

THE BIRD FAUNA AND THE ENVIRONMENTAL CHANGES IN THE LOWER SIRET RIVER (GALAȚI COUNTY, ROMANIA)

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Abstract. In the Lower Siret River's area, there were achieved just some ornithological studies. We follow the bird fauna's evolution starting from earlier '90 till now, comparing our monitoring studies began in 2004 with the only one published data (1994) regarding this territory, with a present status of SPA (Romanian Nature 2000 Network). There are some ponds and natural swampy areas (Tălăbasca, Lozova, Potcoava), while other were disappeared. If in 1994, there were recorded 48 bird species during the autumn birds' migration time, the present bird fauna's list comprise 137, with important breeding species' diversity (99 species). We notice the presence of some rare and protected breeding species in Romania and nor only (*Casmerodius albus*, *Egretta garzetta*, *Platalea leucorodia*, *Aythya nyroca*, *Falco naumanni*, *Himantopus himantopus*, *Chlidonias leucopterus* etc.), but also the appearance of some vagrant species (*Numenius tenuirostris* or *Glareola pratincola*), while some rare species in other sites from Romania use this area like feeding territory during the migration time (*Pelecanus onocrotalus*, *Tadorna tadorna*, *Recurvirostra avosetta* etc.). We analyse the influence of the different human activities in the area on the birds' diversity and populations, too.

Keywords: bird fauna, protection, environmental changes.

Rezumat. Avifauna și modificările mediului natural în Lunca Siretului Inferior (județul Galați, România). În sectorul inferior al bazinului Siret au fost realizate puține cercetări ornitologice. În prezentul studiu, urmărim evoluția avifaunei de la începutul anilor '90 până în prezent, comparând rezultatele investigațiilor inițiate în 2004 cu datele incluse într-un studiu publicat în 1994 și realizat în acest perimetru care este inclus, ca arie specială de protecție avifaunistică (ASPA), în rețeaua națională Natura 2000. Teritoriul include câteva eleștee și bălți (Tălăbasca, Lozova, Potcoava), unele zone umede dispărând între timp. În 1994, în perioada migrației de toamnă, au fost inventariate 48 de specii de păsări; lista avifaunistică actuală include 137 de specii de păsări, avifauna clocitoare prezentând o mare diversitate (99 specii). Subliniem prezența clocitoare a unor specii rare și protejate nu numai în România (*Casmerodius albus*, *Egretta garzetta*, *Platalea leucorodia*, *Aythya nyroca*, *Falco naumanni*, *Himantopus himantopus*, *Chlidonias leucopterus* etc.), dar și apariția unor specii eraticе (*Numenius tenuirostris* sau *Glareola pratincola*), în timp ce alte specii protejate folosesc acest teritoriu ca loc de popas și hrănire în perioada migrației (*Pelecanus onocrotalus*, *Tadorna tadorna*, *Recurvirostra avosetta* etc.). Urmărim și influența diferitelor activități desfășurate de om în acest perimetru, asupra diversității și efectivelor avifaunei.

Cuvinte cheie: avifaună, protecție, modificări ambientale.

INTRODUCTION

Galați County is one of the privileged regions in Romania, being bordered by two very important birds' flyways in our country, the valleys of the Siret River, in the western side, respectively, the Prut River in the eastern side, the both water courses shedding into the Danube River near Galați city.

In the Lower Siret River, there are, still, present three natural lakes Tălăbasca, Lozova and Potcoava Marshes, all being included in the Romanian Nature 2000 Network like part of the Special Protected Area "Lower Meadow of the Siret" (ROSPA0071, in HG 1284/2007). The access is possible on the national road DN 25 (on the sector Galați - Tecuci), but also by train. Tălăbasca Marsh is situated in the vicinity of Tudor Vladimirescu village (north-western limit), while the other two marshes are located near Braniștea village: Potcoava Marsh, in the south-western side, approximately 2 kilometres away and Lozova Marsh, in the north-eastern margin of the village.

Tălăbasca Marsh is the northern one, being a meadow lake, covering a surface about 139 hectares (ha); it has protection status starting from 1994 and it is part of one Special Protected Area (SPA) in the Romanian Nature 2000 Network: "Lower Meadow of the Siret River" (HG 1284/2007). The marsh receives waters from the Siret River, the Geru and the Călmățui rivulets. The vegetation is represented by: reed (*Phragmites* sp.) and bulrush (*Typha* sp.) beds on about 60% from the marsh' surface, with a large compact central area, but also a wet grassland with swampy and sedge (*Scirpus* sp.) sectors. In the vicinity of the marsh, there exist large agricultural lands and a flooding meadow forest, on the Siret River valley, separated by a wet grassland area.

Potcoava Marsh is an elbow lake, with a total surface about 50 ha. The birds' suitable habitats are: open water, reed and bulrush beds (covering about 40% of the whole surface), relatively high banks, the nearest flooding meadow forest on the Siret River valley, a small and young woodland plantation, but also, some agricultural lands.

Lozova Marsh is a river edge formation, with some technical arrangements in order to create a fishery, including dams on the southern and eastern sides. The total surface is about 270 ha; the southern part (130 ha) represent one abandoned fishery, step by step, the ponds being clogged and invaded by marsh vegetation (sedge, reed and bulrush, different floating plants). The northern sector is one open aquatic surface, with thin reed beds in some points and it is used to mitigate the flooding risks.

The climate in this part of Romania has a strong continental influence, presenting dry and hot summers, respectively, dry and cold winters. The medium yearly value of temperature is about 10.4°C, with an obviously increasing during the last years, while the rainfalls present low values, the dryness being a constant phenomenon in the

area. During winter, the ice beds cover most of the water surfaces not due the low temperature, but due the strong cold winds from the north and north-eastern directions.

The bird fauna from the Siret River valley was studied, especially, in its middle sector (RANG, 2002; FENERU, 2002). In the lower part of the basin, the ornithological studies were done just irregularly; there was made only one study in earlier '90, during the autumn migration time (GACHE, 1994); the investigated wetlands disappeared or present obviously reduced surfaces as a result of the sealing and prolonged dryness registered by the end of the 20th century. Some pointed research allowed this perimeter to be included in the national Nature 2000 network (MULLER et al., 2005, respectively, PAPP & FĂNTĂNĂ, 2008). A preliminary study on the bird fauna's phenology in Tălăbasca Marsh and another one regarding the bird fauna from Potcoava Marsh were recently published (ARCAN & GACHE, 2008, 2009), while data on the diversity of bird fauna in Tălăbasca Marsh is in press (GACHE, 2010).

METHODS AND PERIOD OF STUDY

The present study began in 2004 and the fieldwork covered the all phenological periods. We used the transect method, the fixed points monitoring and the band counting for the quantitative estimation of the ducks and waders. For the three marsh areas, transects covered the whole perimeter in Tălăbasca and Potcoava Marshes, while for Lozova Marsh, we used a dam that crosses the marsh in the middle sector along whole its length. The birds were identified through direct observations, but also, through their songs for some species.

RESULTS AND DISCUSSIONS

The bird fauna presents one seasonal quantitative and qualitative dynamics in the Lower Siret River basin like in any wetland area; some bird species visit this territory like winter visitors coming from the northern breeding areas or are just in passage going twice yearly between the southern wintering sites and the northern breeding areas, while others are breeding there, like sedentary or summer visitor species. The biggest diversity, but also, the greatest effectiveness of birds were recorded during August and September, so, in the autumn passage, when birds prepare themselves for the migration flying and wintering, using the abundance of food resources to accumulate the fat tissue necessary as energy resource. The juvenile birds and the breeding adults cannot be seen together not only for the resident or summer visitor bird species, but for the northern populations that cross to the south for the winter period, too.

In Table 1, we render the recorded bird species in Tălăbasca, Potcoava, and Lozova marshes during the last five years and the situation recorded in the 1994 autumn, trying to follow the evolution of the bird fauna diversity in the area. Our list includes 136 bird species, with an unequal distribution on the three investigated marshes. Tălăbasca Marsh was visited by 127 bird species, offering a large diversity of suitable habitats for the birds' breeding, resting and refuge, but various, rich and abundant feed resources, too. As we can see in the mentioned table, the aquatic and semi-aquatic bird species are dominant in this site, mostly visiting the marsh area starting from March till the middle November. There exist large compact reed beds, open water and swampy areas, while, in the vicinity, there are grasslands and the forest located within the Siret River alluvial plain.

Regarding the bird phenological status, the summer visitors are in the top, with 68 bird species, followed by the passage species (28 bird species), and sedentary bird group (19 species), while the wintering visitors are represented just by 7 bird species. Some bird species present a different phenological status in the area than in Romania, especially, due the absence of the suitable breeding habitats in the marsh perimeter. The wintering bird fauna is poor due the ice bed that is covering near 80% of the whole marsh perimeter, normally starting from the last decade of November till the beginning or, sometime, last decade of March (2005, 2006, and 2010). Among the aquatic bird species constantly present as wintering visitors, we mention: *Cygnus olor*, *Anser anser*, *Anas platyrhynchos*, *A. penelope*, *A. crecca*, *A. clypeata*, *Aythya ferina*, and *A. fuligula*, the last being present with small effectiveness, representing not a common species in this area. The mostly aquatic bird winter visitors on Tălăbasca Marsh are represented by northern populations that are leaving this territory early in spring, going to the breeding areas in the north, while the summer breeding populations go to the southern wintering sites by the end of summer or during the first part of the autumn.

This marsh territory represents the most important breeding area for typically wetland birds in the Lower Siret River basin. We identified 92 breeding bird species in different habitats from the marsh perimeter and in its vicinity, another 5 bird species being irregular or probably breeding species in this wetland area. In the middle part and western side of Tălăbasca Marsh, the compact and large reed beds offer very suitable conditions for one mixed breeding colony of egrets, herons and spoonbills, presenting low but constantly positive trends. Among the anseriform species, we notice the presence of the Greylag Goose (*Anser anser*), an indicator for a low level of anthropogenic impact, starting with two pairs in 2007' spring, while, in early May 2010, we counted 56 individuals, eating in the eastern swampy perimeter. We mention, also, the breeding presence of *Anas strepera* that present a negative trend in the last years and *Aythya nyroca*, globally threatened bird species. From the grebes group, we met four breeding species, mentioning, especially, the presence of *Podiceps grisegena* and *P. nigricollis*, which became, relatively, rare breeding species on the Siret and the Prut River. Building floating nests, too, the terns formed a mixed colony in the south-western and western sides of the marsh – *Chlidonias hybridus*, *C. niger*, *C. leucopterus* (the last, with 3-5 pairs), and *Sterna hirundo*.

Table 1. List of the bird species recorded on the territory of the protected areas “Lower Meadow of the Siret”.
 Tabel 1. Lista speciilor de păsări inventariate pe teritoriul ariei protejate “Lunca Siretului Inferior” (1993 - 1994/2004 - 2009).

No.	Species	2004 - 2009				1993 - 1994	IBA Criteria	Romanian Red Book of Vertebrates	Law no. 407/2006	Birds' Directive Annex 1
		Tălăbășca Marsh	Potcoava Marsh	Lozova Marsh						
1.	<i>Podiceps cristatus</i>	+/B	-	+/B	+	A4/B1	-	Annex 2	-	
2.	<i>Podiceps grisegena</i>	+/B	-	-	-	A4/B1	-	Annex 2	-	
3.	<i>Podiceps nigricollis</i>	+/B	-	-	-	A4/B1	-	Annex 2	-	
4.	<i>Tachybaptus ruficollis</i>	+/B	-	+/B	-	A4/B1	-	Annex 2	-	
5.	<i>Pelecanus onocrotaius</i>	+	+	+	-	A4/B1, B2	V	Annex 2	+	
6.	<i>Phalacrocorax carbo</i>	+	+	+	-	A4/B1	-	Annex 1	-	
7.	<i>Phalacrocorax pygmaeus</i>	-	+	+	-	A4/B1	V	Annex 2	+	
8.	<i>Botaurus stellaris</i>	+/B	+/B	-	-	B2	-	Annex 2	+	
9.	<i>Icthyophaga minutus</i>	+/B	+/B	+/B	+	B2	-	Annex 2	+	
10.	<i>Ardeola ralloides</i>	+/B	+/B	+/B	+	A4/B1, B2	V	Annex 2	+	
11.	<i>Egretta garzetta</i>	+/B	+/B	+/B	+	A4/B1	T	Annex 2	+	
12.	<i>Ardea alba (Casmerodius albus)</i>	+/B	+/B	+/B	+	A4/B1	T	Annex 2	+	
13.	<i>Ardea purpurea</i>	+/B	+/B	+/B	+	B2	T	Annex 2	+	
14.	<i>Ardea cinerea</i>	+/B	+/B	+/B	+	A4/B1	-	Annex 2	-	
15.	<i>Nycticorax nycticorax</i>	+/B	+/B	+/B	+	A4/B1, B2	V	Annex 2	+	
16.	<i>Plegadis falcinellus</i>	+	-	-	-	A4/B1, B2	V	Annex 2	+	
17.	<i>Platalea leucorodia</i>	+/B	-	-	-	A4/B1, B2	T	Annex 2	+	
18.	<i>Ciconia ciconia</i>	+/B	+/B	+/B	+	A4/B1, B2	V	Annex 2	+	
19.	<i>Ciconia nigra</i>	+	+	-	-	A4/B1, B2	V	Annex 2	+	
20.	<i>Cygnus olor</i>	+/B	+/B?	+/B	+	A4/B1	-	Annex 2	-	
21.	<i>Cygnus cygnus</i>	+	-	-	-	A4/B1	-	Annex 2	+	
22.	<i>Anser anser</i>	+/B	-	-	-	A4/B1	-	Annex 1	-	
23.	<i>Anas platyrhynchos</i>	+/B	+/B	+/B	+	A4/B1	-	Annex 1	-	
24.	<i>Anas strepera</i>	+/B	+/B	+/B?	-	A4/B1, B2	-	Annex 2*	-	
25.	<i>Anas penelope</i>	+	-	-	-	A4/B1	-	Annex 1	-	
26.	<i>Anas acuta</i>	+	-	-	-	A4/B1, B2	-	Annex 1	-	
27.	<i>Anas crecca</i>	+	-	-	-	A4/B1	-	Annex 1	-	
28.	<i>Anas querquedula</i>	+/B	+/B	+/B	-	A4/B1, B2	-	Annex 1	-	
29.	<i>Anas clypeata</i>	+	+	-	-	A4/B1	-	Annex 1	-	
30.	<i>Aythya ferina</i>	+/B	+	+/B	-	A4/B1, B3	-	Annex 1	-	
31.	<i>Aythya fuligula</i>	+	+	-	-	A4/B1	-	Annex 1	-	
32.	<i>Aythya nyroca</i>	+/B	+/B	+/B	+	A1, A4/B1	V	Annex 2	+	
33.	<i>Tadorna tadorna</i>	+/B?	-	-	-	A4/B1	V	Annex 2	-	
34.	<i>Buteo buteo</i>	+	+	+	-	A4/B1	-	Annex 2	-	
35.	<i>Accipiter nisus</i>	-	+	-	-	A4/B1	-	Annex 2	-	
36.	<i>Pernis apivorus</i>	+	-	-	-	A4/B1	V	Annex 2	+	
37.	<i>Milvus migrans</i>	+	-	-	-	A4/B1, B2	CT	Annex 2	+	
38.	<i>Circus aeruginosus</i>	+/B	+/B	+/B	-	A4/B1	-	Annex 2	+	
39.	<i>Falco tinnunculus</i>	+/B	+/B	-	-	A4/B1, B2	-	Annex 2	-	
40.	<i>Falco subbuteo</i>	+/B	+/B	-	-	A4/B1	-	Annex 2	-	
41.	<i>Falco naumanni</i>	-	+/B	-	-	A1/B1	V	Annex 2	+	
42.	<i>Phasianus colchicus</i>	+/B	+/B	-	-	-	-	Annex 1	-	
43.	<i>Coturnix coturnix</i>	-	+/B	-	-	B2	-	Annex 1	-	

93.	<i>Motacilla alba</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 2	-
94.	<i>Motacilla flava</i>	+/B	+/B	+/B	+/B	-	-	-	Annex 2	-
95.	<i>Lanius collurio</i>	+/B	+/B	+/B	+/B	-	B2	-	Annex 2	+
96.	<i>Lanius minor</i>	+/B	+/B	+/B	+/B	+	B2	-	Annex 2	+
97.	<i>Oriolus oriolus</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 2	-
98.	<i>Sturnus vulgaris</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 1	-
99.	<i>Pica pica</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 1	-
100.	<i>Corvus fragilegus</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 1	-
101.	<i>Corvus monedula</i>	+/B	+/B	+/B	+/B	+	B3	-	Annex 1	-
102.	<i>Corvus corone cornix</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 1	-
103.	<i>Troglodytes troglodytes</i>	+/B	-	-	-	-	-	-	Annex 2	-
104.	<i>Locustella luscinioides</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
105.	<i>Acrocephalus schoenobaenus</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
106.	<i>Acrocephalus scirpaceus</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
107.	<i>Acrocephalus arundinaceus</i>	+/B	+/B	+/B	+/B	-	-	-	Annex 2	-
108.	<i>Hippolais icterina</i>	+/B	-	-	-	-	B3	-	Annex 2	-
109.	<i>Sylvia communis</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
110.	<i>Sylvia borin</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
111.	<i>Sylvia aricapilla</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
112.	<i>Phylloscopus collybita</i>	+/B	+/B	+/B	+/B	-	-	-	Annex 2	-
113.	<i>Muscicapa striata</i>	+/B	+/B	+/B	+/B	-	B2	-	Annex 2	-
114.	<i>Saxicola torquata</i>	+/B	+/B	+/B	+/B	-	B2	-	Annex 2	-
115.	<i>Saxicola rubetra</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
116.	<i>Eritriacus rubecula</i>	+/B	-	-	-	-	B3	-	Annex 2	-
117.	<i>Luscinia megarhynchos</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
118.	<i>Turdus merula</i>	+/B	+/B	+/B	+/B	+	B3	-	Annex 2	-
119.	<i>Turdus philomelos</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 1	-
120.	<i>Turdus pilaris</i>	+	+	+	+	-	B3	-	Annex 1	-
121.	<i>Parus palustris</i>	+/B	-	-	-	-	-	-	Annex 2	-
122.	<i>Parus major</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 2	-
123.	<i>Parus coeruleus</i>	+/B	+/B	+/B	+/B	-	-	-	Annex 2	-
124.	<i>Remiz pendulinus</i>	+/B	-	-	-	-	-	-	Annex 2	-
125.	<i>Panurus biarmicus</i>	+/B	+/B	+/B	+/B	-	-	-	Annex 2	-
126.	<i>Passer domesticus</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 2	-
127.	<i>Passer montanus</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 2	-
128.	<i>Passer hispaniolensis</i>	-	-	-	-	+	-	-	Annex 2	-
129.	<i>Fringilla coelebs</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
130.	<i>Fringilla montifringilla</i>	+	+	+	+	-	A3	-	Annex 2	-
131.	<i>Coccothraustes coccothraustes</i>	+/B	-	-	-	+	-	-	Annex 2	-
132.	<i>Carduelis chloris</i>	+/B	+/B	+/B	+/B	+	B3	-	Annex 2	-
133.	<i>Carduelis carduelis</i>	+/B	+/B	+/B	+/B	+	-	-	Annex 2	-
134.	<i>Carduelis cannabina</i>	+/B	-	-	-	-	B3	-	Annex 2	-
135.	<i>Miliaria calandra</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
136.	<i>Emberiza citrinella</i>	+/B	+/B	+/B	+/B	-	B3	-	Annex 2	-
137.	<i>Emberiza schoeniclus</i>	+/B	+/B	+/B	+/B	-	-	-	Annex 2	-

Legend: B - certainly breeding species; B? / irregular or probably breeding species; IBA Criteria: A1 - globally threatened species; A3 - species of restrictive biome; A4/B1 - bird species forming great agglomerations in different period of the year (breeding season, migration, wintering time); B2 - species with unfavourable conservation status in Europe; B3 - species with favourable conservation status in Europe; Romanian Red Book of Vertebrates: V - vulnerable species; T - threatened species; CT - critically threatened species; Law no. 407/2006: Annex 1 - bird species with hunting permission status; Annex 2 - bird species with prohibit hunting status; Annex 2* - bird species that were included in the list of the species with hunting permission status in the Law no. 197/2007.

On the swampy area, we met breeding pairs of *Vanellus vanellus*, *Himantopus himantopus*, *Recurvirostra avoetta*, and *Charadrius dubius* (the last two, like irregular breeding species). We must mention the presence of Shelduck adult individuals (*Tadorna tadorna*) with mating display behaviour in this marsh area (two pairs in 2006, one pair in 2007 and 2010).

The pelicans (*Pelecanus onocrotalus*) and the cormorants (*Phalacrocorax carbo*) visit the marsh perimeter only for feeding, sometimes, in groups of tens or more individuals.

During the autumn migration, the aquatic birds appear in flocks of hundred individuals, while the waders mixed flocks can gather more than 1,500 individuals, staying for days and weeks in this area that offers them rich food resources and suitable resting sites.

On Potcoava Marsh, we met 91 bird species, the bird fauna being dominated by the summer visitors (56 bird species) and sedentary species (13 bird species), recording only two typical winter visitors in this area (*Turdus pilaris* and *Fringilla montifringilla*). The breeding bird fauna is formed by 74 certainly breeding bird species and 5 probably breeding species (*Cygnus olor*, *Rallus aquaticus*, *Porzana porzana*, *Coracias garrulus*, and *Calandrella brachydactyla*). The reed beds cover large and compact surfaces in the northern part of this marsh with horseshoe shape; there appear, also, open waters, high clay banks and groups of high and old poplars and some willow groves. In the southern vicinity, a large woodland plantation with dense shrubs and bushes is present, while the meadow forest of the Siret River is situated no far away than 500 m, in the western side of the marsh. On the nearest terrains, there are agricultural lands (cereals and sunflower) and some grassland.

Usually, the water surface is covered by ice bed near completely (90% from the whole perimeter, but the ice bed covered the entire surface during the last winter, starting from the beginning of December 2009), so, regularly, the aquatic birds leave the area no late than the first decade of December (*Cygnus olor*, *Anas platyrhynchos*, *A. clypeata*, *Aythya ferina* and *A. fuligula*).

We notice the presence of the Black Stork (*Ciconia nigra*) during the spring migration, crossing like solitary individuals or in small flocks, no bigger than five birds. In the perimeter of Potcoava Marsh, we recorded an impressive number of Cuckoos (*Cuculus canorus*); probably, the birds take profit not only from the numerous possibilities to parasite the nests of warblers (*Acrocephalus* sp. and *Locustella luscinioides*), but the nests of other passerines from the young woodland with dense shrubs situated in the southern vicinity of the marsh and from the nearest meadow forest on the valley of the Siret River.

We met one unexpected breeding presence in the summer of 2009 (beginning August): one pair of Lesser Kestrel (*Falco naumanni*) occupying one old nest of a crow (*Corvus frugilegus*) in one old poplar, from the bank going in the middle part of marsh. First, we saw the female, resting on one electric pillar surveying the open grassland from the north-western side of the marsh; following the bird's flying, we identified the nest where one large falconet practiced the flight, while the male rested on the top of the tree. We will follow during the next period if the birds come back for the breeding season – till now, we recorded another two constantly breeding falcon species in this area – *Falco tinnunculus* and *F. subbuteo*.

During summer, the pelicans (*Pelecanus onocrotalus*) and cormorants (*Phalacrocorax carbo* and *P. pymaeus*) visit this area, searching for food, often swinging to and from the nearest Lozova Marsh.

In Lozova Marsh perimeter, there were recorded just 82 bird species during our fieldwork, 66 being certainly breeding species and one – *Anas strepera*, could be, at least, irregular breeding species in this area. Like everywhere in the area, the summer visitors (49 bird species) and the sedentary birds (16 species) represent the largest part of the bird fauna, but the highest level of the bird diversity is recorded during the autumn migration time. The breeding effectives are small, concentrating on the southern sector of the marsh (the former fishery), but we notice the breeding presence in the reed beds of one egrets and herons colony forming by *Ardeolla ralloides*, *Egretta garzetta*, *Ardea purpurea*, *A. cinerea*, and *Nycticorax nycticorax*, but also one mixed colony formed by grebes (*Podiceps cristatus*, *Tachybaptus ruficollis*) and terns (*Chlidonias hybridus*, *Sterna hirundo*).

As we can see, in the autumn 1992, 48 bird species were recorded in the wetlands from lower sector of the Siret valley; all of them are still present in different points of the area, especially, in the perimeter of Talabasca Marsh. We must notice the disappearance of the large swampy area that used to cover a territory from the north-eastern side of Vames village, sheltering some breeding pairs of egrets, herons, ducks, and rails. The water was permanent on a surface about 1.5 ha, but the swampy perimeter presented big oscillations. Most probably, the breeding bird species found refuge and suitable habitats in Tălăbasca Marsh area after this swampy area was dried due the wetland clogging phenomenon in the ending '90's.

For very short time, this area was visited by birds in July 2005, when due the abundant rainfalls, we had historical flooding phenomenon on the lower valley of the Siret River, water covering the whole perimeter, crossing the national road DN 25 in different sectors. The water broke the dams on the night of 13-14 July 2005, covering the cultivated lands and isolating the villages just in six hours, with very big material damages, affecting the energy and sewerage networks, broken bridges and houses. The effect of the rainfalls was associated with different human activities' impact. First of all, the dams were built under the dimensions and could not resist to the huge discharge recorded at the time. The deforestation and the wrong agricultural practices increased the erosion effects and the drainage on the slope coefficient. In the same time, there appeared numerous buildings in flooding risk areas. For all these reasons, the impact of this flooding phenomenon was very great.

We recorded large flocks of gulls (*Larus michahellis* and *L. ridibundus*), terns (*Sterna hirundo*, *Chlidonias hybridus*, *C. niger*), egrets and herons (*Egretta garzetta*, *Ardea cinerea*, *A. alba*), White Stork (*Ciconia ciconia*), waders (*Vanellus vanellus*, *Limosa limosa*, *Tringa ochropus*, *T. totanus*) – tens and hundreds birds – near Vames village, but also, on the large open plain between Piscu and Independenta villages.

Among the recorded bird species, 24 species appear in the Romanian Red Book of Vertebrates (BOTNARIUC & TATOLE, 2005) – 15 are vulnerable bird species, 6 are threatened bird species, and 3 are critically endangered bird species. The last group is represented by two rare autumn passage species in the area – *Milvus migrans* and *Gelochelidon nilotica*, respectively, one vagrant species in the area – *Numenius tenuirostris* (one recording on the 5th September 2008 - one adult, with contrasting brown spots on the whitish ventral part, shortly and thin beak, respectively, obviously white under wings in flying, observed when the very calm bird changed its position once; we had the possibility to compare it, too, with the species *N. arquata*, present with a large group in the area, five individuals being at a distance about 30 meters from the solitary Slender-billed Curlew exemplar). These birds were observed in Talabasca Marsh perimeter, where, we had recorded, also, only one time, the Collared Pratincole (*Glareola pratincola*): 14 individuals, on the 16th May 2006.

From the investigated wetland areas, in the beginning of the '90s, Potcoava Marsh and Lozova had a fishery status, the second one being more appropriately organized. In fact, Potcoava and Tălăbasca Marshes were used like places for sportive fishing more than for commercial exploitation; the fish stock was supplied yearly (*Cyprinus carpio*, *Stizosteidon lucioperca*, *Esox lucius*, *Perca fluviatilis*, *Carassius auratus gibelio*, and *Scardinius erythrophthalmus*).

Today, Lozova fishery is nearly abandoned, being used, especially, for occasionally fishing; by the end of September – the beginning of October, the administrator drained the water from fishery ponds - the southern sector of this wetland – and the ponds are, partially, filled with water in the second part of the spring (late April in 2009, respectively, beginning of May in 2010). In this area, we met, near all the fieldwork periods, groups about 40 – 60 sheep grazing in the vicinity or on the dry ponds, too.

From early spring to the middle autumn, Potcoava Marsh is visited constantly by numerous sportive fishermen, being situated close to Galați city, but the fishermen are present only on the banks, especially, in the southern sector of this marsh that is more open, with small and isolated reed patches, while Tălăbasca marsh has a caretaker (S.C. Negro S.R.L. Galați) and the sportive fishing is done occasionally, during the week-end and summer holiday. The fishery activity is still included in the management plan, but there is provided specific measures for sustainable development of the area. Despite the fact that they permit hunting games, respecting the law limits, we did not meet hunters in the area. We must mention the grazing activity – with cows and horses – on the swampy perimeter from the eastern and north-eastern side of the marsh, used like feeding place by numerous aquatic and semi-aquatic birds (herons, egrets, spoonbills, geese and ducks, waders), but, also, like breeding site by the wader species, including two rarities for our country, *Himantopus himantopus* and *Recurvirostra avosetta*. Sometime, the cattle number is greater than the capacity of regeneration of the vegetation. So, our recommendation for the caretaker was to control the number of cattle and to limit the grazing activity, at least, out of the birds breeding season.

The water eutrophication (high level on Potcoava and Lozova Marshes) and the wetland clogging due the abandonment of the fishery activity change the quality of the habitats, including for the bird species that lose suitable sites for breeding and feeding, affecting the local biodiversity due to the decreasing of the breeding pairs' number and some bird species disappearance in the area.

CONCLUSIONS

The investigated three marshes perimeters – Potcoava, Lozova, and Tălăbasca – are part of the Special Protected Area “Lower Meadow of the Siret River”, offering suitable conditions for numerous bird species.

Tălăbasca Marsh is the most important breeding site from the area, sheltering 88 certainly breeding bird species and other 7 irregular or probably breeding bird species.

Part of the former wetlands disappeared due the clogging phenomenon and after the abandonment of some fishery farms.

The present anthropogenic impact is low and there are not existing economic interests that could threaten the birds' diversity in the area.

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