Travaux du Muséum National d'Histoire Naturelle «Grigore Antipa»	Vol. LIV (2)	pp. 513–521	© 30 Décembre 2011

DOI: 10.2478/v10191-011-0029-8

NOTE ON THE HERPETOFAUNA OF THE VÂLCAN MOUNTAINS AND THEIR FOOTHILLS (SOUTHERN CARPATHIANS, ROMANIA)

ALEXANDRU IFTIME, OANA IFTIME

Abstract. The results of herpetological studies in the south-facing slope of the Vâlcan mountain massif and associated foothills (Gorj county, Romania), are presented. 20 amphibian and reptile species (and hybrids between *Bombina bombina* and *B. variegata*, as well as the hybridogenetic kleptotaxon *Pelophylax* kl. *esculentus*) were identified in the field in 22 sites investigated.

Résumé. On présente les résultats des études herpétologiques sur le versant sud des montagnes du Vâlcan et de son piemont (département de Gorj, Roumanie). 20 espèces d'amphibiens et reptiles (tout comme des hybrides entre *Bombina bombina* et *B. variegata*, et le kleptotaxon hybridogénétique *Pelophylax* kl. *esculentus*) ont été identifiées sur le terrain dans 22 locations étudiées.

Key words: Vâlcan, mountains, foothills, amphibians, reptiles, records, distribution, hybridization.

INTRODUCTION

The Vâlcan Mountains are an important component of the Southern Carpathians of Romania, constituting the southern and eastern arm of the greater Retezat-Godeanu-Ţarcu massif, and gradually descending into the sub-Carpathian depression of Târgu Jiu-Cărbuneşti (Fig. 1 A, B). The herpetofauna of this area is incompletely and/or imprecisely known: Fuhn (1960) records *Salamandra salamandra* from Tismana, *Mesotriton alpestris* from Cloşani, *Bufo bufo*, *Rana temporaria*, *R. dalmatina* and *Pelophylax ridibundus* from Dobriţa; Fuhn & Vancea (1961) records, *Lacerta agilis* from Piţicu, *Lacerta viridis* and *Podarcis muralis* from Dobriţa, *Natrix natrix* and *Coronella austriaca* from the upper Motru valley, and *Vipera ammodytes* from Tismana and Sohodol. Andrei (1993) has some imprecise data in or close to this area[1], pertaining to *Bombina variegata*, *Bufo viridis*, *Pelophylax* kl. *esculentus*, *Podarcis muralis* and *Anguis fragilis*, and Cogălniceanu, Aioanei & Matei (2000) add to the area records of *Bombina variegata*, *Bufo bufo*, *B. viridis*, *Rana temporaria*, *R. dalmatina* and *Pelophylax ridibundus*[2]. More recently, Petrescu et al. (2004), Tudor et al. (2004), Iftime et al. (2008), Covaciu-Marcov et al. (2009 a, 2009 b) and Covaciu-Marcov (2010) have worked on the herpetofauna of regions close to the study area, and Iftime & Iftime (2011) discuss

[1] See a more detailed discussion of Andrei's 1993 data in Iftime et al., 2008.

[2] We follow mostly Speybroeck et al. (2010) for the nomenclature, with some exceptions, i.e. following Carretero et al. (2009) in the use of *Mesotriton*.

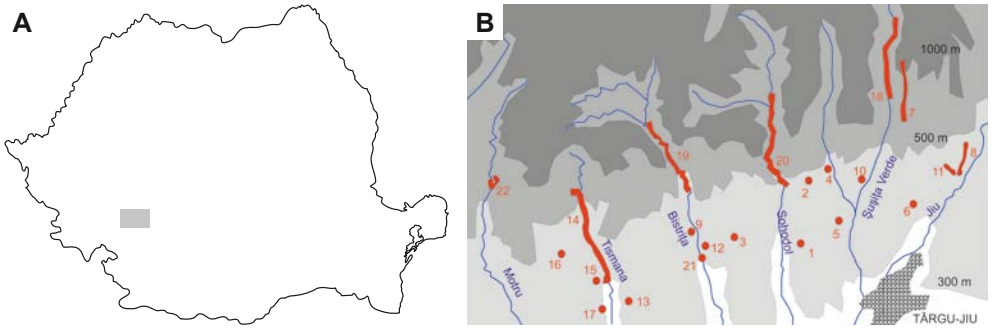

Fig. 1 - A, Location of the study area on the map of Romania; B, General location map of the investigated localities, numbered as in the text. Longer transects are shown as red lines, shorter ones as red dots.

a population of *Triturus cristatus* at the limit of this area, noting the accompanying herpetofauna (*Pelophylax ridibundus*, *Natrix natrix*). We surveyed the herpetofauna of the southern cline and the foothills of this depressionary area by focusing on the southward-flowing valleys of the Vâlcan mountains, from the upper Motru valley to the limits of the Defileul Jiului (Jiu Gorges) National Park.

MATERIAL AND METHODS

Area description. The Vâlcan Mountains form a chain which is oriented roughly east-west, from the Jiu Gorges to the headwaters of the Motru and Cerna. Their altitude reaches 1846 m in the Oslea peak. These mountains are mainly crystalline, but with a significant component of Mesozoic limestone, especially on the southern slope. They are connected to the Retezat-Godeanu massif in the area between the headwaters of the Motru, Cerna and Western Jiu (this last river delimitates the massif on the north). The Vâlcan massif descends towards the south in a series of sub-Carpathian hills, which grade into the hill-enclosed lowland of Târgu Jiu-Cărbuneşti. This southern slope of the Vâlcan Mountains is crossed by several roughly north-south oriented valleys of rivers originating in the Vâlcan chain: the upper Motru, the Tismana, the Bistriţa, the Jaleş, the Suseni, the Şuşiţa etc. The vegetation of this area consists of deciduous forests, dominated by oak species (*Quercus cerris*, *Q. petraea*, *Q. frainetto*, *Q. robur*) and hornbeam up to ca. 1000 m, further up by beech stands, and on the uppermost ridges by beech-fir-spruce forest, and rarely by pure spruce forests. The grasslands are secondary in all these zones, being created for the necessities of pasturing (Mâciu et al., 1982; personal observations).

Methodology. Field work was performed in March and April 2010. Amphibians were searched for in both terrestrial habitats and aquatic basins. The study was carried following the active transects method (after Heyer et al., 1994, and McDiarmid, 1992, in Cogălniceanu, 1997). 22 stations were checked, with transect length between 200 m and ca. 11 km (see table 1).

Table 1

Studied locations.

Station no.	Location	Coordinates (of studied points or, if case, transect ends)	Altitude	Observations
1	Between Târgu Jiu and Runcu	45º04.950'lat N/ 23º10.143'long E	249	Grassland with ponds
2	Between Dobriţa and Leleşti	45º08.700'lat N/ 23º11.859'long E	410	Hayfields, orchards and small ponds
3	Between Runcu and Peştişani	45º05.307'lat N/ 23º05.233'long E	261	Hayfields, orchards and small ponds
4	Dobriţa	45º08.202'lat N/ 23º11.956'long E	391	Grassland with ponds
5	Leleşti	45º06.852'lat N/ 23º12.313'long E	339	Grassland with ponds, forest edge
6	Turcineşti	45º07.069'lat N/ 23º17.940'long E	342	Orchard with temporary pond
7	Road to Vâlcan pass	Between 45º11.047'lat N/ 23º17.393'long E and 45º13.430'lat N/ 23º16.951'long E	663-1021	Beech wood, grassy clearings, small ponds
8	Sâmbotin-Schela	Between 45º08.524'lat N/ 23º20.997'long E and 45º10.525'lat N/ 23º21.830'long E	230-302	Hayfields, orchards and small ponds (often polluted with household waste)
9	Gurani	45º05.916'lat N/ 23º02.346'long E	237	Grassland with ponds and bushes
10	Stăneşti	Between 45º08.303'lat N/ 23º14.892'long E and 45º08.574'lat N/ 23º14.424'long E	325-336	Grassland with ponds and bushes
11	Arsuri	Between 45º08.443'lat N/ 23º20.596'long E and 45º09.221'lat N/ 23º20.060'long E	282-320	Mixed forest with river and ponds
12	Peştişani	45º04.672'lat N/ 23º03.389'long E	212	Small lakes within poplar grove
13	Between Peştişani and Tismana	45º02.306'lat N/ 22º58.789'long E	210	Meadows of a small river
14	Tismana	Between 45º02.978'lat N/ 22º56.583'long E and 45º07.240'lat N/ 22º54.658'long E	222-506	Mixed forest grading into beech forest, small river with ponds
15	Between Tismana and Pocruia	45º02.919'lat N/ 22º56.370'long E	230	Orchard with temporary pond
16	Pocruia	45º04.000'lat N/ 22º53.505'long E	290	Mixed forest with small river
17	West of Pocruia	45º01.301'lat N/ 22º56.290'long E	203	Grassland with ponds
18	Şuşiţa Verde valley	Between 45º12.075'lat N/ 23º16.095'long E and 45º16.067'lat N/ 23º16.301'long E	498-713	Mixed forest grading into beech forest, limestone rocks, small river with ponds
19	Bistriţa valley	Between 45º08.095'lat N/ 23º01.834'long E and 45º10.870'lat N/ 22º59.760'long E	1243-2089	Mixed forest grading into beech forest, limestone rocks, small river with ponds
20	Sohodol valley	Between 45º07.916'lat N/ 23º08.937'long E and 45º12.730'lat N/ 23º07.994'long E	378-535	Mixed forest grading into beech forest, limestone rocks, small river with ponds
21	Hobiţa	45º03.260'lat N/ 23º03.510'long E	224	Orchard with temporary pond
22	Upper Motru valley	Between 45º07.300'lat N/ 22º48.892'long E, 45º07.115'lat N/ 22º48.630'long E and 45º07.475'lat N/ 22º48.533'long E	400-491	Mixed forest grading into beech forest, limestone rocks, small river with ponds

Photographs were taken whenever possible. The records were completed by checking the collections of the "Grigore Antipa" National Museum of Natural History, Bucharest (MGAB collection).

For the identification of *Bombina* species and hybrids, we used the system described in Iftime & Iftime (2007) (see references therein).

RESULTS

20 species (eleven of amphibians, nine of reptiles) and two hybrids between amphibian species were recorded by us (see table 2 for their occurrence in the checked transects).

Table 2

Species found.

Species	Distribution in investigated sites
Salamandra salamandra (Fig. 2 A)	14, 18, 20
Lissotriton vulgaris *	1, 6, 8, 13
Triturus cristatus * (Fig. 2 B)	4, 8, 11, 13
Bombina variegata	7, 10, 19, 22
Bombina bombina *	8, 12, 13, 17
Bombina bombina X *B. variegata* *	11, 15, 19
Bufo bufo (Fig. 3 A)	4, 5, 9, 10, 13, 22
Bufo viridis	8, 10, 19, 22
Hyla arborea *	2, 3, 4, 9, 13, 17
Rana temporaria (Fig. 3 B)	11, 13, 14, 16, 18, 19, 20, 22
Rana dalmatina	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 21
Pelophylax ridibundus	5, 8, 9, 10, 11, 12, 13, 14, 17
Pelophylax kl. *esculentus*	1
Emys orbicularis * (Fig. 4 A)	12, 13
Lacerta agilis	7, 19, 20
Lacerta viridis	2, 8, 9, 11, 12, 22
Podarcis muralis	14, 16, 19, 20, 22
Natrix tessellata *	5
Natrix natrix	11, 12
Zamenis longissimus * (c)	20
Coronella austriaca (c)	20
Vipera ammodytes (Fig. 4 B)	19, 20

An asterisk marks species firstly recorded within the study area.

A (c) marks records from the MGAB collection; all others are from field records.

DISCUSSIONS

13 out of the 21 species (including the kleptotaxon, *Pelophylax* kl. *esculentus*) recorded by us were already known from previous studies. Our study added four amphibian and three reptile species to the known herpetofauna of this area, as well as a case of hybridization (between *Bombina bombina* and *B. variegata*) and new records for all found species. Two species found previously within the area or close to it (*Mesotriton alpestris* and *Anguis fragilis*) were not encountered by us; however, this does not exclude the possibility of their presence, as the investigated area seems hospitable for *Anguis*, and *Mesotriton* may well occur at greater altitudes than reached by us.

Fig. 2 - A, *Salamandra salamandra*, in water, Şuşiţa Verde (Photo by O. Iftime); B, *Triturus cristatus*, Dobriţa (Photo by O. Iftime)

Fig. 3 - A, *Bufo bufo*, upper Motru valley (Photo by O. Iftime); B, *Rana temporaria*, pair in amplexus, on snow, Sohodol (Photo by A. Iftime)

Fig. 4 - A, *Emys orbicularis*, in habitat, Peştişani (Photo by A. Iftime); B, *Vipera ammodytes*, Sohodol (Photo by A. Iftime)

While the herpetofauna of this area is characteristic for sub-Carpathian areas, with *Vipera ammodytes* the only "sub-Mediterranean" species present, the most interesting phenomenon is the presence of *Bombina bombina* and its introgressive hybridization with *B. variegata*. The lowland species *B. bombina* is present in the Târgu Jiu-Cărbuneşti depressionary area, which is a significant extension of its Romanian distribution (as given by, e.g., Cogălniceanu et al., 2000, or Iftime, 2005), and hybridizes with *B. variegata* in the adjacent foothills – explaining the occurrence of *B. bombina* – like characters in *B. variegata* recorded by Covaciu-Marcov (2009 b) in a neighbouring area. On the Bistriţa valley, a distance of ca. 10 km separates the "pure" *B. bombina* and *B. variegata* populations that we recorded, a hybrid population being found almost midway between them; otherwise the distance between *B. bombina* and hybrid populations found by us is smaller (ca. 1.3 km in Sâmbotin area, ca. 2.7 km in Pocruia area). Of course, our samples do not comprise the totality or even the majority of *Bombina* populations, but they indicate the narrowness of the hybridization area.

NOTĂ ASUPRA HERPETOFAUNEI MUNŢILOR VÂLCAN ŞI DEALURILOR LOR SUBCARPATICE (CARPAŢII MERIDIONALI, ROMÂNIA)

REZUMAT

Sunt prezentate rezultatele unor investigaţii herpetologice pe versantul sudic al masivului Vâlcan şi în zona asociată de dealuri subcarpatice (jud. Gorj, România). Au fost identificate în teren 20 specii (şi, de asemenea, hibrizi între speciile *Bombina bombina* şi *B. variegata*, precum şi kleptotaxonul hibridogenetic *Pelophylax* kl. *esculentus*) în 22 localităţi investigate.

LITERATURE CITED

ANDREI, M. D., 1993 - Contribuţii la cunoaşterea herpetofaunei din nordul judeţelor Gorj şi Mehedinţi. Universitatea Babeş-Bolyai, Cluj-Napoca. Facultatea de Biologie, Geografie şi Geologie. Secţia de Biologie. Sesiunea ştiinţifică a secţiei de Biologie, 28-29 mai 1993 (program and abstracts), p. 95. (in Romanian)

CARRETERO, M. A., E. AYLLÓN, G. LLORENTE (eds), 2009 - Lista patron de los anfibios y reptiles de España (actualizada a enero de 2009). AHE, Barcelona, 28 pp.

COGĂLNICEANU, D., F. AIOANEI, B. MATEI, 2000 - Amfibienii din România. Determinator. Edit. Ars Docendi, Bucureşti, 100 pp. (in Romanian)

COVACIU-MARCOV, S. D., 2010 - Data upon the presence of *Ablepharus kitaibelli* in the Getic Piedmont, Gorj County, Romania. North-Western Journal of Zoology, 6 (2): 316-318.

COVACIU-MARCOV, S. D., A. ŞT. CICORT-LUCACIU, O. GACEU, I. SAS, S. FERENŢI, H. BOGDAN, 2009 a - The herpetofauna of the south-western part of Mehedinţi County, Romania. North-Western Journal of Zoology, 5 (1): 142-164.

COVACIU-MARCOV, S. D., A. ŞT. CICORT-LUCACIU, F. DOBRE, S. FERENŢI, M. BIRCEANU, R. MIHUŢ, AL. STRUGARIU, 2009 b - The herpetofauna of the Jiului Gorge National Park, Romania. North-Western Journal of Zoology, 5 (1): S01-S78.

FUHN, I., 1960 - Amphibia. Pp. 1-288. *In*: Fauna R.P.R., 14 (1). Edit. Academiei R.S.R., Bucureşti. (in Romanian)

FUHN, I., ST. VANCEA, 1961 - Reptilia. Pp. 1-349. *In*: Fauna R.P.R., 14 (2). Edit. Academiei Române, Bucureşti. (in Romanian)

GHINEA, D., 2002 - Enciclopedia geografică a României. Edit. Enciclopedică, Bucureşti, 1456 pp. (in Romanian)

IFTIME, A., 2005 - Amphibia. Pp. 197-214. *In*: N. Botnariuc, V. Tatole, (eds). Cartea Roşie a Vertebratelor din România. Edit. Curtea Veche, Bucureşti. (in Romanian)

IFTIME, A., O. IFTIME, 2007 - Preliminary data on the herpetofauna of the Cozia massif (Romania). 2. Amphibians. Travaux du Muséum National d'Histoire Naturelle „Grigore Antipa", 50: 259-271.

IFTIME, A., O. IFTIME, 2011 - *Triturus cristatus* (Caudata: Salamandridae) feeds upon dead fishes. Salamandra, 47 (1): 43-44.

IFTIME, A., A.-M. PETRESCU, O. IFTIME, 2008 - Observations on the herpetofauna of the Mehedinţi karstic plateau (Mehedinţi and Gorj counties, Romania). Travaux du Muséum National d'Histoire Naturelle „Grigore Antipa", 51: 219-230.

MÂCIU, M., A. CHIOREANU, V. VĂCARU, (eds), 1982 - Enciclopedia geografică a României. Edit. Ştiinţifică şi Enciclopedică, Bucureşti, 847 pp. (in Romanian)

PETRESCU, A., I. PETRESCU, N. RĂDULEŢ, AL. IFTIME, C. BAN, 2004 - Date faunistice preliminare din zona viitorului Parc Naţional Defileul Jiului. Oltenia, Studii şi Comunicări, Ştiinţele Naturii, 21: 229-240. (in Romanian)

SPEYBROECK, J., W. BEUKEMA, P.-A. CROCHET, 2010 - A tentative species list of the European herpetofauna (Amphibia and Reptilia) - an update. Zootaxa, 2492: 1-27.

TUDOR, M., N. CRĂCIUN, L. BURLACU, 2004 - Preliminary report on herpetofauna of the becaming National Park "Jiului Gorges". Oltenia, Studii şi Comunicări, Ştiinţele Naturii, 21: 269-272.

Received: August 1, 2011
Accepted: December 16, 2011

Muzeul Naţional de Istorie Naturală
"Grigore Antipa"
Şos. Kiseleff nr. 1, 011341 Bucureşti 2, România
e mail: aiftime@antipa.ro