NAT. CROAT. | VOL. 17 | No 2 | 91–112 | ZAGREB | June 30, 2008

original scientific paper / izvorni znanstveni rad

ADDITION TO THE NEOPHYTIC FLORA OF THE CETINA RIVER REGION

MARIJA PANDŽA[1] & DAMIRA TAFRA[2]

[1]Primary School, Murterski školji, Put škole 8, HR-22243 Murter, Croatia
(marija.pandza@si.t-com.hr)

[2]Ravnice 20, HR-21310 Omiš, Croatia

Pandža, M. & Tafra, D.: Addition to the neophytic flora of the Cetina River region (Dalmatia, Croatia). Nat. Croat., Vol. 17, No. 2., 91–112, 2008, Zagreb.

This work presents habitats of 22 neophytes within the Cetina River area. The neophytes – *Acer negundo* L., *Amaranthus albus* L., *A. blitoides* S. Watson, *Ambrosia artemisiifolia* L., *Artemisia verlotiorum* Lamotte, *Conyza bonariensis* (L.) Cronq., *C. canadensis* (L.) Cronq., *Eleusine indica* (L.) Gaertner, *Euphorbia maculata* L., *E. prostrata* Aiton, *Galinsoga parviflora* Cav., *Paspalum paspalodes* (Michx.) Scribn., *Tagetes minuta* L., *Xanthium spinosum* L., *X. strumarium* L. subsp. *italicum* (Moretti) D. Löve are mentioned for the first time for the researched area.

Data are given for new findings of neophytes previously recorded in the area investigated – *Amorpha fruticosa* L., *Aster squamatum* (Sprengel) Hieron., *Bidens subalternans* DC., *Conyza sumatrensis* (Retz.) E. Walker, *Datura inoxia* Mill., *Erigeron annus* (L.) Pers., *Phytolacca americana* L.

Key words: neophytic flora, new localities, the Cetina River, Croatia

Pandža, M. & Tafra, D.: Prilog neofitskoj flori područja rijeke Cetine (Dalmacija, Hrvatska). Nat. Croat., Vol. 17, No. 2., 91–112, 2008, Zagreb.

U radu se navode nalazišta 22 neofita uz rijeku Cetinu. Neofiti – *Acer negundo* L., *Amaranthus albus* L., *A. blitoides* S. Watson, *Ambrosia artemisiifolia* L., *Artemisia verlotiorum* Lamotte, *Conyza bonariensis* (L.) Cronq., *C. canadensis* (L.) Cronq., *Eleusine indica* (L.) Gaertner, *Euphorbia maculata* L., *E. prostrata* Aiton, *Galinsoga parviflora* Cav., *Paspalum paspalodes* (Michx.) Scribn., *Tagetes minuta* L., *Xanthium spinosum* L., *X. strumarium* L. subsp. *italicum* (Moretti) D. Löve prvi put se navode za istraživano područje.

Za ranije zabilježene neofite – *Amorpha fruticosa* L., *Aster squamatum* (Sprengel) Hieron., *Bidens subalternans* DC., *Conyza sumatrensis* (Retz.) E. Walker, *Datura inoxia* Mill., *Erigeron annus* (L.) Pers., *Phytolacca americana* L. navode se nova nalazišta na istraživanom području.

Ključne riječi: neofitska flora, nova nalazišta, rijeka Cetina, Hrvatska

INTRODUCTION

Our intention was to make an analysis of species transferred by human activity (anthropochoria) from other phytogeographical regions and gradually established in anthropogenous, mainly weed and ruderal, vegetation. Development of anthropogenous flora is highly related to human activity. In the past, this region was exposed to a high level of emigration, resulting in abundance of neophyte species from both Americas (*americanoneophytes*; see TRINAJSTIĆ 1975, 1977).

Recently, neophytes have been intensively spreading along the coastal area of Croatia (SMITAL *et al*., 1998; ILIJANIĆ *et al.*, 1991; TRINAJSTIĆ *et al.*, 1993; PANDŽA & STANČIĆ 1999; MILOVIĆ, 2001, 2004, MILOVIĆ & RANDIĆ, 2001; PANDŽA *et al.*, 2001; ŠILIĆ & ŠOLIĆ, 1999, 2002).

METHODS

In the following review, taxa are stated in alphabetical order of genera. The nomenclature is in accordance with TUTIN *et al.* (1964–1980). Every finding is accompanied by a locality, a date and the habitat of the species. According to Gauss-Krüger the coordinates of the locality are presented (ex. 5637040E – 4812764N). Coordinates were determined by GPS (Garmin VISTA HCx). Both authors confirmed findings of all the neophytes. All locations are between Omiš and Trilj (Central Dalmatia).

RESULTS

Acer negundo L. (*Aceraceae*)

A species of North American origin (WALTERS, 1968: 239). Recorded for Šibenik (MILOVIĆ, 2002) and Janjina on the Pelješac peninsula (KOVAČIĆ *et al*., 2000). In the town of Omiš it has been subspontaneously spreading and growing in a large number of locations (56 37040 – 4812764; 5636946 – 4812688; 5637043 – 4812181; 5636799 – 4812611; May 13th, 2006). In Kaštil Slanica it grows in the vegetation near water; 5640792 – 4812426; Oct 28th, 2006. It has also been spotted on a deserted field and along the Ruda stream, tributary of the Cetina River; Sep 25th, 2005.

Amaranthus albus L. (*Amaranthaceae*)

A species originating from America (*americanoneotophytes*). Recorded for the island of Svetac (ZI. PAVLETIĆ, 1978), the Palagruža islands (ZI. PAVLETIĆ, 1978a), Milna on the island of Brač (ŠTAMOL & MARKOVIĆ, 1985), the island of Hvar (TRINAJSTIĆ, 1993), the Krka River (MARKOVIĆ *et al*., 1990, 1993), Lučica on the island of Kornat (PANDŽA & STANČIĆ, 1995), the island of Zlarin (PANDŽA, 1998), Betina on the island of Murter (PANDŽA, 1998b), Velike Vruje and Suha Punta on the island of Kornat, Njivice (Šibenik), Karlobag, Sv Filip i Jakov, Srima, Zaton, Raslina, Brodarica, the island of Žirje,

Primošten, Rogoznica, Trogir (PANDŽA *et al.*, 2001), Šibenik and its vicinity (MILOVIĆ, 2002), Makarska (ŠILIĆ & ŠOLIĆ, 2002), the island of St. Andrija (JASPRICA *et al.*, 2006).

New localities:

– in ruderal vegetation on building material trash heaps; 5640131– 4812476; Oct 28th, 2006 and in a vegetable garden; 5645986 – 4811421; Oct 28th, 2006.

It grows individually in the above locations and has not yet been considered a dangerous weed.

Amaranthus blitoides S. Watson (*Amaranthaceae*)

A species originating from North America (AKEROYD, 1993: 132). Recorded for the following locations: the island of Murter (PANDŽA, 1998b) and the Šibenik area – Solaris, Bilice, Dubrava, Perković (MILOVIĆ, 2002).

The new locality is along the Cetina River in ruderal vegetation on building material trash heaps; 5640131 – 4812476; Oct 28th, 2006.

Ambrosia artemisiifolia L. (*Asteraceae*)

A neophyte originating from North America (HANSEN, 1976: 142), (Fig. 1). It is quite rare in the coastal area and not considered a dangerous weed. Spotted in Milna on the island of Brač (ŠTAMOL & MARKOVIĆ, 1985), near the Krka River (MARKOVIĆ *et al.*, 1993), Makarska (ŠILIĆ & ŠOLIĆ, 1999). As for the Šibenik area, it has been found in Zaton, Vodice, Murter, Tisno, Solaris, Njivice (Šibenik), Zablaće, Perković, Siverić (PANDŽA *et al.*, 2001; MILOVIĆ, 2001; 2002).

The new locality is along the Cetina River, in ruderal vegetation around the bridge in Trilj; 5639750 – 4831390; Oct 29th, 2006.

Fig. 1. *Ambrosia artemisiifolia* L.

Amorpha fruticosa L. (*Fabaceae*)

This species originates from Central and North America (BALL, 1968: 127) (Fig. 2). Recorded by S. HEĆIMOVIĆ (1982) for Lokrum, by REGULA-BEVILACQUA and LJ. ILIJANIĆ (1984) for Mljet, by TRINAJSTIĆ and ZI. PAVLETIĆ (1988) for Krapje Đol and by ŠILIĆ and ŠOLIĆ (2002) for the area around Radmanove mlinice.

The new localities:

– Ivanova Blato along the Cetina River; Sep 17th, 2005

– Omiš – ruderal vegetation in a populated area; 5637351 – 4813133; 5637377 – 4812945; May 13th, 2006; 5637975 – 4812397; May 14th, 2006

– Omiš – at the mouth of the Cetina River; 5636899 – 4812310; May 14th, 2006

– Omiš – along the road above the Plana tunnel; 5637518 – 4812893; May 14th, 2006

– Radmanove mlinice – in ruderal vegetation; 5642359 – 4811305; Sep 25th, 2005

– Omiš – along the road; 5637528 – 4812824; Oct 28th, 2006

– Kučići – along the road; 5637454 – 4813618; Oct 28th, 2006

Fig. 2. *Amorpha fruticosa* L.

– Omiš – by the yard of the Omial factory (Omiš); 5637448 – 4813615; Apr 30th 2007

– ruderal vegetation near the Cetina River; 5637819 – 4813216; Oct 28th, 2006

– shady slopes of the Omiška Dinara mountain; 5639325 – 4812902; Oct 28th, 2006

– ruderal vegetation on the building waste materials; 5640131 – 4812476; Oct 28th, 2006

– Kaštil Slanica – in ruderal vegetation along the road; 5640792 – 4812426; Oct 28th, 2006

– in ruderal vegetation along the road; 5650565 – 4810984; Oct 28th, 2006

– Blato upon Cetina River; 5649678 – 4816720; Oct 29th, 2006

– Čikotina lađa; 5641565 – 4822342; Oct 29th, 2006

It has spread over a broad area from Radmanove mlinice to the mouth of the Cetina River and being an allergen, presents a significant threat. Expansion of this species should be monitored with due care.

Artemisia verlotiorum **Lamotte (*Asteraceae*)**

A neophyte originating from southwest China (TUTIN, 1976:180). Recorded for Poreč in Istria by MELZER (1969) and continental Croatia on the banks of the Sava River by MARKOVIĆ (1970). The first Mediterranean habitat of this species was found in the city of Split in ruderal vegetation (ILIJANIĆ *et al.*, 1991). Numerous locations have been noted by SMITAL *et al.* (1998). In central Croatia it is distributed in Zagreb and its surroundings, in the northern coastal area (Poreč, Rovinj, the village of Vranja, Opatija, Ičići, Matulji, Rijeka, Bakar, Crikvenica, Bribir and Novi Vinodolski; in central parts of the coast it is in Bilice near Šibenika, Split, Kaštel Sućurac, Dicmo, Podaca and Rogotin near Ploče). Also recorded for Zadar and numerous locations around Šibenik (PANDŽA *et al.*, 2001; MILOVIĆ, 2001, 2002).

The new localities:

– Omiš – ruderal vegetation in the populated area; 5637041– 4812131; May 14th, 2006

– Omiš – in a flower garden in front of the Red Cross building; 5637043 – 4812181; May 14th, 2006

– Ivanovo Blato upon Cetina – ruderal vegetation near the river; Sep 17th, 2005

– Trilj – ruderal vegetation in a populated area; 5639779 – 4831369; Sep 25th, 2005

– along the Ruda stream, Cetina tributary; Sep 25th, 2005

– Omiš – in ruderal vegetation around the Galeb factory; 5637110 – 4812173; Oct 28th, 2006

– in ruderal vegetation near Cetina River; 5637819 – 4813216; Oct 28th, 2006

– in ruderal vegetation along the road; 5650591 – 4810874; Oct 28th, 2006

– in ruderal vegetation along the road near the Cetina River; 5650565 – 4810984; Oct 28th, 2006

– Blato upon Cetina; 5649678 – 4816720; Oct 29th, 2006

– Trilj – ruderal vegetation around the bridge over the Cetina; 5639750 – 4831390; Oct 29th, 2006

– Trilj – by the Cetina River; 5639528 – 4831250; Oct 29th, 2006

– Trilj – in a deserted garden; 5640053 – 4831825; Oct 29th, 2006

– Trilj – in ruderal vegetation along the road; 5640150 – 4832071; Oct 29th, 2006

Aster squamatus (Sprengel) Hieron. (*Asteraceae*)

A species of Central and South American origins (YEO, 1976:115). First found in Croatia in the Neretva valley near Ploče in 1970 and in Gradac by Melzer in 1971 (see TRINAJSTIĆ *et al*., 1993). Recorded for the island of Mljet (REGULA-BEVILACQUA & JURKOVIĆ-BEVILAQUA, 1980; REGULA-BEVILACQUA & ILIJANIĆ, 1984), along the Krka River (MARKOVIĆ *et al*., 1993), Makarska (TRINAJSTIĆ *et al*., 1993), Tarac on the island of Kornat (TRINAJSTIĆ, 1996), in the area of Malostonski Bay (JASPRICA & KOVAČIĆ, 1997), on the island of Zlarin (PANDŽA, 1998). On a large number of locations along the coastline and on the islands from Zadar to Dubrovnik (PANDŽA *et al*., 2001; MILOVIĆ 2001, 2002). Also recorded for Omiš in ruderal vegetation near the sea on October 17th, 1999 (PANŽA *et al*., 2001.)

The new localities:

– Omiš – in ruderal vegetation around the bus station; 5636940 – 4812576; Sep 17th, 2005

– in ruderal vegetation along the canal; 5638262 – 4814811; Sep 25th, 2005

– Omiš – in a high-school park; 5637368 – 4812398; Oct 28th, 2006

– Kučići – ruderal vegetation around the bridge; 5637454 – 4813618; Oct 28th, 2006

– in ruderal vegetation along the road near the Cetina River; 5637819 – 4813216; Oct 28th, 2006

– in ruderal vegetation on the building waste materials along the road; 5640131 – 4812476; Oct 28th, 2006

– in a yard; 5647291 – 4814397; Oct 29th, 2006

It has spread over anthropogenous habitats in ruderal vegetation in populated areas and by the roads.

Bidens subalternans DC. (*Asteraceae*)

A neophyte originating from warm climates of South America (TUTIN, 1976: 140). Due to its thermophylic character its spread is limited to warm parts of Europe. It has spread by epizoochoria. It was found for the first time in Croatia in Trsat (Rijeka) and Opatija as *Bidens bipinnata* L. (TRINAJSTIĆ, 1975a). Also recorded for a number of locations as such (TRINAJSTIĆ, 1978; 1979a; 1987; 1993a; ILIJANIĆ & HEĆIMOVIĆ, 1983; ILIJANIĆ *et al*., 1991; MARKOVIĆ *et al*., 1990, 1993). The *Bidens subalternans* species was recorded in Senj and Bale (near Pula) for the first time in Croatian flora by MELZER

(1987). All the published materials referring to *Bidens bipinnata* species were revised by TRINAJSTIĆ (1993a). It was concluded that all the recorded findings belong to the *Bidens subalternans* species. Also recorded in the vicinity of Makarska and near Omiš (TRINAJSTIĆ *et al.*, 1993; PANDŽA *et al.*, 2001) and on many other locations along the coastline and on the islands (PANDŽA & ZI. PAVLETIĆ, 1996; PANDŽA, 1998; 1998a, 1998b, 2002, 2003; PANDŽA *et al.*, 2001; MILOVIĆ 2001; 2002).

The new localities:

– Omiš – in a flower garden in front of the Red Cross building; 5637043 – 4812181; May 14th, 2006

– Radmanove mlinice; in ruderal vegetation; 5642359 – 4811305; Sep 25th, 2005

– on a deserted field near the Ruda stream; Sep 25th, 2005

– Omiš – in ruderal vegetation above the Stjepan Radić square; Oct 28th, 2006

– Omiš – on the town beach; Oct 28th, 2006

– along the road by the Galeb factory (Omiš); 5637110 – 4812173; Oct 28th, 2006

– by the yard of the Omial factory (Omiš); 5637448 – 4813615; Oct 28th, 2006

– along the road; 5637528 – 4812824; Oct 28th, 2006

– ruderal vegetation on building waste materials; 5640131 – 4812476; Oct 28th, 2006

– on a meadow by the Cetina River; 5642974 – 4811699; Oct 28th, 2006

– in ruderal vegetation along the road; 5644527 – 4811251; Oct 28th, 2006

– along the road; 5645964 – 4811517; Oct 28th, 2006

– in ruderal vegetation along the road; 5648156 – 4810983; 5650591 – 4810874; 5651042 – 4811221; 5651458 – 4811287; Oct 28th, 2006

– Kostanje – on building waste materials along the road; 5649095 – 4812203; Oct 28th, 2006

– in ruderal vegetation along the road; 5637064 – 4814092; 5638262 – 4814811; Oct 29th, 2006

– Gata – in a deserted orchard; 5639559 – 4814593; Oct 29th, 2006

– Čišla – in a deserted garden; 5641151 – 4814396; Oct 29th, 2006

– Ostrvica – in ruderal vegetation along the road; 5642238 – 4813972; Oct 29th, 2006

– along the road; 5644220 – 4813517; Oct 29th, 2006

– Blato upon Cetina – on cultivated soil; 5649254 – 4817051; Oct 29th, 2006

– Trnbusi – along the road; 5644561 – 4818447; Oct 29th, 2006

– on the building waste materials along the road; 5647421 – 4817208; 5648898 – 4814819; Oct 29th, 2006

– Kostanje – in ruderal vegetation along the road; 5648829 – 4813131; Oct 29th, 2006

– Podgrađe – in ruderal vegetation; 5651025 – 4811891; Oct 29th, 2006.

Conyza bonariensis (L.) Cronq (*Asteraceae*)

A species originating from tropical parts of America (MARTINČIĆ *et al.*, 1999). Croatian locations from the literature as well as new habitats from his researches are recorded by MILOVIĆ (2004).

The new localities:

– Kučići – along the road; Sep 25th, 2005

– Omiš – in ruderal vegetation on the town beach; in ruderal vegetation along the road; 5648156 – 4810983; 5650591- 4810874; Oct 28th, 2006

– Kaštil Slanica- in ruderal vegetation along the road; 5640792 – 4812426; Oct 28th, 2006.

– on a meadow by the Cetina River; 5642974 – 48 11699; Oct 28th, 2006

– Trilj – ruderal vegetation in the populated area; 5639779 – 4831369; Oct 29th, 2006

– Trilj – on the walk along the Cetina River bank; 5639650 – 4831385; Oct 29th, 2006.

Conyza canadensis (L.) Cronq. (*Asteraceae*)

A neophyte originating from North America (CRONQUIST, 1976). All the herbarium samples of this species from the Croatian herbarium (ZA) and the Ivo and Marija Horvat herbarium (ZAHO) have been published by MILOVIĆ (2004). MILOVIĆ (2004) has produced a list of Croatian locations recorded in the literature and new locations from his research work.

The new localities:

– Omiš – in a high-school park and in ruderal vegetation around the Galeb factory; 5637110 – 4812173; Oct 28th, 2006

– Podgrađe – in ruderal vegetation along the road; 5650207 – 4811968; Oct 29th, 2006

– Podgrađe – along the road; 5651025 – 4811891; Oct 29th, 2006

– Ostrvica – in ruderal vegetation along the road; 5642238 – 4813972; Oct 29th, 2006

– Svinišća – along the road; 5645086 – 4811314; Oct 28th, 2006

– in ruderal vegetation along the road near the Cetina River; 5650565 – 4810984; Oct 28th, 2006

– on building waste materials; 5651763 – 4811349; Oct 28th, 2006

– in a yard; 5647291 – 4814397; Oct 29th, 2006

– Trilj – ruderal vegetation around the bridge over the Cetina River; 5639750 – 4831390; Oct 29th, 2006

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

A neophyte originating from tropical America (PIGNATTI, 1982). Recently recorded by MILOVIĆ (2004) in a large number of locations along the east coast of the Adriatic Sea. Recorded in the above mentioned work for Omiš and Radmanove mlinice.

The new localities:

– Omiš – in ruderal vegetation along the road; 5636940 – 4812576; Sep 17th, 2005; in ruderal vegetation on the town beach; Oct 28th, 2006

– Dobra voda – along the road; Sep 25th, 2005

– Kučići – along the road and in cultivated fields; Sep 25th, 2005

– in ruderal vegetation along the road; 5637064 – 4814092; 5638262 – 4814811; Oct 29th, 2006

– Gata – in a deserted orchard; 5639559 – 4814593; Oct 29th, 2006

– Čišla – in a deserted garden; 5641151 – 4814396; Oct 29th, 2006

– Kaštil Slanica- in ruderal vegetation along the road; 5640792 – 4812426; Oct 28th, 2006

– ruderal vegetation near the Cetina River; 5637819 – 4813216; Oct 28th, 2006

– along the road; 5642125 – 4811887; Oct 28th, 2006

– on a meadow near the Cetina River; 5642974 – 4811699; Oct 28th, 2006

– in ruderal vegetation along the road; 5644922 – 4811294; 5644527 – 4811251; Oct 28th, 2006

– Svinišća – along the road; 5645086 – 4811314; Oct 28th, 2006

– in ruderal vegetation along the road; 5645986 – 4811421; 5645959 – 4811914; Oct 28th, 2006

– in ruderal vegetation along the road; 5651042 – 4811221; 5651458 – 4811287; Oct 28th, 2006

– Kostanje – on building waste materials along the road; 5649095 – 4812203; Oct 28th, 2006

– Blato upon Cetina; 5649678 – 4816720; 5649254 – 4817051; Oct 29th, 2006

– Trilj – ruderal vegetation in the populated area; 5639779 – 4831369; Oct 29th, 2006

– Trilj – on a lawn near the Cetina River; 5639706 – 4831339; Oct 29th, 2006

– Trilj – in ruderal vegetation along the road; 5640150 – 4832071; Oct 29th, 2006

– Čikotina lađa; 5641565 – 4822342; Oct 29th, 2006

Datura inoxia Mill. (*Solanaceae*)

Recorded for the first time in Croatian flora for Sućurađ on the island of Šipan (M. HEĆIMOVIĆ, 1981), and later on the islet of Bobara (S. HEĆIMOVIĆ, 1982), the islands of Brač (ŠTAMOL & MARKOVIĆ, 1985; ZI. PAVLETIĆ & TRINAJSTIĆ, 1990), Murter (FRANJIĆ, 1993; PANDŽA & ZI. PAVLETIĆ, 1996), Kornat (PANDŽA & STANČIĆ, 1995), Kaprije (FRANJIĆ & PANDŽA, 1996), ZLARIN (PANDŽA, 1998), Vis (FRANJIĆ & TRINAJSTIĆ, 1996) and for the continental parts of Croatia by FRANJIĆ (1993), FRANJIĆ & TRINAJSTIĆ (1996), HULINA (1998).

During the 1994–2000 period, it was found in a number of locations along the east Adriatic coast (PANDŽA & STANČIĆ, 1999; PANDŽA *et al*., 2001; MILOVIĆ, 2002). In August 1999, it was found in ruderal vegetation of the town of Omiš (PANDŽA *et al*., 2001).

The new locality is in Kostanje – in a flower garden and on a trash heap; 5648829 – 48 13131; Sep 17th, 2005.

It has spread over yards, flower gardens, gardens and ruderal surfaces – *ergasiophygophyte* (TRINAJSTIĆ, 1975) (Fig. 3).

Eleusine indica (L.) Gaertn. (*Poaceae*)

This adventive species originates from southwest Asia and is widespread in the warm climates of the world (VREŠ, 1996). First recordings in the Croatian flora were made in autumn 1955 in Kaldanija near Umag (HODAK, 1960), in ruderal vegetation. Later it was found in the continental region (Zagreb and its vicinity, Dugo selo, Lipik, Vukovar, Baranja) and along the coastline (Rijeka, Poreč, Sukošane, Šibenik, Rogoznica, Trogir, Kaštel Gomilica, Split, Makarska, delta of the Neretva, Dubrovnik), (MARKOVIĆ & HULINA, 1970; TOPIĆ & ŠEGULJA, 1978; IVKOVIĆ, 1982; TOPIĆ & KUSULJA, 1987, 1989; LOVRIĆ & RAC, 1987; DUBRAVEC *et al*., 1989; HULINA, 1989; ILIJANIĆ, 1989; JOGAN, 1990; ILIJANIĆ *et al*., 1991; VREŠ 1996; ČARNI & JOGAN, 1998; ŠILIĆ & ŠOLIĆ, 1999; MILOVIĆ, 2001, 2002; PANDŽA *et al*., 2001).

A new locality is in Omiš, in a high-school yard in ruderal vegetation on a trodden surface; 5637368 – 4812398; Oct 28th, 2006.

Erigeron annus (L.) Pers. (*Asteraceae*)

A neophyte originating from North America (HALLIDAY, 1976: 117). Recorded for the island of Murter (PANDŽA, 1998b), Šibenik and Perković (MILOVIĆ, 2002), along the Cetina River and the village of Svinišće (ŠILIĆ & ŠOLIĆ, 1999).

Fig. 3. *Datura inoxia* Mill.

The new localities:

– Ivanova Blato upon Cetina; Sep 17th, 2005

– Kostanje; Sep 17th, 2005

– Radmanove mlinice; in ruderal vegetation; 5642359 – 4811305; Sep 25th, 2005

– Trilj – in ruderal vegetation in populated area; 5640053 – 4831825; Sep 25th, 2005

– on a deserted field near the Ruda stream; Sep 25th, 2005

– Kaštil Slanica – in ruderal vegetation along the road; 5640792 – 4812426; Oct 28th, 2006

– on a meadow by the Cetina River; 5642974 – 4811699; Oct 28th, 2006

– along the road; 5644922 – 4811294; Oct 28th, 2006

– in ruderal vegetation along the road; 5645986 – 4811421; 5648156 – 4810983; 5650591 – 4810874; 5650565 – 4810984; 5651042 – 4811221; Oct 28th, 2006

– Kostanje – on building waste materials; 5649095 – 4812203; Oct 28th, 2006

– Gata – in a deserted orchard; 5639559 – 4814593; Oct 29th, 2006

– Blato upon Cetina – on cultivated soil; 5649254 – 4817051; Oct 29th, 2006

– Ugljane – along the road; 5642580 – 4826750; Oct 29th, 2006

– Trilj – on a meadow near the Cetina River; 5639706 – 4831339; Oct 29th, 2006

– Trilj – on a path along the Cetina River bank; 5639650 – 4831385; Oct 29th, 2006

– Čikotina lađa – in a flower garden; 5641649 – 4822287; Oct 29th, 2006

– Srijani – in ruderal vegetation around the Health Center; 5641389 – 4821976; Oct 29th, 2006

– Trnbusi – on a meadow along the road; 5646871 – 4817397; Oct 29th, 2006

– Podgrađe – in ruderal vegetation along the road; 5650207 – 4811968; Oct 29th, 2006

Euphorbia maculata L. (*Euphorbiaceae*)

A neophyte originating from North America (SMITH & TUTIN, 1968:216), (Fig. 4). In the Croatian coastal area recorded for Šibenik by VISIANI (1826). ILIJANIĆ (1957) recorded quite a few findings of the species in the plains of the Croatian mainland, from Karlovac in the west to Okučani in the east. Also recorded for the island of Hvar (TRINAJSTIĆ, 1993), Makarska – in parks and plantations of St Frances monastery (TRINAJSTIĆ *et al.*, 1993), as well as for several localities in Istra and Kvarner (ČARNI, 1996; ČARNI & JOGAN, 1998). For Rabac, the island of Žirje, Jezera on the island of Murter, Vodice, Srima, Raslina, Jadrija, Lozovac, Šibenik, Brodarica, Jadrtovac, Perković, Primošten and Grebaštica it was recorded by PANDŽA *et al*. (2001) and MILOVIĆ (2001).

The new localities:

– in ruderal vegetation along the road near the Cetina River; 5650551 – 4810927; Oct 28th, 2006

– along the road; 5644220 – 4813517; 5647291 – 4814397; Oct 29th, 2006

Fig. 4. *Euphorbia maculata* L.

– along the road margins some 100 m in length; 5648298 – 4814721; Oct 29th, 2006

– Nova sela – on trampled ground around houses; 5643239 – 4821097; Oct 29th, 2006

– Trilj – on the path along the Cetina River bank; 5639592 – 4831174; Oct 29th, 2006

Euphorbia prostrata Aiton (*Euphorbiaceae*)

A neophyte originating from North America (SMITH & TUTIN, 1968: 216). First recordings in Croatian flora for Mali Lošinj (ČARNI & JOGAN, 1998). After that, found in a large number of locations – Rijeka, Zadar, Šibenik and its surroundings, Trogir, Split, Makarska (MILOVIĆ & RANDIĆ, 2001), Karlobag, Sukošan, Sv Filip i Jakov, Murter, the island of Žirje, Vodice, Srima, Grebaštica, Rogoznica, Suknovci, Podgora (PANDŽA *et al.*, 2001).

The new localities:

– Omiš – along the road; Sep 25th, 2005

– in ruderal vegetation near the Cetina River; Sep 25th, 2005

– Radmanove mlinice – along the road; Sep 25th, 2005

– Omiš – ruderal vegetation in a high-school park; 5637368 – 4812398; Oct 28th, 2006

– Omiš – ruderal vegetation around the bridge over the Cetina River; Oct 28th, 2006

– along the road; 5637528 – 4812824; Oct 28th, 2006

– shady slopes of the Omiška Dinara mountain; 5639325 – 4812902; Oct 28th, 2006

– ruderal vegetation on the building waste materials; 5640131 – 4812476; Oct 28th, 2006

– Omiš – in ruderal vegetation around the bus station; 5636912 – 4812564; Oct 29th, 2006

– Gata – in a deserted orchard; 5639559 – 4814593; Oct 29th, 2006

– Trilj – on a path along the Cetina River bank; 5639650 – 4831385; Oct 29th, 2006

Grows on anthropogenous habitats by roads, walls, canals, bridges, along the pavement cracks.

Galinsoga parviflora Cav. (*Asteraceae*)

A South American neophyte (TUTIN, 1976: 144). Occurs frequently in Croatian lowlands (gardens, fields, flower gardens, potatoe fields, corn fields). Rarely found in the coastal area, by the Krka River (MARKOVIĆ *et al*., 1993), Makarska (TRINAJSTIĆ *et al*., 1993), Pazin, Brest, Rijeka, Crikvenica, Pula, Rabac, Rab, Jablanac, St. Juraj and Kalić, Senj, Zadar, Unešić, Murter, Vodice, Šibenik, Knin, Krapanj, Grebaštica, Perković, Kistanje and Knin (MILOVIĆ, 2001, 2002; PANDŽA *et al*., 2001).

The new localities:

– Trilj – on a path along the Cetina River bank; 5639592 – 4831174; Sep 25th, 2005

– in ruderal vegetation along the road; 5645959 – 4811914; Oct 28th, 2006

– in ruderal vegetation along the road near the Cetina River; 5650565 – 4810984; Oct 28th, 2006

– Trilj – ruderal vegetation around the bridge over the Cetina River; 5639750 – 4831390; Oct 29th, 2006

– Trilj – in a meadow by the Cetina River; 5639706 – 4831339; Sep 25th, 2005

– Čikotina lađa – in a flower garden and a vegetable garden; 5641649 – 4822287; Oct 29th, 2006.

– Srijani – in ruderal vegetation around the Health Center; 5641389 – 4821976; Oct 29th, 2006

Paspalum paspalodes (Michx.) Scribn. (*Poaceae*)

An adventive species of neotropical origins (Fig. 5). First recordings in Croatia in the Neretva valley, between Metković and Opuzen, Metković and Gabela in 1947 in swamp vegetation (HORVATIĆ, 1949). Also recorded for Korčula (TRINAJSTIĆ, 1985), along the Krka River (MARKOVIĆ *et al*., 1990, 1993), Split, Kaštel Sućurac and Kaštel Gomilica (ILIJANIĆ *et al*., 1991), Makarska (TRINAJSTIĆ *et al*., 1993), Betina, Pakoštane, Biograd (PANDŽA *et al*., 2001), Jadrtovac and Vrpolje (MILOVIĆ, 2001, 2002).

The new localities:

– Ivanovo Blato on the Cetina; Sep 17th, 2005

– Omiš – in ruderal vegetation along the road; 5636940 – 4812576; Sep 17th, 2005

– ruderal vegetation on the building waste materials along the road; 5640131 – 4812476; Oct 28th, 2006.

Fig. 5. *Paspalum paspalodes* (Michx.) Scribn.

Phytolacca americana L. (*Phytolaccaceae*)

A neophyte originating from the USA (WEBB & AKEROYD, 1993: 134) (Fig. 6). Recorded for the islands of Šipan (M. HEĆIMOVIĆ, 1981); Lokrum (S. HEĆIMOVIĆ, 1982), Korčula (TRINAJSTIĆ, 1985), Kaprije (FRANJIĆ & PANDŽA, 1996), Hvar (TRINAJSTIĆ, 1993), Zlarin (PANDŽA, 1998), Murter (PANDŽA, 1998b), Žirje (PANDŽA, 2003), along the Krka River (MARKOVIĆ *et al.*, 1993), near Omiš (RADIĆ, 1976), Makarska (ŠILIĆ & ŠOLIĆ, 1999) in Nova Ves, Čalinac, Đurđevački peski, Dilj-Čardak, Klokočevik, Trnava, Osijek, Bilje, Zadar and Brgat-Dubrovnik (PANDŽA *et al.*, 2001).

The new location is in Omiš in a high-school park (5637110 – 4812173) and around the Galeb factory; 5637110 – 4812173; Sep 25th, 2005.

Tagetes minuta L. (*Asteraceae*)

A neophyte originating from South America (HANSEN, 1976:144), (Fig. 7). First recordings for Croatian flora were made some seventy years ago (HAYEK, 1928-1931:618) as *Tagetes glandulifera* Schrk. During the last thirty years, it was found in

Fig. 6. *Phytolacca americana* L.

many locations along the Adriatic coast (ŠILIĆ, 1973; TRINAJSTIĆ, 1971, 1974, 1985; S. HEĆIMOVIĆ, 1982; M. & S. HEĆIMOVIĆ 1987; ZI. PAVLETIĆ, 1987; ILIJANIĆ *et al*., 1991; TRINAJSTIĆ *et al*., 1993; JASPRICA & KOVAČIĆ, 1997a; ČARNI & JOGAN, 1998; ŠILIĆ & ŠOLIĆ 1999; MILOVIĆ, 2001, 2002). In the area of Biokovo, found in St. Križ near Zagvozd (ZI. PAVLETIĆ, 1987) in Makarska, Baškovići, Velo Brdo, Drvenik and Podgora (TRINAJSTIĆ *et al*., 1993).

The new localities:

– ruderal vegetation on building waste materials along the road; 5640131 – 4812476; 5651458 – 4811287; 5651763 – 4811349; Oct 28th, 2006

– Gata – in a deserted orchard; 5639559 – 4814593; Oct 29th, 2006

– Podgrađe – in ruderal vegetation in a canal along the road; 5651025 – 4811891; Oct 29th, 2006.

Xanthium spinosum L. (*Asteraceae*)

A South American neophyte (LÖVE, 1976: 143). Recorded for the islands of Vis and Molat (DOMAC, 1955, 1963), Šipan (M. HEĆIMOVIĆ, 1981), Lastovo and Korčula

Fig. 7. *Tagetes minuta* L.

(TRINAJSTIĆ, 1979, 1985), Brač (ŠTAMOL & MARKOVIĆ, 1985), Hvar (TRINAJSTIĆ, 1993), Kornat (Opat, Koromašna, Ropotnica) (PANDŽA & STANČIĆ, 1995), along the Krka River (MARKOVIĆ *et al.*, 1993), Murter (PANDŽA, 1998b), Šibenik and its surroundings (MILOVIĆ, 2002); Zadar, Pakoštane, the villages of Lukar, Suknovci and Oklaj, Unešić, Šibenik (PANDŽA *et al.*, 2001).

New locality in Gata, along the road in ruderal vegetation; Sep 17th, 2005.

Xanthium strumarium L. subsp. *italicum* (Moretti) D. Löve (*Asteraceae*)

A neophyte originating from North and South America (LÖVE, 1976: 143), (Fig. 8). Recorded for the islands of Mljet (REGULA-BEVILACQUA & ILIJANIĆ, 1984), Korčula (TRINAJSTIĆ, 1985), Koločep (M. & S. HEĆIMOVIĆ, 1987), along the Krka River (MARKOVIĆ, *et al.*, 1993), the area around the Malostonski Bay and Pelješac (JASPRICA & KOVAČIĆ, 1997, 1997a), Šibenik and its surroundings (Jadrija, Zablaće, Perković) (MILOVIĆ, 2002), Posedarje, Murter, Oklaj, Brodarica, Marina near Trogir, Solin, Jesenice, Dugi Rat and Baška voda (PANDŽA *et al.*, 2001).

Fig. 8. *Xanthium strumarium* L. subsp. *italicum* (Moretti) D. Löve

The new localities:

– Omiš – on the town beach; 5637015 – 4812055; May 14th, 2006

– Omiš (Sinaj) – ruderal vegetation in the populated area; 5637975 – 4812397; May 14th, 2006

– ruderal vegetation near the Cetina River; 5637819 – 4813216; Oct 28th, 2006

– ruderal vegetation on building waste materials along the road; 5640131 – 4812476; Oct 28th, 2006

– in ruderal vegetation along the road near the Cetina River; 5650565 – 4810984; Oct 28th, 2006

– Čišla – in a deserted garden; 5641151 – 4814396; Oct 29th, 2006

– Trilj – in ruderal vegetation along the road; 5640150 – 4832071; Sep 25th, 2005

– on a deserted field near the Ruda stream; Sep 25th, 2005.

DISCUSSION

The species *Ambrosia artemisiifolia* recorded in Trilj near the bridge over the Cetina River, grows in ruderal vegetation on a small area and is not yet considered a dangerous weed. Nearby residents however are aware of its presence as well as its strong allergenic features.

Amorpha fruticosa, another allergenic species, covers large areas along the Cetina River banks from Radmanove mlinice to the river mouth. It has also been spreading over ruderal areas in the town of Omiš (spotted around the Omial factory and the new residential quarter called Sinaj). Also spotted upstream from Radmanove mlinice. Its spreading in this region will require particular attention in the future.

The species *Artemisia verlotiorum* grows on anthropogenous habitats. It spreads quite fast due to underground vine propagation.

The species *Bidens subalternans* has a distinctly thermophylic character. Recorded for quite a number of locations on ruderal habitats (along roads, within populated areas, on embankments, on building material waste heaps, in gardens, flower gardens). It has already spread over such a wide area that it endangers cultivated species, somewhat like *Ambrosia artemisiifolia* or *Galinsoga parviflora* in the continental parts of Croatia. Also noticed on piles of building material waste.

The species *Galinsoga parviflora* appears quite frequently in the continental regions of Croatia. In contrast, within the area along the Cetina River, only isolated populations were noticed. Recorded for Trilj and Čikotina lađa in gardens and flower gardens, each population abundant in quantity of individual plants.

Species of the *Conyza* genus have been spotted in abundant populations in a large number of locations, creating areas of dangerous weed. These species grow on ruderal surfaces, along roads and paths, on building material waste heaps, around residential quarters, in gardens…

The species *Conyza sumatrensis* is exceptionally distinctive for its quantity and shows a tendency to spread, assisted by favourable climate conditions (a mild winter enables its continuing existence). Other species were recorded individually or in small groups and are not regarded as dangerous weeds so far.

Received July 18, 2007

REFERENCES

AKEROYD, J. R., 1993: *Amaranthus* L. – In TUTIN, T. G., BURGES, N. A., CHATER, A. O., EDMONDSON, J. R., HEYWOOD, V. H., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds): Flora Europaea **1**, p. 132. Cambridge University Press.

BALL, P. W., 1968: *Amorpha* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **2**, p. 127. Cambridge University Press.

CRONQUIST, A., 1976: *Conyza* Less. In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A., (eds.): Flora Europaea **4**. Cambridge University Press.

DOMAC, R., 1955: Flora otoka Visa. Acta Pharm. Jugosl. **5**, 3–42.

DOMAC, R., 1963: Flora otoka Molata. Acta Bot. Croat. **22**, 83–98.

DUBRAVEC, K., N. PLAVŠIĆ-GOJKOVIĆ & M. BRITVEC, 1989: Nova nalazišta adventivne vrste *Eleusine indica* Gaertn. u Hrvatskoj. Fragm. Herbol. Jugosl. **18**(1), 95–97.

ČARNI, A., 1996: Thermophilic vegetation of trampled habitats in Istria (Croatia and Slovenia). Biologa (Bratislava) **51**, 405–409.

ČARNI, A. & N. JOGAN, 1998: Vegetation of thermophilic trampled habitats in the bay of Kvarner. Nat. Croat. **7**(1), 45–58

FRANJIĆ, J., 1993: Nova nalazišta vrste *Datura inoxia* Miller (*Solanaceae*) u Hrvatskoj. Acta Bot. Croat. **52**, 97–100.

FRANJIĆ, J. & M. PANDŽA, 1996: Flora otoka Kaprija. Ekološke monografije **7**, 205–218.

FRANJIĆ, J. & I. TRINAJSTIĆ, 1996: Sadašnje stanje rasprostranjenosti vrste *Datura inoxia* Miller (*Solanaceae*) u Hrvatskoj. Fragm. Phytom. Herbol. **24**(2), 5–9.

HALLIDAY, G., 1976: *Erigeron* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **4**, p. 117. Cambridge Universyty Press.

HANSEN, A., 1976: *Ambrosia* L.; *Tagetes* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **4**, p. 142; 144. Cambridge Universyty Press.

HAYEK, A., 1928–1931:Prodromus florae peninsulae Balcanicae **2**, p. 618. Berlin-Dahlem.

HEĆIMOVIĆ, M., 1981: Prikaz i analiza flore otoka Šipana. Acta Bot. Croat. **40**, 205–227.

HEĆIMOVIĆ, M. & S. HEĆIMOVIĆ, 1987: Flora otoka Koločepa. Acta Bot. Croat. **46**, 189–205.

HEĆIMOVIĆ, S., 1982: Flora otoka Lokruma, Bobare i Mrkana. Acta Bot. Croat. **41**, 155–170.

HODAK, N., 1960: Nalazište tropske vrste *Eleusine indica* Gaertn. u flori Jugoslavije. Acta Bot. Croat. **18–19**, 65–67.

HORVATIĆ, S., 1949: *Paspalum distichum* L. ssp. *paspalodes* (Michx.) Thell. na području donje Neretve. Acta Bot. Croat. **12–13**, 231–238.

HULINA, N., 1998: Nova nalazišta i rasprostranjenost nekih rijetkih biljnih vrsta u flori Hrvatske. Acta Bot. Croat. **55/56**: 41–51.

ILIJANIĆ, LJ., 1957: Nova nalazišta dviju adventivnih mlječika (*Euphorbia maculata* L. i *E. nutans* Lag.) u Hrvatskoj. Acta Bot. Croat. **16**, 105–108.

ILIJANIĆ, Lj., 1989: Die Stadt Split, neuer Fundort von *Eleusine indica* (L.) Gaertner (*Poaceae*). Bios (Thessaloniki) 117.

ILIJANIĆ, LJ. & S. HEĆIMOVIĆ, 1983: Nova nalazišta adventivne vrste *Bidens bipinnata* L. u istočnojadranskom primorju. Acta Bot. Croat. **42**, 123–126.

ILIJANIĆ, LJ., M. RADIĆ & Ž. ROKOV, 1991: Prilog adventivnoj flori Splita i okolice. Acta Bot. Croat. **50**, 59–65.

IVKOVIĆ, O., 1982: Novi nalazi adventivne vrste *Eleusine indica* (L.) Gaertn. 1788 (*Poales*, *Poaceae*) u Jugoslaviji. Zbornik Prir. Nauk. Mat. Srp. (Novi Sad) **63**, 77–81.

JASPRICA, N. & S. KOVAČIĆ, 1997: Flora šire okolice Malostonskog zaljeva. Zbornik Dubrovačkog primorja i otoka **6**, 241–262.

JASPRICA, N. & S. KOVAČIĆ, 1997a: Vascular Flora of the central part of Pelješac peninsula. Nat. Croat. **6**(4), 381–407.

JASPRICA, N., S. KOVAČIĆ, M. RUŠČIĆ, 2006: Flora and vegetation of Sveti Andrija island, southern Croatia. Nat. Croat. **15**(1–2), 27–42.

JOGAN, N., 1990: Prispevek k poznavanju razširjenosti trav v Sloveniji. Biol. Vestn. **38**(2), 27–38.

LÖVE, D., 1976: *Xanthium* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **4**, p. 143. Cambridge Universyty Press.

LOVRIĆ, A. Ž. & M. RAC, 1987: Fitocenološka analiza vegetacije Biokovskog područja. Morske i kopnene biocenoze. Acta Biokovica **4**, 97–142.

MARKOVIĆ, LJ., 1970: Prilozi neofitskoj flori savskih obala u Hrvatskoj. Acta Bot. Croat. **29**, 203–211.

MARKOVIĆ, LJ. & N. HULINA, 1970: *Eleusine indica* (L.) Gaertn. u širem području Zagreba. Acta Bot. Croat. **29**, 213–215.

MARKOVIĆ, LJ., LJ. ILIJANIĆ, G. LUKAČ & V. HRŠAK, 1990: Pregled istraživanja biljnog pokrova na području Nacionalnog parka Krka. Ekološke monografije **2**, 449–470.

MARKOVIĆ, LJ., LJ. ILIJANIĆ, G. LUKAČ & V. HRŠAK, 1993: Kvalitativni sastav flore papratnjača i sjemenjača Nacionalnog parka Krka. Botanički zavod Prirodoslovno-matematičkog fakulteta Sveučilišta u Zagrebu. Zagreb.

MARTINČIĆ, A., T. WRABER, N. JOGAN, V. RAVNIK, A. PODOBNIK, B. TURK, B. VREŠ, 1999: Mala flora Slovenije. Ključ za določanje paprotnic in semenk. Tehniška založba Slovenije, Ljubljana.

MELZER, H., 1969: Beiträge zur Flora von Kärnten. Verh. Zool.-Bot. Ges. Wien **108/109**, 127–137.

MELZER, H., 1987: Beiträge zur Flora von Frial-Julisch Venetien (Italien) und Slowenien (Jugoslawien). Linzer. Biol. Beitr. **19**(2), 377–388.

MILOVIĆ, M., 2001: A contribution to the knowledge of the neophytic flora of the country of Šibenik and Knin (Dalmatia, Croatia). Nat. Croat. **10**(4), 277–292.

MILOVIĆ, M., 2002: The flora of Šibenik and its surrounding. Nat. Croat. **11**(2), 171–223.

MILOVIĆ, M., 2004: Naturalised species from the genus *Conyza* Less. (*Asteraceae*) in Croatia. Acta Bot. Croat. **63**(2), 147–170.

MILOVIĆ, M. & M. RANDIĆ, 2001: New localities of *Euphorbia prostrata* Aiton (= *Chamaesyce prostrata* (Aiton) Small) in Croatia. Nat. Croat. **10**(2), 89–95.

PANDŽA, M., 1998: Flora of the island of Zlarin. Nat. Croat. **7**(1), 59–78.

PANDŽA, M., 1998a: Flora of the islands of Krapanj and Prvić. Nat. Croat. **7**(4), 321–339.

PANDŽA, M., 1998b: Flora of the island of Murter (central Adriatic). Acta Bot. Croat. **57**, 99–122.

PANDŽA, M., 2002: Flora of the small islands of Murter. Nat. Croat. **11**(1), 77–101.

PANDŽA, M., 2003: Flora of the island of Žirje and the small islands around it (eastern Adriatic coast, Croatia). Acta Bot. Croat. **62**(2), 115–139.

PANDŽA, M. & ZI. PAVLETIĆ, 1996: Značajne biljke hrvatske flore na otoku Murteru. Ekološke monografije **7**, 199–204.

PANDŽA, M. & Z. STANČIĆ, 1995: Contribution of the flora of the Kornati islands (Croatia). Nat. Croat. **4**(3), 133–142.

PANDŽA, M. & Z. STANČIĆ, 1999: New localities of *Datura inoxia* Miller and *Solanum elaeagnifolium* Cav. (*Solanaceae*) in Croatia. Nat. Croat. **8**(2), 117–124.

PANDŽA, M., J. FRANJIĆ, I. TRINAJSTIĆ, Ž. ŠKVORC, & Z. STANČIĆ, 2001: The most recent state of affairs in the distribution of some neophytes in Croatia. Nat. Croat., **10**(4), 259–275.

PAVLETIĆ, ZI., 1978: Vaskularna flora otoka Sveca. Acta Bot. Croat. **37**, 215–224.

PAVLETIĆ, ZI., 1978a: Pregled i analiza flore Palagruških otoka. Biosistematika **4**(1), 39–47.

PAVLETIĆ, ZI., 1987: Prilozi poznavanja Biokovske flore. Acta Biokov. Radovi o prirodi biokovskog područja 4, 25–30.

PAVLETIĆ, ZI. & I. TRINAJSTIĆ, 1990: *Datura inoxia* Miller (*Solanaceae*) u flori Hrvatske. Fragm. Herbol. Jugosl. **19**(2), 133–138.

PIGNATTI, S., 1982: *Conyza* Less. In: PIGNATTI, S. (ed.), Flora d'Italia 3, Edagricole. Bologna.

RADIĆ, J., 1976: Bilje Biokova. Malakološki muzej, Makarska.

REGULA-BEVILACQUA, LJ. & B. JURKOVIĆ-BEVILACQUA, 1980: Prilog flori otoka Mljeta. Acta. Bot. Croat. **39**, 175–184.

REGULA-BEVILACQUA, LJ. & LJ. ILIJANIĆ, 1984: Analyse der Flora der Insel Mljet. Acta Bot. Croat. **43**, 119–142.

SMITAL, A., LJ. MARKOVIĆ, & M. RUŠČIĆ, 1998: O širenju vrste *Artemisia verlotiorum* Lamotte u Hrvatskoj. Acta Bot. Croat. **55–56**, 53–63.

SMITH, A. R. & T. G. TUTIN, 1968: *Euphorbia* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **2**, p. 213–226. Cambridge University Press.

ŠILIĆ, Č., 1973: *Tagetes minuta* L. sve masovniji i opasniji korov na poljoprivrednim površinama Dalmacije, Hercegovine, Crnogorskog primorja i južne Makedonije. Jugoslavenski simpozijum o borbi protiv korova u brdsko-planinskim područjima (Sarajevo), 27–34.

ŠILIĆ, Č. & E. M. ŠOLIĆ, 1999: Contribution to the knowledge of the neophytic flora in the Biokovo area (Dalmatia, Croatia). Nat. Croat. **8**(2), 109–116.

ŠILIĆ, Č. & E. M. ŠOLIĆ, 2002: Addition to the vascular flora in the region of Biokovo (Dalmatia, Croatia): Nat. Croat. **11**(3), 341–363.

ŠTAMOL, V. & LJ. MARKOVIĆ, 1985: Prilog flori otoka Brača. Acta Bot. Croat. **44**, 99–106.

TOPIĆ, J. & B. KUSULJA, 1987: Učestalost vrste *Eleusine indica* (L.) Gaertn. u Slavoniji. Zbornik sažetaka priopćenja trećeg kongresa biologa Hrvatske, Zagreb, p. 111.

TOPIĆ, J. & B. KUSULJA, 1989: Frequency and abundance of the species *Eleusine indica* (L.) Gaertn. in the Slavonia and Baranja regions. Period. Biol. **91**(1), 174.

TOPIĆ, J. & N. ŠEGULJA, 1978: Novo nalazište vrste *Eleusine indica* (L.) Gaertn. u Hrvatskoj. Acta Bot. Croat. **37**, 229–230.

TRINAJSTIĆ, I., 1971: Novi prilozi flori otoka Korčule. Acta Bot. Croat. **30**, 157–161.

TRINAJSTIĆ, I., 1974: Prilog poznavanja horologije neofita *Tagetes minutus* L. na području Jugoslavije. Acta Bot. Croat. **33**, 231–235.

TRINAJSTIĆ, I., 1975: Kronološka klasifikacija antropohora s osvrtom na helenopaleofite jadranskog primorja Jugoslavije. Biosistematika **1**(1), 79–85.

TRINAJSTIĆ, I., 1975a: *Bidens bipinnata* L. – nova adventivna vrsta u flori Hrvatske. Acta. Bot. Croat. **34**, 171–173.

TRINAJSTIĆ, I., 1977: Cronological classification of the Antropochors. Fragm. Herbol. Jugosl. **2**: 27–31.

TRINAJSTIĆ, I., 1978: Nova nalazišta vrste *Bidens bipinnata* L. u Hrvatskoj. Fragm. Herbol. Jugosl. **5**(96–105), 5–7.

TRINAJSTIĆ, I., 1979: Pregled flore otoka Lastova. Acta Bot. Croat. **38**, 167–186.

TRINAJSTIĆ, I., 1979a: Još jedno novo nalazište vrste *Bidens bipinnata* L. u Hrvatskoj. Fragm. Herbol. Jugosl. **8**(126–135), 5–6.

TRINAJSTIĆ, I., 1985: Flora otočne skupine Korčule. Acta Bot Croat **44**, 107–130.

TRINAJSTIĆ, I., 1987: *Bidens bipinnata* L. (*Asteraceae*) – nova pridošlica u flori Crne Gore (Jugoslavija). Biosistematika **12**(1), 35–37.

TRINAJSTIĆ, I., 1993: Vaskularna flora otoka Hvara. Acta Bot. Croat. **52**, 113–143.

TRINAJSTIĆ, I., 1993a: *Bidens subalternans* DC. u neofitskoj flori Hrvatske. Acta Bot. Croat. **52**, 107–112.

TRINAJSTIĆ, I., 1996: Pregled flore Kornatskog otočja. Ekološke monografije **7**, 161–179.

TRINAJSTIĆ, I. & ZI. PAVLETIĆ, 1988: Flora ornitološkog rezervata Krapje Đol u Hrvatskoj. Biosistematika **14**(1), 1–10.

TRINAJSTIĆ, I., ZI. PAVLETIĆ, J. FRANJIĆ & Z. LIBER, 1993: Prilog poznavanju neofitske flore makarskog primorja (Dalmacija, Hrvatska). Fragm. Phytom. Herbol. **21**(1), 57–62.

TUTIN, T. G. *et al.* (eds.), 1964–1980: Flora Europaea **1–5**. University Press. Cambridge.

TUTIN, T. G., 1976*: Bidens* L.*; Galinsoga* L.; *Artemisia* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **4**, p.140, p. 144; p. 180. Cambridge University Press.

VISIANI, R., 1826: Stirpium dalmaticarum specimen. Patavii.

VREŠ, B., 1996: New localities of the species *Eleusine indica* (L.) Gaertn. (*Poaceae*) in Croatia and Slovenia. Nat. Croat. **5**(2), 155–160.

YEO, P. F., 1976: *Aster* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **4**, p. 115. Cambridge University Press.

WALTERS, S. M., 1968: *Acer* L. – In TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **2,** p. 239. Cambridge University Press.

WEBB, D. A. & J. R. AKEROYD, 1993: *Phytolacca* L. – In TUTIN, T. G., BURGES, N. A., CHATER, A. O., EDMONDSON, J. R., HEYWOOD, V. H., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M., WEBB, D. A. (eds.): Flora Europaea **1,** p. 134. Cambridge University Press.

SAŽETAK

Prilog neofitskoj flori područja rijeke Cetine

M. Pandža & D. Tafra

U radu se navode 22 neofitske vrste u porječju rijeke Cetine: *Acer negundo*, *Amaranthus albus*, *A.blitoides*, *Ambrosia artemisiifolia*, *Amorpha fruticosa*, *Artemisia verlotiorum*, *Aster squamatum*, *Bidens subalternans*, *Conyza bonariensis*, *C. canadensis*, *C. sumatrensis*, *Datura inoxia*, *Eleusine indica*, *Erigeron annus*, *Euphorbia macalata*, *E. prostrata*, *Galinsoga parviflora*, *Paspalum paspalodes*, *Phytolacca americana*, *Tagetes minuta*, *Xanthium spinosum* i *X. strumarium* subsp. *italicum.*

Posebnu pozornost zaslužuju vrste *Ambrosia artemisiifolia* i *Amorpha fruticosa,* pelud obiju vrsta je jaki alergen. Dok je vrsta *Ambrosia artemisiifolia* zabilježena u ruderalnoj vegetaciji uz most na Cetini u Trilju, vrsta *Amorpha fruticosa* obrasta velike površine uz Cetinu od Radmanovih mlinica do ušća Cetine u more.

U velikoj množini pojavljuju se vrste *Artemisia verlotiorum*, *Aster squamatum*, *Bidens subalternans*, *Conyza bonariensis*, *C. canadensis*, *C. sumatrensis* i *Erigeron annus.*

Vrste štira – *Amaranthus albus* i *A. blitoides* javljaju se pojedinačno, pa zasada ne predstavljaju opasan korov. Vrsta *Artemisia verlotiorum* raste na antropogenim staništima. Njezino brzo širenje uvjetovano je razmnožavanjem podzemnim vriježama.

Vrsta *Aster squamatum* osobito je brojna na staništima u blizini mora i bočatih voda dok je *Bidens subalternans* obilno nazočan na ruderalnim staništima (uz ceste i putove, po naseljima, na odbačenom građevinskom otpadu, u vrtovima i cvjetnjacima, zapuštenim površinama).