

**NEW TAXA BELONGING TO *DIANTHUS VULTURIUS* GUSS. &  
TEN. GROUP (*CARYOPHYLLACEAE*) FROM S CALABRIA  
(ITALY)**

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Brullo, S., Scelsi, F. & Spampinato, G. (2000). New taxa belonging to *Dianthus vulturius* Guss. & Ten. group (*Caryophyllaceae*) from S Calabria (Italy). *Portugaliae Acta Biol.* 19: 303-317.

The populations belonging to the *Dianthus vulturius* group from the Aspromonte area (S Calabria) are examined. With morphological features it is possible to distinguish three new taxa: *Dianthus vulturius* subsp. *aspromontanus*, occurring on metamorphic rocky cliffs near Montebello Ionico; *Dianthus brutius*, represented by two subspecies, subsp. *brutius*, linked to mountain dwarf-scrub vegetation on metamorphic rocks of the Ionian slope, and subsp. *pentadactyli*, on conglomerate rocky cliffs of various southern basal places. Furthermore, the taxonomic position of related *Dianthus atlanticus* from Algeria is examined. A key of the taxa of *Dianthus vulturius* group is provided.

Key words: Italy, taxonomy, *Caryophyllaceae*, *Dianthus*.

Brullo, S., Scelsi, F. & Spampinato, G. (2000). Nouveaux taxons appartenants au groupe de *Dianthus vulturius* Guss. & Ten. (*Caryophyllaceae*) de la Calabre méridionale (Italie). *Portugaliae Acta Biol.* 19: 303-317.

Sont examinées les populations appartenants au groupe de *Dianthus vulturius* de l'Aspromonte (Calabre méridionale). Les investigations morphologiques comparées ont permis de distinguer trois nouveaux taxons: *Dianthus vulturius* subsp. *aspromontanus*, présent sur les parois rocheuses métamorphiques près de Montebello Ionico; *Dianthus brutius*, représenté par deux sous-espèces, subsp. *brutius*, liée à la pelouse écorchée montagnarde présente sur les roches métamorphiques du versant ionien, et subsp. *pentadactyli*, localisée sur les parois rocheuses

conglomératiques de plusieurs localités de l'étage basal. En plus, est examinée la position taxonomique de l'affine *Dianthus atlanticus* d'Algérie. Une clé des taxons du groupe du *Dianthus vulturius* est fournie.

Key Words: Italie, taxonomie, *Caryophyllaceae*, *Dianthus*.

## INTRODUCTION

In the frame of taxonomical investigations on the flora of Aspromonte (S Italy), some quite critical populations of *Dianthus*, growing in rupestrian habitats or mountain dwarf-scrubs are examined. For several morphological features, they belong to the cycle of *D. vulturius* Guss. & Ten., species distributed in C and S Italy and Algeria (MAIRE, 1963; PIGNATTI, 1982; GREUTER et al., 1984; TUTIN, 1964; TUTIN & WALTERS, 1993). The examination of numerous living and herbarium specimens, collected by us in various localities of Aspromonte, allowed to single out three different populations morphologically well characterized. Besides, there are significant differences between these populations and those coming from Mt. Vulture (Lucania), which is the *locus classicus* of *D. vulturius*.

In order to assess and emphasize the variability of the examined populations a morphological study was undertaken. When having examined numerous herbarium material and observed the habitats of the various investigated populations of *Dianthus vulturius* group occurring in S Italy, we have recognized four different taxa.

## RESULTS

The individualized taxa are the following:

*Dianthus brutius* Brullo, Scelsi & Spampinato, sp. nov.

a) subsp. *brutius* (Figs. 1; 5-A; 6-A).

Type: Italy, Aspromonte, Valle Torrente Menta, Contrada Scala, 21.7.1994, *Brullo, Scelsi & Spampinato s.n.*; (holotype: CAT; isotypes: CAT, FI).

*Dianthus vulturius* Guss. & Ten. proximus, sed foliis rigidis, acuminatis, pungentibus, scapis 5-6 internodiis, bracteis inflorescentiae 7-10 mm longis, floribus brevioribus, bracteis epicalycinis obovatis vel oblongis, margine plano, rotundatis vel retusis apice, dentibus calycis triangularibus vel lanceolato-triangularibus, 4-5 mm longis, limbo petali (4) 5-6 mm longis 2,5-3,5 mm latisque differt.

Small shrub very branched, woody; branches 2-10 cm long, 1.2-2 mm diameter, with dense terminal rosettes of leaves. Basal leaves green, glabrous, rigid, acuminate, pungent, curved-divaricate, canaliculate, 15-60 x 0.5-1 mm, midrib prominent, lateral veinings inconspicuous, thickened and scabrous at the margin. Flowering stems green, solitary, simple, rigid, erect, slightly striate, 25-35 (40) cm high, 1-1.5 mm diameter, with 5-6 internodes; cauline leaves opposite

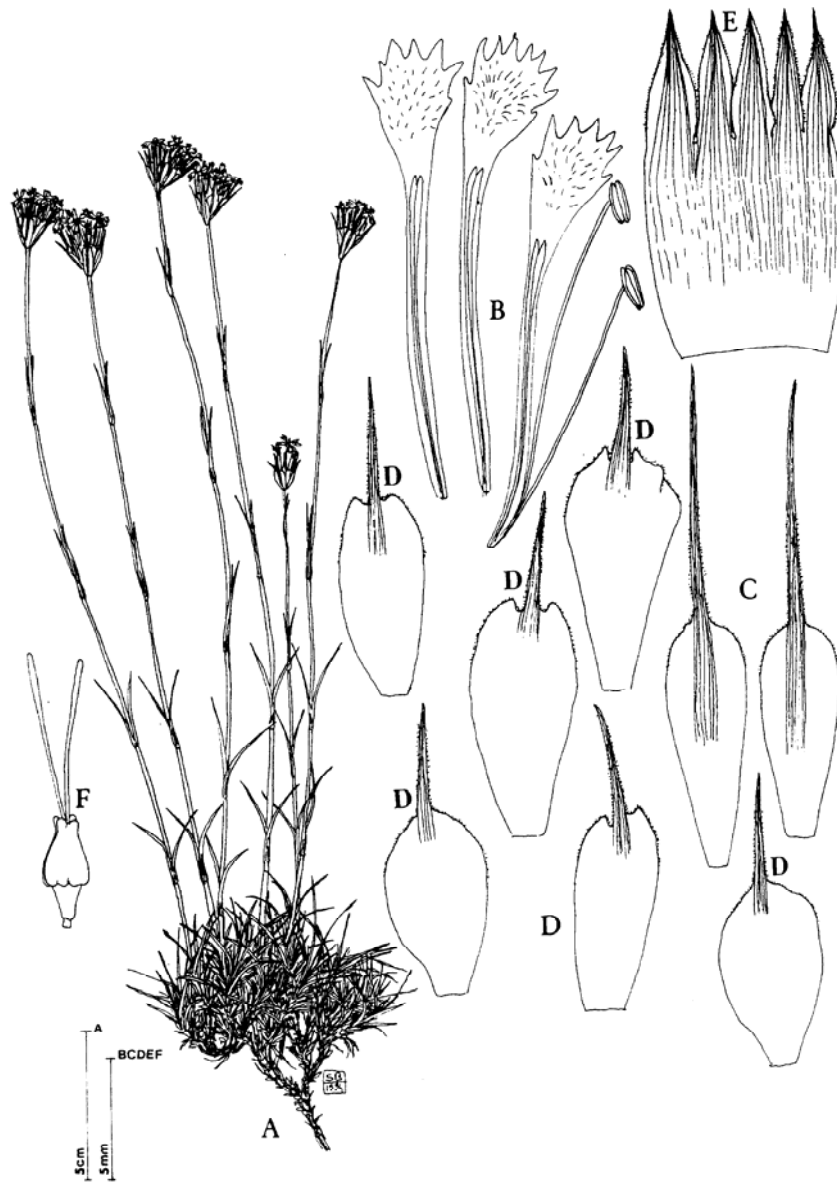


Fig. 1 - *Dianthus brutius* Brullo, Scelsi & Spampinato subsp. *brutius*: A) habit; B) petals and stamens; C) inflorescence bracts; D) epicalyx scales; E) open calyx; F) pistil.

at nodes, linear-subulate, acuminate, rigid, more or less appressed to the stem, 15-30 (40) x 1-1.5 mm, below with membranaceous and shortly ciliate margin, sheath 4-6 mm long. Heads dense, solitary, rarely geminate, 2-2.2 cm long, 3-10 (16)-flowered; outer bracts shorter than flowers, 7-10 mm long, obovate-oblong, coriaceous, with awn green, glabrous or slightly scabrous, 6-8 mm long. Epicalyx scales 4-5, shorter than calyx, coriaceous, obovate to oblong, flat or slightly undulate at the margin, 5-10 x 2.5-4.5 mm, rounded or retuse at the apex, with awn brown, glabrous or slightly scabrous, 2.5-8 mm long. Calyx 13-16 mm long, tinged with brown-purplish above; teeth triangular or lanceolate-triangular, acute or slightly apiculate at the apex, 4-5 mm long, ciliate and membranaceous at the margin. Petal limb pink-purplish or purplish, (4) 5-6 x 2.5-3.5 mm, 7-9-dentate, bearded in the upper face, without nerves or with vanishing nerves; claw whitish, 10-14 mm long. Stamens 10, 5 with filament 13-17 mm long and 5 with filament 7-12 mm long; anther 1.3 mm long. Ovary coriaceous, brown-green, ampullaceous, 2-2.5 mm long; style 6-9 mm long. Capsule obclavate, 10-11 mm long, coriaceous, 2-valved. Seed flat, 2.5-3 x 1.5-2 mm, more or less concave, finely papillose.

#### Other specimens examined

Italy, Calabria, Aspromonte: Campicello, Valle F. Menta, 18.7.1990, *Scelsi & Spampinato s.n.* (CAT); Materazzelli, 19.7.1990, *Scelsi & Spampinato s.n.* (CAT); *ibid.*, Croce Dio Sia Lodato (Parco Nazionale), 18.7.1992, *Brullo, Bartolo, Pulvirenti, Scelsi & Spampinato s.n.* (CAT); Torrente Menta, presso Piscopio, 21.7.1994, *Brullo, Scelsi & Spampinato s.n.* (CAT); Valle Torrente Menta, Campi di Sant'Elia, 21.7.1994, *Brullo, Scelsi & Spampinato s.n.* (CAT).

b) subsp. *pentadactyli* Brullo, Scelsi & Spampinato, subsp. nov. (Figs. 2; 6-B)

Type: Italy, Aspromonte, Rupi di Pentadattilo, 18.6.1992, *Scelsi & Spampinato s.n.* (holotype: CAT; isotypes: CAT, FI).

Differt a typo caule laxo ramoso, saepe valde lignoso, ramis rigidis, 10-25 cm longis, 2-4 (7) mm diametro, foliis basalibus viridi-glauciscentibus, planis vel leviter canaliculatis, 5-9 cm longis et 1-2 mm latis, scapis striatis 1,5-2,5 mm diametro, foliis caulinis 3-9 cm longis et 1,5-2,5 mm latis, bracteis inflorescentiae calyce subequalibus vel eo leviter longioribus, cum arista 20-25 mm longis.

It differs from type by stock loosely branched, often heavily woody, branches rigid, 10-25 cm long and 2-4-(7) mm diameter, basal leaves green-glaucous, flat or slightly canaliculate, 50-90 x 1-2 mm, flowering stems striate, 1.5-2.5 mm in diameter, cauline leaves 30-90 x 1.5-2.5 mm, inflorescence bracts almost equalling the calyx or slightly longer than this, both with awn 20-25 mm long.

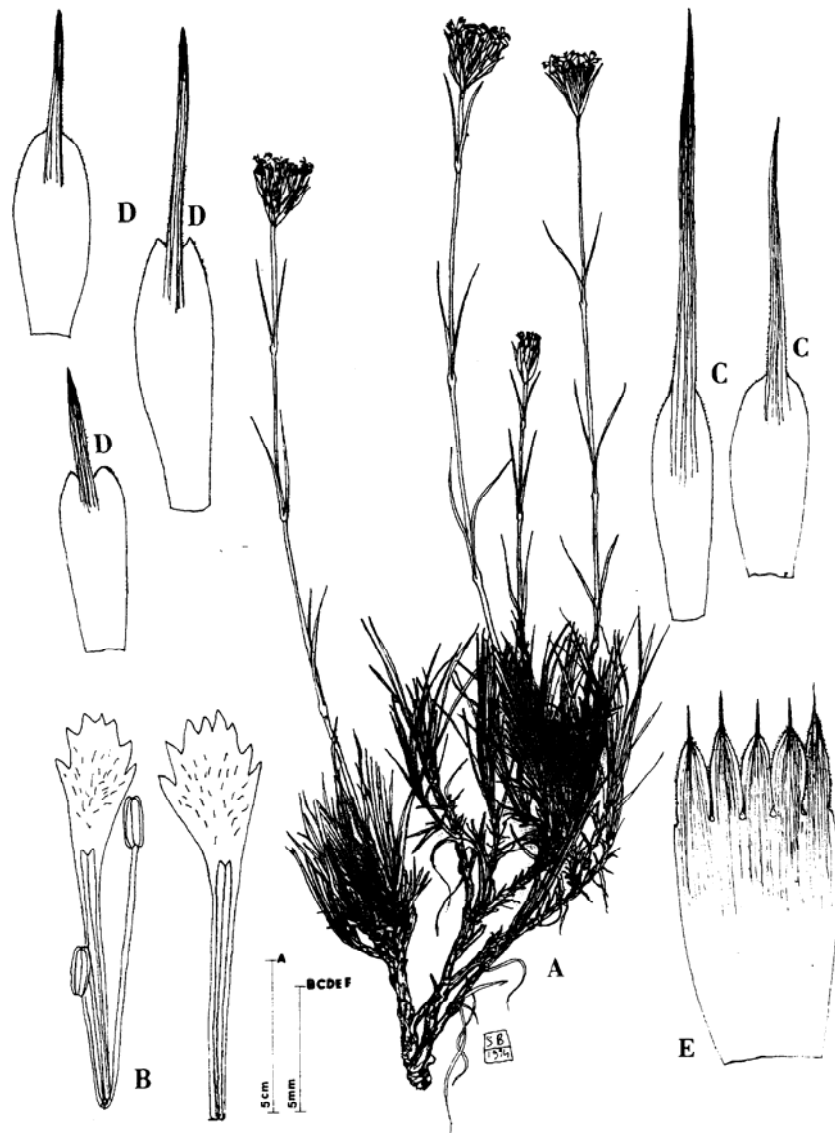


Fig. 2 - *Dianthus brutius* subsp. *pentadactyli* Brullo, Scelsi & Spampinato. A) habit; B) petals and stamens; C) inflorescence bracts; D) epicalyx scales.

**Other specimens examined**

Italy, Aspromonte: In rupium fissuris ad partem merid. Mt. Trediti, supra Ciminà, solo gran. 5-700 m, 28-6.1877, *Huter, Porta e Rigo 422* (FI, G); In saxosis prope Bova in Calabria ultima, 8.6, 1877, *Biondi s.n.*(FI); Presso Bova 8.6., *Biondi s.n.* (FI); Pellaro in collibus aridissimis, solo scist. 25.5-13.7.1898, *Rigo 299* (FI); Pellaro in collibus aridissimis, solo scist. 7.1898, *Rigo 4015* (G); Luoghi sterili presso Bova per andare alla cosiddetta Porticella, 8.6.1877, *Biondi s.n.*(FI); Campicello presso Bova, 17.5.1996, *Brullo e Spampinato s.n.*, (CAT); Portella di Bova, 17.5.1996, *Brullo e Spampinato s.n.*, (CAT); Campicello presso Bova, 7.6.1996, *Brullo, Scelsi e Spampinato s.n.*, (CAT); Portella di Bova, 7.6.1996, *Brullo Scelsi e Spampinato s.n.*, (CAT); In jugis collium ariditis marum supr. Pellaro dit. Rhegii Julii (Reggio), 3-400 m, 30.6.1877, *Huter, Porta e Rigo 414* (FI, G); Rupi di Pentadattilo, 8.5.1989, *Brullo, Signorello & Spampinato s.n.* (CAT); *ibid.*, 5.6.1989, *Scelsi & Spampinato s.n.* (CAT); *ibid.* 18.6.1992, *Scelsi & Spampinato* (CAT, FI); Rupi presso Gerace, 30.8.1994, *Spampinato* (CAT).

*Dianthus vulturius* Guss. & Ten., Ind. Sem. Horti Neap. 1837: 3. 1837.

Syn.: *Dianthus ferrugineus* Mill. subsp. *vulturius* (Guss. & Ten.) Tutin, Feddes Repert. 68: 191 (1963).

a) subsp. *vulturius* (Figs. 3; 5-B)

Type: Italy, M. Vulture, ad Pizzo di S. Michele, praterie elevate del Vulture, 18.7.1836, Tenore (lectotype NAP!).

Branched small shrub, with woody branches, 2-6 cm long, 1.5-2 mm diameter, with  $\pm$  laxe rosettes at the apex. Basal leaves green, linear, 30-90 x 0.5-1.5 mm, flaccid, slightly divaricate, slightly canaliculate, with prominent midrib, thickened and scaber margin. Flowering stems green, erect, 30-50 cm high, 1.5-3 mm in diameter, with 7-8 internodes, striate. Cauline leaves linear-subulate, acute, not pungent, slightly divaricate, with membranaceous and shortly ciliate margin below, 40-100 x 15-30 mm wide, with sheat 6-12 mm long. Heads solitary, 2-2.5 cm long, 5-14 flowered, with outer bracts longer than flowers, 12-16 mm long, linear-oblong, coriaceous, provided with awn green, flat, scabrous, 15-25 mm long. Epicalyx scales 4-5, longer than calyx, coriaceous, linear-elliptical, above laxe undulate at the margin, 10-22 x 2-4.5 mm, acute or slightly obtuse at the apex, provided with awn green or brown-purplish, scabrous, 7-12 (14) mm long. Calyx 13-16 mm long, tinged with purplish above; teeth linear-triangular, long acuminate at the apex, 6-7 mm long, ciliate and narrowly membranaceous at the margin. Petal with limb purple or dark purple, 7-8 x 4-5 mm, 4-6-(7)-dentate, bearbed in the upper face, evidently 3-nerved, with claw whitish, 11-12 mm long. Stamens 10, 5 with filament 14-15 mm long and 5 with filament 8-10 mm long; anther 2 mm long. Ovary coriaceous, white-green, ampullaceous, 2.5 mm long; style 10-12 mm long.

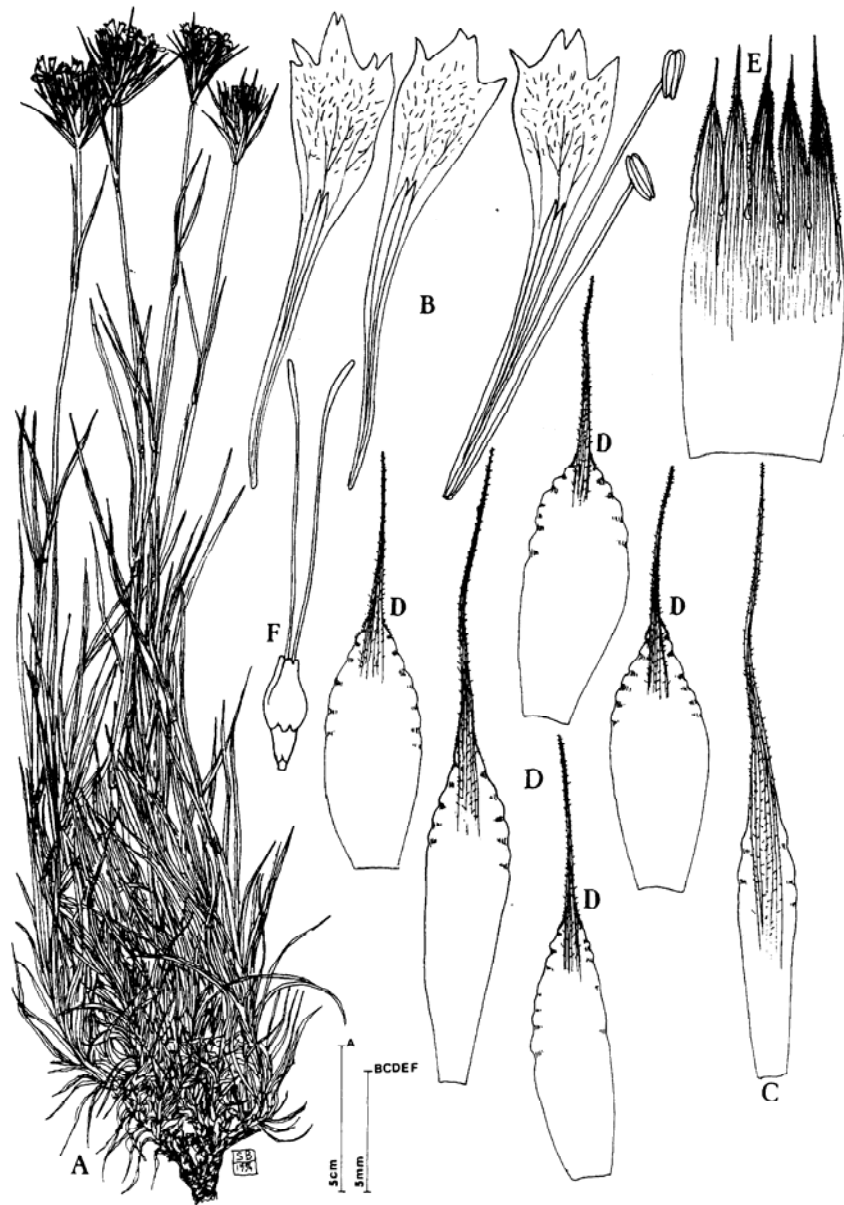


Fig. 3 - *Dianthus vulturius* Guss. & Ten. subsp. *vulturius* A) habit; B) petals and stamens; C) inflorescence bracts; D) epicalyx bracts; E) open calyx; F) pistil.

**Other specimens examined**

Italy, Basilicata: M. Vulture, ad Pizzo di S. Michele, praterie elevate del Vulture, 18.7.1836, s.l. (NAP); Monte Vulture in silvaticis, solo siliceo vulcanico, 700-1000 m, 18.6.1924, *Lacaita & Gavioli s.n.* (FI); M. Vulture, 18.6.1924, *Lacaita s.n.* (G); In Monte Vulturio Apulia, s.d., *Tenore s.n.* (FI); In Monte Vulture, s.d., *Tenore s.n.* (G); In umbrosis demissis et in aridis apricis elatis inter saxas, Vulture, 6.1859, *Terraciano s.n.* (FI); M. Vulture, 11.7.1880, *Biondi s.n.* (FI); Monte Vulture Pizzo S. Michele, 7.7.1994, *Scelsi & Spampinato* (CAT); Monte Vulture, SS. Monticchio-Melfi, 8.7.1994, *Scelsi & Spampinato* (CAT); in aridis apricis loco dicto Le Boccaglie, comune d'Atella, Vulture, 7.1880, *Biondi s.n.* (FI); Pignola in rupestribus et in pascuis saxosis Montis S. Bernardo, solo scistoso, 1000-1300 m, 1.8.1933, *Gavioli s.n.* (FI); Pignola in rupium sessuris et in glareosis sub cacumine Monte Serranetta, 1470 m, solo siliceo, 6.7.1923, *Gavioli 2858* (G).

b) subsp. *aspromontanus* Brullo, Scelsi & Spampinato, subsp. nova (Figs. 4; 5-C; 6-C)

type: Italy, Aspromonte, Rupi presso Montebello Ionico, 15.5.1990, *Scelsi & Spampinato s.n.* (holotype: CAT; isotypes: CAT, FI).

Differt a typo caule 2-8 cm longo, foliis basalibus 4-12 cm longis, foliis caulinis 0,5-1,5 mm latis, bracteis inflorescentiae flore subaequalibus vel eo longioribus, 7-12 mm longis, cum arista 10-15 mm longa, bracteis epicalycinis calyce subaequalibus vel eo leviter longioribus, 6-9 mm longis et 2-3,5-(4) mm latis, margine supra minute undulati, arista 5-7 mm longa, petalis 6-10 dentatis.

It differs from type by woody stock 2-8 cm long, basal leaves 4-12 cm long, cauline leaves 0.5-1.5 mm wide, inflorescence scales almost equalling the flower or longer, 7-12 mm long, with awn 10-15 mm long, epicalyx-scales almost equalling the calyx or slightly longer, 6-9 mm long and 2-3.5-(4) mm wide, with margin finely undulate above, with awn 5-7 mm long, petals 6-10-dentate.

**Other specimens examined**

Italy, Aspromonte: Rupi presso Montebello Ionico, 6.6.1996, *Brullo, Scelsi & Spampinato s.n.* (CAT).



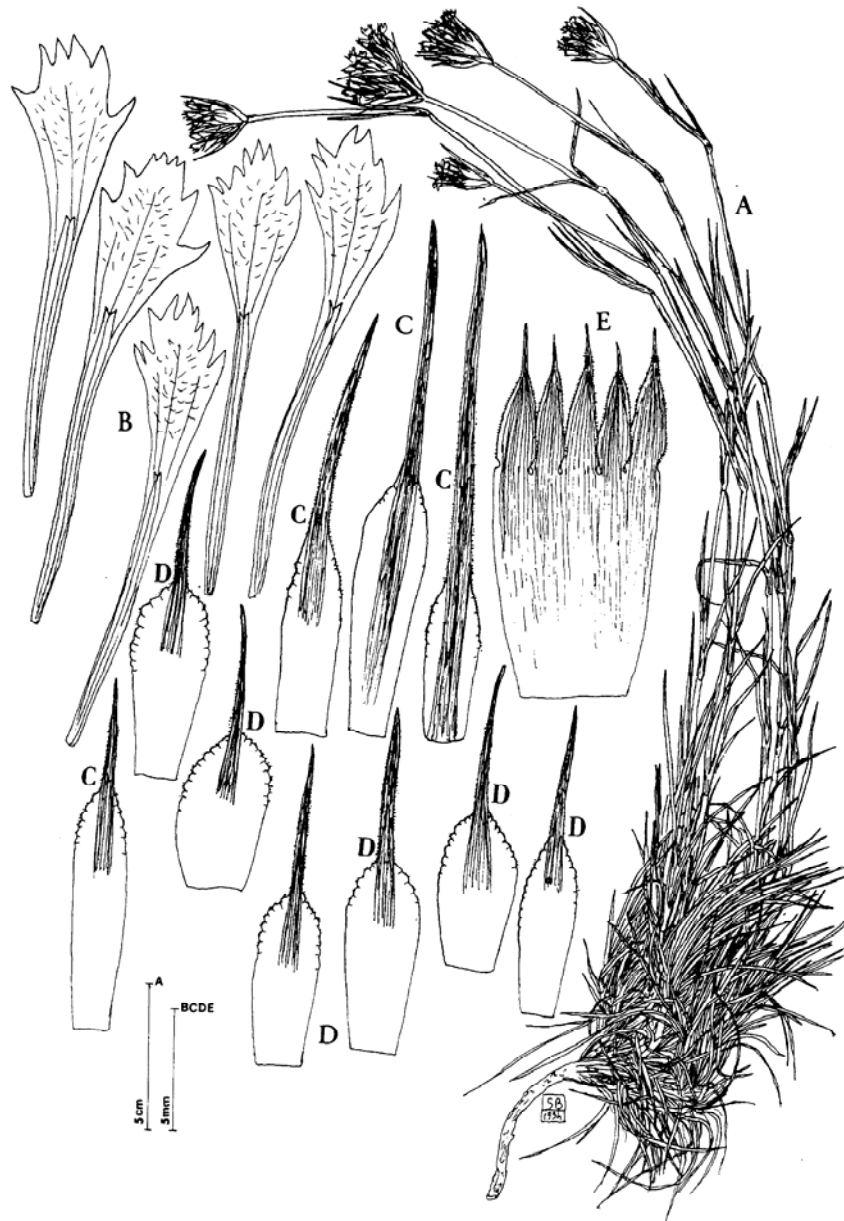


Fig. 4 - *Dianthus vulturius* subsp. *aspromontanus* Brullo, Scelsi & Spampinato: A) habit; B) petals, C) inflorescence bracts; D) epicalyx scales; E) open calyx.

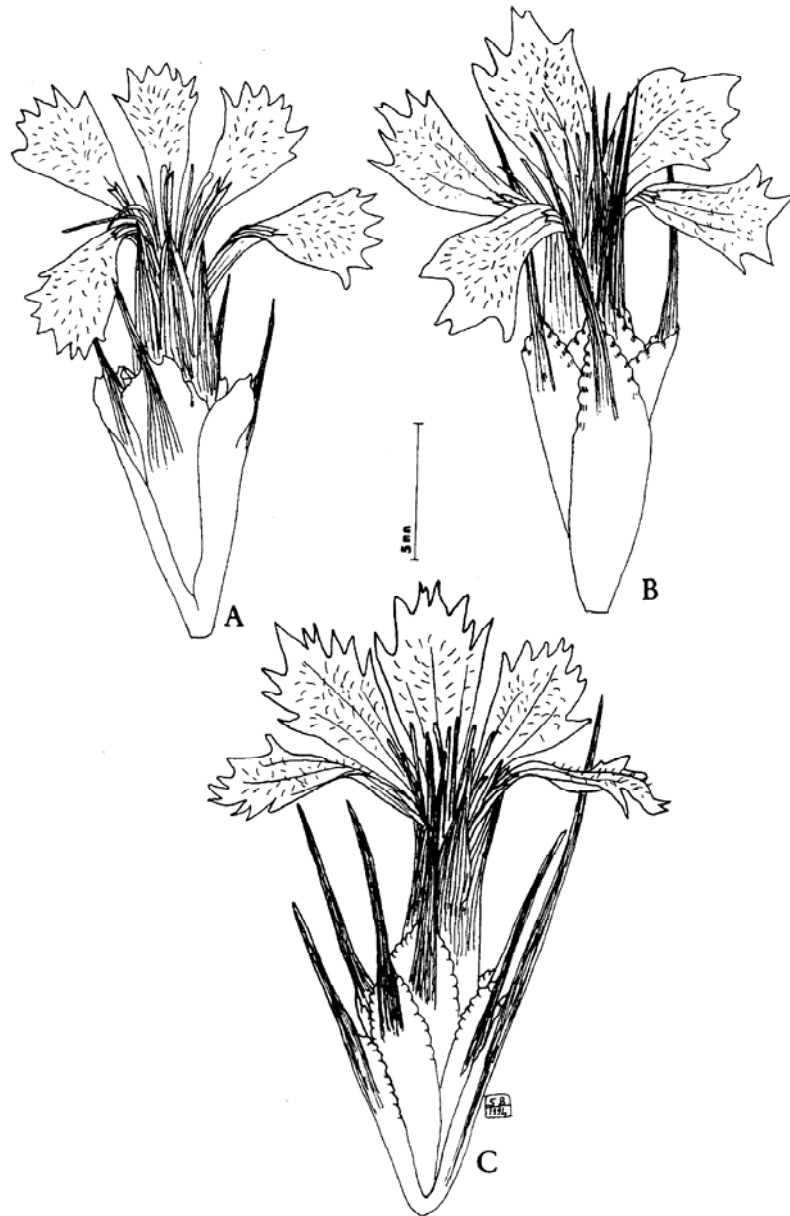


Fig. 5 - Flowers of *Dianthus brutius* subsp. *brutius* (A), *Dianthus vulturius* subsp. *vulturius* (B), *Dianthus vulturius* subsp. *aspromontanus* (C).

The morphological differences among the taxa belonging to the *Dianthus vulturius* cycle are summarized in the following table.

Character	<i>D. vulturius</i> ssp. <i>vulturius</i>	<i>D. vulturius</i> ssp. <i>aspromontanus</i>	<i>D. brutius</i> ssp. <i>brutius</i>	<i>D. brutius</i> ssp. <i>pentadactyli</i>
Branches	2-6 cm long, 1.5-2 mm in diameter	2-8 cm long, 1.5-2 mm in diameter	2-10 cm long, 1.2-2 mm in diameter	10-25 cm long, 2-4 (7) mm in diameter
Basal leaf	green, flaccid, acute, slightly divaricate and canaliculate, 3-9 cm long, 0.5-1.5 wide	green, flaccid, acute, slightly divaricate and canaliculate, 4-12 cm long, 0.5-1.5 wide	green, rigid, acuminate, pungent, curved-divaricate, canaliculate, 1.5-6 cm long, 0.5-1 mm wide	green-glaucous, rigid, acuminate, pungent, curved-divaricate, flat or slightly canaliculate, 5-9 cm long, 1-2 mm wide
Cauline leaf	no pungent, slightly divaricate, 4-10 cm long, 1.5-3 mm wide, sheath 6-12 mm long	no pungent, slightly divaricate, 4-10 cm long, 0.5-1.5 mm wide, sheath 6-12 mm long	pungent, more or less appressed, 1.5-3 (4) cm long, 1-1.5 wide, sheath 4-6 mm long	pungent, more or less appressed, 3-9 cm long, 1.5-2.5 wide, sheath 4-6 mm long
Flowering stem	30-50 cm high, 1.5-3 mm in diameter, with 7-8 internodes	30-50 cm high, 1.5-3 mm in diameter, with 7-8 internodes	25-35 (40) cm high, 1-1.5 mm in diameter, 5-6 internodes	25-35 (40) cm high, 1.5-2.5 mm in diameter, 5-6 internodes
Head	2-2.5 cm long, 5-14 flowered	2-2.5 cm long, 5-14 flowered	2-2.2 cm long, 3-10 (16) flowered	2-2.2 cm long, 3-10 (16) flowered
Inflorescence bracts	longer than flowers, 12-16 mm long, linear-oblong, with awn 15-25 mm long	equalling or longer than flowers, 12-16 mm long, linear-oblong, with awn 10-15 mm long	shorter than flowers, 7-10 mm long, obovate-oblong, with awn 6-8 mm long	shorter than flowers, 7-10 mm long, obovate-oblong, with awn 13-15 mm long
Epicalyx bracts	longer than calyx, linear-elliptical, 10-22 mm long, 2-4.5 wide, margin laxe undulate above, acute to slightly obtuse at apex, with awn 7-12 (14) mm long	almost equalling the calyx or slightly longer than it, linear-elliptical, 6-9 mm long, 2-3.5 (4) mm wide, margin finely undulate above, acute to slightly obtuse at apex, with awn 5-7 mm long	shorter than calyx, obovate to oblong, 5-10 mm long, 2.5-4.5 mm wide, margin flat or slightly undulate, rounded or retuse at apex, with awn 2.5-8 mm long	equalling or slightly longer than calyx, obovate to oblong, 5-10 mm long, 2.5-4.5 mm wide, margin flat or slightly undulate, rounded or retuse at apex, with awn 5-10 mm long
Calyx	with teeth 6-7 mm long, linear-triangular, long acuminate at apex	with teeth 6-7 mm long, linear-triangular, long acuminate at apex	with teeth 4-5 mm long, triangular or lanceolate-triangular, acute or slightly apiculate at apex	with teeth 4-5 mm long, triangular or lanceolate-triangular, acute or slightly apiculate at apex
Petals	7-8 mm long, 4-5 mm wide, 4-6 (7) dentate, evidently 3-nerved	7-8 mm long, 4-5 mm wide, 6-10 dentate, evidently 3-nerved	(4) 5-6 mm long, 2.5-3.5 mm wide, 7-9 dentate, without or vanishing nerves	(4) 5-6 mm long, 2.5-3.5 mm wide, 7-9 dentate, without or vanishing nerves

## DISTRIBUTION AND ECOLOGY

*Dianthus brutius* seems circumscribed to the Aspromonte territory (S. Calabria), where it is represented by the subsp. *brutius*, growing on metamorphic rocks in the orophilous dwarf-shrub vegetation at altitudes of 1400-1600 m, and subsp. *pentadactyli*, localized in chasmophilous communities on conglomerate cliffs of the Ionian slope at 400-500 m (Fig. 6). As concerns *Dianthus vulturius* subsp. *vulturius*, it shows, according to literature data, a wider distribution, occurring in Central and Southern Italy (Abruzzo, Campania, Basilicata and Puglia), while the subsp. *aspromontanus* is localized only in a small area of S Aspromonte. These two subspecies, in addition to a well distinct distribution, are characterized also by a different ecology. In fact, the subsp. *vulturius* grows in xeric meadows of the submountain and mountain belts, while the subsp. *aspromontanus* is a chasmophyte exclusive for rupestrian places.

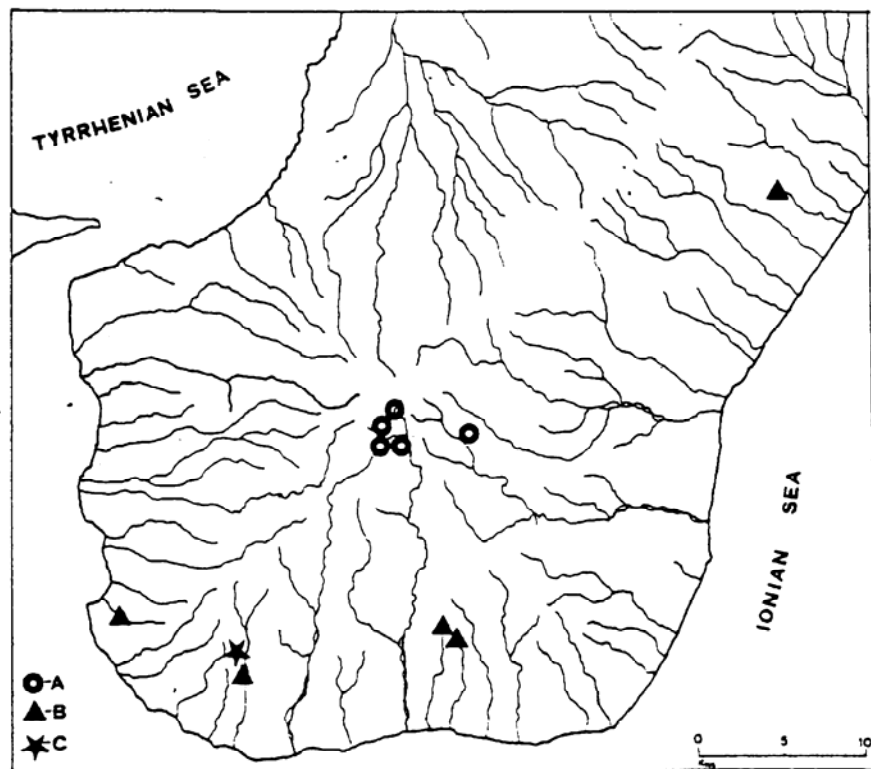


Fig. 6 - Geographical distribution of *Dianthus brutius* subsp. *brutius* (A), *Dianthus brutius* subsp. *pentadactyli* (B), *Dianthus vulturius* subsp. *aspromontanus* (C).

## TAXONOMICAL RELATIONSHIPS

With their woody stock, basal leaves linear in rosettes, solitary stems, terminal heads, numerous epicalyx scales long aristate, the investigated taxa agree with the species placed in *Dianthus ferrugineus* group. According to GREUTER et al. (1984), this complex included the following species: *D. balbisii* Ser., *D. liburnicus* Bartal., *D. ferrugineus* Miller and *D. vulturius* Guss. & Ten. Besides its habit and leaves narrowly linear and more or less rigid, *D. vulturius* shows close relations with *D. pinifolius* Sm., distributed in the N-E Mediterranean area (PIGNATTI 1982). In particular within the Italian populations previously attributed to *D. vulturius*, there can be distinguished two species morphologically well differentiated, as *D. vulturius* and *D. brutius*. *D. vulturius*, the most widespread species, is characterized by flowering stems 1.5-3 mm in diameter with 7-8 internodes, cauline leaves 40-100 x 1.5-3 mm, acute, with sheath 6-12 mm long, outer bracts longer than inflorescence, linear-oblong, 12-16 mm long, with awn 15-25 mm long, epicalyx scales longer than calyx, 10-22 mm long, with awn 7-12 mm long, calyx with teeth linear-triangular long acuminate, 6-7 mm long, petal limb 4-6-dentate, 7-8 x 4-5 mm, evidently 3-nerved, anther 2 mm long. This species is represented by the subsp. *vulturius*, with a more northern distribution, and subsp. *aspromontanus*, which is very isolated and localized in the most southern parts of the Italian Peninsula. *Dianthus brutius* instead shows flowering stems of 1-1.5 mm in diameter with 5-6 internodes, cauline leaves 1.5-3 cm long and 1-1.5 mm wide, acuminate-pungent with sheath 4-6 mm long, outer bracts shorter than inflorescence, rarely longer, obovate-oblong, 7-10 mm long, with awn 6-8 mm long, epicalyx scales shorter than calyx, 5-10 mm long with awn 2.5-8 mm long, calyx with teeth triangular or lanceolate-triangular, acute or apiculate, 4-5 mm long, petal limb 7-9-dentate, 5-6 x 2.5-3.5 mm, without nerves or vanishing nerves, anther 1.3 mm long. Within this species, two subspecies have been recognized, both occurring in the Aspromonte area, as subsp. *brutius* with a mountain distribution and subsp. *pentadactyli*, localized in the basal belt.

From the literature data (MAIRE, 1932, 1963; QUEZEL & SANTA, 1962; GREUTER & al., 1984) and herbarium investigations (G, P) *D. vulturius* is noted from N Algeria, but this record is a mistake. In fact, the Algerian populations, even if belonging to this cycle, differ from the typical *D. vulturius* in numerous features, as stem glaucous, max. 25 (35) cm high, basal leaves glaucous or green glaucescents, flat, cauline leaves with sheath 3-6 mm long, flowering stems with (2)3-6 internodes, heads 2.5-3.2 mm long, (1)2-8 flowered, inflorescence bracts normally shorter than flowers, epicalyx scales 6, ovate to oblong, shorter than calyx; calyx 16-18 mm long, petal limb 7-9 dentate, 5-7 mm wide. Moreover, they are very related to *D. brutius*, in having flowering stems with max. 6 internodes, inflorescence bracts normally shorter than flowers, epicalyx scales shorter than calyx or equalling and petal limb 6-7 mm long, but differ in basal leaves flat,

flaccid, acute, heads 2.5-3.2 cm long, epicalyx scales 10-14 mm long with margin finely undulate above, subacute or obtuse at apex, calyx 16-18 mm long with teeth 6-7 mm long, long acuminate at apex, petal limb evidently 3-nerved, 6-7 mm long and 5-7 mm wide, anthers 2-2.5 mm long.

Therefore, on the ground of these remarkable morphological peculiarities, as well as their considerable geographical isolation, the North-African populations must be treated as a distinct species, which nomenclaturally is awardable to *Dianthus atlanticus* Pomel (type: Agauni bouclicheu, 21.9.1874, Letourneux *s.n.* P!), name considered by MAIRE (1963) as a synonym of *D. vulturius*.

#### Key to taxa of *Dianthus vulturius* group

- 1** Leaves rigid, acuminate and pungent; epicalyx scales obovate to oblong with flat or slightly undulate margin and rounded or retuse at the apex; calyx teeth triangular or lanceolate-triangular, 4-5 mm long; petal limb (4) 5-6 x 2.5-3.5 mm, without or vanishing nerves, anthers 1.3 mm long ..... **2**
- 1** Leaves flaccid, acute no pungent; epicalyx scales linear-elliptic with undulate margin and acute to obtuse at apex; calyx teeth linear-triangular, 6-7 mm long; petal limb 6-8 x 4-7 mm, conspicuously 3-nerved, 2-2.5 mm long ..... **3**
- 2** Branches 2-10 cm long; basal leaves 15-60 x 0.5-1 mm; cauline leaves 15-30 x 1-1.5 mm; stem 1-1.5 mm diameter; inflorescence bracts with awn 6-8 mm long; epicalyx scales shorter than calyx ..... **D. brutius** subsp. **brutius**
- 2** Branches 10-25 cm long; basal leaves 50-90 x 1-2 mm; cauline leaves 30-90 x 1.5-2.5 mm; stem 1.5-2.5 mm diameter; inflorescence bracts with awn 13-15 mm long; epicalyx scales equalling or slightly longer than calyx ..... **D. brutius** subsp. **pentadactyli**
- 3** Basal leaves flat; cauline leaves with sheath 3-6 mm long; flowering stems (1) 5-25 cm high, 1-1.5 mm diameter, with (2) 3-6 internodes; heads 2.5-3.2 cm long, (1) 2-8 flowered; inflorescence bracts shorter than flowers rarely equalling; calyx 16-18 mm long; petal limb 5-7 mm wide ..... **D. atlanticus**
- 3** Basal leaves canaliculate; cauline leaves with sheath 6-12 mm long; flowering stems 30-50 cm high, 1.5-3 mm diameter, with 7-8 internodes; heads 2-2.5 cm long, 5-14 flowered; inflorescence bracts longer than flowers rarely equalling; calyx 13-16 mm long; petal limb 4-5 mm wide .. **4**

4 Caulin leaves 1.5-3 mm wide; inflorescence bracts with awn 15-25 mm long; epicalyx scales 10-22 mm long, with margin laxe undulate and awn 7-12 mm long; petals 4-6 dentate .....**D. vulturius** subsp. **vulturius**

4 Caulin leaves 0.5-1.5 mm wide; inflorescence bracts with awn 10-15 mm long; epicalyx scales 6-9 mm long, with margin finely undulate and awn 5-7mm long; petals 6-10 dentate ..... **vulturius** subsp. **aspromontanus**

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