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**NOTES ON THE AMPHIBIANS AND REPTILES IN THE REGION  
OF VIDRARU DAM LAKE  
(SOUTHERN CLINE OF THE FĂGĂRAȘ MASSIF, ROMANIA)**

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**Abstract.** The results of herpetological observations, carried in August 2004 in the region of Vidraru dam lake in the southern sector of the Făgăraș massif are presented here together. 7 species of amphibians and 7 species of reptiles were found. The impact of the building of Vidraru dam and the creation of its reservoir on the herpetofauna is discussed, together with the need for conservation measures.

**Résumé.** On présente les résultats des investigations herpétologiques réalisées en août 2004 dans la région du lac artificiel de Vidraru sur le versant sudique du massif de Făgăraș. On a recensé 7 espèces d'amphibiens et 7 de reptiles. On discute l'impact de la construction du barrage de Vidraru et de la création du lac d'accumulation sur la herpetofaune, aussi que la nécessité d'entreprendre des mesures de conservation.

**Key words:** reptiles, amphibians, Făgăraș massif, mountain ecosystems, dam lake, conservation.

*INTRODUCTION*

The Făgăraș Massif is known as the highest mountain system of Romania, reaching 2544 m in Moldoveanu peak and comprising numerous other peaks above 2000 m. In their disposition a nearly straight East-West main ridge may be discerned, from which secondary ridges, generally oriented North to South, depart on both the northern and the southern slope; these secondary ridges are very short on the northern slopes of the main ridge, and longer on the southern one. These mountains are crystalline (mainly paragneisses, micaschists and quartzites) in their geological composition, with sporadic limestone intrusions, some at great altitudes, sandstones and shales in a band at lower altitudes, and granitic injections in the region of the Argeș Gorges. Their climate is cool and rich in precipitations during all seasons, and as a consequence the whole massif is well watered and has numerous water courses of varying importance. The vegetation shows the typical altitudinal zonation, going upwards from mixed hill forests dominated by hornbeam and sessile oak to beech and beech-spruce-fir forests (with some natural stands of Scotch pine in the Argeș Gorges), then to almost pure spruce stands, then grading to a transitional mix of stunted spruce, dwarf mountain pine, juniper and rhododendron, then to subalpine heath and alpine grassland. Historically a region of very low population density, the higher Făgăraș massif has suffered less from human impact than other Romanian mountainous areas; the most important and obvious mark of human landscape alteration is the huge Vidraru dam (completed 1966) with its associate dam lake. Built across a narrow section of the Argeș Gorges, the dam holds an immense lake whose area approximates 1000 ha, whose volume is about 465 million m<sup>3</sup> and whose depth reaches more than 100 m in places. It is along the lake that most development has taken place in the region; the lake is circled by roads, an asphalted one on the eastern side and a dirt road on the western side. The

lake is being used for recreation purposes: fishing (it has been stocked with fish, many of them non-native), boating, camping and picnics on the shores, with all associate disturbance: garbage, camp fires, etc.

Accordingly, the amphibian and reptilian fauna to be expected for this region is that of mountainous areas. It has been dealt with by Fuhn (1960), Fuhn and Vancea (1961), whose data is interesting as it was collected before the building of the dam, and Cogălniceanu et al. (2000), always in the wider context of the herpetofauna of all Romania. The records of these authors combined show the presence of *Salamandra salamandra*, *Triturus vulgaris*, *Triturus alpestris*, *Bombina variegata*, *Bufo bufo*, *Bufo viridis* (as from „Făgăraș massif”), *Hyla arborea*, *Rana temporaria*, *Lacerta agilis*, *Lacerta vivipara*, *Anguis fragilis* (as from „Făgăraș massif”), *Coronella austriaca* and *Vipera berus*; most records belong to Fuhn and come from Cumpăna (Cogălniceanu et al. reiterate the findings of Fuhn and add the record of *Hyla arborea*). More records for the massif of Făgăraș come from the northern slope which was more thoroughly and recently investigated by Mara et al. (1999), Ardelean & Trifonof (2000) and Ghira et al. (2002).

My study endeavors to expand the knowledge of amphibians and reptiles in this relatively little-studied region, to establish the impact of the creation of Vidraru lake (and subsequent touristic developments) upon the local herpetofauna and to provide part of the scientific background for the creation of a national park in the Făgăraș massif.

#### MATERIAL AND METHOD

The study is based upon field observations realized during a field trip from the 3rd to the 8th of August, 2004. Sites searched are: Argeș Gorges beneath Poenari fortress; Valea lui Stan valley, where it meets the Argeș Gorges; Călugărița valley for ca. 4 km from its outlet into Vidraru lake; Moliviș plateau and the road towards it; the eastern lake shore for ca. 5 km South of Valea cu Pești chalet; Buda valley for ca. 2 km from its outlet into the lake; the western lake shore for ca. 5 km South and 7 km North from Cumpăna chalet; Cumpăna valley for ca. 1 km from its outlet into the lake; Cumpenița valley for ca. 1 km from its outlet into the lake; Capra river valley around the outlet of its tributary Modrogaz and ca. 0.5 km up this last river; Capra river valley around Capra chalet.

The amphibians and reptiles were observed in the field, and captured by hand or dip-net if necessary for identification, and then released. Photographs were taken of most species found.

#### RESULTS

I have identified 14 amphibian and reptile species:

#### AMPHIBIA

##### Urodela

##### Family Salamandridae

*Salamandra salamandra* (L.) (Fire Salamander).

It is mentioned by Fuhn (1960) from Cumpăna. It was observed in the 2004 trip at the Modrogaz river and the adjoining portion of the Capra valley, on the Cumpăna and Buda valleys and on the western lake shore, South from Cumpăna

chalet, in a habitat of beech and beech-spruce-fir forest crossed by small streams. Many specimens were seen crushed by cars along the roads after rains; traffic mortality is therefore important in this species. Another hazard for this species is falling into “pitfalls” consisting of cemented ditches or pits, whence they cannot climb out; around a dozen specimens, most of them juveniles, were found in such a pit – and rescued (obs. Angela and Iorgu Petrescu). Large tracts of the habitat of *Salamandra salamandra*, which likely supported numerous populations, were obviously lost with the creation of the dam lake. The remaining populations are not very numerous and neither very extensive, for they do not find suitable habitat all over the region, but only in places.

*Triturus alpestris* (Laur.) (Alpine Newt).

Mentioned by Fuhn (1960) at Cumpăna and Negoiu. I found two adults and several larvae in the neighborhood of Cumpăna chalet, in a habitat of mixed beech-spruce-fir forest; the larvae were found in roadside well vegetated ditches, where reproduction and larval development takes place, whereas the adults were found under logs. The species seems rare in the region, mainly for a scarcity of suitable ponds for reproduction.

*Triturus vulgaris* (L.) (Smooth Newt).

Mentioned by Fuhn (1960) at Cumpăna; I found several adults and numerous larvae along the eastern lake shore, both South and North of Cumpăna chalet and in its neighbourhood, in roadside ditches. This species is more frequent than *T. alpestris* but still uncommon in the region as a whole.

Anura

Family Discoglossidae

*Bombina variegata* (L.) (Yellow-Bellied Toad).

It is recorded by Fuhn (1960) in the Făgăraș massif but not in this region. I observed this species along the investigated stretches of both the eastern and the western lake shores, as well as along Cumpăna, Cumpenița, Buda and Călugărița valleys, and on the Moliviș plateau. It inhabits all kinds of stagnant or flowing waters, including Vidraru lake itself, roadside ditches, small pools formed by rivulets, flooded pits etc.

Family Bufonidae

*Bufo bufo* (L.) (Common Toad).

It is recorded by Fuhn (1960) at Cumpăna. We found numerous specimens of all sizes and age classes, at all investigated locations; the species appears therefore to be homogeneously distributed in this area and relatively common all over it, being found in all habitats from the mixed deciduous forest to the subalpine arbustive stands interspersed with grass. At the time of my investigation, recently metamorphosed individuals of very small size were particularly abundant being present everywhere in densities ranging from 0.1 to 3-4 per square meter. This abundance is explained by the species' use of numerous water bodies for reproduction, including Vidraru lake; as the drought in the previous years has caused the water level in the lake to recede, allowing grass to grow on the exposed bed, and in 2004 rains returned refilling the reservoir to its pre-drought level, vast shallow grassy submerged areas were available, offering this species an optimal and

extensive habitat for reproduction, as the underwater grass offers good anchoring for the egg strings, cover and food for the tadpoles. However, this fortunate situation cannot last for the underwater grass will decay sooner or latter, so one may not be misled by the seemingly overabundant *Bufo bufo* population into believing that this species is not vulnerable to the anthropic impact.

Its momentary abundance offered an opportunity for observing a wide range of color variation, with specimens in all shades of brown, and some almost black, some reddish, or red and black, or blackish-brown with yellowish parotids, or even olive-greenish.

#### Family Ranidae

##### *Rana temporaria* L. (Common Frog).

It is mentioned Fuhn (1960) at Cumpăna and Negoiu. I observed it along the investigated stretches of both the eastern and the western lake shores, as well as along Cumpăna, Cumpenița, Modrogaz and Călugărița valleys, around Capra chalet, and on the Moliviș plateau, along humid stretches of forest, marshes, river edges, and in a sub-alpine bog near Capra. Juveniles were found at the water edge of Vidraru lake, indicating that reproduction may take place in it as well, but even if it does, its floating egg masses is far more vulnerable to fish predation than the egg strings of *Bufo bufo* and this may entice a lower recruitment for lake-reproducing subpopulations. Habitual reproduction places are pools formed by rivulets, collateral oxbows of water courses, temporary pools and even water-filled ditches and pits. The species seems uncommon, being everywhere found in low numbers.

##### *Rana esculenta* L. (Edible Frog).

It was observed at the edge of Vidraru lake (obs. Angela Petrescu). This could mean a recent range extension into the area, either by natural dispersion into a water body (Vidraru lake) where such frogs were absent until recently, or by artificial introduction, as an adventive of fish stockings. The population of this species is low at present.

### REPTILIA

#### Squamata

#### Family Lacertidae

##### *Lacerta agilis* L. (Sand Lizard).

It is recorded by Fuhn and Vancea (1961) at Cumpăna. It was found by my along the investigated stretches of both the eastern and the western lake shores, as well as along Cumpăna, Cumpenița, Buda, Modrogaz and Călugărița valleys, and on the Moliviș plateau. It occupies various habitats: forest edges, water edges, embankments and talus at road's edge, grassy clearings with stumps or logs, stony places; this is a species which readily utilizes recently disturbed habitats and pioneer communities, and as such it spreads along water courses (a natural situation) and roads (a human-induced case). It is almost homogenously spread around the lake and fairly common in places. It lives sometimes together with *Lacerta vivipara* and *Podarcis muralis*.

*Lacerta viridis* (Laur.) (Green Lizard).

This species was not recorded in the area before my study. I found it only at the foot of the cliffs supporting the Poenari fortress, in the Argeș gorges, in a biotope of rocky slopes with arbustive vegetation. Apparently, it does not occur above the Vidraru dam and it is thus only marginally present in the study area; even at its only locality, it is not numerous.

*Lacerta vivipara* Jacquin (Viviparous Lizard).

It is mentioned by Fuhn and Vancea (1961) from Cumpăna. I observed it along the investigated stretch of the eastern lake shore, as well as along Modrogaz, Buda and Călugărița valleys, around Capra chalet, and on the Moliviș plateau. It occupies such habitats as forest edges, marshes, grassy clearings with logs and stumps, embankments and talus at road's edge, stony slopes, and piles of logs, subalpine heath and bogs.

*Podarcis muralis* (Laur.) (Wall Lizard).

It was not mentioned in the area before our studies. It was found by us along the investigated stretches of both the eastern and the western lake shores, as well as along Cumpăna, Călugărița and Valea lui Stan valleys, and at the foot of the cliffs supporting the Poenari fortress, in the Argeș Gorges. This species utilizes stony and rocky habitats, such as rocky cliffs and slopes, stony slopes, concrete embankments of roads and rivers, stony talus of roads etc., i. e. both natural and man-made habitats. It is locally common and has obviously dispersed upwards of its natural occurrence in the Argeș Gorges along roads.

## Family Anguidae

*Anguis fragilis* L. (Slowworm).

It is mentioned by Fuhn and Vancea (1961) from "the Făgăraș mountains". One specimen, a young female, was found by me on the western lake shore, ca. 4 km north from Cumpăna chalet, in a biotope of stony slope with arbustive growth and leaf litter. This species seems rare in the area. Doubtlessly large tracts of its optimal habitat were flooded by the dam lake.

## Family Colubridae

*Natrix natrix* (L.) (Grass Snake).

It was not recorded in the area before this study. I have observed several specimens along the investigated stretch of the western lake shore, in roadside ditches and broken concrete embankments, but it obviously also utilizes the lake edge. The specimens observed displayed little of the chromatic variability usually found in this species, being all slaty-grey; the population may therefore have resulted from a reduced number of founders, either because it has immigrated recently towards the lake habitat, or because a naturally occurring population in the area was much reduced at some point (possibly by human agency, such as when the dam was built) and then recovered.

## Family Viperidae

*Vipera berus* (L.) (Adder).

Mentioned by Fuhn and Vancea (1961) at Cumpăna. I have observed two adult females around Capra chalet, in a biotope of subalpine heath. The species

seems to be rare in the region; it is likely killed by locals, shepherds and others, as any snake usually is.

The following species were recorded previously from the region, but I did not observe them:

Amphibians:

*Hyla arborea* (L.). (European Treefrog).

It was only recorded in the area by Cogălniceanu et al. (2000); it may be very rare in the area or the record may be wrong.

Reptiles:

*Coronella austriaca* Laur.

Mentioned by Fuhn and Vancea (1961) at Cumpăna. Its presence is very likely.

#### DISCUSSIONS

My results show a herpetofaunal assemblage typical to the European mountainous areas. As for their status, the populations of the species present in the area would empirically fall into three distinct classes of abundance: very rare or sporadic species (this would include *Rana esculenta*, *Lacerta viridis*, *Anguis fragilis* and likely *Hyla arborea* and *Coronella austriaca* as well), rare or localized species (this would include *Salamandra salamandra*, *Triturus alpestris*, *Triturus vulgaris*, *Rana temporaria*, *Natrix natrix* and *Vipera berus*) and common, numerous species (*Bombina variegata*, *Bufo bufo*, *Lacerta agilis*, *Lacerta vivipara*, *Podarcis muralis*). While most of the species considered as rare or very rare have likely undergone range and/or population reduction, *Rana esculenta* and *Natrix natrix* may be in the process of expanding into the area, their rare occurrence being a momentary condition. However, some of the other rare species are clearly declining, e. g. *Salamandra salamandra*, which obviously lost habitat to the dam and is massively killed in traffic, or *Vipera berus*, which was found by Fuhn at Cumpăna, where it used to be common (Fuhn, 1969, speaks of a cat that used to catch adders) but is now absent or at best extremely rare there. Most of the declining species are those that lost habitat with the creation of the dam lake, while the species that thrive are those that were able to gain habitat with the same operation, such as *Bufo bufo* or *Bombina variegata* that reproduce in the lake, or the lizard species (*Lacerta agilis*, *Lacerta vivipara*, *Podarcis muralis*), that are able to use the roadside habitats. These last species are likely to thrive further and tolerate further human impact, while species found to be “rare” or “very rare” are likely to decline further, or even become locally extinct, with further human disturbance, their tolerance for which is expectably low.

I therefore consider the creation of a natural park that would include the study area as very beneficial for the conservation of many of the amphibian and reptile species found here, which are locally and nationally rare and declining.

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NOTE ASUPRA AMFIBIENILOR ȘI REPTILELOR  
DIN REGIUNEA LACULUI DE BARAJ VIDRARU  
(VERSANTUL SUDIC AL MASIVULUI FĂGĂRAȘ, ROMÂNIA)

## REZUMAT

Sunt prezentate rezultatele observațiilor herpetologice realizate în august 2004 în regiunea lacului de baraj Vidraru, pe versantul sudic al masivului Făgăraș. Au fost identificate 7 specii de amfibieni și 7 de reptile. Este discutat impactul creării lacului de baraj asupra herpetofaunei, precum și necesitatea aplicării de măsuri de conservare a biodiversității în regiune.

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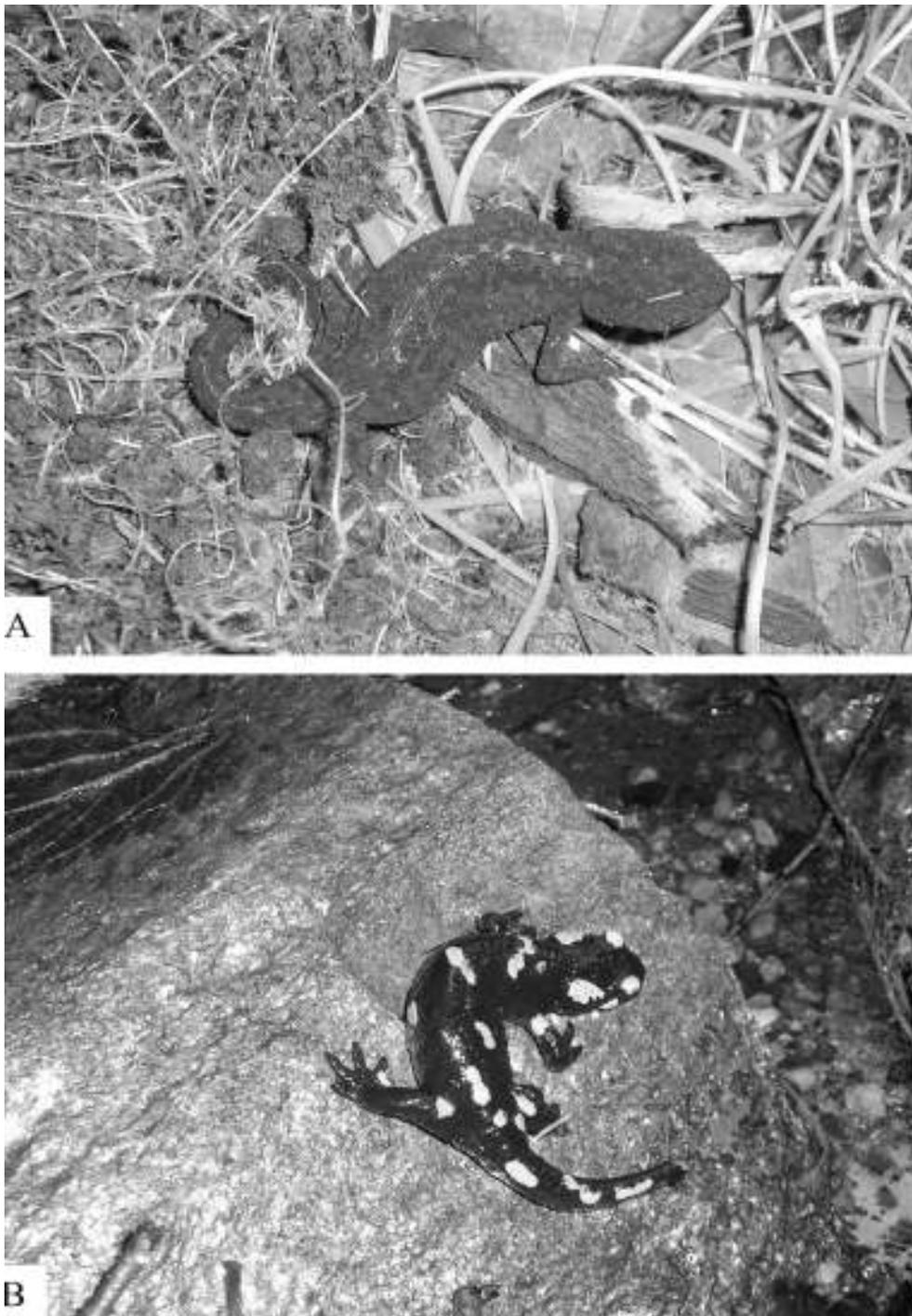


Fig. 1 – A: *Triturus alpestris*, male, Cumpăna; B: *Salamandra salamandra*, Capra valley.



Fig. 2 – A: *Bufo bufo*, juvenile in hand, Cumpăna; B: *Podarcis muralis*, with *Lacerta vivipara*, SE of Vidraru lake.



Fig. 3 – A: *Anguis fragilis*, female, NW of Vidraru lake; B: *Vipera berus*, Capra valley.