

Bidens frondosa (Asteraceae) – a new alien species for the Bulgarian flora

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Abstract. *Bidens frondosa*, an American species which is well known and widespread in Europe, is recorded from several localities in Bulgaria.

Key words: adventive species, *Bidens frondosa*

Introduction

During field work along the bank of the Danube River in 2003, the first two authors found a new adventive species for the flora of Bulgaria: *Bidens frondosa* L. After discussions with other botanists, it turned out that the species had already been recorded in 2001 by the third author along a roadside stream near the town of Pazardzhik. This species is widespread in North America, primarily in the USA, though it is currently expanding into Canada. According to Hejný (1948), the first European locality of the species was recorded in 1834 from Palermo (Sicily, Italy). Now its distribution in Europe mainly follows the courses of large rivers. According to Tutin (1976), the species occurs in the following European countries: Greece, Former Yugoslavia, Austria, Belgium, Holland, the United Kingdom, the Czech Republic, Slovakia, France, Germany, Portugal, Spain, Hungary, Poland, Italy, and Russia (the European part and Siberia). The plant is also extending its area into the Far East in the Vladivostok region (Vasilchenko 1959).

Results

Bidens frondosa L., Sp. Pl. 832 (1753) (*B. melanocarpa* Wieg.) (Fig. 1)

Annual herb, stems nearly glabrous, erect, branching, 0.5–1.5(–2.0) m. Leaves opposite, petiolate, pinnate, with 1(–2) pairs of leaflets. Lateral leaflets with petioles up to 5–6 mm long. Terminal leaflet is longer than lateral, with a petiole up to 25 mm long. Leaflets lanceolate or oblong-lanceolate, acute or acuminate, coarsely serrate, up to 100 mm long, 40 mm wide, light-green below, deep dull-green above. Capitula 10–20 mm in diameter, erect, wider than long. Outer series of bracts spreading, 4–8 in number, herbaceous, up to 30 mm long, occasionally leaf-like, somewhat villous near the base. Inner bracts up to 10 mm long, ovate-oblong, erect, blackish, glabrous, subulate. Corolla 3 mm long, whitish at base, yellowish at apex. Anthers connate, 1 mm long, purplish. Achenes compressed, up to 5–8 mm long, with dark lines and erect hairs on the margins. Bristles on the achenes 2, about 3 mm long.

So far two species of *Bidens* have been reported from Bulgaria – *B. cernua* L. and *B. tripartita* L. (Peev 1992).

The main morphological differences between *B. frondosa* and the other *Bidens* species in Bulgaria are given in Table 1. It was found in several floristic regions in Bulgaria (Fig. 2):

Northeast Bulgaria: the valley of Souha River, near the village of Kolartzi, Dobrich district, 04.08.2003, NJ-45, coll. Tzonev & Šumberová, SOM 158872; the village of Byal Bryag, Shoumen district, 03.09.2002, NH-06, coll. Vladimirov, SOM 159054;

Danubian Plain: several places near the Danube River, on the riverbanks – Cherkovitzta village, 10.08.2003, LJ-24, coll. Tzonev & Šumberová, SOM 158873; Yasen and Sadovetz villages near Vit River, KJ-91, KH-89; Slivata village, 18.07.2003, FP-64, coll. Vladimirov & S. Tzoneva, SOM 159058;

Forebalkan (Western): along the road E-79 near Soumer village, Montana district, 01.09.2002, FP-80, 43°20' N, 23°19' E, coll. Vladimirov, SOM 159055;

Sofia region: 07.10.2003, FN-82, coll. D. Dimitrov, SOM 159049;

Thracian Lowland: near the town of Pazardzhik, by the stream along the road from Sofia, 15.09.2001, KG-77, photographed by Vladimirov (Fig. 3);

Mt Strandzha: Kosti village, 24.07.2003, NJ-65, coll. Ch. Gussev, SOM 158945.



Fig. 1. *B. frondosa*: A – stem with leaves and capitula; B – leaves; C – capitulum; D – achene

The vegetation of the localities on the Danube riverbank belongs to the association *Polygono-Bidentetum tripartitae* (W. Koch. 1926) Lohm. 1950. It consists of the following species: *B. tripartita*, *Cyperus glomeratus* L., *Plantago altissima* L., *Crypsis alopecuroides* (Pill. & Mitt.) Schrad., *Astragalus contortuplicatus* L., *Persicaria lapathifolia* (L.) Gray, *Echinochloa crusgalli* (L.) P. Beauv., etc. In some stands *B. frondosa* is a dominant. The species grows in wet places: riverbanks, ditches, pond and dam margins, and waste areas where it often competes with *B. tripartita*.

B. frondosa may also occur in Romania, on the opposite riverbank of the Danube.

Table 1. Main differences among the species from genus *Bidens* L. in Bulgaria

Species Characters	<i>B. frondosa</i>	<i>B. tripartita</i>	<i>B. cernua</i>
Leaf	pinnate	pinnate	simple
Leaflets	with petiole	without petiole	–
Outer long green bracts	4–8 in number, always present	rarely present	never present
Achenes	compressed, with small hairs, bristles 2	compressed, with teeth curved down, bristles (2)3	4-angled, with larger teeth on the angles, bristles 3–4

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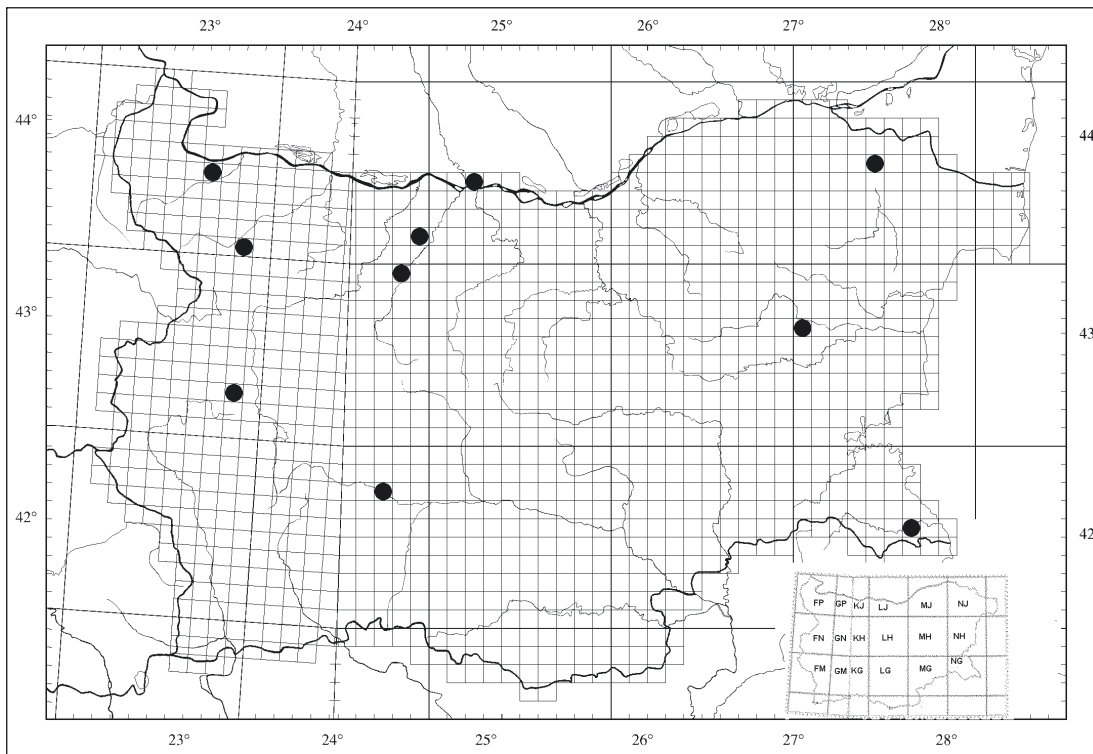


Fig. 2. Distribution of *B. frondosa* in Bulgaria – a UTM map



Fig. 3. *B. frondosa* – a photograph

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