

ASSESSMENT ON THE PRESENT STATUS OF BIRD FAUNA FROM THE RESERVOIRS BACĂU – GALBENI - RĂCĂCIUNI (ROSPA063)

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Abstract. Our study presents the preliminary results of one monitoring program (starting from May 2011, still on-going). The aim of this program is to assess the present status of bird fauna from three reservoirs included in the Nature 2000 site Buhuși-Bacău-Berești Lakes, respectively, Bacău Lake, Galbeni Lake and Răcăciuni Lake. During the last years, there were developed some hydro-technique restoration programs in this area (Bacău Lake and Galbeni Lake). This works had impact especially on the breeding populations of the aquatic and semi-aquatic bird species that were forced to search suitable breeding habitats in other territories. The investigated reservoirs still keep their ornithological importance during bird-migration periods and like wintering areas for aquatic birds. During these periods, we can count daily more than 20,000 waterfowls, respectively, hundreds or thousands individuals of waders in these areas. But in the perimeter of Răcăciuni Lake, situated at the southern limit of the Nature 2000 site, we recorded a very high level of hunting activities that represent an important disturbing factor, especially, during the waterfowls' wintering time in this area.

Keywords: birds, Nature 2000 Network, anthropogenic pressure.

Rezumat. Evaluarea stării actuale de conservare a avifaunei lacurilor de acumulare Bacău – Galbeni – Răcăciuni (ROSPA063). În acest studiu, prezentăm rezultatele unui program de monitorizare inițiat în mai 2011 și aflat în derulare, urmărind evaluarea stării actuale a avifaunei prezente în perimetrul a trei lacuri de acumulare incluse în situl Natura 2000 ROSPA0063, Lacurile Buhuși-Bacău-Berești, respectiv, Bacău, Galbeni și Răcăciuni. În acest perimetru, pe parcursul ultimilor ani, au avut loc programe de reabilitare hidrotehnică (lacurile de acumulare Bacău și Galbeni). Aceste lucrări au afectat populațiile clocitoare aparținând majorității speciilor acvatice și semiacvatice care au fost silit să caute habitate favorabile cuibăritului în alte perimetre. Acumulările acvatice luate în studiu își păstrează importanța ornitologică pe durata perioadelor de pasaj și în timpul iernii, când adăpostesc peste 20000 de exemplare de păsări acvatice și sute, chiar mii de exemplare de păsări limicole. În perimetrul lacului de acumulare Răcăciuni, aflat la extremitatea sudică a sitului, vânătoarea constituie un element de presiune deosebit de ridicat, în special pe durata iernării păsărilor acvatice în acest teritoriu.

Cuvinte cheie: păsări, rețeaua Natura 2000, presiune antropică.

INTRODUCTION

The Nature 2000 network is a result of the European Union environmental politics, representing one network of protected areas inside the European Community that comprises special protected areas (SPA) and sites of community importance (SCI). This network was implemented following to stop the biodiversity decline on the European continent, to stop the populations' decline of threatened, near threatened and vulnerable wild species of plants and animals and to protect the habitats diversity in this part of the world.

The selection of these sites was done only using scientific criteria, following the qualitative and quantitative evaluation of the biological communities, but also using the European classification of the bio-geographical regions, habitats and the list of species of community interest or importance. The key-indicator to select one site in order to be included in the Nature 2000 network is the favourable conservation status of it, established through the populations trends and distribution in the area of the species of community importance, the size and the status of the suitable habitats for the biological communities from that territory. These criteria were proposed by specialists and appear in two European directives: Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC amended through the Directive 2009/147/EC). The first presents the different types of habitats (very important being those included in the Annexes 1 – priority natural habitats of community interest that need designation of special protected areas in order to be preserved) and some list of plants and animals species, other than the birds (relevant being those included in the Annexes 2 – priority plants and animal species, excepting the birds that need designation of special protected areas in order to be preserved). The second one uses the results of the program Important Birds Areas implemented by Birdlife International that established quantitative criteria for different categories of bird species: globally threatened species, species of restrictive biome, endemic species and gregarious species during the migration time or in wintering areas; the bird species included in the Annexes 1 of the Birds Directive represent key-criteria for designation of one special protected area, like part of the Nature 2000 network. There are, also, some criteria to select the areas of special conservation: animal species of community interest that need a strictly protection status; plant species of community interest that need a strictly protection status; animal species of community interest that need special management measures of exploitation and plant species of community interest that need special management measures of exploitation.

The management plans for these sites follow to maintain or improve the level of the biological communities like principal aim. For this reason, there are possible only the economic activities that do not disturb the wild life and the ecosystems function and stability inside these sites, like the traditional activities or the sustainable exploitation of the natural resources. The ecological restoration projects can be implemented inside these territories, all the resulted

areas of these projects becoming areas of special conservation (by national legislation). The ROSPA0063 “Reservoirs Buhuși-Bacău-Berești” (HG 1284/2007) includes the reservoirs formed around the confluence of the Siret and the Bistrița Rivers, with the geographical coordinates: eastern longitude 27°7'12" and northern latitude 46°14'50". The total surface of the sites is about 5,575.5 hectares (ha). The suitable habitats for the bird breeding cover large surfaces, especially, on the lakes tale areas, but this site presents a huge importance especially during the birds migration time and for the waterfowls wintering. During the birds spring and autumn migration periods, but also, during winter, we can record constantly more than 20,000 individuals of waterfowl species on the surfaces of the five reservoirs included in this Nature 2000 site.

METHODS

Starting from May 2011, we begun a monitoring program following the birds fauna diversity and dynamics on the lakes Răcăciuni, Bacău and Galbeni, including the perimeter of Blue Marsh – Balta Albastră (an old natural reserve related to Galbeni Lake) and in the nearest vicinity of the lakes. We visited the area twice per month during the birds migration time (March – May, respectively, July – October), while in the breeding season and in the birds wintering period (November – February), we visited the site monthly. Our study is still on-going, trying to help the caretaker of this Nature 2000 site to improve the existing management plan.

During the first visit, we established some fixed points of counting and the transects along the southern and western shores of Bacău Lake, western shore of Răcăciuni Lake, respectively, a median transect inside Blue Marsh, western and southern shores of Galbeni Lake.

We used binocular and telescope in order to identify the bird species and counting the birds effectives; for some species, we used also the vocal activity of the male birds. For counting the birds effectives we used to count all the birds for the groups less than 200 individuals, while for the largest groups we used the band counting method (especially, for the aquatic and wader species).

RESULTS AND DISCUSSIONS

The principal aim of our monitoring program was to assess the present status of the diversity of bird and to evaluate the dynamics of the bird populations present on the four research areas: Răcăciuni Lake, Galbeni Lake, Blue Marsh and Bacău Lake. We took Blue Marsh perimeter like separate site because in the first part of our study Galbeni Lake area was completely dry, due to the hydro-technique rearrangements started during the year 2006 in this area.

These lakes were included in the Nature 2000 sites ROSPA0063 using the previous studies done during the second part of the '90 (FENERU, 2002), but also one recent evaluation study done in the middle part of the last decade (MÜLLER *et al.*, 2005). There is one monographic study (RANG, 2002), but it gives only qualitative data on the presence or absence of bird species in the investigated area.

We recorded 122 bird species, presented in table 1. The birds effectives given for the migration and wintering periods use the minimum and maximum values recorded in field during one work day. For the birds breeding effectives, we notice:

- the monitoring activity was done from the lake shores and we did not go inside the reed beds from the shores or by boat to the compact reed beds from the lake surface;
- the effectives were estimated through the adult birds recorded along the transects during the period May – July 2011;
- in table 1, the mark “x?” represents the probability of the breeding presence of that species, but we did not find nests and we did not count the breeding effectives, while the mention like “1-2p?” means that we cannot exclude the possibility of the presence of some breeding pairs of that species because we met adult or juveniles birds during the breeding period in that area.

We notice the unequal presence of birds in the four visited areas that is the result of different habitats parameters but also of different situations recorded during our field study.

As we mentioned, Galbeni Lake was the subject of one important hydro-technique rearrangements program being completely dry during the first part of our study. The flooding of this surface began just in late October 2011, which explains the absence of numerous aquatic and semi-aquatic birds in the list of recorded birds fauna from this lake perimeter because these bird species did not find suitable conditions during the annual biological cycle in 2011. As we can see in table 1, the diversity of bird species typical for the wetlands and aquatic ecosystems is very low. The waders do not appear in this list because these birds were in the ending stage of their autumn migration when the water appeared in the lake area. The bird species from this group present an autumn migration in “waves” that in the eastern Romania begins in middle July and ends in the first part of November; some species appear just in a specific period of the autumn passage while others, like *Vanellus vanellus*, *Tringa totanus*, *Numenius arquata*, etc. appear in three or four “migration waves”. During the spring of 2012 year, the bird spring migration began later due the extremely cold second part of the winter, so, we recorded just three wader species on the tail area of this lake (*Vanellus vanellus*, *Limosa limosa* and *Actitis hypoleuca*).

Table 1. The diversity of bird fauna on the surface and in vicinity of the reservoirs around the confluence of the Bistrita and the Siret Rivers.
 Tabel 1. Diversitatea avifaunei inventariate în perimetrul și vecinătatea acumularilor din zona de confluență a râurilor Bistrița și Siret.

No.	Species	Răcăciuni			Bacău			Blue Marsh (Balta Albastră)			Galbeni		
		Migration	Breeding	Wintering	Migration	Breeding	Wintering	Migration	Breeding	Wintering	Migration	Breeding	Wintering
1.	<i>Cygnus olor</i>	12 - 72	2 - 3p	3 - 123	17 - 32	1p?	88 - 146	2 - 6	-	-	6 - 14	-	-
2.	<i>Cygnus cygnus</i>	-	-	28	24 - 40	-	150 - 158	-	-	-	-	-	-
3.	<i>Anser anser</i>	280 - 430	-	-	12 - 24	-	32 - 126	-	-	-	110 - 148	-	-
4.	<i>Anser albifrons</i>	310 - 680	-	-	18 - 120	-	56 - 230	-	-	-	120 - 320	-	-
5.	<i>Anas platyrhynchos</i>	1300 - 5230	20 - 22p	4200 - 6000	170 - 2300	8 - 10p	1350 - 2000	18 - 160	2p	60 - 110	52 - 330	-	220 - 380
6.	<i>Anas strepera</i>	80 - 240	5 - 8p	-	-	4 - 6p	5p	-	1 - 2p	-	80 - 120	-	-
7.	<i>Anas acuta</i>	6 - 24	-	8 - 18	3 - 5	-	-	2 - 6	-	-	10 - 12	-	-
8.	<i>Anas penelope</i>	130 - 325	-	186 - 380	48 - 64	-	32 - 228	32 - 60	-	-	28 - 116	-	48 - 62
9.	<i>Anas crecca</i>	240 - 1120	-	340 - 1500	74 - 220	-	64 - 430	24 - 120	-	34 - 118	192 - 280	-	132 - 180
10.	<i>Anas querquedula</i>	60 - 172	10 - 14p	-	-	2 - 4p	-	28 - 54	-	-	220 - 278	-	-
11.	<i>Anas clypeata</i>	14 - 56	-	-	6 - 18	-	-	12 - 26	-	-	4 - 68	-	-
12.	<i>Tadorna tadorna</i>	12 - 18	-	-	-	-	-	-	-	-	-	-	-
13.	<i>Aythya marila</i>	4 - 16	-	-	-	-	-	-	-	-	-	-	-
14.	<i>Aythya fuligula</i>	76 - 134	-	45 - 156	6 - 32	1p?	78 - 186	8 - 18	-	-	12 - 144	-	-
15.	<i>Aythya ferina</i>	800 - 1300	12 - 15p	282 - 590	34 - 78	3 - 4p	38 - 410	28 - 92	-	12 - 72	165 - 310	-	156 - 320
16.	<i>Aythya nyroca</i>	68 - 170	2 - 4p	-	12 - 32	1p?	-	-	-	-	28 - 42	-	-
17.	<i>Bucephala clangula</i>	44 - 172	-	226 - 318	-	-	12 - 108	-	-	-	-	-	-
18.	<i>Somateria mollissima</i>	-	-	-	1	-	-	-	-	-	-	-	-
19.	<i>Mergus merganser</i>	-	-	6 - 14	-	-	-	-	-	-	-	-	-
20.	<i>Mergellus albellus</i>	-	-	111 - 148	-	-	-	-	-	-	-	-	-
21.	<i>Perdix perdix</i>	X	5 - 7p	X	X	-	X	X	2p	X	X	6 - 8p	X
22.	<i>Coturnix coturnix</i>	X	3 - 4p	-	X	-	-	X	-	-	X	4 - 6p	-
23.	<i>Phasianus colchicus</i>	X	5 - 7p	X	X	2 - 3p	X	X	4 - 5p	X	X	4 - 5p	X
24.	<i>Phalacrocorax carbo</i>	420 - 1400	-	32 - 152	15 - 56	-	5	12 - 18	-	-	5 - 18	-	118 - 158
25.	<i>Phalacrocorax pygmeus</i>	42 - 70	-	-	12 - 28	-	-	-	-	-	24 - 52	-	-
26.	<i>Botaurus stellaris</i>	X?	1 - 2p	-	-	-	-	X?	2 - 3p	-	X?	2 - 4p	-
27.	<i>Ixobrychus minutus</i>	12 - 16	6 - 8p	-	3 - 8	2 - 3p	-	5 - 8	3p	-	-	-	-
28.	<i>Egretta garzetta</i>	65 - 120	3 - 8p?	-	2 - 12	1 - 2p?	-	12 - 16	1 - 2p	-	-	-	-
29.	<i>Ardea alba</i>	62 - 90	2 - 5p?	-	4 - 22	1 - 2p	1	4 - 10	1p?	-	2 - 14	-	-
30.	<i>Ardea cinerea</i>	18 - 64	5 - 10p?	-	5 - 18	-	5	6 - 10	1 - 2p?	-	3 - 22	-	-
31.	<i>Ardea purpurea</i>	8 - 12	2 - 3p?	-	-	-	-	-	-	-	-	-	-
32.	<i>Nycticorax nycticorax</i>	18 - 82	3 - 10p?	-	-	-	-	-	1 - 2p?	-	-	-	-
33.	<i>Platalea leucorodia</i>	52 - 78	X?	-	-	-	-	-	-	-	-	-	-
34.	<i>Ciconia ciconia</i>	44 - 120	-	-	-	-	-	-	-	-	-	-	-
35.	<i>Podiceps cristatus</i>	28 - 52	-	-	12 - 46	2p?	-	2 - 6	-	-	12 - 34	-	4 - 6
36.	<i>Podiceps griseogena</i>	8 - 14	-	2 - 6	2 - 4	-	-	-	-	-	2 - 6	-	-
37.	<i>Podiceps nigricollis</i>	12 - 20	-	-	2 - 4	1p?	-	-	-	-	4 - 6	-	-
38.	<i>Tachybaptus ruficollis</i>	18 - 32	-	10 - 12	-	1 - 2p?	22	-	-	-	8 - 22	-	4
39.	<i>Haliaeetus albicilla</i>	1	-	1 - 2	1	-	-	-	-	-	-	-	-
40.	<i>Buteo buteo</i>	2 - 7	1 - 2p?	2 - 6	2 - 4	-	-	-	-	1 - 2	1 - 3	-	2 - 4
41.	<i>Buteo lagopus</i>	2 - 4	-	2 - 5	1 - 3	-	-	-	-	1	1 - 2	-	1 - 3
42.	<i>Milvus migrans</i>	1 - 3	-	-	-	-	-	-	-	-	-	-	-
43.	<i>Falco subbuteo</i>	2 - 4	1 - 2p?	-	-	-	-	1 - 2	-	-	1 - 3	-	-

44.	<i>Falco tinnunculus</i>	2 - 4	-	-	2 - 5	-	-	-	1-3	-	-	2 - 5	-	-
45.	<i>Gallinula chloropus</i>	18 - 20	8 - 10p	-	3 - 7	3 - 5p	-	-	4 - 10	3 - 4p	-	12 - 15	-	-
46.	<i>Fulica atra</i>	1700 - 3200	20 - 25p	4200 - 6300	350 - 620	10 - 15p	56 - 220	54 - 110	64 - 230	5 - 6p	220 - 280	-	-	-
47.	<i>Vanellus vanellus</i>	84 - 240	10 - 13p	-	-	-	-	-	26 - 64	4 - 6p	18 - 120	-	-	-
48.	<i>Charadrius dubius</i>	4 - 12	2p	-	-	1 - 2p	-	-	12 - 14	2 - 3p	-	-	-	-
49.	<i>Calidris alpina</i>	36 - 120	-	-	-	-	-	-	-	-	-	-	-	-
50.	<i>Limicola falcinellus</i>	18 - 32	-	-	-	-	-	-	-	-	-	-	-	-
51.	<i>Calidris alba</i>	20 - 56	-	-	-	-	-	-	-	-	-	-	-	-
52.	<i>Calidris temminckii</i>	18 - 58	-	-	-	-	-	-	-	-	-	-	-	-
53.	<i>Gallinago gallinago</i>	4 - 8	-	-	10 - 18	-	-	-	-	-	-	-	-	-
54.	<i>Lymnocyptes minimus</i>	6 - 10	-	-	4 - 14	-	-	-	-	-	-	-	-	-
55.	<i>Limosa limosa</i>	80 - 640	-	-	-	-	-	-	-	-	68 - 320	-	-	-
56.	<i>Actitis hypoleucos</i>	12 - 23	-	-	25 - 40	-	-	-	-	-	4 - 18	-	-	-
57.	<i>Tringa ochropus</i>	42 - 60	-	-	35 - 62	-	-	-	-	-	-	-	-	-
58.	<i>Tringa glareola</i>	65 - 110	-	-	120 - 160	-	-	-	-	-	-	-	-	-
59.	<i>Tringa stagnatilis</i>	56 - 115	-	-	32 - 46	-	-	-	-	-	-	-	-	-
60.	<i>Tringa totanus</i>	240 - 430	-	-	120 - 310	-	-	-	-	-	-	-	-	-
61.	<i>Tringa erythropus</i>	140 - 320	-	-	110 - 280	-	-	-	-	-	-	-	-	-
62.	<i>Philomachus pugnax</i>	120 - 420	-	-	118 - 420	-	-	-	-	-	-	-	-	-
63.	<i>Recurvirostra avosetta</i>	6 - 12	-	-	16 - 22	-	-	-	-	-	-	-	-	-
64.	<i>Larus fuscus</i>	28 - 42	-	-	3 - 16	-	-	-	-	-	4 - 12	-	-	-
65.	<i>Larus cachinnans</i>	120 - 600	10 - 14p	48 - 254	52 - 140	12 - 16p	32 - 46	18 - 65	18 - 65	-	34 - 86	26 - 112	-	-
66.	<i>Larus michahellis</i>	75 - 280	5 - 7p?	12 - 52	30 - 180	3 - 5p?	8 - 44	25 - 70	25 - 70	-	28 - 42	34 - 56	-	-
67.	<i>Larus canus</i>	4 - 12	-	-	-	-	-	-	-	-	2 - 7	-	-	-
68.	<i>Larus ridibundus</i>	380 - 1400	25 - 35p	28 - 212	160 - 560	17 - 22p	18	120 - 230	120 - 230	-	150 - 240	12 - 56	-	-
69.	<i>Larus minutus</i>	28 - 36	-	-	-	-	-	-	-	-	-	-	-	-
70.	<i>Chlidonias hybrida</i>	56 - 120	3 - 5p	-	-	-	-	32 - 56	32 - 56	-	98 - 142	28 - 40p?	-	-
71.	<i>Chlidonias niger</i>	16 - 32	2 - 4p	-	-	-	-	-	-	-	52 - 86	12 - 16p?	-	-
72.	<i>Chlidonias leucopterus</i>	4 - 18	2 - 8p	-	-	-	-	-	-	-	32 - 116	14 - 20p?	-	-
73.	<i>Sterna hirsundo</i>	42 - 80	2 - 4p	-	-	2 - 3p?	-	28 - 36	28 - 36	3 - 5p	-	-	-	-
74.	<i>Columba palumbus</i>	32 - 56	X?	-	X	-	-	X	X	-	-	-	-	-
75.	<i>Streptopelia decaocto</i>	-	-	-	-	-	-	-	-	7 - 10p	-	-	-	-
76.	<i>Cuculus canorus</i>	X	14 - 16p	-	X	5 - 7p	-	X	X	6 - 8p	-	8 - 12p	-	-
77.	<i>Merops apiaster</i>	58 - 110	X?	-	-	-	-	-	-	-	42 - 64	-	-	-
78.	<i>Upupa epops</i>	14 - 22	X?	-	-	-	-	-	-	-	10 - 16	-	-	-
79.	<i>Galerida cristata</i>	X	8 - 10p	X	X	5 - 7p	X	X	X	3 - 4p	X	10 - 12p	7 - 46	-
80.	<i>Alauda arvensis</i>	X	20 - 22p	-	X	5 - 7p	-	X	X	8 - 10p	-	30 - 40p	-	-
81.	<i>Hirundo rustica</i>	240 - 450	70 - 80p	-	X	40 - 60p	-	150 - 210	150 - 210	15 - 18p	-	-	-	-
82.	<i>Delichon urbica</i>	160 - 220	60 - 80p	-	X	15 - 20p	-	80 - 120	80 - 120	9 - 12p	-	-	-	-
83.	<i>Anthus campestris</i>	X	5 - 7p	-	X	1 - 2p	-	X	X	2 - 3p	-	-	-	-
84.	<i>Motacilla flava</i>	X	10 - 12p	-	X	4 - 6p	-	X	X	2 - 4p	-	X	8 - 10p	-
85.	<i>Motacilla alba</i>	X	6 - 8p	-	X	2 - 4p	-	X	X	1 - 2p	-	X	6 - 8p	-
86.	<i>Phoenicurus phoenicurus</i>	X	X?	-	X	-	-	X	X	1 - 2p	-	X	2 - 3p	-
87.	<i>Phoenicurus ochruros</i>	X	X?	-	X	-	-	X	X	2 - 4p	-	X	-	-
88.	<i>Oenanthe oenanthe</i>	X	1 - 2p	-	X	-	-	X	X	-	-	X	1 - 2p	-
89.	<i>Saxicola rubetra</i>	X	3 - 5p	-	X	-	-	X	X	2 - 4p	-	X	4 - 5p	-
90.	<i>Saxicola torquata</i>	X	2 - 4p	-	X	-	-	X	X	1 - 2p	-	X	2 - 3p	-
91.	<i>Locustella luscinioides</i>	X	7 - 12p	-	X	2 - 4p	-	X	X	3 - 4p	-	X	X?	-
92.	<i>Acrocephalus scirpaceus</i>	X	35 - 45p	-	X	8 - 12p	-	X	X	16 - 20p	-	X	X?	-

93.	<i>Acrocephalus arundinaceus</i>	X	20 - 35p	-	X	6 - 8p	-	X	8 - 12p	-	X	X?	-
94.	<i>Acrocephalus schoenobaenus</i>	X	15 - 20p	-	X	2 - 4p	-	X	3 - 5p	-	X	X?	-
95.	<i>Sylvia atricapilla</i>	X	X?	-	X	-	-	X	2 - 3p	-	X	5 - 7p	-
96.	<i>Sylvia borin</i>	X	X?	-	X	-	-	X	3 - 4p	-	X	3 - 4p	-
97.	<i>Sylvia communis</i>	X	X?	-	X	-	-	X	4 - 6p	-	X	5 - 6p	-
98.	<i>Parus major</i>	X	X?	X	X	-	X	X	3 - 4p	X	X	-	X
99.	<i>Cyanistes coeruleus</i>	X	X?	X	X	-	X	X	1 - 2p	X	X	-	X
100.	<i>Panurus biarmicus</i>	X	X?	-	X	X?	-	X	X?	-	X	X?	-
101.	<i>Lanius collurio</i>	X	8 - 10p	-	X	2 - 3p	-	X	-	-	X	8 - 12p	-
102.	<i>Lanius minor</i>	X	5 - 7p	-	X	2 - 4p	-	X	-	-	X	8 - 10p	-
103.	<i>Lanius excubitor</i>	X	-	4-15	X	-	-	X	-	2 - 6	X	-	1-4
104.	<i>Oriolus oriolus</i>	X	X?	-	X	-	-	X	1 - 2p	-	X	-	-
105.	<i>Sturnus vulgaris</i>	1400 - 2200	X?	-	210 - 480	-	-	X	8 - 10p	-	430 - 1800	-	-
106.	<i>Pica pica</i>	X	4p	6	X	3 - 4p	4 - 12	X	2p	X	X	-	2
107.	<i>Corvus monedula</i>	X	-	X	X	-	10 - 12	X	-	X	X	-	-
108.	<i>Corvus frugilegus</i>	X	-	X	X	X	18 - 34	X	-	X	X	-	12
109.	<i>Corvus cornix</i>	X	-	X	X	X	4 - 16	X	-	X	X	-	X
110.	<i>Corvus corax</i>	2 - 4	1 - 2p?	1-4	X	X	-	X	-	1 - 2	X	-	-
111.	<i>Passer domesticus</i>	X	X?	X	X	X	X	X	40 - 60 p	X	X	X?	X
112.	<i>Passer montanus</i>	X	X?	X	X	X	X	X	10 - 12 p	X	X	X?	X
113.	<i>Fringilla coelebs</i>	X	X?	X	-	X	X	-	-	X	-	-	X
114.	<i>Fringilla montifringilla</i>	36 - 82	-	32-114	-	X	-	12 - 58	-	12 - 32	-	-	-
115.	<i>Coccothraustes coccothraustes</i>	X	X?	X	-	X	-	-	-	X	-	-	X
116.	<i>Serinus serinus</i>	12 - 24	-	-	-	-	-	-	-	-	8 - 14	-	-
117.	<i>Carduelis chloris</i>	X	X?	-	X	X	-	X	4 - 5p	-	X	-	-
118.	<i>Carduelis carduelis</i>	X	X?	18	X	X	12 - 46	X	6 - 10p	32 - 114	X	-	X
119.	<i>Carduelis cannabina</i>	4 - 12	-	-	-	-	-	-	2 - 6p	-	4 - 16	-	-
120.	<i>Miliaria calandra</i>	X	10 - 12p	-	X	5 - 8p	-	X	5 - 7p	-	X	15 - 20p	-
121.	<i>Emberiza schoeniclus</i>	X	12 - 15p	26	X	8 - 10p	18	X	6 - 8p	X	X	X?	-
122.	<i>Emberiza citrinella</i>	X	X?	-	X	-	-	X	1 - 2p	X	-	-	-

Regarding the aquatic bird species, the waterfowls (Anseriformes) present the highest diversity with 13 species, most of them appearing in this lake area in the end-of the birds' autumn passage in 2011. The low diversity and the small effectives of waterfowls and Coot (*Fulica atra*) that were recorded during the winter 2011 – 2012 could be explained through the later flooding of the lake surface and low level of the water. We believe that during the next winters, the diversity and effectives of the wintering waterfowls on the territory of Galbeni Lake will increase, reaching the levels observed previously of the human intervention in the area (FENERU, 2002). Unexpected great effectives of the three species of *Chlidonias* sp. were recorded on the 1st May 2012 on this lake, especially for the White-Winged Black Tern (*Chlidonias leucopterus*) that appears rarely, just during the migration time and with very small effectives in the other great hydrological basin from eastern Romania, the Prut River (GACHE, 2002; CAZACU, 2007). We cannot exclude the possibility that this species could have a breeding population concentrated on the south-western part of Galbeni Lake-surface.

For the reed beds passerines (*Locustella luscinioides*, *Acrocephalus* sp., *Panurus biarmicus* and *Emberiza schoeniclus*) the increase of breeding effectives is possible but not surely – the reed beds were expanded due the long dryness period but as we saw, large parts of these reed beds are formed by fragile plants and has a strong ruderal character, so, the number of recorded birds through direct observation or by songs in these reed beds was very small (we met a similar situation on the Jijioara River valley, in the perimeter of the ponds Focuri where the water surface decreased steadily starting from 2009).

We assess that the typical birds for wetlands and aquatic ecosystems will return in Galbeni Lake perimeter, probably, in the annual biological cycle corresponding for the year 2012, the stop-over of the waterfowls and wader species on the small aquatic surfaces appeared in late October 2011 being a prove for this possibility.

The Blue Marsh had status of natural reserve and it was included in the ROSPA0063 perimeter. This marsh is related to Galbeni Lake and it was affected by a slowly decay process through the significant reduction of the water surface, the outstanding development of the paludous vegetation, shrubs and bushes, probably emphasized through the temporarily but long period of dryness in Galbeni Lake perimeter (near six years). In these conditions, the diversity of bird fauna was reduced constantly, in the same time, appearing passerine species that use to build their nests in shrubs and bushes. In the second part of June 2011, we met juveniles of some heron species that could breed in the compact reed beds, willows and wickers from the central part of the marsh - *Ixobrychus minutus*, *Egretta garzetta*, *Ardea alba*, *A. cinerea* and *Nycticorax nycticorax*.

During the wintering time, we recorded small flocks of ducks concentrated in the area of confluence of the Bistrița River and the Siret River, but the birds were flying in the direction of other aquatic surfaces from the area, especially, in and from the southern direction (probably, the birds were strolling from the marsh area to Galbeni or Răcăciuni Lakes).

The reservoir Bacău was the subject of one hydro-technique restoration program during the most part of the year 2011. In this situation, we believe that the aquatic and semi-aquatic birds that were recorded during our visit in May 2011 in this area lost the breeding season of this year after the discharge of the water from the dam lake perimeter done to permit the technique works of the restoration program. Starting from June 2011, the aquatic surface has decreased steadily, so in later August 2011 there were present just some small and shallow water meshes, where the birds were concentrated. Between the recorded bird species in that period, we mention the presence of some wader species, including a group of 22 individuals of Avocets (*Recurvirostra avosetta*), protected species in our country, included in the Red Book of Vertebrates from Romania (BOTNARIUC *et al.*, 2005).

The quasi-complete absence of the water in this dam lake perimeter made impossible the stop-over of the waterfowls and wader species during the first part of the autumn migration in 2011. This situation explains the small birds effectives recorded on the surface of Bacău Lake and the completely absence of some bird species that are in the autumn passage in the period August - October from the bird fauna list for this lake.

We notice the early arrival of the wintering visitor Whooper Swan (*Cygnus cygnus*) in this area, starting from the first middle part of November, but also the appearance of a very rare vagrant bird species in Romania - the eider (*Somateria mollissima*), one male being observed closed to one group of White-fronted Goose (*Anser albifrons*) on the 13th of November 2011 on this lake. In the same day, we met one immature individual of White-tailed Eagle (*Haliaeetus albicilla*) flying in the south - south - eastern direction.

During the wintering time, on Bacău Lake we recorded constantly the biggest effectives of swans from the area; excepting the visit from the first part of November, when the Mute Swan (*Cygnus olor*) was present with 88 individuals, in the next winter field visits, we recorded more than one hundred individuals of Mute Swan (*Cygnus olor*) and Whooper Swan (*C. cygnus*) every time, the effectives of the second one being near constantly. In the middle January 2012, we recorded more than 3,100 ducks representing seven species, the dominant species being *Anas platyrhynchos* and *Aythya ferina*, but we notice the unusual presence of five pairs of Gadwall (*Anas strepera*) that is a summer visitor in Romania, observed very close on the lake tail area. Probably, the mild and warm weather during the first two months of the winter 2011- 2012 can represent one explanation of this species presence in the area.

During our monitoring program, we recorded the greatest specific diversity of bird fauna, but also, the biggest effectives of birds on than perimeter of Răcăciuni Lake, including on the downstream sector of the Siret River from the dam Răcăciuni. As we saw in the field, the birds are concentrated neither in the lake tail area, nor on the part that seems like a complex of open waters and canals (near the wooded eastern slope of the lake), but on the areas close the western

shore, where there appear some points with shallow waters. During the autumn passage and in the winter, we recorded large flocks of Coot (*Fulica atra*) very close to the dam area, while, on the downstream sector of the Siret River, groups of tens herons (*Ardea alba* and *A. cinerea*), hundred ducks (*Anas platyrhynchos*, *A. crecca* and *Aythya ferina*) and gulls (*Larus cachinnans* and *Larus ridibundus*) were recorded constantly in the autumn migration and winter period.

The breeding bird fauna is obviously higher, but the breeding populations cannot be recorded just walking along some transects on the lake shores, being absolutely necessary some transects by boat inside the canals and compact reed beds from the lake tail perimeter. In the same time, probably numerous forest typical bird species, including some species that represent criteria for designation of one Nature 2000 site, can be present like breeding species in the wooded area from the eastern slope of Răcăciuni Lake that was not included in our monitoring program. On the humid meadow along the western side of the Siret River, in the downstream sector from the dam, we recorded the breeding presence of two wader species: *Vanellus vanellus* and *Charadrius dubius*.

During the autumn migration, the specific diversity of the bird-fauna, but also the effectives of birds present an obvious increase till the middle October, when the bird species number decreases, but the effectives remain great. During one daily walk along the western shore of the lake in the birds autumn passage period the observer can count currently about 15,000-20,000 individuals representing waterfowls and waders, one relevant prove of the huge ornithological importance of Răcăciuni Lake and this Nature 2000 site in order to protect some rare and threatened bird species at national and European Community level.

During the autumn migration, the wader and the heron species were recorded in flocks of about tens to hundreds individuals, especially on the lake tail area, where the water level decreased due the very dry summer, but also on the humid meadows along the western side of the downstream sector of the Siret River from the concrete dam.

The aquatic bird species presented the greatest diversity (35 species), but also, the biggest effectives on this lake surface between the four investigated sites. Most of them appear in flocks of about hundreds or thousands individuals; sometime some species can form so compact groups that appear like an island on the water surface. We believe that, especially, this year, the large aquatic surface of Răcăciuni Lake supplied the suitable habitats offer of this Nature 2000 site for the aquatic and semi-aquatic bird species that previously used to stop on Galbeni or Bacău Lakes. The recorded effectives are impressive especially for some duck species (*Anas platyrhynchos*, *A. crecca*, *Aythya ferina* and *Bucephala clangula*), but also for Coot (*Fulica atra*) that was present every time in two spots – one very closed to the dam area and another one on the eastern side of the lake, close to the wooden slope. Some species that are rarely observed in large groups in the north-eastern Romania appear with significant effectives in the area of this lake: *Anas acuta*, *Tadorna tadorna*, *Aythya marila* or *Bucephala clangula*.

We notice the early arrival of some winter visitors in the area, starting from the second middle part of October 2011, in groups of tens individuals (*Bucephala clangula*), including some passerine species (*Lanius excubitor* and *Fringilla montifringilla*). In the same period, we recorded the presence of some forest passerine species inside the villages from the vicinity of the Nature 2000 site.

The winter 2011-2012 began very mildly, so, in the middle January, during the waterfowl synchronic census we recorded more than 16,000 birds on this lake. We found the Mallard (*Anas platyrhynchos*) and Coot (*Fulica atra*) like dominant species, with effectives of about 6,000 individuals, but also other species were present with large groups, ducks and mergansers (*Anas crecca*, *A. penelope*, *Aythya ferina*, *Bucephala clangula*, *Aythya fuligula* and *Mergellus albellus*) or gulls (*Larus cachinnans*, *L. michahellis* and *L. ridibundus*). In late January, the weather was changed suddenly, turning in one very cold and frosty winter prolonged till the last decade of March. The birds were concentrated on this lake where the water was not frozen while the waters of Galbeni Lake were still partially frozen in the last days of March 2012.

For Răcăciuni Lake, the most threatening factor for birds is hunting activity. The particularly prudent behaviour of the aquatic birds that left the shore area just in the moment of the car stop, before our appearance outside of the car, but also the tubes of cartridges found along the western shore of the lake suggest a constant and very high level of the hunting activities in this lake area, especially, in the lake tail perimeter where the access is easy on some local roads and in the absence of some barriers that could block the access in the area. In March 2012, we found more than 2,000 tubes of cartridges along about 1,500 metres from the western shore of this lake. Two species of geese appear in flocks of hundreds of individuals during the passage (*Anser anser* and *A. albifrons*), but the birds leave quickly the area due the mentioned high level of the hunting activity.

The abandoned fishing nets in the lake water represent another risk factor for birds, especially for the diving duck species, that can catch in these nests, remaining trapped there – we met this situation on the 13th of November 2011, when we saw one female or, maybe, an immature bird of Common Pochard (*Aythya ferina*) that was trying to free itself from one fishing net installed under the water, at about 150 – 200 m from the shore, swimming strongly, probably till it got exhausted and died.

CONCLUSIONS AND RECOMMENDATIONS

Our monitoring program started in May 2011 and is on-going; we can assess that the reservoirs included in the Nature 2000 site ROSPA0063, Buhuși-Bacău-Berești Lakes and their vicinity present a remarkable ornithological importance during the bird spring and autumn passage time, offering suitable habitats and available rich feeding resources for the aquatic and semi-aquatic birds that use the migration route of the Siret Valley.

The investigated reservoirs represent important wintering areas for the aquatic birds in eastern Romania, too.

In the same time, this Nature 2000 site includes suitable breeding habitats for birds, too. Beginning with 2006, the surface of Galbeni Lake was dry, the water being discharged in order to permit the development of some hydro-technique restoration works, a partial similar situation being also recorded in 2011 on Bacău Lake. For this reason, during our study we could not observe breeding aquatic and semi-aquatic bird populations in the perimeter of Galbeni Lake. The birds recorded on the perimeter of Bacău Lake in the first part of the breeding season in 2011 had not breeding success in this season, losing the suitable feeding areas.

This impact is just temporarily. We assess that the birds will return step by step to their breeding and stop-over sites after the refilling of these lakes starting from late October 2011.

We believe that an ecological restoration program is necessary for Blue Marsh area in order to increase the open water surfaces, but also to control the paludous vegetation expansion and the secondary ecological succession that change the general aspect of this site.

Among the risk factors for birds identified in this site during our monitoring program, we mention the hunting activity and the abandoned fishing nets in the lakes water. We recommend for the caretaker to identify one dialogue way with the members of the local organizations of hunters and fishermen, but also, to install some barriers that could limit the access on the western dyke of Răcăciuni Lake.

In order to improve the management plan for this Nature 2000 site, we recommend the caretaker to elaborate and implement one permanent monitoring program for the whole perimeter of the site, following the dynamics of birds diversity and populations, but also, of the habitats from the area.

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