

THE HERPETOFAUNA IN THE PLAIN AREA FROM THE WESTERN SATU MARE COUNTY, ROMANIA

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Abstract. *The herpetofauna belonging to the Western Satu Mare county is a typical one for the plain areas in North-Western Romania. In the above mentioned region we have noticed 9 amphibian species (Triturus vulgaris, Triturus dobrogicus, Bombina bombina, Pelobates fuscus, Bufo bufo, Hyla arborea, Rana ridibunda, Rana dalmatina and also populations of Rana kl. esculenta, a hybrid form between Rana ridibunda and Rana lessonae) and 5 reptile species (Emys orbicularis, Lacerta agilis, Lacerta viridis, Elaphe longissima, Natrix natrix).*

Keywords: *herpetofauna, Satu Mare, amphibians, hybrid form, reptiles.*

Rezumat. Herpetofauna zonelor de câmpie din vestul județului Satu-Mare, România. *Herpetofauna vestului județului Satu-Mare este una tipică zonelor de câmpie din Nord vestul României. În regiune am observat 9 specii de amfibieni (Triturus vulgaris, Triturus dobrogicus, Bombina bombina, Pelobates fuscus, Bufo bufo, Bufo viridis, Hyla arborea, Rana ridibunda, Rana dalmatina cât și populații de Rana kl. esculenta, formă hibridă între Rana ridibunda și Rana lessonae) și 5 specii de reptile (Emys orbicularis, Lacerta agilis, Lacerta viridis, Elaphe longissima, Natrix natrix).*

Cuvinte cheie: *herpetofauna, Satu Mare, amfibieni, formă hibridă, reptile.*

INTRODUCTION

Satu Mare is one of the Romanian county's whose herpetofauna has been little investigated in the past. Thus, in the 'Romanian Fauna' volumes dedicated to this subject (FUHN, 1960, FUHN & VANCEA, 1961) or in the amphibian monograph from Romania (COGĂLNICEANU et al., 2000), there are only few data about this subject. After 2000, the situation has changed though, and now 3 articles dedicated exclusively to this county's herpetofauna have been published (COVACIU-MARCOV et al., 2004, 2005 a, b). Data about herpetofauna are also available in general works dedicated to the county – or some regions of it – fauna (ARDELEAN, 1998; ARDELEAN & KARACSONYI, 2002), and even some articles about other county's herpetofauna (COVACIU-MARCOV, 2003).

Data about some species of the region herpetofauna are to be found also in some articles about the distribution of some species in North-Western Romania (COVACIU-MARCOV et al., 2003 a, b, 2007 a, 2008, SAS et al., 2006, 2007). Studies concerning the herpetofauna's structure and geographical distribution are of great interest in Romania, as there are very few data about it. Thus, in our country, important discoveries concerning the herpetofauna's geographical distribution have been brought forward lately (GHERGHEL et al., 2007, GHIRA, 2007, COVACIU-MARCOV et al., 2003 c, 2006, 2007 b, LAZĂR et al., 2005, STRUGARIU & GHERGHEL, 2007, TIBU & STRUGARIU, 2007).

As establishing the herpetofauna distribution in Romania is very important, this article aims to cover the white spots, trying to bring forward the last region of the county that has been studied thoroughly yet.

MATERIAL AND METHODS

Our study took place between 2000 and 2004. We used the transects method (COGĂLNICEANU, 1997), making numerous surveys, in all the five years of our study, in each investigated locality. The animals were determined mostly directly, without the necessity of capturing them. When the capture of some specimens was compulsory, it was usually made by hand. Amphibians in their aquatic period were captured with the help of rectangle drags or using round nets mounted on long metallic poles. After determining the captured species, they were set free in their habitats of origin. An important role in the charting of the herpetofauna of the investigated region was played by the dead animals that we found, killed either by local people or by cars.

The region under study comprises the plain areas in Western Satu Mare county. The Western boundary of the studied territory is the border between Romania and Hungary, and the Eastern boundary the contact area between plain and the most western hills. The practical activity took place between 2001-2005, investigating several habitats from 63 localities.

RESULTS AND DISCUSSIONS

In the plain region from Western Satu Mare county we have found 14 species belonging to herpetofauna. Among these, 9 species belong to the amphibians: *Triturus vulgaris*, *Triturus dobrogicus*, *Bombina bombina*, *Pelobates fuscus*, *Bufo bufo*, *Bufo viridis*, *Hyla arborea*, *Rana ridibunda*, *Rana dalmatina* and 5 to the reptiles: *Emys orbicularis*,

Lacerta agilis, *Lacerta viridis*, *Elaphe longissima*, *Natrix natrix*. Besides these 14 species we have also identified in the region *Rana kl. esculenta* populations, a hybrid form between *Rana ridibunda* and *Rana lessonae*.

We have studied the distribution of the 14 species and also a hybrid form of the herpetofauna in the 63 localities in the region under study. Thus, we have identified 459 localities for the species we found in the 63 localities (Table 1). Among these, 342 are brand new localities for the Romania's herpetofauna.

The herpetofauna of the investigated region is not very rich in species. This is normal though, as the region is very ecological and geographically homogenous. Thus, comparing these results with other similar studies (COVACIU-MARCOV et al., 2004, 2005 a, b), the herpetofauna diversity is obviously smaller, but the respective studies, although carried out in the county, comprised areas rich in relief and rich in different ecological conditions. Therefore, the herpetofauna is much richer. Despite its less diversity, the herpetofauna of the studied region is still very important, comprising extremely large populations. These populations are rare and under protection nationally and at European level, such as *Triturus dobrogicus* and *Bombina bombina*. Thus, it is this less rich in species area (due to ecological conditions) that makes its herpetofauna a particular one.

The herpetofauna of the Western Satu Mare county is a typical one for the plain zones in North-Western Romania (COVACIU-MARCOV et al., 2000, 2002, 2003 d, 2004, 2005 a, b), the size of the population showing an area that is little affected anthropically. The herpetofauna species in the region under study can be grouped into 4 categories: 1. plain species, 2. wide-distribution species in Romania, 3. species that have a fragmentary habitat because of the anthropic influence, 4. rare species in the area, in typical habitats.

Triturus dobrogicus, *Bombina bombina* and *Pelobates fuscus* are typical elements for the low areas. Expectantly, among the comb triturus, only *Triturus dobrogicus* is present here, a typical species for the plain areas in Dobrogea and Bazinul Panonic (ARNTZEN et al., 2007). Although its presence in the area was predictable, it was previously noticed throughout all the western Romania, but only in a few localities (IFTIME, 2005). *Triturus dobrogicus* is distribution on the whole area of the region under study, but many populations are low in number, hidden in the artificial canals between crops. Thus, although they still have their reproduction habitat, the terrestrial habitat is much shorter, which can affect the further populations. Large *Triturus dobrogicus* populations live in the wide permanent swamps in the Carei Plain, where more populations are present. *Bombina bombina* is distribution throughout the whole region under study, living in practically any aquatic habitat, the populations being very rich. Although present throughout the whole studied region, *Pelobates fuscus* is by far the richest population from the Carei Plain, where the species has the advantage of digging easier in the sandy soil. The size of the populations in the Carei Plain can also be deduced from the number of the individuals killed by cars, including on the sand roads.

Triturus vulgaris, *Bufo bufo*, *Bufo viridis*, *Lacerta agilis* and *Natrix natrix* are wide distribution species in Romania. Even in the plain area from western Satu Mare county, *Triturus vulgaris* is one of the best represented amphibian species, living throughout the above mentioned area. The both toad species are well represented in this region, being distribution in a relatively uniform way. However, the green toads are better represented in the Carei sandy plain, which is normal for a xero-thermophile species (STUGREN, 1957). *Lacerta agilis* is uniformly distribution in the region we studied, in very different habitats, living not only in the sandy hills and the permanent swamps, but also in the heavy anthropically affected habitats. *Natrix natrix* is well represented in the plain area from western Satu Mare county, but it seems to like more the permanent wet zones, less anthropically affected. However, the species can be also noticed in the canals near the roads or between the crops, where unfortunately it is often the cars' victim.

The effect of the anthropic activities is noticeable for more sensitive species, such as *Hyla arborea*, *Rana dalmatina* or *Emys orbicularis*. *Hyla arborea*, although wide distribution in Romania, is generally connected to the forest zones (FUHN, 1960). Thus, the species is no longer uniformly distribution in this region, but has a fragmentary habitat. The biggest and most connected among them populations are present again the the Carei Plain, where several forests survived, but nevertheless, we can still meet them in wide swamps favorable to the species. Otherwise/in rest, the green frog can be found either in forest islands, or in swamps, both the habitats being very fragmentary and small in size. *Rana dalmatina* has the same area, missing from the heavily affected anthropically zones. However, we can find it more in the Carei Plain, but less in swamps and forest islands. *Emys orbicularis* is also exclusively present in the wide swamps area in the Carei Plain. Here we can find large populations, although generally speaking the species is reduced and vulnerable in Transylvania (GHIRA et al., 2002).

Among the green frogs group we can mention two species (*Rana ridibunda* and *Rana kl. esculenta*), but previously in the area a third form was noticed, namely *Rana lessonae* (COVACIU-MARCOV et al., 2007 a). Thus, the region under study is rich in all the three forms belonging to the green frogs group. However, *Rana ridibunda* is the widest distribution, and it is the only one present even in the heavily affected anthropically areas. *Rana kl. esculenta* and *Rana lessonae* live in the forest zones, swamps or canals flowing from these – so wet areas -, large, permanent and little changed anthropically. *Rana ridibunda* is to be found alone in canals, ditches, the places where cattle water, concrete basins, lacking in other species. *Rana ridibunda* populations are very large, but still, the other two species must be protected by preserving the habitats, by putting an end to the environment degradation, stopping the swamps' cleaning and burning.

Lacerta viridis is a rare species in the region under study, living only in a few localities from the Carei Plain. The green lizard lives only in sand hills areas, especially in forest skirts, road edges or sand quarries. Normally, in Western Romania the species is not to be found in the plain, but only at altitudes higher than 150m, in areas having an

uneven relief (COVACIU-MARCOV et al., 2000, 2002, 2003 d, 2004, 2005 a, b). The same happens in western Satu Mare county, where the species is missing from the very wet plains having a plain relief. Thus, the populations living in the sand hills in the Carei Plain are isolated from the rest of the populations in Romania, and they can only communicate with the ones from the Valea lui Mihai Plain (Northern Bihor county) (COVACIU-MARCOV et al., – in manuscript). Also, these populations communicate with the ones in North-Eastern Hungary (PUKY et al., 2005).

Elaphe longissima is a very rare species in the region we studied, living only in the forest areas in the North. These populations may communicate with the ones from the Oas Mountains forests, where the species is well represented (COVACIU-MARCOV et al., 2004, unpublished data). In the plain area from the western Satu Mare county *Elaphe longissima* is very rare, as we have noticed only one animal in 2005.

Some species were mentioned here for the first time, but, besides these, other 5 species of the herpetofauna were noticed in the area: *Rana arvalis*, *Rana lessonae*, *Podarcis taurica*, *Zootoca vivipara* and *Vipera berus* (COVACIU-MARCOV et al., 2003 a, b, 2007 a, 2008, GHIRA et al., 2002). They are either glacial relics connected to a wet, cooler climate—exceptionally for the plain zone—, or elements linked to a warmer climate due to the sand. The 5 species have been also previously noticed in several localities, but as the present article does not mention anything original about them, those species were not included.

Table 1. The distribution of the recorded amphibian and reptile species in the plain regions from western area of Satu-Mare county.

Tabelul 1. Răspândirea speciilor de amfibieni și reptile în localitățile din zona de câmpie din vestul județului Satu-Mare.

Species	Tv	Td	Bb	Pf	Buf	Buv	Ha	Rr	Re	Rd	Eo	La	Lv	El	Nn
Aliza	S	X	X	-	S	S	-	X	-	S	-	S	O	-	-
Amăți	X	X	X	X	-	-	-	X	X	-	-	X	-	-	-
Ambud	-	-	X	X	X	X	-	X	-	-	-	X	-	-	-
Apateu	-	-	X	-	X	X	-	-	-	-	-	-	-	-	-
Baba Novac	-	-	X	-	-	X	-	X	-	X	-	X	-	-	-
Băbășești	-	-	X	X	-	-	-	X	-	X	-	X	-	-	X
Bercu	-	-	X	-	X	-	-	X	X	X	-	X	-	-	-
Berea	X	X	X	X	X	X	X	X	X	X	-	X	X	-	X
Berveni	O	-	X	-	-	-	-	-	-	O	-	-	-	-	O
Boghiș	S	X	X	O	S	S	O	X	X	-	-	S	O	-	X
Botiz	X	X	X	X	-	-	-	X	-	X	-	X	-	-	X
Carei	S	X	S	S	S	S	S	X	X	O	-	S	O	-	-
Câmin	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
Căpleni	O	-	-	O	O	O	O	X	-	-	-	S	O	-	-
Ciumești	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X
Corod	-	-	X	-	-	X	-	X	-	-	-	-	-	-	-
Craidorolț	S	X	X	-	-	-	O	X	-	X	-	S	O	-	-
Crișeni	X	-	X	-	-	-	-	X	-	X	-	X	-	-	-
Culciu Mic	-	-	X	-	-	X	-	X	-	-	-	X	-	-	X
Dacia	X	X	S	X	O	O	O	X	X	S	-	S	O	-	S
Dara	-	-	X	-	X	X	-	-	X	X	-	X	-	-	X
Doba	S	X	S	S	S	S	O	X	X	S	-	S	O	-	X
Domănești	S	-	S	S	-	S	O	X	-	-	-	S	O	-	S
Dorolț	-	-	X	X	X	X	-	X	X	X	-	X	-	-	X
Decebal	O	-	S	S	S	X	S	X	X	-	-	S	O	-	X
Drindeștiu Mic	-	-	S	-	O	S	O	-	-	-	-	S	O	-	-
Foieni	S	X	S	S	S	S	S	X	X	S	-	S	S	-	S
Gelu	S	-	S	X	S	S	-	X	X	X	-	S	S	-	X
Ghenci	S	X	S	S	X	-	O	X	-	-	-	S	O	-	S
Ghilvaci	S	X	X	S	S	O	O	X	-	X	-	S	O	-	X
Horea	X	X	X	X	-	X	X	X	X	X	-	X	-	-	X
Ianculești	S	-	S	O	O	S	O	X	X	-	-	S	O	-	-
Lazuri	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-
Lucăceni	-	-	S	S	S	S	O	-	-	O	-	S	O	-	S
Marna Nouă	X	-	S	O	O	S	O	-	-	-	-	S	O	-	-
Mărtinești	X	X	X	X	-	X	-	-	-	-	-	X	-	-	-
Moftin	X	-	S	S	O	S	O	X	-	-	-	S	-	-	X
Moftinu Mare	X	-	S	X	X	-	-	X	X	-	-	X	-	-	X
Nisipeni	-	-	X	-	X	-	-	X	X	X	-	X	-	-	X
Noroieni	-	-	X	-	X	-	-	X	X	X	-	X	-	X	X
Oar	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-

Odoreu	X	X	X	X	X	-	-	-	-	-	-	X	-	-	-
Păulian	X	-	S	S	O	O	-	X	-	-	-	X	O	-	X
Păulești	-	-	X	X	-	-	-	X	-	-	-	X	-	-	-
Petea	-	-	X	X	X	X	-	-	X	-	-	X	-	-	-
Petin	-	-	X	X	X	X	-	X	-	-	-	X	-	-	-
Petrești	X	-	S	X	O	S	-	X	-	-	-	X	-	-	-
Pișcolț	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X
Rădulești	S	X	S	S	S	O	O	X	-	-	-	X	-	-	-
Resighea	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X
Sanislău	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X
Satu Mare	X	X	X	X	-	X	X	X	X	X	-	X	-	-	X
Sătmărel	O	-	X	-	-	-	-	X	X	S	-	S	O	-	X
Sânmiclăuș	X	-	S	S	O	O	O	X	-	-	-	S	O	-	-
Scărișoara Nouă	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X
Terebești	X	X	S	O	S	O	-	X	-	S	-	S	O	-	-
Tiream	S	-	S	X	-	X	-	X	-	-	-	X	-	-	S
Traian	S	X	S	O	O	O	O	X	X	S	-	S	O	-	-
Țeghea	S	-	S	O	O	O	O	X	-	-	-	S	O	-	-
Urziceni	S	X	X	X	X	X	X	X	X	S	-	S	X	-	S
Urziceni Pădure	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X
Vânătoarești	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-
Vetiș	-	-	X	X	-	X	X	X	X	-	-	X	-	-	X
Σ (X)	22	26	40	27	20	23	11	51	29	21	6	35	4	1	26
Σ (S)	15	-	22	12	11	13	3	-	-	8	-	24	2	-	7
Σ (O)	4	-	-	7	11	9	17	-	-	3	-	-	21	-	1

Legend:

Tv=*Triturus vulgaris*, **Td**=*Triturus dobrogicus*, **Bb**=*Bombina bombina*, **Pf**=*Pelobates fuscus*, **Buf**=*Bufo bufo*, **Buv**=*Bufo viridis*, **Ha**=*Hyla arborea*, **Rr**=*Rana ridibunda*, **Re**=*Rana esculenta*, **Rd**=*Rana dalmatina*, **Eo**=*Emys orbicularis*, **La**=*Lacerta agilis*, **Lv**=*Lacerta viridis*, **El**=*Elaphe longissima*, **Nn**=*Natrix natrix*.

New localities (S): 342

Localities in which we reconfirmed the presence of the species (S): 117

The sum of localities (X+S): 459

Localities in which we did not reconfirm the presence of the species (O): 73

CONCLUSIONS

The herpetofauna of the investigated region is not very rich in species. This is normal though, as the region is ecological and geographically homogenous.

The herpetofauna species in the region under study can be grouped into 4 categories: 1. plain species, 2. wide-distribution species in Romania, 3. species that have a fragmentary habitat because of the anthropic influence, 4. rare species in the area, in typical habitats.

The plain area from the western Satu Mare county is distinctive for large populations of elements typical for the plain area, rare and protected species, not only in Romania but also in Europe. Besides these, one can notice well represented species belonging to the Romanian herpetofauna, and, as we have also published previously, glacial relics – very rare for the plain area, or at the habitat limit. Thus, the area under study is a rare herpetofauna mixture, but nevertheless of great importance scientifically and conservatively. Therefore, it is vital to keep the forests and the swamps undamaged, especially the most important Region of all, the Carei Plain.

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BIBLIOGRAPHY

- ARDELEAN G. 1998. *Fauna județului Satu - Mare, Țara Oașului, Culmea Codrului și Câmpia Someșului*. "Vasile Goldiș" University Press Arad: 515.
- ARDELEAN G., KARÁCSONYI C. 2002. *Flora și Fauna Văii Ierului (înainte și după asanare)*. Edit. Bion Satu-Mare: 675.

- ARNTZEN J. W., ESPEREGUEIRA THEMUDO G., WIELSTRA B. 2007. *The phylogeny of crested newts (Triturus cristatus superspecies): nuclear and mitochondrial genetic characters suggest a hard polytomy, in line with the paleogeography of the centre of origin*. Contributions to Zoology Amsterdam. **76**(4): 261-278.
- COGĂLNICEANU D. 1997. *Practicum de ecologie a Amfibienilor - metode și tehnici în studiul ecologiei Amfibienilor*. Edit. Univ. din București. București: 122.
- COGĂLNICEANU D., AIOANEI F., BOGDAN M. 2000. *Amfibienii din România, Determinator*. Edit. Ars Docendi București: 99.
- COVACIU-MARCOV S. D., GHIRA I., VENCZEL M. 2000. *Contribuții la studiul herpetofaunei din zona Oradea. Nymphaea, Folia Naturae Bihariae Oradea*. **28**: 143-158.
- COVACIU-MARCOV S. D., TELCEAN I., CUPȘA D., CADLEȚ D., ZSURKA R. 2002. *Contribuții la studiul herpetofaunei din regiunea Marghita (jud. Bihor, România)*. Analele Univ. din Oradea. Fasc. Biol. Oradea. **9**: 47-58.
- COVACIU-MARCOV S. D. 2003. *Date preliminare privind herpetofauna Văii Ierului*. Stud. și Com. Seria Șt. Nat. Satu-Mare. **2-3**: 191-196.
- COVACIU-MARCOV S. D., SAS I., CUPȘA D., KOVACS E. H., GROZA M. 2003 a. *Contributions to the knowledge of the distribution of Rana arvalis - Nills 1842 in the North - West region of Romania*. Analele Univ. din Oradea. Fasc. Biol. Oradea. **10**: 39-48.
- COVACIU-MARCOV S. D., CICORT-LUCACIU A.-ȘT., SAS I., BOGDAN H., PETER V. 2003 b. *Preliminary data about the distribution of Podarcis taurica in the North - Western parts of Romania*. Analele Univ. din Oradea. Fasc. Biol. **10**: 111-117.
- COVACIU-MARCOV S.-D., SAS I., CICORT-LUCACIU A.-ȘT., KOVACS E. H. 2003 c. *Notes upon the herpetofauna of the northern area of the Botoșani county (Romania)*. Univ. din Bacău. Stud. și Cerc. Șt., Biol. Bacău. **8**: 201-205.
- COVACIU-MARCOV S. D., CUPȘA D., TELCEAN I., SAS I., CICORT A. 2003 d. *Contribuții la cunoașterea herpetofaunei din regiunea cursului mediu și inferior al Crișului Negru (Județul Bihor, România)*. Oltenia. Stud. și Com. Șt. Nat. Craiova. **19**: 189-194.
- COVACIU-MARCOV S. D., GHIRA I., SAS I. 2004. *Contribuții la studiul Herpetofaunei zonei Oașului (Județul Satu-Mare, România)*. Mediul cercetare, protecție și gestiune, Cluj-Napoca. **2**: 107-112.
- COVACIU-MARCOV S. D., SAS I., CICORT-LUCACIU A.-ȘT., ACHIM A., ANDRIȚCU A. 2005 a. *The herpetofauna of Tășnad Hills (Satu-Mare county, Romania)*. Analele Științifice ale Univ. "Al. I. Cuza" Iași. Ser. Biologie Animală Iași. **51**: 159-168.
- COVACIU-MARCOV S. D., CICORT-LUCACIU A.-ȘT., SAS I., ILE R. D. 2005 b. *The herpetological fauna of "Culmea Codrului" (Satu-Mare county, Romania)*. Analele Univ. din Craiova. Craiova. **46**: 163-168.
- COVACIU-MARCOV S. D., GHIRA I., CICORT-LUCACIU A.-ȘT., SAS I., STRUGARIU A., BOGDAN H. V. 2006. *Contributions to knowledge regarding the geographical distribution of the herpetofauna of Dobruđja, Romania*. North West. J. Zool. Oradea. **2**(2): 88-125.
- COVACIU-MARCOV S. D., SAS I., CICORT-LUCACIU A.-ȘT. 2007 a. *Distribution of the pool frog Pelophylax (Rana) lessonae, in North-Western Romania*. Biota, Slovenia. **8**(1-2): 5-10.
- COVACIU-MARCOV S. D., CICORT-LUCACIU A.-ȘT., FERENȚI S. 2007 b. *Some low altitude Triturus montandonii (Amphibia: Salamandridae) population records from Oaș region, North-Western Romania*. North West. J. Zool. Oradea. **3**(2): 109-114.
- COVACIU-MARCOV S. D., CICORT-LUCACIU A.-ȘT., FERENȚI S., DAVID A. 2008. *Distribution of Lowland Zootoca vivipara Populations in North-Western Romania*. North West. J. Zool. **3**(1) in press.
- FUHN I. 1960. "Fauna R.P.R." – Amphibia. Editura Academiei R.P.R. București. **14**(1): 1-288.
- FUHN I., VANCEA ȘT. 1961. "Fauna R.P.R." - Reptilia. Edit. Acad. R.P.R., București. **14**(2): 1-352.
- GHERGHEL I., STRUGARIU AL., GLĂVAN T. 2007. *Eremias arguta deserti (Reptilia: Lacertidae) is not extinct from Romanian Moldavia*. North West. J. Zool. Oradea. **3**(2): 115-120.
- GHIRA I. 2007. *Rediscovery of Vipera ursinii rakosiensis in Transylvania*. Herpetologica Romanica Oradea. **1**: 77-81.
- GHIRA I., VENCZEL M., COVACIU-MARCOV S.-D., MARA GY., GHILE P., HARTEL T., TÖRÖK Z., FARKAS L., RÁCZ T., FARKAS Z., BRAD T. 2002. *Mapping of Transylvanian Herpetofauna*. Nymphaea, Folia Naturae Bihariae Oradea. **29**: 145-203.
- IFTIME AL. 2005. *Amfibieni și Reptile*. in: Cartea Roșie a Vertebratelor din România. editori: Botnariuc & Tatole. Edit. Acad. Române București: 1-325.
- LAZĂR V., COVACIU-MARCOV S. D., SAS I., PUSTA C., KOVACS E.-H. 2005. *The herpetofauna in the county of Dolj (Romania)*. Analele Științifice ale Univ. "Al. I. Cuza" Iași. Ser. Biol. Anim. Iași. **51**: 169-168.
- PUKY M., SCHÁD P., SZÖVÉNYI G. M. 2005. *Magyarország herpetológiai atlasza/Herpetological atlas of Hungary*. Varangy Akciócsoport Egyesület, Budapest: 207.
- SAS I., COVACIU-MARCOV S. D., KOVACS E. H., RADU N. R., TOT H. A., POPA A. 2006. *The populations of Rana arvalis Nills. 1842 from the Ier Valley (The Western Plain, Romania): present and future*. North West. J. Zool., Oradea. **2**(1): 1-16.
- SAS I., KOVACS E. H., SZEIBEL N., RADU N. R., TOT H. A., FERENȚI S. 2007. *The populations of Rana arvalis Nills. 1842 from the Ier Valley (The Western Plain, Romania), Part II: sex ratio, and body size distribution of some populations*. Herpetologica Romanica Oradea. **1**: 38-44.

- STRUGARIU AL., GHERGHEL I. 2007. *New record on the occurrence Dolichophis caspius (Reptilia: Colubridae) in Romanian Moldavia*. North West. J. Zool. Oradea. **3**(1): 57-61.
- STUGREN B. 1957. *Noi contribuții la problema originii faunei herpetologice din R. P. R. în lumina glaciațiunilor*. Bul. Șt. Secția de Biologie și Științe Agricole, Seria Zool. **9**(1): 35-47.
- ȚIBU P. L., STRUGARIU AL. 2007. *A new record for the Blotches Snake Elaphe sauromates (Reptilia: Colubridae) in Romania*. North West. J. Zool. Oradea. **3**(1): 62-65.

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