

THE BIRDS OF THE MUREŞ (MAROS) RIVER

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Introduction

In 1991, we conducted a 5th survey in a 22-year period for the estimation of the avifauna of the Mureş River (see References). On the previous occasions we examined a water course of 490 and 650 km respectively; only in 1991 did we succeed in researching the entire length of the 766-km river. We took our observations by line transect, following the water course on foot or by boat. In this way, between June 13th and July 25th, we observed a water course of 719 km, from the spring (Izvorul Mureşului) to the border with Hungary. In August we reexamined the whole length of the river (766 km) by car, completing our former data by the points system.

Material and method

We divided the entire length of the river in 50-km-long sections; the last (15th) section was longer (66 km). We numbered them starting from the spring (Izvorul Mureşului). At the 2nd and 15th courses we used the points system, while at the others we took notes continuously. The various results of the two working methods are arranged in the tables and graphs. The occurring lower values (at the 2nd and 15th courses) are the result of the points system.

Results

On the whole, we observed 123 bird species. Table 1 contains our complete notes, prospected on the 50-km sections. The last three columns include the following indices:

T = the total individual number of a species

F = the frequency of a species (= with the number of observations)

Q = the percentage of a species reported to the number of the individuals from all species

(N) $Q = T * 100 / N$

Now we shall speak more widely about each species:

Ciconiformes: The order is represented by 7 species, *Ardea cinerea* was the most frequent and had the greatest number of individuals. We found a single breeding colony in the 14th section. The night heron (*Nycticorax nycticorax*) was observed beginning from the 5th section, the last investigations showing a certain numerical increasing (Table 2).

Table 1. Species composition of bird communities at different sections of Maros valley

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	T	F	Q
<i>Phalacrocorax carbo</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	9	2	0,053
<i>Ixobrychus minutus</i>	-	1	-	-	5	2	-	-	-	1	-	-	-	-	-	9	9	0,053
<i>Nycticorax nycticorax</i>	-	-	-	-	16	2	6	2	2	15	3	3	3	2	3	57	34	0,337
<i>Ardeola ralloides</i>	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	1	0,006
<i>Egretta alba</i>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Egretta garzetta</i>	-	-	-	-	-	-	-	-	-	-	-	-	1	8	8	17	13	0,100
<i>Ardea cinerea</i>	-	-	-	1	25	-	2	36	21	29	39	59	33	44	1	290	104	1,712
<i>Ciconia ciconia</i>	21	1	60	4	9	4	-	10	4	2	1	1	-	3	-	120	38	0,709
<i>Ciconia nigra</i>	-	-	-	-	-	-	-	-	1	1	-	5	-	-	-	7	6	0,041
<i>Anas platyrhynchos</i>	1	-	4	33	23	-	29	29	31	5	-	3	1	9	37	205	43	1,210
<i>Anas strepera</i>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Anas querquedula</i>	9	-	-	1	3	-	-	2	-	-	-	-	-	-	-	15	4	0,089
<i>Milvus migrans</i>	-	-	-	-	-	-	-	-	1	-	1	-	-	11	-	13	10	0,077
<i>Accipiter gentilis</i>	-	-	-	-	-	-	-	-	-	-	-	-	1	5	-	6	5	0,035
<i>Accipiter nisus</i>	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2	2	0,012
<i>Buteo buteo</i>	5	1	3	-	-	-	-	2	3	4	5	3	2	3	-	31	28	0,183
<i>Aquila pomarina</i>	1	-	-	-	-	-	1	1	-	-	-	-	-	2	-	5	4	0,030
<i>Aquila heliaca</i>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Circus gallicus</i>	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	0,006
<i>Circus cyaneus</i>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Circus aeruginosus</i>	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	2	0,012
<i>Falco subbuteo</i>	1	2	-	1	1	4	11	2	3	5	1	3	1	3	-	38	26	0,224
<i>Falco vespertinus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	5	2	0,030
<i>Falco tinnunculus</i>	-	-	-	-	7	4	11	19	10	1	5	6	5	4	3	75	59	0,443
<i>Perdix perdix</i>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Coturnix coturnix</i>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Phasianus colchicus</i>	-	-	1	2	8	1	1	2	-	1	1	-	5	-	2	24	21	0,142
<i>Crex crex</i>	1	-	-	-	-	-	-	-	-	-	1	1	-	-	-	3	3	0,018
<i>Gallinula chloropus</i>	3	-	-	-	4	-	-	-	-	-	-	-	-	-	-	7	2	0,041
<i>Charadrius dubius</i>	-	-	3	2	-	7	6	9	1	-	-	14	39	-	-	81	43	0,478
<i>Vanellus vanellus</i>	-	-	-	40	53	-	8	1	2	-	-	-	-	5	-	109	12	0,644
<i>Calidris minuta</i>	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	5	4	0,030
<i>Tringa totanus</i>	-	-	-	-	-	-	1	3	-	-	-	-	4	-	-	8	3	0,047
<i>Tringa nebularia</i>	-	-	-	2	-	5	-	4	-	-	-	-	15	5	-	31	17	0,183
<i>Tringa ochropus</i>	-	-	-	-	-	-	5	3	2	-	2	-	4	6	-	22	14	0,130
<i>Tringa glareola</i>	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	2	0,012
<i>Tringa hypoleucos</i>	-	-	10	4	19	7	41	18	27	15	9	7	31	17	7	212	156	1,252
<i>Gallinago gallinago</i>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0,006

Table 1. (continued)

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	T	F	Q
<i>Larus ridibundus</i>	-	-	1	16	39	8	5	6	46	6	-	-	146	5	271	549	42	3,242
<i>Larus fuscus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	0,012
<i>Larus argentatus</i>	-	-	-	2	-	-	-	-	-	-	-	-	1	1	-	2	2	0,012
<i>Sterna hirundo</i>	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2	1	0,012
<i>Columba palumbus</i>	13	-	-	-	-	-	-	-	-	10	16	11	-	8	-	58	24	0,342
<i>Streptopelia decaocto</i>	-	2	4	2	27	22	22	-	1	6	2	-	7	3	40	138	51	0,815
<i>Streptopelia turtur</i>	49	-	-	-	1	-	1	2	2	-	6	8	-	-	-	69	20	0,407
<i>Cuculus canorus</i>	-	-	-	6	3	2	3	2	1	1	-	1	2	5	4	30	27	0,177
<i>Asio otus</i>	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	3	2	0,018
<i>Otus scops</i>	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	1	0,006
<i>Strix aluco</i>	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	1	0,006
<i>Caprimulgus europaeus</i>	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	2	2	0,012
<i>Apus apus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	63	-	63	2	0,372
<i>Alcedo atthis</i>	-	-	9	1	9	7	16	10	20	18	14	14	7	6	1	132	107	0,779
<i>Merops apiaster</i>	-	-	-	-	4	-	7	9	28	1	-	13	89	201	-	352	47	2,079
<i>Coracias garrulus</i>	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2	2	0,012
<i>Upupa epops</i>	7	-	-	-	2	2	-	3	2	-	-	-	1	1	-	18	13	0,106
<i>Picus viridis</i>	-	-	-	-	12	3	4	1	2	-	5	-	4	1	1	33	30	0,195
<i>Picus canus</i>	-	-	-	-	4	-	-	-	1	1	1	3	-	-	-	10	8	0,059
<i>Dryocopus martius</i>	-	-	-	-	-	-	-	-	-	-	2	1	1	1	-	5	4	0,030
<i>Dendrocopos major</i>	-	-	-	-	2	3	-	-	-	-	1	2	-	1	2	11	8	0,065
<i>Dendrocopos syriacus</i>	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	3	2	0,018
<i>Dendrocopos minor</i>	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	4	4	0,024
<i>Galerida cristata</i>	-	-	-	7	-	4	-	6	-	-	-	-	1	-	-	18	9	0,106
<i>Lullula arborea</i>	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2	1	0,012
<i>Alauda arvensis</i>	2	-	-	-	-	6	4	6	9	4	2	1	-	-	-	34	20	0,201
<i>Riparia riparia</i>	-	-	136	57	44	143	369	276	304	159	106	20	725	727	130	3196	92	18,873
<i>Hirundo rustica</i>	59	3	10	31	43	98	187	179	63	73	64	18	60	74	21	983	96	5,805
<i>Delichon urbica</i>	-	-	-	10	3	-	4	13	60	30	3	-	70	-	-	193	11	1,140
<i>Oriolus oriolus</i>	-	1	-	-	24	14	24	22	29	38	43	39	14	8	5	261	171	1,541
<i>Garrulus glandarius</i>	-	-	-	-	1	4	3	1	7	3	14	16	1	2	-	52	38	0,307
<i>Pica pica</i>	32	5	46	94	75	47	81	39	46	59	334	13	17	8	7	603	198	3,561
<i>Nucifraga caryocatactes</i>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Corvus monedula</i>	-	-	37	7	353	35	65	16	3	100	20	-	-	50	-	686	31	4,051
<i>Corvus frugilegus</i>	-	-	15	-	5	41	137	638	60	-	-	-	6	-	-	902	18	5,327
<i>Corvus cornix</i>	7	1	16	77	20	8	46	63	67	32	30	53	65	19	5	509	164	3,006
<i>Corvus corax</i>	2	2	-	-	-	2	-	4	8	2	11	2	-	-	-	33	19	0,195
<i>Parus palustris</i>	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	3	2	0,018

Table 1. (continued)

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	T	F	Q
<i>Parus ater</i>	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Parus caeruleus</i>	-	-	3	-	-	-	-	4	2	5	8	14	1	-	2	39	21	0,230
<i>Parus major</i>	5	-	3	-	6	2	3	14	-	6	13	15	13	-	3	83	40	0,490
<i>Aegithalos caedatus</i>	-	-	1	-	-	-	-	-	-	-	-	12	-	-	-	13	3	0,077
<i>Sitta europaea</i>	-	-	-	-	-	-	2	-	-	-	2	-	-	-	-	4	3	0,024
<i>Troglodytes troglodytes</i>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	2	2	0,012
<i>Saxicola rubetra</i>	21	-	1	-	-	2	2	1	1	-	-	-	-	-	-	28	11	0,165
<i>Saxicola torquata</i>	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	3	3	0,018
<i>Phoenicurus ochruros</i>	9	-	1	1	-	-	-	-	-	-	-	-	-	-	-	11	7	0,065
<i>Erithacus rubecula</i>	-	-	1	-	-	-	-	-	-	4	-	-	-	-	-	5	3	0,030
<i>Luscinia megarhynchos</i>	-	-	-	-	-	-	-	-	1	-	1	-	1	-	-	3	3	0,018
<i>Luscinia luscinia</i>	-	-	5	-	-	1	4	3	1	-	-	-	-	-	-	14	13	0,083
<i>Turdus pilaris</i>	18	1	7	-	-	-	8	-	-	-	-	-	-	-	-	34	12	0,201
<i>Turdus merula</i>	-	-	1	-	1	-	-	-	-	-	1	1	-	-	1	5	5	0,030
<i>Turdus philomelos</i>	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	3	2	0,018
<i>Turdus viscivorus</i>	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	6	1	0,035
<i>Locustella luscinioides</i>	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	2	0,018
<i>Locustella fluviatilis</i>	-	-	-	-	-	-	1	1	4	4	6	8	2	1	-	27	25	0,159
<i>Acrocephalus palustris</i>	1	-	10	10	8	13	12	7	-	2	-	1	-	-	-	64	46	0,378
<i>Acrocephalus scirpaceus</i>	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	6	4	0,035
<i>Acrocephalus arundinaceus</i>	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-	3	3	0,018
<i>Sylvia borin</i>	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	0,018
<i>Sylvia atricapilla</i>	-	-	2	-	2	5	9	5	12	17	30	18	8	6	2	116	95	0,685
<i>Sylvia communis</i>	-	-	10	3	4	10	3	9	4	6	4	1	4	-	-	58	51	0,342
<i>Sylvia curruca</i>	-	-	-	4	2	9	10	5	7	1	-	-	-	-	10	38	36	0,224
<i>Phylloscopus collybita</i>	-	2	2	-	1	-	3	-	1	4	9	4	3	1	-	30	25	0,177
<i>Muscicapa striata</i>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	0,006
<i>Anthus trivialis</i>	14	-	-	-	-	-	1	-	-	-	-	-	-	-	-	15	5	0,089
<i>Motacilla flava</i>	2	-	-	2	-	2	-	-	-	-	2	-	-	-	-	8	4	0,047
<i>Motacilla cinerea</i>	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	0,012
<i>Motacilla alba</i>	39	4	47	29	12	5	24	15	17	21	7	6	7	-	3	236	110	1,394
<i>Lanius collurio</i>	2	2	8	1	1	-	-	1	-	2	-	1	-	2	-	20	15	0,118
<i>Lanius minor</i>	-	-	-	-	-	-	-	1	1	1	-	-	-	-	1	4	4	0,024
<i>Lanius excubitor</i>	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	0,024
<i>Sturnus vulgaris</i>	2316	-	21	290	405	492	21	8	197	36	64	122	124	33	209	4338	93	25,617
<i>Passer domesticus</i>	4	3	2	66	40	54	22	27	13	16	6	12	36	-	-	301	37	1,777
<i>Passer montanus</i>	11	-	142	42	84	27	210	140	63	19	28	14	25	24	5	834	102	4,925

Table 1. (continued)

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	T	F	Q
<i>Fringilla coelebs</i>	3	-	3	-	-	-	1	-	8	3	2	1	-	3	-	24	19	0,142
<i>Serinus serinus</i>	1	1	-	-	-	-	-	-	-	-	1	-	-	-	-	3	3	0,018
<i>Carduelis chloris</i>	8	-	-	-	-	2	2	-	3	1	1	5	3	2	-	27	17	0,159
<i>Carduelis carduelis</i>	5	1	-	6	6	5	10	5	1	10	5	2	3	2	3	64	32	0,378
<i>Carpodacus erythrinus</i>	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	0,018
<i>Acanthis cannabina</i>	22	2	-	-	-	-	-	-	-	1	-	-	-	-	-	25	8	0,148
<i>Coccothraustes</i>	-	-	-	-	-	-	-	1	-	3	14	-	1	-	-	19	5	0,112
<i>coccothraustes</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Emberiza calandra</i>	-	-	-	-	-	1	1	-	1	-	-	-	2	-	-	5	5	0,030
<i>Emberiza citrinella</i>	1	-	2	-	-	1	-	-	-	1	4	3	-	-	-	12	12	0,071
<i>Emberiza schoeniclus</i>	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	0,012
Total individual number	2715	37	629	868	1424	1118	1452	1695	1205	786	657	570	1599	1401	778	16934		
Percentage individual number	16,0	0,2	3,7	5,1	8,4	6,6	8,6	10,0	7,1	4,6	3,9	3,4	9,4	8,3	4,6			
No. of species	46	19	37	37	49	45	51	58	52	53	53	48	50	46	28			
Relative Species Richness index (%)	37,4	15,5	30,0	30,0	39,8	36,6	41,5	47,2	42,3	43,1	43,1	39,0	40,7	37,4	22,8			

Anseriformes: Only the *Anas platyrhynchos* is frequently found, occasionally with young.

Falconiformes: The most frequent species are *Buteo buteo*, *Falco tinnunculus* and *Falco subbuteo*. We encountered nests of the last two species, as well as of *Milvus migrans* and *Accipiter gentilis*. In the 14th section, the young of *Falco vespertinus* had already left their nests.

Charadriiformes: The most characteristic of the species is *Tringa hypoleucos*. Its coherent line distribution begins from the 3rd section. The population fluctuated in the course of years. The black-headed gull (*Larus ridibundus*) occurred in limited number on summer before 1975, but it could be lately observed more frequently and in larger number of individuals (Table 2).

Table 2. Dynamics of some bird species in the Maros valley

Species	1970	1971	1978	1989	1991
<i>Nycticorax nycticorax</i>	17	19	4	49	57
<i>Tringa hypoleucos</i>	317	91	251	96	212
<i>Larus ridibundus</i>	-	12	18	27	549
<i>Streptopelia decaocto</i>	38	65	90	131	138
<i>Streptopelia turtur</i>	764	754	136	14	69
<i>Alcedo atthis</i>	7	30	26	196	132
<i>Merops apiaster</i>	113	181	54	116	352

Columbiformes: While the tute dove (*Streptopelia turtur*) population is diminished wit 91 % in the last 22 years, that of collared turtle dove (*Streptopelia decaocto*) one increased 3,5 times in the same period (Table 2.).

Coraciiformes: The species of kingfisher (*Alcedo atthis*) and bee-eater (*Merops apiaster*) present line distributions; their population is fluctuated too (Table 2.). We have found 29 breeding colonies of this latter.

Piciformes: The occurrence of *Dryocopus martius* this year was a novelty for us, even though we have known that it had breeding grounds before in the flooded area of the 14th section. It also appeared in 1991, in the 11th and 13th sections.

Table 3. The dynamics of the species *Riparia riparia* on the river Maros

Year	Length of examined section	Nr. of colonies	Nr. of nests	Total number	(Q)
1970	490 km	26	1297	688	4,58
1971	650 km	77	4544	2136	15,39
1978	650 km	50	2698	1542	13,56
1989	650 km	83	11908	4924	26,50
1991	766 km	93	9236	3196	18,87

Passeriformes. The most frequent species of this order is *Riparia riparia*, and its changes in number are reflected by Table 3. We think it is important to mention the expansion of *Locustella fluviatilis* in the Mureş valley. In the last 20 years it has extended its area approximately 360 km upstream, starting from the 14th section. *Carpodacus*

erythrinus can be found regularly in the 1st section in the last couple of years. The fieldfare (*Turdus pilaris*), as species in expansion coming from north, reached the Giurgeu depression in 1973, when two mature and three young individuals have been observed (Monteanu 1976). We found it for the first time nesting in 5th July 1978 near Senetea, where in a nest were four eggs. Following the flow of Mureş the first data in the succeeding localities were as follows: Joseni 5. 7. 1978 - one nest with three young, two empty nests and some flyoff young; Sârmaş - 1.7.1984. foddering parents in a nest; Gălăuţaş- 13.6.1984 one nest; Reghin- 18.5.1984 fodding parents in a nest, and 2.6.1984 in the same place the parents foddered already in six places; Glodeni- 26.6.1985- four pair of birds carried the food into the trees on the roud; Cipău- 27.6.1985 one nest with five eggs, on another nest a bird was brooding, and we found four other nests in building; Dateş - 10.6.1989 a food carrying mature bird. Based on these observations it is possible to demonstrate that the fieldfare (*Tudrus pilaris*) has extended into this area about 250 km into the Mureş valley. Begining with the mentioned data the species breeds regularly in this area. On the occasion of our investigations of 1989 this species ocured already along a section of 450 km.

Table 4 contains the species similarity indices (the Jaccard number). We compared each river section with the others on the basis of the following formula: $J_a = A \cdot 100 / B$ where A = the number of species that occur in both sections
B = the number of the species that do or do not occur in both courses.

Table 4. Quotient of Similarity (in percents) between pairs of sections

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	14	21	17	32	28	29	24	23	26	25	28	23	28	27	
2	18	20	19	24	24	29	22	18	19	23	24	22	25		
3	35	28	34	42	36	45	39	38	41	41	41	42			
4	33	32	37	31	29	41	40	44	40	44	46				
5	45	44	46	47	44	52	52	53	52	52					
6	40	38	48	43	44	48	54	56	55						
7	39	45	58	46	46	51	66	60							
8	37	40	57	45	42	54	62								
9	38	51	72	54	54	59									
10	40	41	47	63	56										
11	40	43	47	63											
12	38	45	44												
13	50	51													
14	40														
15															

These results are like the values we have shown in prior years, alternating between 14-66%.

The graph reflects the quantity and quality dividing of species in each river section. Besides the species observed in 1991, at the four previous occasions, we met the following species:

- | | |
|----------------------------------|---------------------------------------|
| 1. <i>Ardea purpurea</i> | 16. <i>Dendrocopos medius</i> |
| 2. <i>Aythya ferina</i> | 17. <i>Dendrocopos leucotos</i> |
| 3. <i>Aythya nyroca</i> | 18. <i>Remiz pendulinus</i> |
| 4. <i>Pernis apivorus</i> | 19. <i>Certhia familiaris</i> |
| 5. <i>Aquila chrysaetos</i> | 20. <i>Cinclus cinclus</i> |
| 6. <i>Falco peregrinus</i> | 21. <i>Oenanthe oenanthe</i> |
| 7. <i>Pluvialis squatarola</i> | 22. <i>Phoenicurus phoenicurus</i> |
| 8. <i>Philomachus pugnax</i> | 23. <i>Turdus torquatus</i> |
| 9. <i>Tringa erythropus</i> | 24. <i>Acrocephalus schoenobaenus</i> |
| 10. <i>Larus minutus</i> | 25. <i>Sylvia nisoria</i> |
| 11. <i>Chlidonias niger</i> | 26. <i>Phylloscopus sibilatrix</i> |
| 12. <i>Chlidonias leucoterus</i> | 27. <i>Anthus pratensis</i> |
| 13. <i>Columba oenas</i> | 28. <i>Sturnus roseus</i> |
| 14. <i>Athene noctua</i> | 29. <i>Pyrrhula pyrrhula</i> |
| 15. <i>Jynx torquilla</i> | |

If we take into account these species, too, based on the observations made on five occasions in the last 22 years, then we can say that the avifauna of the Mureş valley consists of 152 species.

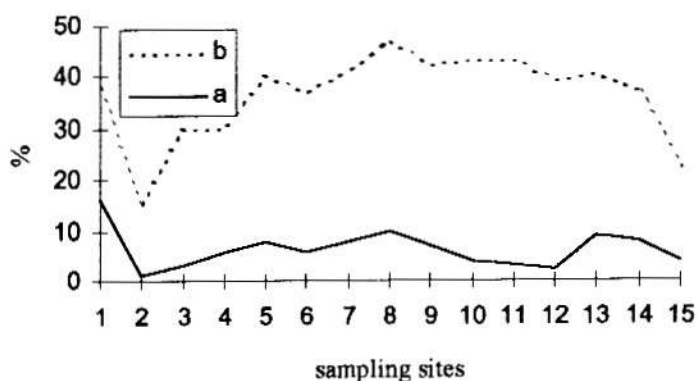


Fig. 1. The qualitative percentage division of the species (a), in each section, compared to a number of 123 species, and that of individuals (b) in each section, compared to the number of 16934.

Conclusions

The changes of the surroundings in the Mureş valley (changes in the river channel, deforestation, pollution) have influence upon the avifauna, too.

At the highest marsh course the deviation of the Mureş into a dug river bed threatens the marshes with drainage, and endangers the existence of several bird species (*Gallinago*

gallinago). Here *Carpodacus erythrinus* populations nest, whose faunal importance cannot be underestimated.

By the abolishment of branches, arms of the river, meanders, the places for nests will be suppressed, and these parts will be used only for rest. For example, *Ardea purpurea* once nested in the reed of the branch in Iernut, but now the new artificial ponds give no possibilities for birds to nest here.

The cutting of trees and bushes along the river also influences the breeding population. So, in the last years *Remiz pendulinus* was missing, a species that lived here before. Probably, the lack of places where they can build their nest, caused its absence. We have met this species last time in regions further away from the Mureş valley (Niraj valley, upstream from Reghin).

If the influence caused by water pollution cannot be seen immediately, the avifauna is menaced by the disappearance of the inferior order of animals.

Proposals

Since not any bird reservation exists along the entire length of the river, and based on our investigations made during a period of 20 years, we propose to be declared as protected area the following:

1. The section Voşlobeni and nearby peat bog.
2. All isles of the river, as well as the protection of lines of trees and shrubs bordering there.
3. The peat bog and the flood plain forest of Bezdin - Prundu Mare, where, among others, occur not less than 171 species of birds. From these eleven are in danger, six are rare, ten are disappeared as a result of changed living conditions and chase.

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