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NEW TAXA AND CHOROLOGICAL DATA FOR DANUBE DELTA FLORA

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Abstract: New chorological data about 20 vascular plant taxa are reported in the present work. Among them, eleven are alien, introduced accidentally. *Monochoria korsakowii*, *Panicum dichotomiflorum*, *Carthamus tinctorius* and *Cyperus difformis* are for first time reported for Danube Delta (Romanian part). Other six alien species were recorded as escaped from cultivation. Some of them are already known as invasive in other regions of the country or in Europe (*Rudbeckia laciniata*, *Solidago gigantea*, *Ascelpias syriaca*). New data about the chorology of three native species is given as well (*Aegilops cylindrica*, *Halocnemum strobilaceum* and *Humulus lupulus*).
Keywords: chorological data, alien species, Danube Delta

Introduction

Flora of the Danube Delta, one of the most important wetlands of Europe, includes 955 of vascular plant species, amount that could increase through new plant introductions by man, or could decrease through the deep changes that affect some habitats (Ciocârlan 1994).

The wetlands are particularly susceptible to invasion due to the high disturbance regimes (Pino et al. 2006) and the easy dispersal of propagules by water (Pyšek & Prach 1993). Thus, the presence of new alien plants in this area is possible.

During the field studies in the period 2009-2011, new data on the occurrence of some vascular plant species have been obtained. Many of them are alien species, but some are native species that have not been reported until now from the Danube Delta.

The nomenclature is according to The Plant List (2010). Beside the new chorological data, the geographic coordinates (WGS 1984 system) are given, as well as a discussion about the distribution in Romania.

Results and discussion

Accidental introduction:

Monochoria korsakowii Regel & Maack

Danube Delta Biosphere Reserve: Chilia Veche, N45º25'59.6", E29º18'29.2", alluvial soil on the right bank of Chilia Veche channel, 06.08.2011. This is the first report of this species for the Danube Delta.

According to Oprea (2005) *Monochoria korsakowii*, with native distribution in temperate East Asia, was reported from south of Romania (Oltenița, Călărași County) and from Dobrogea (Smârdan-Măcin, Tulcea County and Hârşova, Constanţa County).

Panicum dichotomiflorum Michx.

Danube Delta Biosphere Reserve: Murighiol, N45º04'13.5", E29º07'45.4", the right bank of Sf. Gheorghe channel, 29.09.2011. This is the first report of the species in Danube Delta.

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This North American species is considered naturalised in many regions of the country (Anastasiu & Negrean 2009).

Carthamus tinctorius L.

Danube Delta Biosphere Reserve: Chilia Veche, Câmpul Chiliei, cultivated fields, 04.08.2011. It is probably a case of accidental introduction with cereals. The plant is not cultivated as ornamental or medicinal in the researched area. For Romania, it is mentioned as subspontaneous, but without localities (Nyárády 1964).

Cyperus difformis L.

Danube Delta Biosphere Reserve: Chilia Veche, N45º26'11.8", E29º18'42.7", alluvial soil on the right bank of Chilia Veche channel, 06.08.2011.

For the Danube Delta there are reports only from Chilia Delta (Ukraine) (Dubyna et al. 2003). In Romania, it was mentioned from almost all the regions of the country (Oprea 2005), except the Danube Delta.

Ambrosia artemisiifolia L.

Danube Delta Biosphere Reserve: Sacalin Island, N44º50'13.1", E29º35'47.7", salt meadows with *Juncus maritimus*, 07.09.2011; Chilia Veche, Câmpul Chiliei, N45º23'40.7", E29º18'05.7", ruderal places, 04.08.2011; Dunavăţul de Jos, N44º59'14.9", E29º13'11.5", ruderal places, 29.09.2011.

This species, with native distribution in North America, is widespread in Romania. In the Danube Delta it was mentioned from Sulina, in ruderal places (Anastasiu 2010).

Cyperus odoratus L.

Danube Delta Biosphere Reserve: Chilia Veche, N45º26'24.4", E29º18'56.8", alluvial soil on the right bank of Chilia Veche channel, 06.08.2011; Tătaru Forest, N45º22'40.0", E29º06'57.7", alluvial soil on the right bank of Chilia Veche channel, 05.08.2011; Murighiol, N45º04'20.8", E29º07'16.0", the right bank of Sf. Gheorghe channel, 29.09.2011; Murighiol Lake, N45º02'31.3", E29º09'49.7", wet sand, 27.09.2011.

Roman (1992) reported *Cyperus odoratus* from Sulina, and then Ciocârlan (1994) added two new localities: Sf. Gheorghe and Letea.

Dysphania pumilio (R.Br.) Mosyakin & Clemants [syn. Chenopodium pumilio R.Br.]

Danube Delta Biosphere Reserve: Caraorman, N45º05'41.2", E29º23'42.8", sands, 22.08.2009.

It is a rare species in the Danube Delta, reported before from Partizani (Ciocârlan 1994, Oprea 2005). *Dysphania pumilio* is native for Australia.

Eclipta prostrata (L.) L.

Danube Delta Biosphere Reserve: Mahmudia, alluvial soil on the right bank of Sf. Gheorghe Channel, 27.09.2011; Murighiol, N45º04'20.8", E29º07'16.0", the right bank of Sf. Gheorghe channel, 29.09.2011; Murighiol Lake, N45º02'31.3",

E29º09'49.7", wet places, 27.09.2011; Dunavăţul de Jos, N44º59'14.9", E29º13'11.5", ruderal places, 29.09.2011.

Eclipta prostrata is an American species reported from Romania in 1998 (Dihoru & Sârbu 1998) from Brăila County. Afterwards it was reported from Constanţa, Galaţi and Tulcea Counties (Oprea 2005), as well as from the Danube Delta (Tătaru channel, Chilia Veche, Ostrov Babina, Ostrov Cernovca, Ostrov Tătaru, Periprava, Sacalin Island, Sf. Gheorghe, Sulina) (Oprea 2005, Anastasiu 2010).

Iva xanthiifolia Nutt.

Danube Delta Biosphere Reserve: Chilia Veche, N45º24'47.5", E29º16'49.1", ruderal places, 05.08.2011; Sulina, N45º09'29.0", E29º37'55.1", ruderal places, 12.07.2011; Mahmudia, N45º05'18.5", E29º05'37.6", ruderal places near the quay, 27.09.2011; Murighiol, ruderal places on the lake bank, 27.09.2011; Dunavăţul de Jos, N44º59'18.75", E29º13'10.6", ruderal places, 28.09.2011; Colina, N45º01'21.5", E29º02'03.4", ruderal places, 27.09.2011.

Iva xanthiifolia is an invasive species spread over almost all the country: Maramureş, Transilvania, Moldova and Dobrogea. Previously it was reported from the Danube Delta only from Crapina, canal Lata (Oprea 2005) and Sf. Gheorghe (Anastasiu 2010).

Lindernia dubia (L.) Pennell

Danube Delta Biosphere Reserve: Tătaru Forest, N45º22'35.5", E29º06'50.3", alluvial soil on right bank of Chilia Veche channel, 05.08.2011.

Ciocârlan (1994) reported this species as very rare on alluvial soil to the northern part of Sacalin Island, towards Sf. Gheorghe village. Later, *Lindernia dubia*, native in North America, is reported from Chilia Veche, Sf. Gheorghe and Periprava (Oprea 2005).

Oxalis corniculata L.

Danube Delta Biosphere Reserve: Chilia Veche, N45º24'36.1", E29º17'02.1", in ruderal places, 06.08.2011; Sf. Gheorghe, in ruderal places, 06.09.2011.

First report of *Oxalis corniculata* from Danube Delta (Sulina) belongs to Dihoru & Negrean (1976). Afterwards, the species was recorded to Isaccea and Tulcea (Oprea 2005).

Deliberate introduction as ornamentals, escaped from cultivation:

Asclepias syriaca L.

Danube Delta Biosphere Reserve: Sulina, N45º09'32.6", E29º37'10.8", on dam, 12.07.2011.

Native in North America, *Asclepias syriaca* is naturalized in many regions of the country (Banat, Muntenia, Moldova and Crişana) (Anastasiu & Negrean 2009).

Datura innoxia Mill.

Danube Delta Biosphere Reserve: Chilia Veche, waste places, 08.10.2009; Periprava, ruderal places, 09.10.2009; C.A. Rosetti, escaped from cemetery, 09.10.2009; Sulina, ruderal places, 20.08.2009; Caraorman, ruderal places and salty sands, 22.08.2009; Sf. Gheorghe, ruderal places, 26.09.2009.

This American species was reported as escaped from Iaşi (Viţalariu et al. 1992 cited by Oprea 2005) and from Constanţa (Anastasiu et al. 2009).

Hemerocallis fulva (L.) L.

Danube Delta Biosphere Reserve: Sulina, N45º09'33.6", E29º36'19.2", subspontaneous on dam, 12.07.2011.

It is reported as cultivated and subspontaneous from different regions of the country (Oprea 2005).

Rudbeckia laciniata L.

Danube Delta Biosphere Reserve: Sulina, N45º09'26.3", E29º38'08.5", subspontaneous on dam, 12.07.2011.

Iniatially cultivated in gardens as ornamental, it is nowadays widespread in many regions of the country (Muntenia, Moldavia, Transilvania) (Anastasiu & Negrean 2009).

Solidago gigantea Aiton

Danube Delta Biosphere Reserve: Sulina, ruderal places, 17.08.2009. This species is often cultivated as ornamental in gardens and cemeteries from the localities of the Danube Delta.

It is a frequent alien species in abandoned fields, especially from the central part of Romania, and it is considered invasive (Anastasiu & Negrean 2009).

Tanacetum balsamita L.

Danube Delta Biosphere Reserve: Periprava, N45º24'06.6", E29º32'38.6", ruderal places, 05.08.2011. We suppose tha plant is escaped from the garden, even we did not see it cultivated.

Its native distribution is in the South and West of Asia. *Tanacetum balsamita* is widely cultivated as ornamental and locally naturalized (Heywood 1976). From Romania it was not previously reported as escaped.

Native species, not reported before from the Danube Delta Biosphere Reserve:

Aegilops cylindrica Host

Danube Delta Biosphere Reserve: Chilia Veche – Câmpul Chiliei, ruderal places, 04.08.2011.

This species is widespread in Romania, except the Danube Delta (Oprea 2005). Roman (1992) reported *Aegilops crassa* from Letea, but our field research does not confirm its presence.

Halocnemum strobilaceum (Pall.) M.Bieb.

Danube Delta Biosphere Reserve: Plopu, N45º01'15.8", E29º06'35.4", salt-marshes around Beibuceag Lake, 27.09.2011.

It is a Ponto-Mediterranean species, rare in Romania (Oltean et al. 1994), reported from Constanţa (Tuzla, Istria, Sinoe, Grindul Lupilor, Grindul Saele) and Tulcea Counties (Jurilovca on Smeica Island) (Oprea 2005).

Humulus lupulus L.

Danube Delta Biosphere Reserve: Sacalin Island, on *Hippophae rhamnoides* and *Elaeagnus angustifolia* at the northern end of Island, 07.09.2011.

Humulus lupulus is widespread in Europe as well as in Romania, but was not previously reported from the Romanian part of the Danube Delta.

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TAXONI ŞI DATE COROLOGICE NOI PENTRU FLORA DELTEI DUNĂRII

Rezumat: Lucrarea prezintă date corologice noi pentru 20 taxoni adventivi şi nativi. Dintre aceştia, 11 sunt adventivi, pătrunşi accidental. *Monochoria korsakowii*, *Panicum dichotomiflorum*, *Carthamus tinctorius* şi *Cyperus difformis* sunt pentru prima dată menţionaţi din Delta Dunării (partea românească). Alte şase specii sunt adventive, cultivate ca ornamentale, scăpate din cultură. Unele dintre ele sunt deja cunoscute ca invazive în diferite regiuni ale ţării sau în Europa (*Rudbeckia laciniata*, *Solidago gigantea*, *Ascelpias syriaca*). Sunt prezentate, de asemenea, date coroogice noi pentru trei specii native (*Aegilops cylindrica*, *Halocnemum strobilaceum* şi *Humulus lupulus*).

Cuvinte cheie: corologie, specii alohtone, Delta Dunării