



ASPECTS OF THE BIRD FAUNA FROM CIRIC VALLEY'S (IAȘI)

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Abstract

The Ciric Valley, which is located in the northeastern region of Iași, integrates a considerable variety of habitats. Wetlands are dominant, being partially covered with compact reed beds. The other habitats are the deciduous forest, and meadows located in the northern part of the studied area. These allow the settlement of a diverse bird fauna in the area. Using the method of transects, the fixed-point observation, and sound identification, we identified 84 bird species between March 2020 and February 2021. Most species belong to the order Passeriformes (53 species), the rest of the orders having a significantly lower diversity. With the exception of the 20 sedentary species, Ciric's avifauna consisted mostly of migratory species (39 summer visitors, 8 winter visitors, 13 vagrant species), and 5 partial migrant species during the research period. Among the identified bird species are 58 breeding species and 5 possible breeding species, representing 75% of the total number of the observed bird species. During the study, we identified 2 vulnerable species (*Nycticorax nycticorax* - black-crowned night-heron and *Streptopelia turtur* - european turtle-dove), 2 endangered species (*Egretta garzetta* - small egret and *Ardea alba* – great white egret) included in The Red Book of Vertebrates in Romania, and 13 species that require special conservation measures according to the Annex 1 of the Birds' Directive.

Keywords: bird fauna, Ciric, anthropogenic impact, wetlands

Introduction

The study area is located in the northeastern part of Iași and it is composed of five artificial dam lakes formed along the Ciric river (Dorobanț, Aroneanu, Ciric II, Ciric I and Ciric III or Veneția), and their surroundings. Habitats are diverse, the natural environment including wetlands, a plantation forest, meadows, respectively surrounding human settlements. Both the construction of dams and the planting of the forest aimed to prevent the risk of flooding the city during the rainy season (Calistru et al. 2000).

The vegetation is forest-steppe type and includes hydrophilic and hygrophilous vegetation, mesophilic meadows, salt-rich grasslands, xerophilous meadows, anthropophilic vegetation, and a mixed deciduous forest (Antonescu et al., 1969, Dobrescu et al. 1958). The species that make up the reeds are *Schoenoplectus lacustris*, *Phragmites communis*, *Typha angustifolia*, *Typha latifolia*, *Plantago major* and *Symphittum officinale*. Ciric Forest was planted by man and has an area of 252 ha. Among the numerous species of planted trees, there is a dominance of *Acer negundo*, *Quercus robur*, *Robinia pseudoacacia* and *Fraxinus excelsior* (Apăvăloaei et al. 1987). *Prunus spinosa*, *Sambucus nigra*, *Rosa canina* and others make up the shrub level, and *Lepidium ruderales*, *Taraxacum officinale* and others forms the grassy layer (Nicoară 2007, Mititelu and Vițalariu 1967).

The climate is temperate-continental with an average annual temperature of 9.3 °C, with a maximum reaching 21 °C in June and a minimum in January with -4 °C. The annual rainfalls are

533.7 millimeters (mm) in average (Gugiuman and Erhan 1987). The multiannual water temperature at the lake surface varies between 19 °C and 21 °C (Calistru et al. 2000).

Previously, six ornithological research were carried out in the Ciric valley, focused on the bird fauna of Ciric forest and dam lakes, only one regarding the bird species present in the perimeter of the all five dam lakes along the Ciric Valley (Tofănescu and Gache 2009). The very first article was published in 2004, signed by Gache, which was the reference point for the next studies in the area. A year later, Butnaru shares the preliminary results obtained from field observations in the parks and peri-urban areas of Iași, a study consolidated in 2006 with a second article. Later, in 2009, Croitoru (former Butnaru) published a monograph volume regarding the bird fauna related to the urban green areas of Iași, including the one from Ciric forest and the Ciric I – III dam lakes. Ten years later, Tofănescu and Gache conducted a study discussing the risk generated by the presence of groups of birds related to the Ciric Valley upon air traffic safety in the proximity of Iași Airport, a danger present especially during migrations. And finally, in 2020 Loghin presents an update of the list of bird species present in Ciric and analyses the impact of anthropization on the distribution of birds.

The objectives of this paper were to determine the diversity of bird species and their present status inside the habitats from the Ciric Valley. We also wanted to determine if and how our obtained data differ from the ones stated in the previously mentioned studies. Anthropogenic pressure was a permanent factor in the area, therefore it is an important element in the distribution of avifauna in the Ciric Valley. For this reason, we aimed to determine the degree of anthropogenic influence on the distribution of ornithofauna.

Period of study and Methods

The present study took place over twelve months, from March 2020 to February 2021, but we mention on-going field investigations in the area following cantitative aspects of the bird fauna. The activity took place in the perimeter of the lakes along the Ciric river, respectively the artificial dam ponds Dorobanț, Aroneanu, Ciric I, Ciric II and Veneția and their surroundings, among which we mention the edge of the nearby localities and the Ciric forest, on a radius of about 20 m from the waterfront.

As study methods, we chose the method of transects, the fixed-point observation, and sound identification for some bird species. The route covers about 9 km - from the tail of Lake Dorobanț to the Ciric III dam, as shown in the figure 1. The transect followed the eastern shore of Dorobanț and Aroneanu ponds, respectively the western shore of Ciric lakes. During the journey along the linear transect, we recorded the birds' presence on both sides of the lakes while walking and from certain observational points.

We used the sound identification based on the song characteristic of each species inside the forested areas (Ciric forest), for birds hidden in reeds (such as warbler species), in the case of the call of birds of prey on the hunting territories such as *Falco tinnunculus* - common kestrel and *Buteo buteo* - eurasian buzzard or species found in the distance, on top of trees, on poles, or near human settlements, that we could not see.

We used a Nikon Aculon 8-24x binoculars to identify the bird species and a Nikon Coolpix L840 38x camera to take photos of the birds.



Figure 1. The transect used to cross Ciric Valley during the study

Results and discussion

Following the observations done in the field for 12 consecutive months, around the Dorobanț, Aroneanu and Ciric rezervoirs, we identified the presence of 84 bird species (table 1), taxonomically classified in 35 families belonging to 12 distinct orders. It seems that the number of bird species remains the same compared to the one mentioned by Loghin in her article but smaller compared to the 68 taxa identified by Tofănescu and Gache to which we can add the woodland typically species that are not mentioned in their list. The reason for this might be that their on-going field investigations were made two or three times a month and they focused more on birds related to the wetlands habitats and on the migration period. During this time of the year, the birds fly in groups or flocks increasing the potential risk for the air traffic.

There are 32 species with permanent presence in Ciric are: *Ixobrychus minutus*, *Nycticorax nycticorax*, *Ardea cinerea*, *Ardea alba*, *Cygnus olor*, *Anas platyrhynchos*, *Buteo buteo*, *Accipiter gentilis*, *Gallinula chloropus*, *Chroicocephalus ridibundus*, *Larus cachinnans*, *Sterna hirundo*, *Streptopelia decaocto*, *Streptopelia turtur*, *Merops apiaster*, *Riparia riparia*, *Hirundo rustica*, *Delichon urbicum*, *Motacilla alba*, *Turdus pilaris*, *Acrocephalus scirpaceus*, *Acrocephalus arundinaceus*, *Lanius collurio*, *Pica pica*, *Corvus monedula*, *Corvus frugilegus*, *Sturnus vulgaris*, *Passer domesticus*, *Passer montanus*, *Fringilla coelebs*, *Carduelis carduelis*, and *Spinus spinus*. Unfortunately we could not met the Eurasian hoopoe (*Upupa epops*), the common swift (*Apus apus*), the common kingfisher (*Alcedo atthis*), the domestic pigeon (*Columba livia domestica*), the Eurasian coot (*Fulica atra*), the Eurasian sparrowhawk (*Accipiter nissus*) and the white stork (*Ciconia ciconia*), species mentionez in the study area during the years by other authors.

During our study, we added six new bird species to the diversity of ornithofauna of the Ciric Valley: *Galerida cristata* (the crested lark), *Luscinia luscinia* (the thrush nightingale), *Luscinia megarhynchos* (the common nightingale), *Hippolais icterina* (the icterine warbler), *Sylvia borin* (the garden warbler) and *Emberiza calandra* (the corn bunting).

The bird fauna of the Ciric valley is predominantly represented by the order Passeriformes – situation similar to the one presented by Loghin. It constitutes 63.09% of the total number of species identified in the region (53 species out of 84), bringing a considerable contribution to the taxonomic list. Charadriiformes are represented by 6 species of birds, while the orders Pelecaniformes and Piciformes by 5 species. The orders Anseriformes, Accipitriformes and Columbiformes appeared in the area each of them with 3 species, while 2 species belong to the order Podicipediformes. For the orders Falconiformes, Gruiformes, Cuculiformes and Coraciiformes we recorded a single bird species in the study area.

From the point of view of the location, we observed the higher birds' diversity in the area of Ciric I, Ciric II and Ciric III rezervoirs (61 species), while we found 43 of the species d around Dorobanț rezervoir and 21 in the perimeter of Aroneanu rezervoir. The high level of the

diversity of bird fauna in the area of the Ciric complex could be due to the existence of two types of habitats: the wetland preferred by waterfowl species, respectively the forest where many species of passerines are established, and this explains why the order Passeriformes is dominant for the bird fauna in the area. At the opposite pole is the Aroneanu lake with the lower recorded diversity of the bird fauna; this situation may be the consequence of the habitats' degradation by the extension of anthropogenic spaces along the eastern shore and consolidating this shore of the lake with earth, an action carried out by workers before the construction began. This activity leads to the decreasing of the surface of marsh vegetation and water surface in this sector of Ciric Valley.

Analyzing the list of the identified bird fauna, it is found that from the point of view of phenology in Romania, the summer guests are dominant in the area, represented by 41 species, being followed by the sedentary bird species (27 species), and 14 partial migrants, respectively, 8 species rarely found in winter in our country, 8 winter guests and 4 species of passage. Regarding the phenology in the study area, we mention also the dominance of summer guests with 39 species, seconded by the 20 sedentary species, 13 passage bird species, 8 winter visitors (*Anas crecca*, *Periparus ater*, *Regulus regulus*, *Turdus pilaris*, *Certhia familiaris*, *Troglodytes troglodytes*, *Spinus spinus*, *Pyrrhula pyrrhula*), and 5 partial migrant species.

The analysis of the phenological dynamics of the birds starts from the presence of the bird species in the studied area during some well-determined periods of the year. In the temperate climate area, the ecologists use a six-season division of the year, covering different phenological aspects inside the ecosystems: hibernal (November - February), prevernal (March - April), vernal (May), estival (June), serotinal (July - August) and autumnal (September - October).

The diversity of bird species varies during the six phenological aspects in the investigated area. Ciric's ornithofauna reached its peak of diversification during the serotinal season (67 species), closely followed by the estival one (66 species). During the prevernal aspect, we identified 64 species, and in the vernal one 61 bird species. In September and October of 2020 (autumnal season), we observed 51 bird species. The smallest number of species has been identified during the hibernal season (36).

Of the 84 species identified in the perimeter of the Ciric valley during March 2020 - February 2021, we recorded 58 regular breeding bird species and for another 5 we assess that they are possibly breeding species (*Nycticorax nycticorax*, *Accipiter gentilis*, *Chroicocephalus ridibundus*, *Remiz pendulinus*, *Locustella luscinioides*). In this way, we notice that 75% of the identified bird species raise their young in the study area. During our study, we found that more bird species are nesting on the Ciric Valley comparing to the data from the previous last studies. Loghin estimated that 57 of the bird species are breeding in the area, and in 2019 Tofănescu and Gache mentioned only 41. We mention also the case of the individual *Cygnus olor* resident as non-breeding bird mentioned by Loghin, being present in the area of the Ciric I lake during our study.

Most of the observed bird species on the Ciric Valley prefer the forest habitats with less anthropogenic influence (47 species), and at the opposite pole are some that find food and shelter resources near or inside the anthropogenic spaces (17 species). The wetland habitat is also quite populated, with 27 species of birds settling here. Of all, the meadows appear as the least preferred by the birds of the Ciric bird fauna, here settling a total number of 11 species, but this habitat covers small areas in the investigated territory.

The bird fauna of the Ciric Valley is mainly negatively influenced by anthropogenic presence. The people do many activities in this region: kayaking, fishing, construction, commercial and agricultural activities, tourism and recreation. Another thing that influences the establishment of birds in the Ciric valley is its proximity to Iași International Airport. The effects of air traffic and noise produced by aircraft create discomfort for bird species and are a source of danger to

the safety of birds and people traveling on board (Tofănescu and Gache 2019). These factors explain also the presence of more bird species and specimens in the perimeter around the Veneția reservoir. Similar to the last year (Loghin 2020), we recorded more individuals of mallard (*Anas platyrhynchos*) in this sector than in the whole investigated Ciric Valley.

Consulting the Red Book of Vertebrates in Romania and the Annex 1 of the Birds Directive, we identified 14 bird species present on the Ciric Valley that appear in the lists of these documents. Two summer guests (*Nycticorax nycticorax* - black-crowned night-heron and *Streptopelia turtur* - european turtle-dove, the second one as breeding species in the north-eastern part of the Ciric forest) are vulnerable bird species in our country according to the Red Book of Vertebrates in Romania (Botnariuc and Tatole 2005), species that were also mentioned by Loghin in her study. We also identified two endangered species in the area, *Egretta garzetta* - small egret and *Ardea alba* – great white egret. Among these two, the small egret was cited before as being part of Ciric bird fauna (Tofănescu and Gache 2019), while the great white egret appears in the 2020 Loghin' study. Unfortunately, we were not able to identify other birds with conservation need such as *Ciconia ciconia*, *Upupa epops* and *Corvus corax*, species that appear in the 2020 list.

A number of 13 bird species of the 84 recorded species during our study on the Ciric Valley appear in the Annex 1 of Directive 2009/147/EC, which refers to species that require conservation measures of their habitat and population: *Nycticorax nycticorax*, *Ixobrychus minutus*, *Egretta garzetta*, *Ardea alba*, *Circus aeruginosus*, *Gallinago gallinago*, *Tringa glareola*, *Chlidonias hybrida*, *Sterna hirundo*, *Picus canus*, *Dendrocopos syriacus*, *Dendrocopos medius*, *Lanius collurio*, and *Lanius minor*. All these represent a percentage of 15.47% of the total identified bird fauna during our monitoring activity. The number of birds with conservation need dropped significantly (from 31 to 13) compared to the list put together by Loghin which may be a clue that the environment is changing very fast and the optimal conditions for bird fauna are decreasing in the area.

Table 1. Phenology, breeding status and distribution of Circ Valley's avifauna

No.	Species	Romania phenology	Ciric phenology	Breeding species	Observation place	Habitat
1.	<i>Anas platyrhynchos</i>	PM	PM	B	D, A, C	WL
2.	<i>Anas crecca</i>	P, WV, SV	WV	-	D	WL
3.	<i>Cygnus olor</i>	PM	P	-	C	WL
4.	<i>Egretta garzetta</i>	SV	P	-	D	WL
5.	<i>Ardea cinerea</i>	SV, RW	SV	B	D	WL
6.	<i>Ardea alba</i>	SV, RW	P	-	D	WL
7.	<i>Nycticorax nycticorax</i>	SV	SV	B?	D, A, C	WL
8.	<i>Ixobrychus minutus</i>	SV	SV	B	D, A	WL
9.	<i>Accipiter gentilis</i>	S	PM	B?	D, C	F
10.	<i>Circus aeruginosus</i>	SV, RW	SV	B	A	WL
11.	<i>Buteo buteo</i>	PM	P	-	C	F
12.	<i>Falco tinnunculus</i>	PM	P	-	C	M, F
13.	<i>Gallinula chloropus</i>	SV	SV	B	D	WL
14.	<i>Gallinago gallinago</i>	P, SV?	P	-	D	WL
15.	<i>Tringa glareola</i>	P	P	-	D	WL
16.	<i>Chlidonias hybrida</i>	SV	P	-	D	WL
17.	<i>Larus cachinnans</i>	S	PM	B	D	WL
18.	<i>Chroicocephalus ridibundus</i>	PM	SV	B?	D	WL

19.	<i>Sterna hirundo</i>	SV	SV, P	-	D, C	WL
20.	<i>Podiceps cristatus</i>	SV, RW	P	-	A	WL
21.	<i>Tachybaptus ruficollis</i>	SV, RW	P	-	A	WL
22.	<i>Columba palumbus</i>	SV, RW	SV	B	C	F, HS
23.	<i>Streptopelia decaocto</i>	S	S	B	D	HS
24.	<i>Streptopelia turtur</i>	SV	SV	B	A	F
25.	<i>Cuculus canorus</i>	SV	SV	B	D, A	F, HS
26.	<i>Merops apiaster</i>	SV	SV	B	D	M
27.	<i>Dendrocopos syriacus</i>	S	S	B	D	F, HS
28.	<i>Dendrocopos major</i>	S	S	B	C	F, HS
29.	<i>Dendrocopos medius</i>	S	S	B	C	F
30.	<i>Picus viridis</i>	S	S	B	C	F
31.	<i>Picus canus</i>	S	S	B	C	F
32.	<i>Oriolus oriolus</i>	SV	SV	B	D, A, C	F, HS
33.	<i>Lanius collurio</i>	SV	SV	B	D, C	M
34.	<i>Lanius minor</i>	SV	SV	B	D	M
35.	<i>Garrulus glandarius</i>	S	S	B	C	M
36.	<i>Pica pica</i>	S	S	B	D, A, C	M
37.	<i>Corvus frugilegus</i>	S, WV	S	B	D, C	F, HS
38.	<i>Corvus monedula</i>	S	S	B	D, C	F, M
39.	<i>Corvus cornix</i>	S	S	B	D, C	M, HS
40.	<i>Parus major</i>	S	S	B	D, A, C	F, HS
41.	<i>Cyanistes caeruleus</i>	S	S	B	D, A, C	F, HS
42.	<i>Poecile palustris</i>	S	S	B	D, A, C	F, WL
43.	<i>Periparus ater</i>	S	WV	-	D, A, C	F
44.	<i>Remiz pendulinus</i>	PM	SV	B?	D, A, C	WL
45.	<i>Regulus regulus</i>	PM, WV	WV	-	D, A, C	F
46.	<i>Galerida cristata</i>	S	SV	B	A	M
47.	<i>Hirundo rustica</i>	SV	SV	B	D, A, C	HS
48.	<i>Delichon urbicum</i>	SV	SV	B	D, C	HS
49.	<i>Riparia riparia</i>	SV	SV	B	C	M, WL
50.	<i>Acrocephalus arundinaceus</i>	SV	SV	B	D, A, C	WL
51.	<i>Acrocephalus scirpaceus</i>	SV	SV	B	D, A, C	WL
52.	<i>Hippolais icterina</i>	SV	SV	B	C	F
53.	<i>Locustella luscinioides</i>	SV	SV	B?	D	WL
54.	<i>Phylloscopus collybita</i>	SV	SV	B	C	WL
55.	<i>Sylvia atricapilla</i>	SV	SV	B	C	F
56.	<i>Sylvia borin</i>	SV	SV	B	C	F
57.	<i>Sylvia communis</i>	SV	SV	B	C	F
58.	<i>Sylvia curruca</i>	SV	SV	B	C	F
59.	<i>Luscinia megarhynchos</i>	SV	SV	B	A, C	F
60.	<i>Luscinia luscinia</i>	SV	SV	B	C	F
61.	<i>Muscicapa striata</i>	SV	SV	B	C	F, WL
62.	<i>Phoenicurus phoenicurus</i>	SV	SV	B	C	F
63.	<i>Phoenicurus ochruros</i>	SV	SV	B	C	F, HS
64.	<i>Erithacus rubecula</i>	SV, RW	SV	B	C	F

65.	<i>Turdus merula</i>	PM	S	B	C	F
66.	<i>Turdus philomelos</i>	SV	SV	B	C	F
67.	<i>Turdus viscivorus</i>	PM	P	-	C	F
68.	<i>Turdus iliacus</i>	P	P	-	C	F
69.	<i>Turdus pilaris</i>	PM, WV	WV	-	C	F
70.	<i>Sturnus vulgaris</i>	PM	SV	B	D, C	HS
71.	<i>Sitta europaea</i>	S	S	B	C	F
72.	<i>Certhia familiaris</i>	S	WV	-	C	F
73.	<i>Troglodytes troglodytes</i>	SV, RW	WV	-	C	F
74.	<i>Passer domesticus</i>	S	S	B	D, C	HS
75.	<i>Passer montanus</i>	S	S	B	D, C	HS, M
76.	<i>Motacilla alba</i>	SV	SV	B	C	WL
77.	<i>Carduelis carduelis</i>	S, WV	S	B	D, C	F, HS
78.	<i>Fringilla coelebs</i>	PM	S	B	C	F
79.	<i>Spinus spinus</i>	PM, WV	WV	-	C	F
80.	<i>Coccothraustes coccothraustes</i>	S	S	B	C	F
81.	<i>Pyrrhula pyrrhula</i>	S	WV	-	C	F
82.	<i>Chloris chloris</i>	S	SV	B	C	F
83.	<i>Emberiza calandra</i>	PM	SV	B	D	F, M
84.	<i>Emberiza citrinella</i>	S	S	B	D, C	F

Legends:

Phenology status: P – bird species in passage, WV – winter visitors, RW – rare winter visitors, SV – summer visitors, S – sedentary species, PM – partial migratory species:

Breeding status: B – breeding species, B? – probably breeding species;

Location in the study area: D – Dorobanț, A – Aroneanu, C – Ciric;

Suitable habitat: F – Forest, M – Meadow, WL – Wet Lands, HS – Human Settlements.

Conclusions

This study records the presence of 84 species of birds in the perimeter and the proximity of the reservoirs formed on the valley of Ciric River.

The bird fauna in the investigated perimeter reunites summer guests, and sedentary species, while the winter guests and partial migrant species present a lower diversity. During the migration time, this area becomes a significant resting and feeding place for birds, and we notice the appearance of some passage species in this territory.

Most of the species from the list of recorded bird fauna represent breeding bird species in the study area. This indicates that although the Ciric valley is exposed to high anthropogenic pressure, the birds meet favorable conditions for raising chicks there. At the same time, the permanent change of the natural landscape due to the intense anthropization gradually leads to the decrease of the number of individuals belonging to each species and the reduction of the bird fauna's diversity in the area.

Looking on the list of the bird species included in the previous studies done on the Ciric Valley (Gache 2004, Croitoru 2009 and Loghin 2020) and those recorded during our study, we found that only 32 bird species are present in the area every year. This represent less than half of the bird fauna identified in the all mentioned studies. The environment changes constantly and drastically to the point that one same species cannot finds proper conditions to establish in the same perimeter two consecutive years. This represents a serious problem because in the near future the valley of Ciric River might loses the most of its bird fauna's diversity.

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