

## *Echinocystis lobata* (Michx) Torrey et A. Gray in Serbia

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The presence of *Echinocystis lobata* (Michx) Torrey et A. Gray in Serbia was first recorded about 40 years ago in Vojvodina (N Serbia) where it continued to spread in the following years. In the Balkan part of Serbia (to the south of the Sava and Danube rivers), this plant used to be known in the last 20 years from only two localities. The discovery of the species in 26 new localities in this area testifies its successful spread toward the South and East of Serbia.

**Key words:** *Echinocystis lobata*, flora, distribution, Serbia

### Introduction

During the previous centuries, certain European botanical gardens were real nurseries for most adventive plants, which were primarily distributed on the American continent, and today have their secondary ranges in Europe (HEGI 1917, 1918). They were brought to botanical gardens and grown there as examples of what we today call the diversity of the flora of a certain area. Many of these species were, due to their beauty, also grown as ornamental plants in parks and private gardens. In this way intentions that were at base positive enabled the formation of secondary ranges in Europe for quite a high number of adventive plants, some of which became invasive and dangerous weeds.

The North American species *Echinocystis lobata* (Michx) Torrey et A. Gray was also grown for its decorative properties, especially its interesting fruits (Soó 1951). At the time, nobody either assumed or predicted, that this plant would continue spreading from controlled areas, on its own, and without any control.

The primary range of the species *Echinocystis lobata* is in Eastern North America (TUTIN 1968). As is the case with many other adventive plants, which are currently more or less well distributed in Europe, according to HEGI (1929) the first data on *Echinocystis lobata* originated in Central Europe (two localities in Oststeiermark). From that area the plant has spread, in some places entering the autochthonous vegetation in wetland and flood areas, and according to TUTIN (1968) became naturalized in the Central and South-eastern Europe.

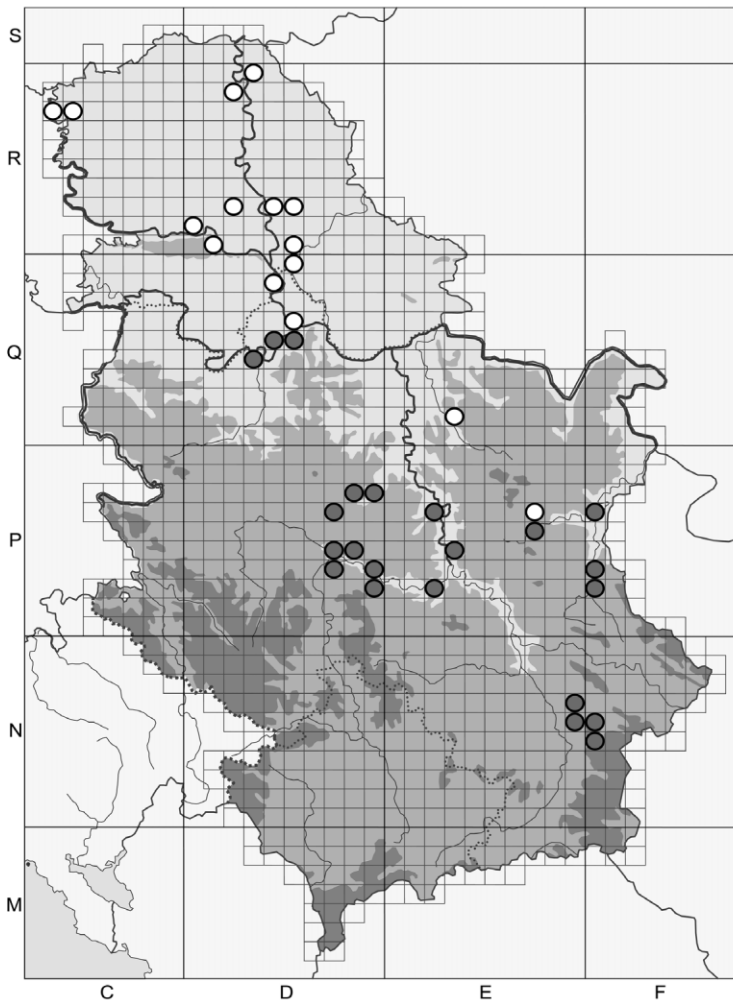
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According to the chronology of occurrence, or, better say, according to the published data, it is obvious that *Echinocystis lobata* entered the territory of Serbia from the north, as it first appeared in Vojvodina (ŠAJNOVIĆ 1976, OBRADOVIĆ 1976). Now the species can be considered to be widespread, besides Vojvodina, particularly in the Central, East and Southeast parts of Serbia.

### Materials and methods

This paper is based both on literature data (see the subheading References) and the results of the author's research (two seasons, 2002 and 2003) in Serbia to the south of the Sava and Danube rivers. The herbarium material is kept at the General Herbarium of the



**Fig. 1.** Distribution of the species *Echinocystis lobata* in Serbia (UTM 10x10 km, Grid Zone 34T): white dots – literature data, black dots – new localities.

Balkan Peninsula (BEO) in the Natural History Museum in Belgrade (coll. numbers: 920021, 920025, 720039, 820032, 920035). Also included are data collected by D. Lakušić in 1999, at the following localities: Makiš, Ada Ciganlija and Obrenovac.

Distribution of the species *Echinocystis lobata* is presented on a UTM (10x10 km, Grid Zone 34T) map (Fig. 1). The squares on the map where the localities are situated are listed in parentheses after the name of the corresponding locality.

## Results and discussion

According to literature data, the species *Echinocystis lobata* was known from the following localities (Fig. 1):

Bezdan (CR37), Bački Monoštor (CR47), Kneževac (DR39), Senta (DR28), Žabalj (DR22), Aradac (DR42), Zrenjanin (DR52), Novi Sad (DR01), Sremski Karlovci (DR10), Perlez (DR50), Čenta (DQ59), Banovci (DQ48), Beograd (DQ56), Petrovac na Mlavi (EQ31), Bogovina (EP76).

During field studies in 1999 (D. Lakušić) and during 2002 and 2003 (O. Vasić), this species was recorded in new 26 localities in Serbia (Fig. 1):

Surroundings of: Makiš (DQ45), Ada Ciganlija (DQ55), Obrenovac (DQ34), Koričane (DP87), Kragujevac (DP97), Knić (DP76), Jagodina (EP26), Zaječar (FP06), Boljevac (EP75), Kraljevo (DP74), Vitanovac (DP84), Itkovac (DP84), Šumarice (DP84), Čičevac (EP34), Pojate (EP34), Ratina (DP73), Vrnjci (DP93), Vitkovac (FP03), Osaonica (DP92), Kruševac (EP22), Knjaževac (FP02), Kruševica (EN96), Vlasotince (EN95), Boljare (EN95), Gornji Dejan (FN05), Crna Trava (FN04).

Although ŠAJNOVIĆ (1976) recorded the first specimens of *Echinocystis lobata* in Novi Sad in 1966, she did not publish her findings until 10 years later.

During that period, the species continued to spread in Vojvodina, and was observed by OBRADOVIĆ who in the same year (1976) published records for several new localities. OBRADOVIĆ (1976) points out that 'in recent years' the species has been spreading through the area of the Tisza River (Kneževac, Senta, Žabalj, Aradac), as well as along the Danube River near Sremski Karlovci and Banovci. The species spread so vigorously during the following several years was such, that OBRADOVIĆ and BUDAK (1979) recorded the plant being widely distributed in the area between the Tisza and Tamiš rivers, citing as new records those from the vicinity of the towns: Zrenjanin, Perlez, Čenta. The species was also recorded in the western part of Bačka near Bezdan and Bački Monoštor (OBRADOVIĆ et al. 1981).

In contrast to most adventive plants, which manage to overcome barriers such as the Sava and Danube only after a long time, and either for the long time or permanently remain within the territory of Vojvodina, *Echinocystis lobata* was already recorded by BOGOJEVIĆ (1983) in Eastern Serbia along the rivers Crni Timok (Bogovina) and Mlava (Petrovac na Mlavi).

This species was recorded for ruderal vegetation in the Belgrade city area by JOVANOVIĆ (1994).

In the *Flora SR Srbije* [Flora of SR Serbia] *Echinocystis lobata* was cited for the area of Vojvodina (without precise localities) and for the vicinity of Beograd (GAJIĆ 1977).

According to reliable data gathered in 1999 by D. Lakušić (pers. comm.) as well as the author's own data from 2002 and 2003, this species is successfully conquering new localities toward the South and East of Serbia (Fig. 1). However, this success was not welcome at all from the aspect of the protection and conservation of natural diversity and state of the plant associations that originally grow in such habitats.

This plant grows along the banks of the rivers Sava (Makiš, Ada Ciganlija, Obrenovac), Lepenica (Koričane), Gruža (Itkovac), Morava (Jagodina), Zapadna Morava (Šumarice, Vitanovac, Vrnjci, Osaonica), Vlasina (Gornji Dejan, Boljare, Kruševica, Crna Trava), Crni Timok (Zaječar) and Beli Timok (Vitkovac). In some places the willows, poplars and marsh elms are almost completely covered with thickly intertwined stems of this liana plant. Not only does it directly threaten their normal growth and development and the survival of these species in the habitat, but the very presence of *Echinocystis lobata* disrupts and changes the natural structure and successions of original associations.

In other localities (Kragujevac, Knić, Kraljevo, Ratina, Boljevac, Čičevac, Pojate, Kruševac, Vlasotince, Knjaževac) *Echinocystis lobata* grows in wet ditches along roads, in places where weed and ruderal vegetation is mostly represented. This plant very easily penetrates into such habitats, as vegetation there is of its very nature non-homogenous and unstable, that is, susceptible to short-term changes, primarily under the influence of anthropogenic factors. Nevertheless it would be quite wrong to deduce that the presence of *Echinocystis lobata* in these areas is harmless. As a species originating in very distant areas (TUTIN 1968), it has an advantage over indigenous weeds, as in the new environment it has no natural enemies, and is also outside previously evolved competition relationships. It very quickly takes over the dominant role, acquiring the potential for further dissemination to habitats of natural vegetation.

The invasive spread of the species *Echinocystis lobata* in Serbia is an example of the negative impact of adventive plants on the natural diversity of autochthonous flora and vegetation. This impact appeared as a consequence of negative anthropogenic influence, and it is not important if the cause was insufficient availability of the information, irresponsibility, insufficient ability to predict the consequences, or unilateral approach. In present times when we know the consequences of irresponsible and bad judgment connected with introduction of alien plants, it is really surprising that some of these species are still recommended for certain uses, without previous analysis and estimate of their possible behavior in the new environment.

### Acknowledgments

I am grateful to Dr. DMITAR LAKUŠIĆ (Faculty of Biology, University of Belgrade) who let me use his data for Makiš, Ada Ciganlija, Obrenovac, contributing to fill the gaps in knowledge of the distribution of *E. lobata*. Thanks are also due to MARJAN NIKETIĆ, curator at the Natural History Museum in Belgrade, who made the map. This paper is a result of research within Project 1864 of Ministry of Science and Environment Protection of Republic of Serbia.

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