

The spring migration of the Lesser Kestrel *Falco naumanni* on the Straits of Messina, data from 1991 to 2008.

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Summary

In the present work we want to provide the relative data on the spring migration of the Lesser Kestrel (*Falco naumanni*) collected during the period of observation and anti-poaching activities on the Straits of Messina (Italy) on the Peloritani Mountains (Sicilian side of the Straits of Messina). The results shown cover the period from 1991 to 2008. The numbers of observed birds vary greatly from one year to another, with a minimum of 12 birds in 1995 to a maximum of 159 in 2003. Observations are done on a daily basis from April to May, and the 70% of the visible migration occurs in the month of April. Adding to Lesser Kestrel individuals in migration we are going to present the numbers of Kestrel (*Falco tinnunculus*) and not surely identified birds (Kestrel/Lesser Kestrel).

The presented results are most likely underestimated from what actually migrate over the Messina Straits and this may depend on the difficult accounting of the species, low visibility and misidentification over long distances and under poor lighting conditions, as the species' tendency to migrate on a broad front and also the fact that the species migrates also during the month of March when no monitoring is done. Nonetheless the Straits of Messina is still one of the most important sites in the Mediterranean basin for the spring migration of the Lesser Kestrel.

Introduction

The Straits of Messina are one of the most important bottlenecks for migrants in Italy (Dimarca A. & Iapichino C., 1984) and in the Central Mediterranean (Zalles J.I. & Bildstein K., 2000). On the average at least 24,000 raptors are counted annually during the course of the observation and anti-poaching camp, of which at least 7.1% are falcons. In the case of the Lesser Kestrel, the individuals observed on the Straits of Messina may belong both to the Italian or eastern European populations.

The Lesser Kestrel breeds in Italy with an estimated population of 3640-3840 pairs, most of them in southern Italy, Basilicata and Puglia with 3140 pairs (Brichetti P. & Fracasso G., 2003).

The species is on the National Red List (Bulgarini et al., 1993), in Annex I of the Birds Directive and SPEC 1 (Burfield I. & Van Bommel F., 2004).

The observation activity done on the Messina Straits was initially started to thwart the poaching phenomenon, in fact during the 1980's, in spite of national and international laws protecting raptors and storks, many poachers still shot these protected birds during the closed hunting season in spring (Giordano A., 1991; Giordano et al., 2005).

In 1984 started the «international camp for the protection and study of the migration of raptors and storks migrating through the Straits of Messina». After some years of activity, decrease of poaching and the acquired better knowledge of local migratory routes, has made possible to concentrate the attention on collecting data about raptors migration.

Study Areas and Methods

The area of study is in north-eastern Sicily, in the province of Messina, from Capo Peloro, at sea-level to Dinnamare (1,152 msl), the highest mountain of the Peloritani ridge. The minimum sea distance between Sicilian and Calabrian side of the strait is approximately 3.3 km.

We have been using 15 different locations (Fig.1), distributed in natural, semi-natural and urban areas, with a maximum distance between locations of about 25 km.

The necessity to use so many observation posts depends both from a conservationist approach (maximum control of territory to prevent poaching), but also due to the extreme variability of the migratory routes due to meteorological conditions.

The following data on Lesser Kestrel migration on the Straits of Messina apply to the years between 1991 and 2008. Previous data (1984 – 1990) has been published (Giordano A., 1991), with many limits, due to the hard poaching existing and the needs to protect the raptors by the illegal shooting more than to study migration behavior and identifying the species.

Besides the collected data on the Lesser Kestrel, because of the difficulty found sometimes in identifying the species, we also present the counts of Common Kestrel and of individuals for which it was impossible to be sure between the two species.

Characters used in identifying raptors were those provided by Gensbol (1984), Porter et al. (1985), Clark (1999) and Forsman (1999).

The «international camp for the protection and study of the migration of raptors and storks migrating through the Straits of Messina» started officially in 1984, but the data gathered in the first years of its activity are not provided due to the data not being collected in a uniform manner.



Figure 1. Observatories mostly used during the census period in the spring migration (Images: Google Earth).

Every year, the observations have been covering a two month period (from the beginning of April to the end of May), each day from 08:00 to 18:00 solar time with some exceptions for weather conditions, stopping observation earlier, or starting very early in case of big passage the day before. In such case, in fact, raptors (mainly Honey buzzard) can leave the roost very early and can be very easy for the poachers, also now, to shoot them. To prevent such occasional remaining poaching, observation can start also at 05:00. Only when very strong south-easterly winds or continuous rains the observations were interrupted.

Results

The Lesser Kestrel has been observed regularly every year, on the Straits of Messina.

On the average about 57 Lesser Kestrels are observed every spring (April and May). In 18 years of observations, 1,020 individuals on migration have been identified, with a minimum of 12 (0.21 ind/day) in 1995 and a maximum of 159 (2.79 ind/day) in 2003 (Table 1). The year 2003 was extremely favorable for observations, with perfect meteorological conditions for our study, with the lack of low clouds, fog, birds passing too far, etc. This is also reflected in the high number of other species observed, in fact (for exception for 2007) in 2003 we have the highest number of raptors observed (35,921). The highest number of Lesser kestrels observed in one day has been 40 on April 10th 1993. Lesser Kestrels have been observed also in small flocks (20 individuals) or associated with other species (*Falco subbuteo*, *Falco tinnunculus*, *Falco vespertinus*, *Pernis apivorus*, *Circus sp.*). The percentage of unidentified birds (*F.naumanni/F.tinnunculus*) compared with total individuals number counted (calculated by adding up the total of Common Kestrels, Lesser Kestrel and *F.naumanni/F.tinnunculus*) varies from 5.5% in 2001 (year where have been counted 689 falcons in total and 38 have been included in *F.naumanni/F.tinnunculus* category) to 29,8% in 2008 (year where have been counted 544 falcons in total and 162 have been the *F.naumanni/F.tinnunculus* ones).

year	F. naumanni	daily average count for F. naumanni	F.nau/F.tin	F.tinnunculus	F.nau+F.tin +F.nau/F.tin
1991	64	1,12	56	653	773
1992	38	0,67	70	449	557
1993	111	1,95	214	665	990
1994	19	0,33	97	417	533
1995	12	0,21	178	480	670
1996	18	0,32	110	573	701
1997	46	0,81	96	934	1076
1998	22	0,39	59	672	753
1999	24	0,42	127	567	718
2000	24	0,42	47	459	530
2001	46	0,81	38	605	689
2002	75	1,32	84	465	624
2003	159	2,79	95	510	764
2004	36	0,63	75	147	258
2005	57	1,00	133	456	646
2006	72	1,26	81	293	446
2007	79	1,39	160	358	597
2008	118	2,07	162	264	544

Table 1. Number of individuals of Lesser Kestrel (*F.naumanni*) counts in each year. Data also includes the number of unidentified individuals (*F.nau/F.tin*) which could either be Common or Lesser Kestrel and the numbers of Common Kestrels (*F.tinnunculus*). In the covered period by the international camp, the migration of Lesser Kestrel is concentrated in April (71 % of individuals observed), with a first peak between the first and second week. The migration continues uniformly up to the end of the month and decreases in May (Fig.2).

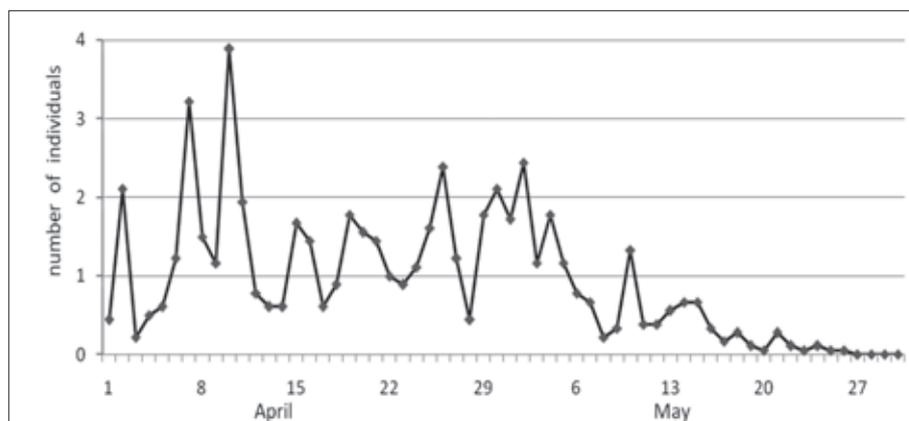


Figure 2. Average numbers of Lesser Kestrels.

Data from both direct observation (Giordano et al., 1998) and recovery of injured birds at our center for wild animals show that Lesser Kestrels are sometimes shot by poachers.

There have been also two recoveries of Lesser Kestrel, both in July 2008, of individual very thin and found exhausted. One of them, has been found in the Straits of Messina, in the sea, close to die, rescued by the naval police. Both have been recovered and released near a colony of Lesser Kestrel at the end of the breeding period.

An individual ringed in Austria (Gran) on 18th June 1955, has been found in Messina on 19th September 1955 (Iapichino & Massa, 1989). It has been often observed feeding, searching for food and eating in flight, while migrating (Giordano et al., 1995).

Discussion

The counts shown in the table above have to be considered as underestimate the actual migration of Lesser Kestrels over the Straits of Messina due to the following reasons:

- The number of individuals observed along migratory routes is not abundant, because of Lesser Kestrel is a broad front migratory raptor and, as other *Falconiformes*, doesn't depend on searching for thermals and soaring. As a consequence it is not concentrated at bottlenecks (Meyer et al., 2003).
- The number of individuals observed varies significantly from one year to another. This may be due to several reasons such as different migratory patterns or different weather conditions resulting in poorer lighting and visibility conditions in some years.
- The Italian population of Lesser Kestrel returns to the breeding grounds beginning from March (Brichetti P. & Fracasso G., 2003, Palumbo G., 1997). We do not use to cover this month regularly and some occasional observation made in the month of March, suggest us that we are probably missing some data on the passage of the Italian population on the Straits of Messina. For example up to 80 individuals were observed within the end of March (Corso A., 2005), with a peak of 20 birds in one day.

Nonetheless the Straits of Messina is still one of the most important sites for the spring migration of the Lesser Kestrel in the Mediterranean basin. Compared to other Italian observation sites, only Otranto Cape, in Puglia, seems to feature a more notable migration route for the Lesser Kestrel (Premuda et al., 2004).

The regular migration of species of conservation concern such as the Lesser Kestrel confirms the importance of the Straits of Messina for raptor migration. The site's importance has been further confirmed with its designation as an Important Bird Area in 1989 and then as a Special Protection Zone in 1999 (enlarged in 2005).

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