



Solanum pseudocapsicum L., an adventive species new for the flora of the Republic of Macedonia

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ABSTRACT: In this paper *Solanum pseudocapsicum* is reported for the first time for the flora of the Republic of Macedonia. This adventive plant species was found in Ohrid, on walls near the Monastery of St. Jovan Kaneo.

KEYWORDS: *Solanum pseudocapsicum*, alien plant species, flora, Republic of Macedonia

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INTRODUCTION

Intensive investigations of the flora of the Republic of Macedonia constantly reveal the presence of new, rare, and insufficiently known adventive plant species on its territory. The invasive flora of the Republic of Macedonia has not been the subject of specific investigation so far, and data indicating the presence of certain invasive species on its territory are registered in other studies on the country's flora. At the present time, we do not know the exact number of alien plant species, but their numbers are increasing. This follows from the data of MICEVSKI (1956, 1962a,b, 1969, 1970, 1987, 1991, 1992), MATVEJEVA (1973), BUKLIEV (1980, 1988), MICEVSKI & MATEVSKI (1983), MATEVSKI & KOSTADINOVSKI (1990), MATEVSKI (2000, 2002-2003, 2007), MATEVSKI *et al.* (2001), MATEVSKI & TEOFILOVSKI (2004, 2011), and other authors who have cited alien species new for Macedonia, species such as *Ailanthus altissima* (Mill.) Swingle, *Ammannia baccifera* L., *Amaranthus spinosus* L., *Amorpha fruticosa* L., *Azolla filiculoides* Lam., *Commelina communis* L., *Dysphania ambrosioides* (L.) Mosyakin & Clemants, *Eleusine indica* (L.) Gaertn., *Erigeron bonariensis* L., *E. canadensis* L., *E. sumatrensis* Retz., *Euphorbia maculata* L., *Galinsoga quadriradiata* Ruiz & Pav., *G. parviflora* Cav., *Heteranthera limosa* (Sw.) Willd., *Juncus tenuis* Willd., *Lindernia dubia* (L.) Pennell, *Lobularia maritima* (L.) Desv., *Matricaria discoidea* DC., *Paspalum distichum* L., *Polycarpon tetraphyllum* (L.) L., *Rudbeckia laciniata*

L., *Sisyrinchium bermudiana* L., *Solanum angustifolium* Mill., *S. elaeagnifolium* Cav., *S. sisymbriifolium* Lam., *Sporobolus indicus* (L.) R. Br., *Tagetes minuta* L., and others.

MATERIAL AND METHODS

Collected herbarium specimens were deposited in the herbarium of the Institute of Biology (MKNH), Faculty of Natural Sciences and Mathematics, Saints Cyril and Methodius University, Skopje. Original photographs were made from the locality where the plant was discovered. The plant's morphological characteristics were compared with data from the literature (HAWKES & EDMONDS 1972; WEBB *et al.* 1988; and others). For distribution of the species *Solanum pseudocapsicum* on European territory, data from the Euro+Med Plantbase (VALDÉS 2012) were used. Data about habitats of the species are based on the authors' personal observations. Plant nomenclature and taxonomy are consistent with the Euro+Med Plantbase (VALDÉS 2012).

RESULTS AND DISCUSSION

***Solanum pseudocapsicum* L.**, Sp. Pl. 184 (1753)
Syn: *Solanum capsicastrum* Schauer, Allg. Gartenzeitung 1:228 (1833);
S. hyemale Salisb., nom. illeg., Prodr. Stirp. Chap. Allerton 133 (1796)



Fig. 1. *Solanum pseudocapsicum* – habit (photo V. Matevski).



Fig. 2. *Solanum pseudocapsicum* – habit (photo V. Matevski).

Annual or perennial; stems 30–120 (200) cm, erect, branched, glabrous or sometimes with few-branched hairs on very young shoots. Leaves 2–14 cm x 0.5–2 cm, linear-lanceolate, lanceolate or elliptical-lanceolate, entire to somewhat sinuate, alternate or in unequal pairs, with prominent mid-rib, bright green, hairless glossy above, cuneate at base or narrowly attenuate, apex obtuse or acute, petiole 0.2–2 cm. Flowers appear from leaf axils, cymes 1–3-flowered, solitary, extra-axillary to leaf opposed, sessile. Calyx 4–5 mm long, deeply incised; teeth linear-lanceolate to ovate-lanceolate, slightly accrescent. Corolla 10–15 mm in diameter, white, glabrous; lobes oblong-ovate to \pm triangular, with central core of orange-yellow stamens. Anthers 2.5–3 mm long, orange. Berry 10–15 (20) mm in diameter, globose, glossy, red, orange to scarlet, shining, solitary, long-persistent. The bracts remain green, but the shiny berries gradually turn orange-red as they ripen and they remain attractive through most of the winter months.

Seeds c. 3 mm diameter, suborbicular to reniform or obovoid, rather asymmetric; margin thickened. The flowers bloom in the late spring and during the summer. Chromosome number $2n = 24$ (Figs. 1, 2).

General Distribution: *Solanum pseudocapsicum* is native to Mexico, Central America, the Caribbean, and South America and has become naturalised in southern Africa, Europe, North America, Hawaii, New Zealand, and Australia (<http://www.plantsrescue.com/solanum-pseudocapsicum/>).

Distribution in Europe: Azores (Faial, Graciosa, São Jorge, Flores, São Miguel, Pico, Santa Maria, Terceira), Canary Islands (Gran Canaria, Gomera, Hierro, La Palmas, Tenerife), Corsica, Greece, France, Germany, Spain, Portugal, Madeira, Slovakia, Turkey (Asaiatic Turkey) (VALDÉS 2012) (Fig. 3).

Distribution on the Balkan Peninsula: Greece - Athos Peninsula (TURRILL 1949), Patras (CHRONOPOULOS & CHRISTODOULAKIS 1996); Crete, Nomos of Rethimno, Eparchia of Agios Vasilios: Dimos Lappas, Spili, between Rethimno and Ag. Galini (GREUTER & RAUS 2006); in the prefecture of Ioannina (CHITOS 2009); Aegean area: Limnos: Myrina (BIEL & TAN 2015); Kriti with Karpathos, Kasos & Gavdhos (VALDÉS 2012). Sources in Greece based on herbarium material: Lesvos: Hansen & Nielsen 6163 (C); Mt. Saitas: Mermvgykas S-46 (ATH); Achaia: S of Lakka, Willing 196120(B) (herbarium data from Greece submitted by Kit Tan).

Distribution in the Republic of Macedonia: Ohrid; St. Jovan Kaneo, between the monastery and the old town, on walls near the road, 31.05.2007, leg. et det. V. Matevski Voucher number 170300 (MKNH).

Analysis of data on the adventive flora of the Republic of Macedonia shows that in the past 15 years, adventive species of the genus *Solanum* are the most common new alien species. This is the case with the following invasive species of the genus *Solanum* - *S. cornutum*, *S. elaeagnifolium*, and *S. sisymbriifolium*, which were discovered at various localities on the republic's territory (MATEVSKI 2000, 2002–2003). *Solanum pseudocapsicum* is a new adventive species in the Republic of Macedonia, one which is registered in the old town of Ohrid, near the Monastery of St. Jovan Kaneo. It grows in cracks of the retaining walls beside the cobbled path near the Monastery of St. Jovan Kaneo. The population of this adventive plant species consists of about 20 specimens, so there is no tendency for it to spread into the surrounding area. We could not reliably identify the reasons for the presence of this species at this locality and they are still unknown (Fig. 4).

Solanum pseudocapsicum (winter cherry) is a toxic plant. It is often cultivated as an indoor ornamental plant due to its beautiful but poisonous berries. According to HAWKES & EDMONDS (1972) in the edition *Flora Europaea*, *S. pseudocapsicum* is widely cultivated for an ornament and is locally naturalised in S.W. Europe.

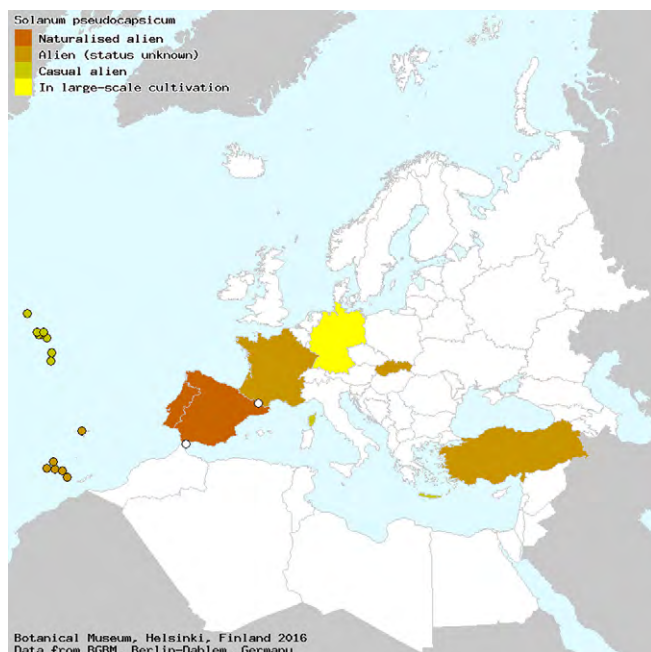


Fig. 3. Map of the distribution of *Solanum pseudocapsicum* L. (according to Euro+Med Plantbase).



Fig. 4. Distribution of *Solanum pseudocapsicum* in the Republic of Macedonia.

GREUTER & RAUS (2006) cite this alien plant species for the first time in Greece (Crete) and note that it is unknown whether the plant arose from seeds or spread vegetatively from previous cultivation.

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Botonica SERBICA



REZIME

Solanum pseudocapsicum L., nova adventivna vrsta u flori Republike Makedonije

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Uradu se po prvi put navodi adventivna vrsta *Solanum pseudocapsicum* L., kao nova za adventivnu floru Republike Makedonije. Zabeležena je u starom delu grada Ohrida, gde raste po zidinima pored puta ka manastiru Sv. Jovan Kaneo. Navedene su karakteristike vrste, njeno rasprostranjenje na globalnom planu, u Evropi, kao i na teritoriji Makedonije.

KLJUČNE REČI: *Solanum pseudocapsicum*, strana biljna vrsta, flora, Republika Makedonija