

Studies on the amphibians of the Someş/Szamos¹ River-Valley

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Abstract

The present paper shows the results of the investigations on distribution of amphibians in Someş river valley. During the Someş/Szamos expedition only 8 species were identified (although 17 species were known from the river valley), mostly due to the timing of the investigations and, in case of the species from hilly and plain areas, due to the destruction of natural habitats. The authors supplementary investigations added other 7 species to the regional faunistical list. The most endangered species of the Someş river valley is the Moor Frog (*Rana arvalis*): because of habitat destruction, many local populations of this species are already extinct in most of the sites where they were known before.

Keywords: herpetofauna, amphibians, River Someş/Szamos, ecological status, endangered species

Introduction

Someş river system is situated in north-western part of Romania having a complex structure, most of the secondary watercourses occurring in the upper parts (mountain and hilly areas) of the watershed. The total surface of the catchment area is 1,501,500 ha (2/3 of the surface is placed at the left side of the main river course). The monitoring of the hydrological dynamic of Someş river started in 1868 (establishment of the hydrological station at Satu Mare) (Diaconu, red., 1971). The main geomorphologic regions crossed by various watercourses belonging to Someş river are: mountains (Apuseni, Rodna, Ţibleş, Gutăi) hilly areas (Someşelor Plateau, Transilvaniei Plain, Baia Mare Basin) and lowlands (Someşelor Plain) (Badea et al, reds., 1983).

The first records on the amphibian species occurring in the Someş river valley could be found in the work of Bielz A., published in 1888: the respective printing contains data on 7 taxa of amphibians. In the same period, Méhely (1891, 1892) provides information on other 4 species. Few years later, Werner (1897) have mentioned one new species for the regional list (*Pelobates fuscus*). Călinescu's work (the first Romanian herpetological monograph) contains information on 13 amphibian species living in the close

¹ The first name is Romanian, and the second Hungarian

neighborhood of Someș river (Călinescu, 1931). The 14th species (*Bufo viridis*) will be mentioned only 30 years later, by Fuhn (1960). Recent studies of Török (1997a and 1997b) provide information on two newt species which are new taxa for the regional list. In the same year, Arntzen et al. (1997) were publishing an article on *Triturus dobrogicus*, species found near to the lower sector of the Someș river.

The present paper shows the result of the herpetological studies carried out in the Someș river valley, including discussions on the actual status of amphibian populations and observations on the species occurring in the Someș basin (even if they have not been found during the investigations).

Materials and methods

In the 21.07.1992 - 03.08.1992 period (the so-called Someș/Szamos Expedition) 17 sampling stations were studied. The stations were situated along the main river courses of the Someș catchment area. In each station we were walking along transects parallel to the river shore and we were making observations on the species, number of specimens, status of habitats. During the same year, many supplementary field-investigations have been carried out, mostly in the Baia Mare Basin and in the vicinity of Cluj. For species identification we have used classic guides: Arnold and Burton (1978) and Fuhn (1960, 1969). For a precise localization of the sampling sites, the Universal Transverse Mercator (UTM) system was used for squares of 10x10 km (Lehrer and Lehrer, 1990). The UTM codes are mentioned in parentheses after the name of each locality.

Results

1. *Salamandra salamandra* (Fire Salamander) was not observed during the investigations, due to the timing of the field investigations (summer is not the proper period for identifying amphibians). Fire Salamander was mentioned by Bielz (1888) from Năsăud (LN 03), by Borcea (1983) from Rodnei Mountains (without precise location of the site) and by Cogălniceanu (1991) from the western limit of Baia Mare Basin (FT 78 and FT 88). Recent studies of Török (1997a) show the existence of stable populations of Fire Salamander in the catchment area of Lăpuș river (tributary to Someș river). Based on these results, our opinion is that the species has viable populations in the forested areas from the upper parts of the Someș valley (Apuseni Mountains, Rodnei Mountains and the border area of the hilly regions).

2. *Triturus cristatus* (Warty Newt) is one of the most common species of amphibians in the hilly areas of the Someș river valley. During the investigations we have not captured any Warty Newt, but in 1992 the species was observed at Bozinta Mica (FT 87), Cluj (FS 98) and Ilba (FT 78). Supplementary field investigations carried out by the author show the occurrence of Warty Newts in several sites placed in the vicinity of the

Someș valley: Baci (FS 88), Fânațele Clujului (FS 99), Lăpușel (FT 87) and Sat Săsar (FT 88). The species was also mentioned by Fuhn (1960) from Gherla (GT 21) and Năsăud (LN 03).

3. *Triturus dobrogicus* (Danube Crested Newt). There is only one reliable record from the close neighborhood of Someș catchment area: Arntzen et al. (1997) mentioned village Andrid (ET 96) as the north-western limit of the range of the species. Being a species adapted to the ecological conditions of wetlands from plain areas, the Danube Crested Newt is a relatively common species in the floodplains of the main rivers from Hungary (Andren et al., 1994). Consequently, we assume that the species is occurring in the floodplain of the lower Someș river (between Satu Mare and the confluence of Someș and Tisa rivers).

4. *Triturus vulgaris* (Smooth Newt) is also one of the common species of the wetlands of Someș river valley. In the hilly areas (Someșelor Plateau, Baia Mare Basin) we have observed populations belonging to the subspecies *Triturus vulgaris ampelensis* at Bozinta Mica (FT 87), Cluj (FS 98) and Ilba (FT 78). The author's supplementary field investigations show the occurrence of Smooth Newt populations at Baci (FS 88), Fânațele Clujului (FS 99) and Recea (FT 87) (see Török, 1997b). Other records of the species: Năsăud (LN 03; see Bielz, 1888), probably this population belongs to the subspecies *Triturus vulgaris vulgaris* (according to the paper of Cogălniceanu, 1991).

5. *Triturus montandoni* (Montandon's Newt) was not captured during the investigations. Studies of Török (1997b) show that the species is common in the mountain areas of Lăpuș catchment area (belonging to Someș hydrological basin). Montandon's Newt is also mentioned by Borcea (1983) from Rodnei Mountains (without precise location of the collecting station). Based on our previous observations, we consider that *Triturus montandoni* has stabile populations in those areas of the Someș valley which are situated in the Eastern Carpathians (the species is not occurring in Apuseni Mountains).

6. *Triturus alpestris* (Alpine Newt) was observed in Apuseni Mountains (FS 66): four specimens were found under a stone, between the river and a carriage road. Borcea (1983) mentioned the existence of the species in Rodnei Mountains. Having the same ecological requirements like Montandon's Newt, the Alpine Newts are probably numerous both in Apuseni and Rodnei Mountains.

7. *Bombina bombina* (Fire-bellied Toad) was not observed during the Someș-Szamos Expedition, but in 1992 one specimen was caught at Ulmeni (FT 75) (see Török, 1997b). Human activities have negative impact on this species, the Fire-bellied Toad populations being unable to survive in polluted waterbodies (ponds, oxbows, etc.) from Someș river valley.

8. *Bombina variegata* (Yellow-bellied Toad) is one of the most common frogs in Someș river valley. The author (see Török, 1997b) has identified Yellow-bellied Toad populations at: Apuseni Mountains (FS 46), Anies (LN 35), Ardușat (FT 77), Arieșu de

Câmp (FT 87), Cicărlău (FT 88), Cluj (FS 98), Dăneștii Chioarului (FT 76), Fărcașa (FT 77), Gardani (FT 76), Ilba (FT 78), Pribilești (FT 77), Săbișa (FT 76), Sălsig (FT 76), Seini (FT 79), Sârbii Fărcașa (FT 77), Ulmeni (FT 75). Méhely (1892) indicated the presence of the species at Beclean (KN 82) and Gherla (GT 21). Bielz (1888) mentioned a population of Yellow bellied Toad at Năsăud (LN 03). Based on our investigations (carried out in the vicinity of these human settlements) we consider highly probable the occurrence of the species in these three sites, too. The species has stable populations all over the catchment area of Someș river (Török, 1997b).

9. *Pelobates fuscus* (Common Spadefoot). During our investigation we have found at Beclean (KN 82) one larva of Common Spadefoot. The specimen was swimming in a small pond (filled with aquatic vegetation) placed at the western limit of Beclean city, in the close vicinity of Someș (Someșul Mare) river. The Common Spadefoot was also mentioned by Werner (1897) from Gherla (GT 21) and by Balint Markó (in verbis) from Fănațele Clujului (FS 99). Taking into account the secretive life of this species and the existence of soft soils (proper environment for the spadefoots) in most parts of Someș catchment area, we assume that the species is relatively common in the hilly and plain sectors of Someș river valley.

10. *Bufo bufo* (Common Toad). During our investigations common toads were observed only in Rodnei Mountains (LN 04), but various publications contain data on the occurrence of the species in other zones of the Someș river valley: Cluj (FS 98; Fuhn 1960), Dej (GT 12; Bielz, 1888), Gherla (GT 21; Fuhn, 1960). Disappearance (clearance) of natural forests from hilly and plain areas caused the fragmentation of the range of populations. Small populations are existing in several forests, but they are isolated: wide agricultural fields make impossible the direct contact between these local populations (Török and Béres, 1996).

11. *Bufo viridis* (Green Toad). Along the Someș river valley Green Toads were observed at Arduzel (FT 75), Lucăcești (FT 76), Pribilești (FT 77). The species was identified in areas close to the river valley at Fănațele Clujului (GS 09), Recea (FT 87). The Romanian scientific literature also contains data on the occurrence of the Green Toad in other zones of the Someș valley: Cluj (FS 98; Fuhn, 1960), Dej (GT 12; Fuhn, 1960), Gherla (GT 21; Fuhn, 1960) and Năsăud (LN 03; Cogălniceanu, 1961). The Green Toad is highly adaptable species, occurring even in big human settlements.

12. *Hyla arborea* (European Tree Frog) was not observed during the Someș-Szomes Expedition (due to the timing of the investigations), even if this frog is relatively common species in the Someș river catchment area. The author have identified populations in the following sites, close to the Someș river valley (Török, 1997b): Ardușat (FT 77), Bozinta Mica (FT 87), Busag (FT 88), Buzești (FT 77), Cicărlău (FT 88), Ilba (FT 78), Lucăcești (FT 76), Pribilești (FT 77), Sabișa (FT 76), Sârbii Fărcașa (FT 77), Tohat (FT 76), Ulmeni (FT 75). The European Green Frog was also mentioned by Bielz (1888) from Năsăud (LN 03) and by Fuhn (1960) from Cluj (FS 98), Dej (GT 12) and Gherla (GT 21).

13. and 14. *Rana esculenta* (Edible Frog), *Rana ridibunda* (Marsh Frog) and hybrids of the two species were mentioned by various authors from the following sites:

Rana esculenta - Dej (GT 12; Fuhn, 1960), Gherla (GT 21; Boulenger, 1897), Năsăud (LN 03; Bielz, 1888) and probably Satu Mare (FT 39; Cogălniceanu and Tesio, 1991)

Rana ridibunda - Gherla (GT 21; Fuhn, 1960), probably Seini (FT 79; Cogălniceanu and Tesio, 1991) and Someșeni (GS 09; Bielz, 1888)

hybrids between *Rana esculenta* and *Rana ridibunda* - in their article, Cogălniceanu and Tesio (1993) mentioned green frog hybrids from Cluj (FS 98), Dej (GT 12), Gherla (GT 21) and probably Seini (FT 79).

During the Someș/Szamos Expedition we have observed specimens belonging to „*esculenta*“ complex at: Beclean (KN 82), Dej (GT 12), Gherla (GT 21), Sârbii Fărcașa (FT 77) and Vetiș (FT 39). The author has found green frogs in several other places of the Someș river catchment area (see Török, 1997b).

15. *Rana dalmatina* (Agile Frog) was not observed during the expedition, but other studies of the author (Török 1997b; Török and Béres, 1996) show the existence of the species in hilly areas of the Someș basin: Baciú Gorge (FS 98), Cluj (FS 97), Fersig (FT 76). The species was also mentioned Méhely (1891) from Bont (GT 20), Dej (GT 12) and Gherla (GT 21). The clearance of the forested areas had a negative impact on this species, only small and isolated populations surviving in the close vicinity of the Someș river.

16. *Rana temporaria* (Common Frog) is more common in the undisturbed mountain areas. During the Someș/Szamos Expedition we could observe the Common Frog in two stations from the Apuseni Mountains (FS 46 and FS 66) and in Rodnei Mountains (LN 04). In each case many young and old specimens could have been found in relatively small surfaces (stripe-like wetlands along the shoreline of the watercourses). The species was also mentioned in the scientific literature at Cluj (FS 98; Méhely, 1891) and Năsăud (LN 03; Bielz, 1888). The author identified the species at Baciú Gorge (FS 98) area placed at about 5 km northward to the Someșul Mic river.

17. *Rana arvalis* (Moor Frog) was practically eradicated from the Someșelor Plateau, Baia Mare Basin and Someșului Plain. In the past the species was known in several sites: Apa (FT 69; Micluța, 1969), Baia Mare (FT 98; Micluța, 1969), Bontida (GT 20; Méhely, 1891), Cluj (Fejérváry-Langh, 1943), Dej (GT 12; Méhely, 1891) and Gherla (GT 21; Méhely, 1891). The last living specimen from Cluj was captured in 1951 at a wetland situated at the limit of the city (Stugren and Popovici, 1960). In the early 50's the wetland was drained, a new neighbourhood was established and since then no other Moor Frog was observed in the area (Stugren, 1983). The population from Baia Mare had the same evolution: drainage of the wetland and occurrence of buildings caused the total disappearance of the local Moor Frogs (Török and Béres, 1996). In case of the other sites there are no recent information on the existence or non-existence of the species.

Conclusions.

Scientific literature contains data on 17 species of amphibians from the Someş river valley. During the Someş/Szamos expedition we have identified 8 species in various sampling sites. Other investigations (carried out by the author in the same year in the same hydrological basin, in sites situated in the vicinity of Someş river) provided information on other 7 species. The Moor Frog (*Rana arvalis*) seems to be the only one species which became extinct in most of the sites where there were local populations few decades ago. The Danube Crested Newt was not recorded from the Someş river valley, but it is highly probable the occurrence of the species in the lower parts of Someş basin.

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