ORNITHOLOGICAL RESEARCHES ON THE PITEŞTI BASIN DURING 2003 – 2011

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Abstract
In this paper the authors show some ecological researches about the ornithofauna registered on the Piteşti Basin (part of the Argeş River Basins, site included in the Nature 2000 network) performed during 2003 – 2011. 189 birds' species were identified. They belong to 17 orders, the Passeriformes order (with 88 species) being the best represented regarding the number of species. The high number of species recorded from April to September suggests that the area is favourable for many species of birds that breed or eat here in the passage period. Concerning the constancy, the most species were the accidental species and concerning the dominance, the most species were the subrecedent species. Anas platyrhynchos, Fulica atra and Larus ridibundus were the eudominant species. Generally, their number of individuals was the biggest from November to February, the Piteşti Basin representing for them an important place of wintering. 41 species belong to Annexe 1 of the Birds Directive.

Keywords: birds, Piteşti Basin, Nature 2000

1. INTRODUCTION

The construction of hydroenergetic basins along the Argeş River (Vidraru, Oieşti, Curtea de Argeş, Vâlcele, Bascov, Piteşti, Goleşti) began four decades ago. Because of the anthropization of the landscape, qualitative and quantitative modifications appeared in the area, influencing the birds' coenoses. The area was intensely studied after year 1991 (Mestecăneanu et al., 2003, Gava et al., 2004a, Gava et al., 2004b, Gava et al., 2007, Conete et al., 2009), but the first researches were elaborated as early as the 1980's (Munteanu & Mătieş, 1983).

2. MATERIAL AND METHOD

The Piteşti Basin is situated at the confluence of the Argeş and Doamnei Rivers (Figure 1). It was built between 1967 and 1971 for economical and recreation purposes. It is 4220 meters long, has a surface of 141 ha and a water volume of 1.3 million m^3.

The basin is partially surrounded by a road with restricted traffic and partially by roads with intense traffic. The city of Piteşti is situated on its right shore and the Zăvoi village (which belongs to Ştefăneşti) is situated on its left shore. A beach was built in Tudor Vladimirescu neighbourhood and a mall and a highway are in its vicinity.

The very high silting of the basin has permitted the development of the wetland plants. The zone of the emersed plants (*Ceratophillum*, *Myriophyllum* etc.) is situated on the coastline, and along the shores there is aquatic and paludous vegetation, with species belonging to the genera *Phragmites*, *Typha*, *Carex*, and *Juncus* that has formed reed plots and reeds. The riverside coppice is represented by: *Salix* sp., *Alnus incana, Populus alba, Rosa canina*, *Rubus* sp., etc.

The characteristic climate of the zone of the Piteşti Basin is temperate-continental with cold winters and warm summers (Barco & Nedelcu, 1974).

The ornithological researches in the area of the Piteşti Basin were done between 2003 and 2011. The birds were identified using the itinerary and the fixed-point observation methods and the Collins Guide (Swensson et al., 2009). We used 10x50 binoculars and a 20-60x80 microscope.

Auditory observations were also made. The study was performed mainly in the morning, when the birds are the most active but complementary observations were also recorded in different moments of the day.

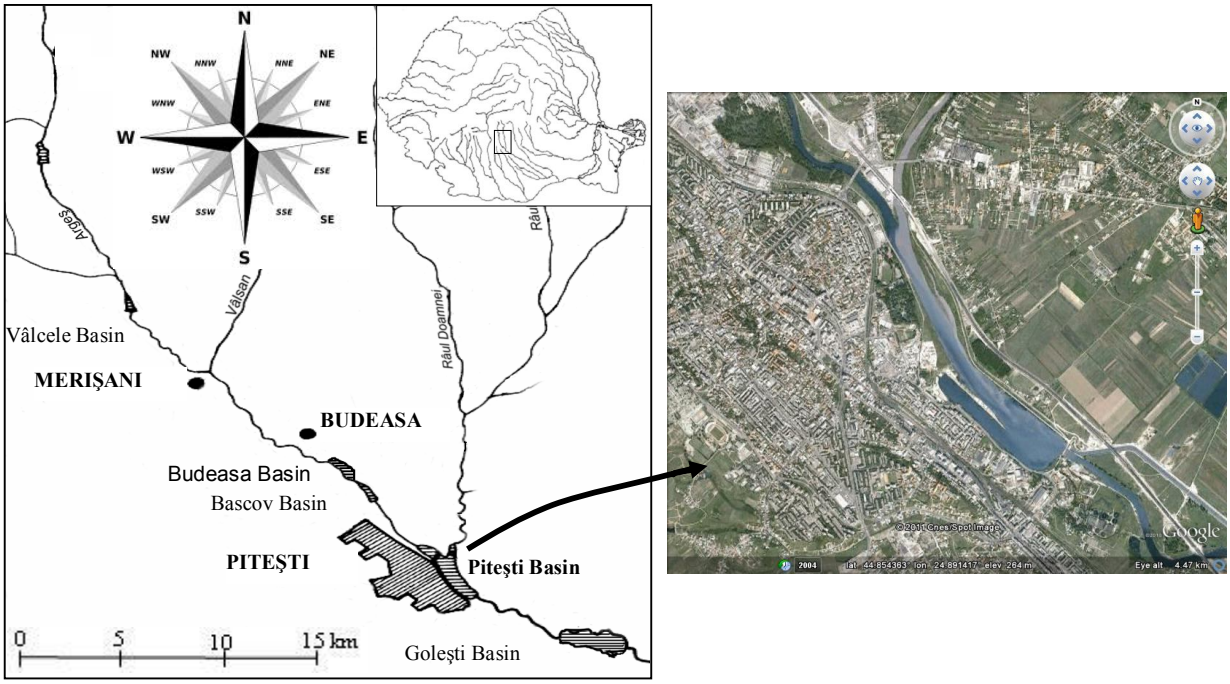

Figure 1. The upper and middle hydrographical basins of the Argeş River.

3. RESULTS AND DISCUSSIONS

During 2003 – 2010, we observed 189 species of birds, which belong to 17 orders (**Gaviiformes, Podicipediformes**, **Pelecaniformes**, **Ciconiiformes, Anseriformes, Falconiformes, Galliformes, Gruiformes, Charadriiformes, Columbiformes, Cuculiformes, Strigiformes, Caprimulgiformes, Apodiformes**, **Coraciiformes, Piciformes and Passeriformes**) and 45 families (Tab. 1). The orders represent 89.49% of the total orders of the Romanian avifauna, the families represent 70.31% and the species represent 49.98%. The best represented are the orders **Passeriformes** (88 species), **Charadriiformes** (22 species), **Anseriformes** (21 species) and **Falconiformes** (15 species).

The lowest number of species was recorded in January and February, in the second half of the winter season, and the highest number was in April, in the spring passage. In the autumn passage, the number of species was smaller. During the vernal and aestival seasons (May – July period) the number of species was also large, suggesting that the area is favourable for many species of birds that breed or eat here (Table 1).

Table 1. The list of the bird species identified in the Piteşti Basin during 2003 – 2011.

No.	Species	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Remarks	Constancy	Dominance	Birds Directie
1	*Gavia arctica*		■										■		C1	D1	AI
2	*Podiceps cristatus*	■	■	■	■	■	■	■	■	■	■	■	■		C2	D1	
3	*Podiceps grisegena*			■	■	■									C1	D1	
4	*Podiceps nigricollis*		■	■			■	■		■		■	■		C1	D1	

5	*Tachybaptus ruficollis*													C4	D3	
6	*Phalacrocorax carbo*													C4	D3	AI
7	*Phalacrocorax pygmeus*													C2	D1	AI
8	*Ixobrychus minutus*													C2	D1	AI
9	*Egretta garzetta*													C2	D1	AI
10	*Egretta alba*													C2	D1	AI
11	*Ardea cinerea*													C3	D1	
12	*Ardea purpurea*													C1	D1	AI
13	*Nycticorax nycticorax*													C2	D1	AI
14	*Cygnus olor*													C3	D3	AII/2
15	*Cygnus cygnus*													C1	D1	AI
16	*Branta ruficolis*													1 ind./8.XII.2005	C1	D1	AI
17	*Anser albifrons*													C1	D1	AII/2, AIII/2
18	*Anas platyrhynchos*													C4	D5	AII/1, AIII/1
19	*Anas strepera*													C1	D1	AII/1
20	*Anas acuta*													C1	D1	AII/1, AIII/2
21	*Anas penelope*													C1	D1	AII/1, AIII/2
22	*Anas querquedula*													C2	D1	AII/1
23	*Anas crecca*													C4	D4	AII/1, AIII/2
24	*Anas clypeata*													C1	D1	AII/1, AIII/2
25	*Tadorna tadorna*													C1	D1	
26	*Netta rufina*													2 ind./14.III.2003, 12 ind./10.X.2009	C1	D1	AII/2
27	*Aythya marila*													C1	D1	AII/2, AIII/2
28	*Aythya fuligula*													C3	D3	AII/1, AIII/2
29	*Aythya ferina*													C4	D4	AII/1, AIII/2
30	*Aythya nyroca*													C1	D1	AI
31	*Bucephala clangula*													C1	D1	AII/2
32	*Melanitta fusca*													1 ind./16.I.2004	C1	D1	AII/2
33	*Mergus merganser*													2 ind./5.XI.2003	C1	D1	AII/2
34	*Mergus albellus*													C1	D1	
35	*Aquila pomarina*													C1	D1	AI
36	*Buteo lagopus*													1 ind./11.I.2003, 1 ind./15.I.2005	C1	D1	
37	*Buteo buteo*													C2	D1	
38	*Pernis apivorus*	1												C1	D1	AI
39	*Accipiter gentilis*													C1	D1	
40	*Accipiter nisus*													C2	D1	
41	*Accipiter brevipes*													C1	D1	AI
42	*Circus aeruginosus*													C1	D1	AI
43	*Circus cyaneus*													C1	D1	AI
44	*Circus pygargus*													C1	D1	AI
45	*Falco peregrinus*													1 ind./16.II.2003, 1 ind./9.III.2005	C1	D1	AI
46	*Falco subbuteo*													C2	D1	
47	*Falco columbarius*													C1	D1	AI
48	*Falco vespertinus*													1 ind./25.IV.2006, 2 ind./5.IV.2009	C1	D1	
49	*Falco tinnunculus*													C1	D1	
50	*Perdix perdix*													C1	D1	AII/1, AIII/1
51	*Phasianus colchicus*													C1	D1	AII/1, AIII/1
52	*Coturnix coturnix*													C1	D1	AII/2
53	*Rallus aquaticus*													C1	D1	AII/2
54	*Porzana porzana*													C1	D1	AI
55	*Gallinula chloropus*													C3	D1	AII/2
56	*Fulica atra*													C4	D5	AII/1, AIII/2
57	*Vanellus vanellus*													C1	D1	AII/2
58	*Charadrius dubius*													C1	D1	

59	*Galinago media*												1 ind./11.I.2003, 1 ind./22.II.2010	C1	D1	AI
60	*Galinago gallinago*													C1	D1	AII/1, AIII/2
61	*Numenius arquata*												1 ind./20.IX.2008	C1	D1	AII/2
62	*Calidris minuta*													C1	D1	
63	*Actitis hypoleucos*													C1	D1	
64	*Tringa ochropus*													C1	D1	
65	*Tringa glareola*													C1	D1	AI
66	*Tringa nebularia*													C1	D1	AII/2
67	*Tringa totanus*													C1	D1	AII/2
68	*Tringa erythropus*													C1	D1	AII/2
69	*Tringa stagnatilis*													C1	D1	
70	*Himantopus himantopus*													C1	D1	AI
71	*Larus cachinnans/michahellis*													C4	D3	AII/2
72	*Larus canus*													C2	D3	AII/2
73	*Larus ridibundus*													C4	D5	AII/2
74	*Larus minutus*													C1	D1	
75	*Chlidonias niger*													C1	D1	AI
76	*Chlidonias leucopterus*													C1	D1	
77	*Chlidonias hybridus*													C2	D1	AI
78	*Sterna hirundo*													C2	D1	AI
79	*Columba palumbus*													C1	D1	AII/1
80	*Streptopelia turtur*												1 ind./16.V.2008	C1	D1	AII/2
81	*Streptopelia decaocto*													C4	D1	AII/2
82	*Cuculus canorus*													C2	D1	
83	*Otus scops*													C1	D1	
84	*Athene noctua*													C1	D1	
85	*Strix aluco*													C1	D1	
86	*Asio otus*													C1	D1	
87	*Caprimulgus europaeus*													C1	D1	AI
88	*Apus apus*													C2	D1	
89	*Alcedo atthis*													C3	D1	AI
90	*Merops apiaster*													C1	D1	
91	*Coracias garrulus*												1 ind./16.V.2008	C1	D1	AI
92	*Upupa epops*													C1	D1	
93	*Picus viridis*													C2	D1	
94	*Picus canus*													C1	D1	AI
95	*Dedrocopos major*													C2	D1	
96	*Dendrocopos syriacus*													C2	D1	AI
97	*Dendrocopos medius*													C1	D1	AI
98	*Dendrocopos minor*													C2	D1	
99	*Dendrocopos leucotos*												1 ind./5.XI.2004, 1 ind./8.X.2006, 1 ind./14.II.2007, 1 ind./22.II.2010	C1	D1	AI
100	*Dryocopus martius*												1 ind./16.V.2007, 1 ind./23.X.2007, 1 ind./14.VI.2008, 2 ind./31.VI.2008	C1	D1	AI
101	*Jynx torquilla*													C1	D1	
102	*Galerida cristata*													C3	D1	
103	*Alauda arvensis*													C2	D1	AII/2
104	*Lullula arborea*													C1	D1	AI
105	*Riparia riparia*													C2	D1	
106	*Hirundo rustica*													C2	D1	
107	*Delichon urbica*													C2	D2	
108	*Anthus trivialis*													C2	D1	

109	*Anthus campestris*												1 ind./12.VI.2006	C1	D1	AI
110	*Anthus spinoletta*													C2	D1	
111	*Motacilla flava*													C2	D1	
112	*Motacilla cinerea*													C1	D1	
113	*Motacilla alba*													C3	D1	
114	*Lanius collurio*													C2	D1	AI
115	*Lanius minor*													C1	D1	AI
116	*Lanius excubitor*													C1	D1	
117	*Oriolus oriolus*													C2	D1	
118	*Sturnus vulgaris*													C3	D3	AII/2
119	*Bombycilla garrulus*												30 ind./10.II.2004, 16 ind./22.II.2006, 20 ind./25.XII.2006	C1	D1	
120	*Garrulus glandarius*													C2	D1	AII/2
121	*Pica pica*													C4	D1	AII/2
122	*Corvus monedula*													C4	D3	AII/2
123	*Corvus frugilegus*													C4	D3	AII/2
124	*Corvus corone cornix*													C4	D1	AII/2
125	*Corvus corax*													C1	D1	
126	*Troglodytes troglodytes*													C2	D1	
127	*Prunella modularis*							1	1					C1	D1	
128	*Locustella luscinioides*													C1	D1	
129	*Locustella fluviatilis*													C1	D1	
130	*Locustella naevia*													C1	D1	
131	*Acrocephalus schoenobaenus*													C2	D1	
132	*Acrocephalus palustris*													C2	D1	
133	*Acrocephalus scirpaceus*													C2	D1	
134	*Arocephalus arundinaceus*													C3	D1	
135	*Hippolais icterina*													C1	D1	
136	*Sylvia nisoria*													C1	D1	AI
137	*Sylvia borin*													C1	D1	
138	*Sylvia atricapilla*													C2	D1	
139	*Sylvia communis*													C2	D1	
140	*Sylvia curruca*													C2	D1	
141	*Phylloscopus collybita*													C3	D1	
142	*Phylloscopus sybilatrix*													C1	D1	
143	*Phylloscopus trochilus*													C1	D1	
144	*Regulus regulus*													C1	D1	
145	*Regulus ignicapillus*													C1	D1	
146	*Ficedula hypoleuca*													C1	D1	
147	*Ficedula parva*						1							C1	D1	AI
148	*Ficedula albicollis*													C1	D1	AI
149	*Muscicapa striata*													C1	D1	
150	*Oenanthe oenanthe*													C1	D1	
151	*Saxicola rubetra*													C1	D1	
152	*Saxicola torquata*													C2	D1	
153	*Phoenicurus phoenicurus*													C1	D1	
154	*Phoenicurus ochruros*													C2	D1	
155	*Erithacus rubecula*													C2	D1	
156	*Lucsinia luscinia*												1 ind./10.VII.2006	C1	D1	
157	*Luscinia megarhynchos*													C2	D1	
158	*Turdus merula*													C3	D1	AII/2
159	*Turdus iliacus*													C1	D1	AII/2
160	*Turdus philomelos*													C2	D1	AII/2
161	*Turdus viscivorus*													C2	D1	AII/2

162	*Turdus pilaris*	■	■	■	■	■	■	■	■	■	■	■		C3	D1	AII/2
163	*Parus palustris*		■	■		■					■	■		C1	D1	
164	*Parus lugubris*		■	■						■				C1	D1	
165	*Parus caeruleus*	■	■	■	■	■	■	■	■	■	■	■		C4	D1	
166	*Parus ater*		■						■	■	■	■		C1	D1	
167	*Parus major*	■	■	■	■	■	■	■	■	■	■	■		C4	D1	
168	*Aegithalos caudatus*		■	■		■	■	■		■	■	■		C1	D1	
169	*Remiz pendulinus*				■	■	■	■	■	■	■			C1	D1	
170	*Sitta europaea*		■	■	■	■	■	■	■	■	■	■		C2	D1	
171	*Certhia familiaris*				■	■			■	■				C1	D1	
172	*Passer domesticus*	■	■	■	■	■	■	■	■	■	■	■		C4	D2	
173	*Passer montanus*	■	■	■	■	■	■	■	■	■	■	■		C4	D2	
174	*Fringilla coelebs*	■	■	■	■	■	■	■	■	■	■	■		C3	D1	
175	*Fringilla montifringilla*	■	■									■		C1	D1	
176	*Pyrrhula pyrrhula*		■	■							■	■		C1	D1	
177	*Coccothraustes coccothraustes*	■	■	■	■	■	■	■	■	■	■	■		C2	D1	
178	*Serinus serinus*		■		■	■		■	■			■		C1	D1	
179	*Carduelis chloris*	■	■	■	■	■	■	■	■	■	■	■		C3	D1	
180	*Carduelis spinus*		■	■								■		C1	D1	
181	*Carduelis carduelis*	■	■	■	■	■	■	■	■	■	■	■		C4	D1	
182	*Carduelis cannabina*	■	■	■	■	■	■	■	■	■	■	■		C2	D1	
183	*Carduelis flamea*											■	4 ind./5.XI.2004, 7 ind./7.XI.2007, 12 ind./21.XII.2008	C1	D1	
184	*Loxia curvirostra*									■				C1	D1	
185	*Emberiza cia*		■										2 ind./10.II.2004	C1	D1	
186	*Emberiza schoeniclus*	■	■	■	■	■	■	■	■	■	■	■		C4	D1	
187	*Emberiza cirlus*		■										4 ind./14.II.2007, 2 ind./22.II.2010	C1	D1	
188	*Miliaria calandra*			■	■	■	■	■	■	■	■			C2	D1	
189	*Emberiza citrinella*	■	■	■	■	■	■	■	■	■	■	■		C3	D1	
	Number of species	64	83	93	128	124	117	113	114	110	78	76	83			

Legend:
ind. – individual(s); **AI** – species that need special habitat conservation measures, to assure their survival and their reproduction in their distribution area, A**II/1** – species that may be hunted in the maritime or geographic zone of application for the Birds Directive, enumerated in the Annex II, part I; A**II/2** – species that may be hunted only in the Member States for which they are mentioned, are enumerated in the Annex II, part II; **C1** - accidental species, **C2** - accessory species, **C3** - constant species, **C4** - euconstant species; **D1** - subrecedent species, **D2** - recedent species, **D3** - subdominant species, **D4** - dominant species, **D5** - eudominant species;

Regarding the constancy, the most species were accidental species (C1, 110 species, 57.89%). They were followed by the accessory species (C2, 46 species, 24.21%), euconstant species (C4, 19 species, 10.00%) and constant species (C3, 15 species, 7.89%), (Table 1, Figure 2).
Regarding the dominance, the most species were subrecedent species (D1, 173 species, 91.05%). The 3 recedent species (D2) constituted 1.58 of all species, the 9 subdominant species (D3) constituted 1.58%, the 2 dominant species (D4) constituted 1.05% and the 3 eudominant species (D5) constituted only 1.58% of all identified species (Table 1, Figure 3).
87 species are present in the annexes of the Birds Directive. 41 of them (20.70%) belong to Annexe 1 (AI), being the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution (Table 1).
Taking into account the variation in the number of individuals of the 3 eudominant species (*Anas platyrhynchos*, *Fulica atra* and *Larus ridibundus*) counted each month at one field observation during 2003 – 2010 (Table 2, Figure 4), we remarked that the highest values were reached in January. In the case of *Fulica atra*, the highest value of the counted individuals was registered in

February. In November and December, the number of individuals was also large (half of the values registered in January and February). This means that the Piteşti Basin represents an important place of wintering for these species of birds. The lowest number of individuals was, generally, in April, May, June and July, when, comparatively, few birds remained here for breeding.

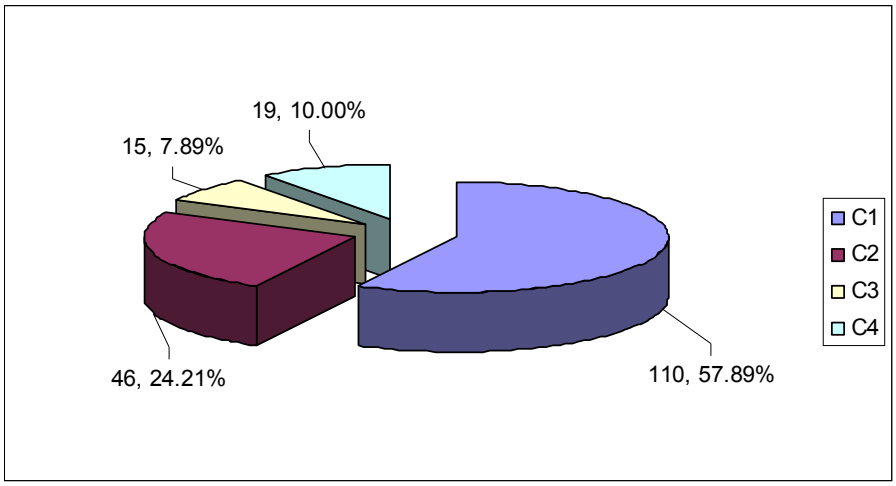

Figure 2. The distribution of the bird species according to constancy

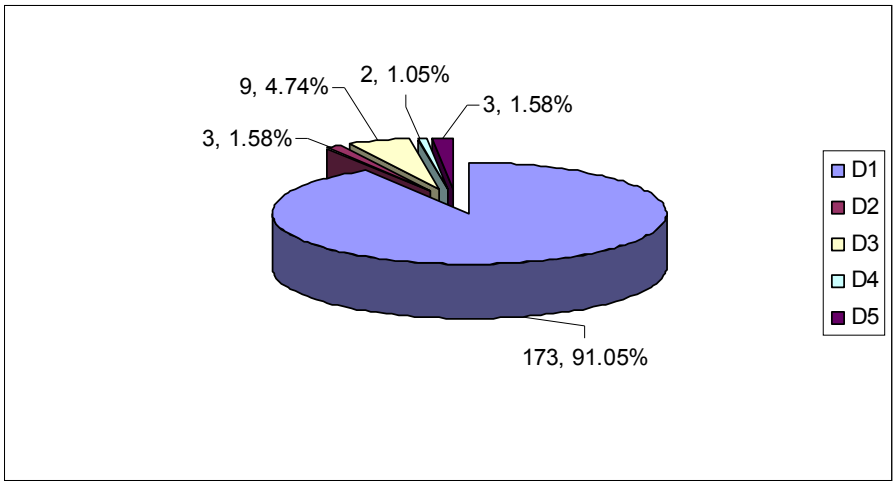

Figure 3. The distribution of the bird species according to dominance.

Table 2. The monthly number of individuals for the eudominant species registered during 2003 - 2010.

No.	Species	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Total
1	*Anas platyrhynchos*	3590	1702	888	358	334	302	404	813	1192	1367	1563	1872	14385
2	*Fulica atra*	2582	2945	1707	319	185	256	350	306	842	842	1228	1833	13395
3	*Larus ridibundus*	3589	2646	981	211	63	92	419	950	897	1279	1379	1663	14169

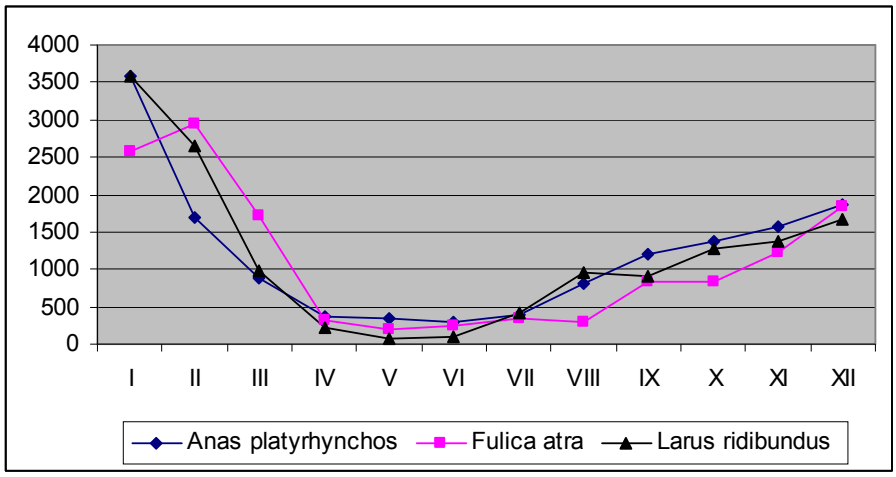

Figure 4. The evolution of the individuals of eudominant species identified during 2003 – 2011 in the Pitesti Basin.

4. CONCLUSIONS

The results obtained during the researches conducted in the period 2003 – 2010 in the Piteşti Basin led us to the conclusion that the area is important for the birds throughout the year. They have here good places for breeding, feeding and refuge. The basin also represents an important winter quarter for many species of birds.

Rare and protected species were identified in the area. 41 species are presented in the Annex I of the Birds Directive, being the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution (Munteanu, 2004).

The Piteşti Basin is part of the Argeş River Basins („Lacurile de acumulare de pe Argeş") together with the basins: Zigoneni, Vâlcele, Budeasa, Bascov and Goleşti. For all the reasons mentioned above, the site is included in the Nature 2000 network.

5. REFFERENCES

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