CONTRIBUTIONS TO THE KNOWLEDGE OF THE HERPETOFAUNA OF SOUTHERN DOBRUJA (ROMANIA)*

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Abstract. The author updates the knowledge on the herpetofauna of southern Dobruja according to his own studies within the area, during 1993-1998, when he identified 18 taxa. They represent 37.5% of the total amphibian and reptile species from Romania. Also the author makes some remarks on respective ecosystems and on the urgent protection need of some species.

Résumé. L'auteur met au courant les connaissances concernant la herpétofaune du sud de la Dobrogea, se basant sur ses propres recherches entreprises en cette zone durant la période 1993-1998, grâce auquelles il y a identifié 18 taxons. Ceux-ci représentent 37,5 % du total des espèces d'amphibiens et de reptiles de Roumanie. Il fait aussi quelques commentaires sur les écosystèmes respectifs ainsi que sur la nécessité stringente de protéger certaines espèces.

Key words: southern Dobrouja, ecological factors, herpetofauna, protection.

From the older specialized literature, summarized in the two fascicles of fauna Fuhn (1960) and Fuhn & Vancea (1961) it results that most of the data on the amphibian and reptile species, whose presence was doubtful in central and southern Dobruja, are absent.

The Danube Delta and the littoral area of the Black Sea were better studied. An interesting paper on the presence of the lizard *Lacerta praticola pontica*

Lantz et Cyren in southern Dobruja is published by Fuhn & Hârsu (1962).

Although the herpetological literature dedicated to Dobruja enriched with some important papers within the last decades, especially in the last one, Săvulescu (1964), Vernea (1976), Popescu (1977), Zinke & Hielscher (1990), Cogălniceanu (1991), Otel (1992), Kotenko, (1993 a, b), Kotenko, Fedorchenko, Otel & Kiss (1992), Kotenko, Otel & Fedorchenko (1993), Kotenko, Fedorchenko & Kiss (1993), Kotenko & Otel (1996), Cogălniceanu & Apostolescu (1994), they do not deal especially with the herpetofauna of the south part of Dobruja.

In his paper, Iana (1970) mentions in short the presence of *Testudo graeca ibera* in the south of Dobruja, but without making other commentaries.

That is why it is necessary to research this area where still there are real "white spots" for the amphibian and reptile fauna.

MATERIAL AND METHODS

Beginning from the hypothesis launched by Fuhn & Hârsu (op.cit.) regarding the eventual presence of the species *Lacerta praticola* in other forests from Dobruja, too, our attention was focused first on the forests from Valea Ciuşmelelor (forest range Negureni-Băneasa) as well on the Canaraua Fetii Natural Reservation. Occasionally we also made some observations in other places: at Şipotele, swamp Iortmac, Hagieni Reservation and others (Fig.1).

^{*} English translation by Mihaela Barcan Achim.

For drawing up this paper we also used material entered in the scientifical collections of the "Grigore Antipa" National Museum of Natural History during the last years, materials that originate in some very close areas to those studied by us.

Encouraged by the positive results from 1993, we continued our studies during the trips made in 1994 - 1998, enlarging our research on the biotopes of the Dumbraveni Forest (Ceairului Valley).

Even if in the past, as it results from literature, Fuhn (1960), Fuhn & Vancea (1961), some of these places (Negureni, Canaraua Fetii Reservation, Sipotele or Hagieni Reservation) were reached more or less sporadically, by a few researchers, we considered that they were unsuficiently investigated from herpetological point of view.

Physical, geographical and ecological characteristics of the Dumbraveni Forest

As regards Dumbrăveni Forest, it deserves a special mention because no reference on the fauna, in general, and especially on herpetofauna was made in the specialized literature, excepting a brief mention on the necessity of the protection of spur-thighed tortoise (*Testudo graeca ibera* Pall.), Vernea (op.cit).

Dumbrăveni Forest, placed at about 30 km south-west from the locality Negureni (Băneasa), with a surface of 2,400 ha, is practically the most vast forest from southern Dobruja, contrasting strongly with the arid landscape from this region of Romania (Fig. 2 A).

As the other forests from southern Dobruja, Dumbrăveni Forest is a real island which mostly preserved the original fauna, although the surrounding areas are almost covered by agricultural cultures.

The presence of some hills and valleys in this region creates a favourable microclimate, protected against north wind, in winter, and the dry winds, in summer (Fig. 2 B).

It is not less important the fact that the Dumbrăveni Forest is crossed by the streamlet Urlui, supplied by the spring waters, especially here, in Dobruja, where the water flows are very rare. Here there are some similarities with Valea Ciuşmelelor Forest from the village Negureni-Băneasa, also crossed by a streamlet supplied by springs. Also, Dumbrăveni Forest is similar from many points of view with Canaraua Fetii Reservation, both by vegetation and the relief and some limy formations.

The distinct conditions from here from the ecological and microclimatic point of view were an additional argument for us for coming back the following years.

The reason why this vast varied green area was unjustly neglected by the naturalists till now is undoubtly that this region is placed far from the main lines of communication, proper means of convenyace to the more important towns being absent.

We consider that the presence of relatively numerous species in the places researched by us is due to a rich vegetation which favour the keeping of humidy, even in the droughty periods as well especially due to abundant entomofauna, favoured by the vegetation and humidity from here.

For the amphibians, the presence of some small water flows and temporary or permanent pools is essential. Although the reptiles stand more easily a certain degree of dryness, they also require some specific living conditions, for instance the Green lizard that has a certain degree of hygrophily or European pond turtle (Fig. 3 A, B).

In the past, the afforested areas of southern Dobruja were surely more large than now. Subsequently, by massive cuts, the forest surfaces with their specific



Fig. 1 - Research and collecting zones in southern Dobruja.



Fig. 2 - A, Dumbrăveni, the largest forest reservation in southern Dobruja; B, Dumbrăveni forest, large variety of biotops (Photo: M. D. Andrei).



Fig. 3 - A, for the amphibians, the presence of water flows is essential; B, pool in Ceairului Valley (Photo: M. D. Andrei).

vegetation reduced, the natural biotopes of different species being extinct and making them to withdraw in the forests which were left. Both Valea Ciuşmelelor Forest and Canaraua Fetii Reservation, Hagieni Reservation or Dumbrăveni Forest are extremely favourable biotopes for the amphibian and reptile populations.

The faunal richness from here can be also explained by the absence of any kind of noxious industry as well by the small human activity from the area (Andrei, 1998).

Also, according to the information got from Mr. Bucur from the Băneasa forest range, it results that the pest control with pesticides was not made after 1989, this thing leading to the recovering of some animal populations susceptible to pesticedes which were very much diminished previously.

If the fauna of Dobruja is rather altered by the large cultivated surfaces, just the presence of some forests can offer the shelter for a rich fauna, both at the forest belt and inside, including the amphibians and reptiles.

RESULTS AND DISCUSSIONS

During the field trips made during the period 1993-1998, we observed, studied and collected 18 species and subspecies, which represent 37.5% of all the amphibians and reptiles from Romania.

In comparison with the amphibians, the reptile fauna is much richer both in number and frequence. This is due to the fact that the small water flows from these forests are interrupted tens of meters, especially in summer when the sping flows decrease; the water disappears suddenly, the drainage being made underground and favoured by the karstic formations.

Commented list of the taxa

Class Amphibia Linnaeus, 1758

Order Anura Duméril, 1801

Family Bufonidae Hogg, 1841

1. Bufo viridis viridis Laurenti, 1768

Although Green toad is a common species all over Romania, it wasn't mentioned from the studied area. We met and collected an adult from Dumbrăveni Forest, in Ceairului Valley (15th of May 1995), and from the streamlet which flowed there we collected tadpoles (17th of May 1995). It is the first mention for this area.

Family Hylidae Laurenti, 1768

2. Hyla arborea arborea Bonaparte, 1845

An euthermic species, the Green frog was known previously from Dobruja, especially from the Danube Delta and from the south-west of Dobruja. We found and collected it at Negureni, in Valea Ciuşmelelor Forest (20th of May 1993), a new collecting place.

Its presence is very sure also in other areas of southern Dobruja, including in Dumbrăveni Forest.

Family Ranidae Bonaparte, 1845

3. The complex of the "green frogs" *Rana ridibunda-esculenta-lesonae* creates great difficulties in identification. It is about a whole hybrid complex, whose problem remains still unsolved for Romania, without some biochemical, genetical, morphological and electrophoretic tests to a large number of individuals, which can inform us what kind of hybrids they are. We only assert that both in Canaraua Fetii, Valea Ciuşmelelor Forest (18th of May 1993) and in Ceairului Valley from Dumbrăveni Forest I found these "green frogs" in the small water flows from here or in some permanent pools, supplied by springs.

These reports for the "green frogs" in the southern Dobruja are new, but the problem of their correct identification remains open to the future reserches.

4. Rana dalmatina Bonaparte, 1839

This species was known only from the northern part of Dobruja, in Tulcea County (Popescu, 1977), being completely unknown in the reaserched area. My colleague N. Răduleț found and collected a specimen in Negureni-Băneasa, near the forest range. This first report for southern Dobruja allows us to presume that it is also present in other forests from here.

Class Reptilia Blainville, 1816

Order Testudines Batsch, 1788

Family Testudinidae Gray, 1825

5. Testudo graeca dobrogica Pallas, 1814

Well enough known from southern Dobruja, Spur-thighed tortoise is common and relatively abundant. It was occurred in all our trips, both in Canaraua Fetii and Negureni-Băneasa and in Dumbrăveni Forest or Hagieni Reservation, practically being ignored by the local people. Sometimes some specimens are crushed by heavy vehicles which transport stones from Canaraua Fetii quarry (Fig. 4 A, B).

In Valea Ciuşmelelor Forest, in a hidden place, in a small valley near some springs with rather great flows for this area, we found several carapaces. After the scale aspect, some of them seemed to be there for a long period of time (Fig. 5 A).

The explanation of this fenomenon would be that during very heavy winters, the water which runs from the springs freezes gradually, adding to other ice layers, finally forming a compact ice pack which catches under it the turtles, sheltered in the banks of this valley for hibernating. So it is a natural trap, where they die from suffocation (Andrei, 2000).

Such traps we also occurred in other places, but this time in the rifts of rocks, in which, in our opinion, compact ice masses formed by the accumulation of snow during winter, closing the entrance. On the other hand, the ice formed here melts much later being isolated and protected from the sun rays.

The cited cases are small isolated accidents generated by natural causes. It is more serious when man causes, directly or indirectly, the death or heavy injuring of these animals.

Fuhn (1964) cites for Hagieni Forest, also from southern Dobruja, the case of some turtles deliberately stroken with the axe. Also in the Dumbrăveni Forest we met such specimens which survived only due to their resistance and their remarcable regeneration capability.



Fig. 4 - A, Canaraua Fetii quarry; B, Heavy vechicle crushed turtle (Photo: M. D. Andrei).



Fig. 5 - A, specific biotop for *Podarcis m. muralis* in Dumbrăveni Reservation; B, *Podarcis m. muralis* in Canaraua Fetii (Photo: M. D. Andrei).

Another type of accident is that when very heavy vehicles kill or crash the turtle carapace, which sometimes recovers viciously (Fig. 5 B).

It is obvious that such a maimed turtle will be rejected from reproduction, this thing leading to the decreasing of the individual number.

We have to mention that during the building of the Danube – the Black Sea Canal, during 1975 – 1984, numerous specimens of turtles were either crashed by different heavy equipments or killed or crippled, or simply killed by uneducated people, for being transformed in ash trays and other different objects.

Family Emydidae Gray, 1870

6. Emys orbicularis (Linnaeus, 1758)

Previously cited in literature from the south of Dobruja (Fuhn & Vancea, op.cit.), from the proximity of the researched area. It was occurred again in Iortomac pool but we also observed it at the entrance of Canaraua Fetii and we collected an adult male from Urlui streamlet, which crossed Ceairului Valley from Dumbrăveni Forest (15th of May 1995), the last two places being new reports for the Constanța County.

In the specimens from Iortmac pool, we remarked a fenomenon similar to that occurred to the Spanish terrapin (*Mauremys leprosa*), from the Iberian Peninsula and north west Africa. When the level of the waters in which this turtle lives decreases very much some algae attacks making the horny scales of their carapace to split and giving them a very strange aspect. The specimens of *Emys* observed by me also have the carapace deteriorated by epibiosis and looked like they were covered by a kind of "fur", fenomenon which deserves a minute study.

Order Sauria Mac Cartney, 1802

Family Scincidae Gray, 1825

7. Ablepharus kitaibelii stepaneki Fuhn & Mertens 1969

It was known and cited by Fuhn & Vancea (op.cit.) as *Ablepharus kitaibelii fitzingeri* Mertens, at Canaraua Fetii - Băneasa. We found it again and collected this Skink both in Canaraua Fetii, near the quarry from here (26th of June 1995), and in Valea Ciuşmelelor Forest from Negureni - Băneasa (22nd of May 1993), but also in Dumbrăveni Forest, near the forest range (May 1994), these last two places being new report places for southern Dobruja.

Family Lacertidae Bonaparte, 1831

8. Lacerta viridis viridis (Laurenti, 1768)

Both in Canaraua Fetii and Negureni-Băneasa and in Dumbrăveni Forest we occurred and collected this Green lizard, especially from the sunny areas from the forest belts and from bushy zones, in May and June, including a male, the form *quatorlineata* from Dumbrăveni Forest.

9. Lacerta viridis meridionalis Cyrén, 1933

We occurred and collected this subspecies cited by Fuhn and Vancea (op.cit.), from Canaraua Fetii and Negureni - Valea Ciuşmelelor, as well from Dumbrăveni Forest (21st of May 1994), new report for southern Dobruja. This rarer Emerald lizard lives in the studied area, in the same range with the nominated species, being possible to occur individuals with intermediate features between the two subspecies, too.

10. Podarcis muralis muralis (Pallas, 1841)

It is enough frequent on rocks, being the main food of the sand nose Horned viper (*Vipera ammodytes montandoni*). We found and collected it not only from Canaraua Fetii, where it was cited by Fuhn & Vancea (op.cit.), but also from the limy rocks from the Dumbrăveni Forest (21st of May 1994) (Fig. 6 A, B).

11. Podarcis taurica taurica (Pallas, 1841)

It is the most common lizard from all Dobruja. We occurred and collected it frequently during my trips in all areas with a high degree of dryness, but never in the deep of the forest, in the shadow. It is the food both for some birds and mammals and for the great colubrids, *Elaphe longissima* and *Coluber caspius*. It is an usual inhabitant of the Dumbrăveni Forest, where forms numerous populations. This last place is a new mention for southern Dobruja.

12. Lacerta praticola pontica Lantz & Cyrén 1919

This species is less known previously from southern Dobruja, only from Fuhn & Hârsu's paper (op.cit.). The authors' hypothesis on the possibility of its presence in other forests from Dobruja, too, was fully confirmed by us findind several populations, numerous enough, in Valea Ciuşmelelor Forest (22nd, 24th of July 1993), Canaraua Fetii (20th of May and 21st, 25th of July 1993), but also in Dumbrăveni Forest, Ceairului Valley (17th of May 1994 and 25th of June 1995), thus adding new collecting points.

Family Anguidae Cope, 1864

13. Anguis fragilis colchicus (Nordmann, 1840)

Slow blind worm was cited from the south of Dobruja only by Băcescu (1934), from Comarova. We found and collected it in Canaraua Fetii (19th of May 1993 and 21st of May 1994) and its presence in the Dumbrăveni Forest do not have to surprise us. Our report enlarges the knowledge on its distribution in southern Dobruja.

Order Serpentes Linnaeus, 1858

Family Colubridae Gray, 1825

14. Coluber caspius Gmelin, 1789

Known well enough from literature, we found this Great colubrids both in Canaraua Fetii (18th of May 1993) and in Valea Ciuşmelelor Forest at Negureni-Băneasa (23rd of May 1993 and 20th of July 1993) but also in Dumbrăveni Forest (21st of May 1994 and 14th of May 1995), a new report for southern Dobruja. The individuals which exceed 120 cm are frequent enough.

Unfortunately, local people kill ruthlessly these wonderful animals, either with fear or by ignorance.



Fig. 6 - A, *Testudo graeca ibera* carapaces; B, *Testudo graeca ibera*, viciously recovered (Photo: M. D. Andrei).

15. Elaphe longissima longissima (Laurenti, 1768)

From the literature studied by us it results that the "Esculap's snake" was completely unknown for southern Dobruja. We found and collected it from the following places: Valea Ciuşmelelor Forest from Negureni-Băneasa (16th of May 1994, 18th and 20th of May 1995), Canaraua Fetii (20th of May 1994) and Dumbrăveni Forest, near Furnica forest range (22nd of June 1995).

As the *Coluber*, this snake is killed by local people. A specimen, found by us in Canaraua Fetii, was recently killed, and after its aspect, it seemed to be crashed by a vehicle.

16. Natrix natrix natrix (Linnaeus, 1758)

The first mention of this snake, at the entrance of the Limanu Cave, near Mangalia, is due to my coleague Dr. C. Pârvu (11th of June 1992).

Other new places: Valea Ciușmelelor Forest from Negureni-Băneasa (18th of May 1993) and Ceairului Valley, Dumbrăveni Forest (17th of May 1994).

17. Natrix tessellata tessellata (Laurenti, 1768)

We have a single report for this species, the pool from Hagieni Reservation. A single specimen collected here by Dr. C. Pârvu (11th of June 1992).

Family Viperidae Bonaparte, 1840

18. Vipera ammodytes montandoni Boulenger, 1904

The Sand nose horned viper is cited in literature for the studied area in Canaraua Fetii, Şipotele, Oltina, Cărpiniş, Hagieni-Albeşti etc. Fuhn & Vancea (op.cit.) (Fig. 7 A, B). The last for Canaraua Fetii, in literature, was that of Săvulescu's (op.cit.). We found it again in Canaraua Fetii (May 1993; $19^{th} - 20^{th}$ of May 1994). From the information got from the local people we found out that it also could be present in Dumbrăveni Forest, but without localizing it.

Unfortunately, because of the anthropic pressure, the number of the specimens decreases continuously, in comparison with their number 15 - 20 years ago and we do not foresee nothing which can improve the situation of this rare snake, at least for the time being.

Also from the local people's information, we found out that they kill the snakes frequently, being afraid of their poisonous bite.

The returning and the enlarging of the studies on this area, after more than 40 years since the publishing of the two Fauna fascicles, have a double importance in our opinion, that is: on the one hand reconfirm the presence of the species previously mentioned by the older authors, and on the other one, bring new mentions for 14 of the 18 found species. Thus: for Negureni-Băneasa and Canaraua Fetii Reservation, the new mentioned species and subspecies are as follows: *Hyla arborea* (L.), complex *Rana ridibunda-esculenta-lesone*, *Emys orbicularis* (L.), *Lacerta v. viridis* (Laur.), *Lacerta praticola pontica* (Lantz & Cyren), *Anguis fragilis colchicus* (Nord.), *Elaphe l. longissima* (Laur.) and *Natrix n. natrix* (L.).

For Negureni-Băneasa we have to underline the report for the agile Dalmatian frog (*Rana dalmatina* Bonap.) for the first time, not only for this place but also for the whole Dubruja.

For Mangalia area we have a first mention for grass snake (*Natrix natrix natrix* (L.), collected at the entrance in Limanu cave.



Fig. 7 - A, specific aspect of southern Dobruja canyon; B, Vipera a. montandoni juvenile in Canaraua Fetii (Photo: A. Mihalcea-Suru).

For Hagieni Reservation we present the presence of the Tesselated water snake (*Natrix tessellata tessellata* (Laur.) as a novelty.

We report for the first time the following species and subspecies for the Dumbrăveni Forest area: Bufo viridis viridis Laur., Rana dalmatina Bonap., Ablepharus kitaibelii stepaneki Fuhn & Mertens 1969, Lacerta praticola pontica (Lantz & Cyren), Lacerta viridis viridis (Laur.), Lacerta viridis meridionalis Cyren, Podarcis muralis muralis (Laur.), Podarcis t. taurica (Pall.), Elaphe l. longissima (Laur.), Coluber caspius Gmel. and Natrix n. natrix (L.).

All the specimens we collected were preserved in alcohol and now represent an apart collection, recorded in the database of the "Grigore Antipa" National Museum of Natural History, together with the photos made during our trips. They are and will be a source of comparative information, starting points for future researches.

Undoubtely, one of the most important problems which must be solved further on is the present statute of *Eryx jaculus turcicus* (Oliver), mentioned recently by Zinke and Hielscher (op.cit.), northwards of Beştepe.

The absence of the species *Elaphe quatorlineata* Lacép. raises problems, because we haven't found it although it would have conditions from the ecological point of view.

We also remarked the absence of *Triturus* species, as well of the species *Bombina bombina* (L.), very common in all Romania, at least for the time being.

Taking into consideration the special character, from the ecological point of view, of the forests from southern Dobruja, we think that the presence of toads *Bufo bufo bufo* could be possible here. In 1960 Fuhn (op. cit) mentioned it for the first time in Dobruja, northwards of the studied area, in Tulcea County, at Cocoş Monastery, and recently in the Danube Delta Kotenko, Fedorchenko, Otel & Kiss (1992) mentioned it, too.

The presence of some geckos in Romania seems unlikely, although it was mentioned southwards, in Bulgaria (*ex verbis* N.Crăciun).

Sheep grazing in some parts of the Canaraua Fetii Reservation and Dumbrăveni Forest – forest reservation could create important lacks of balance in the future.

Protection of fauna, in general, and of the herpetofauna, particularly, from these "green islands" of southern Dobruja is a very important problem for Romania not to repeat the mistakes of other countries, the results being a considerable diminishing of the populations or even the vanishing of some species.

Putting some real protection measures into operation and their monitoring are objectives of a great importance both for the maintaining of the population number and for avoiding their diminishing under dangerous thresholds, when populations cannot recover without human help and considerable fianancial efforts.

This protection cannot be really applied only respecting the law in force, and, on the other hand, by educational measures which aim to induce the idea of protection of nature to the people, especially to the children, by every means.

The future profound faunal studies in southern Dobruja made by teams of specialists in different animal groups would permit the enlarging of our knowledge on this very interesting area, but less studied.

CONTRIBUȚII LA CUNOAȘTEREA HERPETOFAUNEI DOBROGEI DE SUD (ROMÂNIA)

REZUMAT

În urma cercetărilor de teren întreprinse în perioada 1993-1998 autorul face o aducere la zi a cunoștințelor privind herpetofauna din Dobrogea de sud, identificând 18 taxoni, ce reprezintă 37,5 % din totalul speciilor de amfibieni și reptile din România. Pe lângă lista de specii, autorul face și unele comentarii privind ecosistemele respective și necesitatea protejării acestora.

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