

PRELIMINARY DATA CONCERNING THE HERPETOFAUNA IN BACĂU COUNTY

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Key-words: amphibians, reptiles, Bacau County, spreading area

INTRODUCTION

The data regarding the Romanian herpetofauna are very scarce. The most comprehensive studies in this field are included in the volumes *Fauna R.P.R. Amfibia* (Fuhn 1960) and *Reptilia* (Fuhn & Vancea 1961). However the researches didn't satisfactory cover the surface of Romania so the herpetofauna of Bacău County was less studied (Șova 1968, Ghiurcă 2004). Concerning these issues we aimed to realize a synthesis of the knowledge regarding the herpetofauna from Bacău County, based both on the previous studies and our field researches.

MATERIAL AND METHODS

Our studies were carried out based on transects method (Cogălniceanu 1997), comprising the limitrophe localities of Bacău, including the town and other random chosen. Most of the specimens were captured by hand and newts were collected during the reproduction period using landing net. All the captured specimens were released after identification.

The region is placed in Moldavia Subcarpathians in an area with high hills and mountains.

THE HISTORY OF HERPETOLOGICAL RESEARCHES IN THE AREA

The herpetofauna of this area was very poorly studied. During the '60 were published the volumes of Romania Fauna in which were described the Romanian

species involving, also, only scarce data regarding the amphibians and reptilian from Bacău county. In '70 years C. Șova published paper works regarding the herpetofauna with the region. (especially with respect to *Triturus* genus). A synthesis of the knowledge regarding the amphibian spreading in Romania is published in 1991 by Cogălniceanu followed by a more complete work on this issue in 2000 (Cogălniceanu et al 2000). The paper describes the Romanian amphibian species, includes information regarding their spreading illustrated with general maps without quoting the localities in which the species were recorded. Some spreading maps overlap with the region of our study.

RESULTS AND DISCUSSIONS

During our preliminary researches in Neamț county were identified a number of 15 amphibian species (*Salamandra salamandra*, *Triturus vulgaris*, *Triturus cristatus*, *Triturus alpestris*, *Triturus montandoni*, *Bombina bombina*, *Bombina variegata*, *Bufo bufo*, *Bufo viridis*, *Pelobates fuscus*, *Hyla arborea*, *Rana ridibunda*, *Rana arvalis*, *Rana dalmatina*, *Rana temporaria*) and 10 reptilian species (*Emys orbicularis*, *Lacerta agilis*, *Lacerta viridis*, *Zootoca vivipara*, *Anguis fragilis*, *Natrix natrix*, *Natrix tessellata*, *Elaphe longissima*, *Coronella austriaca*, *Vipera berus*).

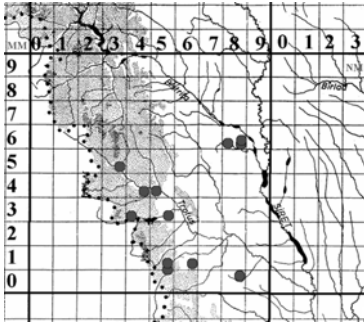
We identified a number of 25 species from 103 studied localities. Due to the fact that in certain localities were identified more the one species, we establish a total number of 375 localities out of which 276 are new mention for species spreading area in Romania.

Table 1. Preliminary data concerning the spreading of reptilian and amphibian species in studied localities from Bacău County (using the UTM quadrate of 10x10 Km – Lehrer & Lehrer 1990)

Species/ Locality	S	T	T	T	T	B	B	B	B	P	H	R	R	R	R	E	L	L	Z	A	N	N	E	C	V
	s	v	c	a	m	b	v	f	b	f	a	r	a	d	t	o	a	v	v	f	n	t	l	a	b
Antohești (NM 15.3)	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X	-	-	-	-
Asău (MM 54.2)	-	X	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Bacău (MM 95.1- 3/MM96.2-4)	-	-	O	-	-	-	X	-	X	-	X	S	-	O	-	X	S	X	-	-	S	-	O	-	-
Bahna (MM 71.1)	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Berești (NM 11.1)	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Bijghir (NM 06.2)	-	O	O	-	-	S	-	-	-	-	O	-	-	O	O	-	-	-	-	-	-	-	-	-	X
Blidari (MM 91.2)	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bogdan Vodă (MM 96.2)	-	-	-	-	-	-	-	-	X	-	X	X	-	-	X	X	X	-	-	-	X	-	-	-	-
Bogdănești (NM 06.1)	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brusturoasa (MM 35.4)	-	-	-	-	O	-	X	-	-	-	-	-	-	-	X	-	X	-	-	-	-	-	-	-	O

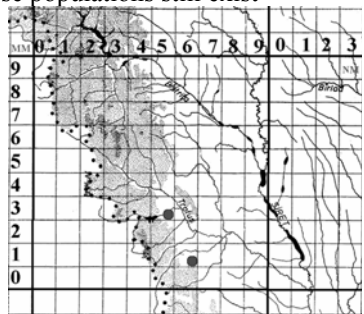
***Triturus alpestris* Laurentus 1768**

The alpine newt is a mountain species, quoted in Romania at altitudes above 500 m (Cogălniceanu et al 2000). Due to the high hills and mountain aspect of the studied region landscape this species is well represented. For the researched area, we identified this species at altitudes lower than in other parts of the country – quit often at 300 m. The species was registered in areas with altitudes of 290 m in Luncani area. In other regions the species was identified in the altitude limits quoted for Romania (Cogălniceanu et al 2000). The presence of this species at lower altitudes is, probably, due to the forest vegetation, which cover almost all the area with the general features of a mountain region represented by a colder and moist climate, conditions favorable for *Triturus alpestris*. Occasionally was recorded in temporal small pools, alone or along with the other newt species (*Triturus vulgaris*, *Triturus cristatus*, *Triturus montandoni*). The species was identified in 10 new localities.



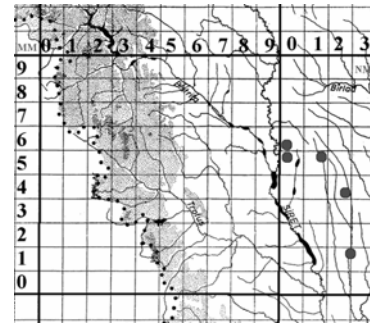
***Triturus montandoni* Boulenger 1880**

The lowest altitude for Montandons newt is 200 m in northern part and 500 m for the other areas (Cogălniceanu et al 2000). We identified this species only in two localities with Bacău county (Sărărie, Sălătruc). This newt was identified in a pond representing water accumulation for the forest nursery from Sărărie along with all the other newt species within the area (*Triturus vulgaris*, *Triturus cristatus*, *Triturus alpestris*), but also, at Sălătruc in the neighborhood of Bălătau lake. The Montandon newt was previously identified on the territory of Bacău county (Șova, 1972), our aim is to check if those populations still exist



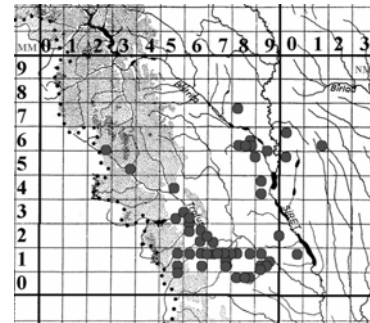
***Bombina bombina* Linnaeus 1761**

The fire-bellied toad is spread in plane areas (Cogălniceanu et al 2000) with preference for larger aquatic habitats (Madej 1973) very rare in the researched zone where high relief prevails We identified 4 new localities for *Bombina bombina*.



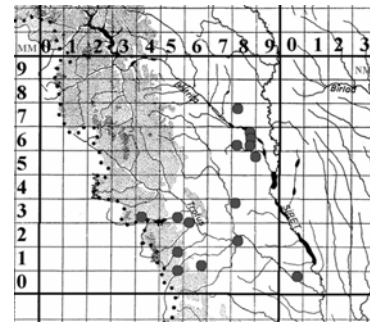
***Bombina variegata* Linnaeus 1758**

The yellow-bellied toad is wider spread than fire-bellied toad (fig. 7). We identified this species in many localities in ponds along the road side, temporary and permanent ponds in the forest. Is not a very selective species, being permanent aquatic beside wintering period (Fuhn 1969). We identified 47 new localities for this species.



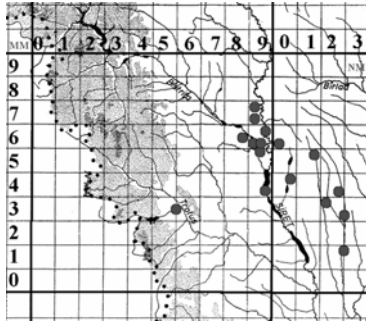
***Bufo bufo* Linnaeus 1758**

The common toad is wide spread in the studied region, which we recorded in almost of the sampled localities. The species is present both in lower altitude areas around Bacău town and, also, in higher zones with mixed forests within the Nemira Mountains. Out of the total number of localities in which we identified the species 14 are new for Romania



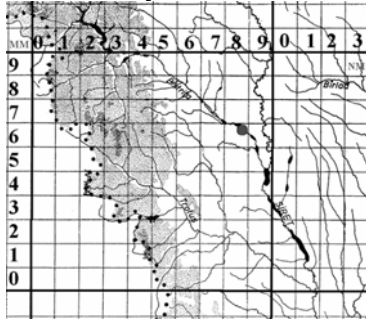
***Bufo viridis* Laurentus 1768**

The green toad is less spread than the previous species and was identified in a small number of localities in the sampled area. Most of the populations are localized at lower altitude and their absence from higher areas is explained through thermophilic preference of this toad (Stugren 1957). A numerous population was identified in two artificial lake from Cancicov Park in Bacău town.



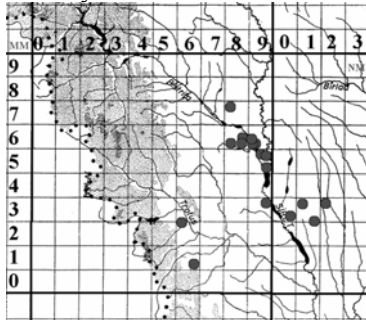
***Pelobates fuscus* Laurentus 1768**

The brown mud frog wasn't previously mentioned for the studied area, being very difficult to observe due to its nocturnal life (Cogălniceanu et al 2000). We recorded this species in one locality: Gârleni.



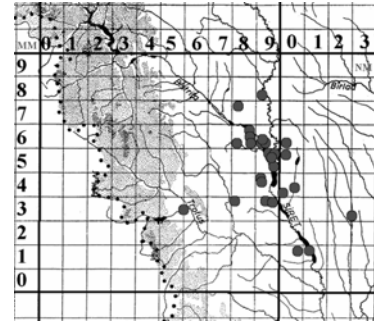
***Hyla arborea* Linnaeus 1758**

The tree-frog is quite common in the researched area, being present in many of the sample localities. For this frog we identify 17 new locations for Romania.



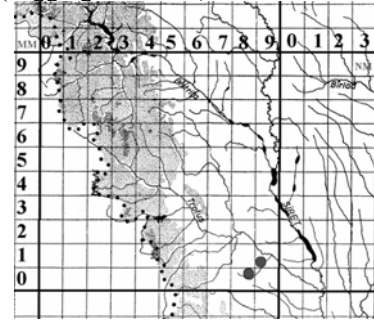
***Rana ridibunda* Pallas 1771**

The edible frog is wide spread in studied area with large populations in almost all the sample localities. Most of the populations are localized in low altitude regions, along water streams, especially along the rivers Bistrița and Moldova; this frog is classified as a plain species in Romania, rare in hill region, spread up to 600 m altitude (Cogălniceanu et al. 2000). *Rana ridibunda* populate both the water stream and the ponds and swamps along their course. In the studied zone we established 22 new localities for this species beside those mentioned in the literature.



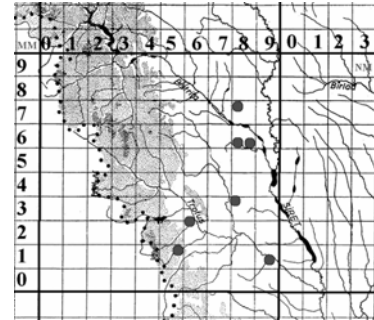
***Rana arvalis* Nills 1842**

This species was identified in the two swamps (Popeni și Pralea) from the South part of Bacău county. Within the studied area, this species matting take place very early (begging of March).



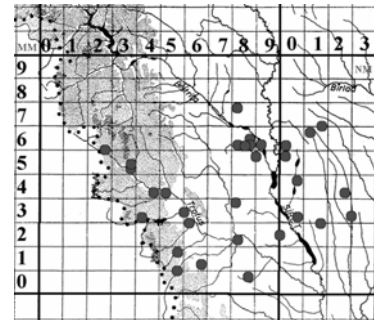
***Rana dalmatina* Bonaparte 1839**

This is a rarely recorded species, in the researched area being identified only in 6 out of a total studied number of 103.



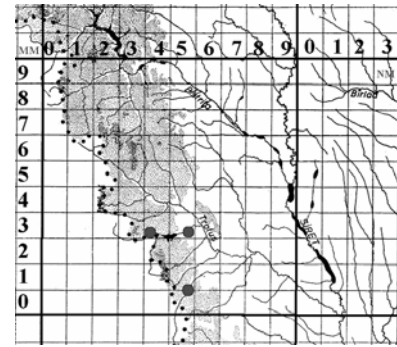
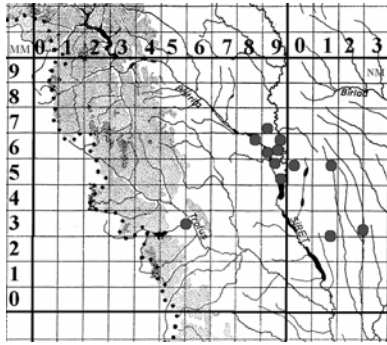
***Rana temporaria* Linnaeus 1758**

The common frog was identified in the most of the sample localities, at altitudes between 180 and 780 m. We recorded this species both in the localities around Bacău and within the range of Nemira Mounties. There were established 27 new localities for this species spreading area in Romania.



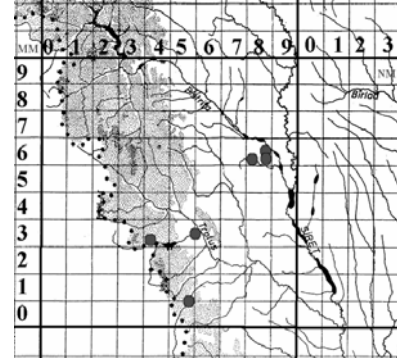
Clasa Reptilia Blainville 1816
Emys orbicularis Linnaeus 1758

This species is rare for Bacău county but we identified a very large population in a fishy basin from Buhoci.



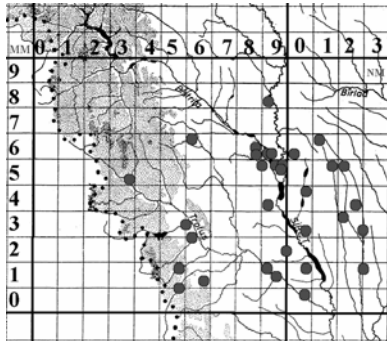
Anguis fragilis Linnaeus 1758

The data about this species are very scarce in the region but we aim to continue the study on this issue.



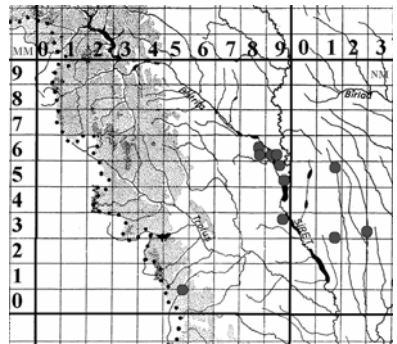
Lacerta agilis Linnaeus 1758

The sandlizard is the most common lizard in the studied region and was recorded in the most of the sample localities. For this species we identified 25 new localities for Romania in the researched area.



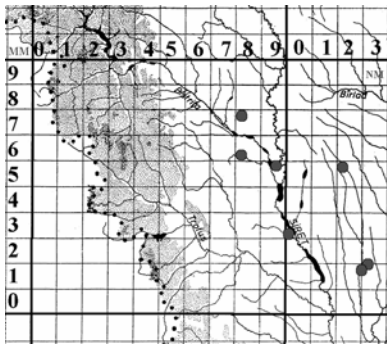
Natrix natrix Linnaeus 1758

The grass snake is a common species for Romania fauna, usually spread closely to the water (Fuhn and Vancea 1961). In the studied region we identified this snake in 17 localities, 8 of them being new for this species spreading area in Romania. The great number of identified specimens shows that the species is not endangered in the area.



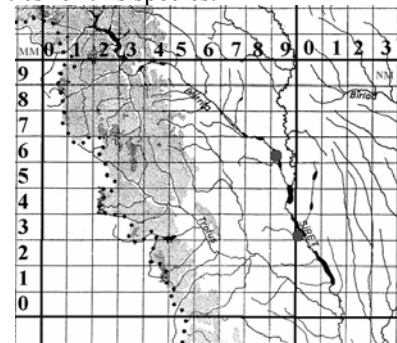
Lacerta viridis Laurentus 1768

The green lizard is a mesophyll big size species (Fuhn and Vancea 1961). in the studied region where we established only 6 new localities for its spreading area in Romania.



Natrix tessellata – Laurentus 1768

This species is rare in the region. We identified 2 new localities for this species.

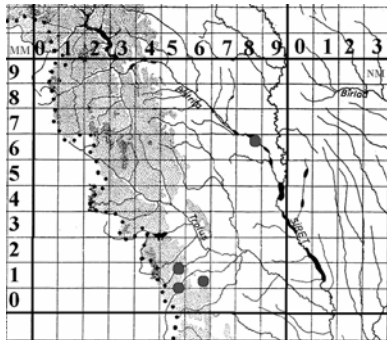


Zootoca vivipara Jacquin 1787

The viviparous lizard is scarce spread in the researched area. We identified this species only in 3 sample localities in Bacău County. As long as the studies are at the beginning we assume that the species could be present in a higher number of localities with the area.

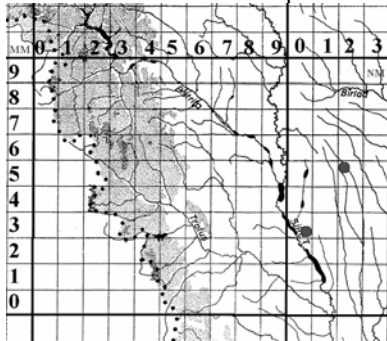
***Elaphe longissima* Laurentus 1768**

This is a quite rarely spread species and was identified in 4 sample localities, as following: Poiana Sărată, Gârleni, Slănic Moldova and Sărărie. We identified this species both in forest ecosystems and in lawns close to forests.



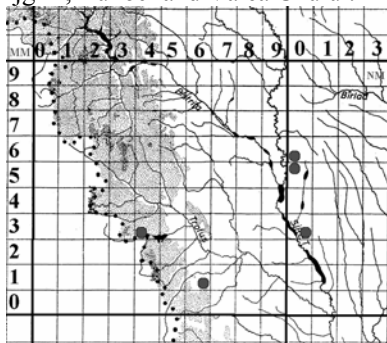
***Coronella austriaca* Laurentus 1768**

The smooth snake is a rare species, being identified in fewer localities than the previous species.



***Vipera berus* Linnaeus 1758**

The viper was recorded in 5 localities out the total number of samples. The species was identified at Sărărie, Pâncești, Bijghir, Buhoci and Valea Uzului.



CONCLUSIONS

Along our study we identified 15 amphibian species (*Salamandra salamandra*, *Triturus vulgaris*, *Triturus cristatus*, *Triturus alpestris*, *Triturus montandoni*, *Bombina bombina*, *Bombina variegata*, *Bufo bufo*, *Bufo viridis*, *Pelobates fuscus*, *Hyla arborea*, *Rana ridibunda*, *Rana arvalis*, *Rana dalmatina*, *Rana temporaria*) and 10 reptilian species (*Emys orbicularis*, *Lacerta agilis*, *Lacerta viridis*, *Zootoca vivipara*, *Anguis fragilis*, *Natrix natrix*, *Natrix tessellata*, *Elaphe longissima*, *Coronella austriaca*, *Vipera berus*).

For all identified amphibian and reptilian species we established new localities for their spreading area in Romania.

It is remarkable the presence of some species at lower altitudes than usual in the researched area. Thus, the following species: *Salamandra salamandra*, *Triturus alpestris*, *Rana temporaria* area spread down to a low limit of almost 290 m. *Triturus alpestris* was identified at Lunca at the lowest altitude (290 m) which have been quoted until now for this region. The occurrence of the species this altitude is due to the particular wet and cold climate in the area. The amphibian species identified in the region are generally spread in many localities in numerous populations thus we consider them not endangered in the area.

Due to their request towards the environment conditions the reptilian species are spread in a fewer localities. The species *Natrix tessellata*, *Coronella austriaca*, *Elaphe longissima* and *Vipera berus* seem to be threatened, being identified only a few specimens.

REZUMAT

În zona investigată am identificat 15 specii de amfibieni (*Salamandra salamandra*, *Triturus vulgaris*, *Triturus cristatus*, *Triturus alpestris*, *Triturus montandoni*, *Bombina bombina*, *Bombina variegata*, *Bufo bufo*, *Bufo viridis*, *Pelobates fuscus*, *Hyla arborea*, *Rana ridibunda*, *Rana arvalis*, *Rana dalmatina*, *Rana temporaria*) și 10 specii de reptile (*Emys orbicularis*, *Lacerta agilis*, *Lacerta viridis*, *Zootoca vivipara*, *Anguis fragilis*, *Natrix natrix*, *Natrix tessellata*, *Coronella austriaca*, *Elaphe longissima*, *Vipera berus*). În regiune am găsit specii a căror limită privind altitudinea minimă până unde coboară acestea a fost cu mult depășită, față de specificațiile din literatură (Cogălniceanu et. al. 2000). Specia *Triturus alpestris* am găsit-o la altitudinea de 290 m în zona Lunca. Majoritatea speciilor de amfibieni și reptile din regiunea investigată nu sunt periclitate.

REFERENCES

1. BROWN L. J. – 1997 - An Evaluation of Some Marking and Trapping Techniques Currently Used in the Study of Anuran Population Dynamics, Journal of Herpetology, Vol. 31, No. 3, 410 – 419;
2. CABELA A., GRILLITSCH H., TIEDEMANN F. – 2001 - On the vertical distribution of the Amphibian species in Austria, Biota, Journal of biology and ecology, Vol. 2, No. 1, 5 – 8;
3. COGĂLNICEANU D., ANDREI M. – 1992 - A bibliographical checklist of Herpetology in Romania, Trav. Mus. natl. Hist. nat. Grigore Antipa, vol. XXXII: 331 – 346;
4. COGĂLNICEANU D., AIOANEI F., BOGDAN M. – 2000 - Amfibienii din România, Determinator, Ed. Ars Docendi, București, 99 pp.;
5. COVACIU – MARCOV S.-D., GHIRA I., VENCZEL M. – 2000 - Contribuții la studiul herpetofaunei din zona Oradea, Nymphaea, Folia naturae Bihariae, Oradea XXVIII: 143-158;

6. COVACIU – MARCOV S.-D. - 2001a – Date preliminare privind herpetofauna Văii Ierului, Studii și Comunicări, Satu Mare, Vol. II – III – Științele naturii: 191 – 196;
7. COVACIU–MARCOV S.-D. – 2001b - Contribuții la cunoașterea răspândirii speciei *Triturus alpestris* Laurentus 1768 în județul Bihor, România, Analele Științifice ale U S M F “Nicolae Testemițanu”, Vol 1, 37-41, Chișinău;
8. COVACIU–MARCOV S.-D., TELCEAN I., CUPȘA D., CADLEȚ D., ZSURKA R. - 2002 a - Contribuții la studiul herpetofaunei din regiunea Marghita (jud. Bihor, România), Analele Universității din Oradea, Fasc Biologie, Tom IX, 2002, In Pres;
9. COVACIU–MARCOV S.-D., GHIRA I., SAS I. - 2002 b - Contribuții la studiul herpetofaunei zonei Oașului (Județul SM, România), Mediul cercetare, protecție și gestiune, Cluj –Napoca, in press. Volumul rezumatelor sesiunii, pp. 33;
10. COVACIU–MARCOV S.-D., TELCEAN I., SALA G., SAS I, CICORT A. - 2003 a - Contribuții la cunoașterea herpetofaunei regiunii Beiuș, jud. Bihor, România, Nymphaea, Folia naturae Bihariae, Oradea, 127 – 142;
11. COVACIU–MARCOV S.-D., CUPȘA D., TELCEAN I., SAS I., CICORT A. - 2003 b - Contribuții la cunoașterea herpetofaunei din regiunea cursului mediu și inferior al Crișului Negru (Județul Bihor, România), Oltenia, Studii și Comunicări, Științele Naturii, Vol. XIX, Craiova, In Pres;
12. COVACIU – MARCOV S.-D., SAS I., CUPȘA DIANA, ZSURKA RENATA, PETER VIOLETA – IONELA – 2003c – Studii herpetologice în regiunea munților Pădurea Craiului și Plopișului (jud. Bihor, România), Analele Univ. Oradea, Fasc. Biologie, Tom. X., article in press;
13. FUHN I. -1953 - Contribuții la cunoașterea solomâzdrelor-de-apă (tritonilor din R.P.R.); studiul subspeciilor și varietăților de *Triturus cristatus* Laur., Bul. Științific secțiunea de Științe Biol. Agro. Geol. și Geog., Tom. 5, nr. 3: 625-640;
14. FUHN I. – 1960 – Amphibia, Fauna R.P.R., vol 14, fascicola 1, Ed. Acad. R.P.R., București;
15. FUHN I., VANCEA Șt. - 1961 - Reptilia, Fauna R.P.R., vol. XIV, Ed. Acad. R.P.R., București;
16. FUHN I. – 1969 - Broaște, șerpi, șopârle, Ed. Științifică, București, 246 pp.;
17. GHIRA I., VENCZEL M., COVACIU – MARCOV S.-D., MARA G., GHILE P., HARTEL T., TOROK Z., FARKAS L., RACZ T., FARCAS Z., BRAD T. – 2001- Mapping of Transylvanian Herpetofauna, Nymphaea, Folia naturae Bihariae, Oradea, XXIX;
18. GHIURCĂ D., ROȘU S. – 2004 – Contribuții la studiul populațiilor de amfibieni din zona Valea Budului - Luncani – județul Bacău (2004), Studii și Comunicări, Nr. 19, Bacau;
19. MADEJ Z. -1964 - Studies on the fire – bellied toad (*Bombina bombina*) and yellow – bellied toad (*Bombina variegata*) of upper Silezia and Moravian Gate, Acta Zool. Cracow, 3, 291 – 334;
20. STUGREN B. – 1957 - Noi contribuții la problema originii faunei herpetologice din R.P.R. în lumina glaciațiunilor, Bul. Șt. Secția de biol. și Științe Agricole, Seria Zool 9, 1, 35 -47;
21. ȘOVA C., VANCEA ȘT., FUHN I. E., STUGREN B. – 1989 - Sur la composition taxonomique du peuplement de grenouilles vertes (complexe *Rana esculenta* L.) de Roumanie, Studia Univ. Babeș – Bolyai, Biologia, XXXIV, 2, 69 – 77;

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