Viola sororia Willd. (Violaceae): new alien species in the flora of Bosnia and Herzegovina

short scientific communication / kratko znanstveno priopćenje

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Abstract

During April 2018, while botanizing in the city of Sarajevo, the authors discovered a species of violet new to the flora of Bosnia and Herzegovina. *Viola sororia* is native to North America but it has been introduced to some areas beyond its natural range. The paper presents a short morphological description and photograph of the new alien species for Bosnia and Herzegovina, as well as the distribution of the taxon.

Keywords: alien plants, Bosnia and Herzegovina, distribution, naturalization, *Viola sororia*

Maslo, S., Sarajlić, N., Kotrošan, D. (2018): *Viola sororia* Willd. (Violaceae): nova strana vrsta u flori Bosne i Hercegovine. Glas. Hrvat. bot. druš. 6(2): 20-24.

Sažetak

Prilikom botaniziranja u gradu Sarajevu tijekom travnja 2018. zabilježena je vrsta ljubičice koja je nova za floru Bosne i Hercegovine. *Viola sororia* je autohtona za područje Sjeverne Amerike, ali je unešena u neka područja izvan prirodnog areala. U radu se donosi kratak opis morfoloških karakteristika vrste, fotografija kao i karta distribucije.

Ključne riječi: Bosna i Hercegovina, naturalizacija, rasprostranjenost, strane vrste biljaka, *Viola sororia*

Introduction

Viola L. (Violaceae) is a large genus of about 600 species native to temperate regions and mountain areas in the tropics worldwide (Wahlert et al. 2014). Many species are cultivated as ornamentals outside their native distribution range. Seven species of the genus *Viola* have been reported as introduced in Europe (Raab-Straube & Henning 2018). No alien species of the genus *Viola* have been recorded in Bosnia and Herzegovina so far (Beck-Mannagetta 1918). *V. sororia* Willd. has been reported in Europe as introduced in Hungary (Balogh et al. 2004), Slovenia (Bačič 2007, Dakskobler & Trnkoczy 2010, Hroneš & Kobrlova 2013), Austria (Fischer et al. 2005), Slovakia (Mereda et al. 2008), Poland (Pliszko 2015) and Italy (Galasso et al. 2018). Recently it was found in Istria (Croatia), but only as cultivated plant (Rottensteiner 2014).

Material and methods

The field study was conducted in spring 2018. Digital photographs and GPS coordinates were taken in the field. Identification of the specimens was done according to Russell (1965), Gil-ad (1997), McKinney & Russell (2002) and Little & McKinney (2015). The nomenclature follows American authors (Gil-ad 1997, 1998, McKinney & Russell 2002, Little & McKinney 2015). The specimens were collected and stored in the Herbarium of the National Museum of Bosnia and Herzegovina (SARA-51820).

Results and discussion

Viola sororia Willd., Enum. Hort. Berol. 1: 72 (1809), also known as Common Blue Violet, originated in the eastern and central part of North America, and is cultivated and occasionally escapes from cultivation in some parts of Europe. This species is classified into the section *Plagiostigma* Godr., subsection *Boreali-Americanae* (W. Becker) Gil-ad (Gil-ad 1997).

V. sororia is one of the most common and most variable North American wild violets, cultivated in Europe. It is pretty like *V. cucullata* Aiton which is represented in gardens by several colour variants (Cullen et al. 1997). In order to separate these two species, we offer the adjusted key according to Gil-ad (1997), McKinney & Russell (2002) and Little & McKinney (2015).

1 Leaves and flowers noticeably erect; sepal auricles 2 - 6 mm long, prominent; lateral petals longer than lower petal; cleistogamous peduncles ascending to erect, cleistogamous sepal auricles prominent and ½ as long to almost as long as sepals; seeds nearly blackish red; plants of mesic to wet habitats .....***V. cucullata***

2 Leaves and flowers erect to ascending; sepal auricles 1 - 2 mm long, not prominent; lateral petals equalling the lower petal; cleistogamous peduncles prostrate to ascending, cleistogamous sepal auricles less than ½ as long as sepals; seeds dark greyish brown; plants of dry or mesic habitats .....***V. sororia***

Figure 1. a) *Viola sororia* herbarium specimen deposited in SARA, b) *V. sororia* f. *priceana* along the Wilson promenade in the centre of Sarajevo (Photo: N. Sarajlić).

Morphological description of *V. sororia* (Fig. 1): acaulescent, homophyllous, non-stoloniferous perennial herb; rhizome thick, fleshy, scaly, sometimes branching. Leaves basal, stipules linear-lanceolate, green with red-purple, margins scarious, apex acute; petioles pubescent, green. Mature leaves dark green and thickish, ovate to orbicular, pubescent, base cordate, margins crenate to serrate, ciliate. The flowers are usually purple, but colour variants occur, including one of white flowers heavily striped purple in the center, sometimes referred to as the Confederate violet (*V. sororia* forma *priceana*). Flowers are at about the same level as the top of the leaves. Sepals short-ciliate toward the base, their broad auricles appressed, 1-2 mm long, not prominent. Lateral petals bearded at base, equalling the lower petal. Cleistogamous flowers on prostrate to ascending peduncles, cleistogamous sepal auricles less than ½ as long as sepals. Seeds are dark greyish brown, with a short caruncle. Chromosome counts are 2n=54 (Russell 1965, McKinney 1992, Gil-ad 1997, McKinney & Russell 2002, Little & McKinney 2015).

V. sororia is one of the most common and most variable North American wild violets, cultivated in Europe in the form of several colour variants: cultivar 'Freckles', with spotted blue and white petals and a greenish corolla throat, cultivar 'Albiflora' with white petals and cultivar 'Priceana' with white petals and violet veins at their basis (Cullen et al. 1997, Hroneš & Kobrlova 2013). The populations recorded in Sarajevo belong to morphotype Priceana. This morphotype is cultivated in the Botanical Garden of the National Museum in Sarajevo and spreads spontaneously to the nearby area.

The first finding of this species for Bosnia and Herzegovina is coming from Sarajevo 2018, near the National Museum in Sarajevo. Three small groups of individuals were recorded, one near the National Museum (43° 85' 46.38" N; 18° 40' 17.73" E, loc. 1), and two growing along the Wilson promenade (43° 85' 36.08" N; 18° 40' 09.60" E, loc. 2, and 43° 85' 34.94" N; 18° 39' 57.65" E, loc. 3 (Fig. 2).It is uncertain how this species was introduced into Bosnia and Herzegovina, most likely as an escapee from the Botanical Garden of the National Museum in Sarajevo.

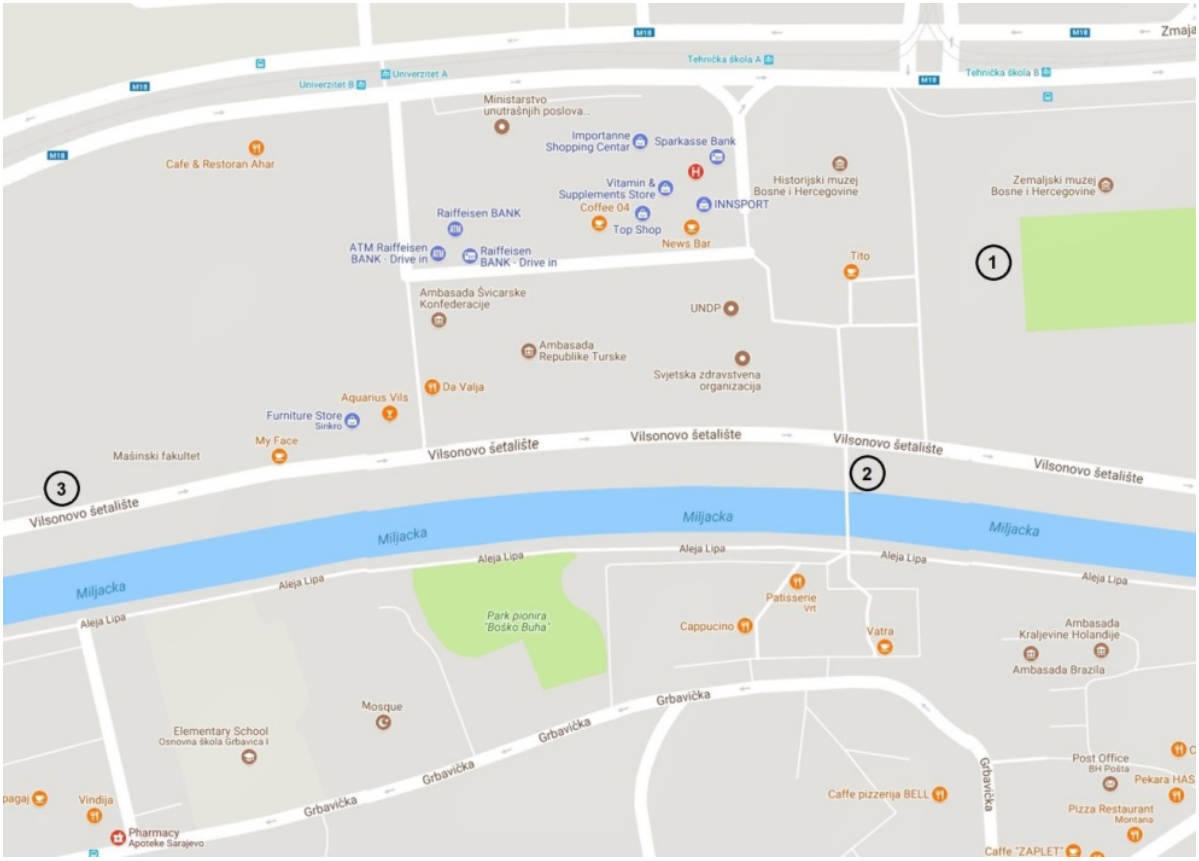

Figure 2. Localities of *Viola sororia* in the city of Sarajevo.

V. sororia and *V. cucullata* are often confused. Several characteristics can reliably separate the two species. *V. sororia* grows in well-drained habitats, while *V. cucullata* can be found in wetter places. The leaves of *V. sororia* often overtop the flowers, while *V. cucullata* has flowers on very long peduncles which usually overtop the leaves. Finally, *V. sororia* has lateral petals equalling the lower petal and in the other species the lower petal is shorter than the laterals.

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, and further field investigations would contribute to the proper status attribution.

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