 11.V. 1950 - La Sila (Calabria). Santa Barbara m 1300, *G. Sarfatti* e *R. Corradi*, 12.V.1950 - La Sila (Calabria). Camigliatello: pendii sottostanti verso la piana m 1290, *G. Sarfatti* e *R. Corradi*, 13.V.1950 – La Sila (Calabria). Monte Curcio m 1700, *G. Sarfatti* e *R. Corradi*, 14.V.1950 - La Sila (Calabria), Salita al M. Carlomagno da Silvana Mansio, m 1450-1670, *G. Sarfatti* e *R. Corradi*, 14.VI.1950 - La Sila (Calabria). Neto di Ferrara, m 1300, *G. Sarfatti* e *R. Corradi*, 22.VI.1950 – La Sila (Calabria), Regione Ciricilla zona piana umida, m 1370, *G. Sarfatti* e *R. Corradi*, 27.VI.1950 – La Sila (Calabria). Regione Ciricilla faggeta ad Ovest della zona piana, m 1390, 27.VI.1950, *G. Sarfatti* e *R. Corradi* - La Sila (Calabria). Camigliatello, nei boschi salendo verso M. Curcio, m 1300-1600, *G. Sarfatti* e *A. Contardo* 10-16.VII.1951 - Sila: contrada Giamberga m 1050 (Sila Greca), *Chiarugi A., Bavazzano R., Contardo A.*, 30.V.1955 - Sila (Camigliatello): Macchia Sacra m 1500 ca., *Chiarugi A., Bavazzano R., Contardo A.*, 30.V.1955 - Sila. Bivio di Garga (Cosenza), m 1255 ca. *Chiarugi A., Bavazzano R., Contardo A.*, 31.V.1955 – Sila Piccola (Cosenza). Poverella, sui 1150 m. Luogo erboso, aperto, ai margini del bosco, *M. Padula, R. Corti*, 11.X.1960 - Sila Grande: Lago di Cecita, verso Longobucco, *P.L. Di Tommaso* e *E. Ferrarini*, 14.VI.1973.

Armeria aspromontana Brullo, Scelsi & Spampinato (1997) Edinb. J. Bot., 54 (1): 91.

Typus – Holotypus in CAT: “Italy. Aspromonte, Bocca del Lupo, 18.VII.1992, *Brullo, Scelsi* et *Spampinato*”.

Caespitose perennial herb with erect scapes, faintly striated, 10-32 cm, with sheaths di 10-16(20) mm. Leaves green-glaucous, glabrous, stiff, dimorphic; outer leaves linear-lanceolate, flat, 2-6 × 0.2-0.4 cm, inner ones linear or filiform, 2-11 × 0.05-0.2 cm. Hemispheric capitula, 12-18 mm wide. Outer involucral bracts from oval-triangular to linear-subulate, 5.5-20 mm, more or less cuspidate, scarious along the edge. Inner bracts from sub-round to oblong, 6-8 × 3.5-6 mm, briefly apiculate at the apex, with wide scarious margin. Sub-sessile spikelets, 2-3 flowers, axcillated by scarious hyaline bracts. Calyx 6-7 mm, with hirsute tube and with limbs and short triangular lobes, with awn of 0.8-1 mm. Pinkish petals, approx. 8 mm.

Iconography – Figs. 1-2 in Brullo & al., (1997: 92-93).

Chorology – Endemic to the Aspromonte, on metamorphic rocks between 1300 and 1900 m.

Specimina visa:

CALABRIA – Calabria I orient. In pascuis petrosis supra Conventum di Polsi ad Montalto, Aspromontes, sol. granit. 1400 m, *Huter*; *Porta Rigo* ex itinere italico III, 30.V.1879 (4 exs.) – Monte Alto di Aspromonte, *U. Martelli*, 8.VI.1906 - Bocca del Lupo, *Brullo, Scelsi et Spampinato*, 18.VII.1992 (Isotypus).

The genus *Armeria* is completed in Italia by the following taxa of Sicily and Sardinia:

Armeria nebrodensis (Guss.) Boiss. in DC. (1848) Prodr., 12: 685.

Statice nebrodensis Guss. (1842) Fl. Sic. Syn., 1: 366.

Chorology – Eastern Sicily (M. Peloritani). Madonie above Petralia (*locus classicus*), Colma grande, etc.

Armeria gussonei Boiss. (1848) A. DC., Prodr, 12: 687.

Armeria morisii var. *gussonei* (Boiss.) Parl. (1866) Fl. Ital., 8: 800.

Chorology – Endemic to Sicily (*locus classicus* Rocca Busambra).

Armeria morisii Boiss. in A. DC. (1848) Prodr, 12: 687.

Chorology - Endemic to central-eastern Sardinia.

Armeria sardoa Spreng. (1827) Syst. Veg., 4(2): 127.

Armeria vulgaris subsp. *sardoa* (Spreng.) Terracc. (1930) Mem. Accad. Sci. Torino, ser. 2, 67: 32.

Chorology - Endemic to the mountains of central-northern Sardinia.

Armedria sardoa subsp. *genargentea* Arrigoni (1970) Webbia, 25: 166.

Chorology - Endemic to M. Gennargentu.

Armeria sulcitana Arrigoni (1970) Webbia, 25: 169.

Chorology - Endemic to the mountains of south-western Sardinia, from 800 to 1300 m (*Locus classicus* M. Santo di Pula).

Escludendae

Armeria arenaria subsp. *bupleuroides* (Godr. & Gren.) Greuter & Burdet (1989) Willdenowia, 19: 39.

Armeria bupleuroides Gren. & Godr. (1850) Fl. Fr., 2: 736.

Armeria plantaginea subsp. *bupleuroides* (Gren. & Godr.) Nyman (1881) Consp. Fl. Eur.: 616.

Armeria plantaginea var. *bupleuroides* (Gren. & Godr.) Lawrence (1940) Gent. Herb., 4(11): 391-418.

Plant woody at the base, delicate with scapes of 20-30 cm, and capitula di 1.2-1.8 cm. Triveined glaucose-green leaves, with wavy margin, 4-8 mm wide. Capitula approx. 1.5 cm in diameter. Outer involucral bracts pale, distinctly shorter than capitulum, i.e., not surpassing the flowers. Calyx with lamina having short, triangular lobes, almost obtuse lobes, abruptly contracted in an awn longer than the lobe. Corolla white, at times pinkish-white.

Chorology – Alpine-Pyrenean/Western Alps, in general on calcareous substrates: Frejus, Toulon, Marseille, Gap. Not in Italy according to Greuter & al. (1989: 308) and Aeschmann & al. (2004, 1: 394).

Armeria canescens (Host) Ebel (1840) Gen. Armeria: 28.

Statice canescens Host (1827) Fl. Austr., 1: 407.

Armeria canescens (Host) Boiss. in DC. (1848) Prodr., 12: 686.

Armeria maritima subsp. *maritima* var. *canescens* (Host) Bernis (1953) Anal. Inst. Bot. Cavanilles, 11(2): 246.

Armeria dalmatica Beck (1898) Ann. K.K. Naturhist. Hofmus., 13: 16.

Armeria canescens subsp. *dalmatica* (Beck) Trinajstić (1980) Suppl. Fl. Anal. Jugosl, 7: 6.

Chorology – Balkan species: Dalmatia, Montenegro. Indicated with doubt in Greece.

Chromos. Numb. - $2n = 18$ (Brullo & al. 1994: 207), on material from Sila (Province of Cosenza), but the report is certainly to be referred to *Armeria brutia* Brullo, Gangale et Uzumov.

Both Host and Boissier described this species for Dalmatia, to which Ebel later added Montenegro and others, Greece. Its presence on the Italian peninsula was hypothesized by Levier (1888) Atti Soc. Tosc. Sci. Nat.: 157) in reference to the var. “*gracilis d pallida*” of Tenore. This hypothesis was accepted by Arcangeli (1894, Comp. Fl. Ital., ed. 2: 461) for Lucania, but the report did not convince Fiori (1902) Fl. Anal. Ital., 334 who, in a note, pointed out diversities in some existing characters between Boissier’s description and the southern populations of Calabria. “The var. “*gracilis d pallida*” is the same, according to Levier (1888: 157) as the *Statice canescens* Host, or *Armeria canescens* Boiss. of Dalmatia and Montenegro; the latter, however, according to Boissier’s description (in DC: Prodr., 12: 686), should have the pedicles of the flower three times shorter than the calyx, and the corolla always white (while in the Calabria plant it is pale purple). Although these characters are relatively unimportant, considering the different geographical areas, they can suffice to consider the two plants as different forms. The same can be said of *Armeria undulata* Boiss. (= *Statice* Bor. & Chaub.) of Greece, which Levier deems synonymous with his *Armeria majellensis* var. *elatior*, while according to Boissier’s diagnosis (l.c.) it differs in having snow-white outer bracts and the pedicles of the flower a little shorter than the calyx

tube; the *elatior* var. corresponds instead to the typical *A. gracilis* Ten., as is clearly evident by the localities specified by Tenore for this species". Subsequently, however, Fiori (1926, 2: 236), accepted this report, but equating the species with *Armeria gracilis* Ten., inclusive of *Armeria majellensis* var. *elatior* Levier (1888).

The name *A. canescens* was subsequently utilized by many florists for peninsula populations having different characters and provenance. Specifically, it has been used for populations of *A. canescens* with sturdy scapes, well-developed leaves and rather large capitula, in sharp contrast to the diagnoses of Host and Boissier and the following description based on original Dalmatian material (in FI).

Diagnosis – “4. *S. floribus capitatis, foliis linearibus scapisque glabris, calycibus aristatis. In Dalmatiae montibus. J. Host, Portenschlag. Fl. Aestate. Per.*” *Radix multiceps. Scapus teres, glabre. Folia linaria, canescentia, striata. Bractee exteriores acuminatae, in membranam, superiorem scapi partem vestientes, decurrentes; interiores obtusae. Calyx pilosus, quinquangulatus: angulis in aristam scabram procurrentibus.*

Multicipite caespitose perennial herb, with erect scapes, 30-40 cm. Sheath 10-15 mm. Dimorphic leaves: outer leaves linear, short (2-3 cm) flat, 2-4 mm wide, 3-7 veins, with wavy cartilaginous margin; inner leaves ranging from linear, a little wider in the upper half, to filiform (3-10 × 0.05-0.2 cm), 1-3 veins, with brief scarious margin in general revolute toward the inside. Capitulum 1.7-2 cm in diameter. Outer bracts of capitulum oval, 3-4.5 mm, acute or apiculate at the apex, scarious on the margin, inner bracts ranging from oval, emarginate and with wide scarious border to oval-rounded, muticate, entirely scarious. Short pedicels, 0.5-2 mm. Calyx 7-8 mm, with tube approx. 3.5 mm, hirsute on the ribs, and scarious lobes, triangular at the apex, terminating in an awn of 1-1.5 mm. “*Corolla constanter alba*” (Boissier).

Note – Bernis (cit.: 246) reports a single Italian sample of this species, coming from the Montagna della Duchessa (leg. Martelli, 1903), “with slight tendency to the var. *macropoda*”.

Armeria elongata (Hoffm.) Koch (1826) in Roehl., *Deutsch Fl.*, ed. 3, 2: 487.

Statice elongata Hoffm. (1800) *Deutschl. Fl.*: 150.

Armeria maritima subsp. *elongata* (Hoffm.) Bonnier in Bonnier & Douin (1927) *Fl. Compl. Fr.*, 9: 54.

Statice armeria var. *elongata* DC. (1805) *Fl. Fr.*, 3: 419.

Armeria vulgaris var. *elongata* (Hoffm.) Fiori (1926) *Nuova Fl. Anal. Ital.*, 2: 235, pro parte.

Chorology - Reported in the past for the Veneto plains and other Po Valley localities, but its presence in Italy had already been considered unproven in Bernis (cit.: 11(2): 256). See *A. helodes* Martini and Poldini.

Armeria majellensis subsp. *ausonia* Bianchini (1977) *Giorn. Bot. Ital.* 111: 49.

The subspecies does not appear significantly distinct since, as shown by the diagnosis, its characters fall within the intra-specific diversity of *A. gracilis*. Moreover, some exsiccata (FI!) from Monte Coccorello (*locus classicus* of the subspecies) have been attributed by Bianchini himself to *A. gracilis*.

Diagnosis – “*Folia 0,5-2,2 mm lata, 40-70 mm longa, esteriore valde latiora. Scapi editi 13-40 cm, capituli subsphaerici (17-23 mm) vagina 2/3 longa et 50-60 spiculis praediti; calix brevibus aristis ornatus*”.

Typus – Holotypus in FI: “In Monte Coccorello, 13.VIII.1875, *Levier*”.

Chorology – Reported on Monte Vettore, Sirente, Majella, M. Meta, etc.

Armeria seticeps Rchb. (1827) Iconogr. Bot. Pl. Crit, 5: 54.

From the diagnosis it can be seen that the species presents “foliis lineari-lanceolatis, erectis, acutis, trinerviis, ciliatis, scape omnino pubescente”, characters that lead us to exclude its presence in Italy, especially in the northern Apennines and the Apuan Alps, territories in which it has been reported by several authors.

Armeria seticeps Rchb. fil. (1855) Fl. Germ. Excurs., 17: 68, nom. illeg., non Rchb. (1827).

This is a name attributed to species differing from *A. seticeps* Rchb. (1827). In synonymy appears *Armeria plantaginea* var. *brachylepis* Boiss. in DC. (1848: 683), a taxon faintly characterized by leaves that are narrower and shorter than *A. arenaria* (Pers.) Schult. (*A. plantaginea* Willd.) and by more modest scapes (Iconography in Reichenbach, 1855, Icon. Fl. Germ. Helv., Tav. 1151, II). The *brachylepis* variety has been reported on the Maritime Alps (Tenda) and at Valdieri.

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