Polygala moggii (Polygalaceae), a new species from Oman

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Polygala moggii (Polygalaceae), una nuova specie dall’Oman – Viene descritta una nuova specie perenne di Polygala scoperta in una area costiera presso Hasik (Dhofar orientale). Polygala moggii, oltre che dalle dimensioni contenute e dai piccoli fiori violacei, è caratterizzata da capsule glabre prive di ali e da sepali petaloidi verdi senza nervature evidenti. Per le caratteristiche dei sepali questa specie può essere accostata ad alcune poligale nane della Somalia e dell’Etiopia, anch'esse aventi un areale molto limitato.

Key words: Oman, Polygala moggii, Polygalaceae, taxonomy.

Polygala moggii sp. nov. grow in a rocky litoral area located at the mouth of a wadi near Hasik, eastern Dhofar. It is a perennial herb characterized by a prostrate habit and small violet flowers.

This new species is evidently different from the other Polygala species known from Oman (Ghazanfar, 1992,1994) for its particular morphological features. In fact, the small dimensions of the stems, leaves and flowers, the prostrate habit, the petaloid wings with no nervation, the violet colour of the corolla, and the un-winged capsules, distinctly separate this species from P. erioptera DC., P. abyssinica R. Br., P. dhofarica Baker, P. tinctoria Vahl, P. dispar Ghazanfar, P. irregularis Boiss, P. thurmanniana Chod. and, particularly, from P. obtusissima Hochst., an up to 1 m high shrub. On the basis of the unwinged capsules, the small dimensions and the similar growth environment, P. moggii seems to be close to P. mascatensis Boiss. (N Oman, C Oman, Dhofar), a variable species especially in the leaves morphology (Boissier, 1867; Ghazanfar, 1992); moreover P. mascatensis is different from P. moggii in having an irsute-canescens indumentum, pink purple flowers, white petaloid wings with evident nervations and pubescent capsules. Also Polygala sp. cited by Ghazanfar (1992) from Dhofar does not correspond to P. moggii since it is a perennial herb up to 30 cm tall, with purple flowers and winged capsules.

For the reduced size of the vegetative parts and the flowers, and for the prostrate habit Polygala moggii can be related to two small perennial species of the Arabian Peninsula: P. rupicola Hochst. & Steud. ex A. Rich. (continental Yemen) and P. kuriensis A.G. Miller (Yemen: Abd al Kuri Island). However Polygala moggii differs from both of them by its green petaloid wings with no evident nervation (they are white with evident nervation in the Yemenite species), and for its leaves which are elliptical-oval to sub-orbicular and not linear-elliptical (P. rupicola) or oblong-elliptical (P. kuriensis).

P. moggii shows a higher affinity to some dwarf species recently described from Somalia (Thulin, 1990; 2001) and Ethiopia (Gilbert, 2000).
**Polygala moggii**, Raffaelli, Mosti & Tardelli, sp. nov.


**ETYMOLOGIA** - Dedicated to Prof. Guido Moggi previous director of the Tropical Herbarium of Florence and notable scholar of the flora of Tropical East Africa, especially Somalia and Kenya, on his 80th birthday.

**DESCRIPTION** - Perennial herb from a woody rootstock; stems numerous, 5-13 cm long, richly branched especially at the distal end, appressed or slightly ascendent and weakly zigzagging, cylindrical, puberulous with minute crisped hairs and often showing leaf scars.

Leaves 3.5-6.0 x 3-5 mm, elliptic-obovate to suborbicular-obcordate, emarginate at apex or shortly mucronate, sparsely puberulous with minute crisped hairs or glabrescent, slightly succulent, with a central midrib; petiole 0.5 mm long. Larger leaves 8-10 x 6-7 mm, sometimes present along the basal part of the branches.

Racemes short, terminal, 3-5(-6)-flowered. Bracts ca. 2.5 mm long, ovate, suborbicular or obcordate, persistent. Bracteoles 1 mm long, suborbicular, persistent.

Wing sepals 2, obovate-oblanceolate, falcate, 3 mm long, without veins or obscurely veined; posterior sepal 1.5 mm long; anterior sepals 2, free, lanceolate, ca. 0.8 mm long. All sepals greenish, with hyaline whitish-yellowish margins, crisped puberulous on the outer face and internally glabrous.

Petals 3: upper 2 oblanceolate-oblong, ca. 2 mm long, pale-violet, with a darker purple spot in the proximal portion; keel 2.5-3 mm long, violet at tip, whitish at base, crested with a lacerate pale-violet appendage. Stamina 8, ca. 2 mm long. Capsule obovate-oblong, 3 x 2 mm, glabrous, emarginate at apex, with thickened margins, unwinged. Seeds 2.5 x 0.8 mm (not completely ripe in our specimens), ellipsoid-oblong, densely pubescent with white straight hairs 0.5-0.7 mm long; caruncle white, ca. 0.5 x 0.5 mm, with 3 basal appendages 0.7-0.8 mm long, pubescent with white sparse patent hairs between the lobes.

**FLOWERING AND FRUITING PERIOD** - February-March.

**ICONOGRAPHY** - (Fig. 1, drawn by A. Maury).

**DISTRIBUTION** (Fig. 2) AND ECOLOGY - *Polygala moggii* was collected at the mouth of a wadi that opens nearby the coastal road between Habdin and Hasik, in eastern Dhofar (Figs. 2, 3). During the collection of the specimens, about 10-15 plants in a 200 m² area were observed. The plants grow on granitic soils, among the pebbles or in the rock fissures. Together with *Polygala moggii* the following plants were collected: *Euphorbia larica* Boiss. (or *E. dhofarensis* Carter), *Fagonia Schweinfurthii* (Hadidi) Hadidi, *Indigofera montana* Balf. f., *Lavandula macra* Baker, *Iphiona scabra* DC., *Cleome Brachycarpa* Chamb. & Lamond, *Cleome Brachycarpa* Vahl ex DC., *Schweinfurthia pedicellata* (T. Anderson) Balfour, *Ochradenus* sp.

**TAXONOMIC REMARKS** (TABLE 1)

*Polygala moggii* shows morphological affinities with some small Somali species (*P. argentea* Thulin, *P. bariensis* Thulin, *P. hamarensis* Thulin & Raimondo, and *P. praetermissa* Thulin), especially in the morphology and colour of the petaloid wings (falcate, green-coloured with hyaline margin and no evident nervation). However, these species show an erect not prostrate habit, lateral not terminal inflorescences, and slightly larger corolla size (from 3.5 to 4.5 mm, not of *P. moggii*). Furthermore, with respect to *P. moggii* (see Tab. 1) *P. argentea* has pubescent capsules; *P. bariensis* has winged capsules; *P. hamarensis* is rhizomatous, often glabrous; *P. praetermissa* has pubescent capsules and linear-lanceolate leaves.

Also *P. mooneyi* Gilbert, a small prostrate perennial herb, known from a very restricted area in Ethiopia, shows affinities with *P. moggii* for the morphological features of the petaloid wings, the colour of the corolla, the tri-appendiculate caruncle of the seed (the caruncle shows three appendixes also in the above mentioned Somali species), and for the size of its vegetative structures. However, *P. mooneyi* is different.
Fig. 1 - *Polygala moggii*: habit (x 1); flower, wing sepal, seed, capsule (x 20).
Fig. 2 - Location of *Polygala moggii* near Hasik (eastern Dhofar).

Fig. 3 - Habitat of *Polygala moggii* near Hasik (eastern Dhofar).
Polygala moggii (Polygalaceae), a new species from Oman

from P. moggii for its lateral inflorescences, larger flowers and winged capsules.

Probably Polygala moggii and the other dwarf species described from Arabia and eastern Africa may be treated as a complex of small species with extremely local distribution whose genesis and differentiation depend on the local environmental and edaphic conditions.

### Table 1 - Morphological diagnostic characters between Polygala moggii and the most related species.

<table>
<thead>
<tr>
<th>characters</th>
<th>Polygala moggii (Oman)</th>
<th>Polygala argentea (Somalia)</th>
<th>Polygala bariensis (Somalia)</th>
<th>Polygala hamarenensis (Somalia)</th>
<th>Polygala mooneyi (Ethiopia)</th>
<th>Polygala praetermissa (Somalia)</th>
</tr>
</thead>
<tbody>
<tr>
<td>habit</td>
<td>perennial herb from a woody rootstock</td>
<td>perennial herb from a woody rootstock</td>
<td>perennial herb from a woody rootstock</td>
<td>perennial herb from a woody rootstock</td>
<td>perennial herb from a woody rootstock</td>
<td></td>
</tr>
<tr>
<td>stem and branches</td>
<td>prostrate (or slightly ascendent)</td>
<td>erect</td>
<td>erect</td>
<td>erect</td>
<td>erect</td>
<td>erect</td>
</tr>
<tr>
<td>branch length</td>
<td>5-13 cm</td>
<td>10 cm</td>
<td>8 cm</td>
<td>5-15 cm</td>
<td>5-7 cm</td>
<td></td>
</tr>
<tr>
<td>branch and leaf indumentum</td>
<td>puberulous with minute crisped hairs</td>
<td>silvery crisped short hairs</td>
<td>pubescent with minute crisped hairs</td>
<td>glabrous or pubescent with spreading hairs</td>
<td>appressed-puberulent</td>
<td>densely puberulous with minute crisped hairs</td>
</tr>
<tr>
<td>rhizome</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes (whitish)</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>leaf blade</td>
<td>elliptic-obovate to suborbicular-oblanceolate</td>
<td>obovate</td>
<td>narrowly elliptic to obovate</td>
<td>elliptic-oblong to obovate or suborbicular</td>
<td>elliptic to elliptic-lanceolate</td>
<td>linear-lanceolate</td>
</tr>
<tr>
<td>leaf size</td>
<td>3.5-5(10) x 3-5(7) mm</td>
<td>4-9 x 3.5-8 mm</td>
<td>2-7.5 x 1-3.2 mm</td>
<td>3.5-14 x 2-7 mm</td>
<td>7-13 x 2-5 mm</td>
<td>4-8 x 1-1.6 mm</td>
</tr>
<tr>
<td>inflorescence</td>
<td>racemes terminal 3-5(-6) flowered</td>
<td>racemes lateral, dense, up to 10-flowered</td>
<td>racemes lateral few-flowered</td>
<td>lateral racemes few-flowered</td>
<td>lateral racemes few-flowered</td>
<td>lateral racemes</td>
</tr>
<tr>
<td>inflorescence bract</td>
<td>ovate to suborbicular-oblanceolate, persistent</td>
<td>lanceolate, caducous</td>
<td>ovate, caducous</td>
<td>lanceolate, persistent</td>
<td>minute, soon caducous</td>
<td>lanceolate, caducous</td>
</tr>
<tr>
<td>wing sepals</td>
<td>obovate-oblancoolate, falcate, crisped puberulous, greenish with hyaline margins</td>
<td>ob lanceolate-elliptic, falcate, greenish with hyaline margins</td>
<td>ob lanceolate falcate, greenish with hyaline margins</td>
<td>ob lanceolate falcate, greenish with hyaline or flushed purplish margins</td>
<td>elliptic, slightly falcate, greenish with narrow scarious margins</td>
<td>ob lanceolate, falcate, crisped puberulous, greenish with hyaline margins</td>
</tr>
<tr>
<td>size and colour of keel</td>
<td>2.5-3 mm, violet</td>
<td>4 mm, blue at tip</td>
<td>4-4.5 mm, blue at tip</td>
<td>4 mm ca., purple at tip</td>
<td>5.6 mm slightly violet, blue or bright pink with paler base</td>
<td>3.5 - 4 mm blue or bluish violet</td>
</tr>
<tr>
<td>colour of appendage</td>
<td>pale violet</td>
<td>white</td>
<td>blue</td>
<td>purple</td>
<td>blue, violet or pink</td>
<td>bluish violet</td>
</tr>
<tr>
<td>shape and colour of the upper petals</td>
<td>ob lanceolate-oblong pale violet, with a violet spot in the proximal portion</td>
<td>ob lanceolate-oblong, white with blue markings</td>
<td>spatulate, blue</td>
<td>narrowly obovate, purple</td>
<td>obovate, truncate</td>
<td>slightly violet, blue or bright pink</td>
</tr>
<tr>
<td>capsule</td>
<td>obovate-oblong emarginate, unwinged, glabrous</td>
<td>elliptic-oblong, emarginate, unwinged, sparsely pubescent</td>
<td>obovate, emarginate narrowly winged, glabrous</td>
<td>obovate, emarginate, narrowly winged, glabrous or pubescent</td>
<td>suborbicular with narrow glabrous wings</td>
<td>obovate, emarginate, unwinged, puberulous</td>
</tr>
<tr>
<td>soil-habitat</td>
<td>on granitic soil near the sea (18 m)</td>
<td>on flat limestone rocks on the coastal plain (at about 50 m)</td>
<td>bushland on limestone plateaus (750-800 m)</td>
<td>on coastal dunes, calcareous sand over coral (10-25 m)</td>
<td>deep red to light brown sandy soil overlying granite (1900-2000 m)</td>
<td>stony places or stony limestone slopes (1500-1750 m)</td>
</tr>
</tbody>
</table>
Acknowledgments

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REFERENCES


Abstract: Polygala moggii grow in a coastal area near Hasik (eastern Dhofar). This new species, apart from its small size and small violet flowers, is also characterized by glabrous unwinged capsules and greenish petaloid sepals without evident nervation. For the characteristics of the sepals, this species resembles some other dwarf species from Somalia and Ethiopia, which have also a limited distribution.