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14. Bird migration in south-western Romania: an analysis of ringing recoveries from Dolj county

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Abstract: The present study concerns the bird species marked with rings in 21 countries (from Europe, Africa and Asia) and that were recaptured in the Souh-West of Romania, more precisely in Dolj county. The most came from Hungary (14 specimens), Russia (7 specimens), and Ukraine (6 specimens). The birds taken into consideration (58 specimens) belong to 22 species from *Phalacrocorax, Pelecanus, Nycticorax, Ardea, Ciconia, Plegadis, Platalea, Anas, Aythya, Coturnix, Fulica, Philomachus, Larus, Rissa, Sterna, Parus* genera. Some of them are kept in the patrimony of Museum of Oltenia, Craiova. The purpose of this study is to inform about the transcontinental bird migration and about some aspects regarding the traveled distance, flight speed, and longevity. In general, the ringed birds turned up in wetland areas nearby water courses, most of them being registred in the Danube Floodplain. In this context, we want to emphasize the importance of wetland habitats, especially of the ones in the green corridor of Danube, as benefic shelters for stop-over of migratory birds.

Keywords: bird migration, ringing recoveries, season, Romania, wintering

INTRODUCTION

There are more than 200 species of birds, which regularly migrate between Europe and Africa, comprising the Western Palearctic-African migratory systems. Populations of these species pass through mainland Europea, with most species crossing the Mediterranean Sea into Africa (Hahn et al. 2009). While most species spend the boreal winter in Africa, there are populations which winter in the Mediterranean Basin (especially short-distance migrants and wetland birds). Romania lays in the southern half of Europe and it hold a number of internationally important stop-over sites (mostly wetlands) and hosts huge numbers of birds in both migratory seasons (Papp and Sándor 2007). While most of the important sites and certain populations of these migratory species are known (Papp and Sándor 2007), the exact migratory flyways, breeding grounds and wintering areas of individual species are still mostly unknown. In order to provide more insight into the fascinating process of bird migration, we analysed recaptures of ringed birds in the region of SW Romania, close to the Danube flood-plain, an internationally known wetland complex (Papp and Sándor 2007).
Our study is focused on the birds marked with rings that were recaptured in the South-Western part of Romania, in the area of Dolj county (Map 1). The geographical configuration of the territory is divided into two main categories representing a pyramid-like figure:

- the plain compartiment, located South, has at its inferior border the Danube flood-plain, with the mean altitude of 30-35 m, and at the superior border it reaches a mean altitude of 180-200 m and it is part of the Olteniei plain (part of the Romanian plain).
- the hill compartiment, located in the northern half of the region, begins from the superior side of the plain and it goes up to the altitude of 325 m above the sea level, and it belongs to the Getic Piedmont or plateau.

Both compartiments are crossed (from the north to the south) by the Jiu river which represents one of the main hydrographic arteries of the county, along with the Danube river which crosses the region from west to east, representing the region's southern border. The hydrographic structure of Dolj county also includes other rivers that belong to the drainage areas of the Danube (Balasan, Desnăţui), of the Jiu river (Argetoaia, Rasnic, Amaradia) and of the Olt river (Tesluiul, Horezu) as well as a series of lakes and ponds (temporary or permanent ones), most of them being in the alluvial plain of the Danube region. The temporary ponds, formed during floods, drain during droughty seasons because of the poor undergroung water supply, thus giving birth to grasslands or arable lands, while the old permanent marshes (Ciuperceni, Arcer, Lata, Lunga, Ţarova) have kept their initial delta-like looks, and are supplied with water from the Danube via brooks and/or small narrow lakes. The largest wetland area (and also the largest area with permanent water cover) is represented by the Bistret Lake, supplied with water by the Desnăţui river on the North side and drained on the South side by a cesspool (Mălăiele's brook) which discharges in the Danube river. The lake has an approximate surface of 1936 ha and it represents the result of the process of manaement of the old natural marhes located in the alluvial plain of the Danube.

From a climatic point of view, Dolj county has a moderate-continental climate, but its southern location – south-western actually – as well as the hilly characteristic of the area located near the arch that the Carpathian-Balcanic mountain chain makes, determines the existence of a warmer climate than in the most territories of Romania (Cetăţeanu et al. 1981).

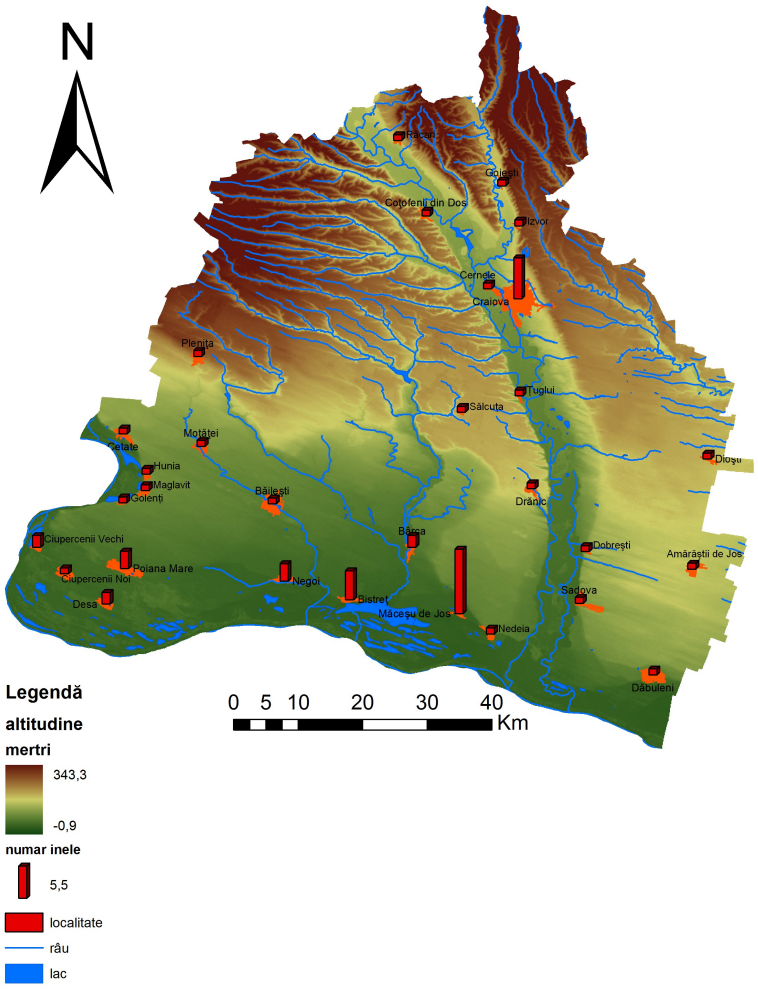

Figure 1 Map of study site, with location of recovery of ringed birds

MATERIAL AND METHODS

We have studied 58 ringed bird specimens found within the administrative boundaries of the Dolj county (Table 1). Some of the ringed birds and some of the rings recovered from birds found dead are kept in the Olteniei Museum in Craiova (Ridiche, 2004). These findings have been reported to the Romanian Ornithological Center (COR) and, in some cases, to other specialised organizations (S.O.R – the Romanian Ornithological Society, the „Danube Delta – National Institute for Research and Development"). In addition we collated information from published sources, mostly the COR Reports (Radu, 1972,1976,1994). Data on ringed birds are shown in Table 1; we must mention that in only one case of finding (one specimen of ***Sterna caspia***) we do not have complete data. In order to find out the minimal transited distances we have calculated the lenght of the track, expressed in km, from the place the birds were ringed in to the place they were found, using for this purpose the Google Earth (*****, 2010).

RESULTS AND DISCUSSIONS

The birds we studied were marked with rings in 21 countries, from 3 continents – Europe, Africa and Asia (Table 2).

Table 2. Origin of the ringed birds found on the territory of Dolj county

No.	Country of origin	Nr. of specimens	Ringed bird species found on the territory of Dolj county
1	Bulgaria	1	***Pelecanus crispus***
2	Czech Republic	1	***Nycticorax nycticorax***
3	Denmark	2	***Ciconia ciconia, Philomachus pugnax***
4	Egypt	1	***Coturnix coturnix***
5	Finland	3	***Ardea cinerea, Sterna caspia***
6	Germany	1	***Ciconia ciconia***
7	Hungary	14	***Ardea cinerea, Ciconia ciconia, Plegadis falcinellus, Platalea leucorodia, Larus ridibundus***
8	Italy	4	***Coturnix coturnix***
9	Lithuania	2	***Ciconia ciconia, Fulica atra***
10	Norway	1	***Anas acuta***
11	Poland	2	***Ardea cinerea, Ciconia ciconia***
12	Romania	1	***Ciconia ciconia***
13	Russia	7	***Anas strepera, Anas platyrhynchos, Anas acuta, Rissa tridactyla***
14	Senegal	1	***Anas querquedula***
15	Serbia	3	***Phalacrocorax pygmaeus, Ciconia ciconia, Platalea leucorodia***
16	Slovakia	2	***Ciconia nigra***
17	Sweden	3	***Philomachus pugnax, Sterna caspia***
18	Switzerland	1	***Aythya fuligula***
19	Turkey	1	***Platalea leucorodia***
20	Ucraine	6	***Phalacrocorax carbo, Plegadis falcinellus, Sterna sandvicensis, Parus major***
21	United Kingdom	1	***Sterna sandvicensis***

It can be easily noticed that the majority of the studied birds were ringed in Hungary (14 specimens), Russia (7 specimens) and Ucraine (6 specimens).

From the ecological classification point of view, the majority of the species are linked to wetland habitats; these are part of the following orders: Pelecaniformes (***Phalacrocorax carbo, P. pygmaeus***), Ciconiiformes (***Nycticorax nycticorax, Ardea cinerea, Ciconia ciconia, C. nigra, Plegadis falcinellus, Platalea leucorodia***), Anseriformes (***Anas strepera, A. platyrhynchos, A. acuta, A. querquedula, Aythya fuligula***), Gruiformes (***Fulica atra)*** and Charadriiformes (***Philomachus pugnax, Larus***

ridibundus, Rissa tridactyla, Sterna caspia, S. sandvicensis). The non-aquatic species belong to the Galliformes (***Coturnix coturnix***) and Passeriformes (***Parus major***) orders.

Next, we will briefly present some opinions regarding the birds' migration from the nesting places to their overwinter places and vice versa, and, in some cases, regarding the distances and the time passed from the moment they were ringed untill the moment they were found.

Phalacrocorax pygmaeus – Pygmy Cormorant

The specimen ringed in the northern area of Serbia (Voievodina) and found after aproximately three months in the South-West of our country shows an eastward deviation of the passage (or form part of an extensive post-breeding wandering) in order to get to the overwinter places in South-East Europe, Turkey and North-East Arabia.

Phalacrocorax carbo – Cormorant

The Ucrainian origin of the specimen found in the Danube's alluvial plain, at Bistreţ, pleads for the fact that at least part of the populations of this species that stay overwinter on our territory or are just passing through belong to the east/north-east regions of the European area of nesting.

Pelecanus crispus – Dalmatian Pelican

The ringed specimen found in the Danube's alluvial plain, on the beach of Bistreţ lake, shows the circulation of young birds comming from the nesting colony located in the Srebarna reservation, to the wetlands along the Danube, rich in food resources.

Nycticorax nycticorax – Night-Heron

The specimen found at the end of November proves a late presence of the species in our country. It must have belonged to a breeding population from the central-european area and it was migrating towards South-East for the winter season in the South (Central and/or West Africa).

Ardea cinerea – Grey Heron

Out of the three specimens found, two were ringed in Finland and Poland, and one in Hungary, which shows that they belong to the central and northern populations of the species, and the South of Romania is on their north-south migration route towards the Mediterranean or Africa.

Ciconia ciconia – White Stork

We are in possesion of data regarding 8 specimens ringed in Denmark, Germany, Lituania, Poland, Romania, Serbia and Hungary. These specimens confirm the numerous conclusions of the studies made on the White Stork's migration, which state that the north-eastern populations and most of the central european ones migrate eastward to the Bosphorus-Dardanelles straits and then from Asia Minor to Central and South Africa.

For six of them, the time passed from the fixation of the ring till their interception was under a year (with a minimum of 1 month, 24 days); the oldest specimen was over 11 years old. If we take into consideration the fact that the species reaches sexual maturity at the age of 3, we can conclude that almost 80% of the individuals didn't reproduce. The case of the ringed specimen found in our country at more than one year after the placement of the ring, at a distance of 217 km from the place it was marked with the ring, proves the fact that the species comes back to its home country, near its birth place.

Ciconia nigra – Black Stork

The specimens ringed in Slovakia show the orientation of the breeding population from Central Europe towards south-eastern regions, crossing the plain of Danube and resting in the wet lands which have a proper feeding environment.

Plegadis falcinellus – Glossy Ibis

Out of the 9 specimens we found, 2/3 have been part of the nesting population from Hungary, and 1/3 were part of the nesting populations in Ucraine. Most of them are young specimens, of about 2-5 months old, which shows that both these populations use the extensive wetlands of the Danube-plain for postbreeding periods.

Platalea leucorodia – Spoonbill

The data we have are with regard to three specimens, all of them recovered in the wetlands of the Danube alluvial plain. Out of these three, two were ringed in Hungary and Serbia, which confirms their south-eastern way to the overwinter areas. The third specimen, ringed in Turkey (most probably at its nest) and found during the spring migration shows a north-western movement which may possibly mean a change of nesting areas. Moreover the recapture of birds from such distant places in SW Romania shows that these popualations form a large SE European complex, ranging from Central Europe to Central Anatolia.

Anas strepera – Gadwal

A specimen ringed in summer time in Russia and found after one year and 8 months in Craiova during spring migration demonstrates the fact that it belongs to the nesting population in the eastern area of

Europe, and South-Western Romania has only been a passage area from the overwinter places in South-Western Romania (mediteraneeans) or Africa.

Anas platyrhynchos – Mallard

The specimen found at Dobreşti in the middle of December after 4 months and 12 days from the moment it has the ring placed on it in Russia confirms once again the hypothesis which states that the populations of mallards found in our country during the cold season, may belong to northern or eastern reproductive areas.

Anas acuta – Pintail

We have data regarding five specimens of this species, all of them ringed in the northern areas of the nesting area, four in Russia and one in Noway. This informations shows that Romania, implicitly the South of the country represents a resting territory and a passage for the northern populations of the species from and to the southern or western wintering places.

One of the specimens ringed in the Delta of Volga in 17th of July, 1979 (in the moulting season) is seen in the south of our country very soon after this, in 27th of August; the distance it had flown from the place it was ringed, is of about 2051 km, and the time elapsed from the moment it was ringed till it was captured was of one month and ten days meaning it must have been flying with an approximate speed of 51 km/day. The specimen marked in Norway had the longest period of survival – 3 years, 6 months and 20 days.

Anas querquedula – Garganey

The specimen ringed in the overwinter spot in the Delta of Senegal and then found at Amărăştii de Jos after almost 3 years and a half provides information regarding the wintering areas of some populations of this species.

Aythya fuligula – Tufted Duck

An adult specimen ringed in mid-winter in Switzerland was found in our country after about 1 year and a half during fall migration; this may mean a south-east advancement for the consecutive winter, most likely caused by switches in wintering areas.

Coturnix coturnix – Quail

Four quail specimens ringed in Italy and found in the Olteniei Plain gives us information regarding the migration pathways from and to the Mediterranean area. The finding of a specimen ringed in Egypt in the fall (October) shows either the overwinter spot in Northern Africa or just the transition area towards more southern areas of at least a part of the population of this species.

Fulica atra – Coot

One specimen ringed with approx. 3 months ahead in Lituania, most probably a juvenile, was found in the alluvial plain of the Danube. This demonstrates that, at least a part of the populations that are just passing by or that remain overwinter in the South of the country, are a part of the populations arrived from the Northern side of the reproductive area.

Philomachus pugnax – Ruff

One juvenile specimen ringed in Sweden was found in the Danube alluvial plain. This indicates that this is a place where young populations spend their time before the southward maigration for the winter.

Larus ridibundus – Black-headed Gull

The three specimens marked with rings in Hungary prove the fact that the Danube is a place located on the path of the transcontinental migration.

Rissa tridactyla – Kittiwake

The specimen found during winter time in the Danube alluvial plain over 2800 km away from the place it was ringed (Great Britain) shows the great dimensions of the areas used by this species. This individual was more than 5 years old at the time of recapture.

Sterna caspia – Caspian Tern

The presence in the South of the country during spring-fall migrations of four ringed specimens from Finland and Sweden is a proof of the transcontinental migration of this species performes on yearly basis towards the southern wintering area and of the passage through the South of Romania implicitly. The age of these specimens were between 3 months and 6 days to 6 years, 10 months and 4 days.

Sterna sandvicensis – Sandwich Tern

In the territory we investigated there were two specimens found: one that was ringed as a juvenile in Ucraine was captured after 4 months and 25 days during the fall migration through the alluvial plain of the Danube; the second specimen was ringed in Great Britain, most probably being a juvenile, and captured after 5 years, 6 months and 16 days in Craiova during the spring migration. In both situations it is obvious that a part of the population of this species passes through the South region of our country during their migration to an overwinter place that can provide the optimal life conditions.

Parus major – Great Tit

The fact that one specimen ringed in northern Ucraine during the fall was found in our country shows a south-western migration route of northern populations; these ones join the native populations or they replace them when they have migrated to the south for the winter season.
Analysing the time of ring-bearing and the distances at which the studied ringed bird specimens were found we observe the following:

- the oldest specimens belong to ***Ciconia ciconia, Sterna caspia, Rissa tridactyla, Sterna sandvicensis*** species;
- the shortest time that passed from the placing of the ring till the capture of the birds was recorded for the ***Anas acuta, Ciconia ciconia*** and ***Plegadis falcinellus***; the largest distances at which the birds have been found were recorded for ***Anas querquedula, Anas strepera, Rissa tridactyla, Anas acuta*** and ***Sterna caspia***.

Regarding the places the ringed birds were found at, we can easily see on the map in Figure 1., that these are generally the wetlands located on the course of rivers, most of them in the Danube flood-plain (Ridiche and Kiss, 2011). During the first six decades of the 21st century, the wet lands on the Danube were only a bit altered by the anthropic activities. Thus, they provided a green corridor very beneficial for the stop of the bird populations found in transcontinental migration. Later, although the biggest part of the aquatic surfaces were significantly reduced (for example, the Bistreţ-Cârna-Nasta-Nedeia marshland complex, with a surface of approximately 22.000 ha was reduced to the Bistreţ stock-pond, with a surface of approx. 2000 ha) or have been completely drained and transformed into arable fields; the remaining traditional wet lands continued to be resting places for an important number of migrating aquatic birds attracted by many feeding possibilities (Ridiche and Murariu, 2009).

The most important report of ringed birds was recorded during the last century. This may be a result of the low levels of bird protection from that time, regarding especially the fish-eating birds, in which case the actions against them were official. We list here especiallty the cormorants, pelicans, herons, spoonbills, glossy ibis, gulls and terns. This derogatory stigma put on these species faded out much later due to tropho-biological research made by numerous specialists, which have identified the trophic chain and the real ecological importance of these birds.

Presently, although they are protected by law, most of these species have a declining conservation status in all of their geographic range , implicitly their protection and the conservation of their habitats is not just a local issue, but a important problem in all Europe. The creation of a network of protected areas is a response to the anthropical dangers from the aquatic environment; this is why most of thewet lands in the territory we investigated is under legal protection, being a part of the national ecological network of Natura 2000 sites (*****, 2007). The preservation of these important ornithological treasures must be a priority in the management plans and in the cross-border endeavours for preserving the avifauna.

CONCLUSIONS

This paper studies the transcontinental migration of 22 bird species and certain aspects regarding the stop-over and the distances crossed during seasonal migrations. The study was realised based on data provided by 58 ringed bird specimens found in South-Western Romania, in Dolj county. The studied birds were ringed in 21 countries, but most of them come from Hungary (14 specimens), Russia (7 specimens) and Ucraine (6 specimens).

From a methodological perspective, they belong to the following orders: Pelecaniformes (genera: ***Phalacrocorax, Pelecanus***), Ciconiiformes (genera: ***Nycticorax, Ardea, Ciconia, Plegadis, Platalea***), Anseriformes (genera: ***Anas, Aythya***), Galliformes (***Coturnix*** genus), Gruiformes (***Fulica*** genus), Charadriiformes (genera: ***Philomachus, Larus, Rissa, Sterna***), Passeriformes (***Parus*** genus), and from an ecological perspective, most of them are waterbird species.

Regarding the places the ringed birds were found, most of them are wetlands located along water courses, especially near the Danube. This demonstrates that the the migrating pathway of the aquatic birds which fly from the nesting areas to the wintering areas lays along the Danube floodplain, and the wetlands along the Danube provide proper conditions for staging and stop-over for many migratory species.

Rezumat. Analiza datelor privitoare la păsările inelate, regăsite în Sud-Vestul României (judeţul Dolj). Studiul de faţă este realizat asupra speciilor de păsări marcate cu inele în 21 de ţări (din Europa, Africa şi Asia) şi regăsite în sud-vestul ţării, respectiv pe teritoriul judeţului Dolj. Cele mai multe provin din Ungaria (14 exemplare), Rusia (7 exemplare) şi Ucraina (6 exemplare). Păsările luate în discuţie (58 de exemplare) aparţin la 22 de specii din genurile ***Phalacrocorax, Pelecanus, Nycticorax, Ardea, Ciconia, Plegadis, Platalea, Anas, Aythya, Coturnix, Fulica, Philomachus, Larus, Rissa, Sterna, Parus***; câteva dintre acestea sunt păstrate în patrimoniul Muzeului Olteniei Craiova. Scopul studiului este de a documenta migraţia transcontinentală a păsărilor şi unele aspecte legate de distanţă parcursă, viteză de zbor, longevitate. În general regăsirile păsărilor inelate s-au făcut în zone umede din vecinătatea cursurilor de apă, cele mai multe fiind înregistrate în Lunca Dunării. În acest contex dorim să reliefăm importanţa zonelor umede, cu precădere a celor din coridorul verde al Dunării, ca refugii foarte prielnice pentru pasajul populaţiilor de păsări migratoare.

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Table 1. Ringed birds recapture in South-Western Romania (Dolj County)

No.	Species	Ring cod (series and no.)	Bird Center of record	Recording place (coordinates)	Date of record	Age and sex at ringing	Recapture place (coordinates)	Date of recapture	Past time	Min. dist. (Km)
1	*Phalacrocorax carbo*	A370483	UKK	Liman Molochnyy, Podkova – UA (46º38'N; 35º21'E)	15.05.1993	Juv.	Bistreţ (43º52'N, 23º35'E)	15.10.1995	2 y, 5 m.	969
2	*Phalacrocorax pygmaeus*	131	HGK	Novi Sad, YU78 – SRB (45.18N, 19.49E)	19.06.1911	Juv.	Hunia (44.08N, 23.08E)	15.09.1911	2 m, 26 d.	288
3	*Pelecanus crispus*	I.plastic: 55 EJ	BGS	Srebârna – BG (44º06'N, 27º04'E)	15.04.2001	Juv.	Bistreţ (43º52'N, 23º35'E)	27.08.2001	4 m, 12 d.	281
4	*Nycticorax nycticorax*	S 3137	CZP	Lednice (Eisgrub) Breslav, Moravia – CZ (48.48N, 16.48E)	23.07.1933	Juv.	Golenţi (44.01N, 23.06E)	24.11.1936	3 y, 4 m, 1 d.	714
5	*Ardea cinerea*	41812	HGK	Kisbalaton – HU (46º40'N, 17º13'E)	09.07.1928	Juv.	Negoi (43º55'N, 23º22'E)	04.02.1931	2 y, 6 m, 25 d.	571
6	*Ardea cinerea*	B 523775	PLG	Zamordaj, Olsztyn, – PL (53.58N, 21.35E)	09.06.1954	Juv.	Cernele (44.20N, 23.46E)	04.09.1956	2 y, 2 m, 25 d.	1038
7	*Ardea cinerea*	ML 04137	SFH	Inkoo, Uusimaa – FH (60.02N, 24.12E)	01.06.2002	Juv.	Izvor (44.22N, 23.48E)	01.10.2002	4 m.	1738
8	*Ciconia ciconia*	112606	HGK	Gelej, HG42 – HU (47.51N, 20.47E)	24.06.1934	Juv.	Sadova (43.53N, 23.57E)	17.08.1934	1 m, 24 d.	504
9	*Ciconia ciconia*	115501	HGK	Abaújfalu, Borsod-Abauj-Zemlén Province – HU (48.10N, 20.10E)	15.07.1935	Juv.	Craiova (44.17N, 23.47E)	04.04.1936	8 m, 20 d.	506
10	*Ciconia ciconia*	B 61846	DFR	Skerswetchen (Pogegen), Memel – Lituania (55.14N 21.46E)	15.07.1936	Juv.	Coţofeni (44.23N, 23.45E)	30.06.1937	11 m, 15 d.	1208
11	*Ciconia ciconia*	B71566	DRR	Gubinek – PL (51º55'N, 14º42'E)	12.07.1938	Juv.	Ciupercenii Noi (43º54'N, 22º57'E)	27.07.1940	2 y, 15 d.	1082
12	*Ciconia ciconia*	12	DKC	Gabol, Graw, Sydill – DK (55.15N, 9.09E)	25.06.1953	Juv.	Goieşti, (44.29N, 23.45E)	16.10.1964	11 y, 3 m, 21 d.	1584
13	*Ciconia ciconia*	B298	ROB	COMANA, Giurgiu (44.10N, 26.08E)	30.06.1954	Juv.	Sălcuta, Pădurea Cobia, (44,05N, 23,45E)	23.07.1955	1 y, 23 d.	217
14	*Ciconia ciconia*	D115283	HRZ	Perlez – SRB (45º12'N, 20º25'E)	26.06.1972	Juv.	Negoi (43º55'N, 23º22'E)	22.08.1972	1 m, 26 d.	275
15	*Ciconia ciconia*	3115	DEW	Lüdingworth – DE (53.46N, 08.46E)	23.06.1973	Juv.	Moţăţei (44.09N, 23.14E)	02.10.1973	3 m, 9 d.	1490
16	*Ciconia nigra*	I.plastic: 8 AU; I.metal : BX4258	CZP	Marhecke Rybniky Malacki district – SK (48º24'N, 17º01'E)	04.07.1999	Juv.	Poiana Mare (43º56'N, 23º05'E)	12.2001	2 y, 5 m.	683
17	*Ciconia nigra*	0236	SKB	Banske, Vronov Nad Toplou – SK (48º50'N, 21º34'E)	04.07.2003	Juv.	Bistreţ (43º52'N, 23º35'E)	13.01.2004	6 m, 9 d.	569
18	*Plegadis falcinellus*	ANON 119	HGK	Kisbalaton – HU (46º40'N, 17º13'E)	01.06.1928	Juv.	Craiova (44.15N, 23.50 E)	15.08.1929	1 y, 3 m, 14 d.	573

19	*Plegadis falcinellus*	27747	HGK	Kisbalaton – HU (46°40'N, 17°13'E)	14.06.1928	Juv.	Măceşu de Jos, Balta Nedeia, (43°55'N, 23°40'E)	18.08.1928	2 m, 4 d.	601
20	*Plegadis falcinellus*	53759	HGK	Kisbalaton – HU (46°40'N, 17°13'E)	04.06.1930	Juv.	Măceşu de Jos, Balta Nedeia,(43°55'N, 23°40'E)	21.08.1930	2 m, 17 d.	601
21	*Plegadis falcinellus*	67383	HGK	Kisbalaton – HU (46°40'N, 17°13'E)	05.06.1931	Juv.	Măceşu de Jos, Balta Nedeia, (43°55'N, 23°40'E)	12.08.1931	2 m, 7 d.	601
22	*Plegadis falcinellus*	66903	HGK	Kisbalaton – HU (46°40'N, 17°13'E)	05.06.1931	Juv.	Măceşu de Jos, Balta Nedeia,(43°55'N, 23°40'E)	08.08.1931	2 m, 3 d.	601
23	*Plegadis falcinellus*	103375	HGK	Kisbalaton – HU (46°40'N, 17°13'E)	28.06.1932	Juv.	Poiana Mare (43.55 N, 23.05 E)	08.09.1932	2 m, 10 d.	552
24	*Plegadis falcinellus*	D 843753	UKK	Dnestr Delta, Odessa – UA (46°27'N, 30°10'E)	20.05.1977	Juv.	Craiova (44.20N, 23.50E)	20.08.1977	3 m.	550
25	*Plegadis falcinellus*	D814396	UKK	Belyaevka, Dnestr Delta, Odessa – UA (46°27'N, 30°10'E)	22.05.1977	Juv.	Măceşu de Jos, Balta Nedeia, (43°55'N, 23°40'E)	12.09.1977	3 m, 20 d.	584
26	*Plegadis falcinellus*	D 814878	SUM	Belyaevka, Dnestr Delta – UA (46°50'N, 30°12'E)	03.06.1979	Juv.	Ciupercenii Vechi (43°55'N, 22°55'E)	23.11.1979	5 m, 20 d.	633
27	*Platalea leucorodia*	103651	HGK	Kisbalaton – HU (46°40'N, 17°13'E)	16.06.1932	Juv.	Măceşu de Jos, Balta Nedeia, (43°55'N, 23°40'E)	25.08.1932	2 m, 9 d.	601
28	*Platalea leucorodia*	B52587	DER	Manyas Gölü, Sigirci – TR (40°13'N, 28°03'E)	24.06.1956	Juv.	Măceşu de Jos, Balta Nedeia,(43°55'N, 23°40'E)	03.04.1961	4 y, 9 m, 9 d.	537
29	*Platalea leucorodia*	I.plastic: 9A E 6S00124	SRB	Jazovo, Voievodina – SRB (45°53'N, 20°14'E)	20.05.2007	Juv.	Desa(43°49'N, 22°57'E)	12.08.2007	7 m, 4 d.	314
30	*Anas strepera*	E 612745	RUM	Abatsk, Tyumen – RU (56.17N, 70.22E)	25.06.1965	Ad./Male	Craiova, Lacul Viţelului (44.05N, 23.54E)	05.03.1967	1 y, 8 m, 7 d.	3483
31	*Anas platyrhynchos*	C 373647	RUM	Severnyy Kaspiy, isl. Iskusstvennyy Astrakhan O. – RU (46.25N, 47,56E)	23.07.1981	?	Dobreşti (43.56N, 23.54E)	05.12.1981	4 m, 12 d.	1870
32	*Anas acuta*	D 68546	RUM	Obzhorovskiy uchastok, Astrakhanskiy Nature Reserve – RU 46°30'N, 49°00'E	03.08.1938	Adult/Female	Drănic (44.03N, 23.31E)	24.03.1939	7 m, 21 d.	1983
33	*Anas acuta*	D205991	SUM	Obzhorovskiy uchastok, Astrakhanskiy Nature Reserve, Astrakhan – RU (46°30'N, 49°00'E)	26.07.1950	Adult	Bârca, Pârâul Dăsnăţui, (43°58'N, 23°34'E)	25.02.1952	1 y, 7 m.	2005
34	*Anas acuta*	5001333	NLA	Hofmansplaat, Noord Brabant – NL (51°43'N, 04°50'E)	17.08.1960	Adult	Măceşu de Jos (43°55'N, 23°40'E)	07.03.1964	3 y, 6 m, 20 d.	1656
35	*Anas acuta*	C388102	SUM	Astrakhan, Delta Volgăi – RU (46°25'N, 48°55'E)	17.07.1979	Adult ♀	Ciupercenii Vechi (43°55'N, 22°55'E)	27.08.1979	1 m, 10 d.	2051
36	*Anas acuta*	C387936	SUM	Astrakhan, Delta Volgăi – RU (46°25'N, 48°55'E)	17.07.1979	Adult ♂	Desa (43°51'N, 22°58'E)	10.03.1980	7 m, 21 d.	2051
37	*Anas querquedula*	FT 66712	FRP	Delta du Senegal – SE (16.10N, 16,18 E)	22.02.1974	Adult ♀	Amărăştii de Jos (43.57N, 24.10E)	16.08.1977	3 y, 5 m, 25 d.	4893

38	*Aythya fuligula*	Z 20814	HES	Vevey, Vaud – SW (46.28N, 6.50E)	29.01.1974	Adult ♂	Dioşti (44.09N, 24.23E)	26.08.1975	1 y, 6 m, 28 d.	1407
39	*Coturnix coturnix*	A 37183	IAB	Roma – IT (41.54N, 12.29E)	16.05.1938	Adult	Bârca (44.27N, 24.26E)	28.08.1939	1 y, 3 m, 12 d.	938
40	*Coturnix coturnix*	A 56166	IAB	Modena – IT (44.40N, 10.55E)	30.04.1939	Adult/Male.	Ţuglui (44.10N, 23.49E)	29.09.1939	4 m, 30 d.	1026
41	*Coturnix coturnix*	284141	IAB	Genova, Liguria – IT (44.25N, 8.56E)	30.05.1950	Adult	Pleniţa (44.13N, 23.10E)	18.08.1950	2 m, 19 d.	1134
42	*Coturnix coturnix*	505727	IAB	Vercelli, Piemonte – IT (45.18N, 8.26 E)	20.05.1954	Adult	Băileşti (44.30N, 23.21E)	02.09.1955	1 y, 3 m, 13 d.	1190
43	*Coturnix coturnix*	060-03389 Cairo	?	Mersa Matruh – Egipt (31.32N, 27.14E)	20.10.1969	Adult ♀	Răcari (44.41N, 25.46E)	06.09.1970	10 m, 16 d.	1370
44	*Fulica atra*	D 246607	LVR	Juvinta, Lituania – LV (54.24N, 23.38E)	16.08.1956	Adult	Dăbuleni (43.47N, 24.05E)	09.11.1956	2 m, 24 d.	1180
45	*Philomachus pugnax*	6002188	SVS	Eskilstuna, Södermanland – SV (59.22N, 16.30E)	11.09.1965	?	Nedeia, Gârla Florenţi (43.54N, 23.15E)	16.04.1966	7 m, 5 d.	1796
46	*Philomachus pugnax*	601817	DKC	Amager, DK (55º38'N, 12º34'E)	22.07.1971	Adult/♂	Poiana Mare (43º56'N, 23º05'E)	26.02.1972	7 m, 4 d.	1500
47	*Larus ridibundus*	S01792	HGK	Velencei-tó – HU (47º10'N, 18º30'E)	11.06.1910	Juv.	Măceşu de Jos, Balta Nedeia,(43º55'N, 23º40'E)	25.08.1910	7 m, 4 d.	551
48	*Larus ridibundus*	7434	HGB	Szeged-Fehértó – HU (46º20'N, 20º05'E)	18.06.1952	Juv.	Măceşu de Jos, Balta Nedeia,(43º55'N, 23º40'E)	20.09.1953	2 m, 14 d.	399
49	*Larus ridibundus*	19621	HGB	Szeged-Fehértó – HU (46º20'N, 20º05'E)	21.06.1953	Juv.	Măceşu de Jos, Balta Nedeia, (43º55'N, 23º40'E)	05.08.1955	3 m, 2 d.	399
50	*Larus ridibundus*	30922	HGB	Szeged-Fehértó HG43 – HU (46.20'N, 20.05'E)	13.06.1954	Juv.	Craiova (44.15'N, 23.50'E)	05.11.1954	4 m, 23 d.	364
51	*Rissa tridactyla*	E 461923	RUM	Marea Barents – RU (68.49'N, 37.20'E)	18.06.1966	Juv.	Maglavit (44.03'N, 23.05'E)	30.01.1972	5 y, 7 m, 12 d.	2820
52	*Sterna caspia*	C228520	SFH	Finland	-	?	Bistreţ (43º52'N, 23º35'E)	12.11.1972	-	cca.1820
53	*Sterna caspia*	H54579	SFH	Pernaja – Finland (60.15'N, 26.25'E)	22.06.1966	Adult	Cetate (44.07'N, 25.02'E)	26.04.1973	6 y, 10 m, 4 d.	1830
54	*Sterna caspia*	7044525	SVS	Gunnarsternarna Södermanland – SV (58.46'N, 18.20'E)	17.06.1968	Juv.	Craiova (44.19'N, 23.48'E)	06.09.1985	17 7, 11 m, 21 d	1650
55	*Sterna caspia*	7082756	SVS	Smaland – SV (58º03'N; 16º53'E)	14.06.1987	Juv.	Negoi (43.55'N, 23.25'E)	20.09.1987	3 m, 6 d.	1633
56	*Sterna sandvicensis*	F190759	UKK	Insula Orlov, Tendrowsky, Chersonsk – UA (46º17'N, 31º45'E)	30.06.1953	Juv.	Bistreţ (43º52'N, 23º35'E)	25.11.1953	4 m, 25 d.	694
57	*Sterna sandvicensis*	GP 38877	GBT	Lincoln – GB (52.42'N, 0.18'E)	24.08.1970	Adult	Craiova (43.48'N, 24.30'E)	12.03.1976	5y, 6 m, 16 d.	2000
58	*Parus major*	582686	UKK	Lebedivka Kiev O. – UA (50.38'N,30.31'E)	15.10.1980	Adult/ Female	Răcarii de Sus (44.30'N, 23.32'E)	04.12.1981	1 y, 1m, 19 d.	860

Legend: ? – unknown date ; Sex: ♀ - female; ♂ - male; Past time: y - year, m - month, z - days ; Min. dist. – minimum distance