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HERPETOLOGICAL OBSERVATIONS IN THE DANUBE FLOODPLAIN SECTOR IN THE GIURGIU COUNTY (ROMANIA)

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Abstract. The results of herpetological observations, carried in April and June 2004 in the Danube floodplain sector of the Giurgiu county are presented here. 7 species of amphibians and 7 species of reptiles were found, most of which are characteristic of the floodplain ecosystem and were expected to occur here. Special mention must be made of the presence of the Wall Lizard, *Podarcis muralis*, which occurs only in a few population on human-created stony habitats and is obviously introduced by human agency.

Résumé. On présente les résultats des investigations herpétologiques réalisées en avril et juin 2004 dans les terres inondables avoisinant le Danube dans le département de Giurgiu. On a recensé 7 espèces d'amphibiens et 7 de reptiles, dont la plupart sont caractéristiques pour les écosystèmes inondables, leur présence étant à prévoir. Une mention spéciale doit être faite sur le Lézard des Murailles, *Podarcis muralis*, qui est présent dans quelques populations vivant sur des habitats pierreux anthropogènes, en étant évidemment introduites par l'homme.

Key words: reptiles, amphibians, floodplain, Danube.

INTRODUCTION

The Danube floodplain of Romania is a complex of ecosystems that has been under much attention, mainly because of its tragic near-destruction under the communist regime, which has drained most of it for agriculture, effectively removing huge areas from the natural flooding cycle by a system of levees. The floodplain sector of the county of Giurgiu is a typical example of such management and its results: immense seasonally flooded areas have been drained and converted to crop fields, and the huge Greaca lake complex, which was linked to the Danube, was likewise replaced with corn fields. All that remained as aquatic and riparian habitats are a maze of drainage ditches and a narrow stripe of seasonally flooded land that lies between the levees and the Danube. A comparison of older topographical maps and recent satellite imagery reveals that on the whole, more than 90% of the seasonally flooded areas as of 1950 have been converted to cropland (including a small amount of pastures), the remainder having to suffer from a stronger erosion from the waters of the Danube during high water season. These remaining areas have also been subject to intensive forestry management practices, such as planting large areas, both on the mainland „stripe” and on the islets in the Danube, with fast-growing hybrid „Euramerican” poplar stands, which are periodically clear-cut for pulp when low waters allow log-carrying tractors to operate. Other factors have also plagued these remaining seasonally flooded ecosystems: runoff from agriculture, including pesticides and fertilizers, which can accumulate in stagnant water bodies causing high mortality in a number of aquatic organisms; the proliferation of non-native organisms such as the False Indigo (*Amorpha fruticosa*), which forms dense stands excluding native species and grows especially well as an underwood for the Euramerican Poplar, or the Pumpkinseed

(*Lepomis gibbosus*) and Prussian Carp (*Carassius auratus gibelio*), which have come to dominate the fish biomass in standing waters; and, last but not least, the pollution of the Danube itself, which has a detrimental influence that can be linked to a variety of impacts, including amphibian deformities (Puky & Fodor, 2002). On the whole, one can see that even these relics of the floodplain ecosystem complex are strongly altered by human agency. The impact of these factors should therefore be visible in the structure of the herpetofaunal communities. However, these were little studied in the precise area of my study until recently; 9 species of amphibians and 3 of reptiles were recorded from only two localities combined (Fuhn, 1960; Fuhn & Vancea, 1961; Cruce, 1972; Cogălniceanu et al., 2000). In the later years substantial data was added by Török (2001), in the wider context of the lower Danube floodplain, recording 4 more species in the area of my study (*Triturus vulgaris*, *Lacreta agilis*, *Podarcis muralis*, *Natrix natrix*). This study endeavoured to further document the present composition and situation of the herpetofaunal communities all along the Danube left bank in the county of Giurgiu, in the remaining seasonally flooded areas as well as on some islets in the Danube, which can be seen as part of the seasonally flooded ecosystem complex, since they are totally or partially submerged at high waters.

MATERIAL AND METHOD

The study is based upon field observations realized during three field trips in 2004: the first from the 26th to the 29th of April, the second from the 7th to the 16th of June and the third from the 21st to the 23rd of June. The left bank of the Danube has been searched along its entire length in the Giurgiu county, from Găujani to Prundu, together with the islets of Cama, Dinu and Slobozia. The trips were funded by PHARE – Cross-border Cooperation Programme Romania-Bulgaria: „Protection of the wetlands of the Danube. A pilot project for Cama Dinu islets area”, to which the „Grigore Antipa” National Museum of Natural History (Bucharest) participated.

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 15 amphibian and reptile species:

AMPHIBIANS

Urodela

Family Salamandridae

Triturus vulgaris (L.) (Smooth Newt)

This species is recorded by Török (2001) at Gostinu. I found it in small, well-vegetated temporary ponds along Șaica lake (which is an isolated arm of the Danube) and by the partly derelict fish ponds of the Slobozia fish farm. Its abundance is low; it is preyed upon by the Diced Snake (*Natrix tessellata*), by birds and probably also by the Marsh Frog (*Rana ridibunda*).

Anura

Family Discoglossidae

Bombina bombina (L.) (Fire-bellied Toad)

It is recorded from this region (at Greaca) by Cogălniceanu et al. (2000), and by Török at Gostinu. I found this species practically all along the investigated area, from Găujani to Prundu, at Găujani, Șaica lake, Malu, Slobozia levee and fish ponds, Gostinu, Penciu forest, Ochiul Boului channel at Prundu; it inhabits all kind of small and medium-sized water bodies, temporary and permanent, clear and well vegetated or muddy and devoid of macrophyts. It is numerous at most locations.

Family Pelobatidae

Pelobates fuscus (Laur.) (Common Spadefoot Toad)

It was known from Greaca and Giurgiu (Fuhn, 1960; Cogălniceanu et al., 2000); during the present study it was found inhabiting the seasonally flooded white poplar forests of Penciu and Ineciu, that grow on a sandy soil, where its characteristic large tadpoles, very close of completing metamorphosis, were found in good numbers in temporary ponds; such tadpoles were also found at Gostinu in a drainage ditch, where they were likewise quite numerous. They were preyed upon by birds, such as the Little Egret (*Egretta garzetta*) and the Night Heron (*Nycticorax nycticorax*), especially by the drying temporary ponds.

Family Bufonidae

Bufo viridis Laur. (Green Toad)

It is recorded by Cogălniceanu et al. (2000) from Giurgiu, and by Török (2001) at Gostinu. I found it at Găujani, Șaica lake, Slobozia fishponds and by the levee, at Giurgiu by the ruined chemical plant, in the Penciu forest and by a draining ditch at Gostinu. It makes use of a variety of available habitats: the black and white poplar forest by lake Șaica; the pastures and field margins at Găujani; the sandy forest at Penciu; abandoned fish ponds, drainage ditches, watering points for cattle and decrepit industrial buildings, at other locations. However, while expectedly eurytopic, it was nowhere very numerous.

Bufo bufo (L.) (Common Toad)

Recorded by Cogălniceanu et al. (2000) from Giurgiu, this species was found inhabiting the Penciu and Ineciu forest, as well as the forested area by Ochiul Boului channel at Prundu, where a few juveniles were found. It is apparently rare in the region.

Family Hylidae

Hyla arborea (L.) (European Tree Frog)

It was previously recorded from Giurgiu and Greaca by Fuhn (1960) and Cogălniceanu et al. (2000), and at Gostinu, Malu, and Cama islet by Török (2001). I found it at Găujani, by the western end of Șaica lake, at Malu in temporary ponds near the levee, at Slobozia near the levee and in drainage ditches, and near Gostinu in the paludaceous vegetation of a drainage ditch. Adults were nowhere numerous, while at one location (the ditch at Gostinu) juveniles were relatively common.

Family Ranidae

Rana ridibunda Pall. (Marsh Frog)

It was previously recorded from Giurgiu and Greaca by Fuhn (1960) and Cogălniceanu et al. (2000), and from Giurgiu and Gostinu by Török (2001). During this study it was found at practically all investigated sites, all along the Danube bank as well as on the Danube islets: at Găujani, Şaica lake, Malu, Slobozia by the levee and the fish ponds, the Slobozia islet, Cama and Dinu islets, Giurgiu by the ruined chemical plant and in the harbour, Penciu and Ineciu forests with their temporary ponds and oxbows, Gostinu with its drainage ditches, and the Ochiul Boului channel. It is abundant everywhere and occupies any kind of aquatic habitat in the area, natural or anthropogenic: the Danube mainstream itself, all lakes, oxbows and arms of the Danube, ditches, ponds, temporary ponds (including those on the islets) etc. A strong swimmer, the Marsh Frog appears to be the best colonizer for the Danube islets among the amphibians of the region.

REPTILES

Chelonia

Family Emydidae

Emys orbicularis (L.) (Pond Turtle)

It was recorded from Greaca (Fuhn & Vancea, 1961). I found a population of this species inhabiting lake Şaica, a permanent, well-vegetated water body that originated as an arm of the Danube and still connects with the Danube when the waters of the river are high. The species is not numerous at this site; it is, moreover, killed by local fishermen and thus in need of protection. This is all the more emphasised by the fact that Török (2001) did not find this species over a far longer stretch of the Danube floodplain (Calafat to Călăraşi).

Squamata

Family Lacertidae

Lacerta agilis L. (Sand Lizard)

This species is recorded by Török (2001) at Gostinu and Malu. I found it especially on the levees, in the herbaceous vegetation, often together with *Podarcis taurica* (despite the affirmations of Cruce, 1972, that these two species are competitors and never occur together, it appears that they can and do occur together, and at high densities for both species, although generally speaking *Podarcis taurica* favours drier habitats than *Lacerta agilis*). I found it at Găujani, by the levees along Şaica lake, at Malu, Gostinu and by the Ochiul Boului channel at Prundu, and in the forests of Penciu and Ineciu, in grassy and bushy places. These populations belong to the subspecies *Lacerta agilis chersonensis* (which is widespread in the Wallachian plain); a specimen exhibiting the *erythronotus* (red-backed) colour morph was also found (in the Ineciu forest).

Lacerta viridis (Laur.) (Green Lizard)

This species was recorded by Fuhn & Vancea (1961) from Greaca, and by Török (2001) at Slobozia by the fish ponds. I found it at Găujani, along Şaica lake, at Malu, on the levee at Slobozia, in the Giurgiu harbour and the Penciu forest, and

on the Cama islet as well. It inhabits bushy places, being found along the forest margins or in dense arbustive groves, as well as in the paludose vegetation along water bodies, and in flooded forests, where it climbs to the trees and readily swims. It also sometimes takes to the water if pursued. On the islet of Cama, where it is the only lizard to be found, it is quite abundant. This species is a good colonizer of Danube islets as it is a strong swimmer and can inhabit marshy and partly flooded forests and bushes. It is interesting to note that, whereas the subspecies found at Greaca by Fuhn & Vancea (1961) was *Lacerta viridis meridionalis*, I only found *L. v. viridis*, at all places, including on Cama islet. It is likely that the nominate form is better tolerant of humid habitats and is thus spread along the Danubian floodplain, while *L. v. meridionalis* favours a drier environment, for it is found in the Dobrogea and further north from Greaca in the dry thermophile oak forest of Comana, and its presence at Greaca is probably to be associated with the high riverine terrace and its drier habitats.

Podarcis muralis (Laur.) (Wall Lizard)

This species was recorded by Török (2001) at Giurgiu, on the medieval citadel. It was found at Giurgiu, in the harbour on an ancient stone embankment and on the medieval citadel, and on the banks of the Danube at Gostinu, in a disembarkment point for construction materials, where they lived on a concrete embankment and on some rocks placed along the water edge. The population in the harbour was quite numerous, the other two were rather sparse. As their rocky habitat did not exist naturally in the region and is entirely man-made, the origin of these Wall Lizard populations is obviously human introduction, the Wall Lizards likely arriving with limestone boulders. According to Fuhn (1975), in Romania, only the nominated subspecies occurs, although some specimens of the populations from Banat and Dobrogea have some characteristics which remind the subspecies *P. m. maculiventris* (Werner), that is, a white coloration, with black spots, in the abdominal and gular regions. This coloration was present in all *Podarcis muralis* specimens examined in this region; thus their origin is likely from Dobrogea or even from the Bulgarian side of the Danube, from whence the stones for the medieval citadel are likely to have originated as a limestone quarry is close to Giurgiu.

Podarcis taurica (Pall.) (Crimean Lizard)

This species was recorded by Cruce (1972) from Găujani, and by Török (2001) at Găujani, Giurgiu, Gostinu, Malu and Slobozia on the levee. I found it on the levees at Găujani, and on those along the Şaica lake, at Slobozia on the levee and on the islet of Slobozia in a sandy, non-floodable area sparsely covered with willows, and in the sandy forest at Penciu. It inhabits grassy areas on the levees, often together with *Lacerta agilis*, and sandy areas. As it is neither a good swimmer, nor particularly fond of wet habitats, it appears not to be suited for the colonization of Danubian islets. However, its presence on the islet of Slobozia, which is not far from the mainland, can be explained by the fact that during severe droughts, when the water level of the river recedes strongly (as it did in the late summer of 2003), the islet of Slobozia becomes connected to the mainland by a sandy spit, that can be used by the Crimean Lizard, which frequents sandy areas, to accede to the islet. It is locally common, except for the population on the islet, which was obviously not numerous.

Family Colubridae

Natrix natrix (L.) (Grass Snake)

This species is now firstly recorded from this region; it was to be expected as it is the commonest snake in Romania and it is widely associated with riparian habitats. I found it at Găujani and along the Șaica lake, at Malu and in the Penciu forest, as well as swimming in the Danube, in the middle of the channel between islets Cama and Dinu. It frequents all kinds of wetland habitats: lakes, oxbows, ponds, the Danube mainstream, as well as adjacent terrestrial habitats: forests, grassy or bushy areas on the levees, etc. A good swimmer and an opportunistic user of relatively diverse habitats, it is a species with good colonizing potential for Danubian islets; it doubtlessly occurs on both Cama and Dinu islets due to its capacity to swim freely across the full current of the Danube, and to the occurrence of a good prey basis (fish, Marsh Frogs, Green Lizards).

Natrix tessellata (Laur.) (Diced Snake)

This species is now firstly recorded in this region. It was only found by Șaica lake, in a small pond in the flooded forest at the edge of the lake. It probably occurs both in lakes such as Șaica and in the Danube mainstream, but is obviously far less numerous than *Natrix natrix* in the area (Török, 2001, found none over a far larger stretch of the Danube floodplain). Its main prey are fishes, occasionally newts, frogs and tadpoles are also taken. (I have seen it consuming a Common Newt).

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

Pelobates syriacus Boettg. (Syrian Spadefoot Toad)

It was recorded from Giurgiu and Greaca by Fuhn (1960), but these findings are anterior to the massive draining operations. It may still be present in along with *Pelobates fuscus*, for instance at Penciu or Ineciu, but in lower numbers than that last species, for it requires larger water bodies than *P. fuscus* (Fuhn, 1960) and the habitat at Penciu and Ineciu would clearly be suboptimal for *P. syriacus*.

Rana esculenta L. (Edible Frog)

It was recorded by Fuhn (1960) at Oltenița; Török (2001) takes it as „probably” present alongside *R. ridibunda* at the sites in the region (Giurgiu, Gostinu). It may still be present in the area, alongside *Rana ridibunda*, and its other parental species *Rana lessonae* Camerano (the Pool Frog) as well, but even if they are, they are far less numerous than *R. ridibunda*. That was also the case before the draining works, in the whole Danube floodplain region (Fuhn, 1960), and the draining may have afflicted these species preferentially, since they occupy smaller water bodies, further inland from the main Danube waterflow, and these have mostly been drained. I have heard calls that may have been of this species, at Șaica lake, but all „Green Frog” specimens that I could examine closely were *R. ridibunda*.

DISCUSSIONS

As it can be seen, the massive human alteration of the Danubian floodplain ecosystem has reduced the habitat of all amphibian and reptile species, but the remaining „patches” are apparently still in good enough state to support most of the species that are associated with wetlands in this area. Only two amphibian species were not found again, and they could be extinct in the area, but further research is needed before they are „officially” considered so. Moreover, some man-made

structures have provided colonizing opportunities for a species previously absent in the area – the Wall Lizard (*Podarcis muralis*), that has become established in three points. As for the islets, their herpetofauna is quite poor and is only represented by a few colonists, mostly strong swimmers and opportunistic species (*Rana ridibunda*, *Lacerta viridis*, *Natrix natrix*) that colonize across the water, with an occasional land colonization as described above for *Podarcis taurica* on Slobozia. It is interesting that I did not find *Hyla arborea* on Cama islet, where it was documented by Török (2001) – being the sole species he found on the islet; this further underlines the dynamic nature of the faunal communities on such islets.

The need for conservation emerges clearly for some of these remaining patches of floodplain habitat, especially for the larger and less perturbed ones (Șaica lake and its surroundings, Slobozia islet with adjacent wetlands and banks, Penciu and Ineciu forests), not only because they contain a great diversity of amphibian and reptile species that are associated with wetland habitats, but also because of the well-known tampering role of seasonally flooded areas towards the potential negative effects of annual flooding.

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OBSERVAȚII HERPETOLOGICE ÎN ZONA INUNDABILĂ A DUNĂRII, SECTORUL GIURGIU (ROMÂNIA)

REZUMAT

Sunt prezentate rezultatele observațiilor herpetologice realizate în aprilie și iunie 2004 în sectorul din județul Giurgiu al luncii inundabile a Dunării. Au fost identificate 7 specii de amfibieni și 7 de reptile, majoritatea specifice ecosistemelor de luncă, și a căror prezență era de așteptat. Șopârla de ziduri (*Podarcis muralis*) merită o mențiune specială fiind prezentă în câteva populații în habitate pietroase antropogene, și fiind în mod evident introdusă prin activități umane.

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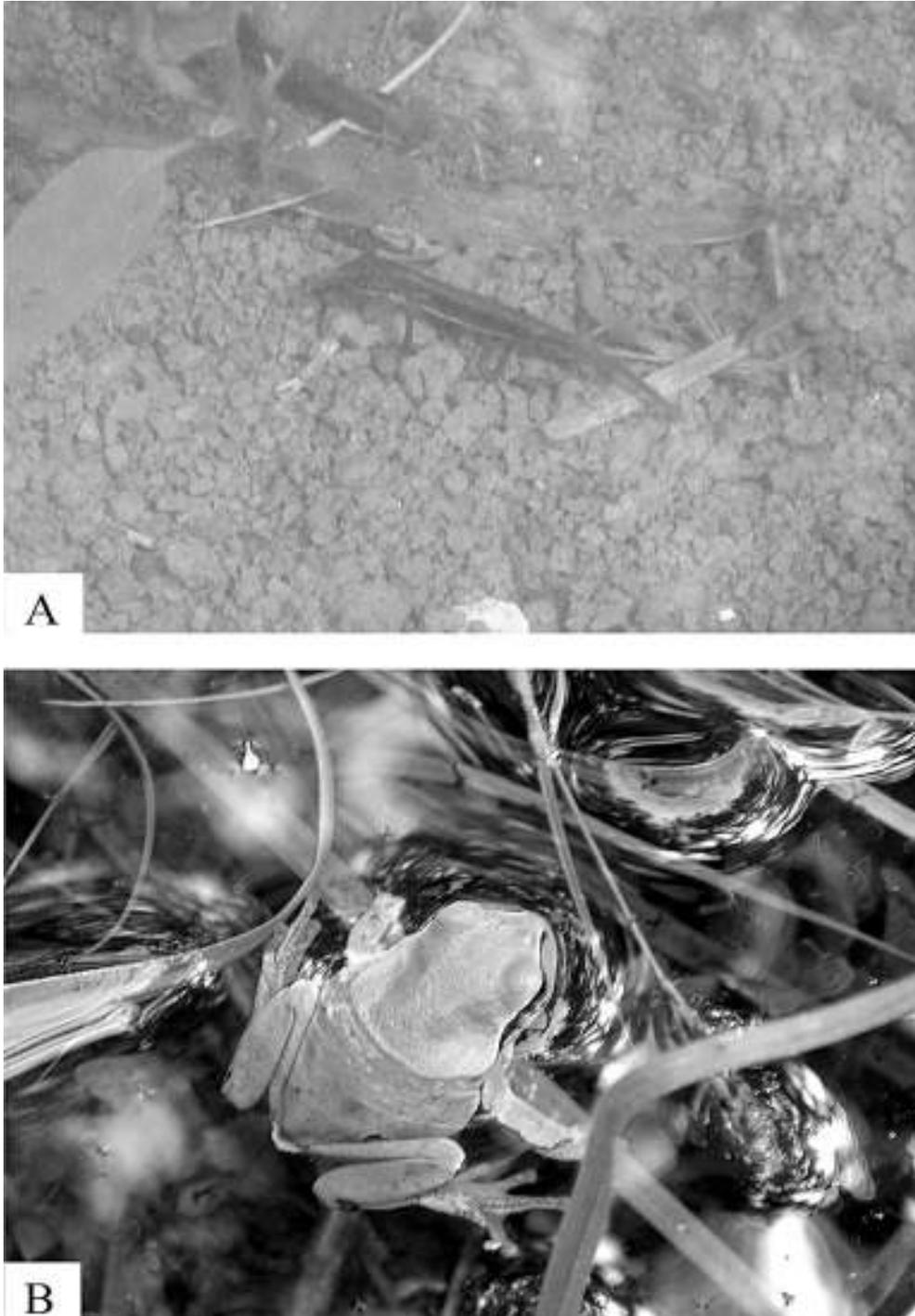


Fig. 1 - A: *Triturus vulgaris*, female, Şaica lake; B: *Hyla arborea*, Şaica lake.

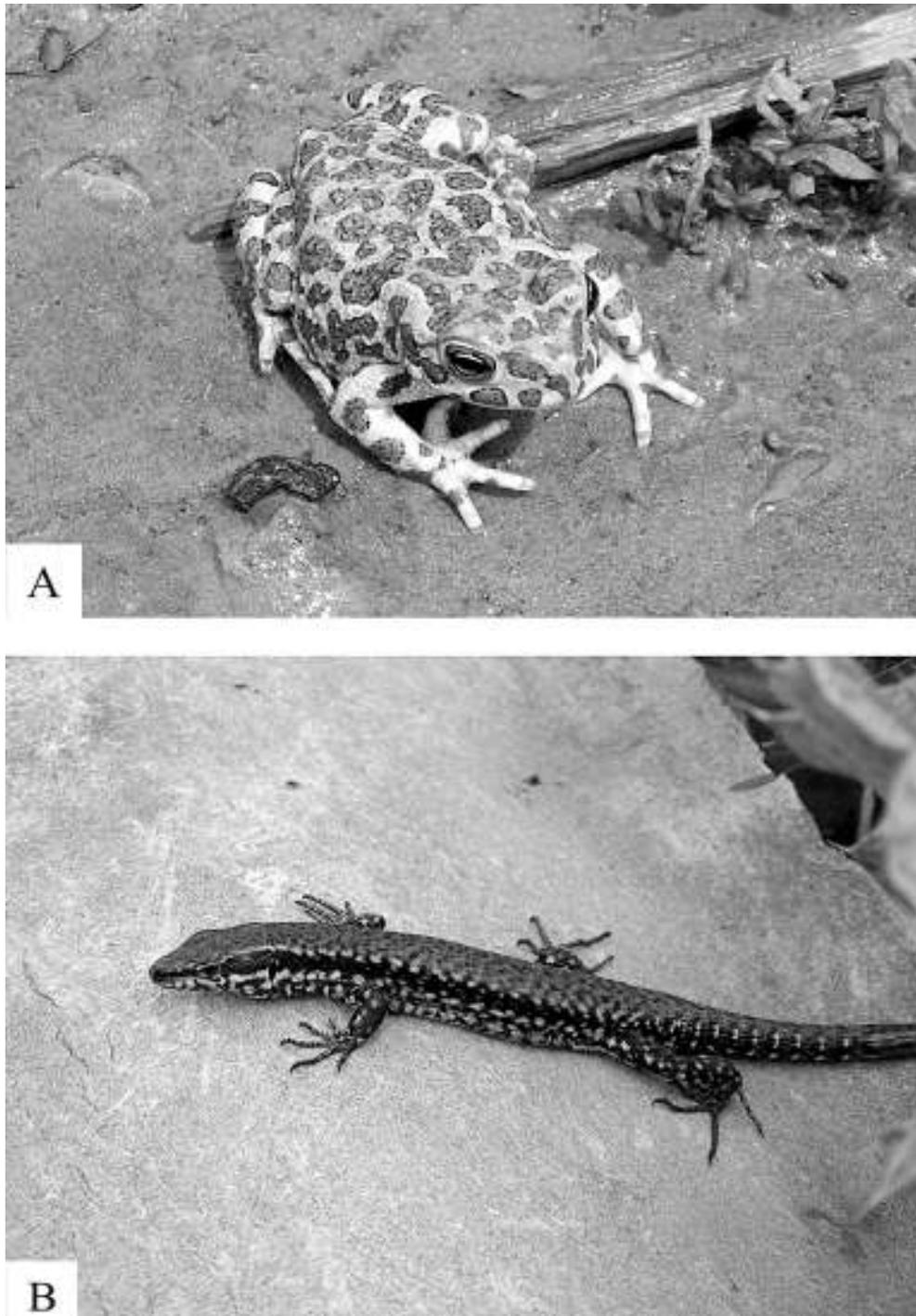


Fig. 2 - A: *Bufo viridis*, Găujani; B: *Podarcis muralis*, Giurgiu harbour.

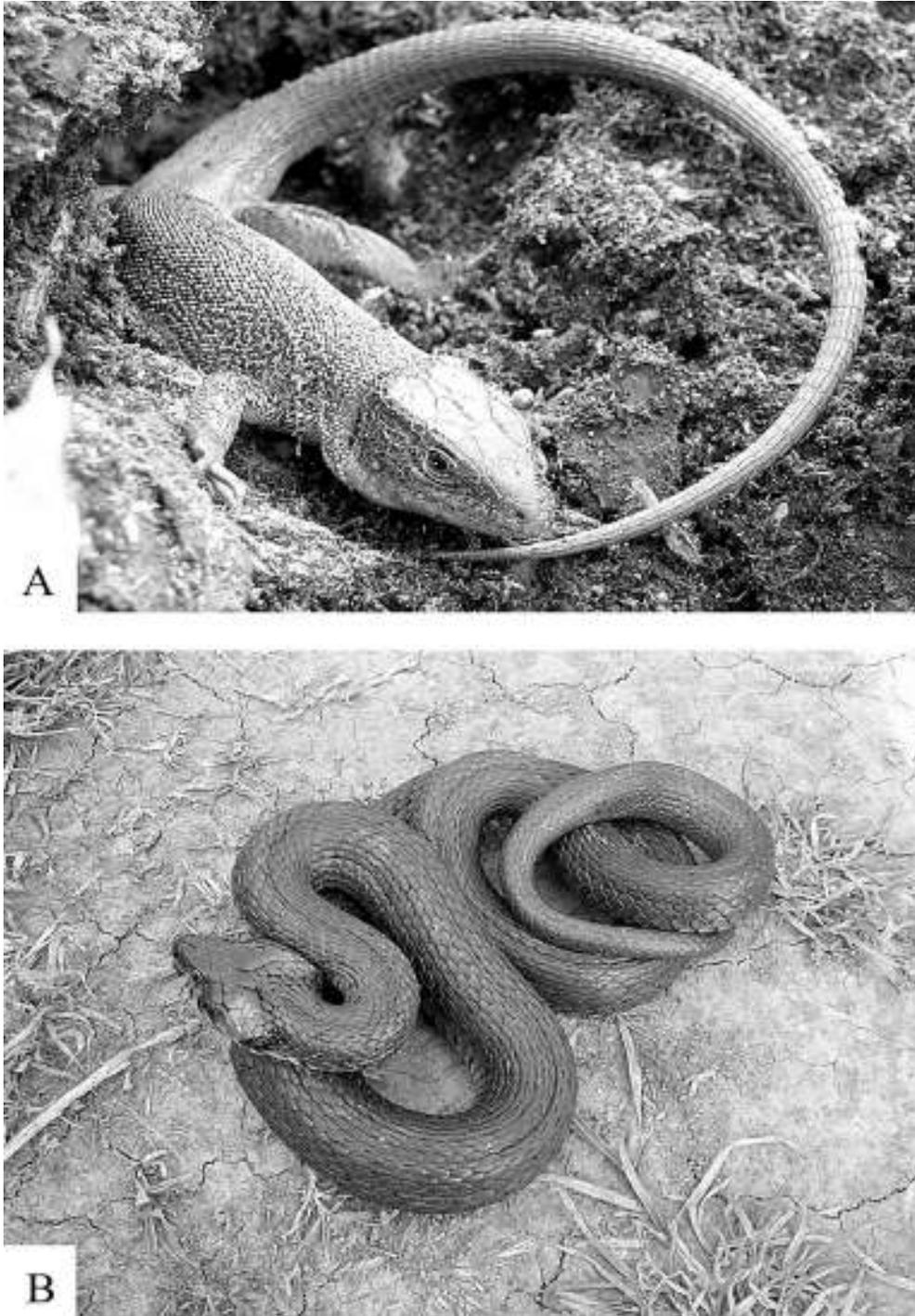


Fig. 3 - A: *Lacerta viridis viridis*, Malu; B: *Natrix natrix* (110 cm length), Şaica lake.