

Notes on the breeding biology of the Redshank *Tringa totanus* in the Venetian Lagoon

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During 1986-1988 we collected data on the breeding biology of Redshank *Tringa totanus* in the Venetian Lagoon. Venetian Redshanks are highly colonial, forming very large multi-specific colonies with other Charadriiformes.

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INTRODUCTION

The breeding biology of the Redshank has been studied in detail in Northern and Central Europe (Hale 1956; Grosskopf 1963; Hale & Ashcroft 1983), but very few data are available on the Mediterranean populations. Recently the Italian breeding population has been estimated as 390-720 pairs, 80% of which are located in the Venetian Lagoon (Tinarelli & Baccetti 1989), where Redshanks were reported breeding in 1847 (Contarini 1847). The purpose of this study is to provide data on the breeding biology of Redshank nesting in the Lagoon.

STUDY AREA

During the breeding seasons 1986-88 data were collected for some colonies of Redshank occurring in the Venetian Lagoon. The habitats of the study area consist of:

1. *barene*: mud-clay marsh islands, partially covered with halophytic vegetation (*Limonietum venetum*, *Limonium vulgare*, *Obione portulacoides*, *Puccinellia palustris*, *Arthrocnemum fruticosum*, etc);
2. *velme*: shoals which emerge during low tide, forming the bottom of the *paludi*;
3. *paludi*: water bodies whose depth is frequently less than the tidal excursion; and
4. channels.

During breeding Redshanks are joined by other colonial species of Charadriiformes (*vide infra*).

RESULTS

Although 100-200 Redshanks wintered in the Lagoon (pers. obs.), most of the breeding population arrived during March and soon began to spend a lot of time chasing and fighting. Fights, involving up to seven Redshanks, lasted the whole breeding period and were very violent, birds frequently pecking one another on the head. An adult also attacked another pair's chick, on 11 June 1988.

In 1988, copulations occurred mostly during the second week of April between 10.30 and 12.30 hours. The first complete clutch was found on 27 April 1987, the last hatching on 2 July 1987; hatchings occurred mainly in the last week of May and the first week of June. Clutches most frequently contained four eggs and in only one case three (mean = 3.9; n = 28).

Hatching success was 81% in 1986 (n = 7) (Valle & D'Este in press), 70% in 1987 (n = 12) and 83% in 1988 (n = 15). Egg losses were mainly due to human disturbance (35%), flooding (30%) and nest abandonment (30%).

Nests were constructed on the *barene*, in the *Limonietum venetum*, in close proximity to water: mean distance = 1.5 m, max = 3 m, min = 0.05 m, n = 12. An average distance between two nests of 9.9 m and a minimum distance of 3.05 m were recorded (n = 12). The breeding density was very high: about 15 pairs/ha of *barene* or 8 pairs/ha of suitable area (including the adjacent *velma* during low tide).

During breeding Redshanks were joined by Common Tern *Sterna hirundo* in 75% of the colonies (n = 28) (a minimum interspecific distance between two nests of 0.3 m was found), by Little Tern *Sterna albifrons* in 17% (0.9 m), by Black-headed Gull *Larus ridibundus* in 32% (1.2 m), by Kentish Plover *Charadrius alexandrinus* in 3% and by Black-winged Stilt *Himantopus himantopus* in 10%. Birds formed very large multi-specific colonies, with more than 200 nests/ha of *barene*.