SOME OBSERVATIONAL DATA ABOUT THE DIVERSITY OF SEDENTARY AND PASSAGE BIRD FAUNA IN "MICRODELTA"- MUSEUM COMPLEX OF NATURAL SCIENCES OF CONSTANȚA

VERONICA ANTONE, ANCA MIHAI, ANCUȚA CAISIN

Abstract. *This paper presents the ornithological comments made between January 2008 and January 2009 in Microdelta - Museum of Natural Sciences Constanța. Within this territory with a surface of 4 ha, 2 ha being represented by water surface, there was found a number of 44 species of birds, which belong to 26 families and 12 orders. Some of species are migratory, the studied area belonging to Sarmatic-Maritime migration route.*

Keywords: *Microdelta, aquatorium, aquatic birds, phenological category.*

Rezumat. Date privind diversitatea avifaunei sedentare şi de pasaj din aria Microdeltei Complexul Muzeal de Ştiinţele Naturii din Constanța. *Lucrarea de față prezintă date privind ornitofauna Microdeltei - obiectiv al C.M.S.N Constanța, în perioada ianuarie 2008 - ianuarie 2009. În acest teritoriu cu o suprafață de 4 hectare, dintre care 2 hectare reprezintă luciul de apă, s-a determinat un număr de 44 de specii avifaunistice ce se încadrează în 26 familii şi 12 ordine. Unele dintre acestea sunt migratoare, aria studiată de noi înscriindu-se pe calea de migrație sarmato-maritimă.*

Cuvinte cheie: *Microdelta, acvatoriu, avifauna, categorie fenologică.*

INTRODUCTION

Inaugurated in 1985, "Microdelta" is a component of the Museum of Natural Sciences from Constanța and it is located in the proximity of holiday resort Mamaia. It covers a surface of 4 ha, 2 ha being represented by water surface coming from Tabacarie Lake. The two aquatic systems are still connected (Fig. 1).

"Microdelta" is an urban "oasis" in an ever-changing environment dominated by human beings.

It has terrestrial and aquatic biotopes like natural reserves from the Dobroudja. It also represents an effort made for protecting wild birds and their habitats from the human-induced changing behaviour of the environment.

With regard to the terrestrial biotopes, there can be noticed arboreal and herbaceous vegetation. The arboreal egetation is represented by planted trees, such as: *Populus* sp. (poplar), *Betula* sp. (birch), *Salix* sp. (willow), shrubs of *Tamarix ramosissima* (salt cedar), *Elaeagnus angustifolia* (russian silverberry). The heterogeneous herbaceous layer is mosaic-like and it is formed from gramineous species, such as *Agropyron junceum* (rushy wheat grass), *Stipa* sp. (spear grass), *Festuca* sp. (fescue grasses) associated with ruderal species as *Cichorium intibus* (wild chicory), *Papaver* sp. (field poppy*), Taraxacum* sp. (dandelion) and so forth.

The shoreline is pointed by a belt of immerse hydrophytes, which covers the largest surface. The most common species is *Phragmites* sp. (reed). In the opening space of the belt, there grow *Typha* sp. (cattail) and *Schoenoplecteus* sp. The high density of these plants offers ideal places for birds' nesting and hiding e.g.: *Anas plathyrynchos* (mallard).

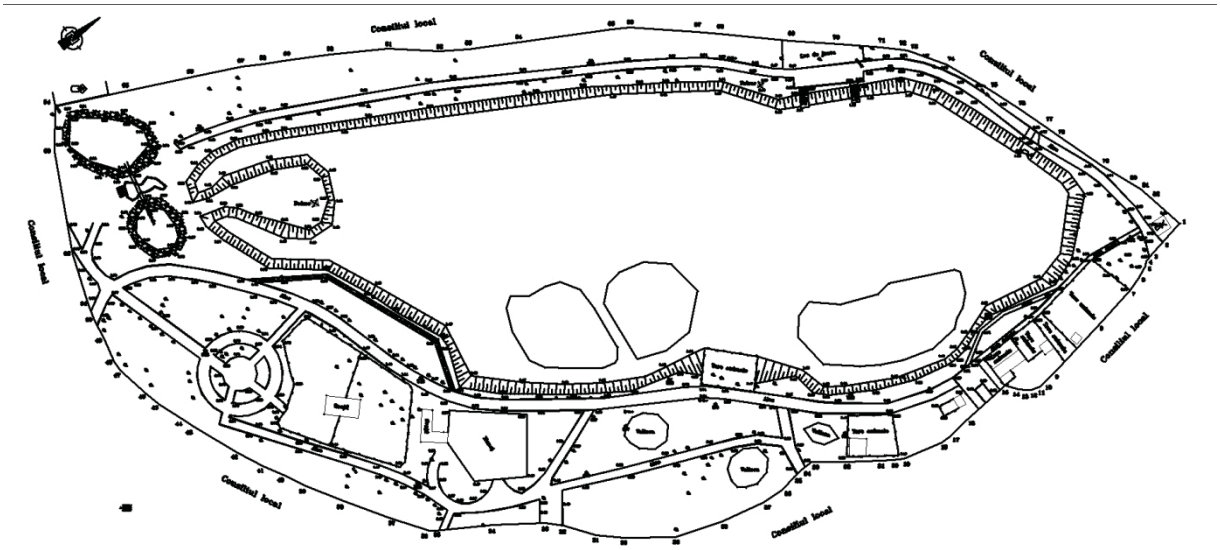

Figure 1. "Microdelta" map.
Figura 1. Harta "Microdelta".

MATERIAL AND METHODS

The present paper aims at rendering the wild birds' species which were observed in Microdelta for twelve months (January 2008, January 2009); the observations were concluded with data collections. Observations were made twice a day, between January and May, between October and September and four times a day between June and September from the water level and from 3 meters height above the water surface, in two observation points specially built in this aim on the adjacent area to aquatorium (Photo 1).

Photo 1. Observation points (1 and 2) - "Microdelta".
Foto 1. Punctele de observare (1 şi 2) - "Microdelta".

We used a field binocular Bresser 7x21x40 and a digital camera Fuji Finepix S 1000FD. Direct observations (BIBBY et al., 2000) from both set points (the two observation points) and moving points (in our route within Microdelta) lasted minimum an hour following a daily schedule - between 8 a.m. and 9 a.m., 2 p.m. and 3 p.m. - during off season. In summer, we made these determinations at every 3 hours, between 8 a.m. and 8 p.m.

The data processing and the classification of the bird fauna (LINTIA, 1954; LINTIA, 1955) were made according to taxonomic phenological (BRUUN, 1999), qualitative, quantitative principles and rules (DOMBROWSKI 1946; CIOCHIA, 1992; CIOCHIA, 2001).

RESULTS AND DISCUSSIONS

In the mentioned period of time, the structure of bird fauna consisted in 44 species pertaining to 26 families, respectively 12 orders (Table 1).

Most of them were water migratory species, such as *Anas plathyrynchos* (mallard), *Ardea cinerea* (heron), *Phalacrocorax carbo sinensis* (cormorant), *Gallinula chloropus* (common moorhen), and *Fulica atra* (coot) (Table 2).

During our study, the species *Anas plathyrynchos* (mallard) recorded the best representation. Ducks were noticed daily. Most of the time, they swam in groups either near reed belt or in the centre of the aquatorium. Generally, they formed couples till March, when females sheltered in the reed thicket for laying eggs. In May, the first ducklings could be seen on water.

Table 1. The list of the observed bird species (classification, according with CIOCHIA, 1992).
Tabel 1. Lista speciilor avifaunistice observate (poziția sistematică dupa CIOCHIA, 1992).

No.	Order	Family	Species	Popular name	Phen.	Denumire populara	Fen
1	Pelecaniformes	Phlalacrocoracidae	*Phlalacrocorax carbo sinensis* LINNAEUS, 1766	Cormorant	**SV**	cormoran mare	**OV**
2			*Phlalacrocorax pygmaeus (*PALLAS, 1773)	Pygmy Cormorant	**SV**	cormoran mic	**OV**
3		Pelecanidae	*Pelecanus onocrotalus* LINNAEUS, 1758	White Pelican	**SV,FM**	pelican comun	**OV,DH**
4			*Pelecanus crispus* BRUCH, 1832	Dalmatian Pelican	**SV,FM**	pelican creț	**OV,DH**
5	Ciconiiformes	Ardeidae	*Botaurus stellaris* (LINNAEUS, 1758)	Bittern	**SV**	buhai de baltă	**OV**
6			*Nycticorax nycticorax* LINNAEUS , 1758	Night Heron.	**SV**	stârc de noapte	**OV**
7			*Ardeola ralloides* (SCOPOLI, 1769)	Squacco Heron	**SV**	stârc galben	**OV**
8			*Egretta alba* (LINNAEUS, 1758)	Great Egret	**SV**	egretă mare	**OV**
9			*Ardea cinerea* LINNAEUS, 1758	Heron	**SV**	stârc cenușiu	**OV**
10		Ciconiidae	*Ciconia ciconia* (LINNAEUS, 1758)	White Stork	**SV**	barză albă	**OV**
11	Anseriformes	Anatidae	*Tadorna ferruginea* (PALLAS, 1764)	Ruddy Shelduck	**SV,P**	călifar roşu	**OV,P**
12			*Anas platyrhynchos* LINNAEUS, 1758	Mallard	**PM**	rață mare	**MP**
13	Lariformes	Laridae	*Larus cachinnans* PALLAS, 1811	Caspian Gull	**R**	pescarușul argintiu	**S**
14	Charadriiformes	Sternidae	*Sterna albifrons* PALLAS, 1764	Little Tern	**SV**	chiră mică	**OV**
15			*Sterna hirundo* LINNAEUS, 1750	Common Tern	**SV**	chiră de baltă	**OV**
16		Glareolidae	*Glareola pratincola (*LINNAEUS, 1766)	Collared Pratincole	**SV**	ciuvică ruginie	**OV**
17	Gruiformes	Rallidae	*Gallinula chloropus* LINNAEUS, 1758	Moorhen	**SV**	găinuşă de baltă	**OV**
18			*Fulica atra* LINNAEUS, 1758	Coot	**PM**	lişită	**MP**
19			*Porzana porzana* (LINNAEUS, 1766)	Spotted Crake	**SV**	cristelut pestriț	**OV**
20			*Rallus aquaticus* LINNAEUS, 1758	Water Rail	**PM**	cristel de baltă	**MP**
21	Falconiformes	Accipitridae	*Accipiter nisus* (LINNAEUS, 1758)	Sparrowhawk	**R, WV**	uliu păsărar	**S, OI**
22	Cuculiformes	Cuculidae	*Cuculus canorus* LINNAEUS, 1758	Cuckoo	**SV**	cuc	**OV**
23	Piciformes	Picidae	*Dendrocopos syriacus* (HEMPRICH et EHRENBERG, 1833)	Syrian Woodpecker	**R**	ciocanitoare de grădină	**S**
24			*Dendrocopos major (*LINNAEUS, 1758)	Great Spotted Woodpecker	**R**	ciocanitoare mare	**S**
25	Coraciadiformes	Coraciidae	*Coracias garrulus* LINNAEUS, 1758	Roller	**SV**	dumbrăveancă	**OV**
26		Meropidae	*Merops apiaster* LINNAEUS, 1758	Bee-eater	**SV**	prigorie	**OV**
27		Upupidae	*Upupa epops* LINNAEUS, 1758	Hoopoe	**SV**	pupăză	**OV**
28	Columbiformes	Columbidae	*Streptopelia decaocto* FRIVALDSZKY, 1838	Collared dove	**R**	guguştuc	**S**
29	Passeriformes	Corvidae	*Corvus frugilegus* LINNAEUS, 1758	Rook	**R**	cioară de semănătură	**S**
30			*Pica pica* (LINNAEUS, 1758)	Magpie	**R**	coțofană	**S**
31			*Corvus monedula* LINNAEUS, 1758	Jackdaw	**R**	stâncuță	**S**
32			*Corvus corax* LINNAEUS, 1758	Raven	**R**	corb comun	**S**
33		Motacillidae	*Motacilla alba* LINNAEUS, 1758	White Wagtail	**SV**	codobatură	**OV**
34		Sturnidae	*Sturnus vulgaris* LINNAEUS, 1758	Starling	**MP**	graur	**MP**
35		Fringillidae	*Carduelis carduelis*	Goldfinch	**R,WV**	sticlete	**S,OI**

			LINNAEUS, 1758				
36			*Carduelis spinus* LINNAEUS, 1758	Siskin	**MP,WV**	scatiu	**MP,OI**
37		Paridae	*Parus major* LINNAEUS, 1758	Great Tit	**R**	pițigoi mare	**S**
38		Hirundinidae	*Hirundo rustica* LINNAEUS, 1758	Swallow	**SV**	rândunică	**OV**
39		Sylvidae	*Sylvia borin* (BODDAERT, 1783)	Garden Warbler	**SV**	silvie de zăvoi	**OV**
40			*Sylvia curruca* (LINNAEUS, 1758)	Lesser Whitethroat	**SV**	silvie mică	**OV**
41			*Lusciniola melanopogon* TEMMINCK, 1823	Moustached Warbler	**SV**	privighetoare de baltă	**OV**
42		Ploceidae	*Passer domesticus* LINNAEUS, 1758	House Sparrow	**R**	vrabie de casă	**S**
43		Lanidae	*Lanius collurio* LINNAEUS, 1758	Red-backed Shrike	**SV**	sfrâncioc roșiatic	**OV**
44		Oriolidae	*Oriolus oriolus* (LINNAEUS, 1758)	Golden Oriole	**SV**	grangur	**OV**

The other mentioned species had quite a constant occurrence in winter but their number was much more diminished in comparison with *Anas plathyrynchos* (mallard).

Coots *(Fulica atra)* were observed in groups consisting of 14 to 17 individuals in different zones of "Microdelta", mostly between our observation points, at 2 meters from the shoreline and on water surface. When the air temperature fell below 0 degrees (Celsius) and the water surface was covered by ice, the moorhens withdrew in the lateral channel. Sometimes individuals of this species interfered with mallard.

Table 2. Occurrence frequency of water species between January 2008 and January 2009.
Tabel 2. Frecvența de apariție a speciilor acvatice în perioada ianuarie 2008 – ianuarie 2009.

No	Species	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Number of occurrences	%
1	*Phlalacrocorax carbo sinensis*	X	X		X	X	X	X	X	X				8	66.7
2	*Phlalacrocorax pygmaeus*		X	X										2	16.7
3	*Pelecanus onocrotalus*					X	X		X					3	25
4	*Pelecanus crispus*						X							1	8.3
5	*Botaurus stellaris*					X	X	X						3	25
6	*Nycticorax nycticorax*			X		X	X	X	X					5	41.7
7	*Ardeola ralloides*				X	X								2	16.7
8	*Egretta alba*	X						X						2	16.7
9	*Ardea cinerea*	X	X	X	X	X	X		X		X	X	X	10	83.3
10	*Ciconia ciconia*					X	X	X	X					4	33.3
11	*Tadorna ferruginea*	X		X	X								X	4	33.3
12	*Anas platyrhynchos*	X	X	X	X	X	X	X	X	X	X	X	X	12	100
13	*Larus cachinans*	X	X	X	X	X	X	X	X	X	X	X	X	12	100
14	*Sterna albifrons*					X	X	X	X	X				5	41.7
15	*Sterna hirundo*					X	X	X	X	X				5	41.7
16	*Glareola pratincola*					X	X	X	X	X				5	41.7
17	*Gallinula chloropus*	X	X	X	X	X	X	X	X	X	X	X	X	12	100
18	*Fulica atra*	X	X	X	X						X	X	X	7	58.3
19	*Porzana porzana*						X	X						2	16.7
20	*Rallus aquaticus*					X	X	X	X					4	33.3

Herons *(Ardea cinerea)* were hardly represented in "Microdelta". During January and February, they did not exceed 4 individuals and, most of the times, they were seen near the reed belt, between observation points 1 and 2 on the right of water surface.

During April and May, only a single specimen of *Ardeola ralloides* stopped in "Microdelta". This specimen was observed in different areas with shallow water or under the branches of the willows.

Between the 11th and 25th of June, 24 pelicans took a rest on water for 14 days. Disturbed by the faintest noises, they flew away, but always returned in the same group.

We also noticed other migratory or sedentary birds that inhabited the highest range of habitats.

In Romania, the ornithologists registered two species of pelicans as migratory - summer species nesting in the Danube Delta. In "Microdelta" these species pass only temporary, during their feeding migration (phenological subgroup SV-FM) (Table 3 and Fig. 2) .

Table 3. Phenological classification of bird fauna.
Tabel 3. Încadrarea fenologică a avifaunei.

No	Phenological classification		Number of species	%
1	summer visitors	SV	24	54.50%
2	passage and summer visitors	P-SV	1	2.30%
3	summer visitors for feeding	SV-F	2	4.50%
4	partial migrants	PM	4	9%
5	partial migrants and/or winter visitors	PM-WV	1	2.30%
6	resident	R	10	22.70%
7	winter visitors and/or resident	WV-R	2	4.50%
8	passage birds	P	0	0%
9	occasional	OCC	0	0%
	TOTAL		44	100%

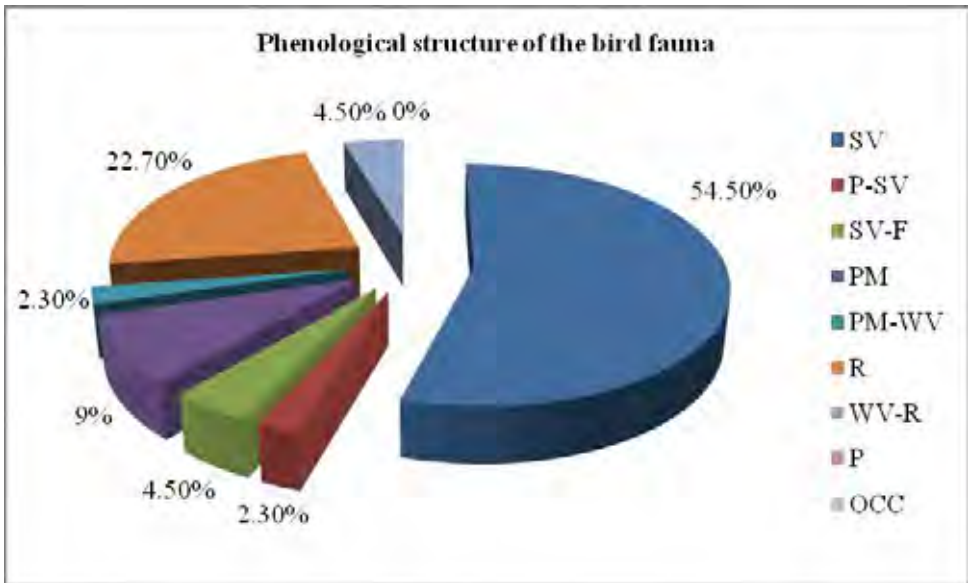

Figure 2. Phenological structure of the bird fauna.
Figura 2. Structura fenologică a avifaunei.

Most species observed in winter were appreciated as migratory ones, winter species or/and species of passage though for our country they are registered as winter visitors e.g. (geese, ducks). Among aquatic wild birds, migratory species – summer visitors were the most numerous, after that it follows in decreasing numerical order: partial migratory summer visitors of passage, species of passage, winter species and/or winter visitors of passage. The other phenological subgroups have a small number of representatives.

CONCLUSIONS

According to the presented data we could conclude that in "Microdelta", the bird fauna and particularly water species has a special structure. Among them, migrant summer visitors are numerically dominant (*Anas platyrhynchos* and *Gallinula chloropus)*.

The two species of pelicans were registered in the phenological subgroup SV-F (*Pelecanus onocrotalus* and *P. crispus)*.

The birds species observed in winter were appreciated as winter species or/and species of passage for Microdelta - winter visitors for Romania (*Phlalacrocorax pygmaeus*, *Tadorna ferruginea* and *Fulica atra*).

Future studies will bring new data relating taxonomy and phenology of wild bird species in "Microdelta", as well as information about their biology and ecology.

REFERENCES

BIBBY C., JONES M., MARSDEN S. 2000. *Metode de teren pentru studiul păsărilor.* Publicaţiile Societăţii Ornitologice Române. Cluj: 139pp.

BRUUN B., DELIN H., SVENSSON L., SINGER A., ZETTERSTROM D. 1999. *Păsările din România şi Europa.* Hamlyn Guide. Londra: 30-234.

CIOCHIA V. 1992. *Păsările clocitoare din România.* Edit. Ştiinţifică. Bucureşti: 385pp.
CIOCHIA V. 2001. *Păsările Dunării de la izvoare la vărsare.* Edit. Pelecanus. Braşov: 61-228.
DOMBROWSKI R. 1946. *Păsările României.* Bucureşti. **1**: 872pp.
LINTIA D. 1954. *Păsările din R.P.R.* Edit. Academiei R.P.R. Bucureşti. **2**: 304pp.
LINTIA D. 1955. *Păsările din R.P.R.* Edit. Academiei R.P.R. Bucureşti. **3**: 487pp.

Veronica Antone, Anca Mihai, Ancuța Caisin
Museum Complex of Natural Sciences of Constanța
Boulevard Mamaia no. 255, 900552 Constanța, Romania
E-mail**:** veronicatoma77@yahoo.com
E-mail: anca_iulia_mihai@yahoo.com
E-mail**:** ancacaisin@yahoo.com

Received: June 12, 2009
Accepted: August 18, 2009