International importance of three Adriatic Flyway priority sites: Livanjsko Polje, the Neretva Delta and Lake Skadar-Shkoder with the Bojana-Buna Delta

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Abstract

During 2007, 2008 and 2009, a EuroNatur team carried out, with the support of local experts and organisations, four waterbird counts each year at three Adriatic Flyway priority sites: Livanjsko Polje (Bosnia-Herzegovina), the Neretva Delta (Croatia – Bosnia-Herzegovina) and Lake Skadar-Shkoder including the Bojana-Buna Delta (Albania – Montenegro). According to WPE4 (Wetlands International 2006), a minimum of 24 waterbird species reach the specific 1% criteria based on waterbirds of the Ramsar Convention. The actual data do not reflect the value and carrying capacity of the three Western Balkan priority sites, which is much higher as disturbance is limiting the numbers of birds at all sites.

1 Introduction

During 2007, 2008 and 2009, a EuroNatur team performed, with the support of local experts and organisations, four waterbird counts each year at three Adriatic Flyway priority sites:

Livanjsko Polje (Bosnia and Herzegovina)
Neretva Delta (Croatia – Bosnia and Herzegovina)
Lake Skadar-Shkoder including the Bojana-Buna Delta (Albania – Montenegro)

Counts for each site where carried out in January, March/April, June and October. For the Bojana-Buna delta, additional waterbird counts through EuroNatur assessment (Schneider-Jacoby et al. 2006) are available and included since 2003. In 2010, waterbirds were counted in January (IWC) as well as in March and April at all priority sites, additionally, a migration survey was carried out on the Ada-Bojana on all days in March. Due to the ecological difference of the Bojana-Buna Delta and the lack of protection in Montenegro, the results are separated from those at Lake Skadar.

According to WPE4 (Wetlands International 2006), a minimum of **24 waterbird species** reach the specific criteria based on waterbirds of the Ramsar Convention:

- **Criterion 6:** A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one waterbird species or subspecies.

and **two sites** reach criterion:

- **Criterion 5:** A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

It is very likely that these western Balkan wetlands sites have been important for more waterbirds species in different times in the year as migration peaks are quite short and resting time limited due to disturbance. Many species, such as Garganey *(Anas querquedula)*, Pintail *(Anas acuta)* or even Ferruginous Duck *(Aythya nyroca)*, stay far away of the wetlands along the Adriatic Sea due to disturbance. According to the biogeographic regionalisation scheme given by Wetlands International (2006), the sites belong to the Eastern Mediterranean Region. We defined the

Ramsar Site Livanjsko polje / photo M. Šarac

Ramsar Site Neretva Delta / photo M. Schneider-Jacoby

Adriatic Flyway as the core area inside the huge Black Sea/Mediterranean Flyway for waders (http://www.wingsoverwetlands.org/) or European Siberia/Black Sea-Mediterranean Flyway for the Anatidae (Boere and Stroud 2006). Only the Black Sea/Mediterranean Flyway crosses the Mediterranean basin in NW – SE direction, while the other two corridors, the East Atlantic Flyway and the West Asian/East African Flyway, follow the coastal zones of West and East Africa (Stroud et al. 2004). While the waterbirds flying along the Eastern and Western African Flyway use mainly the coastal wetlands and follow the coast line, the European and some Siberian waterbirds cross the Mediterranean Sea after their flight over the European continent and winter in North Africa, e.g. in Tunisia or in the Sahel, e.g. in the Niger Basin. The Adriatic Flyway is linked to the stop over (staging) sites along the East coast of the Adriatic Sea and its hinterland (Schneider-Jacoby 2008).

2 Sites overview

2.1 Livanjsko Polje

Beside the Eurasian Spoonbill *(Platalea leucorodia)* Pannonian population, Common Coot *(Fulica atra)* and Common Pochard *(Aythya ferina)* (Table 1), shorebirds such as the Ruff *(Philomachus pugnax)* are likely to fulfil the Ramsar Criteria for the 610 km² large Livanjsko Polje karts field. At the moment, the 55 km² large water surface of Busko Blato (in the year 1972 changed from periodical into semi-natural lake) is hosting the main concentration of waterbirds. The 76 km² large peatlands and 234 km² large grasslands are important breeding sites and non-breeding area for raptors such as Montagu´s Harrier *(Circus pygargus)* (30 bp) and Hen Harrier *(C. cyaneus)* (120 ind. wintering). Here, large flocks of shorebirds and up to 1,000 Common Cranes *(Grus grus)* rest during migration, especially if the Polje is suitably flooded. Together with Duvanjsko, Kupresko and Glamocko poljes, the Karst poljes of the upper Cetina catchment area fulfil the criteria for the regionally important bottleneck site for Common Crane with max. of 2,200 migrating birds/day for population, which overwinter in North Africa. At Livanjsko Polje, the highest numbers of waterbirds are recorded in autumn (Fig. 1). Busko Blato, part of the Karst polje used to accumulate water, holds at the moment the highest waterbird numbers (max. 67,144). We estimated the carrying capacity of Livanjsko Polje at up to 100,000 waterbirds and even more. This is the number of waterbirds, which could be present during spring migration, when the Karst Polje is often flooded. Still, the access to about a half of the Polje is limited due to land mines from the 1991-1995 war.

2.2 The Neretva Delta

Only the 202 km² large Neretva Delta failed to support 20,000 waterbirds present at the same time (Criterion 5, Fig 1.), as here the habitats for more than 50,000 birds are blocked by mainly illegal bird hunting. In Bosnia and Herzegovina, Hutovo Blato Nature Park has four important waterbirds sites: 17 km² large swamps of Deransko Blato, 11 km² large Svitava

Franz Joseph Islet in the Bojana-Buna mouth, Bojana-Buna Delta, 28th April 2003 / photo B. Stumberger

Lake Skadar - Shkoder, 14th June 2008 / photo D. Denac

reservoir, 4 km² large flooded meadows and wet cultural land during the spring and winter months. Officially, the site is a hunting ban area. The large and still flooded 34 km² reed beds and karst lakes in Croatia are ideal resting sites, the same as the large pro-delta with sand and mud flats at the mouth of the River, the Parila lagoon and few remaining flooded pastures. In the last few years, only Pygmy Cormorant *(Phalacrocorax pygmeus)* reached the Ramsar criteria (Table 1), while the Eurasian Spoonbill with its great turnover numbers in the Neretva Delta failed to do so, owing to various disturbances, including kite surfing, bait collection by fisherman and even illegal hunting in the river mouth. Spoonbills rested during recent years further northeast in Mostarsko Blato karst field with up to 200 birds/day indicating the importance of resting sites in the Neretva valley. The delta with Hutovo Blato Nature Park still holds a capacity for resting waterbirds of over 100,000 individuals at the same time and is an extremely important stopover site for many species such as Eurasian Spoonbill, Ferruginous Duck, Glossy Ibis *(Plegadis falcinellus)*, Garganey, Black-tailed Godwit *(Limosa limosa)*, etc., which, however, cannot rest due to disturbance even in the core areas of the Ramsar Site.

2.3 Bojana-Buna Delta

The key habitat inside the Bojana-Buna Delta (222 km²) is at the moment the 14.5 km² large Solana Ulcinj (Stumberger et al. 2008). In this privately managed salina, hunting has been banned by the national hunting law and the owner's decision. Several other important resting sites, such as pastures and marshes in Albania, have been described by EuroNatur (Schneider et al. 2006). The Viluni Lagoon (3.9 km²) in Albania and Lake Sasko (3.2 km²) in Montenegro provide open water surfaces for waterbirds to rest. The Bojana-Buna Delta is the most important resting sites for waders at the moment along the Adriatic East Coast, with a total of 16 waterbird species meeting the Ramsar criteria there (Table 1). This assembly of waterbird species is responding to the unique combination of different wetland habitat types in the Bojana-Buna Delta. From late autumn till the end of winter, the number of waterbirds reaches about 20,000, while in spring no less than up to 40,000 waterbirds can be seen in the delta (Fig. 1). The capacity of the Bojana-Buna Delta is far above 100,000 waterbirds. In combination with flooding of extensive pastureland during the spring passage, is capacity of 200,000 waterbirds is possible for the area. The current low number is a result of the constant and extensive illegal hunting even inside the private protected areas (Solana Ulcinj) and core zones at the Buna Ramsar Site in Albania (e.g. Velipoja Reserve and Viluni Lagoon).

2.4 Lake Skadar-Shkoder

The capacity of Lake Skadar is more than 350,000 wintering waterbirds, with 220,000 counted in the 90ties in Montenegro only (e.g. Vasic et al. 1992). This numbers confirmed the huge value of the site. This 600 km² large shallow lake with its large oscillations (Beenton 1981) fulfils the Ramsar

Criteria for 10 waterbirds species at the moment (Table 1). Remarkable is the species composition, which differs from the connected Bojana-Buna Delta. For fish-eating waterbirds, Lake Skadar is a very important site; especially Grebes and Cormorants are still present there in large numbers, while Pygmy Cormorant reaches fantastic 16% of the European sides of the border.

3 Conclusions

The number of waterbird species, which today reach the 1% level given by WPE4 at one of the three Western Balkan priority sites, is high. It is clear that

Collared Pratincole *(Glareola pratincola)*, Ulcinj salinas / photo P. Sackl

The three priority sites, however, are key stopover sites not only for the bird species that reach the 1% threshold and are in need of better protection.

and Turkish population. Another specific value of the lake concerns species preferring large macrophyte carpets, such as Squacco Heron *(Ardeola ralloides)*, Ferruginous Duck and Whiskered Tern *(Chlidonias hybridus)*, as at least 30 km^2 are covered with plants like Water Chesnut *(Trapa natans)*, White *(Nymphaea alba)* and Yellow Water-lily *(Nupar luteum)*. While the costal Albanian wetlands have lost most of their waterbirds at the end of the 20th century (compare Nowak 1980, Hagemeijer 1994, Vangeluwe et al. 1996, Zekhuis & Tempelman 1998), Lake Skadar has still preserved most of its values as a wetland for non-breeding and breeding waterbirds along the Eastern Adriatic coast (compare Fig. 1, Table 1). Nevertheless, the actual midwinter numbers with 60,000 – 130,000 are much lower than 20 years ago, and disturbance is still increasing in the former inaccessible area (iron curtain) at the border and due to uncontrolled tourism based on motor yachting in Montenegrin National Park. Illegal hunting is widespread on both

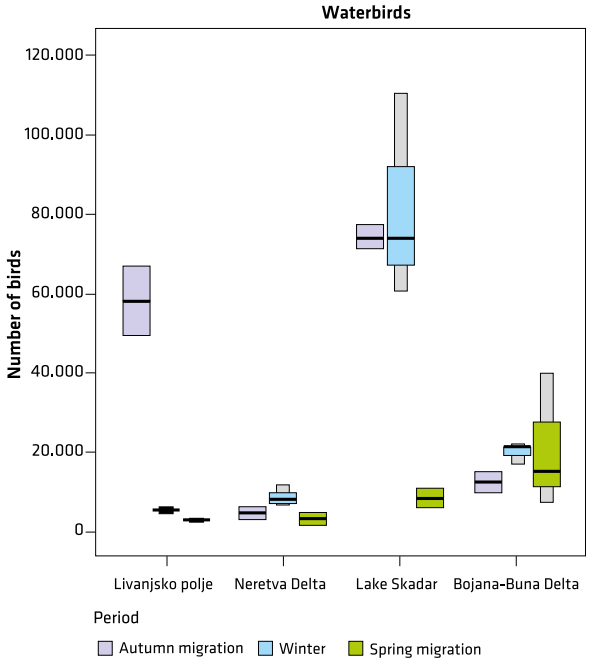

Figure 1: Number of waterbirds during the non-breeding period for Livanjsko Polje, Neretva Delta, Lake Skadar-Shkoder with Bojana-Buna Delta between 2007 and 2009 (figure credit: Peter Sackl)

Table 1: Application of numerical Criteria of the Ramsar Convention through WPE4 (Wetlands International 2006) for the Adriatic Flyway priority sites

Species	1% level WCP4	Livanjsko polje	Neretva delta	Bojana-Buna delta	Lake Skadar-Shkoder
Great Crested Grebe *(Podiceps cristatus)*	7,250				12,561
Black-necked Grebe *(Podiceps nigricollis)*	2,200				2,904
Dalmatian Pelican *(Pelecanus crispus)*	45			119	*34
Great Cormorant *(Phalacrocorax carbo)*	4,000				20,694
Pygmy Cormorant *(Phalacrocorax pygmeus)*	700		2,366	1,419	11,857
Great White Egret *(Egretta alba)*	470			501	
Little Egret *(Egretta garzetta)*	580			783	
Squacco Heron *(Ardeola ralloides)*	600				**506
Eurasian Spoonbil *(Platalea leucorodia)*	120	138	***86	***220	
Common Shelduck *(Tadorna tadorna)*	750			620	
Garganey *(Anas querquedula)*	20,000			20,000	
Common Pochard *(Aythya ferina)*	10,000	13,141			
Ferruginous Duck *(Aythya nyroca)*	450				1,035
Baillon's Crake *(Porzana pusilla)*	60			55	
Common Crane *(Grus grus)*	900	1,000			
Common Coot *(Fulica atra)*	20,000	51,992			64,416
Black-winged Stilt *(Himantopus himantopus)*	500			**392	
Collared Pratincole *(Glareola pratincola)*	240			280	
Kentish Plover *(Charadrius alexandrinus)*	410			472	
Dunlin *(Calidris alpina)*	13,300			10,503	
Black-tailed Godwit *(Limosa limosa)*	1,300			4,263	
Slender-billed Curlew *(Numenius tenuirostris)*	1			1	
Spotted Redshank *(Tringa erythropus)*	900			2,249	
Black-headed Gull *(Larus ridibundus)*	13,000				20,230
Whiskered Tern *(Chlidonias hybridus)*	1,000				2,896
n ≥ 1% level per species		4	2	16	10

* during the 2007-2009 breeding season, some 45 birds with max. 70 birds (Vresovic-Dubak, pers. comm.)
** some 40 km² large feeding swamps in northern lake area never counted
*** turn-over rates seem to be quite remarkable

the Adriatic Flyway is still of a great international importance for waterbird protection. The three priority sites, however, are key stopover sites not only for the bird species that reach the 1% threshold and are in need of better protection. Many of the species concerned face a dramatic population decrease in Europe, especially in the countries N and NE of the Adriatic Flyway (compare BirdLife 2004). For waders, the East Atlantic flyway seems to be in the healthiest state: only a little over one third (37%) of the populations are decreasing. This is in contrast to the Black Sea/Mediterranean Flyway, where 55% of the populations with known or probable trends are declining, and the West Asian/East Africa Flyway with 53% of wader populations in decline (Stroud et al. 2004). Comparable negative trends are known for more waterbird groups (compare Stumberger: A classification of karst poljes in the Dinarides and their significance for waterbird conservation, this publication). The actual data do not reflect the value and carrying capacity of the three Western Balkan priority sites. During spring 2006, when Bird Fly stopped the illegal hunting (Stumberger & Schneider-Jacoby in prep.), the numbers in the Bojana-Buna Delta were much higher, proving that disturbance limits the number of birds. Only in March 2006, 20,000 Garganey were counted resting and migrating in a single day, while in other years only few birds settled down or flew near the shore. To stop the negative trend in the European waterbird population, a full protection of all priority sites is crucial. At the same time, more support is to be provided for the

countries under consideration, the site managers as well as local nature and bird protection NGOs.

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