

PRELIMINARY STUDY ON THE AVIFAUNA IN RADOVAN LOCALITY AREA (DOLJ COUNTY, ROMANIA)

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Abstract. The paper presents the preliminary results regarding the diversity of the avifauna in Radovan area (Dolj county), as well as some estimates of the population of some bird, mainly aquatic. The area under discussion has called our attention by its geomorphological, ecological (ensemble of terrestrial biotopes: forests, bushes, meadows, arable lands, etc., and aquatic biotopes: lake, stream, floodplain forest, etc.) and avifaunistic features, which meet the qualities of a Natura 2000 site. Many of the bird species that we have recorded in the ecosystems of this area are of European conservation interest, which encourages us to support its inclusion on the list of avifaunistic importance areas (AIA), having potential to become avifaunistic special protection area (SPA).

Keywords: Radovan, important bird areas.

Rezumat. Studiu preliminar asupra avifaunei din aria localității Radovan (județul Dolj, România). În lucrarea de față sunt prezentate rezultate preliminare privind diversitatea avifaunei din aria Radovan, precum și unele estimări de efective ale unor specii de păsări, cu precădere acvatică. Zona la care ne referim ne-a atras atenția prin particularitățile geomorfologice, ecologice (complex de biotopuri terestre: păduri, tufărișuri, pajiști, terenuri arabile ș.a. și acvatică: lac, apă curgătoare, pădure de luncă ș.a.) și avifaunistice, care întrunesc calitățile unui sit Natura 2000. Multe din speciile de păsări consemnate de noi în ecosistemele acestei zone sunt de interes conservativ european, ceea ce ne încurajează să susținem includerea ei în lista ariilor de importanță avifaunistică (AIA) cu potențial de arie de protecție specială avifaunistică (SPA).

Cuvinte cheie: Radovan, arie de importanță avifaunistică.

INTRODUCTION

Radovan area is located in the centre of Dolj county, at the intermission of two different geomorphological units, at the southern limit of the Getic Plateau and the northern limit of the Oltenia Plain (coordinates: 44° 09'– 44° 09'N, 23° 38'– 23° 38'E) respectively. The access to the area is made by the national road DN 56 (Craiova – Calafat), setting out from Radovan locality (Map 1).

The altitude of the land varies between 60 and 250 m. The relief is made up of a plateau/tableland crossed both by the Desnățui river, which forms a large valley, and by other smaller streams (e.g. Valea Rea and Bănăgui brooks), which are tributary streams of the Desnățui river. The river has a winding course, with fluctuating flow, strongly influenced by rainfalls and waters collected from the area (CETĂȚEANU *et al.*, 1981). On the course of the Desnățui river, in the north-western part of Radovan area, there was built a water storage dam, called Fântânele lake, with a total surface of about 300 ha, of which 53.5 ha belong to the public domain of Radovan commune, and the difference administratively belongs to Vârvor commune.

During periods with heavy rainfalls, Târnavă pond/lake is formed on the course of Bănăgui brook, having a surface of about 2 ha, but it dries during drought periods.

The climate is temperate continental with long hot summers, long cold winters, and the springs and autumns are short.

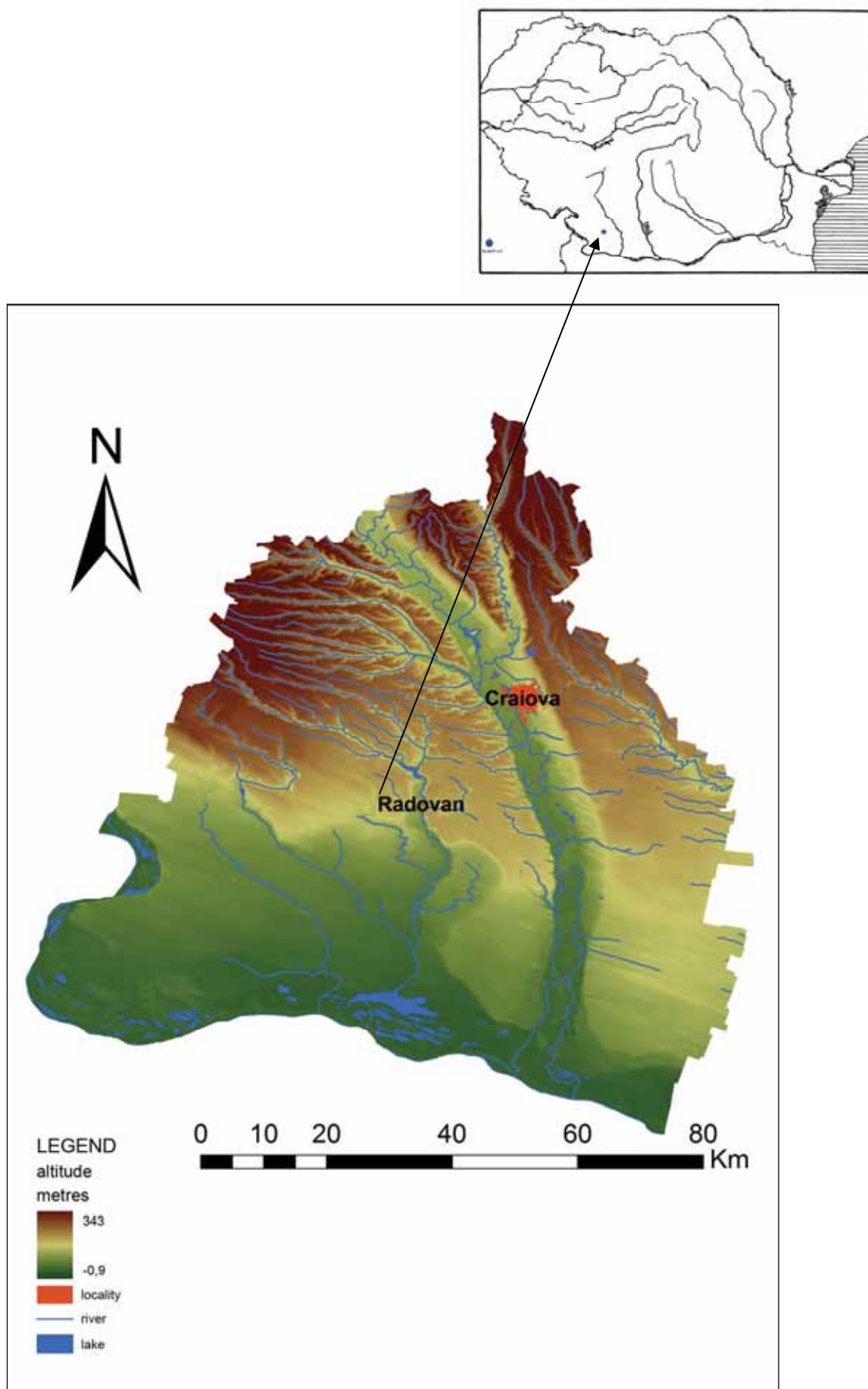
The lithological substratum of the area is made up of loess, and the soils are reddish-brown, typical to the forest steppe area (CERNESCU *et al.*, 1960).

In the perimeter of the area under discussion there exist many types of deciduous forests that are natural (in proportion of 85%), dense and well preserved, which offers them great stability. These forests have a well-developed shrub layer and they shelter many elements of flora and fauna which are very valuable. The surface and the composition of the forests on the territory of Radovan locality, to which we refer in our study, are presented in table 1.

Fântânele lake, as well as the courses of the Desnățui river and of Valea Rea and Bănăgui brooks create aquatic habitats (water surface area), as well as transition/semiaquatic habitats (floodplain forest, reed beds, hygrophilic meadows), which attract many species of aquatic, resident and migratory birds.

The arable land occupies a total surface of 4,935 ha, and the surfaces covered with pasture comprise about 100 ha. These represent the habitats of some bird species which breed and feed on the ground, some of them being of European interest (e.g. *Anthus campestris*, *Galerida cristata*).

In the area under discussion, a surface of 20 ha, called Valea Rea-Radovan, was declared protected area of the national concern, 2.385 code (Law 5/2000), due to the presence of some rare botanical elements such as: *Ziziphora capitata* (specific to Radovan and some areas in Dobrogea), *Dianthus leptopetalus*, *Lathyrus sphaericus*, *Crucianella angustifolia*, *Crocus flavus*, *Platanthera bifolia*, *Erythronium dens-canis ssp. niveum* (an endemic and threatened taxon), *Hordeum bulbosum*, etc., (POPESCU *et al.*, 2003) and also due to some faunistic elements (LAZĂR *et al.*, 2001). This area is under responsibility of the Local Council of Radovan commune and under the observation of the Environmental Protection Agency (APM – Dolj) and it is intended for the protection and conservation of nature (SÂRBU, 2007).



Map 1. Radovan area localization in Romania and county Dolj. / Harta 1. Localizarea ariei Radovan în România și județul Dolj (original).

Table 1. The composition and the surface of the forests in Radovan locality area (Dolj county). /
Tabel 1. Compoziția și suprafața pădurilor din aria localității Radovan (județul Dolj).

Forest	Composition	Surface (ha)
Lunca Radovanului	oak tree, ash tree and other broadleaf trees	about 350
Vlădășel	oak tree, ash tree and other broadleaf trees	300
Fântânele	Turkey oak, Hungarian oak and other broadleaf trees	600
Târnavă	Turkey oak, Hungarian oak and other broadleaf trees	1,000
Total		2,250

The variability of the biotopes (terrestrial: deciduous forests, transition areas forests-bushes, pastures, arable lands, human and aquatic settlements: streams, lake, floodplain forest, marshes, reed beds), and the bioecological characteristics make Radovan area and its surroundings an objective of both scientific and economic interest (Figs. 1a, b, c and Figs. 2a, b, c, d, e). Our interest for Radovan area lies in the faunal value of some bird species, mostly of those of European conservation interest which underlie the designation of avifaunal importance areas/AIA (MUNTEANU, 2004).

Although the area has the qualities of a potential Natura 2000 site, there do not exist any elaborated faunistic studies for this area, therefore our study regarding the bird fauna represents a first step for the knowledge of the ecosystems of this territory and it also opens the perspective for the extension of the network of avifaunal importance areas and/or of avifaunal special protection areas (SPA).

Anthropogenic activities (the use of the land for constructions and infrastructure works, grazing, scything, intensive and touristic fishing, mechanized agriculture, agrochemical treatments) are carried on in the area, which may lead in time to the expansion of anthropically modified surfaces and, consequently, to the alteration of biodiversity.

MATERIAL AND METHODS

The study has been made on the basis of our own observations done in Radovan area and its surroundings, on June 7, 2010; June 26, 2010; July 3, 2010, February 28, 2011, March 3, 2010; June 15, 2012; July 20, 2012. The investigations in 2010 were made within the development project of Natura 2000 network, coordinated by the 'Danube Delta' National Institute for Research and Development (I.N.C.D "Delta Dunării") in Tulcea. The data collected so far are preliminary and we will continue researching the biotopes in all ecological aspects of the year.

The observations have been made with binoculars (Zeiss Jena 10x50, Norconia 10x50, and Bushnell 12x40), from fixed points and in motion, on routes settled beforehand. The photographing and the filming of the birds have been made with proper equipment (Sony 15x digital camera, Canon Sx40HS digital camera, Panasonic SDR-H20 camera).

For the correct identification of some species we have used the following guides for determining species: BRUUN *et al.* (1999), PETERSON *et al.* (1989). For the list of the bird species we have also taken into account the data provided by the ornithological collection of the Oltenia Museum of Craiova (RIDICHE, 2011) – (Table 2). The classification of the bird species by systematic criteria has been made according to SZABÓ-SZELEY & BACZÓ (2006). The belonging to biotopes of the bird species has been determined according to CĂTUNEANU *et al.* (1978).

The administrative data regarding the status and the surface of the lands afferent to the area under study have been provided by the Local Council of Radovan commune.

Table 2. Birds captured in Radovan area, present in the patrimony of the Oltenia Museum. / Tabel 2. Păsări capturate în zona Radovan, prezente în patrimoniul Muzeului Olteniei.

No.	Species	Number of specimens	Sex and age	Place of capture	Date of capture
1.	<i>Tachybaptus ruficollis</i>	1	♂, ad.	Fântânele	April 17, 1976
2.	<i>Ixobrychus minutus</i>	1	♀, ad.	Fântânele	June, 1999
3.	<i>Branta ruficollis</i>	1	♂, ad.	Fântânele	January 13, 1997
4.	<i>Anas platyrhynchos</i>	1	♀, ad.	Fântânele	February 23, 1976
5.	<i>A. acuta</i>	1	♂, ad.	Fântânele	October 15, 2000
6.	<i>Pernis apivorus</i>	1	♂, ad.	Fântânele	June 11, 2002
7.	<i>Accipiter nisus</i>	1	♀, ad.	Fântânele	March 14, 1991
		1	♀, ad.	Radovan	January 10, 1996
8.	<i>Falco tinnunculus</i>	2	♂, ad.	Fântânele	January 8, 2003
9.	<i>Phasianus colchicus</i>	1	♀, ad.	Fântânele	January 30, 1985
10.	<i>Fulica atra</i>	1	♂, ad.	Fântânele	March 10, 1997
11.	<i>Cuculus canorus</i>	1	♂, ad.	Radovan	July 11, 1988
		1	♂, ad.	Radovan	February 6, 1976
12.	<i>Asio otus</i>	1	♂, ad.	Fântânele	January 12, 1978
		1	♀, ad.	Fântânele	January 9, 2003
13.	<i>A. flammeus</i>	1	♂, ad.	Fântânele	January 28, 1978
14.	<i>Alcedo atthis</i>	1	♂, ad.	Fântânele	November 15, 1988
15.	<i>Merops apiaster</i>	8	♂, ad.	Fântânele	July 15, 1993
16.	<i>Coracias garrulus</i>	4	♂ ad., ♀, juv.	Fântânele	July 21, 1973
		1	♂, ad.	Fântânele	October 31, 1995
17.	<i>Picus viridis</i>	1	♂, ad.	Fântânele	July 3, 2002

18.	<i>Galerida cristata</i>	1	○, ad.	Fântânele	March 27, 1978
19.	<i>Oriolus oriolus</i>	1	♀, ad.	Fântânele	May 5, 1998
		1	♂, ad.	Fântânele	May 7, 2002
20.	<i>Lanius excubitor</i>	1	○, ad.	Radovan	January 5, 1996
21.	<i>Garrulus glandarius</i>	1	○, ad.	Fântânele	January 21, 1978
		1	○, ad.	Fântânele	March 27, 1978
		1	○, ad.	Fântânele	January 20, 1980
		1	○, ad.	Fântânele	January 23, 1980
		1	○, ad.	Fântânele	February 9, 1980
		1	○, ad.	Fântânele	February 28, 1991
22.	<i>Pica pica</i>	1	○, ad.	Fântânele	January 21, 1978
		1	○, ad.	Fântânele	February 2, 1978
		1	○, ad.	Fântânele	February 1, 1978
		1	○, ad.	Fântânele	March 28, 1978
23.	<i>Corvus monedula</i>	1	○, ad.	Fântânele	March 5, 1978
		1	○, ad.	Fântânele	March 31, 1978
24.	<i>C. frugilegus</i>	1	○, ad.	Fântânele	February 10, 1980
25.	<i>Passer montanus</i>	1	○, ad.	Fântânele	1993

Legend: Sex and age: ad. – adult, juv. – juvenile, ○ – undetermined sex. / **Legendă:** Sexul și vârsta: ad. – adult, juv. – juvenil, ○ – sex nedeterminat.

RESULTS AND DISCUSSIONS

Following our research, we have identified a number of 106 species distributed to 15 orders and 38 families (Table 3). In what concerns the belonging of the species to the typical biotope (favourable to feeding and mostly to breeding), in the aquatic biotopes on the studied territory we have recorded a number of 44 of which 32 typical species and 12 accessory species and in the terrestrial biotopes we have recorded 76 species, of which 69 species are typical and 7 species are accessory. The last ones have a temporary (nutrition) relation with the respective biotope. In the area under research, there are also euriotope species (*Cuculus canorus*, *Motacilla alba*, *Hirundo rustica*), whose presence we have equally observed, both in the aquatic and terrestrial biotopes.

Among the aquatic species present in the analysed area, our attention has been called by the colony of grey herons (*Ardea cinerea*) settled in Lunca Radovanului forest in the vicinity of Fântânele lake. The 20-25 nests were placed in an ash (*Fraxinus angustifolia*) and alder (*Alnus glutinosa*) forest, at heights over 10 m. Some of them had larger dimensions, which proves that they had been used for several successive years.

Table 3. The preliminary systematic list of the avifauna in Radovan locality area (Dolj county). / Tabel 3. Lista sistematică preliminară a avifaunei din aria localității Radovan (județul Dolj).

No.	Order, Family, Species	Phenological Status (Romania)	Ecological type (Habitat)		SPEC Category	Threat Status		Own observation (Estimated of bird populations)
			Aqu.	Ter.		Romania	Europe	
ORD. PODICIPEDIFORMES								
Fam. Podicipedidae								
1.	<i>Tachybaptus ruficollis</i>	SV, WR	t	–	Non-SPEC	-	S	5-8 in.; on passage
2.	<i>Podiceps cristatus</i>	SV, WR	t	–	Non-SPEC	-	S	3-7 in.; possible breeding
ORD. PELECANIFORMES								
Fam. Phalacrocoracidae								
3.	<i>Phalacrocorax carbo</i>	SV, WR	t	–	Non-SPEC	-	S	7-16 in.
4.	<i>P. pygmeus</i>	SV, WR	t	–	2	V	V	+ 4 in.
ORD. CICONIIFORMES								
Fam. Ardeidae								
5.	<i>Ixobrychus minutus</i>	SV	t	–	3	-	(V)	+ 4 in.; possible breeding
6.	<i>Nycticorax nycticorax</i>	SV	t	–	3	V	D	9-20 in.; possible breeding
7.	<i>Egretta garzetta</i>	SV	t	–	Non-SPEC	E	S	5-22 in.; frequent
8.	<i>Ardea cinerea</i>	SV, WR	t	+	Non-SPEC	-	S	colony with 20-25 nests
Fam. Ciconiidae								
9.	<i>Ciconia nigra</i>	SV, P	+	t	3	V	R	1-2 in.; relatively frequent
10.	<i>C. ciconia</i>	SV	t	+	2	V	V	3-5 pairs; nests in localities
Fam. Threskiornitidae								
11.	<i>Plegadis falcinellus</i>	SV, P	t	–	3	V	D	12-25 in. in flight to the northern part of the lake
ORD. ANSERIFORMES								
Fam. Anatidae								
12.	<i>Branta ruficollis</i>	WV	t	–	1	E	L	+ 1 in.; accidental;
13.	<i>Anas penelope</i>	P, WV	t	–	Non-SPEC	-	S	3-20 in.
14.	<i>A. crecca</i>	P, WV	t	–	Non-SPEC	-	S	12-50 in.
15.	<i>A. platyrhynchos</i>	PM, WV	t	+	Non-SPEC	-	S	120-150 in. on passage; 4-10 pairs possible breeding
16.	<i>A. querquedula</i>	SV, P	t	–	3	-	V	3-10 in. on passage

17.	<i>A. clypeata</i>	P, SW, WR	t	-	Non-SPEC	-	S	about 14-20 in.; on passage
18.	<i>Aythya ferina</i>	PM, WV	t	-	4	-	S	on passage; reduced flocks
ORD. ACCIPITRIFORMES								
Fam. Accipitridae								
19.	<i>Pernis apivorus</i>	SV, P	-	t	4	V	S	+ 2 in.; possible breeding
20.	<i>Haliaeetus albicilla</i>	PM, WV	t	+	3	CE	R	2 in.;
21.	<i>Accipiter gentilis</i>	R	+	t	Non-SPEC	-	S	+ 2 in.; possible breeding
22.	<i>A. nisus</i>	R, WV, P	+	t	Non-SPEC	-	S	+ 2 in.; possible breeding
23.	<i>Buteo buteo</i>	R, P, WV	+	t	Non-SPEC	-	S	+ 3 in.; possible breeding
24.	<i>Aquila pomarina</i>	SV, P	+	t	3	V	R	+ 1 in.
ORD. FALCONIFORMES								
Fam. Falconidae								
25.	<i>Falco tinnunculus</i>	R	+	t	3	-	D	+ 2 pairs
26.	<i>F. vespertinus</i>	SV	+	t	3	V	V	+ 2 in.; possible breeding
27.	<i>F. subbuteo</i>	SV	+	t	Non-SPEC	-	S	+ 2 pairs
ORD. GALLIFORMES								
Fam. Phasianidae								
28.	<i>Perdix perdix</i>	R	-	t	3	-	V	
29.	<i>Phasianus colchicus</i>	R	-	t	Non-SPEC	-	S	present in small groups
ORD. GRUIFORMES								
Fam. Gruidae								
30.	<i>Fulica atra</i>	PM, WV	t	-	Non-SPEC	-	S	+ 10 in.
ORD. CHARADRIIFORMES								
Fam. Charadriidae								
31.	<i>Charadrius dubius</i>	P, SV	t	-	Non-SPEC		(S)	+ 7 in.; on passage
32.	<i>Vanellus vanellus</i>	SV, P	t	+	Non-SPEC	-	(S)	relatively numerous on passage
Fam. Scolopacidae								
33.	<i>Calidris sp.</i>	P	t	-	Non-SPEC	-	S	+ 20 in.
34.	<i>Philomachus pugnax</i>	P	t	-	4	-	(S)	tens of in. on passage
35.	<i>Limosa limosa</i>	P, SV	t	-	2	-	V	+ 150 in.
36.	<i>Tringa ochropus</i>	P	t	-	Non-SPEC	-	S	
Fam. Laridae								
37.	<i>Larus ridibundus</i>	MP, P, WV	t	-	Non-SPEC		S	14-25 in.
38.	<i>L. cachinnans</i>	R	t	-	Non-SPEC	-	S	few in. on feeding trips
39.	<i>L. michahellis</i>	R	t	-	Non-SPEC	-	S	6-10 in. ; on feeding trips
Fam. Sternidae								
40.	<i>Sterna hirundo</i>	SV, P	t	-	Non-SPEC			3-15 in.
41.	<i>Chlidonias hybrida</i>	P, SV	t	-	3	-	D	+ 40 in.; possible breeding
ORD. COLUMBIFORMES								
Fam. Columbidae								
42.	<i>Columba livia domestica</i>	R	-	t	Non-SPEC	-	S	in localities; common
43.	<i>Streptopelia decaocto</i>	R	-	t	Non-SPEC		(S)	in localities; common
44.	<i>S. turtur</i>	SV, P	-	t	3	V	D	+ 8 in.
ORD. CUCULIFORMES								
Fam. Cuculidae								
45.	<i>Cuculus canorus</i>	SV	+	+	Non-SPEC	-		frequent; breeding
ORD. STRIGIFORMES								
Fam. Strigidae								
46.	<i>Otus scops</i>	SV	-	t	2	-	(D)	sound identification
47.	<i>Athene noctua</i>	R	-	t	3	-	D	more frequent in localities
48.	<i>Strix aluco</i>	R	-	t	4	-	S	unevaluated flocks
49.	<i>Asio otus</i>	R	-	t	Non-SPEC	-	S	
50.	<i>A. flammeus</i>	WV, P	-	t	3	V	(V)	+ 2 in.
ORD. CORACIIFORMES								
Fam. Alcedinidae								
51.	<i>Alcedo atthis</i>	PM	t	-	3	-	D	2-3 in.
Fam. Meropidae								
52.	<i>Merops apiaster</i>	SV	-	t	3	-	D	40-100 in.; colonies in ground quarries
Fam. Coraciidae								
53.	<i>Coracias garrulus</i>	SV	-	t	2	-	(D)	+ 10 in.
Fam. Upupidae								
54.	<i>Upupa epops</i>	SV	-	t		V	S	well represented
ORD. PICIFORMES								
Fam. Picidae								
55.	<i>Jynx torquilla</i>	SV	-	t	3	E	D	
56.	<i>Picus viridis</i>	R	-	t	2	-	D	frequent; unevaluated
57.	<i>Dendrocopos major</i>	R	-	t	Non-SPEC	-	S	frequent; unevaluated
58.	<i>D. syriacus</i>	R	-	t	4	-	(S)	frequent; unevaluated
59.	<i>D. medius</i>	R	-	t	4		S	rare; 1-2 in.

ORD. PASSERIFORMES								
Fam. Alaudidae								
60.	<i>Galerida cristata</i>	R	-	-	3	-	(D)	
61.	<i>Alauda arvensis</i>	PM	-	t	3	-	V	tens/hundreds of in.
Fam. Hirundinidae								
62.	<i>Hirundo rustica</i>	SV	+	+	3	-	D	tens of in.; common
63.	<i>Delichon urbicum</i>	SV	+	+	Non-SPEC	-	S	tens of s in.; common
Fam. Motacillidae								
64.	<i>Anthus campestris</i>	SV	-	t	3		V	frequent
65.	<i>Motacilla flava</i>	SV	-	t	Non-SPEC	-	S	frequent
66.	<i>M. alba</i>	SV	+	+	Non-SPEC	-	S	common
Fam. Turdidae								
67.	<i>Luscinia luscinia</i>	SV	-	t	4		S	little numerous
68.	<i>L. megarhynchos</i>	SV	-	t	4	-	(S)	frequent
69.	<i>Saxicola rubetra</i>	SV	-	t	4		S	+ 2 in.
70.	<i>Turdus merula</i>	PM	-	t	4	-	S	
71.	<i>T. pilaris</i>	PM, WV	-	t	4	-	S	tens/hundreds of in.
72.	<i>T. philomelos</i>	SV	-	t	4	-	S	
Fam. Sylviidae								
73.	<i>Acrocephalus arundinaceus</i>	SV	t	+	Non-SPEC	-	(S)	
74.	<i>Sylvia curruca</i>	SV	-	t	Non-SPEC		S	frequent
75.	<i>S. communis</i>	SV	-	t	4		S	
76.	<i>S. atricapilla</i>	SV	-	t	4		S	relatively numerous
77.	<i>Phylloscopus collybita</i>	SV	-	t	Non-SPEC		S	more numerous on passage
Fam. Muscicapidae								
78.	<i>Muscicapa striata</i>	SV	-	t	3		D	more numerous on passage
79.	<i>Ficedula albicollis</i>	SV	-	t	4	-	S	
Fam. Aegithalidae								
80.	<i>Aegithalos caudatus</i>	R	-	t	Non-SPEC	-	S	frequent
Fam. Paridae								
81.	<i>Parus lugubris</i>	R	-	t	4	-	(S)	frequent
82.	<i>P. ater</i>	R	-	t	Non-SPEC	-	S	
83.	<i>P. caeruleus</i>	R	-	t	4	-	S	tens/hundreds of in.
84.	<i>P. major</i>	R	-	t	Non-SPEC	-	S	tens/hundreds of in.
Fam. Sittidae								
85.	<i>Sitta europaea</i>	R	-	t	Non-SPEC	-	S	frequent
Fam. Oriolidae								
86.	<i>Oriolus oriolus</i>	SV	-	t	Non-SPEC	-	S	frequent
Fam. Laniidae								
87.	<i>Lanius collurio</i>	SV	-	t	3	-	(D)	+ 25 pairs; common
88.	<i>L. minor</i>	SV	-	t	2		(D)	+ 6 - 12 in.
89.	<i>L. excubitor</i>	WV, PM	-	t	3	-	D	+ 10 in.; on spring passage
Fam. Corvidae								
90.	<i>Garrulus glandarius</i>	R	-	t	Non-SPEC	-	(S)	common in forests; appears in localities
91.	<i>Pica pica</i>	R	-	t	Non-SPEC	-	S	common
92.	<i>Corvus monedula</i>	R	-	t	4	-	(S)	common
93.	<i>C. frugilegus</i>	R	-	t	Non-SPEC	-	S	common
94.	<i>C. corone</i>	R	+	t	Non-SPEC	-	S	common
Fam. Sturnidae								
95.	<i>Sturnus vulgaris</i>	PM	-	t	Non-SPEC		S	common; tens and hundreds of sp.; colonies in ground quarries
Fam. Passeridae								
96.	<i>Passer domesticus</i>	R	-	t	Non-SPEC		S	common; tens/hundreds of in.
97.	<i>P. montanus</i>	R	-	t	Non-SPEC	-	S	common; tens/hundreds of in.
Fam. Fringillidae								
98.	<i>Fringilla coelebs</i>	PM	-	t	4	-	S	common
99.	<i>F. montifringilla</i>	WV	-	t	Non-SPEC	-	S	frequent
100.	<i>Carduelis chloris</i>	R	-	t	4	-	S	frequent
101.	<i>C. carduelis</i>	R, WV	-	t	Non-SPEC	-	(S)	common
102.	<i>Pyrrhula pyrrhula</i>	R	-	t	Non-SPEC	-	S	relatively frequent
103.	<i>Coccothraustes coccothraustes</i>	R	-	t	Non-SPEC	-	S	relatively frequent
Fam. Emberizidae								
104.	<i>Emberiza citrinella</i>	R	-	t	4	-	(S)	frequent
105.	<i>E. hortulana</i>	SV	-	t	2	-	(V)	rare; little numerous (1-5 in.)
106.	<i>E. calandra</i>	PM	-	t	4	-	(S)	common

Legend: Phenological Status (Romania): R – resident; PM – partial migrant, P – passage visitors; SV – summer visitors, WV – winter visitors; WR – winter rare; Ecologic type (Habitat): Aqu. – aquatic, Ter. – terrestrial, t – typical; + accessory; SPEC category: SPEC 1 – species of global conservation concern (in the entire spreading area), implicitly dependent on conservation; SPEC 2 – species concentrated in Europe, with unfavourable conservation status; SPEC 3 – species which are not concentrated in Europe and have unfavourable conservation status; SPEC 4 – species concentrated in Europe, with favourable conservation status; Non-SPEC – species which are not concentrated in Europe and whose European populations are in a favourable conservation state; Threat status: D – Declining, CE – critically endangered, E – Endangered, L – Localized, R – Rare, S – Secure, V – Vulnerable, () – provisional status; Estimated of bird populations: in. – number of individuals.

Legendă: Tipul fenologic: S – sedentară, Mp – migratoare parțial, P – specie de pasaj, Ov – oaspete de vară, Oi – oaspete de iarnă; Tipul ecologic: Acv. – acvatică, Ter. – terestră, t – tipică; + accesorie; Categoria SPEC: SPEC 1 – specii amenințate pe plan global (în tot arealul de răspândire), implicit dependente de conservare; SPEC 2 – specii concentrate în Europa, cu statut de conservare nefavorabil; SPEC 3 – specii care nu sunt concentrate în Europa și au statut de conservare nefavorabil; SPEC 4 – specii concentrate în Europa, cu statut de conservare favorabil; Non-SPEC – specii care nu sunt concentrate în Europa și ale căror populații europene se află într-o stare favorabilă de conservare; Statutul de amenințare: D – în declin, CE – critic periclitată, E – periclitată, L – localizată, R – rară, S – sigură, V – vulnerabilă, () – statut provizoriu; Efective estimate: in. – număr de exemplare.

The observation of the black stork (*Ciconia nigra*) often overflying the forest to the water meadow of the Desnățui river indicates the possibility of its breeding, especially because the area provides enough trophic resources necessary for the living of this species. This fact will be established in the future studies.

The Anseriformes (*Anas* sp., *Aythya* sp.) and limicolous birds (e.g. *Charadrius dubius*, *Vanellus vanellus*, *Philomachus pugnax*) are numerically well represented during the spring passage, in the north-western part of Fântânele lake. In the rest of the year, the number of species and populations is considerably reduced.

Fântânele lake managed for intensive fishing attracts some fish eating birds such as: *Phalacrocorax* sp., *Sterna hirundo*, *Chlidonia hybrida*, *Larus* sp., *Haliaeetus albicilla*.

The large surfaces of natural forest, which interfere with the other terrestrial and aquatic biotopes, favour the presence of diurnal and nocturnal birds of prey, as breeding species.

The Passeriformes, best represented by the Turdidae, Sylviidae and Fringillidae, represent the dominant order during the whole year and they are predominant among the breeding species in the studied area.

A continuous and fierce competition for the breeding habitat has been observed between *Merops apiaster* and *Sturnus vulgaris* which claim both the cavities and the galleries dug in the earth quarries near Radovan locality.

According to SPEC categories into which the species in Radovan area fit, we notice that the area includes 54 species of European conservation interest, of which 1 species (*Branta ruficollis*) is of global conservation concern (SPEC 1), 8 species are concentrated in Europe and have unfavourable conservation status (SPEC 2), 24 species are not concentrated in Europe and have unfavourable conservation status (SPEC 3), 22 species are concentrated in Europe and have favourable conservation status (SPEC 4). The rest, namely 51 species are not concentrated in Europe and their European populations are in a favourable conservation state (Non-SPEC).

In accordance with the conservation concern status at European level, the situation in the territory that we have investigated stands as it follows:

- 11 bird species are vulnerable, meaning that they depend on conservation, and their inclusion in the category of endangered species is possible in the near future if the causal factors persist (*Phalacrocorax pygmeus*, *Ixobrychus minutus*, *Ciconia ciconia*, *Anas querquedula*, *Falco vespertinus*, *Perdix perdix*, *Limosa limosa*, *Asio flammeus*, *Alauda arvensis*, *Anthus campestris*, *Emberiza hortulana*);

- 3 species are rare, meaning that at global level they have rarely distributed populations on large areas (*Ciconia nigra*, *Haliaeetus albicilla*, *Aquila pomarina*);

- 1 species has limited spreading area in Europe (*Branta ruficollis*);

- 19 species are in decline, meaning that they have broody stocks in regression at European or global level (*Nycticorax nycticorax*, *Plegadis falcinellus*, *Falco tinnunculus*, *Chlidonias hybrida*, *Streptopelia turtur*, *Otus scops*, *Athene noctua*, *Alcedo atthis*, *Merops apiaster*, *Coracias garrulus*, *Jynx torquilla*, *Picus canus*, *P. viridis*, *Galerida cristata*, *Hirundo rustica*, *Muscicapa striata*, *Lanius collurio*, *L. minor*, *L. excubitor*);

- 50 bird species are safe, meaning that their populations maintain themselves as viable components of the natural habitats, and their areas do not present the risk of reduction.

The species with unfavourable conservation status at national level are registered in the Red Book of Vertebrates (MUNTEANU, 2005), therefore, taking it into account, the situation of the birds in Radovan area stands as it follows: 1 species is critically endangered, 3 species are endangered, and 11 species are vulnerable.

We consider that the inclusion of Radovan area on the AIA list and its designation as SPA in the network of Natura 2000 sites would ensure a better management of the habitats, namely of the bird species with unfavourable conservation status, simultaneously with the sustainable development of the area.

Because of a difficult delimitation and the similarity of the habitats with the ones in the neighbouring areas, we consider the extension of the avifauna research also in the neighbouring territories, so that the potential AIA or the potential Natura 2000 (SPA) site may have correct and scientifically proven limits.

CONCLUSIONS

The present paper represents a preliminary study regarding the characteristics of the avifauna in Radovan locality area and its surroundings. The studied area meets the qualities of a potential Natura 2000 site, by its geomorphological, ecological and faunal features. Following the observations carried on, we have identified a number of 106 bird species, systematically classified into 15 orders and 38 families. Most of them have been recorded in terrestrial biotopes. The aquatic species are more numerous, both qualitatively and quantitatively, during spring passage. The majority of bird species are of European conservation interest and they represent indicators for designating important bird areas (special protected areas).

A number of 25 species from the researched area are found in the patrimony of the Oltenia Museum, representing scientific documents which emphasize once again the faunal value of the analysed area.

ACKNOWLEDGEMENTS

We wish to address thanks to Corina Vișan – environmental adviser in the Environmental Protection Agency – Dolj subsidiary, for the kindness and courtesy with that supported us in obtaining some data necessary to characterize the studied area.

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Received: 28 March, 2012

Accepted: 29 July, 2012



Figure 1. Biotopes from Radovan area: a – Radovan forest, b – brook Valea Rea, c – Fântânele lake.
Figura 1. Biotopuri din aria Radovan: a – pădurea Radovan, b – pârâul Valaea Rea, c – lacul Fântânele (original).



Figure 2. Birds from Radovan area: a – Little Egret (*Egretta garzetta*), b – colony of Grey Heron (*Ardea cinerea*), c – White-tailed Eagle (*Haliaeetus albicilla*), d – Bee-eater (*Merops apiaster*) and Starling (*Sturnus vulgaris*), e – Tawny Pipit (*Anthus campestris*).

Figura 2. Păsări din aria Radovan: : a – egretă mică (*Egretta garzetta*), b – colonie de stârc cenușiu (*Ardea cinerea*), c – codalb (*Haliaeetus albicilla*), d – prigrorie (*Merops apiaster*) și graur (*Sturnus vulgaris*), e – fâsă de câmp (*Anthus campestris*) (original).