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Changes in population size of some shorebirds breeding at Ulcinj salt-pans in Montenegro

Populacijske spremembe pri nekaterih gnezdečih pobrežnikih v Ulcinjskih solinah v Črni gori

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1. Introduction

Ulcinj and its surroundings is one of the richest bird areas in Montenegro. Interest in its shorebird avifauna dates from the end of the 19th century. Firer (1895) and Reiser & Fuhrer (1896) were the first to report on birds of Zoganj Mud. Vasić (1979a & b) recorded 229 species there, while Vizi (1998), twenty years later, recorded only 221 bird species. The first intensive ornithological research in the area was carried out by Vasić (1975). In July 1986 Ham (1986) visited the Ulcinj salt-pans and eventually presented a detailed survey of the local breeders. Puzović *et al.* (1992) established the population decline of some bird species, which in fact continued over the next two years (Puzović 1994).

The aim of this article is to present the decrease in the number of breeding pairs of some shorebird species in Ulcinj salt-pans recorded during two year research.

2. Study Area and Methods

2.1. Study Area

Together with its surroundings, the Ulcinj salt-pans (Figure 1) are classified as ornithologically the most important area in Montenegro (Puzović & Grubač 2000). Its value is even greater due to the marshy habitats and to the vicinity of the sea. All the ecological factors that are significant for birds are controlled by man. The salt-pans originated in the area of the former Zoganj Mud, a 25 km^2 large marshy area with brackish water. The oldest salt-pan basins were built in the period from 1926 to 1934. From the mid-20th century the salt-pans gradually grew in size; by the beginning of the 1980s they had been enlarged by 60% and today cover 14.5 km^2. The average depth of the pan basins is 30 cm. According to Vasić (1984), the salt-pans were "taken from the sea" and today form "a cultural lagoon" (Vasić 1989).

Figure 1: Aerial shot of the salt crystallisation basins in Ulcinj salt-pans

Slika 1: Zračni posnetek Ulcinjskih solin

2.2. Methods

The surveys at the Ulcinj salt-pans were carried out from the pans' embankments. In the summer months, field work in the pans was done from 05.00 until 10.00h and from 18.00h until dusk. During the rest of the year, the field work lasted all day. For nest search, some 40 km of the pans' embankments were covered daily. The study was conducted in the years 2000 and 2001.

3. Results and Discussion

Oystercatcher *Haematopus ostralegus*

Reiser & Fuhrer (1896) considered the Oystercatcher as a breeding bird of the Ulcinj area. Breeding was first confirmed by Vasić *et al.* (1977). During the research carried out in 1988, Puzović *et al.* (1992) found a single nest. In 1994, Puzović (1994) registered 4 pairs breeding on the pans' embankments. The Ulcinj salt-pans had been for some years considered the last breeding site of this

species in Yugoslavia. In this study not a single individual was registered at the salt-pans. The Oystercatcher, which has been given the status of critically endangered species (Vasić 1995), can now be considered as extinct in the Ulcinj salt-pans.

Avocet *Recurvirostra avosetta*

During the research Avocet was registered only once; a single individual in August 2001. In 1988, 7 breeding pairs had been registered (Puzović *et al.* 1992).

Black-Winged Stilt *Himantopus himantopus*

Approximately 10 years ago, the Ulcinj salt-pans were considered the largest breeding site of Black-winged Stilts in the former Yugoslavia, with around 100 pairs (Puzović *et al.* 1992). During this intensive two-year survey, only one nest was found in the basin of the first grade evaporation. Surprisingly, this species was registered very rarely in the basins of *kneta* (the new part of the pans), although it was constantly present, in larger numbers, at the salt-pans at the time of breeding.

Redshank *Tringa totanus*

In years 2000 and 2001 breeding of Redshank in Ulcinj salt-pans was not confirmed, although in 1988 some 500 pairs – a minimum of 10% of the Balkan population – (Puzović *et al.* 1992) bred at the salt-pans. Otherwise, this species used to be present at the pans throughout the whole year, and during the spring flocks of more than 1000 individuals could be seen.

Stone-curlew *Burhinus oedicnemus*

The Ulcinj salt-pans were considered the largest breeding site of the Stone-curlew in the former Yugoslavia with 30 pairs (Puzović *et al.* 1992). In 2000, up to 8 individuals were registered on the pans' embankments, with one of them giving the impression that it was ready to mate, but this was not confirmed during the ensuing research. During 2001, Stone-curlews were registered at the pans, but no breeding activity was observed.

Collared Pratincole *Glareola pratincola*

While no less than 90 pairs were registered in 1988 (Puzović *et al.* 1992), not a single nest was found in the pans in 2000, although 10 individuals were recorded during the breeding period (in July). I suspect that the reason for absence of breeding in 2000 was flooding, as the Collared Pratincole usually breeds on the bottom of a basin.

Kentish Plover *Charadrius alexandrinus*

From the number of individuals present there, it can be presumed that in 2000 around 30 pairs of Kentish Plover bred on the embankment of Lake I (some of them were ringed). Apart from the Common Tern *Sterna hirundo*, this is the only species that was constantly present at the salt-pans.

Little Tern *Sterna albifrons*

In 1988, around 90 pairs of Little Tern bred at the pans. In 2000 they bred on the slightly raised embankments of Lake I. Six nests were registered there, but it is not certain that the colony survived as the basin was flooded by high water. Due to the flooding, around 20 nests of this species as well as those of the Common Tern were destroyed at Lake II.

4. Conclusion

The decrease of breeding species was greatly influenced by man controlled factors:

a) Flooding of the basins (in 2000 some 20 Common Tern and Little Tern nests were flooded).
b) The presence of salt workers, hunters, shepherds, flocks of sheep and cattle clearly presented very disturbing factors for breeding birds.
c) Tourism (the pressure of tourists from Big Beach and Ada)

The problem of the disappearance of breeding bird species from the pans could possibly be solved by controlling flooding of the basins and by reducing human disturbance. By declaring the salt-pans a protected zone, conditions for the return of birds would be created. Out of 40 IBA's in Yugoslavia, 11 do not have the status of protected areas (Puzović & Grubač 2000), one of them being the Ulcinj salt-pans. The significance of salt-pans for biodiversity may be seen in the fact that some 75% of all European salt factories are protected (Sadoul *et al.* 1998). For example, the Salin de Giraud in France is classified as a biosphere reserve, while three Greek salt-pans, at Messolonghi, Kitros and Messi, enjoy the status of Ramsar sites. At all Greek salt-pans, for example, any kind of shooting is strictly forbidden, particularly during bird migration (Petanidou 1994).

Table 1: Breeding population size (breeding pairs) of some shorebird species in Ulcinj salt-pans recorded during several surveys from 1975 to 2001

Tabela 1: Pregled velikost gnezditvene populacije (gnezdeči pari) nekaterih vrst pobrežnikov v Ulcinjskih solinah med različnimi popisi od leta 1975 do 2001

Year/Leto	1975	1984	1989	1988	1994	2000	2001
Reference/Vir	Vasić *et al.* (1977)	Ham (1986)	Vasić (1989)	Puzović *et al.* (1992)	Puzović (1994)	this work / to delo	
Haematopus ostralegus	2	0	?[a]	1	4	0	0
Himantopus himantopus	2	45	?[a]	100	?[a]	1	0
Recurvirostra avosetta	0	0	?[a]	7	?[a]	0	0
Burhinus oedicnemus	0	0	?[a]	30	25	0	0
Glareola pratincola	40	150	?[a]	75-90	?[a]	0	0
Charadrius alexandrinus	0	50	?[a]	50	50	30	30
Tringa totanus	0	0	?[a]	500	?[a]	1	0
Sterna albifrons	2	50	?[a]	80-90	?[a]	6[b]	30

Remarks: [a] The breeding was confirmed, but the number of pairs was not given
[b] Around 20 nests of Little *S. albifrons* and Common Tern *S. hirundo* were flooded

Opombe: [a] Potrjena gnezditev brez natančnih navedb števila parov
[b] Okoli 20 gnezd male *Sterna albifrons* in navadne čigre *S. hirundo* je bilo poplavljenih

5. Summary

The author established a population decline, from numbers established in research from 1988 onwards, for eight shorebird species breeding at the Ulcinj salt-pans (Montenegro): Oystercatcher *Haematopus ostralegus,* Kentish Plover *Charadrius alexadrinus,* Redshank *Tringa totanus,* Black-winged Stilt *Himantopus himantopus,* Avocet *Recurvirostra avosetta,* Stone-curlew *Burhinus oedicnemus,* Collared Pratincole *Glareola pratincola* and Little Tern *Sterna albifrons.* During the two-year survey (2000-2001) a dramatic decrease was noticed in the number of breeding pairs, as well as the complete disappearance of some species from the study area including (e.g. Oystercatcher and Avocet).

Povzetek

Avtor s primerjavo svojih podatkov s prejšnjimi raziskavami od leta 1988 naprej ugotavlja upad populacije pri osmih pobrežniških vrstah, gnezdilcih Ulcinjskih solin (Črna gora): školjkarica *Haematopus ostralegus,* beločeli deževnik *Charadrius alexadrinus,* rdečenogi martinec *Tringa totanus,* polojnik *Himantopus himantopus,* sabljarka *Recurvirostra avosetta,* prlivka *Burhinus oedicnemus,* rjava komatna tekica *Glareola pratincola* in mala čigra *Sterna albifrons.* Med dvoletnim popisom (2000-2001) je bil registriran velik upad števila gnezdečih parov, medtem ko so nekatere vrste celo popolnoma izginile iz obravnavanega območja (npr. školjkarica in sabljarka).

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