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Abstract

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Polygala apiculata is studied on living plants from the locus classicus. $2n = 24$ chromosomes were counted, indicating a possibly triploid genomic constitution. The species is unique in the genus for the crown-like arranged caruncle lobes of its seeds. Its occurrence is confirmed for Calabria only and the IUCN conservation status "Critically Endangered" is proposed. A lectotype of the name *P. apiculata* is designated.

Introduction

Polygala apiculata Porta (1879) is an endemic of central S Italy, which is confined to the regions of Molise, Apulia and Calabria according to Pignatti (1982), McNeill (1968), Greuter & al. (1989).

The species is, however, little known, its delimitation from the putatively related *P. nicaeensis* in modern floras (McNeill 1968, Pignatti 1982) is rather vague and not in line with older literature, its taxonomic position is questionable, and nothing is known about its abundance. The present contribution therefore aims at a re-evaluation of its taxonomy, its systematic position and its conservation status, studying living plants at and from the locus classicus near the town Gerace in the region of Calabria.

Material and methods

For the karyological study, root tips of plants cultivated in the Botanic Garden of Calabria University from seeds collected at the type locality (S Calabria, Gerace, along the road from Locri to Gerace, at the indication of "Borrì", 8.4.2003, *Peruzzi, Passalacqua & Gargano,* cult. Hort. Bot. University of Calabria, acc. no. 509) were pretreated in 0.3 % colchicine and fixed in Carnoy, then hydrolyzed in 1N HCl and stained with fuchsine; for counting and measuring the chromosomes, the root tips were squashed in acetic orcein.

Specimens studied. – Italy, Calabria: In clivibus graminosis ad vias cavas sub urbe Gerace, sol. argillac. arenos. 2-300 m, 24.5.1877, *Huter, Porta & Rigo* (FI, 4 specimens); Prov. di Reggio Gerace, in sepibus et herbidis prope urbem, 14.5., *Rigo* (FI, sub *P. huteri* Chodat); Gerace, lungo la strada da Locri a Gerace in prossimità del cartello di Borrì, 15.4.2002, *Peruzzi* & *Passalacqua* (CLU); Gerace, lungo la strada da Locri a Gerace in prossimità del cartello di Borrì, 8.4.2003, *Peruzzi, Passalacqua* & *Gargano* (CLU).

Results and discussion

Morphology. – Contemporary floras (McNeill 1968, Pignatti 1982) distinguish *Polygala apiculata* from *P. nicaeensis* Risso by bract features and the indumentum of the basal leaves. Whereas these features are partly inconsistent, partly erroneous, *P. apiculata* shows a very reliable diagnostic feature hardly employed by recent authors: the caruncle lobes are always erect and crown-like arranged (Fig. 1) instead of ± appressed to the seed as in all other Italian *Polygala* species. Chodat (1887, 1893: t. 32 fig. 30-31) was the first who described and illustrated this character and, apparently unaware of Porta's (1879) diagnosis, described a new species, *P. huterana,* on the basis of the same collection of Huter, Porta & Rigo ("Alae apiculatae; nervi anastomosantes; lobi laterales arilli magni alaeformes, papyracei, semen haud involventes, sed eo superpositi", Chodat 1887). Later Chodat (1893), in his monumental survey of the family *Polygalaceae,* included *P. huterana* (as *"P. huteri"*) in *P.* sect. *Polygala* subsect. *Polygala* (as *"P.* sect. *Orthopolygala* subsect. XIV*"*). The author provided an exhaustive and critical description and concluded: "forma arilli in nulla alia *Polygala* reperitur". In fact seed features have a great taxonomic value in *Polygala* (Paiva 1989).

According to Chodat (1893), the species is distinct from *Polygala flavescens* Lam. also by other features such as wing colour and nervature, and from *P. nicaeensis* Risso also because of the different ratio between wings and capsule. Judgeing from the short wings, the small corolla and the glabrescent leaves, *P. apiculata* appears actually to have a closer relationship to *P. vulgaris* L. than to *P. nicaeensis*.

Although Porta (1879) in his short diagnosis ("alis oblongo-ellipticis, quinquenervis, nervo interno e medietate laeviter ramuloso, cum exterioribus subanastomosanti apice prominente; foliorum margine subserrulato, ciliatoque") does not mention the caruncle features, there is no doubt that he based his description on the same plants as subsequently studied by Chodat.

Chromosome number. – *Polygala apiculata* has a chromosome complement of $2n = 24$ with chromosome size ranges between 1 and 2 µm. It is presumably triploid, since within *Polygala* there are at least two diploid species with $2n = 16$, i.e. *P. carueliana* (Bennet) Caruel (Bechi & al. 1996; also belonging to *P.* subsect. *Polygala*) and *P. scoparia* Kunth (Fedorov 1969).

Among the species of *Polygala* sect. *Polygala* more closely related to *P. apiculata,* chromosome numbers are extremely variable in *P. vulgaris* L. and include $2n = 28, 32, 34, 56, 68$, c. 70 (Fedorov 1969, Goldblatt 1984, Goldblatt & Johnson 2000), wheras *P. nicaeensis* subsp. *corsica* Cosson shows $2n = 34$ (Contandriopoulos 1962) and *P. flavescens* was never studied karyologically. Within *P.* subsect. *Polygala* $2n = 24$ has been reported so far only for *P. baetica* Willk. (Quézel 1957), a plant endemic to W Spain and Morocco (Paiva 1989), whereas $2n = 34$ is the most frequent number both in this subsection and the genus (Paiva 1989).

Polygala apiculata Porta in Nuovo Giorn. Bot. Ital. 11: 238. 1879 ≡ *Polygala vulgaris* var. *apiculata* (Porta) Fiori, Nuov. Fl. Italia 2: 124. 1926 ≡ *Polygala huterana* Chodat in Arch. Sci. Phys. Nat. 18(9): 297. 1887, nom. illeg. ≡ *Polygala huteri* Chodat in Mém. Soc. Phys. Hist. Nat. Genéve 21: 447-448. 1893, nom. illeg. – Lectotype (designated here): "Calabria I orient. in clivibus graminosis ad vias cavas sub urbe Gerace, sol. argillac. arenos. 2-300 m", 24.5.1877, *Huter*, *Porta* & *Rigo 129* ["*P.* (*vulgaris* b) *apiculata* nobis"] (FI ex herb Groves; isolectotypes: FI 2 sheets ex herb. Huter, 1 sheet ex herb. Levier).

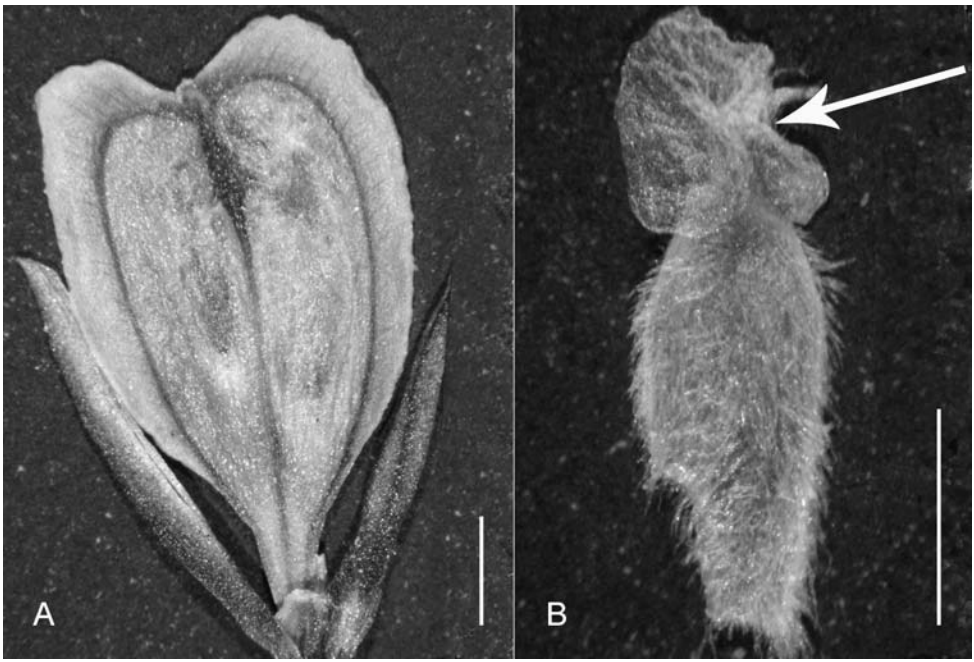

Fig. 1. *Polygala apiculata* – A: fruit; B: seed showing the peculiar crown-like caruncle lobes (B, white arrow). – Scale bars = 1 mm.

Distribution. – Pignatti (1982) reported *Polygala apiculata* for Apulia, Molise and Calabria. In the first two regions the occurrence of *P. apiculata* has not been confirmed recently. Other reported Calabrian localities besides the locus classicus, i.e. Stilo, S. Luca d'Aspromonte, Bianco Nuovo (Fiori 1926, Pignatti 1982) are based on herbarium specimens provisionally identified as *P. comosa* Schkuhr by Gussone (1826) and have not been confirmed recently.

Ecology. – *Polygala apiculata* grows in hilly dry garigue, on mixed substrate (limestones and clays). An interesting aspect is the morphological convergence in inflorescence features (colour, dimension and disposition of the flowers, flowering period) of *P. apiculata* with *Bellevalia dubia* subsp. *boissieri* (Freyn) Feinbr. *(Hyacinthaceae),* which occurs in Calabria in the same habitat but has a wider distribution (see Borzatti de Loewestern & Garbari 2002). Possibly these two plants share the same pollinators.

Conservation status. – *Polygala apiculata* is classified in the IUCN Red List category (IUCN 2001) Critically Endangered (CR) according to criteria B1ab (IV).

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