

## CONCLUSIONS

It is of interest to compare the breeding biology of the Redshanks of the Venetian Lagoon with those of the other European populations, which are notoriously "not highly gregarious" (Cramp & Simmons 1983), except for those of Camargue (Geroudet 1982). Our Redshanks are highly colonial and show the highest breeding density ever reported (Cramp & Simmons 1983).

Dates of laying (Hale & Ashcroft 1983), clutch size and hatching success (Glutz von Blotzeheim 1977) are similar to those of the above mentioned populations. Finally it is of interest to note that our Redshanks nest together with many other Charadriiformes in very large multi-specific colonies. Even the Black-headed Gull, which is considered among the predators of English Redshanks (Nethersole-Thompson & Nethersole-Thompson 1986), nests very close to Redshanks.

## ACKNOWLEDGEMENTS

Professor W.G. Hale kindly revised our text. This study could not have been completed without Giuseppe Visintin's help.

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# Notes on the breeding biology of the Oystercatcher *Haematopus ostralegus* in the Po Delta, Italy

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Valle, R., Scarton, F., Borella, S., & Vettorel, M. 1994. Notes on the breeding biology of the Oystercatcher *Haematopus ostralegus* in the Po Delta, Italy. *Wader Study Group Bull.* 72: 29-30.

The first data on the breeding biology of the Oystercatcher in the Po Delta, Northeast Italy are presented. First clutches were laid in the middle of April, and the last eggs were found at the end of May. Comparisons with other Mediterranean populations are made.

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## INTRODUCTION

The breeding biology and distribution of Oystercatcher has widely been studied in Central and North Europe (Harris 1967; Hepplestone 1972; Piersma 1986), but much less attention has been paid to Mediterranean populations. Some recent works deal with Spain (Martinez *et al.* 1983) and Greece (Goutner 1986; Goutner & Goutner 1987); little information, concerning only the estimated number of breeding pairs (Tinarelli & Baccetti 1989) is available for

the Italian coasts. This note provides the first data for Oystercatchers breeding in the Po Delta, the most important site for this species in Italy.

## STUDY AREA

Field work was carried out in the Po Delta, Northeast Italy, from March to June 1991, although some information from 1989 and 1990 have been used. The first complete census performed in this area (over a total length of 50 km: Borella *et al.* in press) found 32 breeding pairs, all

of them located along the barrier islands at the seaward limit of the Delta. These islands are sandy with dunes and partially covered with psammophilous vegetation, mainly *Cakile maritima*, *Xanthium italicum*, *Agropyron junceum* and *Ammophila littoralis*. Breeding species include Shelduck *Tadorna tadorna*, Little Tern *Sterna albifrons*, Yellow-legged Gull *Larus cachinnans* and Kentish Plover *Charadrius alexandrinus*. Many of these islands are subject to severe disturbance from tourists, especially in summer.

## RESULTS

Only very few Oystercatchers winter in the Po Delta (less than ten in winter 1984-85, Tinarelli 1989); usually this species occurs in this area from the beginning of March. In 1991 the first nests were found during the first half of April; similar dates were recorded in 1989 and 1990. The laying continued until the end of May. At the end of April, three nests were destroyed by storms and two replacement clutches were found during the last week of May.

The nest is a shallow scrape in the ground, with a mean diameter ( $n = 8$ ) of  $19.5 \text{ cm} \pm 2.1$  (s.d.) and a deepness of  $4.3 \text{ cm} (\pm 1.0)$ ; no lining material was observed in 15 nests. Most of these nests (13; 86%) were located between 20 and 50 m from the seashore and all of them were placed in bare sand. About half (53%) were placed on dunes rising 2 to 3 m above the sea-level, while the others were in gently sloping beaches close to the dunes. In one case the nest was built near a colony of some 150 pairs of Yellow-legged Gull. Some pairs built various scrapes close to each other; two pairs had two scrapes, one pair three and another pair built five scrapes.

The clutch size ( $n = 8$ ) ranged between 3 and 4, with an average of  $3.38 (\pm 0.52)$ . Egg size ( $n = 13$ , replacement clutches excluded) was measured with a slide calliper to the nearest 0.1 mm; mean length was  $57.35 \text{ mm} (\pm 1.55)$ , and mean breadth was  $40.35 \text{ mm} (\pm 0.94)$ .

The Oystercatcher is concentrated in the most peaceful areas of the Delta, where its density ranged between 0.4 and 5.3 pairs/km of shoreline, with an average ( $n = 12$ ) of  $1.9 (\pm 1.7)$ .

In such suitable places we recorded distances between nests ranging from 96 m to 300 m (mean =  $1.47.6 \pm 86.7$ ,  $n = 5$ ). Away from these sites, breeding pairs of Oystercatcher are rare and extremely scattered.

Up to this moment we do not have enough data concerning the breeding success, but human disturbance is undoubtedly responsible for the loss of some clutches (in spring 1989 we prevented the capture of two chicks by local fishermen).

## CONCLUSIONS

The small population breeding in the Po Delta (which nevertheless represents at least 90% of the whole Italian population *unpubl. data*) is comparable in size to those inhabiting Ebro Delta (Martinez *et al.* 1983) and Evros Delta (Goutner 1986; Goutner & Goutner 1987). Dates of laying, clutch size and egg dimensions are very similar to those of the Spanish and Greek populations.

Compared with Oystercatchers breeding in the Evros Delta, the location (farther away from the sea shore in Italy) and the substrate (always bare sand) are different. In each of the other Mediterranean populations nests with lining material (bivalve shells, sticks, algae) were observed, while in Italy this has not been recorded.

Further data are strongly needed for a better knowledge of the biology of Oystercatcher in Italy, where it represents one of the rarest breeding waders.

## ACKNOWLEDGEMENTS

Professor W.G. Hale kindly revised our text, while R. Tinarelli made useful remarks; S. Busan corrected the English language.

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