The herpetofauna of the River Someş/Szamos[1] basin

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Abstract

This paper presents the herpetofauna of the Someş river basin. 20 species were recorded, from which 12 are amphibians and 8 are reptiles. 11 habitat types favourable for amphibians and 8 types for reptiles have been identified in the mountain area of the Someşul Cald where 7 amphibian species and 6 reptile species were found.The number of amphibian species was bigger in the beech forests, than in the nearby spruce-fir forests. The reptiles have larger populations in the beech forests, although more species were found in the spruce-fir forests (5 species) that in the beech forests (4 species). The differences between these two types of habitats studied are mainly caused by two factors: the low pH of water and soil determined by the spruce-fir forest and especially by the *Sphagnum* moss, which could disturb certain amphibian species; and the floristic poverty of spruce-fir area, which probably determines a poverty of invertebrate fauna, this being the cause of the low number of amphibian and reptile populations in that area.

Keywords: Someş river basin, herpetofauna, distribution, habitat

Introduction

Till now the herpetofauna of Transylvania was poorly examined by herpetologists, large areas being not mapped yet. The main field observations have been carried out in summer 1997, during the Someş expedition. They were completed in spring and summer 1998 at the springs of the river Someşul Cald, and in the hill and hillock areas of this river basin, in Sălaj and Bistriţa counties.

List of the amphibian and reptile species

CLS. AMPHIBIA
ORD. URODELA
Fam. Salamandridae

1.Triturus alpestris (Laur.) 1768 (Alpine Newt)

A common species at this altitude, pretty often seen in puddles, swamps and ditches at the road verges, or on mountainsides. Although there are a lot of swamps and puddles in the spruce-fir forests, the mountain newt population is rather poor in comparison to

[1] The first name is Romanian, and the second Hungarian

other similar habitats studied by us in the Meridional Carpathians (Retezat and Cibin Mountains etc.). It has been observed at Bazarul Someşului Mare, Ic Ponor and Valea Arin.

2.Triturus vulgaris (Linnaeus) 1785 (Smooth Newt)

A species whose spread is altitudinally limited, reaching approximately a height of 1000 m. It has been seen together with the previous species into some swamps, but in a considerably reduced number in the mountain area. It must be remarked that it has been observed during previous research works in the Sureanu, Poiana Rusca and Metaliferous Mountains. Three newt species - *Tr. alpestris, Tr. vulgaris* and *Tr. cristatus* - live together at this altitude. We did not find the species last mentioned, in spite of the fact that there are favourable microhabitats. In the hill and hillock areas this species is present in only two localities (Ilva Mică and Pomi). Due to the destruction of its favourable habitats the populations of this species are continuously decreasing.

3.Triturus cristatus Laurentus, 1768 (Warty Newt)

A species of large size, preferring larger swamps in comparison to other species. It is present only in the hill area in three localities (Ratin, Recea Mică and Zalău).

4.Triturus montandoni (Boulenger) 1880 (Montandon' s Newt)

It is an endemic species for the Carpathic Basin. It has large populations in the Eastern Carpathians in mountain areas. It has been seen only in two localities, in Valea Mării and at its junction with the Someş river.

5.Salamandra salamandra Linnaeus, 1758 (Fire Salamander)

It is a terrestrial, nocturnal species that comes near the swamps only during the reproduction period in order to lay down the larvae. Excepting this period of time this species can be seen in the forests, till an altitude of 1400-m. Adult salamanders or larvae in puddles have not been observed in the spruce-fir forests, but it has large populations within beech forests. This species has also been seen in Zalău and Ratin.

ORD. ANURA

Fam. Discoglosidae

6.Bombina variegata (Linnaeus) 1758 (Yellow-Bellied Toad)

It is a species spread altitudinally between 400 and 1600-1700 m. There should be large populations of this species within the studied area, considering the existence of many favourable places, such as puddles between 1 and 15 m^2 with various depths, areas which should offer the best conditions to this species. The Yellow-Bellied toad has been seen only in the limestone area, in puddles at road verges. The situation is completely different in the hill area, where apparently this is the most common species of amphibians, being practically seen in almost all localities that have been studied.

7.Bombina bombina (Linnaeus) 1761 (Red Belly Toad)

It is a plain species, sensitive to water quality. Due to this fact it has rather rarely been seen in the studied area (Stâna and Recea Mică).

Fam. Bufonidae

8.Bufo bufo (Linnaeus) 1758 (Common Toad)

It is a common species in the Someş basin, rising altitudinally till 1300-1400 m. It seems that it is not disturbed by the acidic pH of the mountain areas, as it has been seen in both plain swamp areas and mountain side areas. The presence of tadpoles close to swamps indicates the existence of pretty large populations. This species has been seen in nine localities, in both hill and hillock areas: Aval Sângeorz Băi, Ilva Mică, Valea Mării, Arduzel, Ţicău, Stâna, Ratin, Recea Mică and Zalău.

9.Bufo viridis Laurentus 1768 (Green Toad)

It is a rarer species at higher altitudes because of its thermophilous feature, but it is resistant to dryness and it can be seen in areas where other species cannot survive. Even if it has not been seen at all in the mountain area it has been seen in six localities in the hill areas: Arduzel, Stâna, Sânmihaiu Almaşului, Chendremal, Ratin, and Aval Sângeorz.

Fam. Ranidae

10.Rana temporaria Linnaeus 1758 (Common Frog)

It is a common species in mountain areas, being well adapted to the low water pH. The populations of the Someş basin are large - in April approximately 200 egg clumps were seen in the swamps of the rivers, at the springs of the river Someşul Cald. In the rest of the territory its presence is rarer and instead of this species we can meet *Rana dalmatina* here.

11.*Rana dalmatina* Bonaparte 1839 (Agile Frog)

It is a thermophilous species that does not live in a higher altitude of 1000 m. It is common in the habitats of hill and hillock areas, having been seen in seven localities: Aval Năsăud, Beclean, Stâna, Ciumăra, Poarta Sălajului, Sânmihaiu Almaşului, and Zalău

13.Rana esculenta complex (Rana ridibunda Pallas 1771 *and R. lessonae* Camerano 1878 (Green Frogs)

This group of species, whose systematic positions have not been precisely delimited yet, can be seen in almost every fresh or running waters and in swamps, covering an area between hills till an altitude of 800 m. In the Someş basin these species have been seen in most of the studied localities.

Probable species: *Pelobates fuscus* (Laurentus 1768) and *Hyla arborea* (Linnaeus 1758).

CLS. REPTILIA

ORD. SAURIA

Fam. Lacertidae

1.Lacerta agilis Linnaeus 1758 (Sand Lizard)

It is a widespread species, from the plain to an altitude of 1400-1500 m, which prefers sunny places by the watercourse, depending on a certain degree of humidity. In

the Someş basin it is widespread because it have been seen in seventeen localities. It must be noticed that its populations are larger in the hill area in comparison to those in the mountain area.

2.Lacerta viridis (Laurentus) 1768 (Green Lizard)

It is the largest representative of this family in our country, a thermophilous species, that lives till an altitude of 700-800 m. In the hill area of the Someş basin this species can rarely be seen on the southern sides. It could been seen in nine localities: Beclean, Amonte Someş Odorhei, Stâna, Ciumăra, Românaşi, Poarta Sălajului, Chendremal, Ratin, and Zalău.

3.Podarcis muralis Bielz 1856 (Common Wall Lizard)

This species is rarely present in the studied area, which is at the northern limit of its area, where the Common Wall Lizard has only a disperse spreading, having been seen only in the rocky microhabitats of Mediterranean influence. It has been seen in only two localities: Tarnița and Smida, at the springs of the Someşul Cald.

4.Lacerta vivipara Jacquin 1787 (Viviparous Lizard)

This species is much more adapted to the unfavourable conditions of climate, reaching the altitudes of 2000 m. It has been seen at the skirts of the spruce-fir forest, especially in limestone areas, in four localities: Ic Ponor, Lac Baraj, Valea Arin and Valea Mării.

Fam. Anguidae

5.Anguis fragilis(Nordmann) 1840 (Slow Warm))

A common ovoviviparous species, spreading till altitudes of 1900 m. It has been seen in the wet but not in the *Sphagnum* pastures of the beech area, although its presence is not impossible there. It can pretty often be seen in the wet lawns of the hill area. It was found in five localities: Stâna, Sânmihaiu Almaşului, Chendremal, Ratin and Zalău.

ORD. SERPENTES

Fam. Colubridae

6.Natrix narix (Linnaeus) 1758 (Grass Snake)

A common species from the plain till altitudes of approximately 1000 m. It can be seen especially in the hill and hillock areas: Aval Gherla, Aval Năsăud, Beclean, Amonte Someş Odorhei, Ciumăra, Poarta Sălajului, Sânmihaiu Almaşului, and Ratin.

7.Natrix tessellata (Laurenti) 1768 (Dice Snake)

It is a semiaquatic species. It can be seen near running and stagnant waters. It was found only in two localities (Someş Odorhei and Ciumăra).

Fam. Viperidae

8.Vipera berus (Linnaeus) 1758 (Adder)

It is a widespread species in both spruce-fir and beech forests, on the southern sides of the mountains, in the glades of meadows (four localities). The density of the

population is not uniform being connected with the disperse presence of *Lacerta vivipara* populations, which represent the food resource for the young vipers. It was found in Ic Ponor, Lac Baraj and Valea Arin.

Probable species: *Elaphe longissima* (Laurenti) 1768 and *Coronella austriaca* Laurenti 1768

The distribution of herpetofauna in the mountain area of the Someşul Cald river basin

Although the altitude is not very high (950-1200 m), due to specific pedoclimatic conditions there are some characteristic features of the mountain area of the Someşul Cald between the Someşul Cald gorges and the tail of the artificial Hydro Power Station lake Beliş, namely:

- Starting upstream the lake till approximately 4 km from the entrance of the gorges of the Someşul Cald spruce-fir forests and mezohigrophilous lawns are predominant, where the *Sphagnum* mosses grow explosively.

- Upstream the spruce-fir area, the limestone base rock of Someşul Cald gorges is covered by compact beech forests and glades, where the river flows from East to West.

In order to establish the influence that pedoclimatic conditions have on the composition of herpetofauna both characteristic habitats of herpetofauna and existing species have been identified. The results are presented in Table 1. and 2.

Comparing the two vegetation areas, we reached the conclusion that the beech area, although its surface and microhabitat diversity is more limited, shelters a large number of amphibian species, larger, than the spruce-fir areas do. So, only two species live in the swamp of the flooded meadow while in the beech areas five species have been seen. The situation was the same in the other three comparable types of habitats: swamps, lawns and forests.

This obvious difference may have two reasons: the low pH of water and soil, determined by the spruce-fir forest and especially by the *Sphagnum* moss, which can disturb certain amphibian species, and the floristic poverty of spruce-fir area, which probably determines a poverty of invertebrate fauna, this being the cause of the low number of amphibian populations in the area. The spruce-fir area shelters a large number of amphibian species although altitudinally this area is situated higher.

There are six reptile species in the two studied areas (four of lizard and two of snakes).The analysis of data in Table 2. shows us that there are only four species living in the beech area, in comparison to the spruce-fir area where six species are present. It may be the effect of the altitude, but the populations can be found in the beech area are better represented by their number.

	SPRUCE FIR AREA						BEECH AREA				
	A	B	C	D	E	F	G	H	I	J	K
Triturus alpestris	***	*	**				**	*			**
Triturus vulgaris	*						*				
Salamandra salamandra									*		
Bombina variegata							*	*			
Bufo viridis				*						*	
Bufo bufo	**			**		*	*	**	**	*	*
Rana temporaria	**	**	*	*	*	*	***		**	*	*
Number of species	4	2	2	3	1	2	5	4	3	3	3

Table 1. Spreading of amphibian species in the studied habitats

A: Swamps at the tail of the lake;
B: Swamps in flooded meadow with *Sphagnum*;
C: Swamp at the road verges;
D: Area changed by human impact;
E: *Sphagnum* lawns;
F: Spruce-fir forests;
G: Swamps in flooded meadows without *Sphagnum*;
H: Swamps by the roads;
I: Lawns without *Sphagnum*;
J. Scree, rock- piles; K: Beech forest.***Common; **rare; *sporadic

	SPRUCE FIR AREA				BEECH AREA			
	A	B	C	D	E	F	G	H
Podarcis muralis	*	*						
Lacerta vivipara	*	*			*	**	**	**
Lacerta agilis			*			*		
Anguis fragilis		*	*		*	*	*	
Natrix natrix				*				
Vipera berus		*	*		*	*	*	*
Number of species	2	4	3	1	3	4	4	3

Table 2. Spreading of reptile species in the studied habitats

A: rock-piles;
B: Skirts of forest, southern side;
C: Pasture, southern side;
D: Flooded meadow glade and forest;
E: Flooded meadow glade;
F: Pasture, southern side;
G: Skirts of forest;
H: Limestone scree and rock-piles ***Common; **rare; *sporadic

The only important differences between these two areas are in the flooded meadows, because *Anguis fragilis* has not been seen in the spruce-fir area while it was found in the beech area. There might be an explanation if we take in consideration the fact that in the spruce-fir area the meadows are exposed to a strong human impact (gardens, pasturing, wood exploitation).

Conclusions

- The herpetofauna consists of 20 species in the Someş basin, from which 12 are amphibians and 8 are reptiles.

- 11 habitat types favourable for amphibians of and 8 types for reptiles were identified in the mountain area of the Someşul Cald where 7 amphibian species and 6 reptile species were found.

- More amphibian species live in the beech area than in the nearby spruce-fir area.

- The reptiles have larger populations in the beech area, although more species live in the spruce-fir area (5 species) than in the beech area (4 species).

- The differences between the two studied types of habitats are mainly caused by two factors, namely the low pH of water and soil. Determined by the spruce-fir forest and especially by the *Sphagnum* moss, which could disturb certain amphibian species, and the floristic poverty of spruce-fir area, which probably determines a poverty in the invertebrate fauna, this being the cause of the low number of amphibian and saurian populations in this area.

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