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Santoña, Victoria and Joyel Marshes Natural Park



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Stopover sites and migration seasons of Eurasian Spoonbill in the eastern Adriatic region and the Dinaric Karst

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Introduction

Stopover sites of migrating Eurasian spoonbills *Platalea leucorodia* in the W Balkans are insufficiently known. According to recoveries and resightings of colour-ringed birds, spoonbills which cross the Balkan Peninsula and the Adriatic Sea during spring and autumn migration belong to the Central European population which winters in North Africa (Smart *et al.* 2007). Most ringed birds found dead or resighted on both sides of the Adriatic Sea originate from breeding grounds in the Carpathian Basin (Müller 1984, Kralj *et al.* 2012). On the basis of data compiled by EuroNatur throughout the Adriatic Flyway Project (2000–2012), the present paper aims to identify key stopover sites and the main migration seasons of Eurasian Spoonbill in the W Balkans.

Methods

Our data concern wetland areas situated on the E Adriatic Sea coasts, from Slovenia southwards to N Albania, as well as inland sites in the hinterlands of the Dinaric Karst in Slovenia, Croatia, Montenegro and Bosnia-Herzegovina. A total of 464 records with 8,356 individual birds were compiled. Spoonbills were counted (1) during general field surveys, (2) waterbird counts (International Waterfowl Census, IWC), (3) all-year counts along the delta front of the Neretva River (Croatia), (4) breeding and wintering bird

surveys in Bosnia-Herzegovina, Montenegro and Albania, particularly the Ulcinj salina and Skadar lake, and (5) a study on visible bird migration on Ada Island (Montenegro) in March 2010 (Stumberger and Schneider-Jacoby 2010). Since 2003, bird surveys in key wetlands, i.e. Livanjsko polje and Buško Jezero (both Bosnia-Herzegovina), the Neretva river delta (Croatia), and the Bojana/Buna delta and Ulcinj salina in Albania and Montenegro, were performed almost annually from mid-January to June, and less frequently between mid-September and late November. Additionally, occasional observations and count data were provided by different observers and DOPPS-BirdLife Slovenia. To minimize double counts of spoonbills per site in cases of continuous counts only numbers for the first date (first date individuals) were analysed. This reduced the dataset to 335 records and a respective total of 7,834 individuals (Table 1).

Site	Country	n	Min.	Max.	Spring Max.	Autumn Max.	Total	Median (Q ₂₅ /Q ₇₅)
Cerkniško jezero	Slovenia	4	1	4	4	-	9 (0.1%)	2 (1/3.75)
Škocjanski zaton (Koper)	Slovenia	12	1	6	6	1	26 (0.3%)	1 (1/3.5)
Secoveljske soline	Slovenia	5	1	8	5	8	17 (0.2%)	2 (1/6.5)
Haljinici	Bosnia-Herzegovina	7	1	10	10	3	36 (0.5%)	4 (1/9)
Livanjsko polje	Bosnia-Herzegovina	17	1	138	107	138	506 (6.5%)	18 (6/35)
Mostarsko blato	Bosnia-Herzegovina	13	2	200	200	-	533 (6.8%)	24 (15/38)
Madričko polje	Bosnia-Herzegovina	3	1	11	1	11	21 (0.3%)	9 (1/-)
Duvanjsko polje	Bosnia-Herzegovina	5	1	12	3	12	20 (0.3%)	2 (1.5/7.5)
Konavsko polje	Croatia	2	2	24	24	2	26 (0.3%)	-
Salina Nin	Croatia	2	1	4	4	1	5 (0.1%)	-
Otok Pag	Croatia	12	1	15	15	-	53 (0.7%)	2 (1/7.75)
Palud (Rovinj)	Croatia	2	1	8	-	8	9 (0.1%)	-
Ušće Mirne (Novigrad)	Croatia	2	1	1	1	-	2 (< 0.1%)	-
Ušće Neretve	Croatia	156	1	133	133	4	3862 (49.3%)	14 (5.25/31)
Vransko jezero	Croatia	7	1	4	3	4	18 (0.2%)	3 (1/4)
Salita Tivat	Montenegro	3	1	7	7	-	10 (0.1%)	2 (1/-)
Skadarsko jezero	Montenegro/Albania	2	9	15	15	-	24 (0.3%)	-
Bojana/Buna Delta ¹	Montenegro/Albania	14	1	220	220	-	343 (4.4%)	5 (2/20.25)
Solana Ulcinj	Montenegro	62	1	147	147	141	2284 (29.3%)	25 (12/50.25)
Total		335	1	220	220	141	7834 (100%)	11.5 (3/28)

¹ without the Ulcinj salina

Table 1.

Numbers of Eurasian Spoonbill (*Platalea leucorodia*) at stopover sites in the eastern Adriatic region and in Bosnia-Herzegovina, 2000-2012. Only sites with > 5 visits are shown.

Results and discussion

From a total of 33 sites five supported more than 100 Eurasian spoonbills during migration (Fig. 1). While in Slovenia, Istria and along N Dalmatia coasts numbers did not exceed a maximum of 15 birds on Pag Island in March 2006, significant numbers of at least 200-300 spoonbills per season were found in the Neretva river delta in S Dalmatia and the Bojana/Buna delta on the Montenegrin-Albanian coast. Although field effort was heavily skewed to coastal sites, approximately 18% of spoonbills (i.e. 15% of all records) were registered in karst poljes (i.e. inland wetlands) in Bosnia-Herzegovina (Table 1). On the coast spoonbills stop over at the delta fronts of main rivers, lagoons and salinas (79% of all birds), while they were mainly found in periodically flooded karst poljes which are grazed by cattle, sheep and other domestic animals in the hinterlands of the Dinaric Karst (12% of total birds). Together with coastal sites in Montenegro and S Dalmatia, the freshwater habitats in the hinterlands of the E Adriatic's coast indicate a main migration route of the Central European metapopulation across the W Balkans, Adriatic Sea and S Italy (Fig. 1), as pointed out by Smart *et al.* (2007).

Spoonbill numbers in spring were overall higher than autumn numbers, although field effort was lower in late summer and autumn at both coastal and inland sites. The Neretva Delta held very low numbers in autumn (Fig 2a), while other main stopover areas (i.e. Livanjsko polje, Mostarsko blato and the Bojana/Buna delta) are used by a maximum of more than 100 spoonbills during spring as well as autumn migration (Table 1) (Fig. 2b,c).

At coastal sites spring migration starts in early to mid-February with peak numbers in March, while inland sites in Bosnia-Herzegovina support large numbers in mid-March till late April (Fig. 2b). Resightings of colour-ringed spoonbills in the Bojana/Buna delta, where a small breeding colony of 18 pairs (2012) exists, also revealed that some birds stay till mid-May. In addition, comparatively large numbers were seen in June and early July in the nearby Ulcinj salina. Waterbird surveys throughout the approximately 220 km² Bojana/Buna river delta in Montenegro and Albania (2003-2004) showed that the Ulcinj salina is the only wetland area that is regularly used for feeding and daytime roosting by adult and juvenile spoonbills of the local breeding population (Schneider-Jacoby *et al.* 2006). December and January records further indicate that some birds and small flocks may occasionally winter in the area (Fig. 2c).

In autumn peak numbers between early September and October coincided with the departure from main post-breeding gatherings in Kopacki rit in NE Croatia (Schneider-Jacoby *et al.* 2002, Mikuska *et al.* 2006). Large autumn numbers at inland sites in Bosnia-Herzegovina and the Ulcinj salina, suggest that they may function as crucial stopover habitats before crossing the Adriatic/Mediterranean Sea during autumn migration (Fig. 2b,c).



Figure 1.

Stopover sites and maximum numbers per site of Eurasian Spoonbill (*Platalea leucorodia*) on the eastern Adriatic Sea coasts 2000-2012.

- 1
- 2-4
- 5-10
- 11-20
- 21-50
- 101-150
- 151-200
- 201-250

Present data showed that river deltas on the E Adriatic coasts and the extensive inland-karst wetlands in Bosnia-Herzegovina were used by a significant fraction of the Central European population during migration. The extension and seasonal duration of flooding of inland karst poljes depends on winter snow conditions in the mountains of the Dinaric Karst and rainfall during late summer and autumn. In contrast, water levels in the Ulcinj salina are artificially managed during the annual cycle of salt production. Therefore, spoonbill stop over and migration patterns in the W Balkans and across the central Mediterranean may largely depend on water conditions.

Although the W Balkans and the Adriatic Sea are placed in the central part of the C Europe/Black Sea/Mediterranean Flyway, this area was largely ignored for waterbird protection in the past. Recently, Euronatur's Adriatic Flyway Project has shown massive deficiencies in bird and wetland conservation in most E Adriatic countries. Following to historic topographical maps which were compiled by Austro-Hungarian authorities in the late XIX and early XX centuries, the area occupied by coastal wetland habitats in Croatia, Bosnia-Herzegovina, Montenegro and Albania has been reduced from a total of 1,765 km² to 415 km²; this is 76% of its extent during the last century (Stumberger and Sackl 2010). Additionally, more than 2 million birds are shot annually by legal hunters and poachers. Finally, it is remarkable that all important and potential stop over areas for Eurasian spoonbills on the W Balkans, like Mostarsko blato, the Neretva river delta and Ulcinj salina, are currently under tremendous hunting pressure (Schneider-Jacoby and Spangenberg 2010).

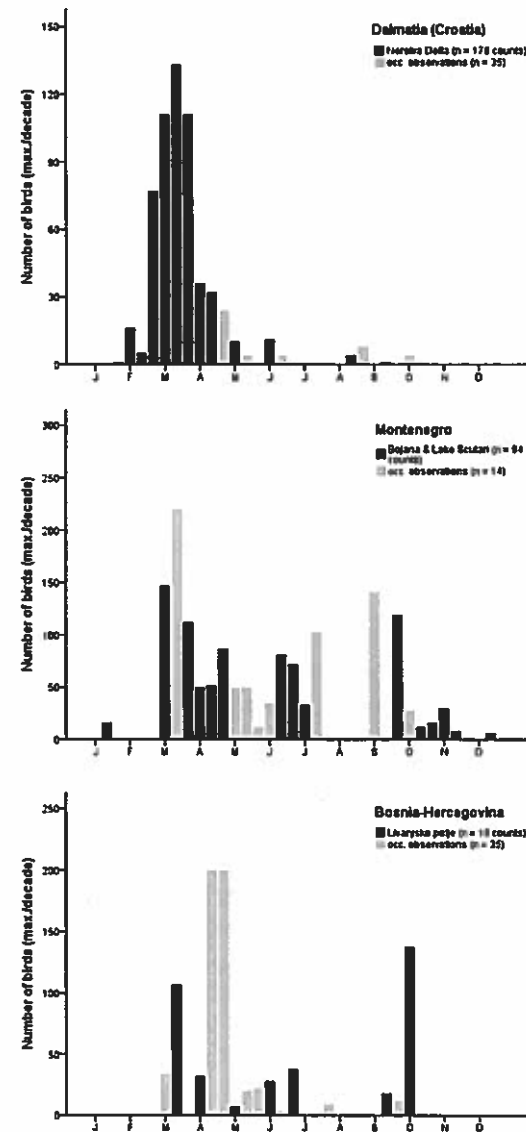


Figure 2.

Migration seasons of Eurasian Spoonbill (*Platalea leucorodia*) on the eastern Adriatic Sea coasts in (a) Croatia and (b) Montenegro, and (c) in the hinterlands of the Dinaric Karst in Bosnia-Herzegovina, 2000-2012.

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