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## ***Lathyrus filiformis* (Fabaceae) a new species for the Bulgarian flora**

### **Abstract**

Tosheva, A.: *Lathyrus filiformis* (Fabaceae) a new species for the Bulgarian flora. — Fl. Medit. 15: 397-402. 2005. — ISSN 1120-4052.

*Lathyrus filiformis* (Lam.) Gay, a characteristic species for the Western Mediterranean region, is reported as a new one for the Bulgarian flora. In Bulgaria it is currently known from few localities in the Central Rhodopes Mts. A brief phytogeographical characteristics and a key for the determination of the Bulgarian species of sect. *Lathyrostylis* are presented.

### **Introduction**

The genus *Lathyrus* L. includes some 150 species found mainly in Europe, Asia, North America, the temperate regions of South America and tropical East Asia (Kupicha 1981).

In the course of the biosystematical survey of the perennial species of g. *Lathyrus* distributed in Bulgaria, some plants were found in the Central Rhodope Mts. demonstrating a set of morphological characters different from these of the currently known. As a result of the comparative morphological analysis these plants are here referred to *Lathyrus filiformis* (Lam.) Gay. The occurrence of this species in Bulgaria is an interesting fact, since it has been known to be a Western-Mediterranean geoelement (Meusel & al. 1965; Ball 1968; Bässler 1981; Greuter & al. 1989). The new localities in the Central Rhodopes Mts. appear as the easternmost parts of the species' geographical area (Fig. 1).

### **Material & Methods**

For the comparative morphological, chorological and phenological survey of *L. filiformis* were used specimens collected from the field, herbar samples kept at the Herbarium of the Sofia University (SO), the Herbarium at the Institute of Botany - Bulgarian Academy of Sciences (SOM), the Herbarium at the Agricultural University, Plovdiv (SOA), Botanischer Garten und Botanisches Museum Berlin - Dahlem (B), the Herbarium of the Royal Botanic Gardens Kew (K) (Table 1).

Morphological features of the vegetative and reproductive parts were used for the spe-

cies delimitation. The quantitative characteristics presented are result of 25-50 measurements.

The area diagnosis follows Meusel & al. (1965). The localities in Bulgaria are shown on an UTM-Grid map (scale 1: 1500000, square side 10 km; Fig. 1). This distribution is presented according to the floristic division of Bulgaria by Jordanov (1966).

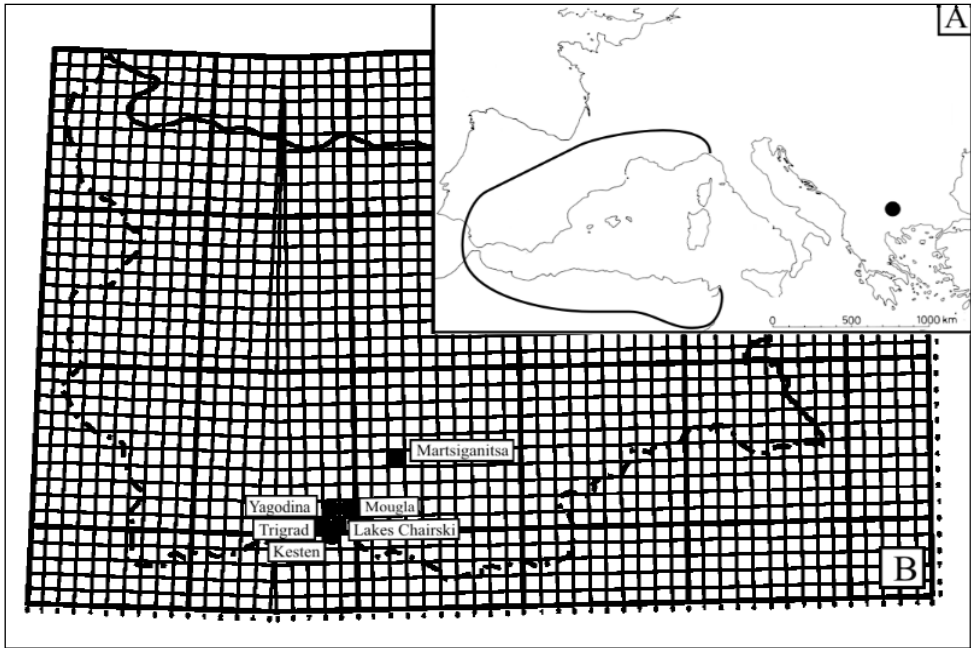


Fig. 1. Distribution map of *Lathyrus filiformis*. A: General distribution; B: Distribution in Bulgaria, scale 1: 1500000, square side 10 km.

## Results & Discussion

*Lathyrus filiformis* (Lam.) Gay, Ann. Sci. Nat. ser 4, 8 (1857) 315;

Fiori & Paoletti, Icon. Fl. It. 2 (1895) t. 2142; Ball, Fl. Eur. 2 (1968) 140; Bässler, Feddes Repert., 92 (1981) 225; *Orobis filiformis* Lam., Fl. Fr., 2 (1779) 568; *Orobis canescens* L. fil., Suppl. (1781) 327 p. p.; *L. canescens* (L. f.) Gren. & Godr., Fl. Fr., 1 (1849) 489; Taub. in Engl. & Prantl, Naturl. Pflanzenfam., 3 (1894) 354, p. p.; *Orobis angustifolius* Vill. in Gilib., Caroli Linnaei Syst. Pl. Eur., 75 (1785) 435, non L. (Fig. 2). *Lathyrus filiformis* belongs to sect. *Lathyrostylis* (Griseb.) Bässler (Bässler 1971; Kupicha 1983). Four other species of the same section are known to occur in Bulgaria *L. digitatus* (M. Bieb.) Fiori, *L. pallescens* (M. Bieb.) C. Koch, *L. pancicii* (Jurišić) Adamovč and *L. pannonicus* subsp. *collinus* (Ortmann) Soó.

Boissier (1872) reported in Flora Orientalis a specimen collected by Janka in Bulgaria (the vicinity of the town of Kalofër) under the name *Orobis filiformis* Lam. as a synonym of *Orobis canescens* L. f. on distributional grounds quite probably, this report does not refer to *L. filiformis*.

Table 1. Specimens of *Lathyrus filiformis* examined.

Examined specimen	Origin and collection data
SO 103049	Central Rhodopes Mts., on stony glades above Trigrad gorge locality, 1350 m asl, KG 80, 41°33'N 24°26'E, 30. 05. 2002, Leg. <i>B. Assiov</i> , Det. <i>A Tosheva</i>
SO 103050	Central Rhodopes Mts., Lakes Chairski, 1750 m asl, KG 80, 41°35'N 24°27'E, 09. 07. 2003, Leg. <i>B. Assiov</i> , Det. <i>A Tosheva</i>
SO 103051	Central Rhodopes Mts., at the slopes of the Durdabak above Trigrad, 1350 m asl, KG 80, 41°33'N 24°26'E, 08. 07. 2003, Leg. <i>B. Assiov</i> , Det. <i>A Tosheva</i>
SO 103053, 103164	Central Rhodopes Mts., nearly the village of Mougla, slop above the road, 1400 m asl, KG 91, 41°37'N 24°30'E, 26. 06. 2002, Leg. / Det. <i>A Tosheva</i> , <i>D. Pavlova</i>
SO 103052	Central Rhodopes Mts., nearby the village of Kesten, 1300 m asl, KG 80, 41°33'N 24°26'E, 26. 06. 2002, Leg. / Det. <i>A Tosheva</i>
SO 103163	Central Rhodopes Mts., along the ecopath Trigrad - Jagodina, 1250 m asl, KG 71, 41°38'N 24°21'E, 03. 07. 2004, Leg. <i>B. Assiov</i> , Det. <i>A Tosheva</i>
SO 69472	Central Rhodopes Mts., on calcareous stony places nearby the village of Kesten, 10. 06. 1974, Leg. / Det. <i>J. Koeva</i> (sub <i>Lathyrus alpestris</i> (Waldst. & Kit.) Rech. f.)
SOA 11958, 11959	Central Rhodopes Mts., Mougla, slope above the road to the village of Mougla, 26. 06. 1960, Leg. / Det. <i>D. Delipavlov</i> (sub <i>Lathyrus alpestris</i> (Waldst. & Kit.) Rech. f.); Rev. S. Kožuharov, 29. 06. 1971 (sub <i>L. versicolor</i> (Gmelin) Beck)
SOA 11960, 11961, 11962, 11963	Central Rhodopes Mts., on grasslands among bushes, Trigrad village, near Smoljan, 26. 06. 1960, Leg. / Det. <i>D. Delipavlov</i> (sub <i>Lathyrus alpestris</i> (Waldst. & Kit.) Rech. f.); Rev. S. Kožuharov, 29. 06. 1971 (sub <i>L. versicolor</i> (Gmelin) Beck)
SOA 12089, 12090	Central Rhodopes Mts., on calcareous places east of Trigrad, 14. 06. 1968, Leg. / Det. <i>Anonym</i> (sub <i>L. pallescens</i> (M. Bieb.) C. Koch); Vidi S. Kožuharov, 29. 06. 1971 (sub <i>L. pallescens</i> (M. Bieb.) C. Koch)
SOA 36829	On grassy, gravel places, near Martsiganitsa chalet (Rhodopes Mts.), 08. 06. 1979, Leg. / Det. <i>D. Delipavlov</i> (sub <i>L. digitatus</i> (M. Bieb.) Fiori)
SOM 121819	Fl. Galica, 850 m. all, st. Vallier – dethiey (Alpes Maritimes), 02. 06. 1967, Leg. / Det. <i>Witte</i>
SOM 157425	Banon, Alpes de Hante, Provance, 910 m. all
B 100004296	Fl. Gallica Dep. Var Montrieux, 02. 05. 1916, Leg. / Det. <i>H. Beger</i> (sub <i>Lathyrus canescens</i> (L. f.) Gren. et Godr.)
B 100004307	Regnum Valentinum in pradis Sierra de Ayora fol. Calior. 800-900 m s m. (sub <i>Orobis canescens</i> L. f. var. <i>filiformis</i> Gay); Rev. M. Bässler 1996 (sub <i>Lathyrus filiformis</i> (Lam.) Gay)
B 100004304	Spanien, Prov. Cuenca, Villalba de la Sierra, 18. 05. 1995, Leg. / Det. <i>R. Hand</i> ; V! M. Bässler, 1996 (sub <i>Lathyrus filiformis</i> (Lam.) Gay)
B 100004305	Spanien, Prov. Cuenca, Cañizares, 19. 05. 1995, Leg. / Det. <i>R. Hand</i> ; V! M. Bässler, 1996 (sub <i>Lathyrus filiformis</i> (Lam.) Gay)
K 000262576	Coteau herbus des terrains calcaires au Luc, 01. 06. 1860, Leg. / Det. <i>H. Kanry</i> (sub <i>Orobis filiformis</i> Lam.)

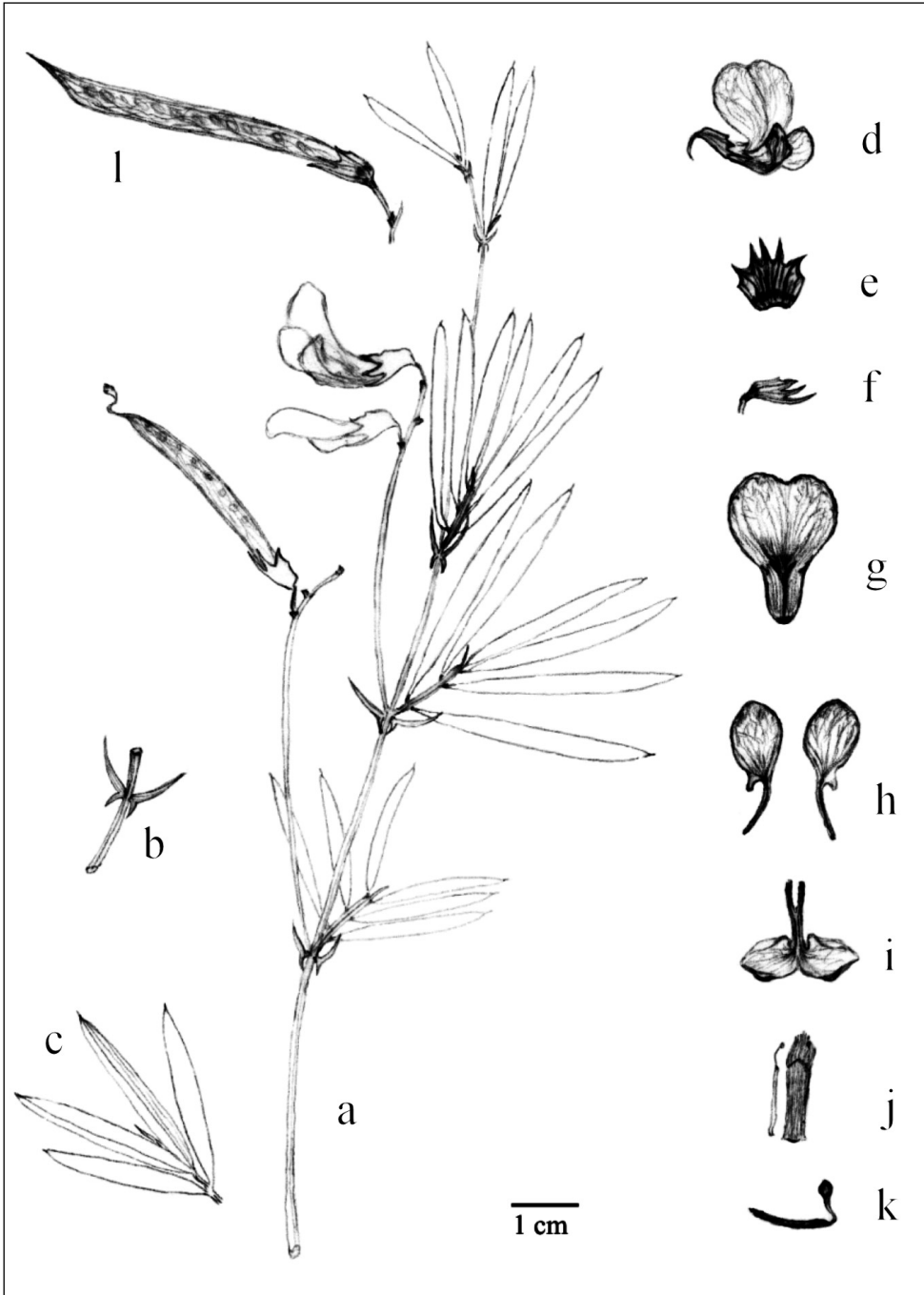


Fig. 2. *Lathyrus filiformis*: a. habit; b. stipules; c. leaf; d. flower; e, f. calyx; g. vexillum; h. allae; i. carina; j. open staminal tube; k. pistil; l. legume; scale bar = 1 cm.

### A key for the determination of the species of sect. *Lathyrostylis* found in Bulgaria

1. Rootstocks tuberous, fusiforms, leaves pinnate or subdigitate, style linear.....2
- 1\*. Rootstocks thin, filiform, leaves pinnate, style spatulate.....3
2. Leaves subdigitate, bracts membranous, obovate, corolla pale purple.....*L. digitatus*
- 2\*. Leaves pinnate, bracts absent, corolla pale cream to white.....*L. pannonicus*
3. Plants (30) 50-80 (140) cm high, villous, leaves with 3-6 (7) pairs of leaflets, inflorescences many-flowered, (5)10-20(25) flowers, legume with simple hairs.....*L. pancicii*
- 3\*. Plants 15 - 50 cm high, glabrous or sparsely pubescent, leaves with 1-3 (4) pairs of leaflets, inflorescences several-flowered, 3-10 flowers, legume glabrous or scattered glandular.....4
4. Stipules semihastate, corolla pale sulphur, legume gland-dotted, hilum  $\frac{1}{4}$  of the seed circumference.....*L. pallescens*
- 4\*. Stipules semisagittate, corolla pale purple, legume glabrous, hilum  $\frac{1}{8}$  of the seed circumference.....*L. filiformis*

### Distribution

The species is considered to be endemic for the Western Mediterranean and its distribution range covers Central North Spain, Eastern Spain, Southern France, Northern Italy (Ball 1968). Later on Morocco, Algeria and the Azores were included in its distribution range (Bässler 1981). The same information is presented also by Greuter & al. (1989) and Gallego (1999).

In Flora of Serbia the species is reported for Bosnia, Montenegro and Serbia (Kojić 1972). According to Vasic (pers. commun.) the specimens kept in the Herbarium at the Natural Museum in Beograd (BEO) most probably belong to *L. bauhini* Genty (= *L. filiformis* var. *ensifolius* (Lapeyr.) Hayek. However, its distribution in these territories could be accepted after a detailed study of the herbar specimens available.

The find of *L. filiformis* in only one floristic region of Bulgaria (Central Rhodopes Mts., the villages of Mougla, Kesten, Trigrad, Yagodina, Lakes Chairski, the vicinity of Martsiganitsa chalet, Table 1, Fig. 1) widens its distribution range to the east and the species can be considered as a Mediterranean geoelement. Its area is characterized by a disjunction that is typical for many species of sect. *Lathyrostylis* (Kupicha 1983)

### Ecology

In the Western Mediterranean *L. filiformis* inhabits dry grasslands and stony places, open shrubby communities on calcareous soils up to 1700 m, rarely reaching 2000 m in the mountains of Morocco (Bässler 1981).

The habitats of the species in the Central Rhodopes Mts. are similar calcareous terrains with thin, poor brown and mountain-forest soils, in a continental climate modified by the Mediterranean influence. The species grows on stony grasslands and on slopes at the margins of spruce forests, mixed with *Pinus sylvestris* L. and *Fagus sylvatica* L., between 1250

and 1750 m, together with *Globularia cordifolia* L., *Daphne oleoides* Schreb., *Astragalus monspessulanus* L., *A. angustifolius* Lam., *Marrubium frivaldskyanum* Boiss., *Muscari commosum* (L.) Miller., *Sedum acre* L., *Morina persica* L. and *Sideritis scardica* Griseb.

The most densely and mosaic populations are found at Lakes Chairski and nearby the village of Mougla. In the other localities the species is found rarely or occurs solitary, most probably as a result of ruderalization after heavy destructions of the natural vegetation. Its populations are under strong anthropogenic pressure and the probability for extinction of the species from the Bulgarian flora in recent future seems quite real.

The possibility for the occurrence of *L. filiformis* in the adjacent border territories of Greece has to be also explored.

### Acknowledgements

Thanks are due to the curator of the Herbarium of the Royal Botanic Gardens Kew (K) for the loan of specimens. Special thanks are due to Dr. Olja Vasic, curator of the Herbarium at the Natural Museum in Beograd (BEO) for the useful information. The author is thankful to the reviewers for the critical comments and notes on the manuscript. The financial support through Project N° YS-B-1202/02 provided by the Ministry of Education and Science in Sofia is gratefully acknowledged.

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