
**New data on the distribution of
Eastern spadefoot toad *Pelobates
syriacus* Boettger, 1889 (Anura:
Pelobatidae) in the Pannonian Plain**

Two of the four European spadefoot toad species are present in Romania: the Common spadefoot toad *Pelobates fuscus* (Laurenti 1768), with an extensive range that covers most of the plains and hilly regions (up to 700 m); and Eastern or Syrian spadefoot toad *Pelobates syriacus* Boettger, 1889, which is limited to the southern parts of the country at altitudes below 200 m a.s.l. (Fuhn 1960, Sos 2008). The European distribution of *P. syriacus* includes the south-eastern Balkans (Džukić et al. 2005, 2008); in SW Asia it occurs in eastern to south-eastern Transcaucasia, northern Iran, Turkey and the Levant to Israel (Agasyan et al. 2009, Székely et al. 2013). According to Sofianidou (1997), the present range of *P. syriacus* is bounded by the Pannonian Plain and the Danube River area in the north (but see Cogălniceanu et al. 2013, Székely et al. 2013), the Morava River valley in the west, the Mediterranean shoreline in the south, and Transcaucasia in the east. In Romania the subspecies *P. s. balcanicus* Karaman, 1928 appears, which has a distribution restricted to Macedonia, Bulgaria, Romania, Greece and Turkey-in-Europe (Fuhn 1960, Ugurtas et al. 2002).

P. syriacus is a highly specialized species, having a narrow ecological niche. Terrestrial habitats occupied are generally open uncultivated and also cultivated arable land (Székely et al. 2013), steppe, coastal dunes (Fuhn 1960), semi-desert and rocky areas, heathlands and deciduous woodlands (Džukić et al. 2005), etc. According to Székely et al.

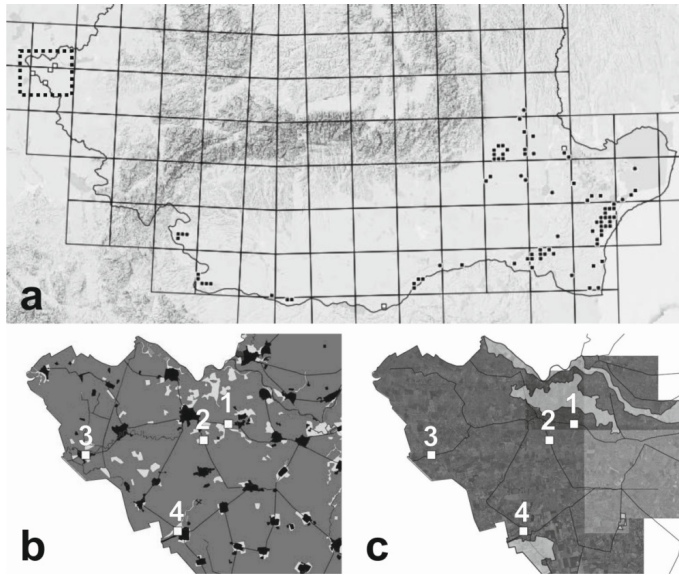


Figure 1.a. The updated distribution of *Pelobates syriacus* in Romania, plotted on 5x5 km UTM grids. The broken lines delimit the location of b. and c. map. **1.b.** The proportion of Corine 2006 habitat types in the recently identified distribution area: grasslands (pastures; light grey), agricultural lands (arable fields; dark grey), localities and roads (black). **1.c.** The Natura 2000 areas (marked with light grey) and the distribution of the species in the area. Locality index: 1. Saravale, 2. Sânnicolau Mare, 3. Vălcani and 4. Comloșu Mare.

(2013), the species is rather abundant in uniform and extensive agricultural landscapes, taking advantage of the network of irrigation canals, partly abandoned and transformed into wetlands. Besides soft soils suitable for a fossorial life, it also inhabits solid, rocky soils (Agasyan et al. 2009). The landscape features have a strong influence on population spread and density (Shpun et al. 1993). It is a fossorial, nocturnal species. During the day it lives in deep burrows, in typically moist soils, and usually remains near its breeding areas (Nicholas & Owenden 2004).

Comprehensive historical and recent distribution data of the species in Romania were recently compiled by Cogălniceanu et al. (2013; Fig. 1.a). Here, the occurrence of the species was reported from 59 5x5 km UTM cells based on 31 old and 122 new records reported before and after 1990, respectively. The most recent study dealing with the distribution of *P. syriacus* in Romania has expanded its range map, with 36 new locations from Galați, Brăila, Buzău, Giurgiu, Olt and Mehedinți counties (from east to west), accounting to 27 new 5x5 km UTM grids (Székely et al. 2013). According to Székely et al. (2013), the northern distribution limit of the species has been extended to Călmățui locality (Galați County), while the Romanian western limit is Gogoșu locality (Mehedinți County). During our field work, we collected new occurrence records that extend the known geographical range of this species further to the north

and west, in the Carpathian Basin, i.e. Pannonian Plain.

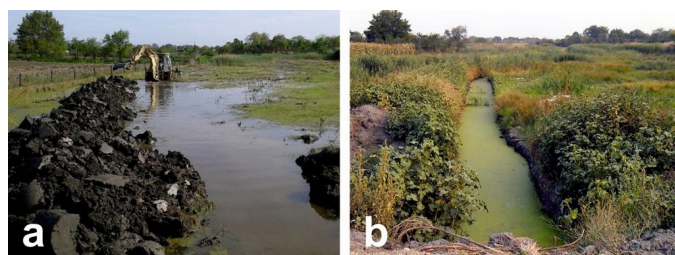
The surveys were conducted during the night, near human settlements and in agricultural lands and also on road sections in order to detect road kills. The investigations were performed outside the reproductive period and only adults were located.

The criteria used for species identification were the head shape, which in the case of this species is flat compared with the well-marked dome of *P. fuscus*, the web shapes of the hind legs and also the colour and pattern of markings (Fuhn 1960, Cogălniceanu 2002, Sidorovska et al. 2002). The dorsal side has variable colouration, from yellow-greyish to white and it can have different tones, but is never brown as in *P. fuscus*.

Here we report six new distribution data and at the same time, six new 5x5 km UTM cell presences of the species from which four records extend the range of the species in Romania to the west and north, inside the Carpathian Basin in the Aranca and Jimbolia Plain. Both are part of the Pannonian Plain, and lie in the lower Mureș River catchment area (Table 1, Figs 1.b-c and 2). The new data represent the northernmost distribution limit in the Carpathian Basin, some 120 km from the previously known Serbian population from the Danube Valley (Džukić et al. 2005, 2008). Seven active adults were identified at night time, in July and August 2015, in Vălcani locality (on three different occasions) and one in Comloșu Mare locality (Figs 2.a-b). Some of the specimens were found during

Table 1. New distribution data for Eastern spadefoot toad (*Pelobates syriacus*) in Romania.

Administrative-territorial units		Lat./Long.	5x5 km UTM cell	Altitude
County	Commune/locality			
Timiș	Vălcani	46.003 20.401	DR59.2	76 m
Timiș	Comloșu Mare	45.895 20.610	DR68.4	79 m
Timiș	Sânnicolau Mare	46.036 20.656	DR79.1	83 m
Timiș	Sânpetru Mare/ Saravale	46.063 20.708	DS70.4	84 m
Teleorman	Bragadiru/Bujoru	43.698 25.528	LJ83.1	27 m
Brăila	Măcin	45.244 28.185	NL91.2	43 m

**Figure 2.** Live and road-killed *Pelobates syriacus* specimens from Vălcani (a), Comloșu Mare (b), Sânnicolau Mare (c) and Saravale (d).**Figure 3.** Loss of potential reproduction habitat because of anthropogenic action in Vălcani village.

or after rain. The other two specimens located near Sânnicolau Mare and Saravale localities were road kills (Figs 2.c-d).

These distribution data are in conflict with the statement of Sofianidou (1997) that the present range of *P. syriacus* is bounded by the Pannonian Plain, as these data are from within this region, and outside the Danube River Valley. The presence of the species in the Pannonian Plain is not unexpected as it was already reported from the southernmost limits of the region (Džukić et al. 2005, 2008). These new data also fall within the geographical space delineated by Tarkhnishvili et al. (2009).

The species is sympatric here with other amphibians: *Triturus dobrogicus*, *Bombina bombina*, *P. fuscus*, *Bufo bufo*, *Bufo viridis*, *Hyla arborea*, *Pelophylax ridibundus* and *P. kl. esculentus*.

P. syriacus is listed in the Governmental Emergency Ordinance 57/2007 on the regime of natural protected areas, conservation of natural habitats, of wild flora and fauna, approved, with amendments and additions by Law 49/2011 (Anonymous 2011), which transposes the EU Habitat Directive. Here it appears in Appendix IVA as a species of Community interest in need of strict protection.

In the surveyed areas, negative factors that

could threaten the reproduction and survival of *P. syriacus* have been identified. These are, in the order of their significance: loss of reproductive habitat because of anthropogenic actions (Fig. 3), accidental mortality (Fig. 2.d), and harsh environmental conditions such as drought and pollution, as similarly listed by Agasyan et al. (2009) for its entire distribution range. Loss of habitat due to land use change, i.e. conversion of steppe grasslands to arable land, is also suspected among the causes that lead to population reduction, however according to Székely et al. (2013), the species seems to cope well with the dominant agricultural landscape. The adaptability of the species to this threat should be dealt with in future research.

The new distribution data lie outside the existent Natura 2000 network (Fig. 1.c). Even though the species is not one that requires the designation of protected areas in order to ensure its conservation under the Habitats Directive, the area should be designated as a Natura 2000 (or included in an existing one) or another type of protected area should be considered. Other species which are listed in Annex II of the Habitats Directive, for example *T. dobrogicus* or *B. bombina*, could be used to achieve that designation.

The range of *P. syriacus* is probably wider in this area considering the presence of the species in Serbia, in the Danube Valley, especially assuming that the species does not have an insular distribution there (Székely et al. 2013). A distribution even in Hungary could be predicted based on ecological preferences of the species and also the available favourable habitats along the Mureş and Tisza River. The difficulties of identifying *Pelobates* spp. adults and their tadpoles (Sidorovska et al. 2002), the insufficient survey coverage in the area, and also the cryptic lifestyle of *P. syriacus*, are factors contributing to the deficient distribution data. These should be filled in the future.

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