

DIANTHUS MOSSANUS (CARYOPHYLLACEAE), A NEW SPECIES FROM SARDINIA

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Dianthus mossanus from Sardinia is described and illustrated as a species new to science. It is a chasmophyte occurring in the siliceous rocky places in some mountains of S Sardinia. Its caryology and relationships with the taxa belonging to *Dianthus furcatus* group are also examined.

Key words: Taxonomy, *Dianthus*, Sardinia

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É descrita e ilustrada uma nova espécie da Sardenha de *Dianthus mossanus*. Espécie cosmopolita que ocorre nas paredes siliciosas de algumas das montanhas do Sul da Sardenha. A sua cariólogia e a sua afinidade com os taxa do grupo de *Dianthus furcatus* são também examinadas.

Palavras chave: Taxonomia, *Dianthus*, Sardenha.

INTRODUCTION

During floristic investigations of Sardinia some populations of dwarf shrubby *Dianthus* were discovered. This taxon is localized on the rocky places in some mountains of S Sardinia, where it grows together with several endemic species. According to the taxonomic treatment of the genus *Dianthus* by PIGNATTI (1982) and TUTIN & WALTERS (1993), the Sardinian plant shows close relations with *D. furcatus*, mainly in the occurrence of lax inflorescences, flowers with epicalyx-scales c. 1/2 as long as the calyx and glabrous petals. Several morphological features regarding the leaves as well as the shape and size of the floral pieces allow to consider it as a species new to science, named *D. mossanus*. We are pleased to dedicate the species to Luigi Mossa, botanist at the

Cagliari University, in recognition of his contribution to the knowledge of the Sardinian flora.

RESULTS

Dianthus mossanus Bacchetta & Brullo sp. nov. fig. 1.

Type: Sardinia, Cagliari, Capoterra, S'Enna e Sa Craba, Conca d'Oru, 500-655 m, graniti e metaquarziti, 10.06.1998, *Bacchetta & Brullo s.n.* (holotype CAT; isotypes CAG, CAT, FI).

Dianthus furcato Balbis proximus, sed dense caespitoso caule, foliis usque ad 22 cm longis, 2-3 mm latis, semicylindrico-canaliculatis, scapis numerosis prostratis vel prostrato-ascendentibus, bracteis epicalycinis calyci 1/2-3/5 longioris, calyce 34-38 mm longo, limbo petali 15-18 mm longo differt.

Dwarf shrub very branched, stock robust and woody, provided with dense terminal rosettes of leaves. Basal leaves green, linear, glabrous, \pm rigid, semicylindrical, often canaliculate, acuminate, lightly serrulate at the margin, 3-nerved, 8-22 cm long, 2-3 mm wide; sheaths 10-15 mm long, 4-6 mm wide at base. Cauline leaves opposite at nodes, similar to the basal ones, progressively reduced upwards. Flowering stems green, simple below and branched above, rigid, prostrate to prostrate-ascending, cylindrical, 20-35 cm long, with 4-5 internodes. Flowers 2-4, fragrant, the lateral ones inserted on branches with 1-2 nodes, the terminal one inserted directly on the scape; pedicels 1.5-3.5 cm long. Epicalyx scales 6, 1/2-3/5 as long as the calyx, 14-21 mm long, elliptical, coriaceous, provided with a green awn. Calyx 34-38 mm long, striate, cylindrical, lightly attenuate above, green, with teeth linear-triangular, acute, coriaceous, (5-)6-8 mm long. Petal lamina 15-18 mm long, 10-16 mm wide, white to whitish, glabrous, irregularly dentate, with vanishing nerves; claw whitish, 28-30 mm long. Stamens 10; filaments 27-32 mm long and anthers elliptic, 3.5 mm long. Ovary coriaceous, c. 1 cm long; style 2-2.5 cm long. Capsule cylindrical, lightly exerted from the calyx. Seed black, flat, 2.8-3 x 2-2.2 mm, finely striate. Chromosome number $2n=30$.

Examined specimens

Sardinia. Cagliari: Villa S.Pietro, Rio di Monte Nieddu, UTM: MJ 96022501, 80-100 m, metarenarie, 13.06.1998, *Bacchetta & Brullo s.n.* (CAT); *ibid.*, Capoterra, C.le Sa Canna, UTM: MJ 89083701, 315 m, graniti, 10.11.1996, *Bacchetta s.n.* (CAG); *ibid.*, Sarroch, Planedda de Leunaxi, UTM: MJ 96052806, 630 m, metaquarziti, 10.06.1997, *Bacchetta s.n.* (CAG); *ibid.*, Uta, Monte Lattias, UTM: MJ 86083304, 750 m, granitii, 13.07.1997, *Bacchetta s.n.* (CAG); *ibid.*, Gonnosfanadiga, Scracchinus, UTM: MJ 69046505, 925 m, graniti, 12.06.1998, *Bacchetta & Brullo s.n.* (CAG, CAT); *ibid.*, Capoterra, S'Enna e Sa Craba, Conca d'Oru, UTM: MJ 96062807, 500-655 m, graniti e metaquarziti, 10.06.1998, *Bacchetta & Brullo s.n.* (CAG, CAT, FI).

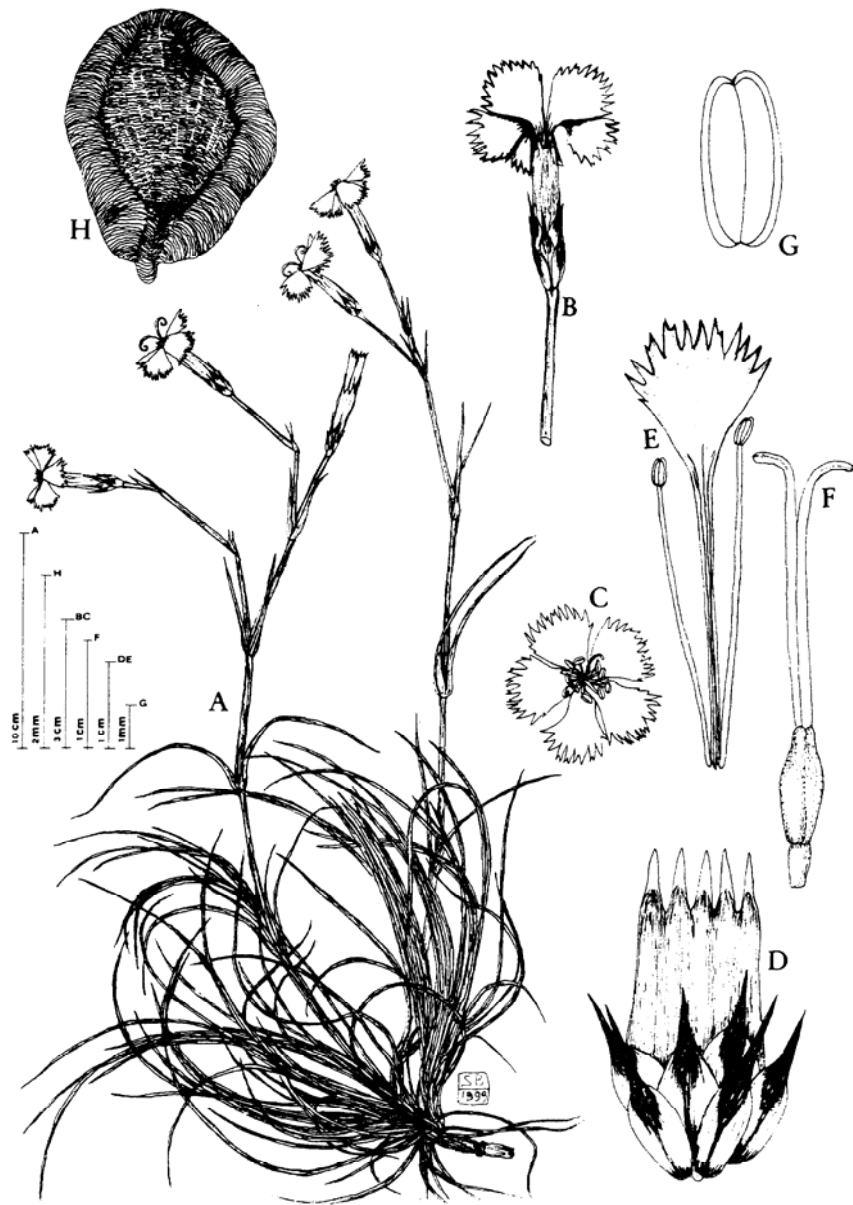


Fig. 1 - *Dianthus mossanus* Bacchetta & Brullo: A) habit; B) flower, side view; C) flower, top view; D) open calyx and epicalyx; E) petal and stamens; F) pistil; G) anther; H) seed.

DISTRIBUTION AND ECOLOGY

Dianthus mossanus is a chasmophyte circumscribed to some mountains of Iglesias, Sulcis and Sarrabus in the Southern Sardinia. It occurs exclusively on Palaeozoic siliceous rocks (porphyries, granites, quartzites and metamorphites), at an altitude of 100-1000 m. According to RIVAS-MARTÍNEZ & LOIDI ARREGUI (1999) bioclimate classification, this area is characterized by a bioclimate between upper thermo-mediterranean and upper mesomediterranean with an ombroclimate of upper dry to lower humid type.

D. mossanus grows in the crevices of cliffs, where it is a member of chasmophilous vegetation belonging to *Asplenietea trichomanis*. Here it is associated with other Sardinian endemics, as *Linaria arcusangeli* Atzei & Camarda, *Bituminaria morisiana* (Pignatti & Metlesics) Greuter, *Verbascum rotundifolium* Ten. subsp. *conocarpum* (Moris) I.K. Ferguson, *Silene nodulosa* Viv..

DISCUSSION

From the morphological point of view, *Dianthus mossanus* belongs to *D. furcatus* group, which is characterized by stock with linear and rosulate leaves, flowers isolated or arranged in lax 2-5 flowered inflorescences, epicalyx scales usually c. 1/2 as long as the calyx, petal limb glabrous. According to literature data, this group is represented by several taxa, considered as subspecies of *D. furcatus* Balbis (PIGNATTI, 1982; GREUTER et al., 1984; TUTIN & WALTERS, 1993). They are: subsp. *furcatus* (SW Alps), subsp. *lereschii* (Burnat) Pignatti (NW Alps), subsp. *dissimilis* (Burnat) Pignatti (Maritime Alps), subsp. *geminiflorus* (Loisel.) Tutin (Pyrenees), subsp. *gyspergerae* (Rouy) Burnat ex Briq. (W Corse). All these taxa, except for the subsp. *gyspergerae*, are morphologically and ecologically closely related. In particular they are characterized by basal leaves soft, very short, obtuse, serrulate, 1-2 mm wide, flowering stems 8-30 cm long, 1-3 flowered, epicalyx scales are not longer than the 1/2 calyx, calyx 10-17 mm long, with teeth lanceolate-triangular, 3-6 mm long, petal limb usually pink, 5-10 mm long, subentire to lacinate, and are always localized in the mountain zones at an altitude of 900-1200 m. In contrast, the subsp. *gyspergerae* shows basal leaves subrigid, quite long, acute, entire, 2-3 mm wide, flowering stems 8-10 cm long, 2-5 flowered inflorescences, epicalyx scales 2/3 as long as the calyx, calyx 12-14 mm long, with teeth narrowly lanceolate, 4-6 mm long, petal limb whitish to white-pinkish, subentire to crenulate, and occurs at 10-500 m altitude. For these remarkable differences between the latter subspecies and the other ones, we consider the Corsican taxon, according to ROUY (1905), as a distinct species, named *D. gyspergerae* Rouy. According to LAÍNIZ (1986, 1987) and BERNAL et al. (1989), *D. furcatus* subsp. *geminiflorus* is an incorrect name, because it is based on *D. geminiflorus* Loisel., which is a different taxon; therefore, its valid name is *D. benearnensis* Loret, ever belonging to *D. furcatus* group, but it has to be considered as a distinct species.

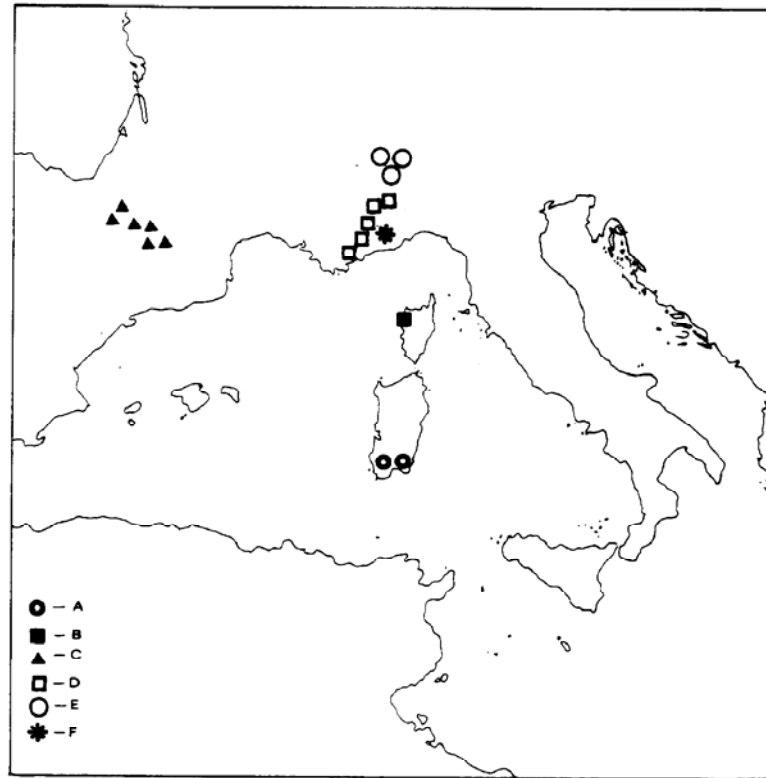


Fig. 2 - Geographical distribution of *Dianthus mossanus* (A), *D. gyspergerae* (B), *D. benearnensis* (C), *D. furcatus* subsp. *furcatus* (D), *D. furcatus* subsp. *lereschii* (E), *D. furcatus* subsp. *dissimilis* (F).

As concerns *Dianthus mossanus*, it differs from all subspecies of *D. furcatus* in having stock robust, woody, very branched, flowering stems cylindrical, prostrate to prostrate-ascending, 20-35 cm long, with 2-4 flowers, the lateral ones inserted on articulate branches, leaves rigid, semicylindrical, often canaliculate, acuminate, epicalyx scales 14-21 mm long, 1/2-3/5 as long as the calyx, elliptical, coriaceous, calyx 34-38 mm long, with teeth linear-triangular, (5-)6-8 mm long, petal limb 15-18 mm long, white, irregularly dentate; while *D. furcatus* shows stock slender, few branched, flowering stems subtetragonal, erect, 8-25(-30) cm long, with 1-3 flowers, all inserted directly on the scape, leaves soft, flat, obtuse, epicalyx scales 4-8 mm long, not longer than the 1/2 calyx, with limb ovate to ovate-lanceolate, green, calyx 10-17 mm long, with teeth lanceolate-triangular, 3-6 mm long, petal limb 5-10 mm long, pink, subentire to lacinate.

Dianthus mossanus, due to its robust habit, leaves 2-3 mm wide, acute, 2-4 flowered inflorescences, epicalyx scales longer than the 1/2 calyx, whitish petals, is more related to *D. gyspergerae*. Nevertheless many significant morphological differences allow to distinguish between these two species very well. In particular, *D. mossanus* is characterized by flowering stems prostrate to prostrate-ascending, cylindrical, 20-35 cm long, with 4-5 internodes, leaves very long, lightly serrulate, epicalyx scales 6, coriaceous, 1/2-3/5 as long as the calyx, 14-21 mm long, calyx 34-38 mm long, with teeth linear-triangular, acute, flowers fragrant, with petal limb 15-18 mm long, irregularly dentate; on the other hand, *D. gyspergerae* has flowering stems erect, subtetragonal, 8-10 cm long, with 2-3 internodes, leaves shorter, entire, epicalyx scales 4, herbaceous, 2/3 to as long as the calyx, 7-13 mm long, calyx 12-14 mm long, with teeth narrowly lanceolate, acuminate-cuspidate, flowers scentless, with petal limb 8-10 mm long, subtire to crenulate.

On the basis of geographical distribution, the taxa belonging to *D. furcatus* group show a clear disjunction between the mountain populations of the Alps and Pyrenees and those of hilly Sardinian-Corsican territories (fig.2). This geographical isolation is very old and probably dates back to the early Miocene, when the Sardinian-Corsican micro-plate drifted from the granitic Hercinian mountain system (WESTPHAL *et al.*, 1976; CARDONA & CONTANDRIOPOULOS, 1977). Therefore, the speciation processes, having been much more protracted and intense in the insular populations, have led to a differentiation into well distinct species, represented by *D. gyspergerae* and *D. mossanus*. Due to the more recent geographical isolation, the continental populations are, however, less differentiated, and it is only possible to distinguish subspecies.

As concerns *D. mossanus*, as well as *D. gyspergerae*, they can be considered as two schizoendemics, which for their rarity and localization in rupestrian habitats assume a clear relict character.

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