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Datura inoxia Mill. (Solanaceae), a new alien species in Serbia

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***Abstract*:**

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As ornamental plant originated from Central America, *Datura inoxia* Mill. has been introduced to many areas beyond its natural range. However, in many places, mainly in the Mediterranean region *D. inoxia* has escaped from cultivation and is being established as an alien. In relevant botanical literature its occurrence on the Balkan Peninsula has not been reported for Albania, Bosnia & Herzegovina, Macedonia (FYROM) and Serbia. Based on our field and herbarium studies, we have found that *D. inoxia* is also present in Serbia, both as cultivated ornamental plant, but as well as an escape, with established populations. We have registered this species in 23 localities in Srem, Bačka, Banat, Šumadija and NE Serbia regions, which are situated in 16 UTM 10 km x 10 km squares. Most of the findings (16 localities) refer to a small group of individuals which are cultivated, while the remaining seven relate to plants that have escaped from cultivation and have established small wild populations in the surrounding ruderal habitats, edges of natural or planted forest, waste and arable fields. Although we have registered only seven small groups of individuals that have escaped from cultivation, due to its capacity to invade natural habitats *D. inoxia* can be considered as potential threat for natural biodiversity in Serbia.

Key words: *Datura inoxia*, alien species, distribution, cultivation, invasion

***Apstrakt*:**

Lakušić, D., Rat, M., Anačkov, G., Jovanović, S.: *Datura inoxia* Mill. (Solanaceae), nova strana vrsta u Srbiji. *Biologica Nyssana, 8 (1), Septembar 2017: 47-51.*

Kao ukrasna biljka koja potiče iz Centralne Amerike, *Datura inoxia* Mill. je uvedena u mnoge oblasti izvan njenog prirodnog areala. Međutim, na mnogim mestima, uglavnom u Mediteranu, ona je pobegla iz kultivacije i postala strana vrsta. U relevantnoj botaničkoj literaturi njeno prirustvo na Balkanskom poluostrvu nije registrovano za Albaniju, Bosnu i Hercegovinu, Makedoniju i Srbiju. Na osnovu našeg istraživanja utvrđeno je da je *D. inoxia* prisutan i u Srbiji, i to kao kultivisana ornamentalna biljka, ali i kao strana vrsta sa uspostavljenim populacijama i na staništima izvan kultivacije. Ova vrsta je registrovana na 23 lokaliteta u regionima Srem, Bačka, Banat, Šumadija i NE Srbija. Registrovani lokaliteti se nalaze u 16 UTM kvadrata 10 x 10 km. Većina nalaza (16 lokaliteta) odnosi se na male grupe gajenih individual koje, dok se preostalih sedam nalaza odnosi na biljke koje su uspostavile male divlje populacije u okolnim ruderalnim staništima, ivicama prirodnih ili zasađenih šuma, deponijama ili obradivim površinama. Iako smo registrovali samo sedam malih

grupa pojedinaca koji su pobegli iz kultivacije, zbog svoje sposobnosti za invaziju prirodnih staništa *D. inoxia* se može smatrati potencijalnom pretnjom za autohtoni biodiverzitet u Srbiji.

Ključne reči: *Datura inoxia*, strane vrste, rasprostranjenje, gajenje, invazija

Introduction

Datura inoxia Mill. is an annual, ornamental but extremely toxic plant. It originates from Central America. Due to its attractive flowers and increased growing in the gardens for decorative purposes, it has been introduced to many areas beyond its natural range (Africa, Asia, Australia and Europe). However, in many places, mainly in the Mediterranean region (Spain, Portugal, France, Italy, Turkey), *D. inoxia* has escaped from cultivation and is being established as an alien species while in other European countries its alien status is unknown (DAISIE, 2017). There is the evidence that in Vojvodina province this species is cultivated as medicinal plant and that it occasionally escapes from cultivation (Obradović & Janjatović, 1982). In relevant botanical literature its occurrence on the Balkan Peninsula has not been reported for Albania, Bosnia & Herzegovina, Macedonia (FYROM) and Serbia (DAISIE, 2017, Caković et al., 2014).

According to Greuter and Raus (2005) *Datura inoxia* has been known from Bulgaria (Sofia district) since 1933. In Romania it is a casual alien, distributed along Black Sea coastal area, mainly in habitats close to harbors (Anastasiu et al., 2011). The first data for Greece refer to plants collected by A. Yannitsaros in October 1966, on a rubbish-tip on waste ground on the South Peloponnesian island of Kithira (Yannitsaros, 1998). Later, the plant was recorded in several localities in the coastal and mainland Greece (Caković et al., 2014). In Croatia the species was reported approximately 30 years ago (Hećimović, 1981). Like in Greece, in Croatia *Datura inoxia* has spread along roads, in courtyards, gardens and in ruderal vegetation, not only to a number of locations in the littoral region, but also within the continental parts (Hećimović, 1981, 1982, Franjić, 1993, Pandža & Stančić, 1990, Trinajstić et al., 1993, Franjić et al., 1998, Pandža et al., 2001). Recently, in 2012, species was reported for the first time in Montenegro, where it was recorded on waste ground at Long Ulcinj Beach (Caković et al., 2014).

Material and methods

The study was carried out on recent field studies, analysis of herbarium material deposited at BEOU and BUNS (herbarium acronyms according to Thiers, 2017+), as well as literature data. The locations for occurrences of the species in the field were recorded with GPS (Garmin eTrex Legend HCx and Garmin eTrex Vista C). All other data on the distribution were georeferenced in OziExplorer 3.95 4s program. The chorological data are presented according to the grid map with squares of c. 10 km × 10 km, based on the Universal Transverse Mercator (UTM) projection (Lampinen, 2001), greed zone 34T. Latitudes and longitudes are given according to the World Geodetic System 84 (WGS84).

Results and discussion

Based on our field and herbarium studies, we have found that *D. inoxia* is also present in Serbia, both as cultivated ornamental plant, but as well as an escape, with established populations. We have registered this species in 23 localities in Srem, Bačka, Banat, Šumadija and NE Serbia regions, which are situated in 16 UTM 10 km x 10 km squares (**Fig. 1**). Most of the findings (16 localities) refer to a small group of individuals which are cultivated, while the remaining seven relate to plants that have escaped from cultivation and have established small wild populations in the surrounding ruderal habitats, edges of natural or planted forest, waste and arable fields (**Fig. 2**). Monitoring of few populations (Stepojevac, Ritopek and Golubac - Ponikva) from 2013 to 2016 did not show any significant spreading into the surrounding hinterland.

Chorological data

Bačka:

CR45 – Apatin, in surroundings, cultivated (*Perić, R.* summer 1998, BUNS)

CR75 – Rumenka, cemetery (*Ujhelji, S.* 23.10.2003, BUNS)

CS90 – Subotička peščara - Kelebija-Radanovac, planted *Pinus-Robinia* forest, 46.134546 N, 19.642232 E, 124 m (*Radak, B., Bokić, B., Rat, M. field obs.*, 12.08.2011)

Banat:

DR57 – Kikinda - 45.83 N, 20.45 E, 80 m, cultivated (*Fodulović, G. field obs.*, 09. 2013)

Srem:

DQ25 – Kupinovo, forest edge, waste and the arable fields in vicinity of the settlement, 44.711295

N, 20.045730 E, 74m (*Knežević, J., Kovački, M., Rat, M. field obs.*, 14.10.2016)

Šumadija:

DQ42 Stepojevac, 44.511594 N, 20.294598 E, 130 m, escaped from cultivation (*Lakušić, D. field obs.*, 10.09.2015, ibid 09.10.2016)

DQ55 Beograd - Braće Jerković, 44.772 N, 20.490 E, 150 m, cultivated (*Fodulović, G. field obs.*, 09. 2013)

DQ55 Beograd - Braće Jerković, 44.769621 N, 20.498191 E, 175 m, cultivated (*Fodulović, G. field obs.*, 08.09. 2016)

DQ55 Beograd - Železnik, 44.738512 N, 20.386443 E, 90 m, cultivated (*Lakušić, D. field obs.*, 10.09.2015)

DQ56 Beograd - Dorćol, Visokog Stevana 21, 44.825409 N, 20.458966 E, 80 m, cultivated (Dnevne novine Blic 12.7.2013)

DQ56 Beograd - Zvezdara, Marka Oreškovića, 44.803009 N, 20.487444 E, 120 m, cultivated (*Lakušić, D. field obs.*, 10.2015)

DQ56 Beograd - Zvezdara, Vojvode Brane, 44.804743 N, 20.483909 E, 120 m, escaped from cultivation (*Lakušić, D. field obs.*, 10.09.2015)

DQ56 Beograd - Zvezdara, Vojvode Savatija, 44.804695 N, 20.483720 E, 125 m, cultivated (*Lakušić, D. field obs.*, 09. 2013)

DQ65 Beograd - Ritopek, 44.764100 N, 20.564839 E, 200 m, escaped from cultivation (*Lakušić, D. field obs.* 12.02.2016, ibid. 09.10.2016)

DQ65 Beograd - selo Rakovica ispod Avale, 44.720943 N, 20.499923 E, 200 m, cultivated (*Lakušić, D. field obs.*, 10.09.2015)

DQ66 Beograd - Karaburma, Marijane Gregoran, 44.813257 N, 20.508549 E, 115 m, cultivated (*Lakušić, D. field obs.*, 09. 2013)

DQ72 Mladenovac, 44.468310 N, 20.666330 E, 150 m, cultivated (*Lakušić, D. field obs.* 11.08.2015)

DQ74 Grocka 44.682760 N, 20.706863 E, 110 m, cultivated (*Lakušić, D. field obs.*, 06.09. 2016)

NE Serbia:

EQ24 Veliko Gradište, Sirakovo - 44.679089 N, 21.338209 E, 160 m, escaped from cultivation (*Lakušić, D. field obs.*, 25.09. 2013)

EQ35 Veliko Gradište, Kumane - 44.730360 N, 21.466415 E, 75 m, cultivated (*Lakušić, D. field obs.*, 25.09. 2013)

EQ35 Veliko Gradište, Topolovnik - 44.720534 N, 21.443139 E, 75 m, cultivated (*Lakušić, D. field obs.*, 25.09. 2013)

EQ44 Golubac, Ponikva - 44.689409 N, 21.570992 E, 120 m, escaped from cultivation (*Lakušić, D.* 37683, 25.09. 2013, BEOU)

EQ92 Donji Milanovac, centar - 44.465961 N, 22.153158 E, 70 m, cultivated (*Lakušić, D. field obs.*, 25.09. 2013)

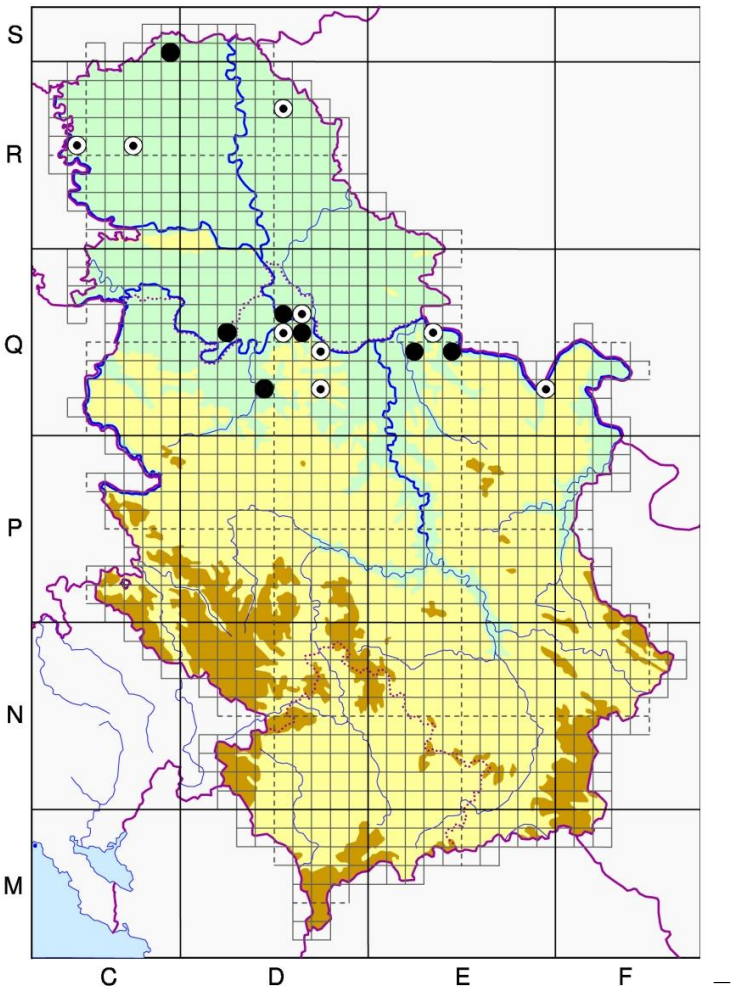

Fig. 1. Distribution of *Datura innoxia* Mill. In Serbia. (UTM Grid zone 34T; basic square 10 x 10 km, according to Lampinen, 2001). Locality symbols: ⊙ cultivated plants ● established populations

Conclusion

In conclusion, although we have registered only seven small groups of individuals that have escaped from cultivation, due to its capacity to invade natural

Fig. 2. Naturalized plants of *Datura innoxia* Mill. - Golubac, Ponikva – EQ44, 44.689409 N, 21.570992 E, 120 m (*Lakušić, D. field obs.*, 25.09. 2013, photo D. Lakušić).

habitats *D. inoxia* can be considered as potential threat for natural biodiversity in Serbia. According to field records, its status in Serbia is established alien species, with low invasiveness impact, i.e. it is casual species. Nevertheless, on a local level it can be considered an important invader. The most vulnerable habitats are sandy areas along Danube and continental sands, that are close to human settlements.

In the same time, the wide range of adaptations on different artificial habitats and our records altogether with already published data show that *Datura inoxia* is spreading in the Continental and Pannonian part of the SE Europe and thus can be expected in Albania, Bosnia & Herzegovina and Macedonia (FYROM) as well.

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