

## The herpetofauna of the south-western part of Mehedinți County, Romania

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**Abstract.** The south-western part of Mehedinți County comprises many herpetofauna species, compared to most regions in Romania. This is how we managed to encounter 14 amphibian species (*Salamandra salamandra*, *Lissotriton vulgaris*, *Triturus cristatus*, *Triturus dobrogicus*, *Bombina bombina*, *Bombina variegata*, *Pelobates fuscus*, *Bufo bufo*, *Bufo viridis*, *Hyla arborea*, *Pelophylax ridibundus*, *Pelophylax lessonae*, *Rana dalmatina*, *Rana temporaria*) plus *Pelophylax kl. esculentus* and 15 reptile species (*Emys orbicularis*, *Testudo hermanni*, *Ablepharus kitaibelii*, *Lacerta agilis*, *Lacerta viridis*, *Podarcis muralis*, *Podarcis taurica*, *Darevskia praticola*, *Anguis fragilis*, *Zamenis longissimus*, *Dolichophis caspius*, *Coronella austriaca*, *Natrix natrix*, *Natrix tessellata*, *Vipera ammodytes*). *Salamandra salamandra*, *Bombina variegata* and *Rana temporaria* were identified at very low altitudes, lower than any other indication from Romania up to present. This is explained by the fact that mountain valleys, bearing here a typical aspect, reach all the way to the Danube, carrying with them the occurring species. In Blahnița Plain, *Darevskia praticola* appears in cleared areas, being present in the vegetation girdles bordering the canals found between agricultural fields.

**Key words:** distribution, amphibians, reptiles, SW Mehedinți, Romania

### Introduction

Mehedinți County is situated in the south-western part of Romania (Fig.1), this region of the country fully benefiting from sub-Mediterranean climate influences (Tufescu et al. 1995). These influences are felt both in the annual thermal average and the annual rainfall average (Stoenescu et al. 1966). Due to these factors, the south-western part of Romania is a region in which sub-Mediterranean flora and fauna elements appear (Tufescu et al. 1995). Further more, in

Mehedinți County we have mountain units belonging to the Carpathian Mountains right near low plain areas (Posea & Badea 1984). Thus, relief diversity induces a vast mosaic of habitats which, combined with the climate regime, has many effects on the herpetofauna. Due to the high amount of sub-Mediterranean elements one of the most special herpetofauna complexes from Romania inhabits this area as previously signaled (Fuhn & Vancea 1961, Fuhn 1970, 1975). Contributions regarding the distribution of these species continued to appear

along time: for example, Hermann's tortoise was recently indicated in areas from the Danube's narrow path (Rozyłowicz et al. 2003, Rozyłowicz 2008, Covaciu-Marcov et al. 2005). Despite of these particularities, few explicit studies have been made for the herpetofauna of the region, in comparison with other, much more ecologically uniform areas of the country. In the past, this area was strongly affected by human activities, with the construction of the "Porțile de Fier" Dam, a fact that led to the extinction of some species from this region (Fuhn 1975). Along with some work dedicated to this area (Fuhn 1970, 1975, Șerban 1972), scarce data about the herpetofauna of the region are found in manuscripts concerning the entire Oltenia (Cruce 1971a, b) or in the monographs on Romania's herpetofauna (Fuhn 1960, Fuhn & Vancea 1961, Cogălniceanu et al. 2000, Iftime 2005). This situation pushed us to undergo studies in this area, aiming to contribute to the knowledge of species assemblage and geographic distribution of herpetofauna from this region in Romania.

#### Material and Methods

The study took place between 2005 and 2008. In each of the 4 years, we made 2 or even 3 field trips in the area, each taking about 3-4 days. The investigated area is represented by the south-western part of Mehedinți County, having the Caraș Severin County as western border and the Danube as southern. Not having a natural border to the north and to the east, this area reaches near the town of Vânju Mare to the east (Fig.1). The studied area comprises a high sector, situated in the western part, representing parts of the Almaj Mountains, but also a plain sector, to the south-east, representing the Blahnița Plain (Posea & Badea 1984). Between these, there is also a part of the Mehedinți Plateau and of the Strehaia Plateau (Mândruț 2006).

The method used was that of transects (Cogălniceanu 1997), making several trips to most of the 51 localities from the studied area and in many of them investigating more than one habitat. The encountered animals were identified directly in some cases, without the need of capturing. The reptiles were all captured by hand, without any exception. Capturing animals was necessary in spring for amphibians and especially for newts, which are found in large ponds, with murky water throughout their breeding period, in which they cannot be observed. The newts were collected with various types of nets, mounted on metallic poles of different lengths. After capturing, all the animals were always released back to their habitats of origin, being sometimes photographed prior to that. Only road-killed animals were conserved. This was especially the case of the road going parallel with the Danube, from Drobeta Turnu-Severin, towards Orsova, all the way through the investigated area to the limit with Caraș-Severin County. Road-killed animals were present in large numbers especially in spring and autumn, their identification helping to establish the composition and the geographic distribution of this region's herpetofauna.

#### Results

In the south-western part of the Mehedinți County we identified 29 herpetofauna species (Appendix 1, Figs 2-3), along with a category of hybrids between two amphibian species. Out of the entire 29 species, 14 were amphibians: *Salamandra salamandra*, *Lissotriton vulgaris*, *Triturus cristatus*, *Triturus dobrogicus*, *Bombina bombina*, *Bombina variegata*, *Pelobates fuscus*, *Bufo bufo*, *Bufo viridis*, *Hyla arborea*, *Pelophylax ridibundus*, *Pelophylax lessonae*, *Rana dalmatina*, *Rana temporaria* and 15 were reptiles: *Emys orbicularis*, *Testudo hermanni*, *Ablepharus kitaibelii*, *Lacerta agilis*, *Lacerta viridis*, *Podarcis muralis*, *Podarcis taurica*, *Darevskia praticola*, *Anguis fragilis*, *Zamenis longissimus*, *Dolichophis caspius*, *Coronella austriaca*, *Natrix natrix*, *Natrix tessellata*, *Vipera ammodytes*. The hybrids were represented by *Pelophylax* kl. *escu-*

*lentus*, an intermediate form between *Pelophylax ridibundus* and *Pelophylax lessonae*.

We've analyzed the distribution of the 29 species and the hybrid form in the 51 localities from the studied area. Thus, we

identified 499 localities for the encountered species in the 51 field localities (Appendix 1). Among the amphibians, one species - *Rana temporaria* - is indicated as a premiere for this region.

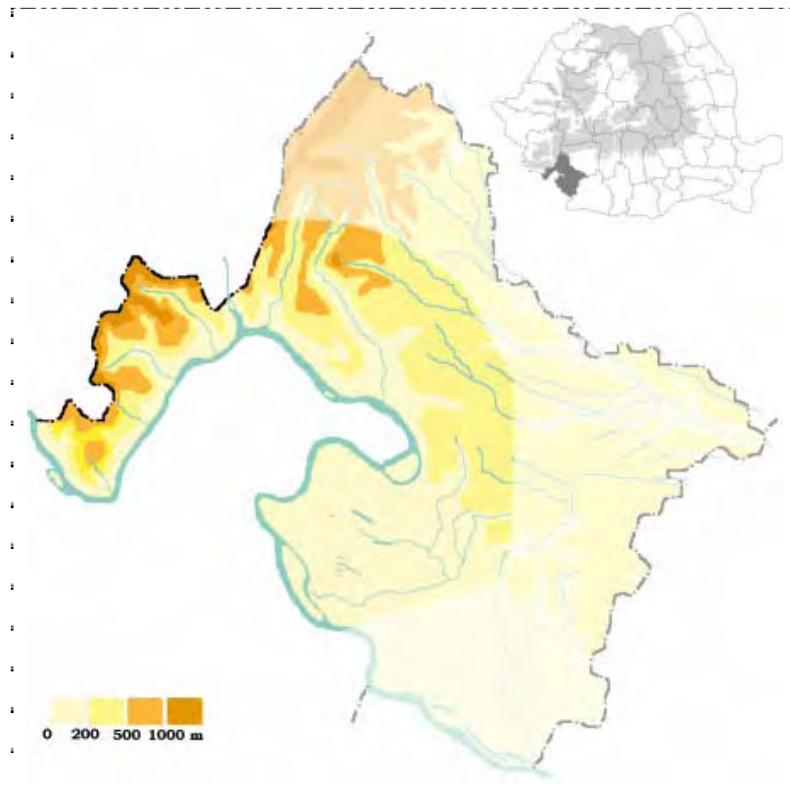


Figure 1. Location of the research area in Romania

*Salamandra salamandra* is only found in the high afforested sectors of the studied region, occurring only to the west of Drobeta Turnu - Severin. This distribution is in accordance with the ecological needs of the species (Cogălniceanu et al. 2000). However, the salamander has been identified at only 100m asl., in Vodita Valley, including downhill

of the monastery (Fig. A., B.). This is so far the lowest altitude in the country at which the species has been found, previously being encountered by us at 150m asl. in northern Romania (Covaciu-Marcov et al. 2007a).

*Lissotriton vulgaris* is the best represented newt in the area, mainly present in the plain sectors but also appearing in the high ones. We haven't identified this species uphill of Turnu

- Severin, probably because of the almost complete absence of breeding habitats, which in turn is most likely caused by the very steep slopes from the Danube's narrow path, that don't allow much room for water accumulations.

*Triturus cristatus* is very rare, encountered in only two localities, situated in the higher areas of the Mehedinți Plateau. Just like the previous species, it is missing from the Danube's narrow path due to the same causes - more

drastic and obvious at a larger sized species.

*Triturus dobrogicus* is even rarer than the above mentioned species, being identified in just one locality. It usually only occurs in the plain area, being a species characteristic to this relief (Cogălniceanu et al. 2002, Arntzen et al. 2006). The detail explains the absence of the Danube crested newt from the region, the studied plain sector having a very low degree of humidity. The identified population is localized near the Danube (Fig. C.), in the area where the Blahnita River flows into the Da-

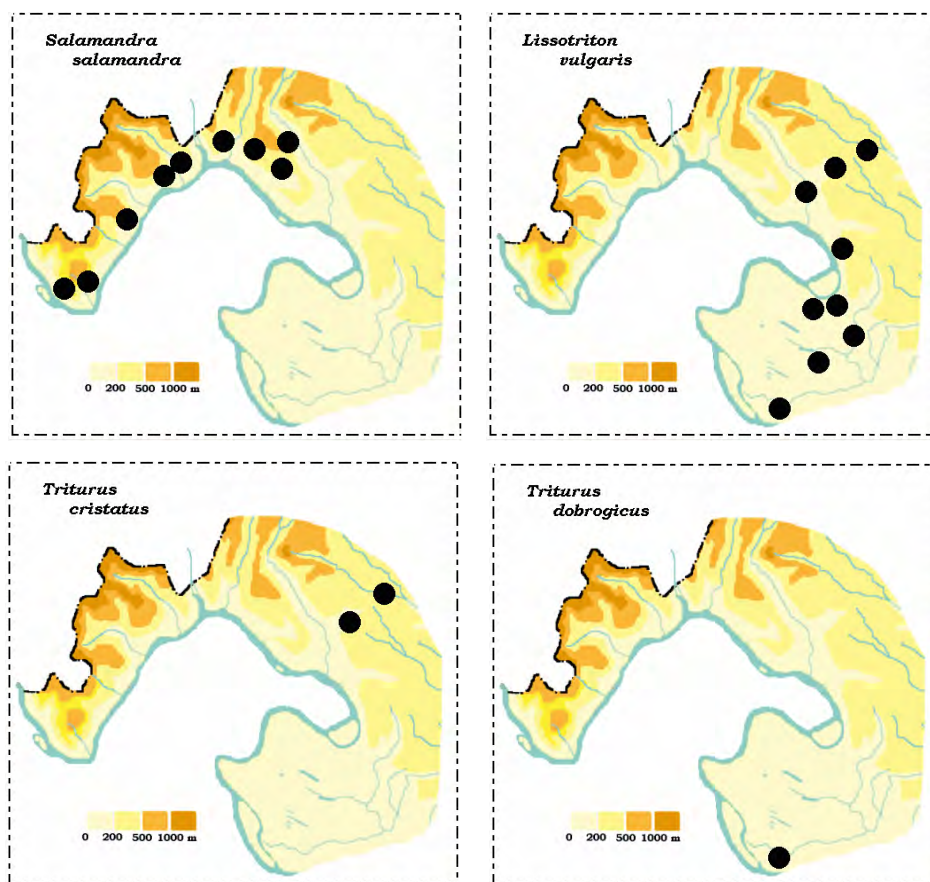


Figure 1./A. Distribution of the recorded amphibian species in the the research area.



**Figure A.** *S. salamandra* from the Vodița Valley



**Figure B.** Habitat of *S. Salamandra*, *B. variegata*, *P. esculentus*, *P. ridibundus*, *P. muralis* and *N. tessellata* at the Vodița Valley, near de Vodița Monastery.



**Figure C.** Habitat of *T. dobrogicus*, *L. vulgaris*, *B. bombina* near Balta Verde locality

nube.

*Bombina bombina* is common for the plain area, being present mostly in the artificial canals alongside roads or agricultural fields. Nevertheless, it can also be found in water accumulations from the Hinova - Ostrovul Corbului area (Fig. D).

*Bombina variegata* is also common in the region, but it only populates the high sector from the western part of the studied area. It is present in small waters, mostly small streams flowing in the Danube. One remarkable fact is that here *Bombina variegata* is found down to only 90m asl., even in the area where the Vodita Valley (Fig. B) flows into the Danube. This is, until now, the lowest altitude ever documented for this species in Romania (Covaciu-Marcov et al. 2007b).

*Pelobates fuscus* inhabits only the low area of the Blahnița Plain. We observed the species in just two localities, but it's probably better represented in the region, being though difficult to spot because of its nocturnal activity.

*Bufo bufo* was identified only in the higher and afforested sectors from the western part of the studied area.

*Bufo viridis* is, unlike the other *Bufo* species, very widespread, present in the entire territory of the studied area. Numerous individuals are killed by traffic each year, both on main and secondary roads.

*Hyla arborea* can be found throughout the entire region as well, but with a greater concentration of populations around forest sectors. In lower areas, it also appears in the vegetation from the sides of canals.

*Pelophylax ridibundus* is an abundant species, present in all the area investigated, despite the relatively low humidity. The species is found upstream on the Danube tributaries, even in sectors with a fast flow

and rocky riverbed, having the appearance of a mountainous landscape.

*Pelophylax lessonae* is rare in the region, being identified only in the 3 locations in which it was recently cited (Covaciu-Marcov et al. 2008). The populations are rather small in numbers, especially in the Vodita Valley.

*Pelophylax* kl. *esculentus* is present in more localities than the previous, being encountered both in the high and in the plain sector. In the latter, it occurs in open swampy areas but also in nearby forests, while in the higher sector it is to be found near streams flowing to the Danube.

*Rana dalmatina* is a common species for the forest sectors of the studied area.

*Rana temporaria* is very rare, identified in only two locations, alongside some Danube tributaries, in the high sector with humid, dense forests. It comes down to 140m asl., an altitude representing the lowest documented so far for this species in Romania.

*Emys orbicularis* was found in a small number of localities, but spread rather evenly throughout the entire study area. It appears both in the plain sector, where it inhabits permanent waters or artificial canals, and the Danube's narrow path, uphill from the Portile de Fier Dam. In this latter case, it is present in the semi-permanent streams flowing to the Danube, mainly in gulfs that they create before discharging.

*Testudo hermanni* is common and distributed in the entire region.

*Ablepharus kitaibelii* is a rare species, present in few localities, all of them in afforested areas. Most of these are located in the higher sector, with the exception of one locality situated in the plain: the forests near Vânju Mare.

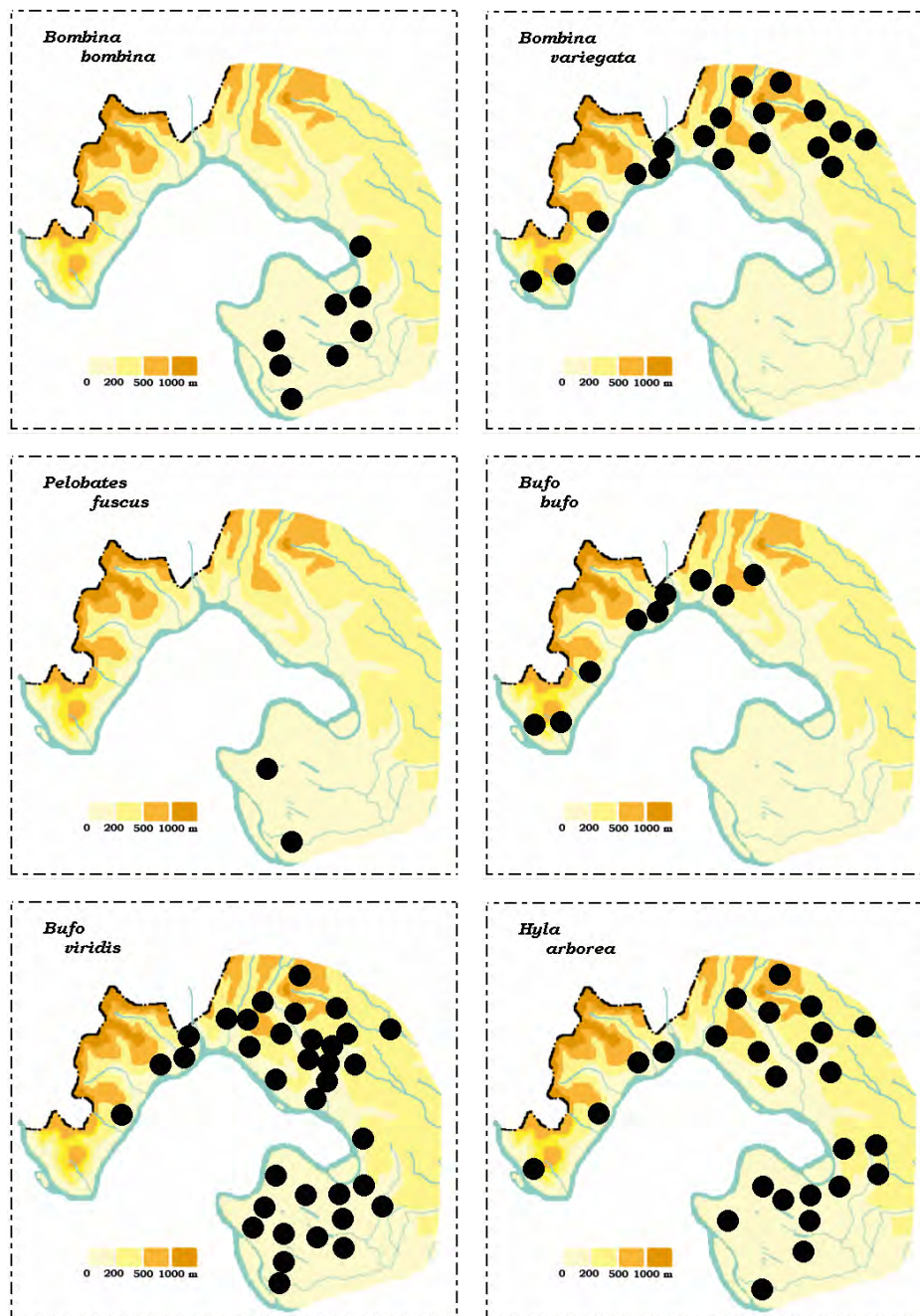


Figure 1/B. Distribution of the recorded amphibian species in the the research area

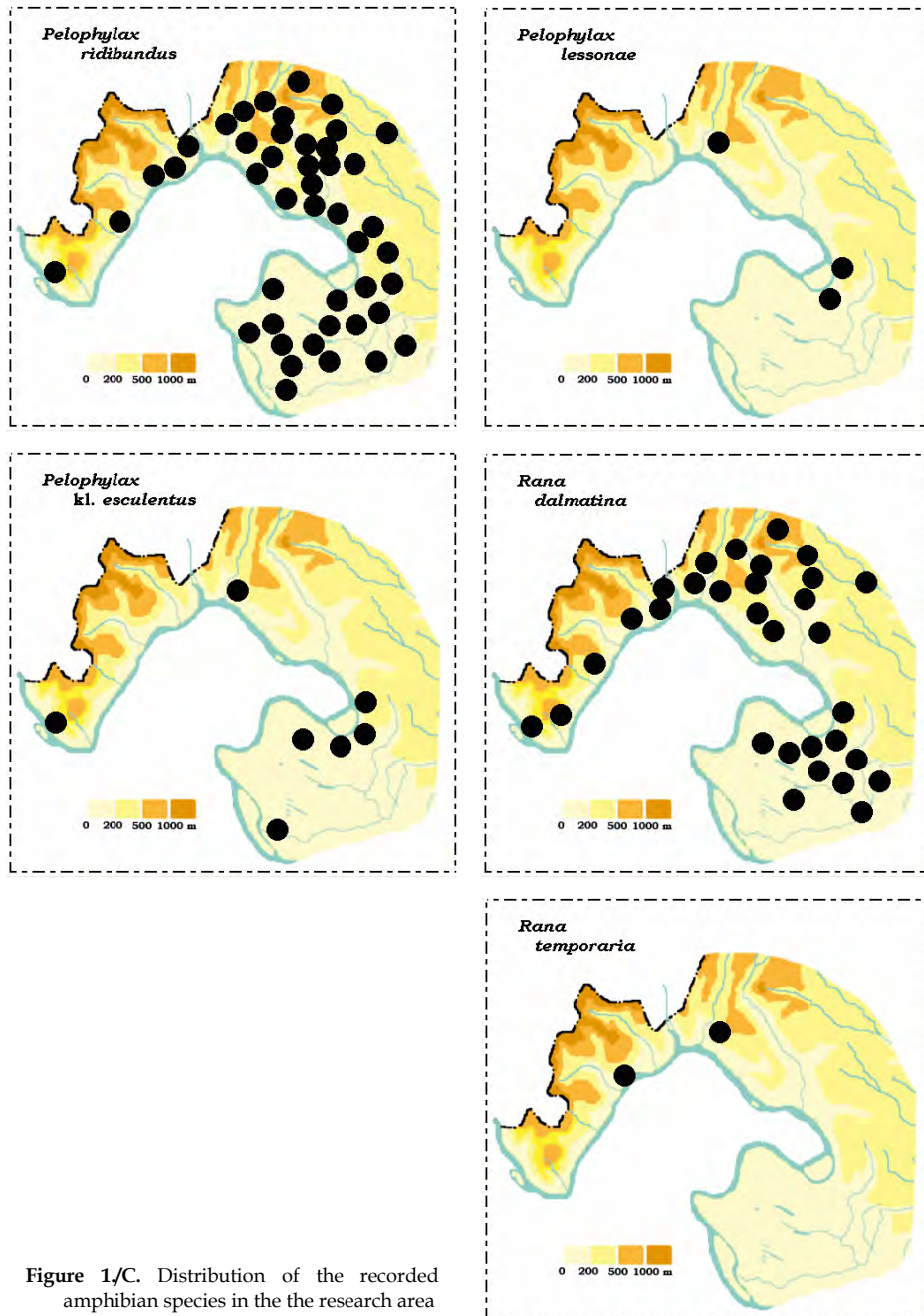


Figure 1/C. Distribution of the recorded amphibian species in the the research area





Figure D. Habitat of *B. bombina*, *Hyla arborea* and water frogs near Hinova locality

*Lacerta agilis* is extremely rare, being identified only in two locations from the plain sector. It inhabits vegetation girdles near ditches and canals, being present in areas with a higher humidity.

*Lacerta viridis* is common, being present in the entire studied region and represented by large populations.

*Podarcis muralis* occupies the entire higher sector, found especially in rocky areas in very high numbers.

*Podarcis taurica* (Fig. E) is characteristic only for the lower sectors. However, it occurs somewhat to the west of Turnu Severin, on the hills near Dudașu Schelei. In the inhabited areas (Fig. E) it is very abundant, being the most common lizard species.

*Darevskia praticola* is relatively rare, but present in the high and plain sectors as well, where it appears to have been found for the first time. Generally, it is present in forests, but exceptionally it can occur alongside *Lacerta agilis* in the plain in vegetation along canals found in open areas, between agricultural fields.

*Anguis fragilis* is, again, a rare species, found strictly in the high, afforested area.

*Zamenis longissimus* is, once more, rare, observed only in the higher, forest sectors. Occasionally, it can become a traffic victim in the area.

*Dolichophis caspius* is a species characteristic to the region, being widespread throughout it and found in both high and plain areas.

*Coronella austriaca* was encountered in a low number of localities, situated in higher sectors and always in forest areas.

*Natrix natrix* is present in the entire investigated region, not being limited by altitude or presence of forests, but always near some permanent waters.

*Natrix tessellata* is rarer than its congeneric species, being only present near some mountain streams from the high sector. Numerous individuals were found on stone walls near the Danube, and hundreds of them are annually killed by traffic.

*Vipera ammodytes* is present in the high, rocky sector only, where it is found in large

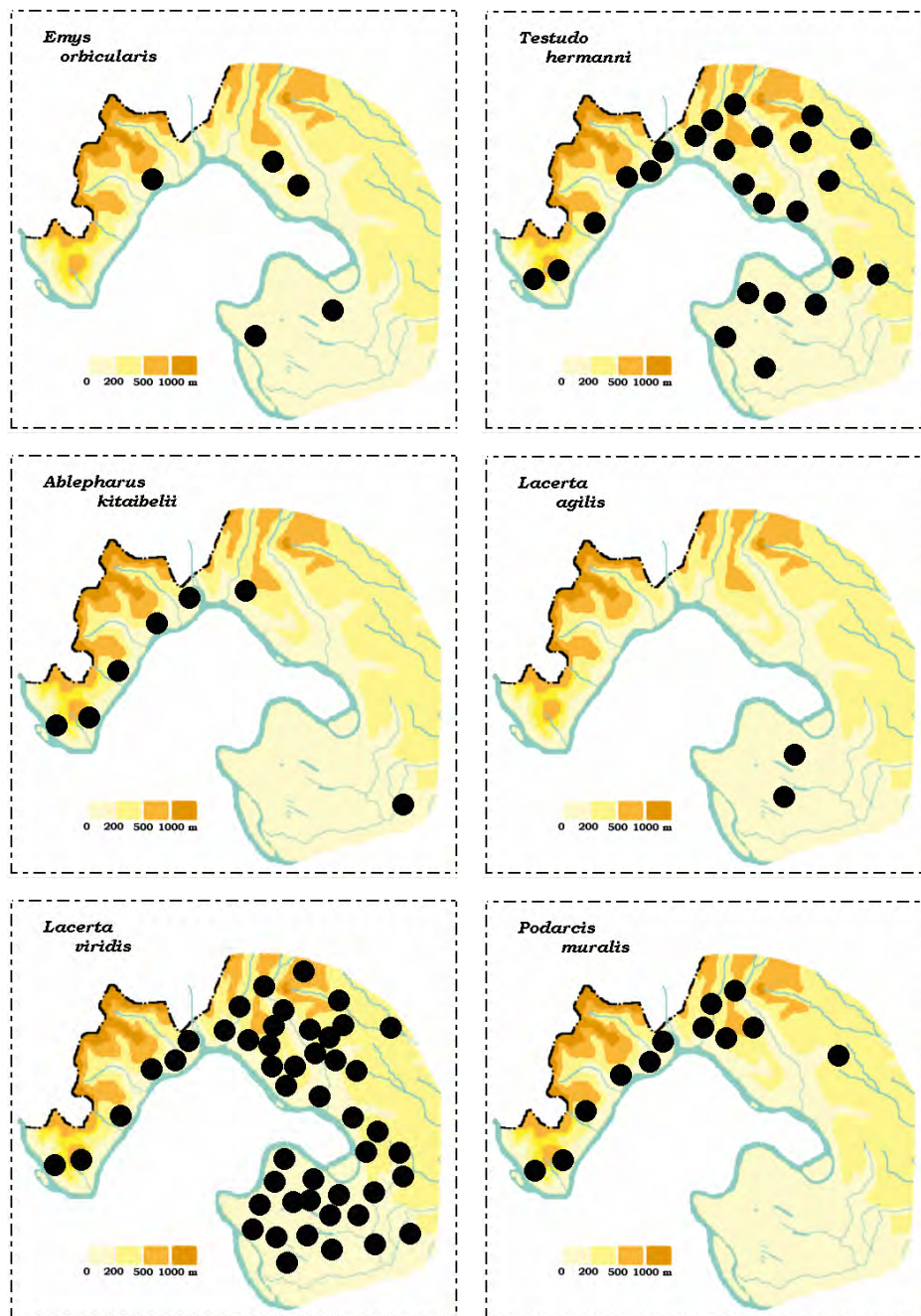


Figure 2/A. Distribution of the recorded reptile species in the the research area

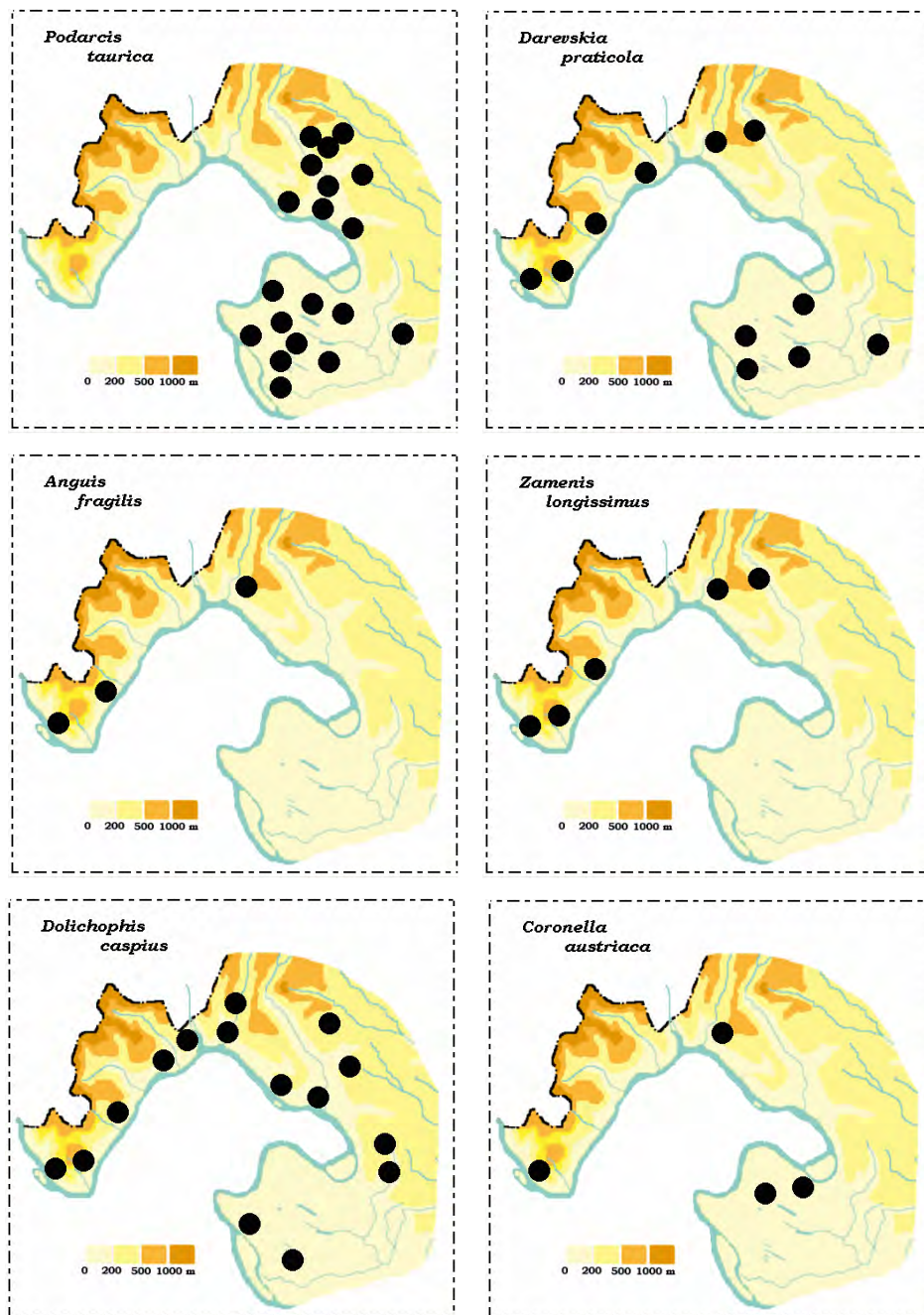


Figure 2/B. Distribution of the recorded reptile species in the the research area

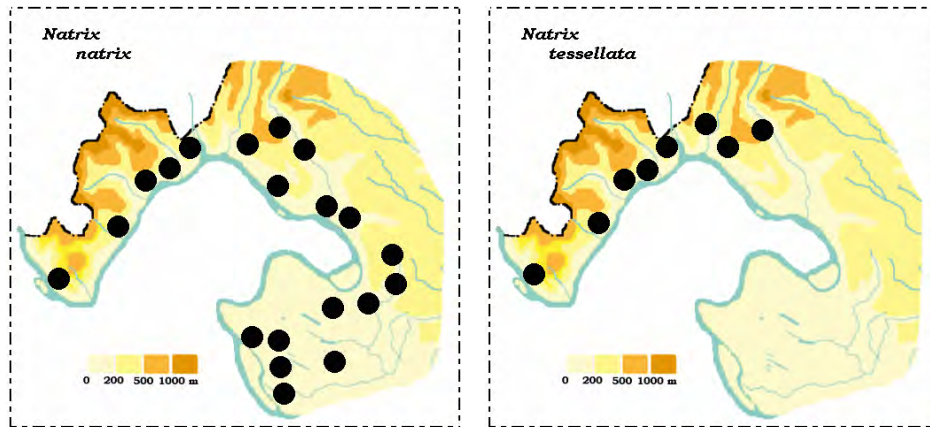


Figure 2/C. Distribution of the recorded reptile species in the the research area

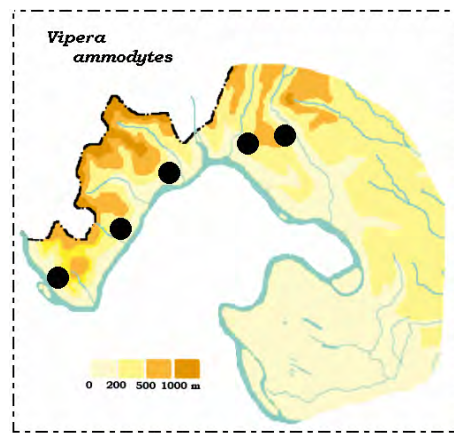


Figure E. Habitat (left) and adult male (right) of *P. taurica* near the Iron Gate II.

populations.

### Discussions

The south-western part of Mehedinți County presents a special abundance of herpetofauna species reunited on the same territory, as opposed to other regions in Romania. Thus, in this area we have the greatest indicated number of species, by comparison to other areas in the country (Covaciu-Marcov et al. 2002, 2003, 2004, 2006a, 2009, Ghira 1997, Gherghel et al. 2007). This fact is a consequence of the ecological mosaic of the region, but also of the large percentage of thermophilous species, not found in other regions in Romania.

Another particularity of this region's herpetofauna is the large number of reptile species. Generally for Romania, in the case of herpetofauna, it's the amphibians that prevail, due to the more humid and colder climate. In Mehedinți County, the large number of reptile species is a result of the southern position of the county, in an area with plenty of sub-Mediterranean influences (Tufescu et al. 1995). Another Romanian region where reptiles are more numerous is Dobrudja (Covaciu-Marcov et al. 2006b).

In the case of amphibians, the species assemblage is rather similar to other parts of the country (Covaciu-Marcov et al. 2002, 2003, 2004, 2006 a, Gherghel et al. 2007, Strugariu et al. 2006). The relatively large number of species by comparison to other areas in southern Romania, like Dobrudja (Covaciu-Marcov et al. 2006b), is a consequence of the relief mosaic allowing for the presence of both plain and high sector species in the investigated area. Furthermore, the Danube has a strong influence

here preserving a certain degree of humidity and vast hydrographic network. However, most amphibian species aren't generally very abundant. The situation is more obvious in the drier, plain sector (Stoenescu et al 1966), where the most common species, represented by large populations, is *Bufo viridis*. Besides that, amphibians have larger populations in Danube tributaries from the higher, afforested area of the Danube's narrow path.

Among amphibians, the newts are not usually well represented, both from the point of view of indicated localities and observed individuals. In the plain sectors, this is probably due to the dry climate limiting some aquatic habitats. In places where adequate aquatic habitats are found, one can usually find both newt species. However, in most cases, *Lissotriton vulgaris* is the only species found in the plain sector, despite the fact that it inhabits large and permanent canals, also suitable for the Danube crested newt. The absence of *Triturus dobrogicus* from these biotopes is therefore not due strictly to the absence of the satisfactory aquatic habitat, but also to the absence of the necessary land territory used after the mating season, because the canals are almost always surrounded by agricultural fields. If a small newt like *Lissotriton vulgaris* can survive in a small vegetation girdle after the completion of its aquatic period, the same does not apply to a larger newt like *Triturus dobrogicus*. This situation has, in time, lead to the extinction of the latter species from such habitats still inhabited by common newt. Further more, several fish species are often present in these habitats.

In the higher sector, newts are again rare despite the higher humidity. We did not

succeed in identifying either the crested newts or the common newt in the Danube's narrow path area, although both species are present in the Mehedinți Plateau, situated to the north. Their absence is the effect of the very steep hillsides from this area, on which breeding ponds do not form, not even for the common newt. The puddles alongside roads, which are in other regions used by the common newts, are very ephemeral here, all being temporary. Otherwise, the absence of newts from the steep sector near the Danube appears to be general, the same situation being recorded in Caraș Severin County, too (Covaciu-Marcov et al 2005).

Large differences are encountered in the case of reptiles compared to other Romanian regions, as was previously stated by Fuhn 1975. Thus, many southern, Mediterranean elements, found in Romania at their northern limit of their area are present here, from which we can mention: *Testudo hermanni*, *Ablepharus kitaibelii*, *Darevskia praticola*, *Dolichophis caspius* or *Vipera ammodytes* (Fig. F). Meanwhile, common elements from Romania like *Lacerta agilis*, usually tied to wet areas, are extremely rare here. Further more, elements related to a colder climate, like *Vipera berus* or *Zootoca vivipara*, were, of course, not identified. The indication of *Zootoca vivipara* as abundant in the region (Serban 1972) is from our point of view most improbable, being as previously argued (Fuhn 1975) the result of confusion with *Darevskia praticola*.

Our study brings its most important contributions not necessarily to the Danube's narrow path area, but to the south-eastern corner of the region, in the "horseshoe"-like area between the Danube and Blahnița. Here we've signaled more species as premieres compared to data from 2005 (Iftime 2005). It is mainly the case of

southern reptile species like *Testudo hermanni*, *Ablepharus kitaibelii*, *Darevskia praticola* or *Dolichophis caspius*. However, despite the fact that these species were not mentioned in the 2005 paper, data regarding the presence of some of them is found in an older, less known paper, usually ignored due to the amount of errors it contains (Serban 1972). The presence of these species in the area is logical both from the zoogeographical and ecological points of view, due to the southern location of the region, benefiting from high temperatures (Stoenescu et al. 1966) and from favorable habitats for these species (Fig. G). The region looks like a forest steppe, with many islands of woods found among sand dunes, all in a rural area, with very little human impact. Thus, the presence of the above mentioned species is logical and the fact that they were not found here before can only be because of lack of studies, or quality studies, in the area. We could also speculate about their presence more to the east, alongside the Danube, as long as suitable habitats are present.

Mediterranean elements found in Romania at their northern limit of their distribution area are present in both the high and the plain sector. The nose-horned viper is the only exception, due to its special ecological needs, the species occurring only in rocky areas. The encountered species are almost always found in their typical biotopes. The exception is *Darevskia praticola* (Fig. H), species considered in Romania to inhabit only forests (Fuhn&Vancea 1961, Iftime 2005) but the same is true for the rest of its areal (Arribas 1999, Helmer et al. 1988, Strijbosch et al. 1989). We, too, have generally observed this species in woods, in wet and shaded areas, with the exception of Blahnița Plain where surprisingly, it occurs



**Figure F.** *V. ammodytes* from Topolnita Monastery.

in atypical habitats (Fig. H). This is how, besides forests, this species has been found to live in a narrow grassy vegetation girdle bordering some permanent canals on the plain, usually between agricultural fields or grasslands in many localities. This vegetation girdle is usually about 4-5 m wide. In many cases, the closest forest is at about 20 km from the habitat, and yet the lizard is abundant near these canals. *Darevskia praticola* sometimes shares these habitats with *Lacerta agilis*, which is restricted to them throughout the studied region. It is likely that these canals follow old streams that initially passed through forested areas. After these forests were cleared, the lizard populations have retreated and survived near the canals, which at least offer 2 very important ecological factors: humidity (Darevsky 1997) and grassy vegetation (Strijbosch et al 1989). However, in other

areas also, the species is known to occur near streams or swamps (Arnold 2002). Thus, the canals between the agricultural fields in Blahnita Plain can be considered safe grounds for herpetofauna, due to their higher degree of humidity, in an area dominated by a hot and dry climate. If the above mentioned scenario is demonstrated, the *Darevskia praticola* populations from the Blahnita Plain canals are relicts of a wider areal in the region, one fragmented and reduced by man.

Another important result is the identification in the Danube's narrow path of more than one amphibian species that are found here at lower altitudes than anywhere else in Romania (Fuhn 1960, Cogălniceanu et al. 2000, Ghira et al. 2002, Iftime 2005). We are talking about *Salamandra salamandra* - found down to 100 m asl - *Bombina variegata* - down to 90 m asl - and *Rana*

*temporaria* –down to 140 m asl. In the northern part of the country, the occurrence of some amphibian species at lower altitudes can simply be explained by the colder and more humid climate (Micluță 1970, Covaciu-Marcov et al. 2003). This explanation, however, could not hold for Mehedinți County, but still, there has to be a general cause, since it implies 3 different species. We think therefore that the occurrence of these species at such low altitudes here is a consequence of the occurrence of their favorable habitats, stretching towards the Danube, along its tributaries. This altitudinal drop of the favorable habitats surely implies the same for their corresponding herpetofauna. Thus, typical mountain valleys, with wet biotopes, bring their amphibian inhabitants all the way to their mouth into the Danube. As a conclusion, the occurrence of favorable habitat stands above the classic rule of the minimum altitude, this usually being the limit of the habitat itself.

The above mentioned details, throw new light on the supposed situation prior to the construction of the “Portile de Fier” Dam, when the valleys arrived lower than at present and would have flown into the Danube at a different point. For example, before the dam, *Bombina bombina* was cited in puddles right near the Danube (Fuhn 1970), situation not existing at present and only observed at the other end of the narrow path, towards Bazias (Covaciu-Marcov et al. 2005). Although in the south-western part of Mehedinți County both species of the *Bombina* genus are present, we have never come across a hybrid population. This fact is due to the very distinctive limit between the two species distribution areas and again, mostly because of the dam presence. However, there still are some noticeable residual signs of hybridisation on the present *Bombinas* here, left by the disappeared *Bombina bombina*. Thus, we found here individuals of *Bombina variegata* with an orange underbelly, a majority of the



**Figure G.** Typical habitat of *T. hermanni* and *D. caspius* near the Iron Gate II.





**Figure H.** Habitat (up) and adult (down) of *D. praticola* near Scapau locality.

black pigment, or with more developed vocal sacs. This is how the construction of the dam strongly affected the herpetofauna, the disappearance or the separation of

habitats greatly affecting the amphibians (Cushman 2006). The situation is not only valid for the Bombinas, since the construction of the dam is also responsible for the

extinction of *Triturus dobrogicus* and *Pelobates syriacus* from the area (Fuhn 1975). *Triturus dobrogicus* was only found more downstream on the Danube. Still, both species most likely occur downstream of Turnu Severin, at least *Pelobates syriacus*. The fact that we couldn't find it can be a consequence of its nocturnal life combined with rarity so its absence is not quite beyond contestation.

The human impact on the herpetofauna of this region is very obvious, although different depending on the sector. The strongest impact is seen in the higher sector although, which is quite paradoxical, with part of the area included in a National Park. The plain sector is now little affected because there is no industry, and the agriculture is minimal, even though it was much more practiced in the past. In the high sector, there is industry, more roads and also a strong direct tourism impact. Tourists kill many animals and also leave a huge quantity of waste. Thus, near the Vodita Monastery, biology students are periodically collecting the wastes, but sadly with little effect, since it only lasts a few days. Also, in Turnu Severin - Dubova region, the urban sprawl is destroying habitats and stressing the animals.

In the plain sector, the strongest impact is represented by the reconstruction of the canals (Fig. 1). These actions destroy the herpetofauna that has found refuge in them and sometimes is only present here - as is the case for *Darevskia praticola* and *Lacerta agilis*. The canals between agricultural fields represent very important habitats for the semi-aquatic herpetofauna just like in other regions (Kati et al. 2007). Traffic also kills almost any herpetofauna species here, the number of roadkills reaching thousands in spring. This type of mortality negatively

affects the herpetofauna in numerous other regions, too (Krecsák et al. 2004, Tóth et al. 2006).



Figure 1. Anthropogenic impact on the *D. praticola* habitat from Scapau.

The areas with the most diverse herpetofauna are represented by valleys flowing into the Danube. We have grouped here most of the species, on different levels of habitats, with even some aquatic tortoises being present at the river mouth. In the plain sector, the islands of forest are reservoirs of a special herpetofauna or, in their absence, the canals. The southern species, found also in unusual habitats, should benefit from a real protection in the region.

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## References

- Arribas, O. J. (1999): Phylogeny and relationships of the mountain lizards of Europe and near east (*Archaeolacerta Mertens 1921*, s.l.) and their relationships among the Eurasian lacertid radiation. *Russ. Journal of Herpetology* 6: 1-22.
- Arnold, E. N. (2002): A field guide to the reptiles and amphibians of Britain and Europe. Harper Collins Publishers, London.
- 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* 76 (4): 261-278.
- Cogălniceanu, D. (1997): Practicum de ecologie a Amfibienilor - metode și tehnici în studiul ecologiei Amfibienilor. Ed. Universității din București, Bucharest. [in Romanian].
- Cogălniceanu, D., Aioanei, F., Bogdan, M. (2000): Amfibienii din România, Determinator. Ed. Ars Docendi, Bucharest. [in Romanian].
- Covaciu-Marcov, S. D., Telcean, I., Cupșa, D., Cadleț, D., Zsurka, R. (2002): Contribuții la studiul herpetofaunei din regiunea Marghita (jud. Bihor, România). *Analele Universității din Oradea, Fascicula Biologie* 9: 47-58. [in Romanian].
- Covaciu-Marcov, S. D., Sas, I., Cupșa, D., Meleg, G., Bud, B. (2003): Studii herpetologice în regiunea Munților Pădurea Craiului și Plopișului (Județul Bihor). *Analele Universității din Oradea, Fascicula Biologie* 10: 81-95. [in Romanian].
- Covaciu-Marcov, S. D., Ghira, I., Sas, I. (2004): Contribuții la studiul Herpetofaunei zonei Oașului (Județul SM, România). Cluj-Napoca, Mediul cercetare, protecție și gestiune (*Environment & Progress*) 2: 107-112. [in Romanian].
- Covaciu-Marcov, S. D., Sas, I., Cicort-Lucaciu, A.-Șt., Peter, I., Bogdan, H. (2005): Notes upon the herpetofauna of the county of Caraș - Severin, Romania. *Revue Roumaine de Biologie, serie de Biologie Animale* 49 (1-2): 47-56.
- Covaciu-Marcov, S. D., Sas, I., Cicort-Lucaciu, A.-Șt., Bogdan, H., Ardelean, R. (2006a): The herpetofauna of the north-western region of Sălaj County. *Bacău, Studii și Cercetări, Biologie* 11: 85-91.
- 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 Dobruja, Romania. *North-Western Journal of Zoology* 2 (2): 88-125.
- Covaciu-Marcov, S.-D., Cicort-Lucaciu, A.-Șt., Ferenți S. (2007a). *Salamandra salamandra* (Amphibia, Salamandridae) at 150 m height in the forest from Livada, Satu-Mare county, Romania. *Analele Universității din Craiova, Biologie* 12 [48]: 283-286.
- Covaciu-Marcov, S.-D., Toth, A., Ile, R. D., Iaba, I., Lazăr, O. (2007b): Research on some populations of *Bombina variegata* from south-west of Mehedinți county (Romania). *Analele Universității din Craiova, Biologie* 12 [48]: 277-282.
- Covaciu-Marcov, S.-D., Sas, I., Cupșa, D. (2008): On the presence of *Rana (Pelophylax) lessonae* in south-western Romania: distribution, biogeographical signification and status. *North-Western Journal of Zoology* 4 (1): 129-133.
- Covaciu-Marcov, S.D., Sas, I., Cicort-Lucaciu, A.S., Kovacs, E.H., Pinte, C. (2009): Herpetofauna of the Natural Reserves from Carei Plain: zoogeographical significance, ecology, statute and conservation. *Carpathian Journal of Earth and Environmental Sciences* 4 (1): 69-80.
- Cruce, M. (1971a): Contribuții la studiul faunei herpetologice din Oltenia. *Analele Universității din Craiova, Seria III, Biologie, Științe Agricole* 3 (13): 389-393. [in Romanian].
- Cruce, M. (1971b): Observații privind răspândirea geografică și ecologia șopârlei de iarbă (*Lacerta taurica* Pallas) în România. *Studii și Cercetări de Biologie, Seria Zoologie* 23 (2): 185-189. [in Romanian].
- Cushman, S. A. (2006): Effects of habitat loss and fragmentation on amphibians: A review and prospectus. *Biological Conservation* 128: 232-240.
- Darevsky, I. S. (1997): *Lacerta praticola* Eversmann, 1834. pp. 254-255. In: Gasc J.P. et al. (eds.). *Atlas of Amphibians and Reptiles in Europe*. Museum National D'Histoire Naturelle, Paris.
- Fuhn, I. (1960): "Fauna R.P.R.", vol. XIV, Fascicula I, Amphibia. Editura Academiei R.P.R., Bucharest. [in Romanian].
- Fuhn, I. (1970): Amfibii și Reptile din zona viitorului lac de baraj de la Porțile de Fier. *Studii și Cercetări de Biologie, Seria Zoologie* 22 (4): 321-331. [in Romanian].
- Fuhn, I. (1975): Amphibia și Reptilia. Pp. 301-303. In: Grupul de cercetări complexe "Porțile de Fier", Serie monografică, Fauna. Ed. Academiei R.S.R., Bucharest. [in Romanian].
- Fuhn, I., Vancea, Șt. (1961): "Fauna R.P.R.", vol. XIV, Fascicula II, Reptilia. Editura Academiei R.P.R., Bucharest. [in Romanian].
- Gherghel, I., Strugariu, Al., Ghiurcă, D., Roșu, S., Hutuleac-Volosciuc, M. V. (2007): The composition and distribution of the herpetofauna from the Valea

- Neagră river basin (Romania). *Herpetologica Romanica* 1: 70-76.
- Ghira, I. (1997): Herpetofauna of Crișul Repede / Sebeș Koros and Barcău / Berettyo river basins. Pp. 353-360. In: Sarkany-Kiss, A. & Hammar, J. (eds.). *Tiscia - Monograph series: The Criș / Koros rivers Valleys*. [in Romanian, Hungarian & English].
- Ghira, I., Venczel, M., Covaciu-Marcov, S.D., Mara, Gy., Ghile, P., Hartel, T., Török, Zs., Farkas, L., Rác, T., Farkas, Z., Brad, T. (2002): Mapping of Transylvanian Herpetofauna. *Nymphaea, Folia Naturae Bihariae* 29: 145-203.
- Helmer, W., Strijbosch, H., Scholte, P. (1988): Two addenda to the Greek herpetofauna and some new distributional data on mainland Greece. *Amphibia-Reptilia* 9(4): 421-422.
- Iftime, Al. (2005): Amfibieni și Reptile. Pp. 173-214. In: Botnariuc, N. & Tatole, V. (eds). *Cartea Roșie a Vertebratelor din România*. Ed. Academiei Române, Bucharest. [in Romanian].
- Kati, V., Foufopoulos, J., Ioannidis, Y., Papaioannou, H., Poirazidis, K., Lebrun, P. (2007): Diversity, ecological structure and conservation of herpetofauna in a Mediterranean area (Dadia National Park, Greece). *Amphibia-Reptilia* 28: 517-529.
- Krecsák, L., Sike, T., Sos T. (2004): Distribution of the herpetofauna in the Lotrioara river basin, Sibiu district (Romania). *Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"* 47: 285-295.
- Mândruț, O. (2006): Mic Atlas de Geografie a României. Ed. Corint, Bucharest. [in Romanian].
- Micluță, H. (1970): Note faunistice herpetologice din Județul Maramureș. *Buletinul Științific, Institutul Pedagogic Baia-Mare, Seria Biologie* 2: 39-42. [in Romanian].
- Posea, G., Badea, L. (1984): România, Harta Unităților de relief (Regionarea geomorfologică). Ed. Științifică și Enciclopedică, Bucharest. [in Romanian].
- Rozyłowicz, L., Tetelea, C., Popescu, V. (2003): Assessing the distribution of Hermann's tortoise (*Testudo hermanni boettgeri* Mojsisovics, 1888) in the Iron Gates Natural Park, Romania. *Proceedings of the 1<sup>st</sup> International Conference on Environmental Research and Assessment, Bucharest, Romania, March 23-27, 2003*. Ars Docendi Publishing House, Bucharest, Romania.
- Rozyłowicz, L. (2008): Metode de analiză a distribuției areal-geografice a țestoasei lui Hermann (*Testudo hermanni* Gmelin, 1789) în România. *Studiu de caz: Parcul Natural Porțile de Fier*. Ed. Universității din București, Bucharest. [in Romanian].
- Stoenescu, Ș. M., Șchiop, A., Dica, I., Popescu, E., Patrichi, E., Țepeș, E. (1966): Atlasul climatologic al R. S. R., Bucharest. [in Romanian].
- Strijbosch, H., Helmer, W., Scholte P. T. (1988): Distribution and ecology of liyards in the Greek province of evros. *Amphibia-Reptilia* 10: 151-174.
- Strugariu, Al., Gherghel, I., Volosciuc-Hutuleac, M.V., Săhlean, T.C., Sas, I., Pușcașu, C.M. (2006): Preliminary data concerning the distribution of amphibian fauna in Suceava County (Romania). *Analele Universității din Oradea, Fascicula Biologie* 13: 39-47.
- Șerban, M. (1972): Contribuții la studiul herpetofaunei din jud. Mehedinți. *Studii și Cercetări, Comunitatea de Cultură și Educație a Județului Gorj* 1972: 171-179. [in Romanian].
- Tóth, T., Grillisch, H., Farkas, B., Gál, J., Sušić, G. (2006): Herpetofaunal data from Cres Island, Croatia. *Herpetozoa* 19 (1-2): 27-58.
- Tufescu, V., Giurcăneanu, C., Mierlă, I. (1995): Geografia României. Ed. Didactică și Pedagogică, Bucharest. [in Romanian].

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**Appendix 1.** Geographical distribution of the amphibian and reptile species in the south-western part of Mehedinți county. [**Ss**=*Salamandrina salamandrina*,

**Ltv**=*Lissotriton vulgaris*, **Tc**=*Triturus cristatus*, **Td**=*Triturus dobrogicus*, **Bb**=*Bombina bombina*, **Bv**=*Bombina variegata*, **Pf**=*Pelobates fuscus*, **Buf**=*Bufo bufo*, **Buv**=*Bufo viridis*, **Ha**=*Hyla arborea*, **Pr**=*Pelophylax ritubundus*, **Pf**=*Pelophylax lessonae*, **Pe**=*Pelophylax kl. esculentus*, **Rd**=*Rana dalmatina*, **Rt**=*Rana temporaria*, **Eo**=*Emys orbicularis*, **Th**=*Testudo hermanni*, **Alk**=*Ablepharus kitaibeli*, **La**=*Lacerta agilis*, **Lv**=*Lacerta viridis*, **Pm**=*Podarcis muralis*, **Pt**=*Podarcis taurica*, **Dp**=*Darevskia praticola*, **Af**=*Anguis fragilis*, **Zl**= *Zamenis longissimus*, **Dc**= *Dolichophis caspius*, **Ca**=*Coronella austriaca*, **Nn**=*Natrix natrix*, **Nt**=*Natrix tessellata*, **Va**=*Vipera ammodytes*].

Species →	S	L	T	T	B	B	P	B	B	H	P	P	P	R	R	E	T	A	L	L	P	P	D	A	Z	D	C	N	N	V
Localities ↓	s	t	c	d	b	v	f	u	a	r	i	e	d	t	o	h	k	a	v	m	t	p	f	i	c	a	n	t	a	
Bahna	-	-	-	-	-	X	-	-	X	-	X	-	-	X	-	X	-	X	-	X	X	-	-	-	-	X	-	-	-	
Balotești	-	-	-	-	-	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	X	-	X	-	-	-	-	X	-	
Balta Verde	-	X	-	X	X	-	X	X	X	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	X	-	
Batoși	-	X	-	X	-	-	X	X	X	-	X	X	-	X	-	X	-	X	-	X	-	-	-	-	-	-	X	-	-	
Bălvănești	-	-	-	-	-	X	-	-	X	X	X	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
Bistrița	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
Bobâița	-	-	-	-	-	X	-	-	X	X	X	-	-	X	-	X	-	X	-	X	-	X	-	-	-	X	-	-	-	
Burila Mare	-	-	-	-	-	-	X	-	X	X	X	-	-	-	-	-	-	-	-	X	-	X	-	-	-	-	-	-	-	
Burila Mică	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	X	-	-	-	X	-	-		
Breznița Ocol	-	-	-	-	-	-	-	-	X	X	-	-	X	-	X	-	X	-	-	X	-	-	-	-	-	-	-	-	-	
Cireșu	-	-	-	-	-	X	-	-	X	X	X	-	-	X	-	X	-	X	-	X	X	-	-	-	-	-	-	-	-	
Chilia	-	-	-	-	-	-	-	-	X	X	-	-	X	X	-	X	-	X	-	X	-	X	-	-	-	X	-	-	-	
Cocorova	-	X	X	-	-	X	-	-	X	X	X	-	-	X	-	X	-	X	-	X	-	-	-	-	-	-	-	-	-	
Crivina	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	X	-	X	-	X	-	-	-	-	-	-	-	-	
Devesel	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	
Drobeta Tr.-Severin	-	-	-	-	-	-	-	-	X	-	X	-	-	X	-	X	-	X	-	X	-	X	-	-	-	X	-	X	-	
Dubova	X	-	-	-	-	X	-	X	X	X	X	-	-	X	-	X	-	X	-	X	X	-	X	X	X	X	X	X	X	



Appendix 1. (Continued)

Species → Localities ↓	S	L	T	T	B	B	P	B	B	H	P	P	P	R	R	E	T	A	L	L	P	P	D	A	Z	D	C	N	N	V	
	s	t	c	d	b	v	f	u	f	u	a	r	i	e	d	t	o	k	a	k	v	m	t	p	f	I	c	a	n	t	a
Pitulași	-	-	-	-	-	X	-	-	X	X	X	-	-	X	-	-	X	-	-	X	-	X	-	-	-	-	-	-	-	-	-
Râscolești	-	-	-	-	-	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Rogova	-	-	-	-	-	-	-	-	X	-	X	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	X	-	-	-
Scăpău	-	X	-	-	X	-	-	X	X	X	-	-	X	-	X	-	X	-	X	X	-	X	-	X	-	-	-	-	X	-	-
Schitu Topolnıjei	X	-	-	-	X	-	X	X	-	X	-	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	-	X	-	X	X
Șimian	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	X	-	X	-	-	-	-	X	-	-	-
Șiroca	-	-	-	-	X	-	-	X	X	X	-	-	X	-	X	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Șvinița	X	-	-	-	X	-	X	-	X	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	X	X	X	X	X	X	X
Tismana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Țigănași	-	-	-	-	-	-	-	-	X	-	X	-	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-
Vînju Mare	-	-	-	-	-	-	-	-	-	X	-	-	X	-	X	-	-	X	-	X	-	X	X	X	-	-	-	-	-	-	-
Vânjuleț	-	-	-	-	-	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Vrancea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
<b>Σ of localities</b>	<b>9</b>	<b>9</b>	<b>2</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>2</b>	<b>9</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>8</b>	<b>5</b>	