THE DISTRIBUTION ON HABITATS OF THE BIRD SPECIES MET IN THE BASIN OF TAZLĂU RIVER

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Abstract. The study refers to the distribution on habitats of the bird species met in Tazlau River. The study presents the field observations synthesis of the avifauna (birds' world) in the Basin of Tazlau River between 2000 and 2005. Following the observations we established the avifauna taxonomical composition distinctive to any habitat met in the Basin of Tazlau River.

Keywords: avifauna, habitat, ecological index of ecological significance.

Rezumat. Repartizarea pe habitate a speciilor de păsări întâlnite în bazinul râului Tazlău. Studiul prezintă sinteza observaţiilor de teren ale avifaunei din bazinul râului Tazlău în perioada 2000-2005. În urma observaţiilor am stabilit compoziţia taxonomică a avifaunei caracteristică fiecărui tip de habitat întâlnit în bazinul râului Tazlău.

Cuvinte cheie: avifaună, habitat, indici ecologici.

Introduction

The field observations were made at the beginning of 2000, in autumnal aspect, in the Basin of Tazlau River. The studied surface exceeds 1000 sqm. In the studied territory are met different biotopes types which are advantageous habitats for the different birds' species. The forest zone is represented by spruce forests, mixture forests, beech forests and chestnut oaks forests. The area of riversides, riverside coppices and of watercourses shelters a large number of birds' species from the total number of the inventoried species in the area. The entropic and the agro-ecosystem areas are represented by agricultural lands, orchards, lawns and meadows.

Materials and Methods

During 6 years of observation many methods were used. The most used was the one of transects. The lines along brooks, paths, roads were avoided because the existing vegetation in these places was different from the one existing in the forest.

At each observation, were it was possible, the birds were counted, the area/space and destination, the place were they were, the sex of the bird, their activity and the meteorological factors were estimated.

In the dense forests with high crowning was used the method of fixed points. Certain fixed points along transects were established in order to ease birds' shifting and the research on troubled field. The distance between two fixed points in the same transect did not exceeded 150 m. for Passeriformes species because these were hardly distinguished.

In the case of nocturne species the shifting was made either in the evening or in the night and the different species' identification was made by following the sounds made by males.

The direct observation was used via binoculars of 8x30 and binoculars of 7x40.

The sense of direction was established by using a map and a compass; medium's temperature t^0 was estimated with an air thermometer.

In order to make a quantitative dynamics very close to reality, the data concerning the estimated birds' establishments in different parts of the basin were used.

The ecological indexes used for avifauna's analysis from the studied area are: analytics (dominance, frequency, constancy) and synthetics (the index of ecological significance -Dzuba and the index of diversity - Simpson). The last ones allow the accumulation of some values of the analytical indicators by offering a general image on the interrelationships between the species of a biocoenosis.

The sinecologic analysis regarding the avifauna of the Basin of Tazlau River was made depending on both birds' distribution on habitats and on the entire basin.

Results and Discussion

From the total 375 species of birds existing in Romania, in the Basin of Tazlau River are 122 species, representing a percentage of 32.53%. As regards the superior taxonomic units, the families' number in the Basin of Tazlau River is 41, representing 64, 06% from the 64 families existing in Romania; the number of orders is 15, representing 78.64% from the 18 orders existing in the country.

Table 1. Comparative analyses in the taxonomic units of Tazlau's basin avifauna with the one existing in Romania.

No. of reg.	Taxonomic Unit	Romania	Tazlau Basin	Percentage %
1	No. of orders	19	15	78.94
2	No. of families	64	41	64.06
3	No. of species	375	122	32.53

The birds manifest certain preferences, thus being scattered in different habitats. Birds' distribution is highly influenced by external factors: geological structure, type of soil, hydrographical network, climatic conditions, type of vegetation, entropic activity.

From these, the vegetation is the determinant factor in avifauna' distribution, this is why the birds are separated on vegetation areas. The birds are distributed on crowns of trees, on their stumps, on little trees, on soil between herbs.

Sorts of biotypes from the Basin of Tazlau River:

I. Forestry area:
1. Spruce grove area
2. Area of mixture forests
3. Beech forests area
4. Oak groves area

II. Area of riversides, riverside coppices and watercourses.

III. Entropic area and agro-ecosystems area:
1. Agricultural lands
2. Orchards
3. Pasture lands
4. Lawns

The avifauna of spruce groves

The surfaces occupied with spruce forests are limited in the Basin of Tazlau River, reducing it self at the Gosmanu Mountains Peaks (Holmul Geamăna - 1351 m., Răchitiş Peak, Goşmanu - 1306 m, Cracul Geamăna - 1442 m). The dominant species are represented by the spruce. Other species are: Service Tree, Beech, Mountain Sycamore, Fir Tree, Birch Tree and pine. Some perimeters occupied by forests were broke up. The birds left from these areas to the neighbouring forests to search food and shelter.

The list of bird species which nestle in the spruce forests of Tazlau River's Basin is presented in the table 3.

Considering the seasonal dynamics, from the 44 inventoried species in the Basin of Tazlau River 23 are sedentary, 5 partial migratory, 15 summer guests and a species of winter guests comply with table 2:

Table 2. Phenological Categories of bird species in the spruce groves of Tazlau River's Basin.

Reg. no.	Phenological categories	No. of species	% from total
1	sedentary	23	52.27
2	partial-migratory	5	11.36
3	summer visitors	15	34.09
4	winter visitors	1	2.27

On the subject of birds' distribution in ecosystem, we noticed that the most populated habitat offered by a spruce forest is tree's crown. It shelters species which like better the thicket of spruce fir trees (*Parus cristatus, Parus ater, Parus montanus, Regulus ignicapillus, Regulus regulus, Loxia curvirostra*), the branches with fewer leaves, (*Fringilla coelebs, Pyrrhula pyrrhula),* or the thick leaves, making a halt close to the trunk (*Bubo bubo, Glaucidium passerinum, Strix aluco, Strix uralensis*).

On the spruces trunks we noticed the species: *Picus canus, Picus viridis, Dendrocopos major and Picoides tridactylus* from the Piciformes, and *Certhia familiaris* from the Passeriformes. In the arboretum bird species live and make nests on the soil or nearby, obtaining their food from this niche: *Turdus merula, Turdus philomelos, and Phylloscopus collybita and Erithacus rubecula.*

The species *Bonasia bonasia and Tetrao urogallus* sit on the soil.

Table 3. Ecological indexes considering the avifauna from spruce groves in the Basin of Tazlau River.

Reg. no.	Species	Dominancy			Frequency	Constancy		Index of ecological signification			Simpson Index of diversity
		Value	Code	Group		Code	Group	Val.	Code	Group	
1.	Accipiter gentilis	0.59	D_1	Subrecedent	28.12	C_2	Accessory	0.17	W_2	Recedent	15.28 %
2.	Accipiter nisus	0.59	D_1	Subrecedent	14.06	C_1	Accidental	0.08	W_1	Subrece-dent	
3.	Aquila chrysäetos	1.17	D_2	Recedent	9.38	C_1	Accidental	0.11	W_2	Recedent	
4.	Buteo buteo	0.59	D_1	Subrece-dent	13.28	C_1	Accidental	0.08	W_1	Subrece-dent	
5.	Falco subbuteo	0.29	D_1	Subrece-dent	9.38	C_1	Accidental	0.03	W_1	Subrece-dent	
6.	Bonasia bonasia	0.88	D_1	Subrece-dent	9.38	C_1	Accidental	0.08	W_1	Subrece-dent	
7.	Tetrao urogallus	0.59	D_1	Subrece-dent	48.44	C_2	Accessory	0.29	W_2	Recedent	
8.	Columba palumbus	1.47	D_2	Recedent	13.28	C_1	Accidental	0.2	W_2	Recedent	
9.	Streptopelia turtur	1.17	D_2	Recedent	16.41	C_1	Accidental	0.19	W_2	Recedent	
10.	Cuculus canorus	0.88	D_1	Subrece-dent	66.41	C_3	Constant	0.58	W_2	Recedent	
11.	Bubo bubo	0.88	D_1	Subrece-dent	13.28	C_1	Accidental	0.12	W_2	Recedent	
12.	Glaucidium passerinum	1.17	D_2	Recedent	9.38	C_1	Accidental	0.11	W_2	Recedent	
13.	Strix aluco	0.59	D_1	Subrece-dent	19.53	C_1	Accidental	0.12	W_2	Recedent	
14.	Strix uralensis	0.59	D_1	Subrece-dent	16.41	C_1	Accidental	0.1	W_2	Recedent	
15.	Dendrocopos	1.17	D_2	Recedent	28.12	C_2	Accessory	0.33	W_2	Recedent	

	major										
16.	Dryocopus martius	1.47	D_2	Recedent	79.69	C_4	Euconstant	1.17	W_3	Subdominant	
17.	Picus canus	1.17	D_2	Recedent	19.53	C_1	Accidental	0.23	W_2	Recedent	
18.	Picus viridis	1.17	D_2	Recedent	14.06	C_1	Accidental	0.16	W_2	Recedent	
19.	Picoides tridactylus	0.29	D_1	Subrece-dent	9.38	C_1	Accidental	0.03	W_1	Subrece-dent	
20.	Corvus corax	1.47	D_2	Recedent	87.5	C_4	Euconstant	1.29	W_3	Subdominant	
21.	Garrulus glandarius	0.88	D_1	Subrece-dent	76.56	C_4	Euconstant	0.67	W_2	Recedent	
22.	Parus ater	15.84	D_5	Eudomi-nant	96.09	C_4	Euconstant	15.22	W_5	Eudomi-nant	
23.	Parus cristatus	7.04	D_4	Dominant	92.19	C_4	Euconstant	6.49	W_4	Dominant	
24.	Parus montanus	5.28	D_4	Dominant	84.38	C_4	Euconstant	4.46	W_3	Subdominant	
25.	Sitta europaea	2.05	D_3	Subdominant	69.53	C_3	Constant	1.43	W_3	Subdominant	
26.	Erithacus rubecula	1.47	D_2	Recedent	37.5	C_2	Accessory	0.55	W_2	Recedent	
27.	Phoenicurus phoenicurus	1.17	D_2	Recedent	42.97	C_2	Accessory	0.5	W_2	Recedent	
28.	Turdus merula	0.88	D_1	Subrece-dent	61.72	C_3	Constant	0.54	W_2	Recedent	
29.	Turdus philomelos	1.47	D_2	Recedent	52.34	C_3	Constant	0.77	W_2	Recedent	
30.	Turdus viscivorus	1.17	D_2	Recedent	65.62	C_3	Constant	0.77	W_2	Recedent	
31.	Phylloscopus collybita	0.59	D_1	Subrece-dent	52.34	C_3	Constant	0.31	W_2	Recedent	
32.	Phylloscopus sibilatrix	0.88	D_1	Subrece-dent	61.72	C_3	Constant	0.54	W_2	Recedent	
33.	Sylvia atricapilla	1.17	D_2	Recedent	19.53	C_1	Accidental	0.23	W_2	Recedent	
34.	Regulus ignicapillus	9.09	D_4	Dominant	79.69	C_4	Euconstant	7.24	W_4	Dominant	
35.	Regulus regulus	11.73	D_5	Eudomi-nant	82.03	C_4	Euconstant	9.62	W_4	Dominant	
36.	Certhia familiaris	1.17	D_2	Recedent	22.66	C_1	Accidental	0.27	W_2	Recedent	
37.	Muscicapa striata	1.47	D_2	Recedent	32.81	C_2	Accessory	0.48	W_2	Recedent	
38.	Anthus trivialis	0.88	D_1	Subrecede	19.53	C_1	Accidental	0.17	W_2	Recedent	
39.	Troglodytes troglodytes	3.81	D_3	Subdominant	77.34	C_4	Euconstant	2.95	W_3	Subdominant	
40.	Carduelis chloris	1.76	D_2	Recedent	52.34	C_3	Constant	0.92	W_2	Recedent	
41.	Carduelis spinus	1.47	D_2	Recedent	30.47	C_2	Accessory	0.45	W_2	Recedent	
42.	Fringilla coelebs	7.33	D_4	Dominant	76.56	C_4	Euconstant	5.61	W_4	Dominant	
43.	Loxia curvirostra	2.64	D_3	Subdominant	82.03	C_4	Euconstant	2.17	W_3	Subdominant	
44.	Pyrrhula pyrrhula	0.59	D_1	Subrece-dent	52.34	C_3	Constant	0.31	W_2	Recedent	

15.28 %

In the spruce groves dominances' highest values are reached by *Parus ater* and *Regulus regulu species* which are eudominant.

In the group of Euconstant' Species are: *Dryocopus martius, Corvus corax, Garrulus glandarius, Parus ater, Parus cristatus, Parus montanus, Regulus ignicapillus, Regulus regulus, Troglodytes troglodytes, Fringilla coelebs, Loxia curvirostra*.

Comply with the index of ecological signification (Dzuba), the eudominant species are represented by *Parus ater*.

Simpson diversity index has a value of 15.28%.

Avifauna of the mixture forests

The mixture forests are better represented than the spruce groves in the studied area. They are placed on the west side of the basin, between Goşmanu Mountains and Tazlăului Depression. The dominant species are the spruce and the beech. Besides these, there are also ash trees, mountain sycamore and yoke elm.

Depending on the seasoning dynamics, the 55 bird species identified in the mixture forests classify comply with table 4:

Table 4. Phenological categories of bird species in the mixture forests of the Tazlau River Basin.

Reg. no.	Phenological categories	No. of species	% from total
1.	Sedentary	28	50.91
2.	Summer visitors	19	34.55
3.	Partial migratory	4	7.27
4.	Passage	2	3.64
5.	Winter visitors	1	1.82
6.	Accidentals	1	1.82

The brooder bird species are dispersed considering their food preferences. Those who love the coniferae live in the coniferae’s foliage or trunk (*Parus cristatus, Pyrrhula pyrrhula*), others live in the manyplies’ clusters (*Ficedula parva*, *Parus major*, *Sylvia atricapilla*). Most of them like better the tree lines, the sparse growth of trees and the glades. In the old forests the species number is higher than the one of the species that live in young forests.

The bird species and the ecological indexes of the mixed forests’ avifauna from Tazlau Basin are presented in the table no. 5:

Table 5. Ecological indexes of the mixed forests’ avifauna in the Basin of Tazlau River.

Reg. no.	Species	Dominance			Frequency	Constance		Index of ecological signification			Simpson index of diversity
		Value	Code	Group		Code	Group	Value	Code	Group	
1.	Accipiter gentilis	0.57	D_1	Subrecedent	27.4	C_2	Accessory	0.16	W_2	Recedent	15.28 %
2.	Accipiter nisus	0.29	D_1	Subrecedent	32.88	C_2	Accessory	0.1	W_2	Recedent	
3.	Aquila pomarina	0.29	D_1	Subrecedent	12.33	C_1	Accidental	0.04	W_1	Subrecedent	
4.	Buteo buteo	0.57	D_1	Subrecedent	30.82	C_2	Accessory	0.18	W_2	Recedent	
5.	Bonasia bonasia	1.14	D_2	Recedent	29.45	C_2	Accessory	0.34	W_2	Recedent	
6.	Scolopax rusticola	0.86	D_1	Subrecedent	39.73	C_2	Accessory	0.34	W_2	Recedent	
7.	Columba oenas	1.15	D_2	Recedent	79.45	C_4	Euconstant	0.91	W_2	Recedent	
8.	Columba palumbus	1.71	D_2	Recedent	67.12	C_3	Constant	1.15	W_3	Subdominant	
9.	Streptopelia turtur	0.29	D_1	Subrecedent	2.05	C_1	Accidental	0.01	W_1	Subrecedent	
10.	Cuculus canorus	0.86	D_1	Subrecedent	59.59	C_2	Accessory	0.51	W_2	Recedent	
11.	Athene noctua	0.57	D_1	Subrecedent	31.51	C_2	Accessory	0.18	W_2	Recedent	
12.	Bubo bubo	0.86	D_1	Subrecedent	30.14	C_2	Accessory	0.26	W_2	Recedent	
13.	Glaucidium passerinum	0.14	D_1	Subrecedent	1.37	C_1	Accidental	0	W_1	Subrecedent	
14.	Strix aluco	0.57	D_1	Subrecedent	36.3	C_2	Accessory	0.21	W_2	Recedent	
15.	Tyto alba	0.57	D_1	Subrecedent	13.01	C_1	Accidental	0.07	W_1	Subrecedent	
16.	Dendrocopos leucotos	0.29	D_1	Subrecedent	19.18	C_1	Accidental	0.06	W_1	Subrecedent	
17.	Dryocopus martius	0.86	D_1	Subrecedent	35.62	C_2	Accessory	0.31	W_2	Recedent	
18.	Picoides tridactylus	1.14	D_2	Recedent	32.19	C_2	Accessory	0.37	W_2	Recedent	
19.	Picus canus	0.57	D_1	Subrecedent	13.01	C_1	Accidental	0.07	W_1	Subrecedent	
20.	Picus viridis	0.14	D_1	Subrecedent	2.05	C_1	Accidental	0	W_1	Subrecedent	

21.	Lullula arborea	0.29	D_1	Subrecedent	1.37	C_1	Accidental	0	W_1	Subrecedent	
22.	Garrulus glandarius	2.57	D_3	Subdominant	97.26	C_4	Euconstant	2.52	W_3	Subdominant	
23.	Corvus corax	0.57	D_1	Subrecedent	45.89	C_2	Accessory	0.26	W_2	Subdominant	
24.	Aegithalos caudatus	0.86	D_1	Subrecedent	64.38	C_3	Constant	0.55	W_2	Recedent	
25.	Parus ater	3.71	D_3	Subdominant	84.25	C_4	Euconstant	3.15	W_3	Subdominant	
26.	Parus caeruleus	0.86	D_1	Subrecedent	28.08	C_2	Accessory	0.24	W_2	Recedent	
27.	Parus cristatus	2	D_3	Subdominant	67.12	C_3	Constant	1.35	W_3	Subdominant	
28.	Parus major	3.71	D_3	Subdominant	69.86	C_3	Constant	2.61	W_3	Subdominant	
29.	Parus montanus	2.29	D_3	Subdominant	96.58	C_4	Euconstant	2.22	W_3	Subdominant	
30.	Parus palustris	1.15	D_2	Recedent	60.27	C_3	Constant	0.69	W_2	Recedent	
31.	Sitta europaea	1.43	D_2	Recedent	58.9	C_3	Constant	0.85	W_2	Recedent	
32.	Erithacus rubecula	7.71	D_4	Dominant	80.82	C_4	Euconstant	6.27	W_4	Dominant	
33.	Phoenicurus phoenicurus	1.71	D_2	Recedent	51.37	C_3	Constant	0.88	W_2	Recedent	
34.	Turdus merula	8	D_4	Dominant	82.88	C_4	Euconstant	6.67	W_4	Dominant	
35.	Turdus philomelos	1.15	D_2	Recedent	33.56	C_3	Constant	0.39	W_2	Recedent	
36.	Turdus viscivorus	0.86	D_1	Subrecedent	50.68	C_3	Constant	0.44	W_2	Recedent	
37.	Sylvia atricapilla	0.86	D_1	Subrecedent	26.03	C_2	Accessory	0.22	W_2	Recedent	
38.	Sylvia curruca	0.57	D_1	Subrecedent	2.05	C_1	Accidental	0.01	W_1	Subrecedent	
39.	Phylloscopus collybita	6.57	D_4	Dominant	80.82	C_4	Euconstant	5.34	W_4	Dominant	
40.	Phylloscopus sibilatrix	1.71	D_2	Recedent	35.62	C_2	Accessory	0.61	W_2	Recedent	
41.	Regulus ignicapillus	2.86	D_3	Subdominant	81.51	C_4	Euconstant	2.34	W_3	Subdominant	
42.	Regulus regulus	3.14	D_3	Subdominant	91.1	C_4	Euconstant	2.88	W_3	Subdominant	
43.	Certhia familiaris	3.43	D_3	Subdominant	82.88	C_4	Euconstant	2.86	W_3	Subdominant	
44.	Ficedula albicollis	0.86	D_1	Subrecedent	35.62	C_2	Accessory	0.31	W_2	Recedent	
45.	Ficedula parva	0.29	D_1	Subrecedent	0.68	C_1	Accidental	0	W_1	Subrecedent	
46.	Muscicapa striata	1.71	D_2	Recedent	80.82	C_4	Euconstant	1.39	W_3	Subdominant	
47.	Anthus trivialis	1.15	D_2	Recedent	35.62	C_2	Accessory	0.41	W_2	Recedent	
48.	Troglodytes troglodytes	4	D_3	Subdominant	82.88	C_4	Euconstant	3.33	W_3	Subdominant	
49.	Carduelis carduelis	1.14	D_2	Recedent	59.59	C_3	Constant	0.69	W_2	Recedent	
50.	Carduelis chloris	1.14	D_2	Recedent	50.68	C_3	Constant	0.58	W_2	Recedent	
51.	Cocothraustes cocothraustes	3.14	D_3	Subdominant	59.59	C_3	Constant	1.88	W_3	Subdominant	
52.	Fringilla coelebs	10	D_5	Eudomi-nant	80.82	C_4	Euconstant	8.13	W_4	Dominant	
53.	Fringilla montifringilla	2	D_3	Subdominant	33.56	C_2	Accessory	0.67	W_2	Recedent	
54.	Loxia curvirostra	0.86	D_1	Subrecedent	50.68	C_3	Constant	0.44	W_2	Recedent	
55.	Pyrrhula pyrrhula	2.29	D_3	Subdominant	91.1	C_4	Euconstant	2.28	W_3	Subdominant	

25.25 %

Comply with the dominance; the eudominant species in the mixture forests are represented by *Fringilla coelebs.* The Euconstant species are: *Columba oenas, Garrulus glandarius, Parus ater, Parus montanus, Erithacus rubecula, Turdus merula, Phylloscopus collybita, Regulus ignicapillus, Regulus regulus, Certhia familiaris, Muscicapa striata, Troglodytes troglodytes, Fringilla coelebs, and Pyrrhula pyrrhula.* The highest values of the ecological signification index belong to the following species: *Erithacus rubecula, Turdus merula, Phylloscopus collybita, and Fringilla coelebs.* The diversity index has a 25.25% value.

The beech forests' avifauna

The beech forests are located at irregular intervals in the Basin of Tazlau River at altitudes of approx 500 sqm, on shadowed slopes. These exist in Tazlău Village (Măgura Mare), Berzunți (Vatala), Balcani (from Frumoasa – to west), Solonț (Cucuieți Village and Mitoc Hill), Măgura Hill in the course of Tazlăul Sărat. The dominant species is the beech. Other species which subsist in beech forests are: the chestnut oak, the sweet cherry

tree, the hornbeam and the lime tree. The herbaceous and little trees stratums are sparsely represented by: how-thorn, hazel tree, wild rose, elder and dogwood.

From the 50 registered species in beech forests 24 are sedentary, 3 partial migratory and 23 are summer visitors comply with table 6.

Table 6. Phenological Categories of Bird Species in the beech forests from Tazlau River Basin.

Reg. no.	Phenological category	No of species	% from total
1.	Sedentary	24	48
2.	Summer visitors	23	46
3.	Partial migratory	3	6

Table 7. Ecological indexes of the avifauna in the beech forest from the Basin of Tazlau River.

Reg. no.	Species	Dominance			Frequency	Constance		Index of ecological signification			Simpson index of diversity
		Value	Code	Group		Code	Group	Value	Code	Group	
1.	Accipiter gentilis	0.2	D_1	Subrecedent	42.75	C_2	Accessory	0.09	W_1	Subrecedent	
2.	Accipiter nisus	0.4	D_1	Subrecedent	36.64	C_2	Accessory	0.15	W_2	Recedent	
3.	Buteo buteo	0.2	D_1	Subrecedent	32.82	C_2	Accessory	0.07	W_1	Subrecedent	
4.	Falco subbuteo	0.1	D_1	Subrecedent	9.16	C_1	Accidental	0.01	W_1	Subrecedent	
5.	Scolopax rusticola	0.4	D_1	Subrecedent	31.3	C_2	Accessory	0.13	W_2	Recedent	
6.	Columba oenas	4.2	D_3	Subdominant	81.68	C_4	Euconstant	3.43	W_3	Subdominant	
7.	Columba palumbus	0.8	D_1	Subrecedent	42.75	C_2	Accessory	0.34	W_2	Recedent	
8.	Streptopelia turtur	0.8	D_1	Subrecedent	13.74	C_1	Accidental	0.11	W_2	Recedent	
9.	Cuculus canorus	1.6	D_2	Recedent	49.62	C_2	Accessory	0.79	W_2	Recedent	
10.	Bubo bubo	0.6	D_1	Subrecedent	31.3	C_2	Accessory	0.19	W_2	Recedent	
11.	Strix aluco	0.4	D_1	Subrecedent	31.3	C_2	Accessory	0.13	W_2	Recedent	
12.	Strix uralensis	0.4	D_1	Subrecedent	32.82	C_2	Accessory	0.13	W_2	Recedent	
13.	Upupa epops	0.2	D_1	Subrecedent	22.14	C_1	Accidental	0.04	W_1	Subrecedent	
14.	Dendrocopos leucotos	4	D_3	Subdominant	90.08	C_4	Euconstant	3.6	W_3	Subdominant	
15.	Dendrocopos major	2.4	D_3	Subdominant	93.13	C_4	Euconstant	2.24	W_3	Subdominant	
16.	Dendrocopos medius	0.2	D_1	Subrecedent	19.08	C_1	Accidental	0.04	W_1	Subrecedent	
17.	Dendrocopos minor	0.2	D_1	Subrecedent	13.74	C_1	Accidental	0.03	W_1	Subrecedent	
18.	Dryocopus martius	0.4	D_1	Subrecedent	46.56	C_2	Accessory	0.19	W_2	Recedent	
19.	Picus canus	1	D_1	Subrecedent	60.31	C_3	Constant	0.6	W_2	Recedent	
20.	Picus viridis	0.4	D_1	Subrecedent	23.66	C_1	Accidental	0.09	W_1	Subrecedent	
21.	Lullula arborea	0.2	D_1	Subrecedent	17.56	C_1	Accidental	0.04	W_1	Subrecedent	
22.	Oriolus oriolus	0.4	D_1	Subrecedent	29.01	C_2	Accessory	0.12	W_2	Recedent	
23.	Garrulus glandarius	1.4	D_2	Recedent	78.63	C_4	Euconstant	1.1	W_3	Recedent	
24.	Pica pica	1.2	D_2	Recedent	78.63	C_4	Euconstant	0.94	W_2	Recedent	
25.	Aegithalos caudatus	1.6	D_2	Recedent	74.81	C_3	Constant	1.2	W_3	Subdominant	
26.	Parus ater	0.4	D_1	Subrecedent	29.01	C_2	Accessory	0.12	W_2	Recedent	
27.	Parus caeruleus	2.4	D_3	Subdominant	67.94	C_3	Constant	1.63	W_3	Subdominant	
28.	Parus major	4.4	D_3	Subdominant	98.47	C_4	Euconstant	4.33	W_3	Subdominant	
29.	Parus palustris	4.6	D_3	Subdominant	78.63	C_4	Euconstant	3.62	W_3	Subdominant	
30.	Sitta europaea	6.6	D_4	Dominant	96.18	C_4	Euconstant	6.35	W_4	Dominant	
31.	Erithacus	7	D_4	Dominant	54.96	C_3	Constant	3.85	W_3	Subdominant	17.83 %

	rubecula										
32.	Phoenicurus phoenicurus	10.61	D_5	Eudominant	80.92	C_4	Euconstant	8.59	W_4	Dominant	17.83 %
33.	Turdus merula	1.8	D_2	Recedent	77.1	C_4	Euconstant	1.39	W_3	Subdominant	
34.	Turdus philomelos	0.8	D_1	Subrecedent	32.82	C_2	Accessory	0.26	W_2	Recedent	
35.	Turdus viscivorus	0.8	D_1	Subrecedent	48.85	C_2	Acceso-rie	0.39	W_2	Recedent	
36.	Sylvia atricapilla	0.6	D_1	Subrecedent	9.92	C_1	Accidental	0.06	W_1	Subrecedent	
37.	Sylvia curruca	0.6	D_1	Subrecedent	9.92	C_1	Accidental	0.06	W_1	Subrecedent	
38.	Phylloscopus collybita	1	D_1	Subrecedent	16.03	C_1	Accidental	0.16	W_2	Recedent	
39.	Phylloscopus sibilatrix	6.4	D_4	Dominant	57.25	C_3	Constant	3.66	W_3	Subdominant	
40.	Certhia familiaris	1.8	D_2	Recedent	67.94	C_3	Constant	1.22	W_3	Subdominant	
41.	Ficedula albicollis	9.2	D_4	Dominant	80.92	C_4	Eucons-tanta	7.44	W_4	Dominant	
42.	Muscicapa striata	0.2	D_1	Subrecedent	13.74	C_1	Accidental	0.03	W_1	Subrecedent	
43.	Anthus trivialis	1.2	D_2	Recedent	42.75	C_2	Acceso-rie	0.51	W_2	Recedent	
44.	Troglodytes troglodytes	0.6	D_1	Subrecedent	40.46	C_2	Acceso-rie	0.24	W_2	Recedent	
45.	Lanius collurio	0.8	D_1	Subrecedent	37.4	C_2	Acceso-rie	0.3	W_2	Recedent	
46.	Sturnus vulgaris	0.4	D_1	Subrecedent	41.22	C_2	Acceso-rie	0.16	W_2	Recedent	
47.	Carduelis chloris	0.8	D_1	Subrecedent	37.4	C_2	Acceso-rie	0.3	W_2	Recedent	
48.	Cocothraustes cocothraustes	0.8	D_1	Subrecedent	52.67	C_3	Constant	0.42	W_2	Recedent	
49.	Fringilla coelebs	11.21	D_5	Eudominant	90.08	C_4	Eucons-tanta	10.1	W_5	Eudomi-nant	
50.	Pyrrhula pyrrhula	1.2	D_2	Recedent	80.92	C_4	Eucons-tanta	0.97	W_2	Recedent	

Considering the dominance, the eudominant species in beech forests are: *Phoenicurus phoenicurus, Fringilla coelebs*. The Euconstant species are: *Columba oenas, Dendrocopos leucotos, Dendrocopos major, Garrulus glandarius, Pica pica, Parus major, Parus palustris, Sitta europaea, Phoenicurus phoenicurus, Turdus merula, Ficedula albicollis, Fringilla coelebs, and Pyrrhula pyrrhula*. Comply with the index of ecological signification the eudominant species is *Fringilla coelebs.* The value of the diversity index is 17.83%.

The chestnut oak forests avifauna.

The chestnut oak forests in the area are well represented. The south area of chestnut oak forests is a part of the *Querco petraeae – Carpinetum Association.* They reach even 400-500 sqm altitude on the sunny hills which descends form Berzunți Peak or Pietricica Peak to Tazlăului Valley. The distinctive species are the chestnut and the hornbeam. Other species: ash trees, silver lime tree, sycamore, sweet cherry tree, field maple, wild pear tree, crab wood apples, etc.

In the basin' north side the *Querco robori – Carpinetum Association* is distinguished. It is represented by low interfluves, terrace forests or slope foots. It grows on the soils of Balcani region, Frumoasa and Sănduleni. The chestnut oak is replaced by the oak.

Considering the seasoning dynamics the bird species met in chestnut oak forests are presented in the table 8:

Table 8. Phenological categories of bird species met in chestnut oak forests from the Basin of Tazlau River

Reg. no.	Phenological category	Species no.	% from total
1.	Sedentary	22	44
2.	Summer visitors	21	42
3.	Partial migratory	3	6
4.	Winter visitors	2	4
5.	Passage	1	2
6.	Accidentals	1	2

The eudominant specie in the chestnut oak forests is *Sturnus vulgaris*.

The highest frequency values are reached by the following species: *Accipiter gentilis, Buteo buteo, Columba oenas, Streptopelia turtur, Cuculus canorus, Caprimulgus europaeus, Upupa epops, Dendrocopos leucotos, Dendrocopos major, Parus palustris, Sitta europaea, Erithacus rubecula, Turdus merula, Turdus philomelos, Phylloscopus sibilatrix, Muscicapa striata, Ficedula albicollis, Anthus trivialis, Carduelis chloris, Coccothraustes coccothraustes, Fringilla coelebs.*

The ecological signification index (Dzuba) presents the highest values for dominant species: *Erithacus rubecula, Sturnus vulgaris, and Fringilla coelebs*.

The Simpson Diversity’ Index Value is 21.4% in the chestnut oaks forests from the Basin of Tazlau River

The area of riversides, riverside coppices and water courses.

There are riversides and riverside coppices located in several associations of plants between the localities in the area. The dim dominant species are: *Salix alba, Salix fragilis, Salix triandra, Salix purpurea, Salix viminalis, Populus alba and Populus nigra.* The characteristic little trees and herbes are : *Cornus sanguinea, Viburnum sp., Amorpha fruticosa, Morus alba, Rubus caesius, Calystiga sepium, Solanum dulcamara, Poa trivialis, Stachis palustris, Myosotis scorpioides, Ranunculus repens, Humulus lupulus, Lythrum salicaria, Tripholium album, Tripholium repens and Agrostis stolonifera*.

The hygrophilic and hydrophilic vegetation are represented by genus species like: *Scirpo, Phragmitem, Typha, Glyceria, Spargalium, Carex, Lemna, Utricularia, Ceratophyllum, Salvinia*.

From seasoning dynamics point of view the 87 bird species registered in this area are summarised in table 9.

Table 9. Phenological categories of the bird species from the riversides, riverside coppices and water courses in the Basin of Tazlau River.

Reg. no.	Phenological categories	No. of species	% from total
1.	Sedentary	30	34.48
2.	Summer visitors	39	44.83
3.	Winter visitors	6	6.9
4.	Partially migratory	4	4.6
5.	Passage	5	5.75
6.	Accidentals	2	2.3

Due to the ecological indexes computation, the highest dominancy values were obtained by the following species: *Parus palustris, Phoenicurus phoenicurus, Regulus ignicapillus, Sturnus vulgaris, Garrulus glandarius, Pica pica, and Parus caeruleus.*

The Euconstant species are: *Accipiter gentilis, Accipiter nisus, Scolopax rusticola, Cuculus canorus, Alcedo atthis, Upupa epops, Garrulus glandarius, Pica pica, Parus caeruleus, Parus palustris, Phoenicurus phoenicurus, Luscinia megarhynchos,*

Sylvia atricapilla, Regulus ignicapillus, Regulus regulus, Muscicapa striata, Troglodytes troglodytes, Sturnus vulgaris, and Passer montanus.

Comply with the index of ecological signification (Dzuba) the dominant species are: *Parus palustris and Sturnus vulgaris*.

The value of Simpson Diversity Index is 30.15% in riversides, riverside coppices and watercourses.

The Avifauna of anthropogenic landscape

The human settlements developed since ancient times, being concentrated along permanent Tazlau and its affluent' river beds. The villages are predominant, the only urban locality being Moineşti Town situated in the middle basin of Tazlau Sarat River.

The zone of Tazlau Basin was mostly protected against the polluting effect of excessive industrialization. Goşmanu Mountain was exploited because it has oil fields. Oil extraction, with everything that this involves, modified the eco-systems natural aspect. The north-west side of the Basin was polluted from Comăneşti until Oneşti Towns, situated in Trotus Basin. The rest of it remained "clear", the rural settlements being preferred by numerous bird species, due to the people's life natural conditions. The avifauna of villages and of Moineşti Town is reach and various. It is influenced by the vegetation type and even by the constructions made by people, some birds preferring to nest in the buildings.

Table no. 10 presents the seasoning dynamics of the bird species in the anthropogenic landscape.

Table 10. Phenological categories of bird species from the anthropogenic landscape in the Basin of Tazlau River.

Reg. no.	Phenological categories	No. of species	% from total
1.	Sedentary	31	43.66
2.	Summer visitors	29	40.85
3.	Passage	3	4.22
4.	Winter visitors	4	5.63
5.	Partial migratory	4	5.63

When calculating the ecological indexes, the biggest values were obtained by the species Passer *domesticus*.

In the anthropogenic landscape the following species are euconstant: *Streptopelia decaocto, Athene noctua, Dendrocopos syriacus, Galerida cristata, Corvus frugilegus, Corvus monedula, Garrulus glandarius, Parus major, Sitta europaea, Luscinia megarhynchos, Sylvia curruca, Lanius collurio, Sturnus vulgaris, Passer domesticus, Carduelis carduelis, Carduelis spinus and Fringilla coelebs.* Comply with the ecological signification index (Dzuba), the dominant specie is Passer *domesticus.* The value of diversity index is 37.39%.

The avifauna of agro-ecosystems.

The agro-ecosystems in the studied area expanded as a result of Tazlau' River and its affluent' adjacent populated areas. The biggest part of the natural eco-systems was replaced because the human beings modified it.

The agro-ecosystems are represented by agricultural lands, orchards, pastures and lawns.

The species that reach high dominancy values are: *Corvus frugilegus, Turdus pilaris, Sturnus vulgaris, Passer domesticus, Passer montanus, Fringilla coelebs and Carduelis carduelis.* The following species reach high frequencies: *Passer domesticus, Corvus frugilegus, Galerida cristata, Passer montanus, Alauda arvensis and Buteo buteo.*

Comply with the ecological signification index, the dominant species in agro-ecosystems are: *Corvus frugilegus, Passer montanus, Parus major, Passer domesticus and Carduelis carduelis.*

The values of Simpson Diversity Index are: 18.24% for agricultural lands, 20.47% for orchards, 14.56% for pastures and 13.87% for lawns.

Conclusions

From ornitho-fauna's perspective we can consider the Basin of Tazlau River a medium area by comparison with Romania.

The biotopes sorts in the Basin of Tazlau River are: spruce groves, mixture forests, pasture lands, oak groves, riversides, riverside coppices, watercourses, agricultural lands, orchards, pasture lands and lawns. In spruce groves we find 44 de species, the diversity index being 15.28%. In the mixture forests are 55 species, the diversity index being 25.25%. The beech forests shelter 50 species- the value of diversity index is 17.83%. In the oak groves were inventoried 50 species- the diversity index being 21.4%. The area of riversides, riverside coppices and watercourses has 87 bird species - The value of Simpson diversity index is 30.15%. We identified 62 bird species in the agro-ecosystems. The values of Simpson diversity index are: 18.24% for agricultural lands, 20.47% for orchards, 14.56% for pasture lands and 13.87% for lawns.

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