

AVIFAUNA OF CHISINAU CITY IN THE HYEMAL PERIOD

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Abstract. *In present paper we give information about the wintering avifauna from Chisinau city: a taxonomic list, the phenology status and number of birds species in different kinds of parks and residential district. There are different kinds of biotopes (park-forest, meadows and grassland, aquatic biotope, constructions of different heights etc) which are like those natural. The green plantation constitutes 1.1 thousand hectares. Ornithologic observations that were done in Chisinau gave us the possibility to characterize the distribution of bird population density in urban area in hyemal period. The methods of investigation were transects and points of counting. We notice also some relations between type of park, human pressure, their density and number of species. In Chisinau city were found 30 bird species, the biggest amount in the city avifauna present passerines (64.2% of the total number of identified bird species).*

Keywords: *birds, diversity, winter visitors, density, hyemal season.*

Rezumat. *Avifauna orașului Chișinău în perioada hiemală. Lucrarea dată prezintă informații despre avifauna existentă în parcurile orașului Chișinău în perioada hiemală, include lista taxonomică, statutul fenologic ale speciilor de păsări. Orașul creează un mediu de viață nou, specific după parametrii săi față de alte tipuri de ecosisteme pentru lumea animală. Studiul prezintă o analiză comparativă dintre diferitele tipuri de parcuri ale orașului, relația dintre densitatea speciilor, numărul de specii estimate în fiecare staționar stabilit și componența fitocenotică. Conform datelor înregistrate avifauna orașului Chișinău în perioada hiemală enumără 30 de specii.*

Cuvinte cheie: *păsări, diversitate, oaspeți de iarnă, densitate, sezonul hiemal.*

INTRODUCTION

The city creates a new specific environment with your specific parameters to other types of ecosystems for animal life. There are different kinds of biotopes (park-forest, meadows and grassland, aquatic, constructions of different heights etc) which are like those natural, which allow formation and conservation of urban avifauna. This component plays an important role in nature and in human life.

The relevant situation of animal life diversity, especially, of the avifauna, is determined by natural and anthrop ecosystems functioning.

There was registered the growing interest in last decade in monitoring of avifauna in urban areas, having as the object both role of these artificial ecosystems as refuge for some types of birds and evaluation of ambient environment quality on the basis of avifauna diversities, the presence of some settled varieties and some effectives ones, more or less stable birds in the frames of a town.

Chisinau city is situated in favorable climatic zone of central part of geographic area between Prut and Dniester with temperate continental climate. The total surface of Chisinau city constitutes 33, 7 thousands ha, green plantations constitutes 1,1 thousands ha. The percent of planting of greenery is 3. 3%.

The Chisinau climate is temperate continental. The winter is mild and short; the summer is hot and lasts a long period. The winter temperatures are characterized by instability. The temperature under 5 degrees is possible from November till March, frost takes turns warming. The most cold month is January (the average temperature is -3,5⁰C, in February the temperature is more warm -2,5⁰C). The winter days are frosty and lull.

METHODS OF STUDY

The avifauna researches of hyemal season were realized in different kinds of ecosystems of Chisinau. The territory of Chisinau was divided into several sectors. We used the methods of transects and points of counting. Transects were established during our first visits and we kept them during the whole study. The observation, identification and the quantitative and qualitative estimation of the bird populations were conducted from 2003 till 2007.

The investigations took place in the November- February period of the each year. Data were analyzed from faunistical and ecological prospects. Data handling there were used follow ecologic parameters by Pesenco, 1982. The index of bird density was efectuated owing by Naumov (1963) and Schegolev (1977).

Density was counted the following way: $M = m/l * 2d * A$,

where: M – abundance of species; m – number of the individuals of present species; 2d – identification stripe (on the basis of sound activities of the birds); l- the length of the way; A activity of species.

RESULTS AND DISCUSSIONS

Ornitologic observations that were done in Chisinau gave us the possibility to characterize the distribution of bird population density in urban area in hyemal period.

The parks of different sectors and housing estates were selected as matter of researches. The park mitigate the influence of climate upon the city, control the temperature, hold back the substances, which pollute the air, being kind of recreation for city population.

The research results about ornitofauna distribution in different biotopes of the city in the hyemal season are presented in Tab. 1.

Table 1. Birds species identified in Chisinau city parks in hyemal season.
Tabelul 1. Speciile de păsări înregistrate în parcurile orașului Chișinău în sezonul hiemal.

No	Species	P.V.M.	P.V.T	Dendrariu	Ș.C.M	9floors	5floors	Private sect.	Phenology
1	<i>Anas platyrhynchos</i>	22,86	125,71	0,00	0,00	0,00	0,00	0,00	MP
2	<i>Accipiter nisus</i>	5,71	11,43	0,00	0,00	0,00	0,00	0,00	S,OI
3	<i>Fulica atra</i>	0,00	51,43	0,00	0,00	0,00	0,00	0,00	MP
4	<i>Gallinula chloropus</i>	22,86	28,57	0,00	0,00	0,00	0,00	0,00	MP
5	<i>Larus ridibundus</i>	0,00	11,43	0,00	0,00	0,00	0,00	0,00	MP
6	<i>Columba livia</i>	34,29	57,14	97,14	200,00	40,68	258,25	98,25	S
7	<i>Streptopelia decaocto</i>	11,43	0,00	0,00	0,00	2,52	30,25	25,24	S
8	<i>Picus canus</i>	11,43	0,00	22,86	0,00	0,00	0,00	0,00	S
9	<i>Dendrocopus major</i>	22,86	0,00	22,86	12,52	0,00	4,18	0,00	S
10	<i>Dendrocopus syriacus</i>	11,43	11,43	0,00	25,36	0,00	0,00	4,23	S
11	<i>Corvus corone cornix</i>	68,57	80,00	34,29	120,00	3,21	10,25	0,00	S
12	<i>Corvus frugilegus</i>	274,29	337,14	725,71	140,00	14,52	87,54	79,25	S
13	<i>Pica pica</i>	11,43	28,57	34,29	0,00	3,25	10,25	0,00	S
14	<i>Garrulus glandarius</i>	11,43	22,86	11,00	0,00	0,00	0,00	0,00	S
15	<i>Troglodytes troglod.</i>	5,71	11,43	5,71	0,00	0,00	0,00	0,00	MP
16	<i>Turdus merula</i>	11,43	0,00	0,00	0,00	0,00	0,00	0,00	S
17	<i>Turdus viscivorus</i>	57,14	0,00	0,00	0,00	0,00	0,00	0,00	OI
18	<i>Turdus pilaris</i>	22,86	0,00	0,00	0,00	0,00	0,00	0,00	OI
19	<i>Parus major</i>	560,00	520,00	251,43	80,00	12,35	83,25	34,59	S
20	<i>Parus coeruleus</i>	120,00	28,57	80,00	0,00	0,00	5,62	0,00	S
21	<i>Parus palustris</i>	34,29	11,43	11,43	0,00	0,00	8,33	0,00	S
22	<i>Parus ater</i>	0,00	108,57	0,00	0,00	0,00	0,00	0,00	S
23	<i>Sitta europeaea</i>	22,86	5,71	17,14	0,00	0,00	0,00	0,00	S
24	<i>Certia familiaris</i>	0,00	11,43	17,14	20,00	0,00	0,00	12,23	OI
25	<i>Passer domesticus</i>	468,57	142,86	114,29	480,00	40,12	59,87	63,85	S
26	<i>Passer montanus</i>	371,43	45,71	102,86	0,00	4,23	0,00	23,58	S
27	<i>Coccothraustes cocctr</i>	0,00	45,71	0,00	0,00	0,00	0,00	0,00	S
28	<i>Pyrrula pyrrula</i>	22,86	0,00	34,29	0,00	0,00	0,00	0,00	OI
29	<i>Carduelis spinus</i>	0,00	0,00	34,29	0,00	0,00	0,00	0,00	OI
30	<i>Regulus regulus</i>	34,29	00,00	00,00	00,00	00,00	00,00	00,00	OI

Under the registered data and quantitative and qualitative analysis there were identified 30 species of the birds (table 1). The biggest number was registered in the parks with big surface and rich vegetal structure, these are „Valea Morilor”, „Valea Trandafirilor”, Dendrariu, and the smallest number of species was registered in public garden „Ștefan cel Mare”. This fact is caused by the following factors: situation in the central part of the city, the influence of trouble factor, limited surface, meager vegetal structure, the absence of coniferous plot, which in the cold periods of the year play an important role, being as a shelter (for tits, kinglets, chaffinches, magpies), where there is no frost and wind. Thus the public garden „Ștefan cel Mare” resembles more with the residential area under the number of species, than with the parks mentioned above. The urban sector is more meager Hence the blocks with 5 floors, 9 floors and private sector is more meager under the number of species, which because of meager variety of vegetative structure. The majority is species of passerines (64.2% of all identified species).

We will describe the community structure of the birds in hyemal season, taking as the example the park „Valea Trandafirilor”, because the 2 parks, mentioned above are the same to a greater extent in surface, components, architectonic of vegetation.

There were discovered 22 bird species in the park „Valea Trandafirilor”, among them *Corvus frugilegus*, *Parus major* and *Columba livia* have the numerical dominance.

In the winter the conditions became more severe for settled birds, thus the biggest part of them fly to the town, where there are more favorable conditions for their existence. The main conditions in winter time for birds are rich sources of food, the protection from predators and favorable microclimate.

There is both reduction species number in all biotopes and their density (Fig. 2), because migratory species leave the territory and the number of winter visitors, which come to the territory is low and the density is insignificant.

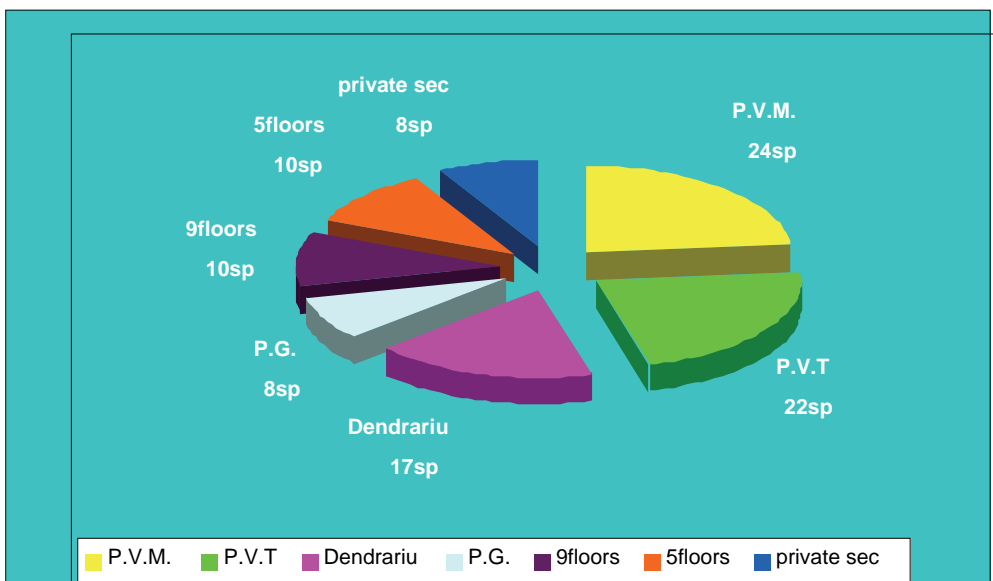


Fig. 1. Number of bird species of studied areas: P.V.M.-park “Valea Morilor”, P.V.T.- park “Valea trandafirilor”,P.G.- public garden”Stefan cel Mare”, 9 floors-residential district with houses 9 floors, 5 floors- residential district with houses with 5 floors, private sector - residential district.
 Fig.1. Repartiția numerică a speciilor de păsări din ecosistemele studiate: P.V.M.- parcul “Valea Morilor”, P.V.T. – parcul “Valea Trandafirilor”, P.G. – Grădina publică ”Stefan cel Mare”, 9 etaje – blocuri locative cu 9 etaje, 5 etaje – blocuri locative cu 5 etaje, sectorul particular.

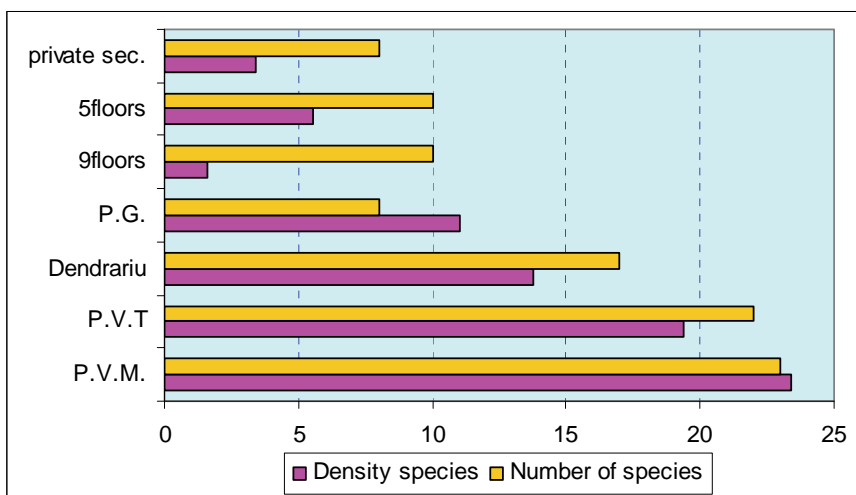


Fig. 2. Density (ind/10ha) and number of bird species in different biotopes in the winter.
 Fig. 2. Densitatea (ind/10ha) și numărul speciilor de păsări în diverse biotopuri în perioada hiemală.

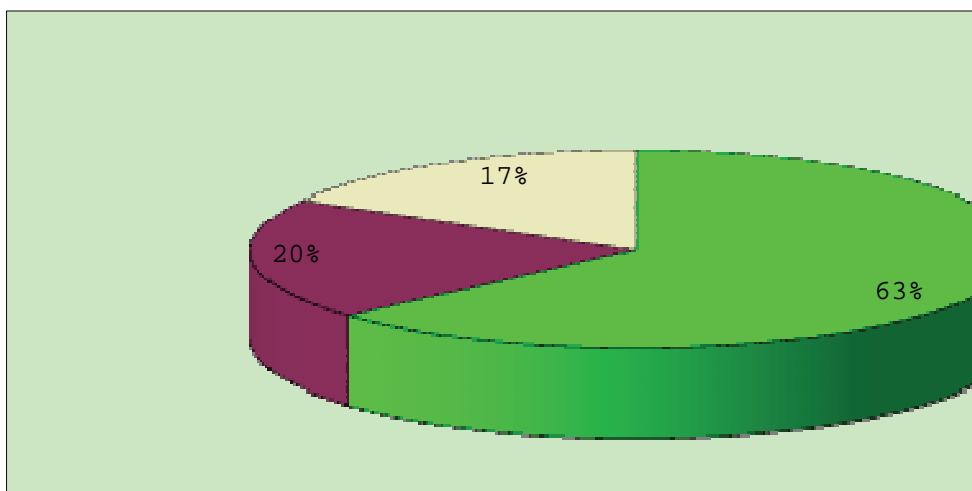


Fig. 3. The phenology status of urban avifauna identified in hyemal season: S-sedentary species, WV - winter visitor, PM-partially migratory.
 Fig. 3. Statutul fenologic a avifaunei urbane privind aspectul hiemal: S – sedentare, WV – oaspeți de iarnă, PM – parțial migratori.

Comparing the index of density with the number of species, it may be observed that the first one shows the relatively high level. This can be explained by the fact: due to the dropping number of migratory birds and the density of species which remain for wintering grows due to species synanthropic, which in winter time fly to adjoining ecosystems, which form kind of lobby around the town. The town produces favorable conditions for ornitofauna in the period of winter in comparison with its ecosystems: the temperature is lower, the food source is rich (fruit-trees, nutrient medium, garbage containers etc).

The hyemal period plays an important role in forming and enriching the ornitofauna of urban area. This fact is explained by new species spreading in modern towns because of big decorative and fruit trees surfaces, which present a source of living and shelter in the winter period for those birds, which remain for wintering on the territory. The presence of aquatic biotopes with thermal water allows wintering for aquatic species, like: big duck, bald-coot, moorhen (Hrabrâii, 1982). In parks of Chisinau in 2005-2007 I had met several couples of big ducks in February. On the territory of Dendrologic garden in the course of three years on the rivulet Durlești 4 duck couples had been wintering.

If we regard the birds phenological status (figure 3), the sedentary are dominant (63%), following by the winter visitors (20%), partially migratory -17%.

Usually, avifauna is meager in this period, being presented by sedentary species and winter visitors. Partially migratory species have the lowest spreading; the number of this phenological category depends on the type of winter. In mild winters we can meet the next species (chaffinch, starling, big duck, bald-coot, moorhen etc.).

Urban ecosystems have a great importance in conservation of biodiversity, especially in cold periods of the year, because the majority of birds find here more favorable conditions than in wild nature. In urban areas their number is higher than in wild nature. The anthrop factor is one of the important forces of, which determines all the changes from the structure and components of the whole fauna.

Taking into consideration the fact that the problem of biodiversity conservation is the global one, we consider that it may be solved through close cooperation between decisive factors, scientists and the whole society.

CONCLUSIONS

- The realized studies confirm that urban surfaces play considerable role in producing the favorable conditions for many birds' species in the cold period of the year.
- In Chisinau city were found 30 bird species, the biggest amount in the city avifauna present passerines (64.2% of the total number of identified avifauna).
- The phenology status of Chisinau avifauna in the hyemal season constitutes: sedentary-66% species, winter visitors -16%, passage -11%, partially migratory-7%.
- In the future it is possible that urban surface will be as an oasis rescuer of many bird species of natural environment, which on account of growing of anthrop pressing or reducing of natural habitat can be subject to disappearing.

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