MUZEUL JUDEȚEAN ARGEŞ, PITEŞTI, ROMÂNIA
ARGESIS *- STUDII ŞI COMUNICĂRI - seria ŞTIINȚELE NATURII,* **TOM XXII**, 2014

ORNITHOLOGICAL OBSERVATIONS ON THE BUDEASA BASIN BETWEEN FEBRUARY 2013 AND JANUARY 2014

ADRIAN MESTECĂNEANU
Argeş County Museum, Armand Călinescu, 44, 110047, Piteşti, Argeş, Romania,
e-mail: mestecaneanua@yahoo.com
RADU GAVA
University of Piteşti, Târgul din Vale, 1, 110040, Piteşti, Argeş, Romania,
e-mail: gavaradu@yahoo.com

ABSTRACT: In this paper are presented the results of the researches performed between February 2013 & January 2014 on the avifauna from the Budeasa Basin. The 60 observed species belong to 11 orders: Podicipediformes, Pelecaniformes, Ciconiiformes, Anseriformes, Falconiformes, Gruiformes, Charadriiformes, Columbiformes, Coraciiformes, Piciformes and Passeriformes. Four species - *Phalacrocorax carbo* (Linnaeus, 1758), *Anas platyrhynchos* Linnaeus, 1758, *Fulica atra* Linnaeus, 1758, *Larus argentatus* Pontoppidan, 1763 and *Pica pica* (Linnaeus, 1758) - were euconstant. From the constancy point of view, 3 species - *Anas platyrhynchos*, *Aythya ferina* (Linnaeus, 1758) and *Fulica atra* - were eudominant and, from the Dzuba index of ecological significance, 2 species (*Anas platyrhynchos* and *Fulica atra*) were eudominant. Anseriformes was the overdominat order and, inside it, *Anas platyrhynchos* was the overdominant species.

Keywords: ornithological observations, Budeasa Basin, Argeş.

REZUMAT: Observaţii ornitologice pe lacul de acumulare Budeasa în perioada februarie 2013 – ianuarie 2014.
În această lucrare, sunt prezentate rezultatele cercetărilor efectuate în perioada februarie 2013 – ianuarie 2014 asupra păsărilor de pe lacul de acumulare Budeasa. Cele 60 de specii observate aparţin la 11 ordine: Podicipediformes, Pelecaniformes, Ciconiiformes, Anseriformes, Falconiformes, Gruiformes, Charadriiformes, Columbiformes, Coraciiformes, Piciformes şi Passeriformes. Patru specii - *Phalacrocorax carbo* (Linnaeus, 1758), *Anas platyrhynchos* Linnaeus, 1758, *Fulica atra* Linnaeus, 1758, *Larus argentatus* Pontoppidan, 1763 şi *Pica pica* (Linnaeus, 1758) - au fost euconstante. Din punctul de vedere al dominanței, 3 specii - *Anas platyrhynchos*, *Aythya ferina* (Linnaeus, 1758) şi *Fulica atra* - au fost eudominate iar, din punctul de vedere al indicelui de semnificaţie ecologică Dzuba, 2 specii au fost dominate (*Anas platyrhynchos* şi *Fulica atra*). Pe durata întregului an, Anseriformes a fost singurul ordin supradominant, în cadrul acestuia supradominantă fiind *Anas platyrhynchos.*

Cuvinte cheie: observaţii ornitologice, lacul de acumulare Budeasa, Argeş.

INTRODUCTION

The ornithofauna of the basins from the Argeş River was firstly researched after the '60s, immediately after their building (Mătieş, 1969; Munteanu & Mătieş, 1983). Starting from 1995, its study was accelerated since it was implemented the Midwinter Census from January in Argeş (Gava, 1997; Gava et al, 2004b; Mestecăneanu et al, 2010, etc.). Then, the avifauna of the whole year was studied (Mestecăneanu et al, 2003; Gava et al, 2004a; Mestecăneanu et al, 2004; Conete et al, 2006; Conete et al, 2010; Conete, 2011; Conete et al, 2012; Mestecăneanu & Gava, 2013, etc.) and the researches were conducted on the basins from Vâlcele to Goleşti, that are included in the ROSPA0062 – "Lacurile de acumulare de pe Argeş" (Fig. 1).

The avifauna of Budeasa Barrier Lake was the special subject of many papers (Conete & Mestecăneanu, 2004; Mestecăneanu et al, 2006a; Mestecăneanu et al, 2006b; Conete et al, 2010).

MATERIAL AND METHODS

The Budeasa Basin is an accumulation lake given in exploitation in 1978. Its dam is of gravity and earth, with breast and concrete type of watertight and partial rocky foundation type. The dam is 33 m height, and the reservoir has 54.9 million m^3, and 643 ha. Its purposes are: the supplying with water, irrigations, the production of electrical energy, and the attenuation of floods. The area of catchment is 1100 km^2 (cf. http://www.baraje.ro/rrmb/rrmb_d1.htm).

Upstream Budeasa Barrier Lake is Vâlcele Basin and closely downstream is Bascov Basin. Next to reservoir is Budeasa locality. The access is provided by DN 7C that links Piteşti (the municipality of the Argeş County, Romania) with Curtea de Argeş and DJ 703K that passes through the Budeasa locality. Secondary roads to the basin start from here. On the breast there is a road restricted to the vehicle circulation (Fig. 1). The basin is an oligotrophic lake (from the biological point of view) with water of second class of physic-chemical quality (cf. http://apmag.anpm.ro).

The climate of the area is temperate continental. Hilly influence is well marked. The annual mean of the air temperature is 9^0C (-2^0C in January and 20^0C in July). The annual mean of the water temperature is 1^0C more than one of the air. The ice sheet forms when the frost persists many days. The precipitations measure almost 700mm/year. Generally, the driest month is February and the rainiest is June (Barco & Nedelcu, 1974).

The vegetation is typical for the Southern hills zone. The hills and the meadows are covered with deciduous woods, orchards and agricultural crops. The vegetation of the basin is represented by: *Phragmites australis* (Cav.) Trin. ex Steud., *Typha* sp., *Carex* sp., *Juncus* sp., *Salix* sp., *Rubus* sp., *Alnus incana* (L.) Moench , *Populus alba* L., *Rosa canina* L., etc.

The fishy fauna is rich. In the basin there are: *Barbus barbus* (Linnaeus, 1758), *Stizostedion lucioperca* (Linnaeus, 1758), *Esox lucius* Linnaeus, 1758,

Scardinius erythrophthalmus (Linnaeus, 1758), *Rutilus rutilus* (Linnaeus, 1758), *Aristichthys nobilis* (Richardson, 1845), *Alburnus alburnus* (Linnaeus, 1758), *Perca fluviatilis* Linnaeus, 1758, *Carassius gibelio* (Bloch, 1782), *Cyprinus carpio* Linnaeus, 1758, *Leuciscus cephalus* (Linnaeus, 1758), etc.

The itinerary method and the method of the fixed point of observations were used as field methods. The surveys were performed between 10 and 20 of every month (February 2013 – January 2014). The same track was crossed each time with stops in the most favourable places for the observation of the water birds. The birds were visually and auditory identified. Binoculars (10x50), a spotting scope (14-45x50), and a photo device (42x optical zoom) were used.

The scientific norm and classification of the birds are the ones used in the Hamlin Guide (Bruun et al, 1999).

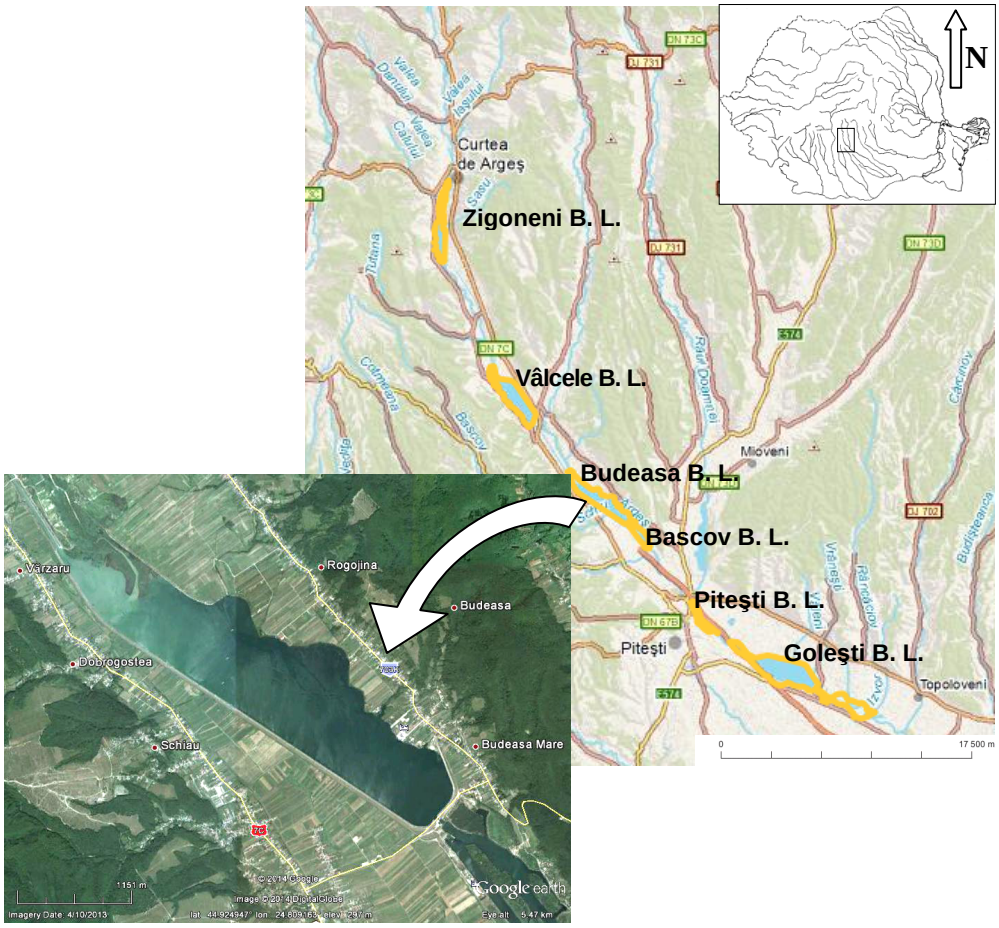

Figure 1 - The ROSPA0062 – "Lacurile de acumulare de pe Argeş" map (by http://dev.adworks.ro/natura, modified) with the place of Budeasa Barrier Lake (in Google Earth view).

RESULTS AND DISCUSSIONS

In the mentioned period, 60 bird species were observed in the researched area. They appertain to 11 orders: Podicipediformes, Pelecaniformes, Ciconiiformes, Anseriformes, Falconiformes, Gruiformes, Charadriiformes, Columbiformes, Coraciiformes, Piciformes and Passeriformes. Passeriformes numbered the most species (26 species). It is followed by Anseriformes (with 11 species) and Charadriiformes (with 6 species). Gruiformes and Piciformes numbered each only 1 species. The number of species varied much from a month to another and it reflects the occurrence of the migratory birds (passage species, winter or summer species). There were two maximums: one in February (with 24 species) and one in November (with 25 species) and there were two minimums: in March (12 species) and January (13 species). Also, a month with few species was August (with 14 species). The number of individuals was the highest in February (4989 individuals). Months rich in individuals were October and November, too (with 1226, respectively 1189 individuals). April and May were the poorest months in this aspect (with 94 and 90 individuals), (Tab. 1). Despite of the large surface of the basin, the number of species and individuals registered along the year and, respectively, every month is however small. The anthropogenic pressure, mainly during the hunting period, and the relatively small area occupied by the reed beds are the main things responsible for this situation.

Taking into account only the 30 aquatic or amphibious species (according to the main habitat of breeding and/or feeding), regarding the individuals number, the variation is similar, with the main maximum in February (4945 individuals) and the second one in October (1194 individuals) and minimum in April and May (77, respectively 56 individuals). In addition, the numbers are very close to the one of all registered species. They demonstrate that the aquatic or amphibious species are the most important species for the ecosystem, the rest being generally species that come for food from the surrounding area. From the number of species point of view, the maximum was also in February (18 species) and minimum in June and July (each with 8 species, Fig. 2). The most non aquatic or amphibious species are the Passeriformes. Their number was the biggest at the beginning of winter, in November (12 species). 36 species were counted in the hiemal period. February was the best both as number of species and as number of individuals, as we saw earlier. January was the worst month from both perspectives (11 species and 644 individuals).

Regarding the index of constancy, 43 species (71.67%) were accidental (C1), 6 species (10.00%) were accessory (C2), 6 species (10.00%) were constant (C3) and 5 species (8.33%) were euconstant (C4), (Tab. 1, Fig. 3). The constant species are: *Phalacrocorax carbo*, *Anas platyrhynchos*, *Fulica atra*, *Larus argentatus cachinnans/michahellis*, and *Pica pica*.

By the index of dominancy, 50 species (83.33%) were subrecedent (D1), 1 species (1.67%) were recedent (D2), 4 species (6.67%) were subdominant (D3),

2 species (3.33%) were dominant (D4) and 3 species (*Anas platyrhynchos Aythya ferina* and *Fulica atra*, 5.00%) were eudominant (D5), (Tab. 1, Fig. 4).

From the Dzuba index of ecological significance point of view, 42 species (70.00%) were subrecedent (W1), 8 species (13.33%) were recedent (W2), 7 species (11.67%) were subdominant (W3), 1 species (1.67%) were dominant (W4) and 2 species (*Anas platyrhynchos* and *Fulica atra*, 3.33%) were eudominant (W5), (Tab. 1, Fig. 5).

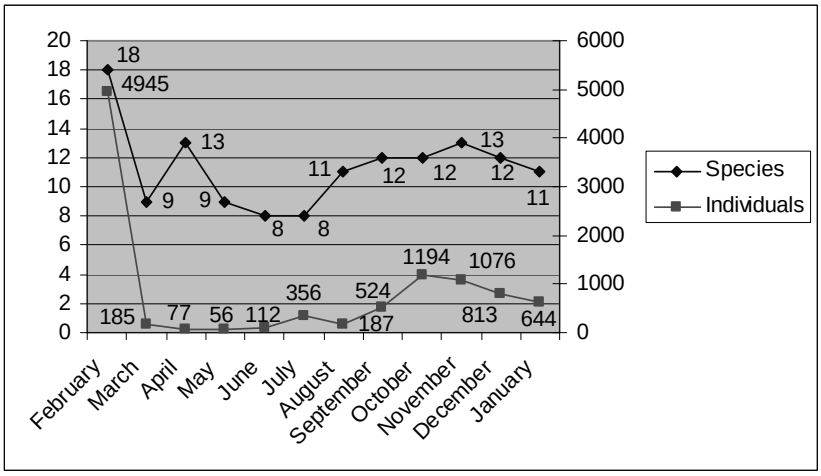

Figure 2 - The monthly variation of the number of individuals and of the number of species.

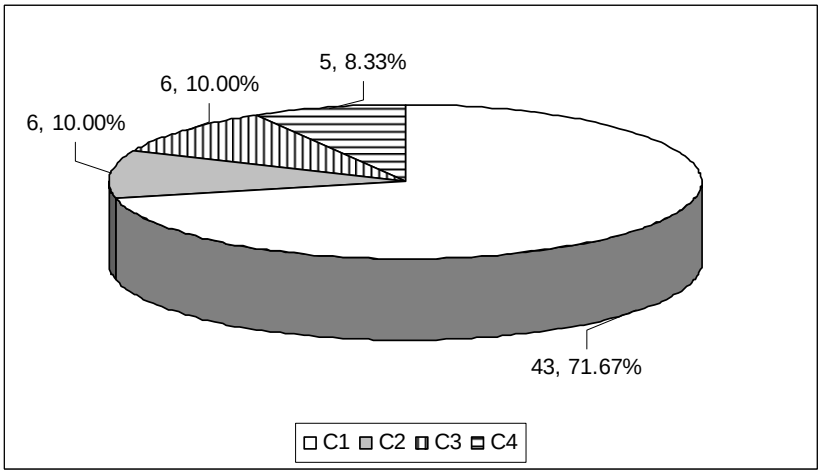

Figure 3 - The species distribution according to the index of constancy.

As we saw previously, the eudominant species (in the case of Dzuba index of ecological significance) are *Anas platyrhynchos* and *Fulica atra*. They dictate the rhythm of the monthly variation of the strength of individuals of all species,

fact visible especially for *Anas platyrhynchos*. They were almost absent from April to July, that means that their breeding population is quite little; from the late of autumn up to begin of the spring, they were more abundance. Both species had a principal maximum in February; the secondary one was in December and January for *Fulica atra*, and in October and November, for *Anas platyrhynchos* (Fig. 6). Obviously, these maximums are given by the individuals that did not breed here. Other factors, like the freezing of the water and the hunting, carry to this fluctuation.

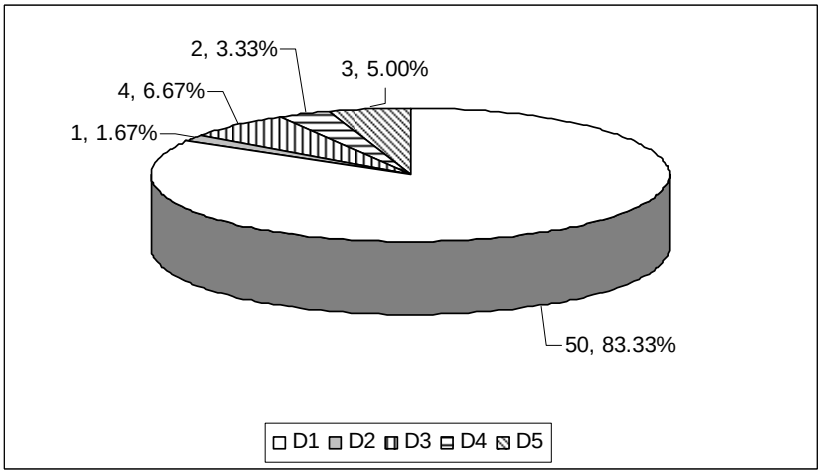

Figure 4 - The species distribution according to the index of dominancy.

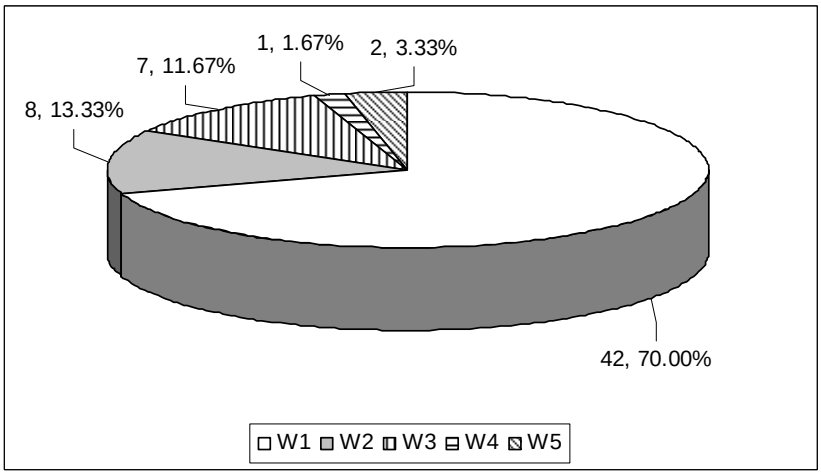

Figure 5 - The species distribution according to the index of Dzuba ecological significance.

Regarding the participation of the orders to the formation of the avicoenose from the Budeasa Basin, Anseriformes was the only overdominat order.

Gruiformes and Charadriiformes were dominant orders and Passeriformes and the group of the other orders were complementary (Fig. 7). Anseriformes numbered 7132 individuals, Gruiformes 1275 and Charadriiformes 1089 individuals.

Concerning the importance of the species inside the Anseriformes order, we stated, as expected, that *Anas platyrhynchos* was overdominant. *Anas crecca* and *Aythya ferina* were dominant and the rest of species were complementary (Fig. 8).

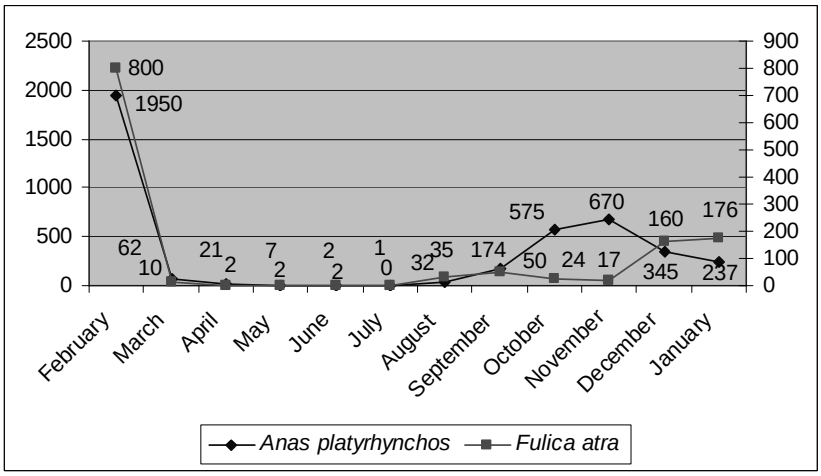

Figure 6 - The monthly variation in number *of Anas platyrhynchos* and *Fulica atra*.

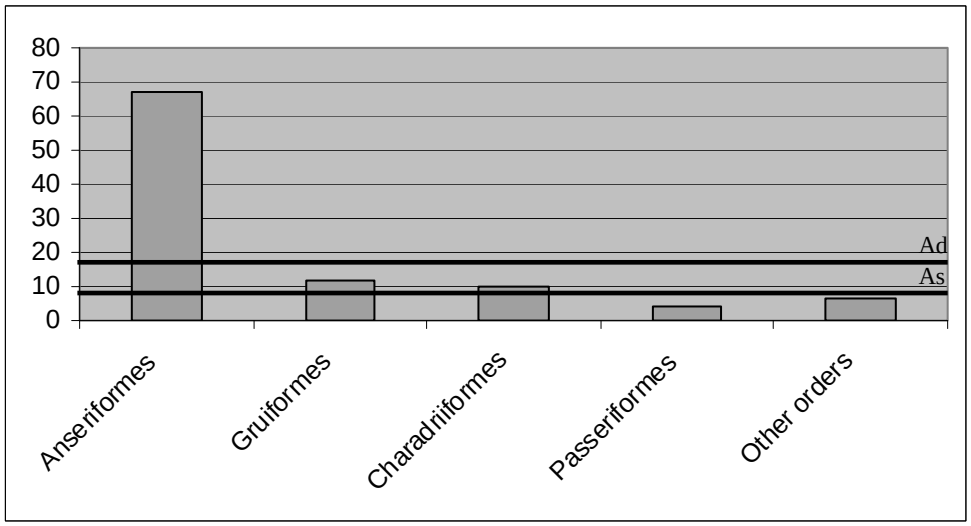

Figure 7 - The participation of the orders to the formation of the avicoenose from the Budeasa Basin.

Nine species (15.00% of all identified species) are in the Annex I of the Birds Directive (2009/147/EC). They are: *Phalacrocorax pygmeus*, *Egretta*

garzetta, *Egretta alba*, *Ciconia ciconia*, *Mergus albellus*, *Circus aeruginosus*, *Sterna hirundo*, *Alcedo atthis*, and *Lanius collurio*. 17 species (28.33% of all identified species) are in the Annex II of the Bern Convention and 10 (16.66% of all identified species) are in the Annex III of the same convention. Finally, according to the Bonn Convention, 12 species (20.00% of all identified species) are in the Annex II. The species mentioned in Annex I of the Birds Directive shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution (cf. http://ec.europa.eu). The species from the Annex II of the Bern Convention are strictly protected fauna species and the species from the Annex III are protected fauna species (cf. http://conventions.coe.int). The species from the Annex II af the Bonn Convention are migratory species requiring international cooperation (cf. http://eur-lex.europa.eu).

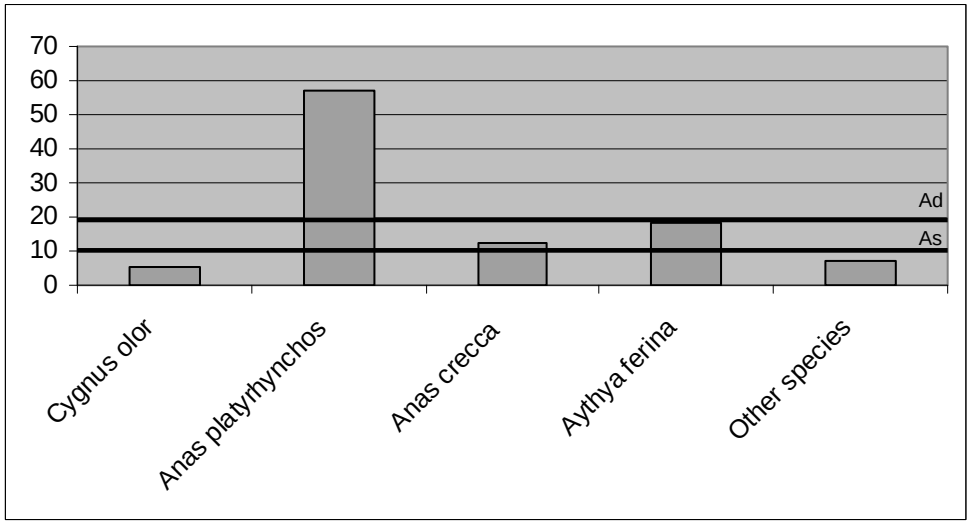

Figure 8 - The participation of the species to the formation of the Anseriformes coenose from the Budeasa Basin.

CONCLUSIONS

- Between February 2013 & January 2014, on the Budeasa Basin were identified 60 bird species that appertain to 11 orders.
- Passeriformes was the richest (with 26 species) and the Anseriformes orders (with 11 species) was the best represented among the wetland birds.
- The highest number of individuals was in February (4989 individuals).
- In November was registered the biggest number of species (25).
- *Phalacrocorax carbo*, *Anas platyrhynchos*, *Fulica atra*, *Larus argentatus cachinnans/michahellis*, and *Pica pica* were the euconstant species.

- By the index of dominancy, *Anas platyrhynchos Aythya ferina* and *Fulica atra* were the eudominant species and by the Dzuba index of ecological significance, *Anas platyrhynchos* and *Fulica atra*.
- Both *Anas platyrhynchos* and *Fulica atra* counted most individuals in a month in February.
- All the year, Anseriformes was the overdominat order, Gruiformes and Charadriiformes were dominant orders and Passeriformes and the group of the other orders were complementary.
- Inside of the Anseriformes order, *Anas platyrhynchos* was overdominant, *Anas crecca* and *Aythya ferina* were dominant and the rest of species were complementary.
- 9 species (*Phalacrocorax pygmeus*, *Egretta garzetta*, *Egretta alba*, *Ciconia ciconia*, *Mergus albellus*, *Circus aeruginosus*, *Sterna hirundo*, *Alcedo atthis*, and *Lanius collurio*) are in the Annex I of the Birds Directive.

REFFERENCES

BARCO Aurelia, Nedelcu E., 1974 - *Judeţul Argeş*. Editura Academiei Republicii Socialiste România. Bucureşti. 168 p.

BRUUN B., DELIN H., SVENSSON L., SINGER A., ZETTERSTRÖM D., MUNTEANU D., 1999 - *Păsările din România şi Europa*. Determinator ilustrat. Hamlyn Guide. Societatea Ornitologică Română. Octopus Publishing Group Ltd. 320 p.

CONETE Maria Denisa, 2011 - *Cercetări ecologice asupra avifaunei unor lacuri de baraj din zona mijlocie a văii Argeşului.* PhD thesis. Institutul de Biologie al Academiei Române, Bucureşti. 370 p.

CONETE Maria Denisa, MESTECĂNEANU A., 2004 - *Cercetări privind avifauna zonei lacului de acumulare Budeasa în perioada 2002-2004*. Analele Universității Oradea. Fascicolul Biologie. University of Oradea Publishing House. **11**: 49-54.

CONETE Denisa, MESTECĂNEANU A., GAVA R., 2010 - *Ecological researches about the avifauna of the Budeasa Basin (Argeş River, Romania) in the hiemal and prevernal aspects (2008 – 2009).* Analele Universității din Oradea. Fascicula Biologie. University of Oradea Publishing House. **17 (1)**: 90-94.

CONETE Denisa, MESTECĂNEANU A., GAVA R., 2012 - *Ornithological researches on the Goleşti Dam Lake (Argeş County, Romania) during 2003 – 2010*. Analele Universității din Oradea. Fascicula Biologie. University of Oradea Publishing House. **19 (1)**: 84-92.

CONETE Maria Denisa, MESTECĂNEANU A., GAVA R., 2006 - *Speciile de păsări din situl AIA „Lacurile de acumulare de pe Argeş" protejate pe plan naţional şi european*. Argesis. Studii şi Comunicări. Ştiinţele Naturii. Muzeul Județean Argeș, Piteşti. **14**: 103-115.

GAVA R., 1997 - *Acumulările hidroenergetice de pe râul Argeş, posibile Arii de Importanță Avifaunistică*. Lucrările simpozionului Arii de Importanță Avifaunistică din România. Publicațiile S.O.R. Cluj Napoca. **3**: 39-42.

GAVA R., MESTECĂNEANU A., CONETE Denisa, 2004 - *The reservoirs of the Argeş River valley – important bird areas.* Limnological Reports, Internat. Assoc. Danube. Res., Novi Sad, Sebia and Muntenegro. **35**: 619-631.

GAVA R., MESTECĂNEANU A., CONETE Denisa, MESTECĂNEANU F., 2004 - *Recensământul păsărilor de baltă din ianuarie de pe lacurile din bazinul mijlociu*

al râului Argeş, în perioada 2000 - 2004. Argessis. Studii şi Comunicări. Ştiinţele Naturii. Muzeul Judeţean Argeş, Piteşti. **12**: 125-132.

MĂTIEŞ M., 1969 - *Cercetări avifenologice de-a lungul bazinului mijlociu şi superior al Argeşului între 1 ianuarie - 31 mai 1968*. Muzeul Judeţean Argeş. Studii şi Comunicări. **2**: 73-90.

MESTECĂNEANU A., GAVA R., 2013 - *The avifauna from Vâlcele, Budeasa, Bascov, Piteşti, and Goleşti basins observed in the prevernal season in 2013*. Argesis. Studii şi comunicări. Seria Ştiinţele Naturii. Muzeul Judeţean Argeş, Piteşti. **21**: 71-86.

MESTECĂNEANU A., CONETE Denisa, GAVA R., 2003 - *Date despre prezenţa a 12 ordine de păsări (Aves), cu dinamica anseriformelor pe lacul Piteşti în iarna 2002 – 2003*. Oltenia. Studii şi Comunicări. Ştiinţele Naturii. Muzeul Olteniei, Craiova. **19**: 195-201.

MESTECĂNEANU A., CONETE Denisa, GAVA R., 2004 - *Date despre prezenţa păsărilor pe lacul Piteşti în toamna anului 2003*. Studii şi Comunicări. Complexul Muzeal de Ştiinţele Naturii "Ion Borcea". Ed. "Ion Borcea", Bacău. **19**: 212-217.

MESTECANEANU A., CONETE Denisa, GAVA R., 2006 - *Observaţii de tip monitoring asupra păsărilor de apă de pe lacul Budeasa (bazinul Argeşului)*. Analele Bucovinei. Academia Română, Filiala Iaşi, Centrul de Studii „Bucovina" Rădăuţi, Editura Academiei Române. **XIII (1)**: 289-296.

MESTECĂNEANU A., CONETE Denisa, GAVA R., 2010 - *Ecological research-studies regarding the avifauna during the hiemal period from the basins area of the Argeş River between 2000 and 2010. Annals. Food Science and Tehnology*. Universitatea Valahia, Târgovişte. **11 (2)**: 127-135.

MESTECANEANU A., GAVA R., CONETE Denisa, NIŢĂ Alina, 2006 - *Ornithological observations made in the area of Budeasa basin in hiemal and prevernal aspects (2005 - 2006)*. Drobeta. Muzeul Regiuni Porţilor de Fier. Seria Ştiinţele Naturii. Editura Universitaria Craiova. **XVI**: 144-153.

MUNTEANU D., MĂTIEŞ M., 1983 - *Modificări induse de lacurile de acumulare în structura şi dinamica avifaunei*. Analele Banatului. Ştiinţele Naturii. Muzeul Banatului, Timişoara. **1**: 217- 225.

*** Google Earth Database (accessed: September 29, 2014).

*** http://apmag.anpm.ro/upload/72682_raport_anual_2010_Arges.pdf (accessed: September 29, 2014).

*** http://conventions.coe.int/Treaty/EN/Treaties/PDF/Romanian/104-Romanian.pdf (accessed: September 30, 2014).

*** http://dev.adworks.ro/natura/situri/65/Lacurile-de-acumulare-de-pe-Arge.html#map-holder (accessed: September 30, 2014).

*** http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm; (accessed: September 30, 2014).

*** http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.1982.210.01.0010.01.ENG (accessed: September 30, 2014).

*** http://www.baraje.ro/rrmb/rrmb_d1.htm (accessed: September 29, 2014).

Table 1 – The occurrence along the year, some ecological indexes and the conservation status of the species.

No.	Species	Month												Class of constancy	Class of dominancy	Class of Dzuba index of ecological significance	Birds Directive (2009/147/CE)	Bern Convention	Bonn Convention
		February	March	April	May	June	July	August	September	October	November	December	January						
1	***Podiceps cristatus*** (Linnaeus, 1758)*		+	+	+		+	+	+	+	+	+		C3	D2	W3		AIII	
2	***Tachybaptus ruficollis*** (Pallas, 1764)*							+					+	C1	D1	W1		AII	
3	***Phalacrocorax carbo*** (Linnaeus, 1758)*	+	+	+	+	+	+	+	+	+	+	+	+	C4	D3	W3		AIII	
4	***Phalacrocorax pygmeus*** (Pallas, 1773)*	+												C1	D1	W1	AI		
5	***Egretta garzetta*** (Linnaeus, 1766)*				+		+	+						C1	D1	W1	AI	AII	
6	***Egretta alba*** (Linnaeus, 1758)*	+		+					+		+	+	+	C2	D1	W2	AI	AII	AII
7	***Ardea cinerea*** Linnaeus, 1758*	+		+	+		+	+	+	+	+			C3	D1	W2			
8	***Ciconia ciconia*** (Linnaeus, 1758)*						+							C1	D1	W1	AI	AII	AII
9	***Cygnus olor*** (Gmelin, 1789)*	+	+	+		+			+		+	+	+	C3	D3	W3		AIII	AII
10	***Anas platyrhynchos*** Linnaeus, 1758*	+	+	+	+	+	+	+	+	+	+	+	+	C4	D5	W5		AIII	AII
11	***Anas strepera*** Linnaeus, 1758*	+												C1	D1	W1			
12	***Anas penelope*** Linnaeus, 1758*	+		+							+		+	C2	D1	W2		AII	AII
13	***Anas crecca*** Linnaeus, 1758*	+							+		+	+	+	C2	D4	W3			
14	***Anas clypeata*** Linnaeus, 1758*									+				C1	D1	W1			
15	***Tadorna tadorna*** (Linnaeus, 1758)*	+												C1	D1	W1			
16	***Aythya fuligula*** (Linnaeus, 1758)*	+	+	+		+			+	+		+		C3	D3	W3			
17	***Aythya ferina*** (Linnaeus, 1758)*	+	+	+					+	+	+	+		C3	D5	W4		AIII	AII
18	***Bucephala clangula*** (Linnaeus, 1758)*	+									+		+	C1	D1	W2			

19	***Mergus albellus*** (Linnaeus, 1758)*	+								+				C1	D1	W1	AI	AII	AII
20	***Buteo buteo*** (Linnaeus, 1758)	+									+	+		C1	D1	W1		AII	AII
21	***Circus aeruginosus*** (Linnaeus, 1758)*			+				+						C1	D1	W1	AI		
22	***Falco tinnunculus*** Linnaeus, 1758	+												C1	D1	W1			
23	***Fulica atra*** Linnaeus, 1758*	+	+	+	+	+		+	+	+	+	+	+	C4	D5	W5		AIII	AII
24	***Actitis hypoleucos*** Linnaeus, 1758*			+			+	+						C1	D1	W1			
25	***Tringa ochropus*** Linnaeus, 1758*											+		C1	D1	W1			
26	***Larus argentatus*** Pontoppidan, 1763 (ssp. *cachinnans/ michahellis*)*	+	+	+	+	+	+	+	+	+	+	+	+	C4	D3	W3			
27	***Larus canus*** Linnaeus, 1758*	+												C1	D1	W1		AIII	
28	***Larus ridibundus*** Linnaeus, 1766*	+	+		+		+	+	+	+		+	+	C3	D4	W3		AIII	
29	***Sterna hirundo*** Linnaeus, 1758*				+									C1	D1	W1	AI	AII	AII
30	***Columba palumbus*** Linnaeus, 1758						+							C1	D1	W1			
31	***Streptopelia decaocto*** (Frivaldszky, 1838)									+	+			C1	D1	W1		AIII	
32	***Alcedo atthis*** (Linnaeus, 1758)*									+				C1	D1	W1	AI	AII	
33	***Merops apiaster*** Linnaeus, 1758				+									C1	D1	W1			
34	***Dedrocopos major*** (Linnaeus, 1758)									+	+			C1	D1	W1			
35	***Riparia riparia*** (Linnaeus, 1758)				+									C1	D1	W1		AII	
36	***Hirundo rustica*** Linnaeus, 1758			+	+	+	+	+						C2	D1	W2		AII	
37	***Delichon urbica*** (Linnaeus, 1758)					+		+						C1	D1	W1		AII	
38	***Anthus spinoletta*** (Linnaeus, 1758)		+								+			C1	D1	W1			
39	***Motacilla flava*** Linnaeus, 1758					+	+							C1	D1	W1			
40	***Motacilla alba*** Linnaeus, 1758		+				+		+					C1	D1	W1		AII	
41	***Lanius collurio*** Linnaeus, 1758				+									C1	D1	W1	AI		

42	***Oriolus oriolus*** (Linnaeus, 1758)					+								C1	D1	W1			
43	***Pica pica*** (Linnaeus, 1758)	+	+	+	+	+	+		+	+	+	+	+	C4	D1	W2			
44	***Corvus monedula*** Linnaeus, 1758										+	+		C1	D1	W1			
45	***Corvus frugilegus*** Linnaeus, 1758										+	+		C1	D1	W1			
46	***Corvus corone cornix*** Linnaeus, 1758	+												C1	D1	W1			
47	***Corvus corax*** Linnaeus, 1758								+	+				C1	D1	W1		AIII	
48	***Acrocephalus palustris*** (Bechstein, 1798) *					+								C1	D1	W1		AII	
49	***Arocephalus arundinaceus*** (Temminck & Schlegel, 1847) *					+								C1	D1	W1		AII	AII
50	***Sylvia atricapilla*** (Linnaeus, 1758)					+								C1	D1	W1			
51	***Sylvia curruca*** (Linnaeus, 1758)			+										C1	D1	W1		AII	AII
52	***Phylloscopus collybita*** (Vieillot, 1817)						+			+				C1	D1	W1			
53	***Parus caeruleus*** Linnaeus, 1758						+	+			+			C1	D1	W1			
54	***Parus major*** Linnaeus, 1758				+									C1	D1	W1			
55	***Passer domesticus*** (Linnaeus, 1758)			+	+	+	+			+				C2	D1	W2			
56	***Passer montanus*** (Linnaeus, 1758)	+			+					+	+		+	C2	D1	W2			
57	***Fringilla coelebs*** Linnaeus, 1758									+	+			C1	D1	W1			
58	***Carduelis carduelis*** (Linnaeus, 1758)			+						+	+			C1	D1	W1			
59	***Emberiza schoeniclus*** (Linnaeus, 1758)**										+			C1	D1	W1		AII	
60	***Emberiza citrinella*** Linnaeus, 1758	+									+			C1	D1	W1			
Number of species		24	12	18	17	15	17	14	15	21	25	16	13						
Number of individuals		4989	191	94	90	132	387	200	565	1226	1189	872	717						

Legend: * - aquatic or amphibious birds; + - presence; AI, AII, AIII – annexes.