

***Euphorbia marginata* (Euphorbiaceae): new alien species in the flora of Bosnia and Herzegovina**

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Abstract: An alien species of the genus *Euphorbia* L. – *E. marginata* Pursh., native to North America, has been recorded as new to the vascular flora of Bosnia and Herzegovina, at two localities: Vranduk near Zenica, Ribnica near Zavidovići. The paper presents a short morphological description and photographs of the new alien species for Bosnia and Herzegovina, as well as the distribution map of the taxon.

Keywords: alien plants, Bosnia and Herzegovina, distribution, *Euphorbia*.

Introduction

Euphorbia marginata Pursh (syn. *Agaloma marginata* (Pursh) Á. Löve & D. Löve; *Dichrophyllum marginatum* (Pursh) Klotzsch & Garcke; *Lepadena marginata* (Pursh) Nieuwl., *Tithymalus marginatus* (Pursh) Cockerell), also known as Snow-on-the-mountain. This species is classified into the *Euphorbia* L., sect. *Alectroctonum* (BERRY et al. 2016).

E. marginata Pursh. (Fig. 1) is an erect annual, 20-120 cm high, often freely branched from a taproot system with milky juice. Leaves in general oblong, alternate, somewhat hairy, sometimes crowded, the upper crowded into a whorl below the inflorescence and some or all of these white margined. Flowers moderately small, inconspicuous and in inflorescences which are bordered by conspicuous white bracts and white-margined leaves. Fruit a somewhat hairy capsule containing three seeds. Seeds are 3-4 mm. long, obovate-globular, with

a dark line on one side, minutely pitted, tubercled, light gray to brown. Chromosome counts are $2n=56$ (GATES 1941; BERRY et al. 2016).

E. marginata is native to the central United States. It is presumably naturalized outside of this area and widely cultivated as an ornamental for its showy, white-margined distal leaves, and it can escape locally. The article deals with the first occurrence data of the species in the Bosnia and Herzegovina.



Fig.1. *Euphorbia marginata* near Vranduk and Ribnica, Zavidovići: a, b – habitat c – plant habit, d – flower and capsule (Photos by Šemso & Šarić 2018)

Material and methods

The field study was conducted in the summer of 2018. Digital photographs and GPS coordinates were taken in field. The identification of the specimens was

done according to CARTER & CULLEN (1997), and BERRY et al. (2016). The nomenclature follows BERRY et al. (2016). The specimens were collected and stored in the Herbarium of the National Museum of Bosnia and Herzegovina (SARA, 51862, 51863).

Results and discussion

The first finding of *Euphorbia marginata* to Bosnia and Herzegovina was recorded in Central Bosnia, near Vranduk village ($44^{\circ}18'15.27''$ N; $17^{\circ}54'35.72''$ E, the elevation 287 m a. s. l.) at the beginning of August 2018 (Fig.1). Only a few plants were observed at a rubbish soil dump on the left bank of Bosna River (Fig.1a). The second locality of *E. marginata* has recently been registered along the banks of the river Krivaja in the vicinity of the village Ribnica near the Zavidovići town ($44^{\circ}19'49.64''$ N; $18^{\circ}24'18.47''$ E; elevation 307 m a. s. l.) (Fig.1b).

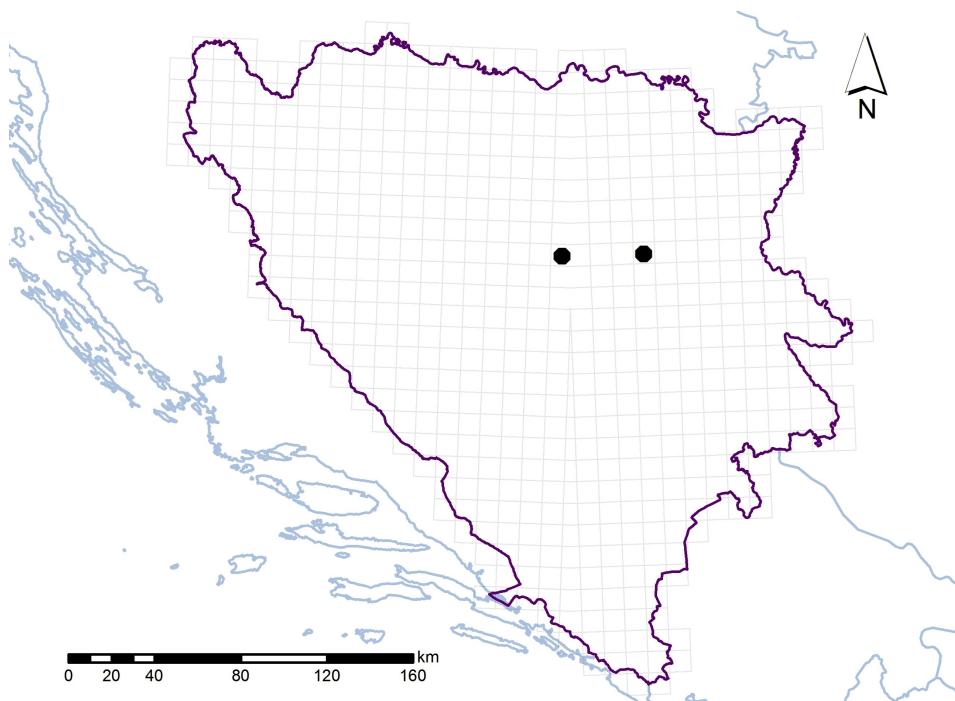


Fig. 2. The distribution of *Euphorbia marginata* in the Bosnia and Herzegovina

According to RICHARDSON et al. (2000), the observation period is too short to declare a state of naturalized species. Therefore, this species can be considered an alien casual for now, waiting for further field investigations to achieve the proper status attribution.

Euphorbia L. (Euphorbiaceae) is one of the larger genera in the flora of Bosnia and Herzegovina. So far it is represented by 43 species of which three are alien: *E. maculata* L., *E. nutans* Lag. and *E. prostrata* Aiton (MALÝ 1899, 1948; BECK-MANAGETTA 1920; MASLO 2014). No other alien species of the genus *Euphorbia* have been recorded in Bosnia and Herzegovina so far, so our finding represent first data to the country. *E. marginata* Pursh. is reported as alien in SW Europe from Portugal (ALMEIDA & FREITAS 2006) and Spain (SÁNCHEZ GULLÓN & VERLOOVE 2016), in S Europe from Italy (GALASSO et al. 2018) and in central Europe from the Czech Republic (CHRTEK & KŘISA 1992), Austria (WALTER et al. 2002), Slovakia (CHRTEK & KŘISA 1982), Hungary (BALOGH et al. 2004) and Poland (WOCH 2012). It was also recorded in W Ukraine (YAVORSKA 2009).

For the area of the Balkans, *E. marginata* appears in 14 localities for the entire territory of Slovenia, as a garden escape (MARTINČIĆ 1999, FRAJMAN & JOGAN 2007), nine localities in Croatia, as a garden escape mostly in the coastal part of the country (NIKOLIĆ 2018) and in four localities in Romania, as casual mostly in the area of Danube Delta (OPREA et al. 2011). On the other hand, the species is mentioned only as casual, without precise quotation of the localities in the country in Montenegro (STEŠEVIĆ & JOVANOVIĆ 2008) and Greece (ARIANOUTSOU et al. 2010).

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