

Francesco M. Raimondo

***Polygala amadei* (Polygalaceae), a new species from Nebrodi Mountains (NE-Sicily)**

Abstract

Raimondo, F. M.: *Polygala amadei* (Polygalaceae), a new species from Nebrodi Mountains (NE-Sicily). — *Bocc.* 30: 9-17. 2024. — ISSN: 1120-4060 printed.

Polygala amadei (Polygalaceae) is described from Nebrodi Mountains in Sicily. Related to *P. preslii*, the other Sicilian endemic of the genus, it differs from it both for its morphological characters and for its different phenology and ecology. Its population, although localized, occurs in a vast mountain territory, located in the north-eastern sector of the island of Sicily, rich in woods and large clearings, which have been grazed by cattle, sheep and horses for centuries. Confused in the past with the endemic *P. preslii*, the new species is sufficiently distinct and is also related to subspecies of *P. alpestris* from the south of the Italian Peninsula. In addition to the diagnostic characters and a brief analysis of the relationships with some similar taxa occurring in southern Italy, the ecological and chorological characters of the new taxon are reported, then comparing them with *P. preslii*, with which the Nebrodi species still remains highly related.

Key words: Taxonomy, vascular flora, endemism, Nebrodi Regional Park, Sicily.

Introduction

The native vascular flora of Sicily has been well explored in the past (Raimondo 1988) and the Sicilian territory is among the best known floristic territories in the Italian and Mediterranean regions (Raimondo & al. 2005). Not all the regional territory, however, has been investigated with the same depth. There are still some moderately explored areas and among these there is the entire wide mountain area of Nebrodi Mountains, which only in recent decades has been the subject of attention both by botanists from the University of Catania and by scholars working or having worked in the botanical institution of the University of Palermo. The latter are the most recent contributions regarding the phyto-taxonomic exploration of this area (Raimondo & Schicchi 2004; Raimondo 2008; Marino & al. 2012; Raimondo & al. 2020; Raimondo & al. 2022).

Recent investigations about previously unpublished aspects of the flora of this area have offered the opportunity to acquire new findings which have enabled the isolation of other taxa new to science, including a species of *Polygala*. This is a third species of this genus occurring in Sicily, reported in the past in the same territory of Nebrodi Mountains sub *P. preslii* Spreng. (Brullo & Grillo 1978; Arrigoni 2014). It is subsequently established with the name of *Polygala amadei*.

***Polygala amadei* Raimondo sp. nova** (Fig. 1)

Diagnosis – *Planta perennis herbacea, parva, florens tam vere quam autumnno. Differt a Polygala preslii in minore magnitudine, in diverso cyclo vegetativo et in oecologia diversa.*

Types – *Holotypus*: Sicily, Nebrodi Mountains, locality Bosco Saracina, mesophilic meadows on siliceous soil in the clearings of the woods with *Quercus cerris*, north-east of Lake Maulazzo (Alcara Li Fusi, Messina), 1425 m a.s.l., 37°56'60.0"N, 14°40'18.2"E, 3.09.2019, Raimondo s.n., PAL-Gr. *Isotype*: FI.

Description – Herbaceous plant, perennial, caespitose, pluricaule, 8-16 cm with tap root (Figs. 2-4). Stems plagiotropic-ascending, glabrescent. Leaves briefly petiolate, basal ovate-lanceolate (5-10 × 1-4 mm) or sub-round (1-2 × 1 mm), with a light hairy margin, the upper leaves lanceolate (15-16 mm long × 4-5 mm wide in the middle), obtuse. Inflorescences terminal racemose, 3-7 cm, pauciflores. Bracts oval-acute, about 1 mm, scarious. Pedicels 1 mm. Bracteoles oval-oblong, about 2 mm, with a dorsal green band. Wings obovate-elliptic, cuneate, 9(-10) × 4-4.5 mm, greenish, with three nerves, one of which particularly evident, and upper margins purplish. Corolla superior to the wings, purplish pink, keel with prominent, fimbriate crest. Capsule bilobed and attenuated at the apex, 8-9 mm long × 4-4.5 mm wide. Seed 2.5-3 mm long × 0.9-1 mm wide (Fig. 5), with scaly, glabrous aril and short, triangular lateral lobes.

Etymology – Species commemorating HRH Prince Amedeo of Savoy, Duke of Aosta, passionate phytologist, onorary OPTIMA member, for many years esteemed president of the International Foundation pro *Herbario Mediterraneo* in Palermo, publishing *Flora Mediterranea* and *Bocconea* journals.

Phenology – Flowering in May-June and August-September.

Distribution and ecology – Mesophilous species, well represented in the area of Nebrodi Mountains where it occupies the humid north slopes (Fig. 6). The distribution area covers the submontane belt characterized by extensive forests of *Quercus cerris* L. and occupies the potential space of the associations of the order *Quercetalia pubescenti-petraea*, between 1300 and 1500 m a.s.l.; in particular, it occurs in the area around the *locus classicus* (Fig. 4). In this context, it widely colonizes clearings. The presence of *Quercus cerris* to which they are associated include also *Fagus sylvatica* L., *Pyrus pedrottiana* Raimondo, Venturella & Domina, *P. spinosa* Forssk., *Pyrus* sp., *Crataegus monogyna* L., *C. laciniata* Ucria, *Malus sylvestris* L., *Daphne laureola* L., *Rosa canina* L., *Rosa sicula* Tratt., *Rubus hirtus* Waldst. & Kit., *Ruscus aculeatus* L., and, among herbaceous species, *Ajuga iva* (L.) Schreb. subsp. *iva*, *Anthoxanthum odoratum* L., *Asphodelus ramosus* L. subsp. *ramosus*, *Bellis perennis* L., *Brachypodium pinnatum* (L.) P. Beauv, *Capsella rubella* Reut., *Carex flacca* Schreb. subsp. *flacca*, *Centaurea jacea* L. subsp. *jacea*, *Cirsium vallis-demonii* Lojac. subsp. *vallis-demonii*, *Clinopodium alpinum* subsp. *nebrodense* (A. Kern. & Strobl) Bartolucci & F. Conti, *Crepis vesicaria* L., *Cynosurus cristatus* L., *Dactylorhiza romana* (Sebast.) Soó subsp. *markusii* (Tineo) Holub, *Hypochoeris radicata* L., *Linum* sp., *Lotus corniculatus* L. subsp. *corniculatus*, *Medicago cupaniana* Guss., *Muscari commutatum* Guss., *Odontites vernus* subsp. *serotinus* Corb.,

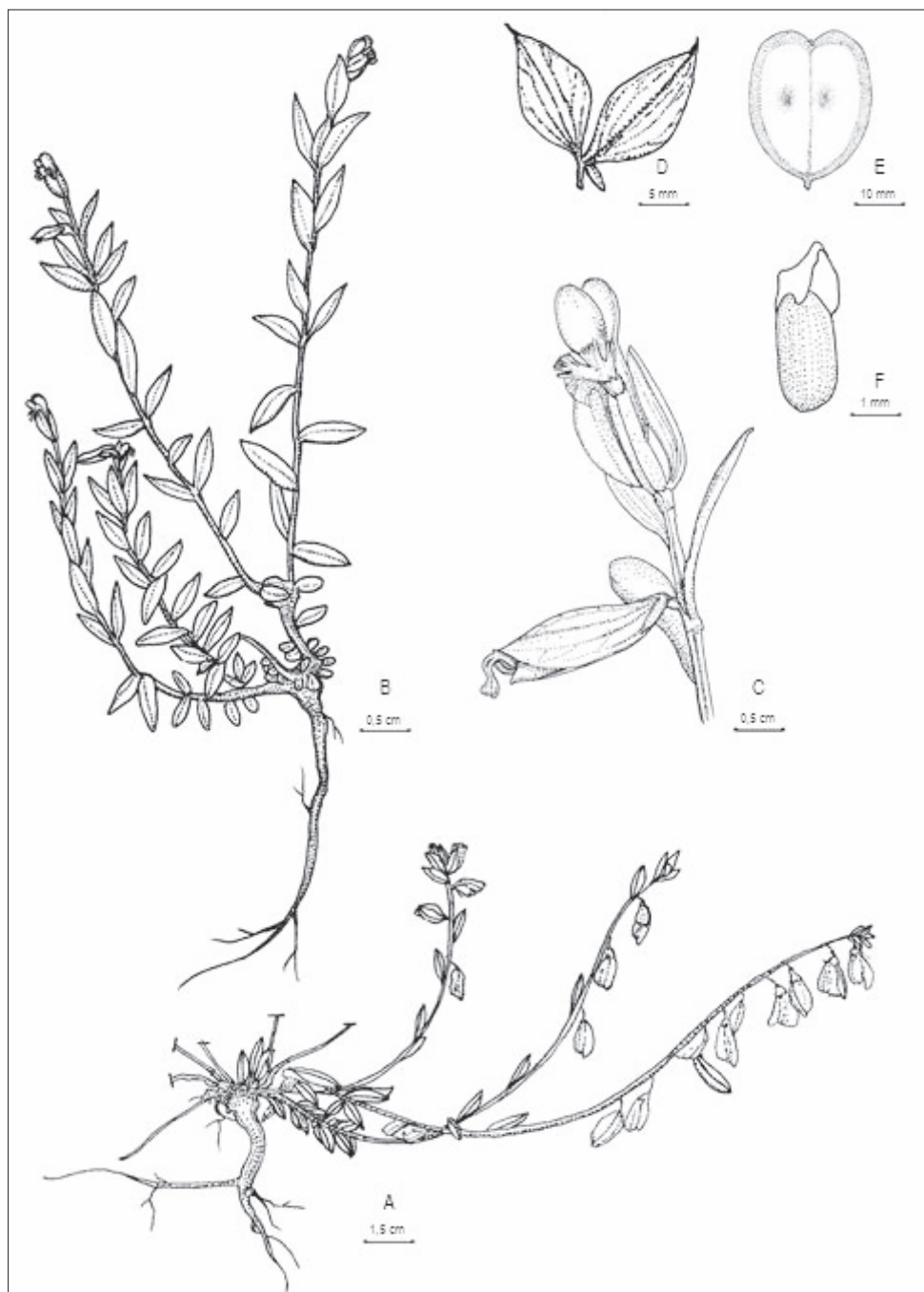


Fig. 1. Iconographic table of *Polygala amadei*: A) adult plant after the spring vegetative growth; B) plant in the first year of development; C) details of the flower; D) wings; E) capsule; F) seed (Drawing by V. Magro).



Fig. 2. *Polygala amadei* flowering in August in the meadow habitat of its *locus classicus*.

Plantago cupani Guss., *Reichardia picroides* (L.) Roth, *Sinapis pubescens* L. subsp. *pubescens*, *Symphytum tuberosum* subsp. *tuberosum*, *Thymus longicaulis* C. Presl, *Trifolium pratense* L. subsp. *pratense*, *T. repens* L., *Viola reichembachiana* Boreau, etc.

Status IUCN – Vulnerable species (VU)

Biological and ecological remarks – Compared to the subspecific taxa of *P. alpestris*, *P. amadei* shows greater ecological and partly phenological affinities with *P. alpestris* subsp. *meridionalis*, summer flowering plant treated in the past under *P. angelisii* Ten. (Spampinato 2014). With respect to *P. preslii* (Fig. 7), *P. amadei* stands out for its small size and different ecology, not being a hilly coastal species, but rather an inland and mountainous one. Furthermore *P. preslii* is a species characteristic of a fruticose plant association, the *Erico-Polygaletum preslii* Marcenò & Colombo 1982, related to *Rosmarinetalia officinalis* Br.-Bl. ex Molinier 1934. *P. amadei*, instead, participates in a mesophilous herbaceous plant community with *Plantago cupani* and *Cynosurus cristatus* referred to *Cirsietalia vallis-demonis* Brullo & Grillo 1978 although not exclusively. The phenology is also different: in *P. preslii*, flowering occurs only in spring (May); instead in *P. amadei* it occurs both in spring (May) and at the end of summer after the resumption of the rainy season (second half of August).



Fig. 3. Vegetative aspects and details of the flowers of *Polygala amadei*.

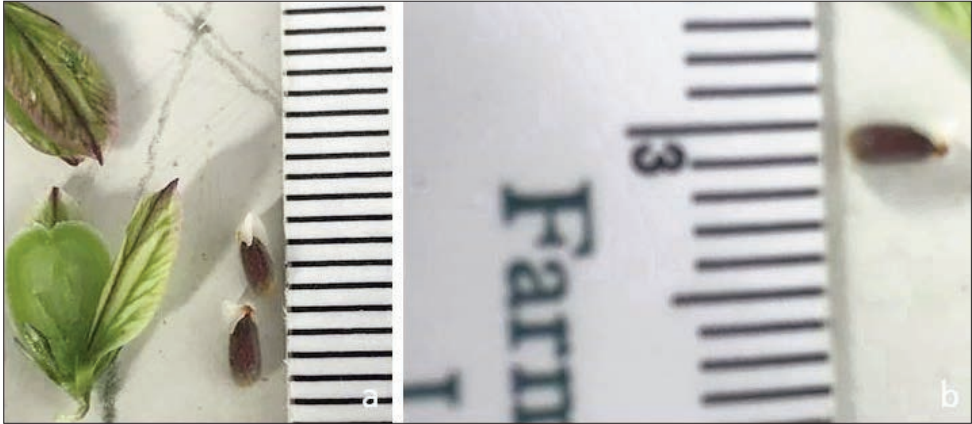


Fig. 4. Details of the capsule and seeds of *Polygala amadei*.



Fig. 5. *Polygala amadei* in flower, on the edge of the deciduous wood in one of the sites in the basin of Alcantara river (S-E Floresta, Messina).

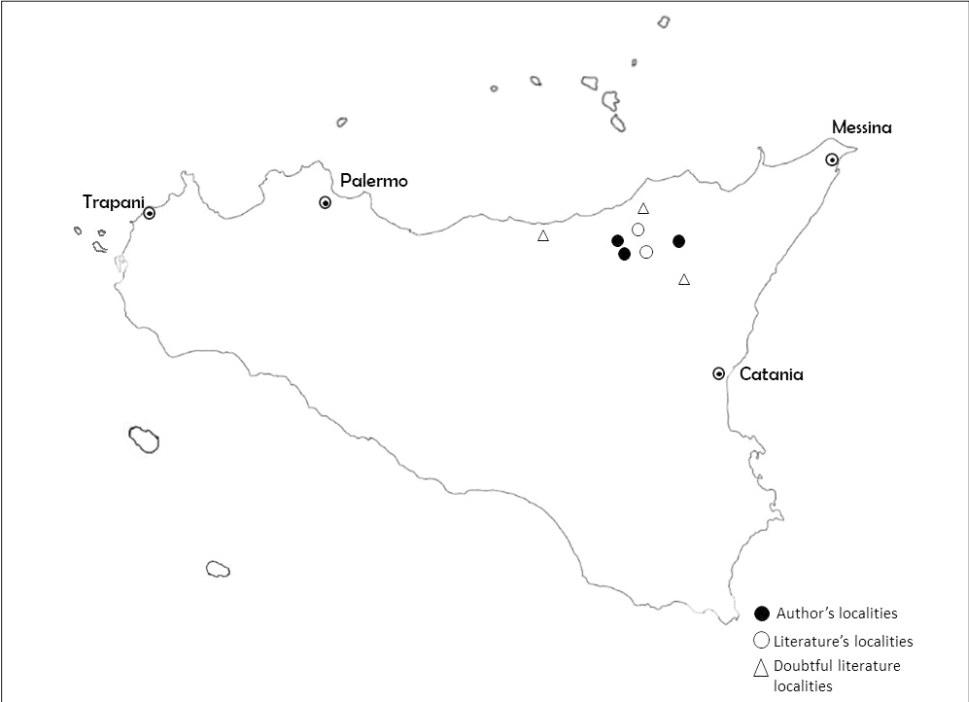


Fig. 6. Distribution of *Polygala amadei* based on author's collections and literature data referred to *P. preslii*.



Fig. 7. *Polygala preslii* in flower, in conditions of shady habitat near San Martino delle Scale (Palermo), *locus classicus* of the species (photo by E. Di Gristina).

Discussion and Conclusions

According to Arrigoni (2014), in Italy, *Polygala* L. is represented by 12 species, two of which occurring in Sicily. In this region, in addition to *P. monspeliaca* L., a therophyte widespread in most Mediterranean countries, *P. preslii* Spreng – a hemicytrophite endemic to the Island – occurs.

Arrigoni himself (2014) reports *P. alpestris* subsp. *meridionalis* Arrigoni for the South of the Italian Peninsula (Basilicata and Calabria) and excludes *P. alpestris* subsp. *angelisi* (endemic in the Marche, Abruzzo and Lazio) from Calabria, cited instead by Brullo & al. (2001) for Calabria itself. Bartolucci & al. (2018) confirm the subsp. *meridionalis* for Basilicata and Calabria, while they report subsp. *angelisii* for Central Italy (Marche, Abruzzo and Lazio), as does the aforementioned Arrigoni (2014) and NP for Calabria: The aforementioned authors report the endemic *P. preslii* for Sicily, in addition to *P. monspeliaca*.

The population of *Polygala* from Nebrodi so far known as *P. preslii*, however, is recognized here as a distinct species and therefore proposed as a new species on the basis of characteristics considered discriminating: the size of the plant, the reduced number of flowers of the raceme, the shorter corolla tube, the biological structure and phenology, the ecology (autoecology and synecology).

The record from Nebrodi Mountains distinguishes very well from the *P. alpestris* group and separates itself from the other species of southern Italy. Similarities remain with the aforementioned *Polygala preslii* and with *P. alpestris* subsp. *angelisii* and *P. alpestris* subsp. *meridionalis*, to which collections carried out in the same territory have been referred in the past (Brullo & Grillo 1978; Giardina & al. 2007; Arrigoni 2014). In fact, the locality of Nebrodi mountain attributed to the latter species and the sample from the Florentine herbarium (FI) of the same authors mentioned by Arrigoni in his revision of the genus in Italy (Arrigoni 2014), fall into the same area of relevance of the new taxon, being located at short distance from its *locus classicus*. In light of the above and of the specific taxon described below, the materials from Nebrodi Mountains cited under *P. preslii* must therefore be referred to the new species.

Specimens seen

Polygala amadei

Sicily: Nebrodi Mts, mesophilic meadows on siliceous substrate, in the clearings of the deciduous woods with *Quercus cerris*, north-east of Lake Maulazzo (Militello Rosmarino, Messina), 1425 m a.s.l., 37°56'6N - 14°40'18"E, 03.09.2019, Raimondo s.n. (PAL-Gr.); ibdem 16.07.2019, Raimondo (PAL-Gr., FI); Ibidem 28.05.2021; Nebrodi Mts, southern slopes of Mount Soro, on siliceous soil in the clearings of *Fagus sylvatica* and *Ilex aquifolium* wood, about 1470 m a.s.l., 05.06.2021, Raimondo (PAL-Gr); *Polygala* aff. *preslii*, *Polygala amadei* Raimondo (ined.). High valley of Alcantara river south-east of Floresta, below the cemetery, alt. 1070 m., 37,954985°N, 14,918811°E. Wooded slope at the edge of the track, siliceous soil. Flowers reddish-purple. May 21st [2022], W. Greuter 29273, F.M. Raimondo & R. Rankin (PAL-Gr).

Polygala preslii

Sicily: San Martino delle Scale (Palermo), near to the former Mountain Village "Ai Pini", on the slope under the pine forest along Via Crisafulli, 38°05'14"N – 13°14'34"E,

738 m a.s.l., carbonate soil, 04.05.2022, *E. Di Gristina* (PAL-Gr).

Acknowledgements

The author is grateful to *PLANTA*/Center for Research, Documentation and Training (Palermo, Sicily) for its logistic support; to Dr E. Di Gristina for the new records of *P. preslii* from the *locus classicus*; to Dr Vincenzo Magro (Palermo) for the drawing of Fig. 1. Finally to Dr Enrico Bajona and Dr Salvatore Giarratana for their precious collaboration within *PLANTA* Center in Palermo and in the field.

References

- Arrigoni, P.V. 2014: Revisione tassonomica e corologica del genere *Polygala* in Italia – Inform. Bot. Ital. **46(2)**: 235-263.
- Bartolucci, F., Peruzzi, L., Galasso, G., Albano, A., Alessandrini, A., Ardenghi, N.M.G., Astuti, G., Bacchetta, G., Ballelli, S., Banfi, E., Barberis, G., Bernardo, L., Bouvet, D., Bovio, M., Cecchi, L., Di Pietro, R., Domina, G., Fascetti, S., Fenu, G., Festi, F., Foggi, B., Gallo, L., Gottschlich, G., Gubellini, L., Iamónico, D., Iberite, M., Jiménez-Mejías, P., Lattanzi, E., Marchetti, D., Martinetto, E., Masin, R. R., Medagli, P., Passalacqua, N. G., Peccenini, S., Pennesi, R., Pierini, B., Poldini, L., Prosser, F., Raimondo, F.M., Roma-Marzio, F., Rosati, L., Santangelo, A., Scoppola, A., Scortegagna, S., Selvaggi, A., Selvi, F., Soldano, A., Stinca, A., Wagensommer, R. P., Wilhelm, T. Conti, F. 2018: An updated checklist of the vascular flora native to Italy. – *Plant Biosystems* **152(2)**: 179-303.
- Brullo, S. & Grillo, M. 1978: Ricerche sui pascoli dei Monti Nebrodi – *Not. Fitosoc.* **11**.
- Giardina, G., Raimondo, F.M. & Spadaro, V. 2007: A catalogue of plants growing in Sicily. – *Boccone* **20**: 5-558.
- Marino, P., Castellano, G., Raimondo, F. M. & Spadaro, V. 2012: *Pyrus ciancioi* (*Rosaceae*), a new species from Sicily. – *Plant Biosyst.* **146(3)**: 654-657.
- Pignatti, S. 2017: *Flora d'Italia*, Sec. ed. – Edagricole, Milano.
- Raimondo, F. M. 1988: Stato delle conoscenze floristiche della Sicilia al 1987. – In: Pedrotti, F. (ed.), 100 anni di ricerche botaniche in Italia: 1888-1988, II vol.: 637-665. Società Botanica Italiana, Firenze.
- 2008: A new species of *Malus* (*Rosaceae*, *Maloideae*) from Sicily. – *Fl. Medit.* **18**: 5-10.
- & Schicchi, R. 2004: *Pyrus vallis-demonis* (*Rosaceae*), a new species from the Nebrodi mountains (NE-Sicily). – *Boccone* **17**: 325-330.
- , Domina, G. & Bazan, G. 2005: Carta dello stato delle conoscenze floristiche della Sicilia. – In: Scoppola, A. & Blasi, C. (a cura), *Stato delle Conoscenze sulla Flora Vascolare d'Italia*, pp. 203-207 – Palombi Editori, Roma.
- , Spadaro, V. & Di Gristina, E. 2020: *Centaurea heywoodiana* (*Asteraceae*), a new species from the Nebrodi Mountains (NE Sicily). – *Fl. Medit.* **30**: 369-376.
- , Venturella, G. & Domina, G. 2022: *Pyrus pedrottiana* (*Rosaceae*), a new species from the Nebrodi Mountains (N-E Sicily). – *Fl. Medit.* **32**: 25-34.
- Spampinato, G. 2014: *Guida alla flora dell'Aspromonte*. – Larussa Editore. Reggio Calabria. Pp. 447.

Address of the author:

Francesco M. Raimondo, *PLANTA*/Center for Research, Documentation and Training, Via Serraglio Vecchio 28, 90123 – Palermo (Italy).

Email: raimondo@centroplantapalermo.org