

# A TWO-YEAR STUDY OF WINTERING RAPTORS IN BASILICATA (SOUTHERN ITALY)

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The Mediterranean basin and its coastal areas and islands constitute an important area for raptors, both during migration and wintering. Bird species that migrate southward in a short and medium range from central and northern Europe can spend their winter in the north side of the Mediterranean while long-distance migrants need to cross the sea to reach African wintering grounds. In southern Italy many researches have been focused on raptor migration, while studies about the composition and the structure of wintering raptor communities are almost lacking.

## STUDY AREA AND METHODS

Basilicata is a region of southern continental Italy with a relatively low density of human population (58,8 people/km<sup>2</sup>) compared to national average of 201,45 people/km<sup>2</sup>; lowlands occupy just 8% of the total surface and are concentrated along the eastern coast; the rest of the region, hilly and mountainous in similar percentage, is characterized prevalently by low intensity agriculture and semi-wild livestock farms. Interaction between low human pressure and large extension of natural and semi-natural ecosystems creates the conditions for the presence of numerous species of raptors, in particular this region represents the stronghold of red kites (*Milvus milvus*) in Italy considering that half of its national population breeds here (approximately 200 pairs, Allavena et al. 2006). Roadside surveys were made using the car transect method (Thiollay 1976, Fuller & Mosher 1981): 16 (11,87 Km mean length) and 24 (18,08 km mean length) transect were conducted at low-speed (20-40 km/h) in January 2009 and January 2011, respectively, for a total of 634 km (197 Km in 2009 and 437 Km in 2011); at least two observers were employed.

## RESULTS

A total of 572 birds of prey (0,9 individuals Km<sup>-1</sup>) were counted in the two years belonging to 8 different species the most common of which were the common buzzard (*Buteo buteo*, 0,38 ind/km), the Eurasian kestrel (*Falco tinnunculus*, 0,27 ind/km) and red kite (0,24 ind/km). Other species recorded during surveys were the black kite (*Milvus migrans*), hen harrier (*Circus cyaneus*), sparrowhawk (*Accipiter nisus*), osprey (*Pandion haliaetus*) and peregrine falcon (*Falco peregrinus*). All these species had an index of abundance less than 0,01 ind/km.

Considering the three commonest species, the European kestrel showed significant difference in the number of individuals per kilometer within the two surveys (Mann-Whitney U-test,  $z = -2,351$ ;  $P = 0,019$ ) while kilometeric index of abundance for common buzzard and red kite did not vary significantly in the two years.

## DISCUSSION

Although the overall species richness (8 species) it's similar or lower than in other areas of the Mediterranean Basin (Sarà, 1996), Italy (Boano & Toffoli 2002), France (Meunier 2000) and Spain (Tapia et al. 2008), the abundance of birds (N=572; 0,9 individuals km<sup>-1</sup>) reaches one of the highest values even observed in studies on wintering raptor in several place both in Europe and Africa. Anadón et al. (2010), for example, surveys made in the Sahel reported 47 individuals 100 km<sup>-1</sup> but this value drops to 7 individuals 100 km<sup>-1</sup> when black kite, the commonest species, is removed from counts. Sarà (1996) drove 818,5 km of car transect in Basilicata during winter 1993-94 and counted seven species of raptors, the commonest species were the same reported in our study but abundance were lower, the index of kilometeric abundance were 0,065, 0,062 and 0,048 ind/Km for red kite, common buzzard and european kestrel, respectively. Almost twenty years after Sarà's censuses the number of the three most common species of raptors wintering in Basilicata is creased considerably and this can due to several causes, one of this can be the decrease of hunting pressure in the region in the last two decades.

The results of this study highlight primarily the importance of this region for the red kite conservation at national scale considering the low numbers of pairs breeding in Italy and the concentration of half of the Italian population in this area. Furthermore this region could play an important role at national and international scale for the conservation of that species, like common buzzards and european kestrels, that winter here in large numbers.

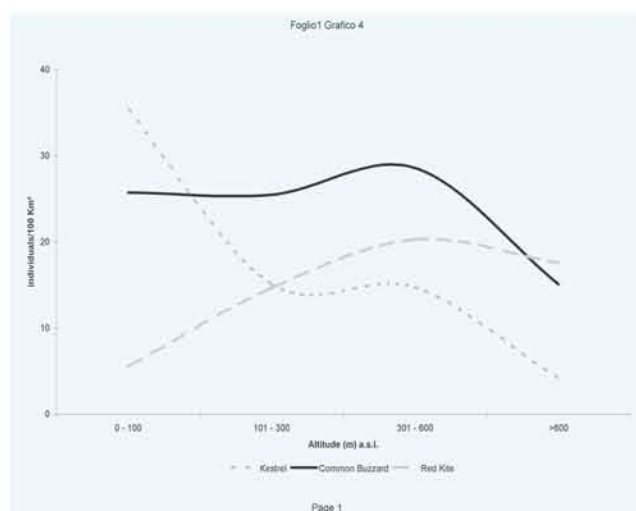
**RIASSUNTO:** Tra i rapaci europei le specie migratrici superano in numero quelle stanziali. I migratori manifestano diverse strategie di migrazione, condizionate dalla presenza di due barriere ecologiche: il mar Mediterraneo e il deserto del Sahara. Alcune delle specie Europee di rapaci evitano l'attraversamento di entrambe queste barriere e svernano a nord del Mediterraneo. Questo studio fornisce dati sui rapaci svernanti in Basilicata, una regione dell'Italia meridionale peninsulare in cui la densità della popolazione umana è relativamente bassa. I censimenti sono stati effettuati nel gennaio 2009 e 2011. Sono stati percorsi complessivamente 634 km di transetti, 197 nel 2009 e 437 nel 2011. Sono state contattate 8 specie di rapaci. Le tre specie più comuni sono state la poiana (0,38 ind/km), il gheppio (0,26 ind/km) e il nibbio reale (0,24 ind/km). Altre specie osservate sono state il nibbio bruno, l'albanella reale, lo sparviere, il falco pescatore e il falco pellegrino. Confrontando i risultati dei due anni solo per il gheppio è stata rilevata una differenza significativa nel numero di individui osservati per chilometro. I risultati di questo studio mostrano un indice di abbondanza relativa di rapaci più elevato rispetto a studi precedenti effettuati negli anni '90 nella stessa area, si suppone che questo incremento potrebbe essere dovuto alla diminuzione della pressione venatoria nella regione. Il numero di rapaci osservati per ogni chilometro di transetto percorso è paragonabile ai massimi valori osservati in altre aree del bacino del mediterraneo evidenziando l'importanza di questa regione dell'Italia meridionale per lo svernamento dei rapaci. La Basilicata inoltre risulta essere un'area importante per la conservazione del nibbio reale.

## References

- Allavena S et al. 2006. Atti del convegno "Status e conservazione del Nibbio reale (*Milvus milvus*) e del Nibbio bruno (*Milvus migrans*) in Italia e in Europa meridionale"; Anadón J D et al. 2010. Animal conservation 13:495-504; Boano G. & Toffoli R 2002. Journal of Raptor Research 36(2):128-135; Fuller M R & Mosher J A. 1981. Stud. Avian Biology 6:235-246; Menuier F D et al. 2000. Biological conservation 92:291-298; Sarà M 1996. In Biología y Conservación de las Rapaces Mediterráneas. Monografías nº4. SEO, Madrid; Tapia L et al. 2008. Polish Journal of Ecology 56(2):232-233; Thiollay J M 1976. Passer 13:69-76.

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Altitudinal distribution of observed raptors.

Basilicata 2011 - 437km		Basilicata 2009 - 197Km	
<b>Circus cyaneus (N=6)</b> IKA 0,0137	<b>Milvus migrans (N=1)</b> IKA 0,0023	<b>Circus cyaneus (N=1)</b> IKA 0,0051	<b>Milvus migrans (N=1)</b> IKA 0,0051
<b>Pandion haliaetus (N=1)</b> IKA 0,0023	<b>Falco tinnunculus (N=100)</b> IKA 0,2288	<b>Falco peregrinus (N=1)</b> IKA 0,0051	<b>Falco tinnunculus (N=63)</b> IKA 0,3198
<b>Milvus milvus (N=103)</b> IKA 0,2357	<b>Buteo buteo (N=176)</b> IKA 0,4027	<b>Milvus milvus (N=50)</b> IKA 0,2538	<b>Buteo buteo (N=63)</b> IKA 0,3198
<b>Accipiter nisus (N=4)</b> IKA 0,0092		<b>Accipiter nisus (N=2)</b> IKA 0,0102	

