

DATA ON THE AVIFAUNA OF THE TISZA REGION IN SZATMÁR—BEREG

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Abstract

From June 22 to 29, 1976, a Nature Conserving and Ornithological Camp was in session at Tivadar, organized by the Hungarian Ornithological Association, in the course of which some ornithological observations and investigations were performed by the participants in the Tisza region in Szatmár and Bereg.

Stock-takings were carried out by stripe method, in the different and characteristic biotopes found in the region. It was established that in the ornifauna of the region there occurred some mountain-elements, as well: *Picus canus* GM., *Dryocopus martius* BREHM, *Columba oenas* L., etc. There were found some birds, nesting but rarely in our country: *Crex crex* L., *Asio flammeus* PONT., *Corvus corax* L., etc. And the nesting of *Luscinia luscinia* in these reaches of the Tisza was proved, as well. Our work — has mainly ecological and faunistical importance.

Methods of investigation

Taking into consideration that the work was going on not more than for eight days in the area in order to obtain as profound knowledge as possible, the collection of data was carried out in two sections:

(1) The task of the netting-ringing section was to collect in the various biotopes, and to complete the audio-visual observations with these results.

(2) Stock-takings were carried out by the eco-faunistical section in the biotopes characteristic of the area, applying the stripe-method known in coenology. Every biotope was recorded by a number of work-teams on several paths at the same time. In this way, we have obtained a relatively large amount of data. These were already suitable to evaluate the dominance conditions and characterize the avifauna of the biotope. The observations were recorded in a special printed paper where, apart from the ornithological data, also the climatic, orographic, botanical, topographical, etc. factors had a part.

The works of both selections completed each other very well, because some species — e.g., *Luscinia luscinia*, *Sylvia nisoria*, etc. — could only be observed by means of nets, while others only by being kept under observation.

The biotopes under investigation were selected in the way so that the area should be represented best by them and, with the aid of them, a general picture should be formed. We are fully aware of that this picture is not complete. But the data achieved are so valuable that they are worth being published, even in spite of being incomplete.

Characterization of the area investigated

The observations have comprised the Tisza flood-plain from Szatmárcseke to Gergelyugornya and in some places — referred to later — the biotopes outside the flood-plain, as well. This is a flat area filled up with alluvial deposits where some

variety — a depression in the relief — is only given by the river beds abandoned. The flood-plain is covered with woods — mainly with *Salicetum albae-fragilis* and, in some places, in the higher parts with *Fraxino-pannonicae Ulmetum* —, with nut-groves and — in a comparatively low percentage — plough-lands. As the Carpathian Mountains are near and as this is one of the regions of the country with the coolest climate, there may be found several mountain-elements both in vegetation and fauna — in the ornis, as well. The height of the area above sea level is 106 to 110 m. The yearly average of the precipitation is 600 to 700 mm. The mean annual temperature is 8—9 °C.

Evaluation of the results obtained

Birds of woods at the borrowing pits

In the course of our observations, there were established here 57 species, of which 51 proved to be nesting and 6 visited the biotope only for feeding. (Cf.: Table 1).

The many-sidedness of the biotope is also shown by that, instead of the four nesting levels that are common in woods, here there are seven levels to be found, in which the distribution of species is as follows:

	species	percentage
Hatching at ground-level:	9	17,8
Hatching at shrub-level:	11	21,7
Hatching at tree-stem-level:	13	25,4
Hatching at foliage-level:	13	25,4
Hatching at water-level:	3	5,9
Hatching at reed-level:	1	1,9
Hatching at parieticolous-level:	1	1,9

This extremely rich avifauna is an important factor of the biological wood protection. This is most shown if we investigate the distribution of species on the basis of the quality of the food consumed.

According to this:	species	percentage
Carnivore:	8	14,—
Insectivore:	30	52,6
Herbivore:	11	19,4
Mixed eater:	8	14,—

Abbreviations in the Table:

R = rare A = accessory Sd = sub-dominant D = dominant species
 N = nesting F = only feeding species in the biotope.
 Values of categories D: R 0—3,99, A 4—6,99, Sd 7—9,99 D > 10 percentile D-value

It is to be added to these, anyhow, that — in the course of recordings — the total number of bird individuals in the area could not be observed anywhere. The above values remain, therefore, here and further on, too, below the real quantities.

Birds of the willow-poplar groves (*Salicetum albae-fragilis*)

In the course of our ranging over the terrain, we have established 30 nesting species, in which number the species hatching in settlements are not contained. (Cf.: Table 2.)

Table 1. Bird species observed in the woods at borrowing pits and their dominance relations

Species	Individuals observed	D per cent	D category	Quality of staying
1. <i>Podiceps ruficollis</i> PALL	6	0,99	R	N
2. <i>Ardea cinerea</i> L.	2	0,33	R	F
3. <i>Egretta garzetta</i> L.	2	0,33	R	F
4. <i>Nycticorax nycticorax</i> L.	4	0,66	R	F
5. <i>Ixobrychus minutus</i> L.	2	0,33	R	N
6. <i>Ciconia ciconia</i> L.	9	1,49	R	F
7. <i>Anas platyrhynchos</i> L.	19	3,15	R	N
8. <i>Falco subbuteo</i> L.	1	0,16	R	F
9. <i>Falco vespertinus</i> L.	1	0,16	R	N
10. <i>Falco tinnunculus</i> L.	19	3,15	R	N
11. <i>Perdix perdix</i> L.	8	1,33	R	N
12. <i>Phasianus cochicus</i> L.	12	1,99	R	N
13. <i>Gallinula chloropus</i> L.	11	1,82	R	N
14. <i>Fulica atra</i> L.	3	0,49	R	N
15. <i>Tringa ochropus</i> L.	1	0,16	R	F
16. <i>Columba oenas</i> L.	6	0,99	R	N
17. <i>Columba palumbus</i> L.	5	0,83	R	N
18. <i>Streptopelia turtur</i> L.	25	4,15	A	N
19. <i>Streptopelia decaocto</i> FRIV.	3	0,49	R	N
20. <i>Cuculus canorus</i> L.	26	4,32	A	N
21. <i>Strix aluco</i> L.	2	0,33	R	N
22. <i>Alcedo atthis</i> L.	1	0,16	R	N
23. <i>Coracias garrulus</i> L.	3	0,49	R	N
24. <i>Upupa epops</i> L.	6	0,99	R	N
25. <i>Picus viridis</i> L.	6	0,99	R	N
26. <i>Picus canus</i> GM.	5	0,83	R	N
27. <i>Dendrocopos maior</i> L.	5	0,83	R	N
28. <i>Dendrocopos medius</i> L.	1	0,16	R	N
29. <i>Oriolus oriolus</i> L.	14	2,32	R	N
30. <i>Corvus cornix</i> L.	32	5,31	A	N
31. <i>Pica pica</i> L.	6	0,99	R	N
32. <i>Garrulus glandarius</i> L.	5	0,83	R	N
33. <i>Parus maior</i> L.	24	3,98	R	N
34. <i>Parus caeruleus</i> L.	5	0,83	R	N
35. <i>Parus palustris</i> L.	1	1,16	R	N
36. <i>Remiz pendulinus</i> L.	4	0,66	R	N
37. <i>Turdus philomelos</i> BREHM	2	0,33	R	N
38. <i>Turdus merula</i> L.	5	0,83	R	N
39. <i>Luscinia megarhynchos</i> BREHM	14	2,32	R	N
40. <i>Luscinia luscinia</i> L.	2	0,33	R	N
41. <i>Locustella fluviatilis</i> WOLF	4	0,66	R	N
42. <i>Sylvia atricapilla</i> L.	15	2,49	R	N
43. <i>Sylvia borin</i> BODD.	4	0,66	R	N
44. <i>Sylvia communis</i> LATH.	7	1,16	R	N
45. <i>Sylvia curruca</i> L.	3	0,49	R	N
46. <i>Phylloscopus collybita</i> VIEILL	13	3,82	R	N
47. <i>Muscicapa striata</i> PALL.	2	0,33	R	N
48. <i>Anthus trivialis</i> L.	16	2,66	R	N
49. <i>Motacilla alba</i> L.	3	0,49	R	N
50. <i>Lanius minor</i> GM.	6	0,99	R	N
51. <i>Lanius collurio</i> L.	11	1,82	R	N
52. <i>Sturnus vulgaris</i> L.	32	5,31	A	N
53. <i>Passer montanus</i> L.	140	23,25	D	N
54. <i>Chloris chloris</i> L.	2	0,33	R	N
55. <i>Carduelis carduelis</i> L.	6	0,99	R	N
56. <i>Fringilla coelebs</i> L.	18	2,99	R	N
57. <i>Emberiza citrinella</i> L.	12	1,99	R	N

Table 2. Bird species observed in the willow-poplar gallery forests and their dominance relations

Species	Individual observed	D per cent	D category	Quality of staying
1. <i>Falco vespertinus</i> L.	1	0,69	R	N
2. <i>Phasianus colchicus</i> L.	1	0,69	R	N
3. <i>Columba oenas</i> L.	1	0,69	R	N
4. <i>Streptopelia turtur</i> L.	9	6,20	A	N
5. <i>Streptopelia decaocto</i> FRIV.	1	0,69	R	N
6. <i>Cuculus canorus</i> L.	7	4,82	A	N
7. <i>Picus canus</i> GM.	1	0,69	R	N
8. <i>Dryocopus martius</i> L.	1	0,69	R	N
9. <i>Oriolus oriolus</i> L.	5	3,44	R	N
10. <i>Corvus cornix</i> L.	2	1,38	R	N
11. <i>Parus maior</i> L.	2	1,38	R	N
12. <i>Parus caeruleus</i> L.	2	1,38	R	N
13. <i>Aegithalos caudatus</i> L.	2	1,38	R	N
14. <i>Sitta europaea</i> L.	1	0,69	R	N
15. <i>Certhia brachydactyla</i> BREHM	1	0,69	R	N
16. <i>Turdus merula</i> L.	4	2,75	R	N
17. <i>Luscinia megarhynchos</i> BREHM	2	1,38	R	N
18. <i>Locustella fluviatilis</i> WOLF	2	1,38	R	N
19. <i>Sylvia atricapilla</i> L.	14	9,65	Sd	N
20. <i>Sylvia borin</i> BODD.	3	2,06	R	N
21. <i>Sylvia communis</i> LATH.	3	2,06	R	N
22. <i>Sylvia curruca</i> L.	5	3,44	R	N
23. <i>Phylloscopus collybita</i> VIEILL.	6	4,13	A	N
24. <i>Lanius collurio</i> L.	3	2,06	R	N
25. <i>Sturnus vulgaris</i> L.	30	20,68	D	N
26. <i>Passer montanus</i> L.	27	18,62	D	N
27. <i>Chloris chloris</i> L.	1	0,69	R	N
28. <i>Carduelis carduelis</i> L.	2	1,38	R	N
29. <i>Fringilla coelebs</i> L.	4	2,75	R	N
30. <i>Emberiza citrinella</i> L.	2	1,38	R	N

In the biotope, the distribution of species according to their nesting levels is the following:

	species	percentage
Hatching at ground-level:	4	13,3
Hatching at shrub-level:	11	36,7
Hatching at tree-stem-level:	9	30,—
Hatching at foliage-level:	6	20,—

The explanation of the large number of species nesting at the stem- and shrub-levels is that the old grove-woods are extremely rich in shrub-levels and soft-wood.

The distribution of the avifauna according to feeding categories is the following:

	species	percentage
Carnivore	—	—
Insectivore	20	66,66
Herbivore	8	26,67
Mixed eater	2	6,67

The absolute dominance of the small-body insectivorous song-birds is, therefore, characteristic of the avifauna of the biotope. Their part in the protection of forests is important.

We want to remark here, as well, that a settlement of *Corvus frugilegus* L., consisting of about 150—200 nests,

Herbivore	1	11,1
Mixed eater	3	33,3

Birds of the meadow

The fresh meadows and grasslands of large extension are extremely characteristic of the plain in Szatmár-Bereg. They had developed mainly in the place of deforestations. Most characteristic of these is the *Alopecuretum pratensis* hungaricum association. In the course of our work, we have investigated the grassland at Kísár, extending nearly to the Tisza dam. On that occasion, we have observed in this biotope 22 bird species, seven of which were only staying there for getting food. (Cf.: Table 4.)

Table 4. Bird species observed in the meadow, and their dominance relations

Species	Individual observed	D per cent	D category	Quality of staying
1. <i>Ciconia ciconia</i> L.	1	0,37	R	F
2. <i>Circus aeruginosus</i> L.	1	0,37	R	F
3. <i>Falco tinnunculus</i> L.	4	1,49	R	F
4. <i>Perdix perdix</i> L.	2	0,74	R	N
5. <i>Coturnix coturnix</i> L.	3	1,12	R	N
6. <i>Phasianus colchicus</i> L.	8	2,98	R	N
7. <i>Vanellus vanellus</i> L.	2	0,74	R	N
8. <i>Cuculus canorus</i> L.	1	0,35	R	N
9. <i>Galerida cristata</i> L.	2	0,74	R	N
10. <i>Alauda arvensis</i> L.	2	0,74	R	N
11. <i>Corvus cornix</i> L.	10	3,73	R	F
12. <i>Corvus frugilegus</i> L.	200	74,62	D	F
13. <i>Saxicola torquata</i> L.	1	0,37	R	N
14. <i>Saxicola rubetra</i> L.	6	2,23	R	N
15. <i>Acrocephalus palustris</i> BECHST	1	0,37	R	N
16. <i>Acrocephalus schoenobaenus</i> L.	1	0,37	R	F
17. <i>Sylvia communis</i> LATH.	3	1,12	R	N
18. <i>Motacilla flava</i> L.	8	2,98	R	N
19. <i>Lanius minor</i> GM.	1	0,37	R	N
20. <i>Lanius collurio</i> L.	8	2,98	R	N
21. <i>Carduelis carduelis</i> L.	2	0,74	R	F
22. <i>Emberiza citrinella</i> L.	1	0,37	R	N

This biotope — as compared with similar areas to be found at lower stretches of the Tisza — was found to be rich in respect of both the individual and the species numbers.

Although in a meadow there are only rather one-sided nesting possibilities, we meet groups hatching at not fewer than three levels:

	species	percentage
Hatching at ground-level	10	66,6
Hatching at shrub-level	4	26,7
Hatching at foliage-level	1	6,7

The presence of the latter two groups in the meadow is explained and made possible by the dispersed willow-bushes and trees there.

On the basis of the quality of the food consumed the distribution of species is the following:

	species	percentage
Carnivore	3	13,6
Insectivore	12	54,5
Herbivore	5	22,8
Mixed eater	2	9,1

The biotope has, therefore, primarily within the mosaic-complex of the region, some feeding importance.

Birds of fish-ponds

It was made possible by the soil conditions of the region, as well as by the rich system of canalization, to build fish-ponds in several places. One of these — that lying between Fehérgyarmat and Kísar (the fish-pond system at Fehérgyarmat) — was investigated by us. As a result of our observation it was found by us in this biotope type, at the junction of the rivers Szamos and Tisza. Two other heronries were found at Jánd and Szatmárcseke. Here the nesting of *Ardea cinerea* L., *Egretta garzetta* L., and *Nycticorax nycticorax* L. was established. The quantitative elaboration of the settlements has, however, not taken place, as yet, owing just to the short time and because of being strongly covered with leaves. This will be one of the tasks of the further research work.

Birds of the mortlake at Tivadar

In the stretch investigated, several smaller or larger mortlakes of artificial origin have been found. One of these takes place between Tivadar and Jánd, outside the flood-plain, surrounded by plough-lands.

At stock-taking, there were only observed 9 species, 7 of which proved to be nesting. (Cf.: Table 3.)

Table 3. Bird species observed in the mortlake at Tivadar and their dominance relations

Species	Individual observed	D per cent	D category	Quality of staying
1. <i>Ardea cinerea</i> L.	2	3,03	R	F
2. <i>Ixobrychus minutus</i> L.	17	25,75	D	N
3. <i>Anas platyrhynchos</i> L.	4	6,07	A	F
4. <i>Gallinula chloropus</i> L.	14	21,21	D	N
5. <i>Fulica atra</i> L.	7	10,61	D	N
6. <i>Cuculus canorus</i> L.	7	10,61	D	N
7. <i>Acrocephalus arundinaceus</i> L.	12	18,18	D	N
8. <i>Acrocephalus schoenobaenus</i> L.	1	1,51	R	N
9. <i>Motacilla alba</i> L.	2	3,03	R	N

As compared with the former ones, this biotope already demands a considerable specialization and, therefore, the number of species diminished. At the same time — in proportion to the area — the number of individuals belonging to the same species were considerable. It is just a result of this, as observed in connection with dominance, that the limit-values of a dominant category were achieved by not fewer than five species.

The species have hatched — according to the possibilities given by the biotope — at three levels:

	species	percentage
Hatching at ground-level	1	11,1
Hatching at water-level	2	27,6
Hatching at reed-level	4	57,1

Both nesting levels, characteristic of the mortlake, had equally a dominant species each. And even more of them. But with regard to the differences in food and to the division of the area into "reviers", they did not mean any food-competition to one another. According to the quality of the food consumed, the species observed are distributed as follows:

	species	percentage
Carnivore	1	11,1
Insectivore	4	44,5

As seen from the data, the species observed could only be found in a very low individual number, and the area was visited by the majority of them only for getting food. This is understandable because for nesting there are not provided for too many opportunities by the narrow fringe of reed. By the not more than seven hatching species the following distribution was shown in relation of the nesting levels:

	species	percentage
Hatching at ground-level	2	28,5
Hatching at water-level	3	43,—
Hatching at reed-level	2	28,5

The area is, therefore, rather a feeding biotope, frequented by birds, partly owing to the fish foods accumulated at the waterside, partly because of the food provided for by the pond.

Table 5. Bird species observed at the fish-pond at Fehérgyarmat and their dominance relations

Species	Individual observed	D per cent	D category	Quality of staying
1. <i>Ardea cinerea</i> L.	8	7,34	Sd	F
2. <i>Ixobrychus minutus</i> L.	3	2,75	R	N
3. <i>Ciconia ciconia</i> L.	2	1,83	R	F
4. <i>Anas platyrhynchos</i> L.	12	11,—	D	N
5. <i>Spatula clypeata</i> L.	4	3,67	R	F
6. <i>Aythya ferina</i> L.	5	4,58	A	N
7. <i>Aythya fuligula</i> L.	4	3,67	R	F
8. <i>Aythya nyroca</i> GÜLD.	2	1,83	R	N
9. <i>Gallinula chloropus</i> L.	6	5,50	A	N
10. <i>Fulica atra</i> L.	2	1,83	R	N
11. <i>Larus ridibundus</i> L.	2	1,83	R	F
12. <i>Streptopelia turtur</i> L.	20	18,34	D	F
13. <i>Corvus cornix</i> L.	10	9,12	Sd	F
14. <i>Corvus frugilegus</i> L.	25	22,93	D	F
15. <i>Acrocephalus arundinaceus</i> L.	4	3,67	R	N

Birds of the ash-elm grove
(*Fraxino pannonicae-Ulmetum*)

From the association covering in olden times a large part of the plain in Szatmár-Bereg, only some smaller or larger spots are to be found any more in our days. In one of these places — the forest at Birhó belonging to Fehérgyarmat — we have performed a detailed survey, and in another — in the forest of Bockerek in the vicinity of Vámosatya — a comparative collection of data. But in the latter one — in lack of a suitable time — there was no coenological recording and netting. These old forests have rich grass- and shrub-levels and, correspondingly, they have an extremely colourful avifauna. (Cf.: Table 6, demonstrating the results of the surveys made in the forest at Birhó.)

Table 6. *Bird species observed in the ash-elm grove and their dominance relations*

Species	Individual observed	D per cent	D category	Quality of staying
1. <i>Pernis apivorus</i> L.	1	0,43	R	N
2. <i>Buteo buteo</i> L.	1	0,43	R	N
3. <i>Falco subbuteo</i> L.	2	0,86	R	N
4. <i>Falco tinnunculus</i> L.	2	0,86	R	N
5. <i>Phasianus colchicus</i> L.	4	1,74	R	N
6. <i>Columba palumbus</i> L.	7	3,04	R	N
7. <i>Streptopelia turtur</i> L.	7	3,04	R	N
8. <i>Cuculus canorus</i> L.	6	2,60	R	N
9. <i>Coracias garrulus</i> L.	3	1,30	R	N
10. <i>Jynx torquilla</i> L.	1	0,43	R	N
11. <i>Picus viridis</i> L.	2	0,86	R	N
12. <i>Dendrocopos maior</i> L.	4	1,74	R	N
13. <i>Oriolus oriolus</i> L.	7	3,04	R	N
14. <i>Corvus corax</i> L.	3	1,30	R	N
15. <i>Corvus cornix</i> L.	3	1,30	R	N
16. <i>Garrulus glandarius</i> L.	3	1,30	R	N
17. <i>Parus maior</i> L.	6	2,60	R	N
18. <i>Parus caeruleus</i> L.	4	1,74	R	N
19. <i>Sitta europaea</i> L.	3	1,30	R	N
20. <i>Turdus philomelos</i> BREHM	2	0,86	R	N
21. <i>Turdus merula</i> L.	7	3,04	R	N
22. <i>Luscinia megarhynchos</i> BREHM	24	10,43	D	N
23. <i>Luscinia luscinia</i> L.	1	0,43	R	N
24. <i>Locustella fluviatilis</i> WOLF	4	1,74	R	N
25. <i>Sylvia atricapilla</i> L.	14	6,08	A	N
26. <i>Sylvia nisoria</i> BECHST.	2	0,86	R	N
27. <i>Sylvia borin</i> BODD.	1	0,43	R	N
28. <i>Sylvia communis</i> LATH.	2	0,86	R	N
29. <i>Sylvia curruca</i> L.	6	2,60	R	N
30. <i>Phylloscopus collybita</i> VIEILL	3	1,30	R	N
31. <i>Phylloscopus sibilatrix</i> BECHS	4	1,74	R	N
32. <i>Muscicapa striata</i> PALL.	2	0,86	R	N
33. <i>Anthus trivialis</i> L.	3	1,30	R	N
34. <i>Lanius collurio</i> L.	17	7,39	Sd	N
35. <i>Sturnus vulgaris</i> L.	5	2,14	R	N
36. <i>Passer montanus</i> L.	18	7,82	Sd	N
37. <i>Chloris chloris</i> L.	15	6,52	A	N
38. <i>Carduelis carduelis</i> L.	2	0,86	R	N
39. <i>Fringilla coelebs</i> L.	27	11,74	D	N
40. <i>Emberiza citrinella</i> L.	2	0,86	R	N

It is here to be mentioned immediately that in the very similar but still larger forest at Bockerek, that was in a more original state, besides the above mentioned ones, the following species could also be observed: *Ciconia nigra* L., *Crex crex* L., *Dryocopus martius* BREHM, *Dendrocopos minor* GÖTZ. And even here, in the neighbourhood, in the forest Gátlapos II at Beregsurány, the nest of *Asio flammeus* PONT. was found this year.

The large number of the rarus — rare — species is characteristic of the dominance conditions. This is completely regular due to the ecological richness of the biotope. The utilization of nesting levels, that is to say, the distribution of species according to these levels, is well-balanced and corresponds to the character of the biotope:

	species	percentage
Hatching at ground-level	7	17,5
Hatching at shrub-level	11	27,5
Hatching at tree-stem-level	10	25
Hatching at foliage level	12	30

Investigating the distribution of species according to their food, we are obtaining the ratios characteristic of the forest. It is shown by that that the biological part of this community is primarily in the domain of protecting the forests.

	species	percentage
Carnivore	4	10,—
Insectivore	26	65,—
Herbivore	7	17,5
Mixed eater	3	7,5

Summing up the above facts, it can be established that the mosaic-complex of the Tisza region in Szatmár—Bereg has an avifauna rich both in species and individual numbers. In this, a large number of mountain-elements — *Picus canus* GM., *Dryocopus martius* BREHM, *Columba oenas* L. — may be demonstrated. In addition, it is a considerable result of the work of observation that the presence of *Luscinia luscinia* L. was proved in these reaches of the Tisza, as well. There were found some species, too, which are belonging today to the rare nidatory birds in our country — *Crex crex* L., *Asio flammeus* PONT., *Ciconia nigra* L., *Corvus corax* L.

From the ancient avifauna of the area the most valuable bird associations are preserved for us by the forests, providing for most protection. The earlier mentioned species are all bound to forests, as well.

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