

Population growth and range expansion of the Oystercatchers (*Haematopus ostralegus*) breeding in Italy

By Francesco Scarton, Roberto Valle, Renzo Rusticali,
Paolo Utmar and Marcello Grussu

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Over the last 20 years the Oystercatchers Italian population, one of the largest along the Mediterranean coasts, has been rapidly growing up, from 20–30 pairs estimated at the beginning of the 1980s to 63 pairs censused in 1996. The year annual growth has been 7.2%, with a much higher growth (11.2%) in the very last years. The species has both increased in the traditional breeding sites (the Po Delta) and colonised new areas (Lagoon of Grado-Marano and Lagoon of Venice). Artificial sites, such as dredge spoil islands, has been rapidly occupied by breeding pairs. Among the possible causes of increase higher adult survival in the breeding grounds and provision of new sites are considered the most important.

Key words: Oystercatcher (*Haematopus ostralegus*), breeding biology, population growth, Italy, dredged islands.

Addresses: (F. S.) Via Tevere 82, 30173 Mestre (VE), Italy; (R. V.) Castello 618/E, 30122 Venice, Italy; (R. R.) 45010 Ivica (RO), Italy; (P. U.) Largo Mioni 3, 34137 Trieste, Italy; (M. G.) Via Cagliari 2, 09095 Mogoro (OR), Italy.

1. Introduction

Though the breeding biology of the Oystercatcher (*Haematopus ostralegus*) has been widely described in northern Europe (i.e. HARRIS 1967, HEPPLESTON 1972, SAFRIEL et al. 1984, ENS 1992, KERSTEN & BRENNINKMEIJER 1995, YESOU et al. 1995), the populations nesting in the Mediterranean basin have been investigated only recently. Several papers dealt with some aspects of their ecology (MARTINEZ-VILALTA et al. 1983, GOUTNER & GOUTNER 1987, SCARTON et al. 1993, VALLE & SCARTON 1996), while the status, distribution and population trends are still very poorly known.

There has been a remarkable increase in the breeding range and breeding population of north European Oystercatchers in the last century, with new nesting habitat, such as inland agricultural areas, successfully colonised (GOSS-CUSTARD et al. 1995). Recently VALLE & SCARTON (in press) summarized the species distribution along the Mediterranean coastline, showing that about 300 pairs nest in this area, 60% of which are located at a few sites in France and Italy. Here we report, through analysis of published and unpublished data spanning over two decades, on the population growth and range expansion of the Oystercatchers breeding along the Italian coastline.

2. Study area and methods

For the years 1980–1990 we will refer to estimates available from the literature, partial counts and personal observations. From 1991 onwards, censuses of all the potentially suitable breeding areas were performed by the authors. These censuses were made in sites known (or suspected) to have hosted breeding Oystercatchers in the present century: the Lagoon of Grado-Marano, the Lagoon of Venice and the Po Delta, all of them located along the north-western Adriatic coasts, between 45°44' and 44°49' N (Fig. 1). The Sardinian coastal wetlands, such as brackish ponds, coastal lagoons and saltpans, were included in the censuses due to the regular occurrence of summering birds. Coastal wetlands of Tuscany (last breeding: 1930, CATERINI 1932) and of Sicily (occasional occurrence of summering birds) were excluded as breeding sites on the basis of recent surveys (MAINARDI and CORSO, pers. comm.). Even if differences exist among these areas, all of them consist mainly of shallow waterbodies with channels, tidal flats, marshes and barrier islands; sometimes man-made islands also occur. Censuses were made checking by boat and on foot all the sites in the April–July months of 1991–96. According to the literature on Oystercatchers (i.e. VERMEER et al. 1992) and to direct observations in our breeding areas, we de-

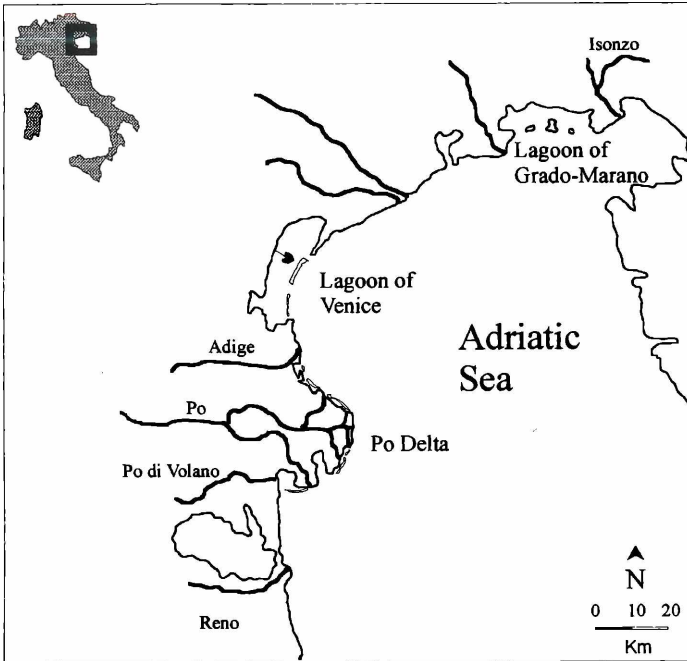


Figure 1: Breeding area of Oystercatchers in Italy, with the geographical features referred to in the text. – Karte zum Brutvorkommen des Austernfischers in Italien (mit Kennzeichnung der im Text genannten Örtlichkeiten).

fined as „censused pair“ every certain (with nests, eggs or chicks; the majority of records) or probable (alarming birds) pair, while pairs observed in suitable habitat were defined as „possible breeders“ and not included in the totals given below.

Average annual growth rate in breeding pairs (GR) was calculated from a recent count (RC) n years after an initial count (IC) using the following formula (after RICKLEFS 1980 in WESELOH et al., 1995):

$$GR = \frac{\ln(RC) - \ln(IC)}{n}$$

A simple regression model was used to fit the population trend with the use of STATISTICA package.

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3. Results and discussion

3.1. Expansion of breeding range

During the firsts decades of this century the Oystercatchers were breeding in Italy along the northern-Adriatic and Tuscany coasts (ARRIGONI DEGLI ODDI 1929, NINNI 1938, CATERINI 1932). In the following decades the species disappeared from most sites, until becoming restricted to a few barrier islands of the Po Delta since the '50s (TOSCHI 1986). The same was true until the beginning of the '80s, as shown by the national Breeding Bird Atlas (BOGLIANI 1993). In 1987 and 1988 a pair

nested on the Reno river mouth, 20 km south of the Po Delta (TINARELLI & BACCETTI 1989). There were no further records in the following years. In 1988 a breeding pair was found for the first time in the Grado-Marano Lagoon (UTMAR 1989), located about 100 km north of the Po Delta. From 1990 to 1995 several breeding pairs have settled on new sites among these two areas, and in 1996 the species recolonised the Lagoon of Venice, where it was breeding at the beginning of this century. In less than ten years the length of coastline inhabited by breeding pairs increased (distance from the farthest sites) from about 30 km to almost 160 km, with all the apparently favourable areas occupied. Nevertheless the distribution is not homogeneous; still are stretches of coasts, usually those with heavy human disturbance or tourists occurrence, being completely devoid of breeding pairs.

Along the Sardinian coastline, Oystercatchers were reported being present during the breeding period before 1980 (MOCCI DEMARTIS 1970, TORRE 1979), but nests were never found. Then, from 1987 to 1996, summering birds were regularly observed on the coastal areas of Sulcis (SW Sardinia), of the Gulf of Oristano and near Cagliari. Single birds and isolated pairs were observed in June–July, while larger groups (up to 15 birds) in May and August. Despite of accurate surveys no nest was found. However, an adult and two juveniles were observed on September 2nd 1989 on the pond of Corru s'Ittiri-Arborea (Gulf of Oristano), where 2–4 birds are regularly present during the breeding season. On the basis of these data, the Oystercatcher was included amongst the species which possibly breed in Sardinia (GRUSSU 1995).

A noticeable aspect of the Oystercatchers expansion is the rapid use of dredge spoil islands, created since the beginning of the '90s in some northern-Adriatic coastal lagoons. These islands, from 5 to 30 ha in size, are built with the controlled discharge of sand and mud resulting from dredging operations (BETTINETTI et al. 1995). In a couple of years seven pairs settled on these islets in the Lagoon of Porto Caleri (northern Po Delta), where the species had never previously bred; again, the first breeding pair in the lagoon of Venice nested on one such islet. Nowadays, about 30% of the Italian Oystercatchers are found on these artificial sites. These may be seen as a poorer quality habitat compared to barrier islands; their colonisation, in a phase of population growth, would result from the saturation of the latter, with new breeders forced to use sub-optimal habitats, in a typical density-dependent process (as reported in northern Europe for agricultural areas; GOSS-CUSTARD et al. 1995). Indeed, in several barrier islands we observed regular spacing of breeding pairs every 250–300 m, which represents the highest density at our sites. Nevertheless, we believe that dredged islands are also a cause of population increase, due to the fact that they act as the only other rather safe breeding sites, the mainland being too urbanised to allow settlement of new pairs. Something similar has been observed for the closely related species *H. palliatus* in north America, where creation of dredge islands contributed to a raise in the breeding population (NOL & HUMPHREY 1994). Up to now we have not observed any nesting on wrack or grass on marsh islands, a new adaptation that was recently observed for the same species by LAURO & BURGER (1989), probably as a response of humane disturbance on beaches and islands.

3.2. Population growth

The trend for the whole Italian population is shown in Fig.2, where all the available data are summarized. From about 20 pairs estimated in 1980 (PUPILLO & BOLDREGHINI in TINARELLI & BACCETTI 1989) the population was assessed at 15–30 pairs in the Italian Breeding Birds Atlas (years 1983–1984; BOGLIANI 1993) and at 20–25 pairs in 1987 (TINARELLI & BACCETTI 1989). Even if detailed censuses were not performed, there is little doubt that the whole Italian population amounted to a few tens of pairs until the end of the '80s. In 1991 (first complete census) 36 pairs were counted, increasing to 59 in 1994 and to 63 pairs in 1996. Since 1980, the mean annual rate of increase has been 7.2%. Nevertheless, the study period can be divided in two distinct phases, respectively 1980–1991 and 1991–1996. For the former, even if data are scanty, an annual increase of 5.5% may

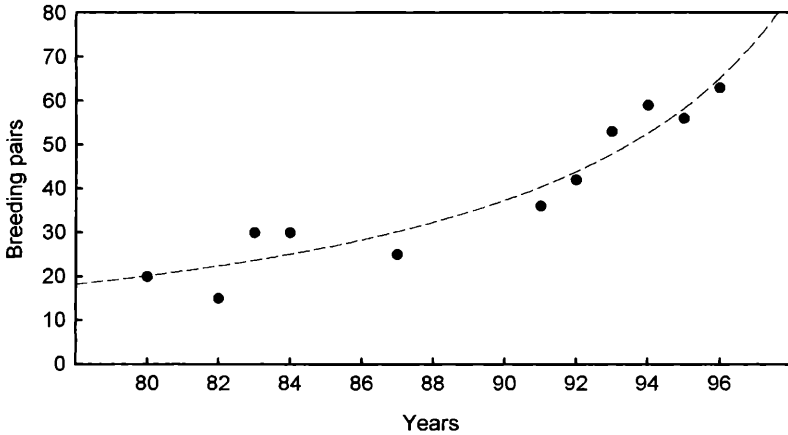


Figure 2: Trend of the Italian population over the last 16 years. The equation for the regression line is $y = (-15.13)/(1+(-10.12)*\exp((-0.022)*x))$, where y = no. of breeding pairs and x = years. Data sources: TINARELLI & BACCETTI 1989, BOGLIANI 1993 and pers. comm., SCARTON et al. 1993, VALLE et al. in press. – Populationsentwicklung (Zahl der Brutpaare) des Austernfischers von 1980 bis 1996.

be estimated. For the latter, a much higher increase (11.2%) has been reached. The overall population trend can be described by a simple, almost exponential regression model which explains for the 91.2% of the variance (fig. 2).

At a local level, the trend is similar in both the larger sites. In the Po Delta the numbers of pairs rose from 32 in 1991 to 53 in 1994 and 56 in 1996, while in the Grado-Marano Lagoon from one pair in 1988 six pairs occurred in 1994, and from then the small population stabilized at this level.

From data reported by GOSS-CUSTARD et al. (1995) for a number of British sites we have calculated the yearly growth for a period (years 1980–1992) similar to ours. The sites with the fastest increases show growth data (5.2% and 5.8%) which are comparable, but lower, than those we observed in Italy. Between 1982 and 1991 the breeding pairs in Camargue, the only other Mediterranean population for which detailed data exist, increased only of 1.9% per year (data from BOUTIN et al. 1991 and PINEAU, pers. comm).

For a long lived species with high breeding site philopatry increase in a isolated population can be due to a lower adult mortality, especially in winter, or to a higher reproductive success, or both. Temporarily, it also could be due to breeding at an earlier stage (ENS, pers. comm.). Moreover, it is well known that among Oystercatchers' populations a certain percentage of adults do not nest every year (ENS 1992). In our case, the real causes of the recent increase of the Oystercatcher in Italy, after decades in which it went very close to extinction, are not clear. The species has been formally protected by law for many decades. Nevertheless in the past illegal killings were observed until the end of March (hunting season closing date), when the adults were already present in their breeding grounds. Since 1992 the hunting season stops at the end of January, so that the number of adults killed dropped to almost zero. The observed population growth started at the beginning of the '90s, suggesting a possible cause-effect relationship with the new regulations.

Other possible reasons are much more unlikely. Any form of either management or special protection has never been devoted to the few breeding sites, so the observed population growth cannot be ascribed to these practices. Considering the Italian population as a whole, we discard the hypothesis of new recruitments through immigration. The next closest breeding site is the Camargue,

some 600 km from the northern Adriatic coasts, and there is no evidence of increase for this site in the last years (BOUTIN et al. 1991, PINEAU pers. comm.). Nothing is known about the winter quarters of the Italian Oystercatchers, so the hypothesis of a higher winter survival of adults cannot be checked. Again, at the moment we have not enough data to compare the rates of breeding success through the years in order to look for significant increases. Finally, non-breeders were regularly observed in the Lagoon of Venice, and sometimes in the Po Delta as well. It is likely these adults had begun to nest in the new sites such as dredge spoil islands, colonising new habitats where the lack of suitable sites was the real cause of breeding absence.

4. Zusammenfassung

Während der letzten 20 Jahre nahm im Bereich der italienischen Adriaküste die Population des Austernfischers (*Haematopus ostralegus*) stark zu (von etwa 20–30 Paaren zu Beginn der 1980er Jahre auf 63 Paare im Jahr 1996). Die jährliche Zuwachsrate liegt im Mittel bei 7,2% und in den letzten Jahren sogar bei 11,2%. Die Art nahm nicht nur an ihren traditionellen Brutplätzen zu (Po-Delta), sondern besiedelte auch neue Gebiete (einschließlich künstlich geschaffener Inseln). Es wird vermutet, daß die Bestandszunahme vor allem mit einer höheren Überlebensrate der Altvögel in ihren Brutgebieten und mit der Schaffung neuer Brutplätze zusammenhängt.

5. References

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Autor(en)/Author(s): Scarton Francesco, Valle Roberto, Rusticali Renzo, Utmar Paolo, Grussu Marcello

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