Plantago maxima (Plantaginaceae): a relict species new for the Bulgarian flora

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Abstract. The native and relict *Plantago maxima* species is added to the Bulgarian flora. The new geographical distribution extended its area to the south. Morphological description and new chorological data are presented.

Key words: Bulgaria, distribution, morphology, *Plantago maxima*

Introduction

During field work in the Znepole floristic region (Western Bulgaria) in implementation of the project *Conservation and sustainable management of biodiversity in the region of Dragoman marsh and the calcareous hill of Chepun* carried out by the Balkani Wildlife Society and the Bulgarian Biodiversity Foundation, *Plantago maxima* Juss. ex Jacq was found: a species new for the Bulgarian flora. This species is Boreal in origin and is distributed mainly in the Western Siberia and in the European part of Russia (Grigoriev 1958), but it also has some isolated localities in Hungary and Romania (Ball 1976).

Material and methods

Collected plant material was used for morphological description. The descriptive botanical terminology, interpretation and translation of the Latin into a common name are according to Stearn (2004).

The locality and chorological data are presented on a UTM grid map of Bulgaria (scale 1:1 5000 000), according to the recommendations of Kožuharov & al. (1983).

Voucher specimens are deposited in the Herbarium of the Institute of Botany, Bulgarian Academy of Sciences (SOM).

Results and discussions

Plantago maxima Juss. ex Jacq., Collect. Bot. 1: 82 (1787) (Figs 1, 2)
Common Bulgarian name: gigantski zhivovlek.

A perennial herb, usually with several rosettes and a massive root. Height 20–70 (90) cm, stem single or several (2–9), simple, erect with a single erect spike on top (Fig. 1). Leaves 20–50×5–15 cm, usually blackened on drying; lamina broadly ovate to ovate-elliptical, remotely denticulate, 7 to 11-veined, more or less sparsely hairy, more or less abruptly narrowed into a petiole longer than the lamina. Scapes somewhat exceeding leaves, striate, subglabrous or appressed-hairy above; spikes 5–20 cm, dense (Fig. 2). Bracts 2.5–3 mm, ovate-elliptical, glabrous. Sepals 2.5–3 mm, subequal, almost

Fig. 1. *P. maxima*: overview

Fig. 2. *P. maxima*: spike.

free, glabrous, brown with scarious margins. Corolla tube 2–2.5 mm, glabrous; lobes c. 2 mm, ovate-lanceolate, acute. Stamens 10–12 mm, white to pale-pinkish. Capsule c. 3 mm: seeds 4, c. 2 mm, oblong-ellipsoid, plano-convex.

Phenology. Flowering May to July, fruiting July to August.

Distribution in Bulgaria. The species is native to Bulgaria, found in the eastern vicinities of Tsruklevtsi village, Dragoman district (Znepole floristic region), FN-75, at 793 m, 42°56'42.8" N, 23°08'57.8" E, 05.07.2007, coll. *R. Tzonev*, *T. Karakiev* & *P. Tzvetkov* (SOM 163650) (Fig. 3).

General distribution. This is a species with Pontic-Pannonian-Southwest Siberian range of distribution (see Schneider-Binder 1978). It is distributed mainly in the western part of Siberia and in European Russia. Its range extends to the Caucasus Mts and Lake Balkhash (on the south); Volga and Dniepr rivers (on the west, 35° E); Angara River and Sayan Mts (on the east), and up to 57° N (to the north) (Ball 1976, Grigoriev 1958). It also grows in some isolated localities in Hungary and Romania (Ball 1976). All Romanian localities (the closest to the Bulgarian ones) are situated near Sibiu town (Sura Mica, Ocna Sibiului, Turnisor) (Pauca 1961). In Hungary, according to Soo (1968), the species is a relict postglacial steppe element. Videki & Mate (2003) reported 10 localities in the country, mostly in the Danube Lowland between Budapest, Dunaujvaros and Kecskemet, but only two of them were confirmed after 1990.

Habitat description. In the region of Tsruklevtsi, *P. maxima* participates in very specific wet meadow communities. In spite of the low altitude, there are many Boreal and mountain species in Bulgaria, most of them of relict origin. The meadow (Fig. 4) is dominated by *Deschamspia caespitosa* (L.) P. Beav. and *Juncus conglomeratus* L. *Sanguisorba officinalis* L., *Potentilla erecta* (L.) Raeusch., *Ranunculus repens* L., *Carex flava* L., *C. panicea* L., *Iris sibirica* L., *Gentiana pneumonanthe* L. participate in the community. Mention deserves the participation of a relict population of *Salix rosmarinifolia* L. in the same community, which forms large spots in the meadow. These meadows, which are a habitat form falling under Directive 62/43: **6410 *Molinia* meadows on calcareous peaty or glayey – siltladen soils**

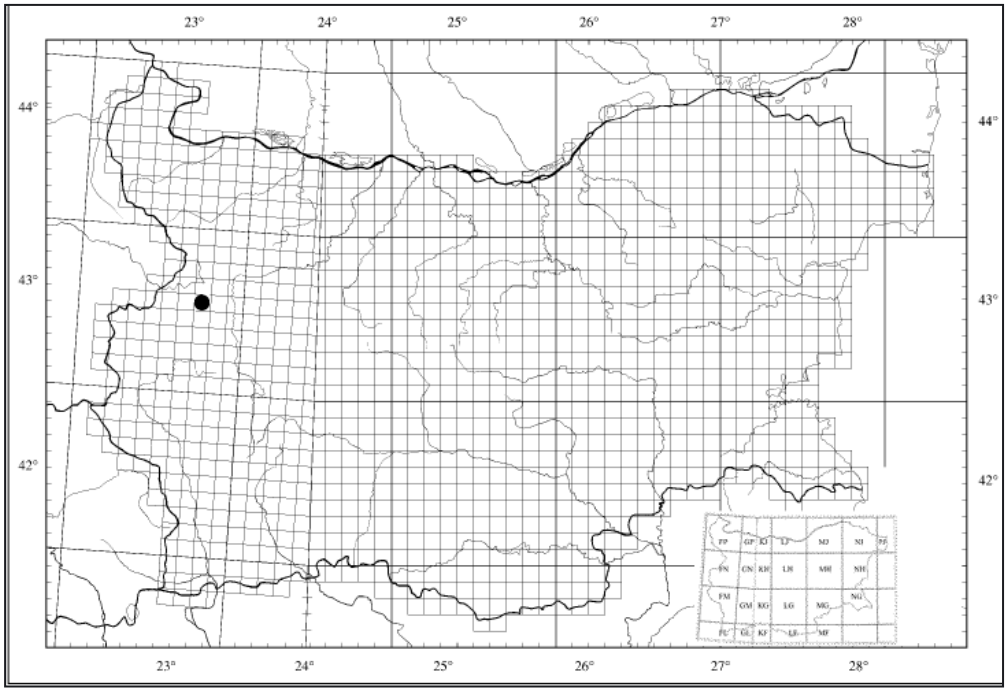

Fig. 2. *P. maxima*: spike.

Fig. 4. The habitat of *P. maxima*.

(***Molinion caeruleae***), are part of a big complex of alkaline fens (habitat **7230** under Habitat Directive), drier meadows and riverine flooded areas. They are situated along small streams, which run into the valley. The valley is located between large calcareous low-mountain regions: Chepun and Ponorsko Plateau. The soil, geological and climatic specificities of the region are very particular and unique. They create suitable conditions for the preservation of some relict Boreal and Central-European hygrophilous species. Some of them are very rare and endangered in Bulgaria (*Lathyrus palustris* L., *Galium boreale* L., *Salix rosmarinifoli*, *Carex disticha* Huds., *Pedicularis palustris* L.), others are distributed mainly on higher altitudes in the country (*Potentilla erecta*, *Gentiana pneumonanthe*, *Veratrum lobelianum* Bernh., *Parnassia palustris* L.). This large and very specific floristic and vegetation complex underlines

the unique character of the locality of Tsruklevtsi. Participation, together with *P. maxima,* of other Boreal species, such as *Iris sibirica, Salix rosmarinifolia* and *Gentiana pneumonanthe* in the community is the best proof of the relict nature of vegetation and flora of the locality. Presumably, *P. maxima* had been wider distributed in the past, and then its distribution has been reduced by the climatic and anthropogenic impact.

The discovered population of *P. maxima* occupied a territory of 0.2 ha to 0.3 ha. The population density varied between 25–45 specimens/100 m^2. The population numbers could be estimated between 800 and 1000 specimens.

We suggest for *P. maxima* to be included in the new edition of the *Red Data Book of Bulgaria*. We also suggest an evaluation of the species **Critically Endangered [CR B1a+2a]** according to the IUCN criteria.

The present record extended the species area southwards and the locality is the southernmost point of the species range of distribution. The peculiarities of the habitat put under question the findings of *P. maixma* in other parts of the territory of Bulgaria.

The species is well distinguished morphologically from another similar species, *Plantago media* L., which is common for the country (Table 1).

Table 1. Comparison of diagnostic morphological characters between the related species *P. maxima* and *P. media*. Data on *P. media* are according to Petrova (1995).

Morphological characters	*P. maxima*	*P. media*
Stems (height)	20–70 (90) cm	15–70 cm
Leaves (size)	20–50 × 5–15 cm	5–15 (30) × 2.5–8 cm
Leaves (petiole)	longer than lamina	twice shorter than lamina
Laves (lamina)	broadly-ovate to ovate-elliptical, 7–11 veined	broadly-elliptical to elliptically-lanceolate, (5) 7– 9 veined
Spike	5–20 cm	(1) 2 – 6 (15) cm

Conclusion

The present record brings forth many questions about of the species range, variability, hybridization, and viability of its population. The taxonomic position of the species in Bulgaria needs further biosystematic investigations with classical and modern multidisciplinary approaches. The locality of the species is rich in rare, relict and endangered species and is in need of urgent protection.

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