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ORNITHOLOGICAL OBSERVATIONS ON THE VÂLCELE BASIN DURING FEBRUARY 2013 – JANUARY 2014

Adrian Mestecăneanu *, Radu Gava **

* Argeş County Museum, Armand Călinescu, 44, 110047, Piteşti, Argeş, Romania
E-mail: mestecaneanua@yahoo.com
** University of Piteşti, Târgu din Vale, 1, 110040, Piteşti, Argeş, Romania
E-mail: gavaradu@yahoo.com

Abstract
In this paper are showed the results of the researches performed during February 2013 – January 2014 on the avifauna from the Vâlcele Basin. The 65 observed species belong to 13 orders, Passeriformes being the richest (33 species). Anseriformes and Charadriiformes (each with 7 species) were the best represented among the wetland birds. 5 species (Podiceps cristatus, Phalacrocorax carbo, Anas platyrhynchos, Fulica atra, and Larus argentatus cachinnans/michahellis) were euconstant and 2 species (Anas platyrhynchos and Fulica atra) were eudominant. Anas platyrhynchos counted most individuals in a month in December; in July were no individuals. Fulica atra had the most number in September; it was absent in May. For the Vâlcele Basin avicoenose, Anseriformes and Gruiformes were the overdominat orders and, inside the Anseriformes order, Anas platyrhynchos was overdominant species. 7 species (Egretta alba, Nycticorax nycticorax, Ciconia ciconia, Chlidonias hybridus, Alcedo atthis, Picus canus, and Lanius collurio) are in the Annex I of the Birds Directive.

Keywords: ornithological observations, Vâlcele Basin, Argeş.

1. INTRODUCTION

The ornithofauna of the basins from the Argeş River was firstly researched after the ‘60s, hard upon their building (Mătieş, 1969, Munteanu and Mătieş, 1983). Its study was accelerated after 1995, when the Midwinter Census, co-ordinated at the national level by the Romanian Ornithological Society, and in the last years in alliance with the Association for Birds and Nature Protection “Milvus Group”, was performed annually in January (Gava, 1997, Gava et al., 2004a, Mestecăneanu et al., 2010 etc.). More recently, the avifauna of the whole year was studied, focused on the basins from Vâlcele to Goleşti, that are included in the ROSPA0062 – “Lacurile de acumulare de pe Argeş” protected area (Mestecăneanu et al., 2003, Gava et al., 2004b, Mestecăneanu et al., 2004, Conete et al., 2006b, Conete et al., 2010, Conete, 2011, Conete et al., 2012 etc.).

The avifauna of Vâlcele Basin was the special subject of researches in one paper (Conete et al., 2006a).

2. MATERIAL AND METHODS

The Vâlcele Basin is an accumulation lake given in exploitation in 1976 on the Argeş River. It is a dam of gravity and earth, with breast and concrete type of watertight and rocky and not rocky

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ground foundation type. The dam is 35 m height, and the reservoir has 54.08 million m^3, and 640 ha. Its purposes are: the supplying with water, the production of electrical energy, the attenuation of floods and the irrigations. The area of catchment is 850 km^2
(cf. http://www.baraje.ro/rrmb/rrmb_d4.htm).
It is placed between the Zigoneni and the Budeasa Basins, next the Vâlcele locality from Merişani, which gave it its name. The access is provided by a road restricted to the vehicle circulation that limits it on the east part. This is connected with DN 7C way that links Piteşti (the municipality of the Argeş County, Romania) with Curtea de Argeş and 704H way that crosses the Malu Vânăt, Brătеasca and Vâlcele vills (figure 1). It is an eutrophic lake with water of second class of quality (Diaconu, 2008).

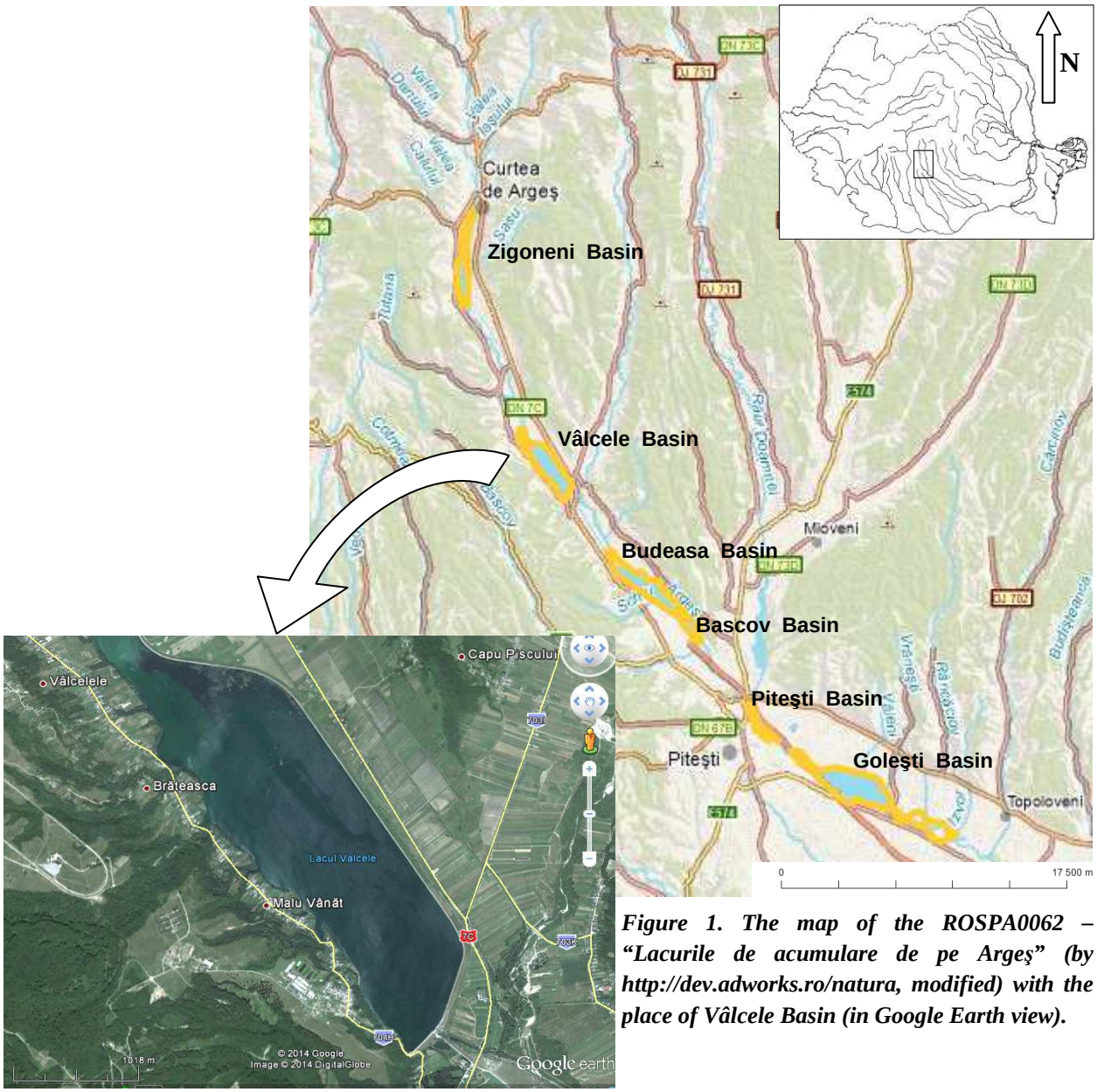

Figure 1. The map of the ROSPA0062 – "Lacurile de acumulare de pe Argeş" (by http://dev.adworks.ro/natura, modified) with the place of Vâlcele Basin (in Google Earth view).

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The climate of the area is temperate continental with hilly influence. 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 temperature of the air persists many days below -10^0C. The precipitations measure 700mm/year. Generally, the driest month is February and the rainiest is June (Barco and Nedelcu, 1974). The lake level of water varies according to the rains and melting of the mountains snow: it grows in spring and decreases during the summer.
The vegetation (*Carex*, *Juncus*, *Salix*, *Alnus*, *Populus* etc.) is scarce. It is localised upstream and occupies small areas and, also, on the west bank as an interrupted narrow band. The vegetation from adjacent hills comprises broad leaf forests (beech, hornbeam, diverse species of oak, etc.) and orchards, too. The meadows are covered with crops (cereals, fodder, green goods, etc.).
The itinerary method of field was used and the one of the fixed point of observations, too. The field trips were performed between 10 and 20 of every month. The same track on the eastern bank of the basin, on the road restricted to the public vehicle circulation was crossed, this being the most favourable 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 compatible with the Hamlin Guide (Bruun et al., 1999).

3. RESULTS AND DISCUSSIONS

Between February 2013 and January 2014, 65 bird species were observed on the Vâlcele Basin. They appertain to 13 orders: Podicipediformes, Pelecaniformes, Ciconiiformes, Anseriformes, Falconiformes, Galliformes, Gruiformes, Charadriiformes, Columbiformes, Strigiformes, Coraciiformes, Piciformes and Passeriformes. Passeriformes was the richest (with 33 species), it is followed by Anseriformes and Charadriiformes (each with 7 species). Pelecaniformes, Falconiformes, Galliformes, Gruiformes, and Strigiformes were the least represented (each with 1 species). The number of species varied much from a month to another, but it is obvious that there are two minimums in July and January (every with 15 species) and there are two maximums in April (23 species) and November (25 species), these corresponding to the periods of migration. The number of individuals was the highest in September (1,926 individuals). It maintains nearly 1,000 individuals during the hiemal period, after that it descends below 400 individuals from March to August. The minimum was in June (101 individuals), (table 1). In rapport with the surface of the lake, it is noticeable the small number of species and individuals registered along the year and, respectively, every month. This fact was remarked in another occasion, too (Mestecăneanu et al., 2010, Conete, 2011, Mestecăneanu and Gava, 2013) and it is due to more factors: the anthropogenic pressure, mainly during the hunting period, the lack of the reed beds and the fewness of the habitats, the place of the basin in the upper part of the Argeş River, less frequented by birds in passage, the deficient trophic resources etc.
Taking into account only the 26 aquatic or amphibious species (according to the main habitat of breeding and/or feeding), regarding the individuals number, the variation is similar, with maximum in September (1,898 individuals) and minimum in June (56 individuals), the input of the other species being therefore reduced. From the number of species point of view, the situation is changed, the maximum being in February, April and December (13 species) and minimum in June (6 species, figure 2), fact that reflects the bad conditions of breeding in the area, where: *Podiceps cristatus*, *Anas platyrhynchos* and *Fulica atra* certainly breed in the mentioned period and: *Nycticorax nycticorax*, *Tachybaptus ruficollis*, *Vanellus vanellus*, *Charadrius dubius*, *Larus argentatus cachinnans/michahellis*, *Larus ridibundus*, *Chlidonias hybridus* and *Alcedo atthis* is possible to be breed. *Ciconia ciconia* was rarely observed feeding on the shore, but it does not breed here. 14

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species were counted in the hiemal period; they sum nearly 1,000 individuals every month. In the future, these numbers can grow reducing the anthropogenic impact through adequate measures of protection. An increasing silting will permit the development of the vegetation specific to the wetlands with repercussion on the ornitofauna diversity.

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

No.	Species	Month												Absolute abundance	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							
I	**Ord. Podicipediformes**																			
1.	*Podiceps cristatus**	+	+	+	+	+	+	+	+	+	+	+	+	388	C4	D3	W3		AIII	
2.	*Podiceps nigricollis**			+				+						10	C1	D1	W1		AII	
3.	*Tachybaptus ruficollis**	+	+					+		+	+	+	+	47	C3	D1	W2		AII	
II	**Ord. Pelecaniformes**																			
4.	*Phalacrocorax carbo**	+	+	+	+	+	+	+	+	+	+	+	+	414	C4	D3	W3		AIII	
III	**Ord. Ciconiiformes**																			
5.	*Egretta alba**	+	+	+								+	+	19	C2	D1	W1	AI	AII	AII
6.	*Ardea cinerea**	+	+	+					+	+	+	+	+	20	C3	D1	W2		AIII	
7.	*Nycticorax nycticorax**						+							4	C1	D1	W1	AI	AII	
8.	*Ciconia ciconia**				+									9	C1	D1	W1	AI	AII	AII
IV	**Ord. Anseriformes**																			
9.	*Cygnus olor**	+								+				51	C1	D1	W1		AIII	AII
10.	*Anas platyrhynchos**	+	+	+	+	+		+	+	+	+	+	+	2824	C4	D5	W5		AIII	AII
11.	*Anas crecca**	+	+						+		+	+	+	315	C2	D3	W3		AIII	AII
12.	*Anas clypeata**			+					+	+				22	C1	D1	W1		AIII	AII
13.	*Aythya fuligula**	+	+	+					+		+	+		223	C2	D3	W3		AIII	AII
14.	*Aythya ferina**	+								+	+	+		303	C2	D3	W3		AIII	AII
15.	*Bucephala clangula**	+	+								+	+	+	182	C2	D3	W2		AIII	AII
V	**Ord. Falconiformes**																			
16.	*Buteo buteo*		+					+	+	+				4	C2	D1	W1		AII	AII
VI	**Ord. Galliformes**																			
17.	*Phasianus colchicus*			+										1	C1	D1	W1		AIII	
VII	**Ord. Gruiformes**																			
18.	*Fulica atra**	+	+	+		+	+	+	+	+	+	+	+	3159	C4	D5	W5		AIII	AII
VIII	**Ord. Charadriiformes**																			
19.	*Vanellus vanellus**				+									1	C1	D1	W1		AIII	AII
20.	*Charadrius dubius**		+		+									4	C1	D1	W1		AII	AII

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		February	March	April	May	June	July	August	September	October	November	December	January							
21.	*Actitis hypoleucos**			+				+						2	C1	D1	W1		AII	AII
22.	*Tringa nebularia**				+									1	C1	D1	W1		AIII	AII
23.	*Larus argentatus cachinnans/michahellis**	+	+	+	+	+	+	+	+	+	+	+	+	242	C4	D3	W3			
24.	*Larus ridibundus**			+			+	+	+	+				120	C2	D2	W2		AIII	
25.	*Chlidonias hybridus**			+			+							6	C1	D1	W1	AI	AII	
IX	**Ord. Columbiformes**																			
26.	*Columba palumbus*				+			+	+					9	C1	D1	W1			
27.	*Streptopelia turtur*				+	+		+						9	C1	D1	W1		AIII	AII
X	**Ord. Strigiformes**																			
28.	*Athene noctua*										+			1	C1	D1	W1		AII	
XI	**Ord. Coraciiformes**																			
29.	*Alcedo atthis**							+	+					3	C1	D1	W1	AI	AII	
30.	*Upupa epops*			+			+							2	C1	D1	W1		AII	
XII	**Ord. Piciformes**																			
31.	*Picus canus*												+	1	C1	D1	W1	AI	AII	
32.	*Dendrocopos major*										+			1	C1	D1	W1		AII	
XIII	**Ord. Passeriformes**																			
33.	*Galerida cristata*									+	+			4	C1	D1	W1		AIII	
34.	*Riparia riparia*				+									50	C1	D1	W1		AII	
35.	*Hirundo rustica*			+	+	+	+	+						44	C2	D1	W2		AII	
36.	*Delichon urbica*						+							16	C1	D1	W1		AII	
37.	*Anthus trivialis*								+					1	C1	D1	W1		AII	
38.	*Anthus spinoletta*		+							+	+	+		14	C2	D1	W1		AII	
39.	*Anthus pratensis*									+	+			9	C1	D1	W1		AII	
40.	*Motacilla flava*			+	+	+		+						17	C2	D1	W1		AII	
41.	*Motacilla alba*	+	+	+		+	+		+	+				45	C3	D1	W2		AII	
42.	*Lanius collurio*					+	+	+						5	C1	D1	W1	AI	AII	
43.	*Lanius excubitor*			+							+			3	C1	D1	W1		AII	
44.	*Sturnus vulgaris*		+		+	+					+			133	C2	D2	W2			
45.	*Pica pica*	+		+	+	+			+		+	+	+	58	C3	D1	W2			
46.	*Corvus corax*				+									3	C1	D1	W1		AIII	
47.	*Acrocephalus palustris**					+								2	C1	D1	W1		AII	AII
48.	*Sylvia communis*					+								1	C1	D1	W1		AII	AII

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No.	Species	Month												Absolute abundance	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							
49.	*Phylloscopus collybita*						+	+	+	+				9	C2	D1	W1		AII	AII
50.	*Oenanthe oenanthe*								+					5	C1	D1	W1		AII	
51.	*Saxicola rubetra*							+	+					12	C1	D1	W1		AII	
52.	*Saxicola torquata*			+										1	C1	D1	W1		AII	
53.	*Luscinia megarhynchos*					+								1	C1	D1	W1		AII	
54.	*Turdus merula*					+						+	+	3	C1	D1	W1		AIII	
55.	*Parus caeruleus*									+	+		+	10	C1	D1	W1		AII	
56.	*Parus major*							+		+				8	C1	D1	W1		AII	
57.	*Passer domesticus*	+				+								19	C1	D1	W1			
58.	*Passer montanus*			+			+	+		+				29	C2	D1	W2		AIII	
59.	*Fringilla coelebs*									+	+	+		36	C1	D1	W1		AIII	
60.	*Carduelis chloris*			+		+	+				+			16	C2	D1	W1		AII	
61.	*Carduelis carduelis*	+												14	C1	D1	W1		AII	
62.	*Carduelis cannabina*										+			4	C1	D1	W1		AII	
63.	*Emberiza schoeniclus**									+		+		2	C1	D1	W1		AII	
64.	*Miliaria calandra*				+	+					+			6	C1	D1	W1		AIII	
65.	*Emberiza citrinella*	+	+						+		+	+	+	64	C2	D1	W2		AII	
Number of species		18	17	23	17	19	15	20	20	22	25	18	15							
Number of individuals		1098	351	277	298	101	121	394	1926	1028	1239	1218	990							

Legend:
* - dependent on the water birds; + - presence; AI, AII, AIII – annexes.

Regarding the index of constancy, 41 species (63.08%) were accidental (C1), 15 species (23.08%) were accessory (C2), 4 species (6.15%) were constant (C3) and 5 species (7.69%) were euconstant (C4), (table 1, figure 3). The constant species are: *Tachybaptus ruficollis*, *Ardea cinerea*, *Motacilla alba*, and *Pica pica* and the euconstant species are: *Podiceps cristatus*, *Phalacrocorax carbo*, *Anas platyrhynchos*, *Fulica atra*, and *Larus argentatus cachinnans/michahellis*.
By the index of dominancy, 54 species (83.08%) were subrecedent (D1), 2 species (3.08%) were recedent (D2), 7 species (10.77%) were subdominant (D3), 0 species (0%) were dominant (D4) and 2 species (*Anas platyrhynchos* and *Fulica atra*, 3.08%) were eudominant (D5), (table 1, figure 4).
According to the Dzuba index of ecological significance, 47 species (72.31%) were subrecedent (W1), 10 species (15.38%) were recedent (W2), 6 species (9.23%) were subdominant (W3), 0

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species (0%) were dominant (W4) and 2 species (*Anas platyrhynchos* and *Fulica atra*, 3.08%) were eudominant (W5), (table 1, figure 5).

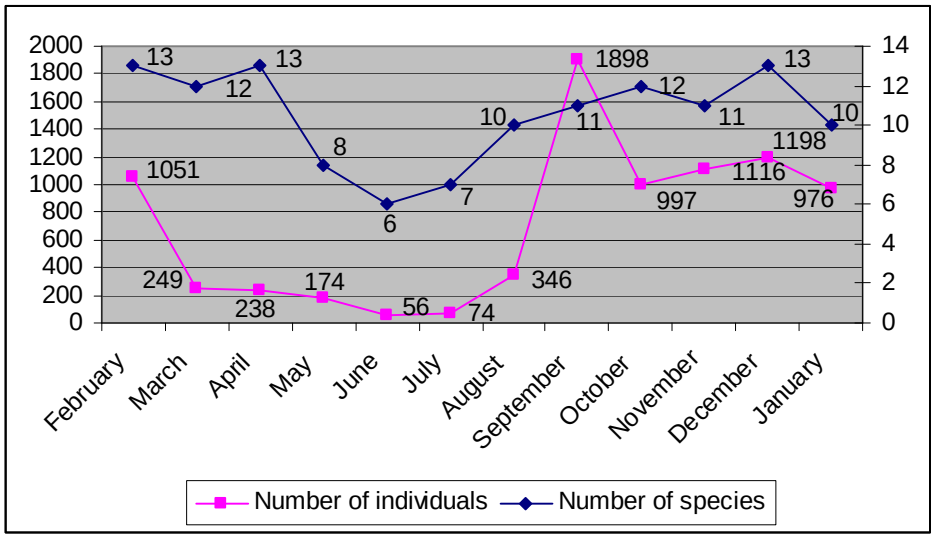

Figure 2. The monthly variation of the number of individuals and of the number of species.

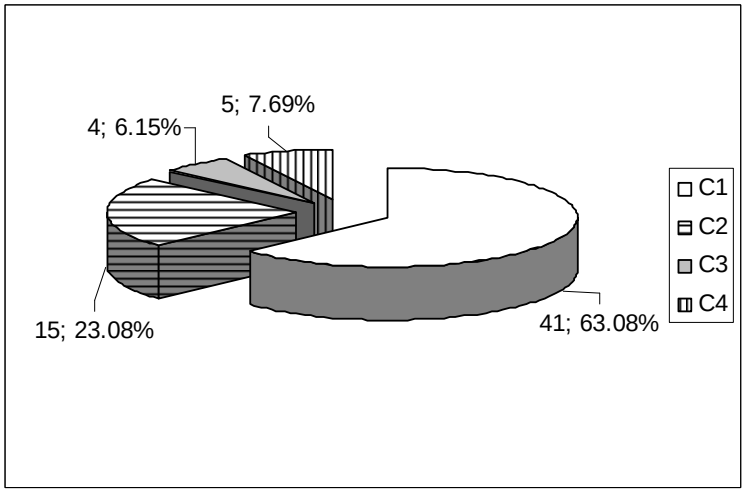

Figure 3. The species distribution according to the index of constancy.

The eudominant species (both in the case of index of dominancy and in the case of Dzuba index of ecological significance) are *Anas platyrhynchos* and *Fulica atra*. Their monthly variation of strength reflects powerfully in the total variation of the number of individuals of all species. *Anas platyrhynchos* was represented by few individuals in June and August and by no individuals in July. Its number increases continuously up to maximum in December (810 individuals), after that it begins to descend. Generally, in the hiemal period it is the best represented. *Fulica atra* maintains a small number of individuals from April to July (it is even absent in May) and a bigger number in the rest of the year. In September, its number increases very much (up to 1,591 individuals), after that it begins to go down until the hiemal minimum in January, caused by the intense freezing of the water (figure 6). The variation of the number of individuals from a month to another is influenced

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by more aspects: the hunting, the relatively bad conditions of breeding, feeding and resting, the issue of juveniles, the migratory birds, etc.

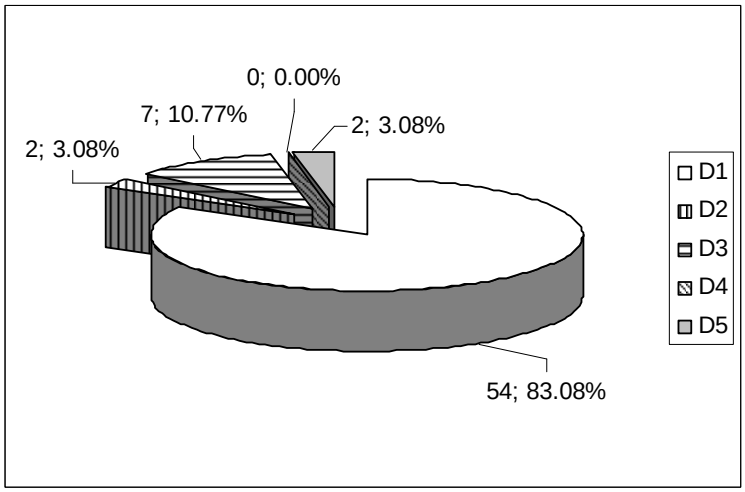

Figure 4. The species distribution according to the index of dominancy.

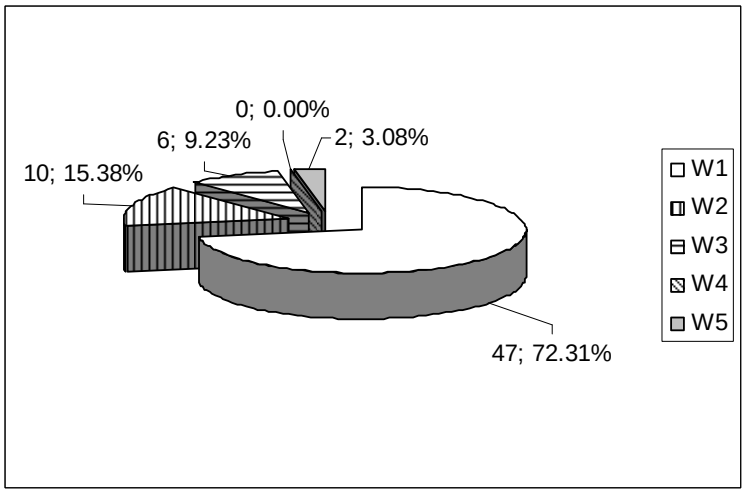

Figure 5. The species distribution according to the index of Dzuba ecological significance.

Taking into account the ones previously mentioned, on the whole year, Anseriformes and Gruiformes were the overdominat orders, and other orders were complementary, where the static axis (As) is 7.7 and the dominance axis (Ad) is 15.4 (figure 7). Anseriformes numbered 3,950 individuals and Gruiformes 3,159 individuals.

There is a big difference between the number of individuals of *Anas platyrhynchos* and the number of individuals of the other species of Anseriformes, too. This means that *Anas platyrhynchos* is overdominant species in the Anseriformes coenose and the other species are complementary, where the static axis (As) is 14.3 and the dominance axis (Ad) is 28.6 (figure 8).

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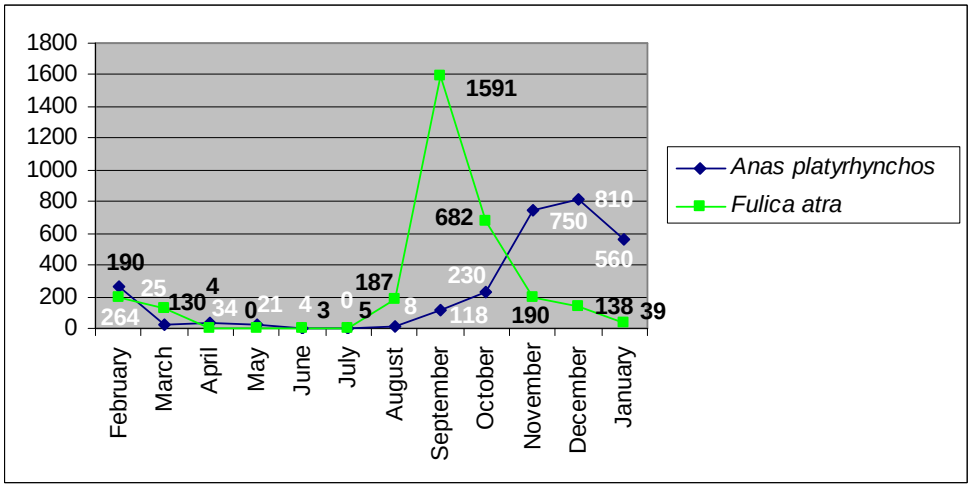

Figure 6. The monthly variation in number of Anas platyrhynchos and Fulica atra.

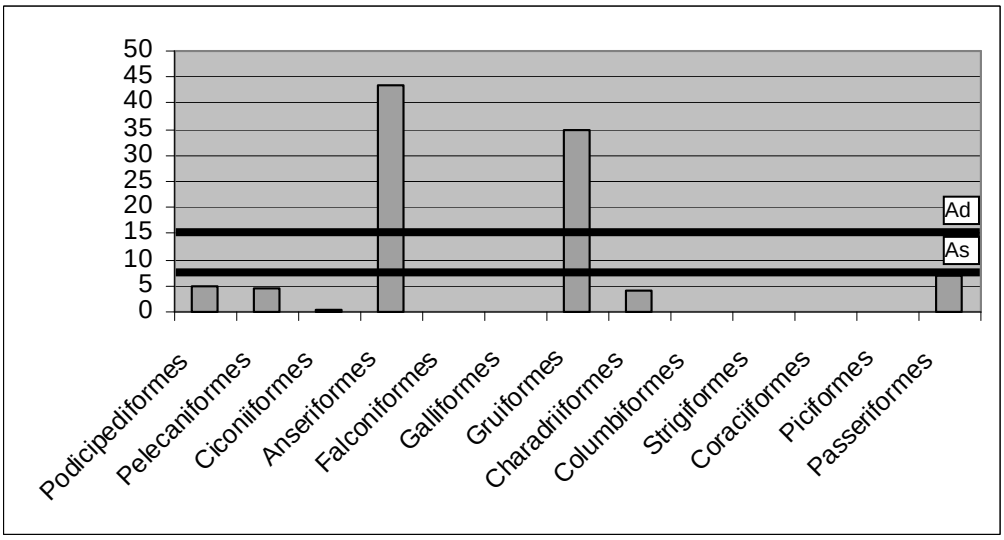

Figure 7. The participation of the orders to the formation of the avicoenose from the Vâlcele Basin.

Regarding on the monthly dynamics of the orders (figure 9), it is noticeable that Podicipediformes (in April, June, July and August), Pelecaniformes (in May), Anseriformes (between February and April and between October and January), Gruiformes (in February, March, August, September and October), and Passeriformes (in March, May, June and July) were overdominant orders. Podicipediformes (in May), Pelecaniformes (in April, August and January), Anseriformes (in September), Gruiformes (in November and December), Charadriiformes (in July, August and January) and Passeriformes (in April, August and November) were dominant. Ciconiiformes, Falconiformes, Galliformes, Columbiformes, Strigiformes, Coraciiformes, Piciformes were always complementary. The dynamics of the orders is influenced mainly by the migration of the Anseriformes and by the apparition of the juveniles of Gruiformes. The static axis (As) is 7.7 and the dominance axis (Ad) is 15.4.

Concerning the monthly dynamics of the species of Anseriformes (figure 10), notable is that *Anas plathyrhynchos* was almost always overdominant species, only *Aythya fuligula* (in March and April) and *Aythya ferina* (in February) being included in this category among the other species. *Anas plathyrhynchos*, *Anas crecca* and *Bucephala clangula* (in March) were dominant species. *Cygnus olor*

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and *Anas clypeata* were always complementary. In July no species of Anseriformes were observed. The static axis (As) is 14.3 and the dominance axis (Ad) is 28.6.

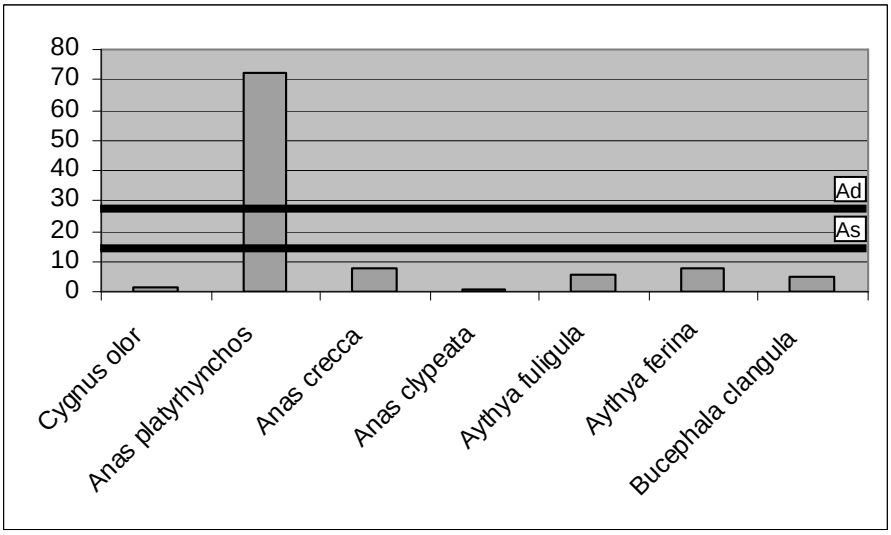

Figure 8. The participation of the species to the formation of the Anseriformes coenose from the Vâlcele Basin.

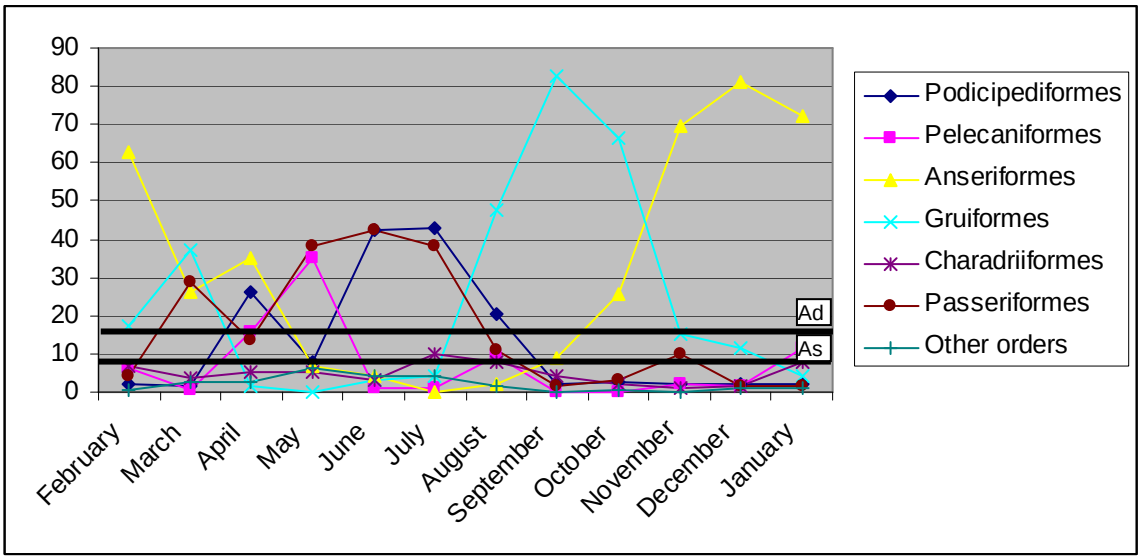

Figure 9. The monthly dynamics of the orders.

By Birds Directive, 7 species (10.76%, *Egretta alba*, *Nycticorax nycticorax*, *Ciconia ciconia*, *Chlidonias hybridus*, *Alcedo atthis*, *Picus canus*, and *Lanius collurio*) are in the Annex I (AI). These species shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution (http://eur-lex.europa.eu/). By Bern Convention, 38 species (58.46%) are in the Annex II (AII, strictly protected species) and 22 species (33.84%) are in the Annex III (AIII, protected species) (http://conventions.coe.int/). By Bonn Convention, 19 species (29.23%) are in the Annex II (AII, migratory species which have an unfavourable status of protection and that demand international agreements for their protection) (http://eur-lex.europa.eu/legal-content/).

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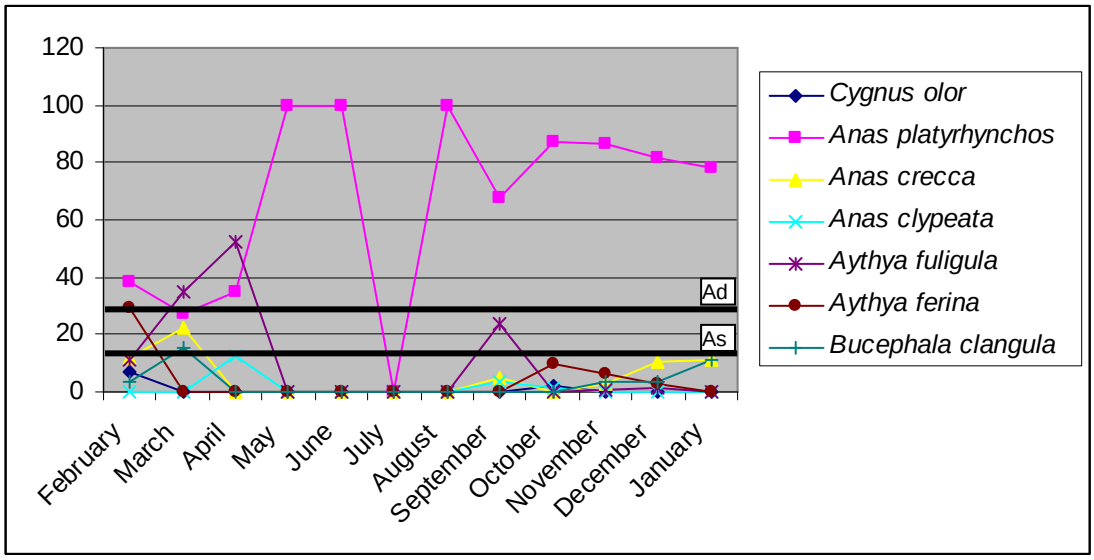

Figure 10. The monthly dynamics of the species of Anseriformes.

4. CONCLUSIONS

- During February 2013 – January 2014, on the Vâlcele Basin were identified 65 bird species that appertain to 13 orders;
- Passeriformes was the richest (with 33 species), being followed by Anseriformes and Charadriiformes (each with 7 species);
- The most species were counted in the passage period and the most individuals in the autumn passage and in the hiemal season;
- *Podiceps cristatus*, *Phalacrocorax carbo*, *Anas platyrhynchos*, *Fulica atra*, and *Larus argentatus cachinnans/michahellis* were the euconstant species;
- *Anas platyrhynchos* and *Fulica atra* were the eudominant species;
- *Anas platyrhynchos* counted most individuals in a month in December and *Fulica atra* had the most number in September;
- All the year, Anseriformes and Gruiformes were the overdominat orders and, inside the Anseriformes order, *Anas platyrhynchos* was overdominant species;
- The monthly dynamics of the orders is influenced mainly by the migration of the Anseriformes and by the apparition of the juveniles of Gruiformes; *Anas platyrhynchos* was overdominant species almost every month;
- 7 species (*Egretta alba*, *Nycticorax nycticorax*, *Ciconia ciconia*, *Chlidonias hybridus*, *Alcedo atthis*, *Picus canus*, and *Lanius collurio*) are in the Annex I of the Birds Directive.

Seeing the surface of the lake in rapport with the surface of other basins from downstream, it is visible the small number of species and individuals registered along the year and, respectively, each month. The anthropogenic pressure, mainly during the hunting period, the lack of the reed beds and the fewness of the habitats, the place of the basin in the upper part of the Argeş River, less frequented by birds in passage, the deficient trophic resources etc. contribute together to this situation.

The Vâlcele Basin is an important part of “Lacurile de acumulare de pe Argeş” Special Protection Area. Reducing the negative anthropogenic impact through adequate measures of management, it is expected that its ornitofauna diversity will grow in the future.

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