

NEW DATA ON THE DISTRIBUTION AND INVASION STATUS OF SOME ALIEN PLANTS IN ROMANIA

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Abstract: In this paper we report new chorological data for 20 alien plant taxa from the vascular flora of Romania. A total of 9 species (*Campsis radicans*, *Euphorbia ghypso sperma*, *Grindelia squarrosa*, *Impatiens balfourii*, *Oenothera suaveolens*, *Robinia × ambigua*, *Rudbeckia triloba*, *Sedum sarmentosum*, *Setaria faberi*) are reported as new to the regional floras within the country. *Oenothera pycnocarpa* and *Dittrichia graveolens* are reported in their second and the third sites in Romania, respectively. For the remaining 9 species (*Cytisus scoparius*, *Dysphania pumilio*, *Eleusine indica*, *Erigeron sumatrensis*, *Eriochloa villosa*, *Oenothera depressa*, *Paspalum distichum*, *Rosa rugosa* and *Sicyos angulatus*), we provided new field data, to improve knowledge on their current distribution and invasion status. All taxa are neophytes, introduced either accidentally (11 taxa) or deliberately (9 taxa), more than half of which are currently invasive or potentially invasive in the country.

Keywords: chorological data, invasion status, neophytes, new floristic records, vascular flora.

Introduction

Research on alien flora, mainly on neophytes (*i.e.* alien plant species introduced after the year 1500, according to RICHARDSON & al. 2000), has registered notable development in recent decades in Romania. For all neophytes cited in the vascular flora of Romania until 2011, historical data on their distribution and invasive status in the country were previously extensively documented by ANASTASIU & NEGREAN (2009) and SÎRBU & OPREA (2011). After 2011, new data on neophytes from Romania were added by reporting on some previously unrecorded species [e.g.: ANASTASIU & MEMEDEMİN, 2012; OPREA & al. 2012; NAGODĂ & al. 2013; CAMEN-COMĂNESCU & al. 2016; NEGREAN & al. 2017; SÎRBU & OPREA, 2017; SÎRBU & ȘUȘNIA, 2018; SZATMARI & HURDU, 2020, etc.], but also by new contributions to knowledge on their distribution, habitat preferences and invasive status in the country [e.g.: SÎRBU & al. 2012; NAGODĂ, 2015; NEGREAN & al. 2017; OPREA & al. 2021; SÎRBU & al. 2021; ȘUȘNIA, 2022, etc.]. An extensive literature review on alien plant species (primarily neophytes) in Romania, covering the 1778-2018 time-period has been compiled recently [SÎRBU & al. 2022], resulting in a list of 102 invasive or potentially invasive alien plant species in the country.

Field research on this topic increased substantially especially during 2019-2022, when the project “*The adequate management of invasive species in Romania in accordance with EU Regulation*” [Code SMIS 120008; <https://invasive.ccmesi.ro/>], coordinated by Dr. P. ANASTASIU, was carried out at the national level.

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This work aims to update knowledge on distribution and invasive status of a number of 20 neophytes from Romania, some of which are here reported as new to the regional floras within the country.

Material and methods

Species of neophytes were recorded as a result of our field works between 2012 and 2022 (but particularly in the last 3 years), in various regions of the country. For species identification and nomenclature we used standard floras, such as: BRITTON & BROWN (1970), KOMAROV & al. (1968-2004), TUTIN & al. (1968-1980, 1993), SÂRBU & al. (2013) etc. The invasive status in Romania (*i.e.*, casual, naturalised or invasive) of neophytes listed in the paper was established according to RICHARDSON & al. (2000) and PYŠEK & al. (2004). The geographic coordinates (northern latitude, eastern longitude) were recorded in the field using the application OsmAnd (<https://osmand.net/>). Voucher specimens were deposited in the Herbarium of the University of Life Science “Ion Ionescu de la Brad” of Iași (IASI) and the Herbarium of the Botanical Garden “Anastase Fătu”, “Alexandru Ioan Cuza” University of Iași (IAGB). Phytosociological data for *Cytisus scoparius* were recorded and presented according to CRISTEA & al. (2004) and COLDEA (2012). Limits of the geographical-historical regions (provinces) of Romania mentioned for each species are consistent with CLEMENT & al. (1959).

Results and discussions

***Campsis radicans* (L.) Seem. (*Tecoma radicans* Juss.)**

This is a liana native to North America, widely cultivated as ornamental [CIOCÂRLAN, 2009]. It has been cited as a casual alien (escaped from cultivation) in several localities of Dobrogea [ANASTASIU & al. 2009; MEMEDEMİN & al. 2016] – including the Danube Delta [ANASTASIU & al. 2014], Muntenia [NAGODĂ & al. 2014; NAGODĂ, 2015] and Transylvania [NEGREAN & al. 2017].

We report it now for the first time in three historical provinces of Romania, namely Moldova (Bacău, Botoșani, Iași, Neamț, Suceava and Vrancea counties), Oltenia (Gorj and Vâlcea counties) and Banat (Timiș County):

– Bacău County: Răcăciuni – roadsides and vacant grounds (N 46.33478, E 27.00289; *leg. et det.* C. Sîrbu, 27.VIII.2020);

– Botoșani County: Miorcani – derelict old fences (N 48.20180, 26.85153; *leg. et det.* A. Oprea, 13.XI.2020);

– Iași County: Bivolari – derelict fences and vacant grounds (N 47.51085, E 27.43692; *leg. et det.* A. Oprea, 06.X.2021), Hârlău – railway embankment and associated disturbed grounds (N 44.62100, E 26.92012; *leg. et det.* C. Sîrbu & A. Oprea, 09.X.2019), Scânteia – derelict old fences (N 47.33049, E 27.56485; *leg. et det.* A. Oprea, 30.VIII.2021);

– Neamț County: Bicaz – train station and associated disturbed lands (N 46.86142, E 26.09889; *leg. et det.* C. Sîrbu, 31.VII.2020), Tupilați – derelict old fences (N 46.88473, E 26.63539; *leg. et det.* A. Oprea, 10.X.2021), Ștefan cel Mare – derelict old fences (N 46.75446, E 26.51116; *leg. et det.* A. Oprea, 11.X.2021);

– Suceava County: Dolhasca – disturbed grounds, along the railway track (N 47.54022, E 26.60391; *leg. et det.* C. Sîrbu & A. Oprea, 10.VII.2021);

– Vrancea County: Râmniceni – disturbed grounds (N 45.53679, E 27.44885; *leg. et det.* A. Oprea, 13.VI.2021), Alexandru Vlahuță towards Cândești – roadsides (N 47.54172, E 27.10132; *leg. et det.* C. Sîrbu & A. Oprea, 27.VIII.2022).

– Gorj County: Roșița – derelict fences and walls (N 44.80089, E22.98152; *leg. et det.* A. Oprea, 13.VIII.2020);

– Vâlcea County: Căzănești – derelict fences and vacant grounds (N 45.93423, E 24.28324; *leg. et det.* A. Oprea, 12.VIII.2020), Copăcelu – derelict fences and vacant grounds (N 45.95138, E 24.30619; *leg. et det.* A. Oprea, 12.VIII.2020);

– Timiș County: Timișoara – at the edge of the “Green Forest” (“Pădurea Verde”) (N 45.77837, E 21.25194; *leg. et det.* C. Sîrbu, 10.VI.2017).

New chorological data from other regions:

– Brașov County: Bod – vacant grounds (N 45.76760, E 25.64433; *leg. et det.* A. Oprea, 16.IX.2022), Cristian – derelict fences and walls (N 45.50592, E 25.48369; *leg. et det.* A. Oprea, 23.VIII.2020);

– Covasna County: Ozun – derelict fences and walls, vacant grounds (N 45.10467, E 25.84720; *leg. et det.* A. Oprea, 12.VIII.2020);

– Buzău County: Buzău, The Marghiloman Park – flower beds, edges of paths, spaces between pavers (N 45.14716, E 26.84534; *leg. et det.* A. Oprea & C. Sîrbu, 31.VIII.2022);

– Tulcea county: Tulcea – on the Danube right bank (N 45.17995, E 28.80316; *leg. et det.* C. Sîrbu & A. Oprea, 02.VIII.2020), vacant ground next to the “Monumentul Eroilor” (N 45.18646, E 28.81441 *leg. et det.* C. Sîrbu & A. Oprea, 02.VIII.2020); Periprava – derelict fences (N 45.40503, E 29.54127; *leg. et det.* C. Sîrbu, A. Oprea, M. Doroftei, S. Covaliov 03.VIII.2021), Mila 23 – the channel bank and roadside along the channel (N 45.21678, E 29.23539; *leg. et det.* C. Sîrbu, A. Oprea, M. Doroftei, S. Covaliov, 13.VIII.2021); Caraorman – roadsides, vacant grounds, walls (N 45.07740, E 29.39205; *leg. et det.* C. Sîrbu & A. Oprea, 01.VIII.2022); Popu – roadside and derelict yard (N 45.78572, E 29.13367; *leg. et det.* C. Sîrbu & A. Oprea, 31.VII.2022); Sarinasuf – derelict yard (N 45.75258, E 29.06776; *leg. et det.* C. Sîrbu & A. Oprea, 31.VII.2022), Sulina – household yard (N 45.09212, E 28.38370; M. Doroftei); Crișan – derelict yard (N 45.10261, E 29.23556; M. Doroftei); Mila 23 – derelict yard (N 45.13419, E 29.15046; N 45.13393, E 29.15083; M. Doroftei); Gorgova – the bank of the Danube River within the locality, roadside (N 45.10423, E 29.09445; N 45.10414, E 29.09389; M. Doroftei); Mila 36 channel joint with Șontea (N 45.15101, E 29.55327; M. Doroftei); Gârla Șontea – “La Scăunele” (N 45.15100, E 28.58437; M. Doroftei).

Current status in Romania's flora: casual (or quasi-naturalized).

Cytisus scoparius (L.) Link (*Sarothamnus scoparius* (L.) W. D. J. Koch) (Figure 1)

This is a species originating from Central, Western and Southern Europe [CIOCARLAN, 2009], reported (outside the cultivation sites) as naturalised [ANASTASIU & NEGREAN, 2009] or invasive [SÎRBU & al. 2022] in almost all provinces of the country so far [SÎRBU & Oprea, 2011].

Although it is pretty widespread in Moldova (Eastern Romania) – see references in SÎRBU & OPREA, 2011 – very extensive populations of this species have not been reported from this country's province of the country, until now. During our recent fieldwork, we recorded vast populations of *C. scoparius*, covering entire mountain slopes south of the town of Moinești (Bacău County). We provide below the plant composition of a phytocoenosis of the association *Festuco - Agrostietum capillaris* Horv. 1951, recorded in the above-mentioned place, strongly invaded by *C. scoparius* (N 46.44947; E 26.46729; surface: 100 m²; westerly aspect, slope 20%;

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leg. et det. C. Sîrbu & A. Oprea, 08.VI.2020; plant species and abundance-dominance values – AD): **Cytisus scoparius** 4; **Car. ass.:** *Agrostis capillaris* ssp. *capillaris* 3, *Festuca rubra* 1; **Cynosurion & Arrhenatheretalia:** *Cynosurus cristatus* +, *Gentianopsis ciliata* +, *Hypochaeris radicata* +, *Achillea millefolium* +, *Briza media* +, *Leontodon hispidus* +; **Molinio-Arrhenatheretea:** *Agrostis stolonifera* ssp. *stolonifera* +, *Centaurea jacea* ssp. *jacea* +, *Festuca pratensis* ssp. *pratensis* +, *Helianthemum nummularium* ssp. *nummularium* +, *Holcus lanatus* +, *Polygala vulgaris* ssp. *vulgaris* +, *Thymus pulegioides* ssp. *pulegioides* +, *Viola canina* ssp. *montana* +; **Festuco-Brometea:** *Carlina biebersteini* ssp. *brevibracteata* +, *Eryngium campestre* +, *Galium verum* ssp. *verum* +, *Pimpinella saxifraga* subsp. *saxifraga* +, *Plantago lanceolata* (+); **Trifolio-Geranietea:** *Fragaria vesca* +, *Ranunculus polyanthemoides* subsp. *polyanthemoides* +, *Seseli annuum* ssp. *annuum* +; **Variae:** *Daucus carota* ssp. *carota* +, *Betula pendula* +, *Carpinus betulus* +, *Crataegus monogyna* +, *Pinus sylvestris* (juv.) +, *Rosa canina* +, *Salix caprea* +.

Current status in Romania's flora: invasive.

Dittrichia graveolens (L.) W. Greuter (Figure 2)

The first data concerning the occurrence in Romania of this Mediterranean species was published by SZATMARI & HURDU (2020), namely along the European road E68 (DN1), between the villages Viștea de Jos and Ucea de Jos (Brașov County) and between the villages Arpașul de Jos and Scoreiu (Sibiu County), on the roadsides and in the cracks formed between the concrete tiles of a bridge.



Figure 1. *Cytisus scoparius*, south of the Moinești town, Bacău County

We have found hundreds of specimens of *D. graveolens* near Tohanu Nou (Brașov County), about 80 Km road from Viștea de Jos, on compacted gravel, on both sides of the road E574 (N 45.55196, E 25.38871; *leg. et det.* C. Sîrbu, 22.X.2022). This is the third place where the species has been identified in Romania to date.

SZATMARI & HURDU (2020) pointed out the high invasive potential of this species due to its easy dispersal over long distances and broad ecological tolerance. According to PONTICELLI & al. (2022), *D. graveolens* “is currently undergoing a dramatic northward expansion of its native range related to climate change”. For a detailed description of this species and taxonomy of the genus, see BRULLO & De MARCO (2000).



Figure 2. *Dittrichia graveolens*, Tohanu Nou, Brașov County

Current status in Romania's flora: naturalised, potentially invasive.

Dysphania pumilio (R. Br.) Mosyakin & Clemants (*Chenopodium pumilio* R. Br.)

Reported relatively recently in Romania [CHYTRÝ, 1993], previously assessed as a casual neophyte [ANASTASIU & NEGREAN, 2009], the species originating from tropical regions (Australia, New Zealand, New Caledonia), has been confirmed in the country, until now, only on fluvial sands of the Danube, in the Danube Delta [CHYTRÝ, 1993; COSTEA, 1994; OPREA, 2005; CIOCÂRLAN, 2009; SÎRBU & OPREA, 2011; SÂRBU & al. 2013] and in the Galați County [SÎRBU & OPREA, 2011]. We identified it between the pavement tiles in the central zone of the city of Focșani (N 45,69750, E 27.18303; *leg. et det.* C. Sîrbu & A. Oprea, 28.VII.2022). This is the first

report of this species in anthropogenic habitats at a great distance from the Danube River, and the first for the Vrancea County. Current status in Romania's flora: invasive.

Eleusine indica (L.) Gaertn.

This is a species native to tropical and subtropical Asia, first mentioned in the country by RĂVĂRUȚ & MITITELU (1960). Although the population reported by the cited authors from north-eastern Romania (the city of Iași) did not survive over time, new populations have been reported in recent decades from other regions, as follows: southern Moldova [SÎRBU & OPREA, 2011; ȘUȘNIA, 2022], Dobrogea [COSTEA, 1996; SÎRBU & OPREA, 2011; MEMEDEMİN & al. 2016], Muntenia [NEGREAN & CONSTANTIN, 1999; OPREA & al. 2004; NAGODĂ, 2015], Oltenia [RĂDUȚOIU & STAN, 2013] and Transylvania [NEGREAN & al. 2017]. ANASTASIU & NEGREAN (2009) assessed it as naturalised in the country.

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We report it now for the first time in Argeş, Buzău and Vrancea counties, as follows: Jgheaburi – roadside, sandy ground (N 45.27771, E 24.80556; *leg. et det.* C. Sîrbu & A. Oprea, 11.VIII.2022) (Argeş County); Buzău train station – near the platform (N 45.14269, E 26.84434; *leg. et det.* A. Oprea & C. Sîrbu, 31.VII.2022) (Buzău County); Cândeşti – roadside, vacant sandy ground (N 45.53985, E 27.08698; *leg. et det.* C. Sîrbu & A. Oprea, 27.VIII.2022) (Vrancea County).

Current status in Romania's flora: naturalised, potentially invasive in southern regions and casual elsewhere; dispersed over long distances by road and rail transport.

Erigeron sumatrensis Retz. (*Conyza sumatrensis* (Retz.) E. Walker)

An invasive species native to South America, reported in Romania for the first time by ANASTASIU & MEMEDEMİN (2012). After this first report, in just a single decade, it has been identified in several provinces of the country, namely: Dobrogea [ANASTASIU & MEMEDEMİN, 2012; MEMEDEMİN & al. 2016; OPREA & al. 2021], Banat, Moldova, Oltenia [OPREA & al. 2021] and Muntenia (Argeş County) [SOARE, 2021].

We report it here for the first time in three counties (Dâmboviţa, Buzău and Iaşi), as follows: Târgovişte – train station, between the railway lines (N 44.91593, E 25.45447; *leg. et det.* A. Oprea & C. Sîrbu, 11.VIII.2022) and Curtea Domnească (The Royal Court) – on the lawns (N 44.93211, E 25.45832; *leg. et det.* A. Oprea & C. Sîrbu, 11.VIII.2022) (Dâmboviţa County); Buzău train station – between the railway lines (N 45.142900, E 26.82873; *leg. et det.* A. Oprea & C. Sîrbu, 31.VII.2022) (Buzău County); Iaşi (the central area, near the Palace of Culture) – vacant land (N 47.15710, E 27.58806; *leg. et det.* C. Sîrbu, 05.IX.2022); Miroslava – disturbed ground, at the edge of the orchard (N 47.13922, E 27.54893; *leg. et det.* C. Sîrbu, 12.XI.2022) (Iaşi county); Corbu – seaside at abandoned industrial site (N 44.21209, E 28.41327; M. Doroftei) (Constanţa County).

Current status in Romania's flora: naturalised to invasive.

Eriochloa villosa (Thunb.) Kunth

This is a weed of Asian origin [CIOCÂRLAN & SIKE, 2006; CIOCÂRLAN, 2009], quite common (invasive) in western and north-western Romania [CIOCÂRLAN & SIKE, 2006; FĂRCĂŞESCU & al. 2007, 2008; ARDELEAN & al. 2009, 2018; KARÁCSONYI, 2011; NEGREAN, 2011; SZATMARI, 2016; NEGREAN & al. 2017; SÎRBU & al. 2022].

We identified it in Alba County, at Blaj, near the “Eminescu's Linden Tree” – in a corn field (N 46.18062, E 23.93088; *leg. et det.* A. Oprea, 20.VIII.2021) and at Ighiu – in a corn field (N 46.14964, E 23.51041; *leg. et det.* A. Oprea, 21.VIII.2021). These reports seem to be the first from the Alba County and the easternmost from Romania.

Current status in Romania's flora: invasive.

Euphorbia glyptosperma Engelm. (*Chamaesyce glyptosperma* (Engelm.) Small)

Reported a few years ago [SÎRBU & ŞUŞNIA, 2018] for the first time in the flora of Romania, this neophyte of North American origin, identified so far only in Moldova (Galaţi, Vrancea and Vaslui counties) [SÎRBU & ŞUŞNIA, 2018; ŞUŞNIA & al. 2020; OPREA & al. 2021; ŞUŞNIA, 2022], seems to be much more widespread than initially thought, or is in full process of invasion.

We report it from new localities, as follows: East of Cornăţel – river sands and pebbles in the Trotuşului river bed, upstream of the bridge (N 46.13416, E 27.05252; *leg. et det.* C. Sîrbu & A. Oprea, 27.VIII.2022) (Bacău County); south of Adjud – vacant land, with compacted gravel (N 46.08645, E 27.19130; *leg. et det.* C. Sîrbu & A. Oprea, 27.VIII.2022), Bonţeşti – vacant land, with compacted gravel (N 45.67776, E 27.05255; *leg. et det.* C. Sîrbu & A. Oprea, 26.VIII.2022), Urecheşti – roadside, on compacted gravel (N 45.60420, E 27.08860; *leg. et det.*

C. Sîrbu & A. Oprea, 26.VIII.2022) (Vrancea County); Râmnicu Sărat, north of the town – vacant, stony land, with concrete slabs, in the yard of an out-of-use industrial hall (N 45.39778, E 27.04790; *leg. et det.* C. Sîrbu & A. Oprea, 06.XI.2022) (Buzău County). The species is reported here for the first time from Muntenia (at Râmnicu Sărat, Buzău County) and Bacău County (at Cornățel). We have to mention that the specimens collected from Râmnicu Sărat have atypical seeds, weakly ornamented.

Current status in Romania's flora: invasive.

Grindelia squarrosa (Pursh) Dunal.

This is a species native to North America, previously known in Romania only toward the eastern border of the country, between the cities of Iași and Galați [SÎRBU & OPREA, 1998, 2011; OPREA & al. 2021], at first assessed as casual [ANASTASIU & NEGREAN, 2009], later on as invasive, or potentially invasive [TRUȚĂ & al. 2012; SÎRBU & al. 2022].

We report it here from the Brăila port area – on the railway embankment (N 45.28964, E 27.98203; *leg. et det.* C. Sîrbu & A. Oprea, 11.VI.2022). This is the first report of *G. squarrosa* in Muntenia and the southernmost from Romania until now. From the current data, it is quite predictable that it will spread further to other regions of the country along the transport networks.

Current status in Romania's flora: invasive.

Impatiens balfourii Hook. f.

This is an Asian species (native to the Himalayas), introduced in Romania as an ornamental plant and first listed by NEGREAN (2011) as an alien plant species in the country. Until now, it has been cited from Banat [NEGREAN, 2011], Crișana [NEGREAN, 2011, 2012; KARÁCSONYI, 2011], Muntenia [NEGREAN, 2011, 2012; NAGODĂ, 2015; ANASTASIU & al. 2017], Oltenia [NEGREAN & CIORTAN, 2014] and Transylvania [KOVÁCS, 2012; NEGREAN & al. 2017].

We report it for the first time as a neophyte in Moldova (eastern Romania), from Pojorâta (Suceava County) – roadsides, vacant lands and ditches (N 47.48450, E 25.49068; *leg. et det.* A. Oprea, 03.IX.2022).

Current status in Romania's flora: naturalised (casual in eastern Romania).

Oenothera depressa E. Greene

This species, native to North America, has recently been reported in the alien flora of Romania [SÎRBU & OPREA, 2017], being known until now in Moldova [SÎRBU & OPREA, 2017; ȘUȘNIA & al. 2020; ȘUȘNIA, 2022], Transylvania [SÎRBU & OPREA, 2017] and the Danube Delta [OPREA & al. 2021].

We report it now from new localities, as follows: Cornățel – fluvial sands in the Trotuș river bed (N 46.13416, E 27.05252; *leg. et det.* C. Sîrbu & A. Oprea, 27.VIII.2022) (Bacău County); Smârdan – vacant land, with sandy-stone substrate (N 45.46556, E 27.95785; *leg. et det.* C. Sîrbu & A. Oprea, 05.VI.2021); Tecuci – the embankment of the ring road under construction, at the eastern end of the bridge over the railway (N 45.81380, E 27.43831; *leg. et det.* C. Sîrbu & A. Oprea, 06.VI.2021) (Galați County); Iași – at the Socola train station – between the railway tracks (N 47.13989, E 27.61237; *leg. et det.* C. Sîrbu, 24.IX.2022) (Iași County); Bogata – Moldova river bank (N 47.41124, E 26.20646; *leg. et det.* A. Oprea, 02.IX.2022) (Suceava County). We mention that this invasive species has not been reported from the counties of Bacău, Iași and Suceava, up to now.

Current status in Romania's flora: invasive.

Oenothera pycnocarpa G. F. Atk. & Bartlett

This is a North American species, very rare in Romania, known so far only from one locality, namely Răchiteni (Iasi County) – on the right, sandy bank of the Siret River [SÎRBU & OPREA, 2017]. We report it here from a second locality in the country, this time in an anthropogenic habitat: Dolhasca train station (Suceava County) – between the railway tracks and vacant lands nearby (N 47,4247, E 26,61059; N 47.42377, E 26.61126; *leg. et det.* C. Sîrbu & A. Oprea, 10.VII.2021).

Current status in Romania's flora: naturalised.

Oenothera suaveolens Person

A native to North America, this species has been recently reported from Romania [SÎRBU & OPREA, 2017], in both anthropogenic (vacant lands, train stations) and natural habitats (fluvial sands, river banks), in the counties of Iași [SÎRBU & OPREA, 2017], Galați [SÎRBU & OPREA, 2017; ȘUȘNIA & al. 2020], Vrancea [ȘUȘNIA, 2022] and Brăila [ȘUȘNIA & al. 2020].

We report it now for the first time in the Danube Delta (Tulcea County), as well as in Neamț and Bacău counties, as follows:

– Tulcea County (the Danube Delta): Caraorman – the edge of the path, on the sand dunes, near the “kneeling oak” (“stejarul îngenunchiat”) (N 45.02986, E 29.40650; N 45.02905, E 29.40602; *leg. et det.* C. Sîrbu & A. Oprea, 01.VIII.2022), Letea (the village) – roadsides and associated vacant lands (N 45.29115, E 29.51412; N 45.29197, E 29.51127; *leg. et det.* C. Sîrbu & A. Oprea, 03.VIII.2022), Letea (the nature reserve) – sand dunes, dry interdune depressions (N 45.30099, E 29.51353; N 45.3028, E 29.51266; N 45.30838, E 29.52889; N 45.31012, E 29.53331; N 45.32166, E 29.51923; *leg. et det.* C. Sîrbu & A. Oprea, 04.VIII.2022);

– Bacău County: Galbeni – sandy land at the sand and gravel quarry, downstream of the dam (N 46.45031, E 26.95338; *leg. et det.* C. Sîrbu, 26.VII.2021), Coteni – fluvial sands on the left bank of Siret River (N 46.53564, E 26.98858; *leg. et det.* C. Sîrbu, 26.VII.2021);

– Neamț County: Adjudeni – fluvial sands on the right bank of the Siret River (N 46.79910, E 26.96416; *leg. et det.* C. Sîrbu, 26.VII.2021), Ion Creangă – fluvial sands on the left bank of the Siret River (N 47.30992, E 26.96227; N 47.30985, E 26.97140; *leg. et det.* C. Sîrbu, 26.VII.2021), Sagna – on the dyke bordering the Siret River bed (N 46.96501, E 26.99056; *leg. et det.* C. Sîrbu, 27.VII.2021).

The species has already been reported from Iași County [SÎRBU & OPREA, 2017], but new points of presence have been recorded recently, as follows: between Kogălniceni and Alexandru Ioan Cuza – along the Siret River, on the edge of the dyke (N 47.13119, E 26.82347; *leg. et det.* C. Sîrbu, 13.IX.2021) and inside of the riparian forest (N 47.12982, E 26.82249; *leg. et det.* C. Sîrbu, 13.IX.2021); Iași, near the “Frumoasa” Monastery – vacant land at the edge of a silted up pond (N 47.14051, E 27.59094; *leg. et det.* C. Sîrbu, 24.IX.2022); between Soloneț and Zaboloteni – fluvial sands on the right bank of the Prut River (N 47.48581, E 27.47303 *leg. et det.* C. Sîrbu, 15.IX.2021).

Current status in Romania's flora: invasive.

Paspalum distichum L. (*Paspalum paspalodes* (Michx.) Scribn.) (Figure 3)

This neophyte of tropical origin, invasive in Romania [ANASTASIU & NEGREAN, 2009; SÎRBU & OPREA, 2011; SÎRBU & al. 2022], was first mentioned in the country by ROMAN (1992). Until now it is known from several localities along the Danube River, between the Nera micro-delta, in Caraș-Severin County (upstream) and Sulina, Danube Delta (downstream) [ROMAN, 1992; CIOCÂRLAN, 2000, 2009, 2011; OPREA, 2005;

ANASTASIU & NEGREAN, 2009; SÂRBU & al. 2007; DOROFTEI & al. 2011; SÎRBU & OPREA, 2011; NEGREAN, 2012; SÎRBU & al. 2021; CAMEN-COMĂNESCU & MIHAI, 2022].

From the Danube Delta, the species has been reported so far from three localities: the Letea forest [ROMAN, 1992], Mila 28 [SÎRBU & OPREA, 2011] and Sulina [DOROFTEI & al. 2011]. In our recent field work, we have identified extensive populations of *P. distichum* in many other localities in this protected area, namely: Cardon, in the south-eastern extremity of the Letea levee, near the bridge – on the channel edges (N 45.23006, E 29.63172; *leg. et det.* C. Sîrbu, A. Oprea, M. Doroftei, S. Covaliov, 04.VIII.2020); Cardon, at the monastery – on the channel edges (N 45.25828, E 29.62489; *leg. et det.* C. Sîrbu, A. Oprea, M. Doroftei, S. Covaliov, 04.VIII.2020); downstream of Crișan, at the wharf for picking up waste – marshy



Figure 3. *Paspalum distichum*, Sulina, Tulcea County

place (N 45.17274, E 29.43669; *leg. et det.* C. Sîrbu & A. Oprea, S. Covaliov, 06.VIII.2021); Mila 23 – on the channel edges (N 45.21612, E 29.23484; *leg. et det.* C. Sîrbu & A. Oprea, 13.VIII.2021); upstream of Vulturii – on the channel edges (N 45.17061, E 29.00346; *leg. et det.* C. Sîrbu & A. Oprea, S. Covaliov, 03.VIII.2020). The species has already been cited from the Sulina town, as shown before, but without a precise location. We identified a large population of *P. distichum* in this locality, around a pond on the left side of the Sulina channel (N 45.16059, E 29.63885; N 45.16045, E 29.63828; *leg. et det.* C. Sîrbu, A. Oprea, S. Covaliov, M. Doroftei, 03.VIII.2020).

Current status in Romania's flora: invasive.

Robinia × ambigua Poir. (*R. pseudoacacia* × *viscosa*; *R. dubia* Fouc., *R. hybrida* Audib., *R. intermedia* Soul.-Bod.)

This is a hybrid between *R. pseudoacacia* and *R. viscosa*, of North American origin, cultivated for ornamental purposes. As a casual alien plant, it has been reported from Romania only from Alba County, at Sebeș (Viile Românilor and Calea Scufundată) [BORZA, 1959]. We report it for the first time in the flora of Moldova and the Danube Delta (as a casual alien plant, outside the cultivation sites), as follows: Lunca Asău – on the river bank and the roadside (N 46.42444, E 26.42993; *leg. et det.* A. Oprea & C. Sîrbu, 03.VII.2022) (Bacău County); Giurgeni – roadsides (N 47.20069, E 27.11683; *leg. et det.* A. Oprea, 26.VI.2022), Mărmureni – roadsides and vacant lots (N 47.21101, E 27.17894; *leg. et det.* A. Oprea, 26.VI.2022), Valea Enei – roadsides (N 47.79991, E 27.15270; *leg. et det.* A. Oprea, 26.VI.2022) and Valea Ursului – roadsides (N 47.20069, E 27.09544; *leg. et det.* A. Oprea, 26.VI.2022) (Neamț County); in the Danube Delta (Tulcea County): Lăstuni – household yard (N 45.01340, E 28.41335), Zebil – train halt (N 44.57539, E 28.43073; M. Doroftei).

Current status in Romania's flora: casual.

Rosa rugosa Thunb.

An East Asian species cultivated in gardens as ornamental [PRODAN, 1956], it was reported as a casual alien from the counties of Satu Mare [KARÁCSONYI, 1995], Sălaj [NEGREAN & al. 2017] and Botoșani [HUȚANU, 1999]. We identified a small population of *R. rugosa* in the grassland of the “Poiana cu Schit” nature reserve – Grajduri, Iași County (N 46.98649, E 27.58479; *leg. et det.* C. Sîrbu, 10.VII.2021). This is the second record of its spontaneous occurrence

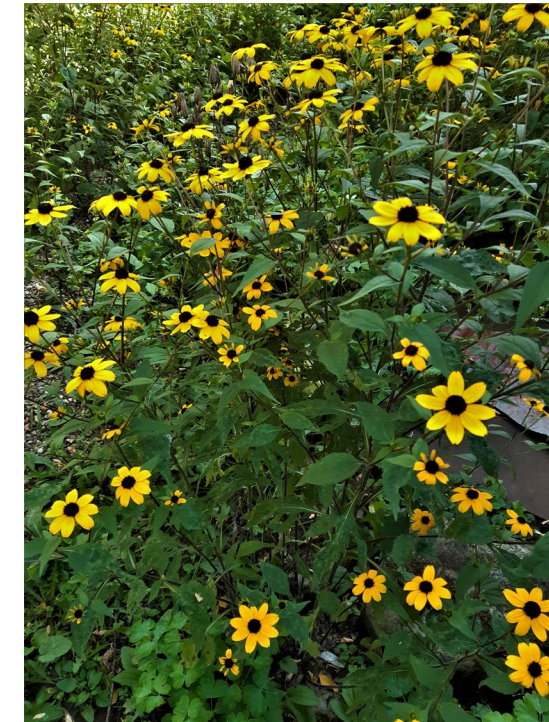


Figure 4. *Rudbeckia triloba*, Soveja, Vrancea County

outside the cultivation site in Moldova (Eastern Romania).

Current status in Romania's flora: casual.

Rudbeckia triloba L. (Figure 4)

This is a North American species, widely cultivated in Romania for its ornamental value, previously reported as a casual alien plant, from only a few localities, namely: Bocicoi (Maramureș County), Agapia (Neamț County), Ruginoasa and Iași (Iași County) [SÎRBU & OPREA, 2010]. Recently, numerous new points of presence of this species outside the cultivation sites have been registered, in some cases (Lepșa, Soveja) the populations being very extensive, of hundreds of individuals. Our new records are as follows:

– Covasna County: Imeni – roadsides (N 46.06089, E 26.16695; *leg. et det.* A. Oprea, 10.IX.2022), Bățanii Mari – vacant lots (N 46.08847, E 25.69137; *leg. et det.* A. Oprea, 10.IX.2022);

– Bacău County: Livezi – vacant lots (N 46.40294, E 26.73394; *leg. et det.* A. Oprea, 06.X.2020);

– Botoșani County: Lunca – on a deposit of river sand (N 47.88901, E 26.26002; *leg. et det.* C. Sîrbu & A. Oprea, 01.XI.2020);

– Iași County: Cârlig – vacant lots (N 47.20421, E 27.56004; *leg. et det.* C. Sîrbu, 10.VII.2013);

– Neamț County: Pângărați – ditch beside the road (N 46.92989, E 26.20125; *leg. et det.* A. Oprea., 10.XI.2021);

– Vrancea County: Adjud – roadsides (N 46.10162, E 27.17959; *leg. et det.* C. Sîrbu, 28.VIII.2020), Lepșa – uncultivated land, near the access road to “Piatra Ciutei”, abundant (N 45.9421, E 26.5884; *leg. et det.* A. Oprea & C. Sîrbu, 26.VIII.2022), Răcoasa – clogged ditch on the roadside (N 45.99314, E 26.86780; *leg. et det.* A. Oprea & C. Sîrbu, 26.VIII.2022) and vacant lands (N 45.99300, E 26.86732; N 45.99282, E 26.86865; *leg. et det.* A. Oprea & C. Sîrbu, 26.VIII.2022), Soveja – the bank of the Dragomira stream, abundant (N 45.99830, E 26.64168; N 45.99905, E 26.66158; *leg. et det.* A. Oprea & C. Sîrbu, 26.VIII.2022);

– Vaslui County: Vaslui – roadside and on the Delea stream bank (N 46.65753, E 27.71786; *leg. et det.* C. Sîrbu, 5.VIII.2017).

According to our data, the species is now reported for the first time in Transylvania (Covasna County), as well as in some counties of Moldova (Botoșani, Bacău, Vaslui and Vrancea).

Current status in Romania's flora: naturalised.

Sedum sarmentosum Bunge (Figure 5)

An ornamental plant, native of East Asia, reported in the alien flora (as a refugee from culture) in almost all provinces of the country [DRĂGULESCU, 2010; NEGREAN, 2011; ANASTASIU & al. 2011, 2014; SÎRBU & OPREA, 2011; NEGREAN & CIORTAN, 2014; NAGODĂ, 2015; NEGREAN & al. 2017], except for Moldova (eastern Romania). We have registered it in several localities in this historical province, namely:

– Suceava County: Stulpicani – vacant land (N 47.47200, E 25.75902; *leg. et det.* A. Oprea, 06.IX.2022), Ițcani-Suceava – railway station (N 47.676667, E 26.216944; *leg. et det.* A. Oprea, 06.IX.2022);

– Neamț County: Piatra Șoimului – on river pebble and the concrete bank of the river Calu (N 46.79410, E 26.45704; *leg. et det.* C. Sîrbu & A. Oprea, 02.VII.2022);

– Bacău County: Valea lui Ion – stony ground (N 46.69963, E 26.62701; *leg. et det.* C. Sîrbu & A. Oprea, 03.VII.2022);

– Vrancea County: Soveja – stony ground on a stream bank (N 46.00010, E 26.66462; *leg. et det.* C. Sîrbu & A. Oprea, 26.VIII.2022);

In other provinces of the country, we have also recorded it in new localities as follows:

– Bihor County: Băile Felix – on the edge of the forest, next to the railway (N 46.99758, E 21.97893; *leg. et det.* C. Sîrbu, 2017);

– Sălaj County: Jibou – sidewalks (N 47.25856, E 23.25161; *leg. et det.* Sîrbu & Oprea 2012);

– Cluj County: Frăsinet – on the bank of the Valea Ierii rivulet (*leg. et det.* Sîrbu & Oprea, 2012);

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– Covasna County: Bixad – vacant land (N 46.10217, E 25.85851; *leg. et det.* A. Oprea, 16.VII.2020);

– Dâmbovița County: Pucioasa – roadside, sidewalks (N 45.04481, E 25.43852; N 45.04439, E 25.43903; N 45.04468, E 25.43879; *leg. et det.* C. Sîrbu & A. Oprea 11.VIII.2022).
Current status in Romania's flora: naturalised.



Figure 5. *Sedum sarmentosum*, Piatra Șoimului, Neamț County

***Setaria faberi* J. Herrm.**

This is a species native to East Asia, accidentally introduced into Romania, from where it was first cited by COSTEA (1996). So far it has been reported as a casual neophyte [ANASTASIU & NEGREAN, 2009] in anthropogenic habitats of railway stations only from Dobrogea [COSTEA, 1996; CIOCÂRLAN, 2000, 2009], Muntenia [CIOCÂRLAN, 2009; OPREA & al. 2012; CAMEN-COMĂNESCU & MIHAI, 2022] and Moldova [OPREA & al. 2012]. We identified it for the first time in Transylvania, in the Făgăraș railway station (Brașov County) – on the railway embankment and the associated vacant land (N 45.83046, E 24.97393; *leg. et det.* A. Oprea, 20.IX.2022).

Current status in Romania's flora: casual.

***Sicyos angulatus* L.**

This is a neophyte native to North America, invasive in Romania [ȘÎRBU & al. 2022], reported to date from all provinces of the country [ANASTASIU & al. 2011; RĂDUȚOIU & STAN, 2013; NICULESCU & al. 2021; ARDELEAN & ROȘU, 2016; NEGREAN & al. 2017; for older references, see ȘÎRBU & OPREA, 2011].

From the Danube Delta, the species has been first mentioned by ANASTASIU & al. (2011), recorded along the Black Sea coast. We have recently identified this species in several places in the Delta, between Tulcea and Sulina, as follows: Litcov Channel – channel banks (N 45.12441, E 29.18134; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, 04.VIII.2021), Șontea Channel – channel banks (N 45.2031, E 29.17947; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, 04.VIII.2021), Caraorman – Channel Vătafu-Împușita – on the willows and the water's edges (N 45.11919, E 29.42309; N 45.11741, E 29.39516; *leg. et det.* A. Oprea & C. Sîrbu, 03.VIII.2022), Crișan – on the Danube banks (N 45.17437, E 29.38675; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, M. Doroftei, 05.VIII.2021), Mila 23 – channel banks (N 45.21678, E 29.23539; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, M. Doroftei, 13.VIII.2021), Mila 28 – channel banks (N 45.17400, E 29.06185; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, M. Doroftei, 04.VIII.2020), Tulcea – on the Danube banks (N 45.18000, E 28.80097; N 45.17995, E 28.80316; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, M. Doroftei, 04.VIII.2020), Sulina – channel banks (N 45.15947, E 29.63745; N 45.15284, E 29.67612; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, M. Doroftei, 06.VIII.2021), Vultur (upstream) – channel banks (N 45.17061, E 29.00346; *leg. et det.* A. Oprea, C. Sîrbu, S. Covaliov, M. Doroftei, 05.VIII.2020), Grindul Lupilor – roadside (N 44.41444, E 28.56265; M. Doroftei).

Other new chorological data:

– Caraș-Severin County: Baziaș – wet thickets (N 44.86299, E 21.39048; *leg. et det.* A. Oprea, 20.VIII.2020);

– Mehedinți County: the Mraconia bay – roadside (N 47.74677, E 22.29391; *leg. et det.* A. Oprea, 19.VIII.2020);

– Iași County: Hălăucești – unkempt land, on the bank of a stream (N 47.10111, E 26.81632; *leg. et det.* C. Sîrbu, 14.IX.2021), Șcheia – the steep bank of the Siret River (N 47.11073, E 26.88616; *leg. et det.* C. Sîrbu, 13.IX.2021);

– Neamț County: Borca – the bank of the homonymous stream (N 47.79752, E 25.77423; N 47.79752, E 25.77445; *leg. et det.* A. Oprea, 11.XI.2021).

The species has not been reported previously in Iași and Neamț counties.

Current status in Romania's flora: invasive.

Conclusions

The paper presents new chorological data and the current invasion status in Romania for a total of 20 species of neophytes;

Some taxa are reported for the first time in some regional floras within the country, as follows: *Campsis radicans* – the first record for Moldova (eastern Romania), Oltenia and Banat; *Impatiens balfourii*, *Robinia × ambigua* and *Sedum sarmentosum* – the first record for Moldova (eastern Romania); *Oenothera suaveolens* – the first record for the Danube Delta; *Euphorbia glyptosperma* and *Grindelia squarrosa* – the first record for Muntenia; *Rudbeckia triloba* and *Setaria faberi* – the first record for Transylvania;

Oenothera pycnocarpa and *Dittrichia graveolens* are reported in their second and third sites in Romania, respectively;

Based on current data, the invasive status in Romania of the taxa analyzed in the paper was assessed as follows: 4 species are casual (*Robinia × ambigua*, *Rosa rugosa*, *Setaria faberi*, *Campsis radicans*); 4 species are naturalised (*Impatiens balfourii*, *Oenothera pycnocarpa*, *Rudbeckia triloba*, *Sedum sarmentosum*); 3 species are potentially invasive (*Dittrichia graveolens*,

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Eleusine indica, *Erigeron sumatrensis*) and 9 species are invasive (*Cytisus scoparius*, *Dysphania pumilio*, *Eriochloa villosa*, *Euphorbia glyptosperma*, *Grindelia squarrosa*, *Oenothera depressa*, *Oenothera suaveolens*, *Paspalum distichum*, *Sicyos angulatus*).

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References

- ANASTASIU P., COMĂNESCU C. P., NAGODĂ E., LIȚESCU S. & NEGREAN G. 2017. Nature reclaiming its territory in urban areas. Case study: Văcărești Nature Park, Bucharest, Romania. *Acta Horti Botanici Bucurestiensis*. **44**: 71-99.
- ANASTASIU P. & MEMEDEMİN D. 2012. *Conyza sumatrensis*: a new alien plant in Romania. *Botanica Serbica*. **36**(1): 37-40.
- ANASTASIU P. & NEGREAN G. 2009. Neophytes in Romania. pp. 66-97. In: RÁKOSY L. & MOMEU L. (eds.). *Neobiota din România*, Cluj-Napoca: Edit. Presa Univ. Clujeană.
- ANASTASIU P., NEGREAN G., FĂGĂRAȘ M., SAMOILĂ C. & COGĂLNICEANU D. 2009. Constanța harbour (România) as a major gateway and reservoir for alien plant species. *Acta Horti Botanici Bucurestiensis*. **36**: 41-60.
- ANASTASIU P., NEGREAN G., SAMOILĂ C., MEMEDEMİN D. & COGĂLNICEANU D. 2011. A comparative analysis of alien plant species along the Romanian Black Sea coastal area. The role of harbours. *Journal of Coastal Conservation*. **15**: 595-606.
- ANASTASIU P., NEGREAN G., SMARANDACHE D., LIȚESCU S. & BASNOU C. 2014. Neophytes in protected areas. Case study: the Danube Delta Biosphere Reserve. *Acta Horti Botanici Bucurestiensis*. **41**: 41-68.
- ARDELEAN A., KARÁCSONYI K. & NEGREAN G. 2009. *Eriochloa villosa* – a new alien graminaceae species for Arad county (Romania). *Studia Universitatis “Vasile Goldiș” Arad, Ser. Științele Vieții*. **19**(2): 281-282.
- ARDELEAN A. & ROȘU I. 2016. *Flora și vegetația Defileului Mureșului Inferior*. București: Edit. Acad. Române, 695 pp.
- ARDELEAN A., ROȘU I. & DON I. 2018. *Flora și vegetația Banatului. I, Flora*. București: Edit. Acad. Române, 616 pp.
- BORZA A. 1959. *Flora și vegetația Văii Sebeșului*. București: Edit. Academiei R. P. Române, 363 pp.
- BRITTON N. & BROWN A. 1970. *An illustrated flora of the Northern United States and Canada*, I-III. New York: Dover Publ. Inc.
- BRULLO B. & De MARCO G. 2000. Taxonomical revision of the genus *Dittrichia* (Asteraceae). *Portugaliae Acta Biologica*. **19**: 341-354.
- CAMEN-COMĂNESCU P. & MIHAI D. C. 2022. Alien flora from Brăila county – Romania. *Acta Horti Botanici Bucurestiensis*. **48**: 25-42.
- CAMEN-COMĂNESCU P., NEGREAN G., NAGODĂ E. & ANASTASIU P. 2016. *Symphytotrichum squamatum* – a new alien plant in Romania. *Acta Horti Botanici Bucurestiensis*. **43**: 79-84.
- CHYTRÝ M. 1993. *Chenopodium pumilio* R. Br., a new adventive species for Romania. *Linzer Biologische Beiträge*. **25**(1): 151-152.
- CIOCĂRLAN V. 2000; 2009. *Flora ilustrată a României. Pteridophyta et Spermatophyta* (ed. II, III). București: Edit. Ceres, 1138 pp.; 1141 pp.
- CIOCĂRLAN V. 2011. Vascular flora of the Danube Delta. *Analele Științifice ale Universității „Alexandru Ioan Cuza” Iași, Ser. II a. Biologie vegetală*. **57**(1): 41-64.
- CIOCĂRLAN V. & SIKE M. 2006. *Eriochloa villosa* (Thunb.) Kunth. (*Poaceae*) in the Romanian Flora. *Buletinul Grădinii Botanice Iași*. **13**: 105-108.
- CLEMENT V., DUNĂRESCU-IONESCU I. & CERGĂU L. 1959. *Republica Populară Română, harta politico-administrativă*. Anexa II, in *Monografia Geografică a R.P.R.* (edit. comm.), Vol I. *Geografia Fizică*. București: Edit. Acad. R.P.R.
- COLDEA GH. (ed.) 2012. *Les associations végétales de Roumanie, Tome 2. Les associations anthropogènes*. Cluj-Napoca: Presa Univ. Clujeană, 482 pp.
- COSTEA M. 1994. *Chenopodium pumilio* R. Br., o nouă specie adventivă în flora României. *Studii și Cercetări de Biologie, Ser. Biologie Vegetală*. **46**(2): 117-119.

- COSTEA M. 1996. The recording of some new adventive taxa for Romania in the harbor of Constanța. *Revue Roumaine de Biologie, Sér. Biologie végétale*. **41**(2): 91-96.
- CRISTEA V., GAFTA D. & PEDROTTI F. 2004. *Fitosociologie*. Cluj-Napoca: Edit. Presa Univ. Clujeană, 394 pp.
- DOROFTEI M., OPREA A., ȘTEFAN N. & SÂRBU I. 2011. Vascular wild flora of Danube Delta Biosphere Reserve. *Scientific Annals of the Danube Delta Institute*. **17**: 15-52.
- DRĂGULESCU C. 2010. *Cormoflora județului Sibiu*. Sibiu: Edit. Univ. "Lucian Blaga", 931 pp.
- FĂRCĂȘESCU A. M., ARSENE G. G. & NEACȘU A. G. 2007. *Eriochloa villosa* (Thunb.) Khunt (*Poaceae*) – a new species for the Banat flora. *Scientific Papers. University of Agricultural Sciences and Veterinary Medicine of the Banat, Faculty of Agriculture*. **39**: 483-584.
- FĂRCĂȘESCU A. M., ARSENE G. G. & NEACȘU A. G. 2008. *Eriochloa villosa* (Thunb.) Khunt – a new invasive weed in Romania. *Journal of Plant Diseases and Protection, Special Issue*. **21**: 329-330.
- HUȚANU M. 1999. Cormofite noi și rare în flora Moldovei. *Lucrări Științifice UAMV Iași, Ser. Agronomie (supl.)*. **42**: 99-102.
- KARÁCSONYI C. 1995. *Flora și vegetația județului Satu-Mare*. Satu Mare: Edit. Muz. Sătmărean, 196 pp.
- KARÁCSONYI C. 2011. *Flora și vegetația dealurilor Tășnadului și a colinelor marginale*. Arad: „Vasile Goldiș” University Press, 368 pp.
- KOMAROV V. L. & al. (chief eds). 1968-2004. *Flora of the USSR*, Vol. 1-31 (Translated from Russian: *Flora SSSR*, Vol. 1-31. Moscow-Leningrad: Akademiya Nauk SSSR, 1934-1964). Washington D.C.: Smithsonian Institution Libraries.
- KOVÁCS J. A. 2012. Adatok Székelyföld edényes flórájának és növényföldrajzának ismeretéhez (Kelet-Erdély, Románia) I. *Kanitzia*. **19**: 115-178.
- MEMEDEM D., ANASTASIU P., PREDĂ C., NEGREAN G. & COGĂLNICEANU D. 2016. Alien plant species turnover in Constanța harbor (Romania) in the last decade. *Acta Horti Botanici Bucurestiensis*. **43**: 5-18.
- NAGODĂ E. 2015. *Cercetări asupra plantelor alohtone din București și împrejurimi*. PhD thesis [in Romanian]. București: Universitatea București, 240 pp.
- NAGODĂ E., COMĂNESCU P. & ANASTASIU P. 2013. *Phemeranthus confertiflorus*: new alien species to Europe. *Journal of Plant Development*. **20**: 141-147.
- NAGODĂ E., COMĂNESCU P. & ANASTASIU P. 2014. Grădina Botanică „D. Brândză”, potențial centru de dispersie pentru plantele invazive? *Acta Horti Botanici Bucurestiensis*. **41**: 13-40.
- NEGREAN G. 2011; 2012. Addenda to “*Flora Romaniae*” volumes 1-12. Newly published plants, nomenclature, taxonomy, chorology and commentaries (Part 1; Part 2). *Kanitzia*. **18**: 89-194; **19**: 195-233.
- NEGREAN G. & CIORTAN I. 2014. Alien and potentially invasive plants from Geopark Plateau Mehedinți. *Journal of Horticulture, Forestry and Biotechnology*. **18**(1): 84-95.
- NEGREAN G. & CONSTANTIN N. 1999. Noi plante adventive în flora Bucureștiului. *Acta Horti Botanici Bucurestiensis*. **27**/1998/: 143-146.
- NEGREAN G., KARÁCSONYI C. & SZATMARI P. M. 2017. *Patrimoniul natural al Sălajului*. Vol. I., *Flora, micobionta și vegetația*. Satu Mare: Edit. Someșul, 1319 pp.
- NICULESCU M., CORNEANU M. & NUȚĂ SILVESTRU I. 2021. *Sicyos angulatus* and *Echinocystis lobata*, two invasive vascular plants on the Danube Valley, between the Baziaș and Măceșu de Sus (Romania). *Acta Horti Botanici Bucurestiensis*. **47**: 27-35.
- OPREA A. 2005. *Lista critică a plantelor vasculare din România*. Iași: Edit. Univ. „Alexandru Ioan Cuza”, 668 pp.
- OPREA A., BARINA Z. & SÎRBU C. 2012. *Euphorbia davidii* Subils (Euphorbiaceae) – a new alien species to the Romanian flora. *Contribuții Botanice*. **47**: 7-12.
- OPREA A., SÂRBU A. & PASCALE G. 2004. A new contribution to the knowledge of flora and vegetation along Danube River, between Zimnicea and Călărași towns (Romania). Note I. *Acta Horti Botanici Bucurestiensis*. **31**: 141-146.
- OPREA A., SÎRBU C., DOROFTEI M. & COVALIOV S. 2021. New contributions to the chorology of some alien plant species in Romania's flora. *Acta Horti Botanici Bucurestiensis*. **47**: 13-26.
- OPREA A., SÎRBU C., ELIĂȘ P. jun. & FERUS P. 2012. New data addition to the Romanian alien flora. *Journal of Plant Development*. **19**: 141-156.
- PONTICELLI M., LELA L., RUSSO D., FARAONE I., SINISGALLI C., MUSTAPHA M. B., ESPOSITO G., JANNET H. B., COSTANTINO V. & MILELLA L. 2022. *Dittrichia graveolens* (L.) Greuter, a rapidly spreading invasive plant: chemistry and bioactivity. *Molecules*. **27**: 895. <https://doi.org/10.3390/molecules27030895>
- PRODAN I. 1956. *Rosa* L. (pro parte). pp. 799-835. In.: SĂVULESCU T. (ed.), *Flora R. P. Române*. Vol. 4. București: Edit. Acad. R. P. Române.
- PYŠEK P., RICHARDSON D. M., REJMÁNEK M., WEBSTER G. L., WILLIAMSON M. & KIRSCHNER J. 2004. Alien plants in checklists and floras: towards better communication between taxonomists and ecologists. *Taxon*. **53**(1): 131-143. <https://doi.org/10.2307/4135498>

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- RĂDUȚOIU D. & STAN I. 2013. Preliminary data on alien flora from Oltenia – Romania. *Acta Horti Botanici Bucurestiensis*. **40**: 33-42.
- RICHARDSON D. M., PYŠEK P., REJMÁNEK M., BARBOUR M. G., PANETTA F. D. & WEST C. J. 2000. Naturalization and invasion of alien plants: concepts and definitions. *Diversity and Distribution*. **6**: 93-107.
- RĂVĂRUȚ M. & MITITELU D. 1960. Două specii noi în flora Republicii Populare Române. *Studii și Cercetări ale Academiei R. P. Române, Fil. Cluj, Sect. Biologie*. **11**(1): 7-9.
- ROMAN N. 1992. Contribuții la cunoașterea florei Rezervației Biosferei Delta Dunării. *Analele Științifice ale Institutului Delta Dunării*. **1**: 51-56.
- SÂRBU A., NEGREAN G., PASCALE G., SMARANDACHE D. & MIHAI C. 2007. The Nera mini-delta – botanical contributions. *Acta Horti Botanici Bucurestiensis*. **34**: 63-71.
- SÎRBU C., ANASTASIU P., URZICEANU M., CAMEN-COMĂNESCU P., SÎRBU I. M., POPA A. M., IOJA C., GAVRILIDIS A. A. & OPREA A. 2021. Invasive alien plant species in Romania of European Union concern. *Environmental & Socio Economic Studies*. **9**(4): 32-44.
- SÎRBU C., MIU I. V., GAVRILIDIS A. A., GRĂDINARU S. R., NICULAE I. M., PEDA C., OPREA A., URZICEANU M., CAMEN-COMĂNESCU P., NAGODĂ E., SÎRBU I. M., MEMEDEMİN D. & ANASTASIU P. 2022. Distribution and pathways of introduction of invasive alien plant species in Romania. *NeoBiota*. **75**: 1-21. <https://doi.org/10.3897/neobiota.75.84684>
- SÎRBU C. & OPREA A. 1998. *Grindelia squarrosa* (Pursh) Dunal en Roumanie. *Revue Roumaine de Biologie, Sér. Biologie végétale*. **43**(2): 91-93.
- SÎRBU C. & OPREA A. 2010. Contribution to the knowledge of the alien flora from Romania: *Rudbeckia triloba* L. and *Senecio inaequidens* DC. (Asteraceae). *Notulae Botanicae Horti Agrobotanici Cluj-Napoca*. **38**(1): 33-36.
- SÎRBU C. & OPREA A. 2011. *Plante adventive în flora României*. Iași: Edit. „Ion Ionescu de la Brad”, 733 pp.
- SÎRBU C. & OPREA A. 2017. Notes on the genus *Oenothera*, section *Oenothera*, subsection *Oenothera* in Romania. *Acta Horti Botanici Bucurestiensis*. **44**: 33-56.
- SÎRBU C., OPREA A., SAMUIL C. & TĂNASE C. 2012. Neophyte invasion in Moldavia (Eastern Romania) in different habitat types. *Folia Geobotanica*. **47**: 215-229.
- SÎRBU C. & ȘUȘNIA (TONE) I. 2018. New records in the alien flora of Romania: *Euphorbia serpens* and *E. glyptosperma*. *Journal of Plant Development*. **25**: 135-144.
- SÎRBU I. M., ANASTASIU P., URZICEANU M., NAGODĂ E. & ȘESAN T. E. 2021. Noi date de distribuție a speciei *Paspalum distichum* în lungul sectorului românesc al Dunării: 31. In: ANASTASIU P. & CAMEN-COMĂNESCU P. (eds.). 2021. *Sesiunea de Comunicări științifice „D. Brandza”*, ediția a 27-a. Program, rezumate. București: Edit. Univ. din București.
- SOARE L. C. 2021. Noi localități pentru specia adventivă *Conyza sumatrensis* Retz., în județul Argeș: 51-52. In: ANASTASIU P. & CAMEN-COMĂNESCU P. (eds.). 2021. *Sesiunea de Comunicări științifice „D. Brandza”*, ediția a 27-a. Program, rezumate. București: Edit. Univ. din București.
- SZATMARI P. M. 2016. Monitoring invasive woolly cupgrass *Eriochloa villosa* in the Pir village area, Satu Mare County, Romania, and its impact on segetal flora. *Acta Horti Botanici Bucurestiensis*. **43**: 41-55.
- SZATMARI P. M. & HURDU B. I. 2020. *Dittrichia graveolens* (Asteraceae) – a new alien plant species for Romania. *Contribuții Botanice*. **55**: 49-58. <https://doi.org/10.24193/Contrib.Bot.55.3>
- ȘUȘNIA I. 2022. *Cercetări asupra invaziei plantelor adventive în lunca Siretului inferior*. PhD thesis [in Romanian]. Iași: „Ion Ionescu de la Brad” University of Life Sciences, 199 pp.
- ȘUȘNIA I., OPREA A., SAMUIL C., HUȚANU M. & SÎRBU C. 2020. The current spread of some invasive neophytes along the lower course of the Siret river. *Lucrări Științifice ale USAMV Iași, Ser. Agronomie*. **63**(1): 219-223.
- TRUȚĂ E., VOCHIȚA G., OPREA A. & SÎRBU C. 2012. Karyotype traits in *Grindelia squarrosa* (Pursh) Dunal (Asteraceae), an invasive plant in Romania. *Silvae Genetica*. **61**(4-5): 179-186. <https://doi.org/10.1515/sg-2012-0023>
- TUTIN T. G., BURGESS N. A., CHATER A. O., EDMONSON J. R., HEYWOOD V. H., MOORE D. M., VALENTINE D. H., WALTERS S. M. & WEBB D. A. (eds.) 1993. *Flora Europaea, vol. 1, 2nd ed.* (1st paperback printing 2010), Cambridge: Cambridge University Press, 581 pp.
- TUTIN T. G., HEYWOOD V. H., BURGESS N. A., MOORE D. M., VALENTINE D. H., WALTERS S. M. & WEBB D. A. (eds.) 1968, 1972, 1976, 1980. *Flora Europaea, vol. 2-5, 1st ed.* (1st paperback printing 2010), Cambridge: Cambridge University Press, 469 pp., 385 pp., 517 pp., 463 pp.
- *** *Adequate management of invasive species in Romania in accordance with EU Regulation* (Code SMIS 120008). <https://invazive.ccmes.ro/>

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