SFÂNTU GHEORGHE (TULCEA, ROMANIA): AN IMPORTANT HERPETOLOGICAL AREA

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Abstract. Amphibians and reptiles are endangered at European level. The aim of the study is to present the detailed distribution of the herpetofauna of the area surrounding the village of Sfântu Gheorghe. We identified 7 amphibian and 6 reptile species of which only one is not legally protected. The main threats for the amphibians and reptiles are the habitat alteration and killing.

Keywords: amphibians, reptiles, habitats, Danube Delta, Directive 92/43/EEC.


Cuvinte cheie: amfibieni, reptile, habitate, Delta Dunării, Directiva 92/43/EEC.

Introduction

The amphibians and reptiles are one of the most endangered animals. At European level, almost a quarter of the amphibians and nearly one fifth of the reptiles are considered threatened (Cox & Temple, 2009; Temple & Cox, 2009). These animals also play an important part in the protection of nature. According to Romanian and European environmental regulations, the presence of some of these species constitutes arguments for the continuous protection of certain areas (European Council Directive 92/43/EEC, transposed as Romanian Government Ordinance no. 57/20.06.2007). Therefore, the identification and monitoring of areas where these species concentrate is very important. Such an area is the Danube Delta, especially the part near the coast, which offers a great variety of habitats and environmental conditions. Although a biosphere reserve, the delta is not deprived of human influence and alteration. The area around Sfântu Gheorghe is representative in this respect for putting together wilderness and civilisation in various degrees.

Thus, we aim to present the herpetofauna of the area surrounding the village of Sfântu Gheorghe, emphasising on species with protective value and their habitats. Even though there are several herpetofaunistic records for the locality Sfântu Gheorghe, our study presents for the first time a detailed distribution of the species.

Material and Methods

The study area (Fig. 1) lies in the south-eastern tip of the Sărăturile natural marine levee, which is an economical zone of the Danube Delta Biosphere Reserve. It is also included in the Natura 2000 network of protected areas as ROSCI0065 Delta Dunării (The Danube Delta) established through the Order of the Minister of Environment and Durable Development 776/05.09.2007.

The area is a mosaic of natural and anthropogenic habitats: permanent and temporal ponds and channels, flat areas, dykes and beach. Average altitude is around 0 m.
The sandy substratum is covered with vegetation that varies from hydrophilous to xerophilous. The climate of the area is semi-arid, with mean annual temperatures and precipitations of 11.4°C and 403.6 mm, respectively (Găștescu & Știucă, 2006).

The study zone is considered as formed of 4 areas: the village, which includes anthropic habitats, the area to the north-west of the village (Fig. 2), includes small temporary ponds and elevated terraces covered mostly by *Juncus* sp., the area to the east of the village (Fig. 3), includes marshes and sand dykes, and the seashore, which includes small dunes with scarce vegetation (Fig. 4).

![Figure 1. The study area.](image)
Figure 2. The north-western area.

Figure 3. The eastern area.

Figure 4. The small dunes of the beach.
The herpetofaunistic study consisted of extensive, visual and aural, transect surveys (Cogălniceanu, 1997; Sutherland, 2006) carried out during spring and summer of the following periods: May 2007, July 2008 and May and August 2010. The specimens were identified following the literature (Fuhn, 1960; Fuhn & Vancea, 1961; Nöllert & Nöllert, 1995; Cogălniceanu, 2000; Arnold & Burton, 2002) and photographed. Species protection status has been set according to Directive 92/43 EEC, RGO 57/2007 and the Red Data Book of Romanian Vertebrates (Iftime, 2005) Habitat situation has been assessed through vegetation analysis. The vegetation study was done according to the Braun-Blanquet methodology (Braun-Blanquet, 1964, Cristea et al. 2004).

Results and Discussion

Species account

During the investigations we recorded 7 amphibian species and 6 reptile species.

*Bombina bombina* (Fig. 5) have been cited previously from the study area (Fuhn, 1971; Cogălniceanu et al., 2000; Székely et al., 2009). We found it in channels and temporary and permanent ponds especially during the reproduction period. The individuals prefer the habitats with shallow water and lush aquatic vegetation. The species is distributed everywhere in the area, except for the beach.

*Pelobates fuscus* (Fig. 6). The records of this species are relatively old (Fuhn, 1971; Oțel, 1992). The situation may be due to its nocturnal activity pattern. Indeed, we observed numerous individuals after dusk when they were emerging from the sand to forage. During the day we accidentally saw a few specimens. The highest densities for the species were observed on the sand dykes covered that cross the wet area between the village and the beach. It seems that the individuals prefer the sands with vegetation, and avoid the barren ones, as they are absent on the sands near the sea shore.

*Bufo viridis* (Fig. 7) has been previously recorded from the area (Fuhn, 1971; Oțel, 1992; Székely et al., 2009). We found it mainly in and around the village, in anthropogenic habitats.

*Hyla arborea*. This species is diffusely distributed in the area. We manage to record its presence mainly by hearing its calls that occur especially during the sunset. The individuals were recorded from the habitat in the north of the village and from the flat area towards the sea (Fig. 8). The species was previously mentioned from Sfântu Gheorghe (Oțel, 1992).
Pelophylax esculentus complex. The green frogs are present in every body of water, especially permanent ones (in the channel that surrounds the village, the one that borders the study area to the west, and in the marshes between the village and the sea, to the east). All the three species have been recorded previously from the area: Pelophylax lessorae (Otel, 2000), Pelophylax kl. esculentus and Pelophylax ridibundus (Fuhn, 1960; Popescu, 1973; Otel, 1992; Cogălniceanu et al., 2000; Székely et al., 2009). Whereas P. kl. esculentus and P. ridibundus have a constant presence, P. lessorae is less frequent and we observed it in the eastern marshes. Species identification was carried out through the pulse structure and duration of the calls: very jerky for P. ridibundus, jerky and relatively short for P. kl. esculentus, and smooth and relatively longer for P. lessorae (Zamfirescu, 2004).

Emys orbicularis (Fig. 9) has been previously recorded from the area (Fuhn, 1971). We saw individuals near the marshes between the village and the sea. In the area to the north-west from the village and in the village we found dead individuals (Fig. 10). Probably, they were killed by vehicles.

Eremias arguta (Fig. 11) appears only on some small dunes with vegetation, on the beach. It was previously recorded from the area (Fuhn, 1971). The lizards are active only during the day, especially in spring. They may coexist with Lacerta agilis in the same habitats.

Lacerta agilis has been previously and recently recorded from the study area as L. agilis euxinica. (Fuhn, 1971, Török, 1999, 2004; Gherghel & Strugariu, 2009). We found the individuals of in large numbers in the area to the north-west from the village. Fewer individuals have been observed on the small vegetated dunes near the sea shore.
together with the previous species. Our observations confirm also the presence of the “erythronotus” morph (Fig. 12).

**Figure 11. Eremias arguta**  
**Figure 12. Lacerta agilis euxinica erythronotus morph**

*Natrix natrix* is constantly present in the study area towards north-west, in the village, and to the seashore. The species has been recorded in the past, as well (Fuhn, 1971; Török, 2004). The snakes live near the ponds and channels, but they can also be found relatively far from water. We encountered many dead specimens, which were probably killed by vehicles, humans or boats (Fig. 13). In the study area there are two morphs, apart from the normal one, i.e. persa (Fig. 14) and melanistic (Fig. 15).

**Figure 13. Natrix natrix – killed specimen**

**Figure 14. Natrix natrix – persa morph**  
**Figure 15. Natrix natrix – melanistic morph**
Natrix tessellata although previously observed (Fuhn, 1971) it is quite rare in the study area. We could see only one dead specimen in the village channel (Fig. 16).

Figure 16. Natrix tessellata – dead specimen

Vipera ursinii (Fig. 17) is the most documented reptile from the study area (e.g.: Fuhn, 1971, Török, 2002, Halpern et al., 2007; see Krecsak & Zamfirescu, 2008 for a comprehensive review). The population is concentrated in the area toward the north-west from the village, and has a density estimated around 5 individual/ha and an estimated size of 321 individuals (Strugariu et al., 2011). The vipers occur on the slighted elevated terraces covered with vegetation formed of plant communities of the associations Juncetum maritimi (Rübel 1930) Pignatti 1953, Juncetum littoralis Popescu et Sanda 1976, and Agropyretum elongati I. Șerbănescu 1968. This vegetation has a coverage between 50% and 100% that insures optimal conditions in terms of thermoregulation and refuge against predators. The population might cover a larger area that spans almost near the beach. This hypothesis is supported by the finding of a dead specimen on the path to the beach (Fig. 18). The specimen might have been carried to that location, but other observations (I. Popescu, pers. comm.) increase the likelihood of our hypothesis.

Some species we have not observed have been recorded from the study area in the past: Lissotriton vulgaris (Fuhn, 1971), Triturus dobrogicus (Fuhn, 1971).

Figure 17. Vipera ursinii
Anthropogenic impact and conservation

Eleven of the identified species are included in the annexes of the Directive 92/43/EEC/1992 (Table 1.). One amphibian and two reptiles are species of Community interest whose conservation requires the designation of special conservation area. Other four species of amphibians and two species of reptiles are species of Community interest in need of strict protection.

Of the 13 identified species 12 are included in the annexes of the RGO 57/2007. From the Romanian Red List perspective, three are vulnerable, one is endangered and one is critically endangered.

The threats for the studied species fall into two main categories: habitat alteration and killing with or without intention (see Figs. 10, 13, 16, 18). The most evident habitat alteration consists of construction (Fig. 19) littering (Fig. 20), which alters the very area where *Vipera ursinii*, the critically endangered species exists.
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2a – Annex IIa: Animal species of Community interest whose conservation requires the designation of special areas of conservation
4a – Annex IVa: Animal species of Community interest in need of strict protection
5a – Annex V: Animal species of Community interest whose taking in the wild and exploitation may be subject to management measures

**RGO 57/2007**
3 – Annex 3a: Animal species of Community interest whose conservation requires the designation of special areas of conservation
4Aa – Annex 4Aa: Animal species of Community interest in need of strict protection
4Ba – Annex 4Ba: Animal species of national interest in need of strict protection
5Aa – Annex 5a: Animal species of Community interest (except birds) whose taking in the wild and exploitation may be subject to management measures

Because of the high number of protected species, the studied area is important for the protection of amphibians and reptiles at national and European level, and therefore efficient protective measures must be taken to reduce the above mention threats.

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**References**
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