

Three-lobed Coneflower *Rudbeckia triloba* L. (Compositae): new alien species in the flora of Bosnia and Herzegovina

short scientific communication / kratko znanstveno priopćenje

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Abstract

Three-lobed Coneflower *Rudbeckia triloba* L. was discovered in September 2016 during fieldwork on the banks of the Krivaja River in the vicinity of village Ribnica near Zavidovići (Central Bosnia). Three-lobed Coneflower is native in North America but it has been introduced to some areas beyond its natural range. This is the first record of this

species for Bosnia and Herzegovina. The paper presents a short morphological description and photographs of the species based mainly on the collected specimens, as well as the distribution of the taxon. A determination key is given for *Rudbeckia* taxa registered in Bosnia and Herzegovina and neighbouring countries.

Keywords: alien plants, Coneflower, distribution, morphology, naturalization

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Sažetak

U rujnu 2016. u Bosni i Hercegovini je po prvi put u prirodi zabilježena vrsta *Rudbeckia triloba* L. na obalama rijeke Krivaje, u blizini Zavidovića. Vrsta je autohtona za područje Sjeverne Amerike, ali je unešena u neka područja izvan

prirodnog areala. U radu se donosi kratak opis morfoloških karakteristika vrste, karta distribucije kao i ključ za determinaciju vrsta roda *Rudbeckia* zabilježenih u Bosni i Hercegovini i susjednim zemljama.

Ključne riječi: naturalizacija, rasprostranjenost, rudbekija, strane vrste biljaka

Introduction

The genus *Rudbeckia* L. (Compositae) has 23 species native to North America and Mexico (Urbatsch & Cox 2006). Many species are cultivated as ornamentals outside their native distribution range. Six of these have been reported as introduced in Europe but only two species, *R. hirta* L. and *R. laciniata* L. are considered to be widely naturalized in Europe (Greuter 2006). In the flora of Bosnia and Herzegovina only two species of the genus *Rudbeckia*, have been recorded so far: *R. hirta* and *R. laciniata* (Slavnić 1960, Obradović & Budak 1982, Beck-Mannagetta et al. 1983).

Species *R. laciniata* has recently been described as invasive to the country (Vojniković 2015) and is included in the preliminary check-list of invasive alien plant species (IAS) in Bosnia and Herzegovina (Maslo 2016). Species *R. triloba* has been reported in Europe as introduced in Austria (Forstner & Hübl 1971, Stöhr et al. 2009), Ukraine (Mosyakin & Fedoronchuk 1999), Great Britain (Sell & Murrell 2006), Montenegro (Stešević & Jovanović 2008), Hungary (Király et al. 2009), Romania (Sirbu & Oprea 2010) and Slovenia (Jogan 2013).

Material and methods

The autumn floristic survey in 2016 in the area of Central Bosnia resulted in new records for the alien flora of Bosnia and Herzegovina, *R. triloba*. Digital photographs and GPS coordinates were taken in field. Identification of the specimens was done according to Perdue (1957), Britton & Brown (1970), Cronquist (1980), Urbatsch & Cox (2006) and Weakley (2007). The nomenclature follows the Euro-Med checklist (EURO+MED 2006). The specimens were collected and stored into the Herbarium of the National Museum of Bosnia and Herzegovina (SARA-51805 and SARA-51806).

Results and discussion

Rudbeckia triloba L. (Sp. Pl.: 907. 1753), also known as Three-lobed Coneflower, originated in the eastern part of North America, and is a very rare, locally naturalized alien in some parts of Europe. To identify this new species in the flora of Bosnia and Herzegovina, we offer here the adjusted key according to Britton & Brown (1970), Cronquist (1980), Urbatsch & Cox (2006) and Weakley (2007).

1. Disk elongated or cylindric in fruit, yellowish or gray. Stems essentially glabrous, leaves thin, usually subglabrous, pinnately divided or pinnatifid; plants about 100-300 cm tall, usually colonial; pappus a short crown ***R. laciniata***
1. Disk globose or ovoid and purple or dark brown in fruit. Stems hirsute or hispid, lower leaves entire or lobed; plants about 50-150 cm tall **2**
2. Lower leaves deeply 3-lobed or 3-divided, stems branched, hirsute, 50-150 cm tall; heads many, 10 to 30; pappus a minute crown ***R. triloba***
2. Leaves neither 3-lobed nor 3-divided, stems simple, hispid, 30-100 cm tall; heads 1 to 3, pappus absent ***R. hirta***

R. triloba (Fig. 1) is short-lived perennial, with stem branched, 50-150 cm tall, moderately hirsute or strigose to subglabrous. Leaves are thin, sharply toothed to subentire, the basal ones broadly ovate

or subcordate and long-petiolate, the cauline mostly narrower and short-petiolate or sessile. Some of the leaves are generally 3-lobed, rarely any of them pinnately lobed, the lobes generally acute. Heads many (10-30), long pedunculate, in corymbiform arrays, terminating the branches; the disk ovoid, dark purple, 1-1.5 cm wide; rays 8-12, yellow or orange, 1-2 cm long; receptacular bracts glabrous, abruptly narrowed to a short but distinct awn tip often shortly surpassing the disc corollas. Pappus a minute crown; chromosome number $n=19$ (Cronquist 1980). In its native area *R. triloba* grows in mesic to wet woodlands, thickets, pastures, roadsides and meadows, generally on wet soils. The flowering period stretches from June to October. The plant reproduces by seeds which are dispersed by the wind (Britton & Brown 1970).

The first finding of this species for Bosnia and Herzegovina is coming from Central Bosnia in 2016, on the banks of the Krivaja river in the

vicinity of the village Ribnica near Zavidovići (44° 21' 10.18" N; 18° 23' 35.36" E) (Fig. 2). Individuals in the population were numerous, with some plants up to 150 cm high. About twenty flowering specimens were recorded at a linear distance of ca 100 m. In Central Bosnia the species is slowly expanding, and it is now found in natural and semi-natural habitats such as moist forests, moist meadows, in ditches and along watercourses. It occurs along river banks and roads and in different human-made habitats. During fieldwork in the summer 2017 the species was recorded in a few new localities in the Krivaja valley (Careva Čuprija and Kamensko near Olovo as well as Maoča and Vozuća near Zavidovići). The species has recently been registered along the banks of the river Željeznica in the vicinity of the village Krupac near Sarajevo (Fig. 2). It is yet unknown how this species was introduced into Bosnia and Herzegovina, most likely as a garden escapee.



Figure 1. Three-lobed Coneflower *Rudbeckia triloba* L. in the vicinity of village Kamensko near Olovo and on the banks of Krivaja River near Zavidovići (Photos: Š. Šarić).

According to Richardson et al. (2000), the observation period is too short to understand and declare a state of naturalized species. Therefore it can be considered an alien casual, probably not yet as naturalized, waiting for further field investigations to achieve the proper status attribution.

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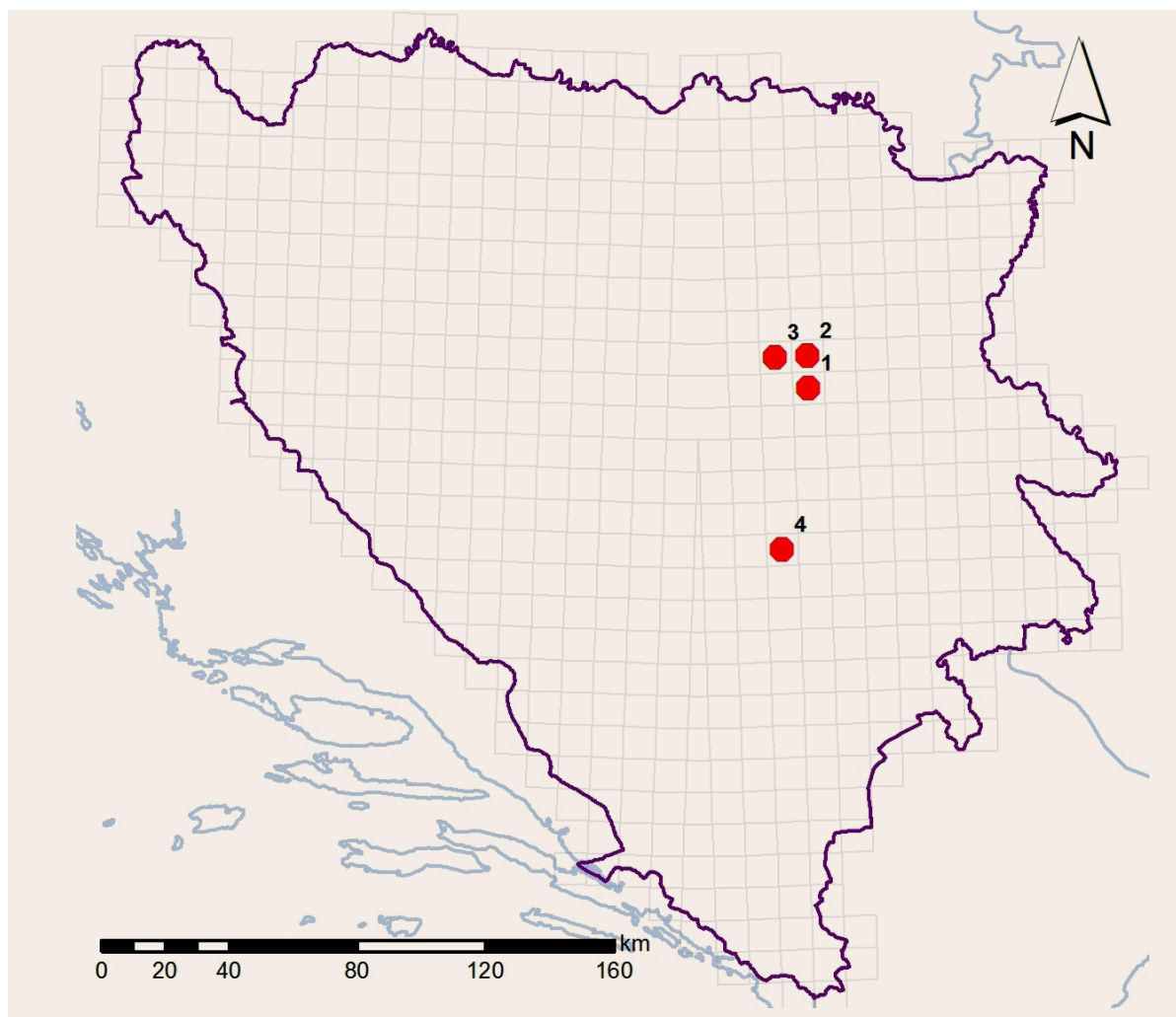


Figure 2. The distribution of *Rudbeckia triloba* L. in Bosnia and Herzegovina: 1. Careva Ćuprija, Kamensko and Maoča, 2. Ribnica, 3. Vozuća and 4. Krupac.

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