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# First record of *Euphorbia maculata* L. (Euphorbiaceae) in Slovakia

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Abstract: *Euphorbia maculata*, a new alien species of Slovak flora was found near the Chatam Sófer memorial in Bratislava in July 2007. The species was growing in ruderal plant community of trampled soil on broken stone ballast. Brief information on the species distribution and origin is given.

Keywords: *Euphorbia maculata*, new alien species, Slovakia.

## Introduction

Small procumbent annual *Euphorbia* taxa with stipules and asymmetrical leaf base are included in subgenus *Chamaesyce* (e. g. SMITH & TUTIN 1968, MULLIGAN & LINDSAY 1978, ROSTAŃSKI 1992, GELTMAN 1996) or separated into freestanding but never generally accepted genus *Chamaesyce* S. F. Gray (e. g. CHRTEK & KŘÍSA 1992, BENEDI & ORELL 1992, HERNDON 1993, HÜGIN 1998, 1999). According to recent DNA studies by Steinmann & Porter (2002) and Bruyns et al. (2006) the first mentioned concept seems to be more acceptable nowadays.

The number of native and naturalized taxa of this subgenus in Europe differentiate among authors who recognize from six (SMITH & TUTIN 1968) to eleven species (HÜGIN 1998, 1999). One of them is *Euphorbia maculata* L. [syn. *Chamaesyce maculata* (L.) Small; *Euphorbia supina* Rafin.]. After SMITH & TUTIN (1968) *E. maculata* is an annual herb, 10-17 cm tall. Stem is prostrate, richly branched, ca 1 mm thick. Leaves opposite, stipules forming prickles, ciliate, leaf blade long elliptic to reniform-oblong, often with an oblong purple spot in middle, abaxially light green or gray-green, purple spot easily seen when fresh, invisible when dry, both surfaces glabrous, base obliquely slightly attenuate-rounded,

margin entire below middle, finely serrulate above, apex obtuse. Cyathia from nodes, peduncle 1-2 mm long; involucres narrowly cuplike, 0.7-1 × ca. 0.5 mm, white pubescent outside, marginal lobes 5, triangular-rounded; glands 4, yellow-green, transversely elliptic, appendages white. Capsule is 3-angular-ovoid, ca. 2 × 2 mm, smooth, sparsely pilose. Other detail data and determination keys were published by HÜGIN (1998, 1999) and RÖTHLISBERGER (2007).

The species is native to North America from north-eastern Canada to southern USA (GLEASON & CRONQUIST 1991), naturalised in southern and central Europe (SMITH & TUTIN 1968, HÜGIN 1998) and also being found in Middle and South America (Mexico, Argentina, Peru, Chile), the Middle East (Israel, Syria), eastern Asia (China, Taiwan, Japan), New Zealand and Australia (HOLM et al. 1979, ESLER & ASTRIDGE 1987, KARZON & BÖCKER 2006). It grows in open sunny locations and a variety of soils, and frequently found as a weed of gardens and fields (SMITH & TUTIN 1968, UVA et al. 1997).

## Material and methods

The phytosociological relevé was sampled according to the Zürich-Montpellier approach using the adapted Braun-Blanquet's scale (BARKMAN et al. 1964). All nomenclature taxa except *E. maculata* are in accordance with MARHOLD & HINDÁK (1998); while nomenclature of *E. maculata* follows SMITH & TUTIN (1968). Herbarium specimens of the species were studied in four main Slovak herbaria (BRA, NI, SAV, SLO) and herbarium vouchers collected by the author are stored in herbarium NI. The herbarium abbreviations used follow HOLMGREN et al. (1990).

## Results and discussion

In July 2007, several *Euphorbia maculata* plants (Fig. 1) were found in the area of the Chatam Sófer memorial in Bratislava. Occurrence of this species has not been previously reported from Slovakia (see CHRTEK & KŘÍSA 1982, DOSTÁL & ČERVENKA 1991, MARHOLD & HINDÁK 1998). Likewise, no herbarium voucher of the species originated from Slovakia was found in the main Slovak herbaria during this study. It is, however surprising, because the species had been already recorded in all neighbouring countries (Austria, Czech Republic, Hungary, Poland, Ukraine) ca 23 - 120 years ago (DEGEN 1907, ZIMMERMANN et al. 1975, CHRTEK & KŘÍSA 1992, ROSTAŃSKI 1992, GELTMAN 1996), and the two closest foreign locality, i.e. the settlements of Lednice in southern Moravia (ČERNOCH 1955) and Győr in north-western Hungary (SCHMIDT & BAUER 2005) were revealed in 1950 and 2002 respectively.

The species was growing in ruderal plant community of trampled soil on broken stone ballast. The vegetation composition is presented in the following phytosociological relevé:

Slovakia, the Danube Lowland, Bratislava, trampled soil on broken stone ballast in area of the Chatam Sófer memorial (48° 0 8` 30``N; 17° 05` 28``E), sampled area 16 $m^2$, 135 m s. l., $E_1$ 10%, $E_0$ 0%, July 16, 2007 (sampled by P.

ELIÁŠ jun.), $E_1$: *Euphorbia maculata* 1, *Convolvulus arvensis* +, *Polygonum arenastrum* +, *Portulaca oleracea* +, *Taraxacum* sect. *Ruderalia* +, *Amaranthus retroflexus* r, *Eragrostis minor* r, *Lactuca serriola* r, *Senecio vulgaris* r.

**Fig. 1. Herbarium specimen of *Euphrobia maculata* L. from Bratislava**

The above mentioned vegetation is close to *Euphorbia maculata-Portulaca oleracea*-community for the first time described by BRANDES (1993) from Germany. Later, ČARNI & MUCINA (1998) evaluated it as an association *Portulaco-Euphorbietum maculatae* belong to class *Stellarietea mediae*. The association is characteristic for trampled and extremely warm sites in urban areas and is found abundantly in Mediterranean Europe.

An origin of this species in Slovakia is still under speculation, but two possible ways may be taken into consideration. Either spread by ornamental plants from botanical gardens and/or by tourists. The spreading of *E. maculata* via an American ornamental plant was firstly mentioned in 17. century in the London botanical garden (ZIMMERMANN et al. 1975) and some authors regarded botanical gardens as the main dispersal centres of *E. maculata* in Central Europe (GALERA & SUDNIK-WÓJCIKOWSKA 2004). The spreading by tourists can be connected with railway traffic, since the species is very frequently found on railway stations and rail lines (BRANDES 1993).

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