Population status and trends of Ferruginous Duck in Italy

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Introduction

The Ferruginous Duck was a common species in Italy, especially in winter, until the middle of the 20th century. However, its numbers have decreased rapidly since then and the species was considered as "vulnerable" in the Red List of Italian birds (Frugis & Schenk, 1981), and "critically endangered" in the update by Calvario *et al*. (1999). This paper updates the national estimates of breeding and wintering populations and reviews the main threats to the species in Italy.

Methods

Within the framework of the Italian Action Plan for the Ferruginous Duck, a field survey was carried out in 2002 to obtain an updated estimate of the Italian breeding population. The survey was carried out on 134 sites, selected on the basis of **a)** historical presence of breeding Ferruginous Ducks, **b)** current presence of a suitable habitat, **c)** occurrence of wintering birds. The fieldwork was conducted with the help of volunteer birdwatchers and ornithologists.

Distribution, numbers and trend of the Ferruginous Duck wintering population were estimated from the results of the International Waterbird Census, from 1994 to 2001 (Baccetti *et al*., 2002). All sites where the Ferruginous Duck was present at least once in January 1994-2001 were considered as potential sites. An annual coverage index was calculated as the number of potential sites censused in each year divided by the total number of identified potential sites. This coverage index showed that, since 1994, winter counts have been performed on more than 80% of the potential sites.

The population trend was calculated with TRIM (TRends and Indices for Monitoring data, version 3, Pannekoek & van Strien, 2001). Only sites without missing counts were used for TRIM calculations; 40% of the yearly totals was thus excluded from the trend analysis.

Results and Discussion

Breeding was confirmed at 19 sites in 2002 (Fig. 1). The distribution of the Ferruginous Duck in Italy did not differ much from that recorded in the 1980s (Brichetti *et al.,* 1992; Canova, 1993), with the exception that no birds were found in 2002 in Sardinia where the species was present until 2000 (Stagno di Platamona, D. Pisu & C. Azara, *pers. comm.*). In 2002, there were a total of 78-107 breeding pairs compared to a previous estimate of 25-50 pairs (Brichetti & Gariboldi, 1997) thus the Italian breeding population of Ferruginous Ducks may have increased in recent years. Six sites or wetland complexes held five or more pairs in 2002 (Fig. 1): Punte Alberete-Valle Mandriole, Ravenna, southern Po Delta (15-20 pairs); Eastern Bologna Plain (10-15 pairs); Lesina Lake (Gargano Peninsula, 7-9 pairs); Gulf of Manfredonia (Apulia, south of the Gargano Peninsula, 20 pairs); Catania Plain, Eastern Sicily (including the Simeto River Mouth and Lentini Lake, 15-20 pairs); Pantano Leone (south-western Sicily, 5 pairs).

Breeding numbers have increased in recent years at the Bologna plain, Gulf of Manfredonia and Lesina Lake (Allavena & Matarrese, 1978; Di Carlo, 1966; Frugis & Frugis, 1963; Tinarelli, 2001a). The Bologna plain population has probably

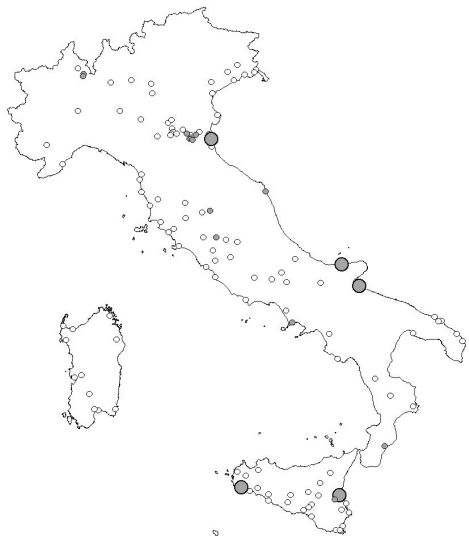

Fig.1: Distribution of breeding Ferruginous Duck in Italy in 2002 (full dots = confirmed breeding sites, empty dots = unoccupied potential sites, large dots = 5 pairs of more, small dots = less than 5 pairs).

increased due to reintroduction projects and habitat re-creation (Tinarelli, 2001a; 2001b), while the Apulian population has benefited from the designation of two nature reserves in 1981 and 1991.

Between 1994 and 2001, the winter range of the Ferruginous Duck in Italy has not changed substantially (Fig. 2), with a regular presence in the northern Adriatic coastal wetlands, along the Thyrrenian coast and Tevere Valley, in Sicily and in Sardinia. However, over the same time period the number of wintering birds has increased fourfold, from 84 to 368 birds (Fig. 3). The relative distribution of individuals has also changed - with the percentage of birds in Sicily increasing significantly from 19% to 56% (r_s =0.71, $p<0.05$, n=8). Overall, the winter population has increased by 29.3% per year, mainly due to a notable increase in the last two winters (Fig. 4a). Most of this increase has been in Sicily, but numbers

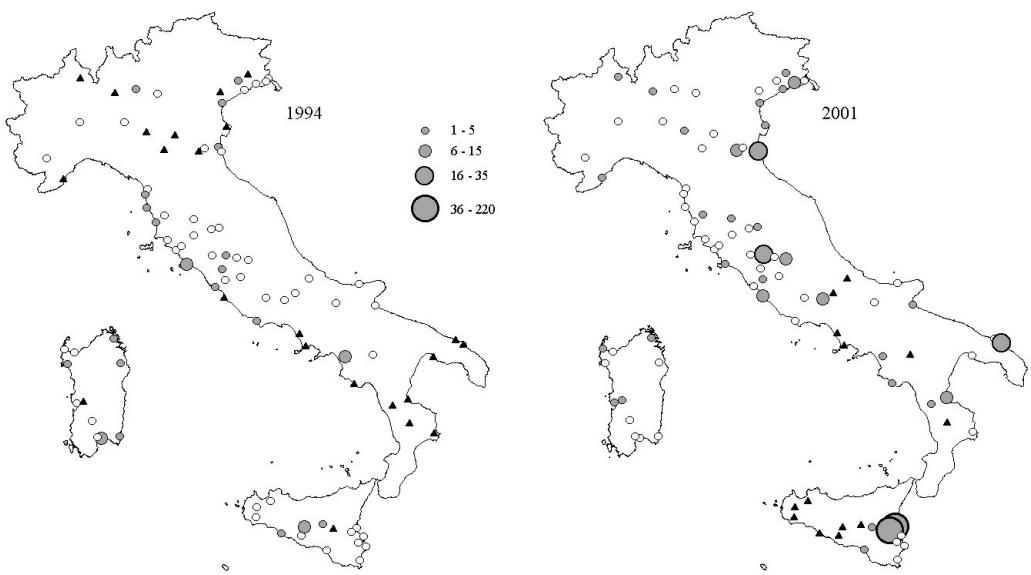

Fig. 2: Distribution of wintering Ferruginous Ducks in 1994 and 2001 (full dots = site censused species present, empty dots = unoccupied potential site, species absent, triangle = unsurveyed potential sites not visited) (see methods).

in the rest of Italy have also increased (at 7% per year) (Fig. 4b). The abundance index (Fig. 4a) and annual totals (Fig. 3) show similar trends thus confirming the representativeness of the sample of sites on which the trend was calculated.

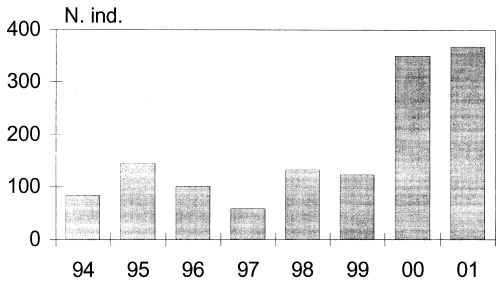

Fig.3: Numbers of wintering Ferruginous Duck in Italy, 1994-2001.

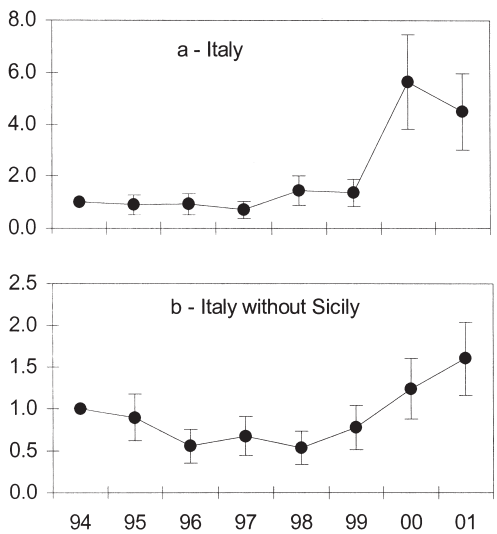

Fig.4: Abundance indexes and population trends of Ferruginous Ducks in Italy, 1994-2001, calculated with (a) and without (b) Sicilian data.

In conclusion, in the last decade both breeding and wintering populations of Ferruginous Duck in Italy have increased while the ranges have not significantly changed. Possible reasons for the increasing trends include:

- √ A shorter hunting season since 1992, thanks to a new law which reduced it both in late summer and in spring.
- √ A decrease in the number of hunters in Italy, from 1,7 million twenty years ago to 700 000 today.
- √ The designation of protected areas since the end of the 1970s, including key sites such as Punte Alberete-Valle Mandriole (1979) and the Simeto River Mouth (1984).
- √ Local reintroduction projects - about twenty have been carried out in the last ten years (Bellucci, 2000). Although most were not successful, small but apparently self-sustaining populations were established at two sites (Eastern Bologna Plain and Alviano Lake) (Cardinali, *pers. comm.*; Tinarelli, 2001a).
- √ Creation of new wetlands, for example in the lower Po River Plain, close to Bologna (Tinarelli, 2001b) and at Lentini Lake, which is a protected area in eastern Sicily, established in 1991 (Ciaccio & Priolo, 1997). In the former area, more than 2 000ha of new wetlands were created in the 1990s.

It is also possible, however, that the increase in Ferruginous Duck numbers has been driven mainly by the increases in Sicily. In fact, while the population of mainland Italy is apparently sedentary, that of Sicily - like that of Tunisia - is subject to influxes of migrants: flocks of hundreds are reported both in spring (e.g. 439 individuals in 1998 and 781 in 1999 in the Gulf of Gela, Campo *et al.*, 2001) and in autumn (300-600 birds regularly recorded in October at Lentini Lake, A. Corso, *pers. comm.*). Recruitment from these large migrant flocks when local habitat conditions are favourable might therefore explain the increases in breeding and wintering numbers.

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