

relative to other studies suggests that prey diversity is not a factor which precludes Northern Goshawk nesting in the Coast Range. Second, our field observations and those of other researchers indicate that dense understories are common throughout the Coast Range (Franklin and Dyrness 1973, Natural vegetation of Oregon and Washington. USDA For. Serv. Tech. Rep. PNW-8, Portland, OR U.S.A.; Reynolds and Meslow 1984; DeStefano and McCloskey 1997). This dense understory may decrease prey vulnerability to Northern Goshawks, reducing foraging efficiency and breeding success. We suspect that the hypothesized lack of suitable foraging habitat may be a limiting factor contributing to the low breeding density of goshawks in the Coast Range of Oregon.

We thank J. Crawford, R. Jarvis, S. DeStefano, M. Collopy, E. Forsman, and R. Anthony for their contributions.—  
**James A. Thraillkill, Lawrence S. Andrews, and Rita M. Claremont, Oregon Cooperative Fish and Wildlife Research Unit, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331 U.S.A.**

*J Raptor Res.* 34(4):340–341

© 2000 The Raptor Research Foundation, Inc.

#### FIRST DARK MORPH BROOD OF MONTAGU'S HARRIERS (*CIRCUS PYGARGUS*) IN 14 YEARS IN ITALY

The dark morph of the Montagu's Harrier (*Circus pygargus*) is rare in Eurasia and its ecology and adaptive value is unclear. From 1986–99 (14 yr), I studied an Italian population of Montagu's Harriers in a 120 000 ha study area on the eastern slopes of the Central Apennines. It is the southernmost population on the Adriatic coast with the nearest population 70–80 km to the north. The size of this population has varied between 12–32 pairs annually ( $\bar{x}$  = 21.7 pairs).

The dark (melanistic) morph of Montagu's Harrier is relatively frequent in the western portion of the European range. In France and Spain, it varies between 2–5% of all individuals in the passage at Gibraltar (Clarke, 1996, Montagu's Harrier, Harlequin Press, Chelmsford, Essex, U.K.) and, in a population in the province of Burgos in northern Spain, as much as 10% of the population (88 nests examined in 1994–96, Sancho and Ansoła Aristondo, 1998, Regulación del carácter "plumaje oscuro" en una población de Aguilucho cenizo (*Circus pygargus*), Abstract, 5° Reunión Ibérica sobre Aguiluchos, Evora, Portugal:11) is melanistic. The same is true in Portugal where as much as 20% of the population is the dark morph in Castroverde (Franco pers. comm.). Dark morphs occur less frequently in eastern and central Europe. Shirihai (1996, The birds of Israel, Academic Press, London, U.K.), for example, reported only 10 dark morphs among thousands of Montagu's Harriers migrating through Israel in the 1970s and 1980s. We have no data for the number of dark morphs migrating at the Messina Strait but, in the migration along the Adriatic coast, no melanistic birds have been observed in three years of observations nor have they been observed at the neighboring Monte Conero site where 286 Montagu's Harriers have been observed (Pandolfi et al., 1998, Migrazione primaverile dei rapaci diurni nel Parco Naturale Regionale del San Bartolo (PS), "59° Congresso Nazionale dell'U.Z.I.," Abstract:43).

The Italian breeding population of Montagu's Harriers appears to belong to the eastern portion of the range in this respect. Indeed, in 13 yr of observations through 1999, I encountered only one melanistic male in 1989, and it was not a breeder but a vagrant seen only for a few days in a breeding site of three pairs. During this time, >1000 adult and young Montagu's Harriers were observed in about 280 nests where nearly 400 young fledged. About 20% of these were nonbreeders and each observation/year was independent. Nevertheless, only this single case of a dark morph was observed (<0.1%).

In the 1999 breeding season, while on a late visit to band and tag harriers, three melanistic, young Montagu's Harriers were observed at a nest on 17 July at Monte della Mattered near Mombaroccio, a known breeding site occupied by the harriers almost every year since 1987. The parents of the three melanistic young were light morphs but all three young in the brood were completely dark, smokey brownish-black, except for the upper tail coverts, which were white as in normal brown juveniles and adult females. This last feature, a white mark at the upper end of the tail, is not normally depicted nor described in most field guides or general ornithological books. Indeed, even the two recent books (Clark, 1999, A field guide to the raptors of Europe, the Middle East and North Africa, Oxford Univ. Press, Oxford, U.K. and Forsman, 1999, The raptors of Europe and the Middle East, T. & A.D. Poyser, London, U.K.), make no mention of this white mark on the upper tail coverts.

Sancho and Ansoła Aristondo (1998 and pers. comm.) found no melanistic young produced from normal plumage adults. For this reason, they felt the dark plumage character was dominant. Sage (1962, *Br. Birds* 55:201–225) felt

that melanism was a heterozygous dominant trait. The three dark Montagu's Harrier young we observed conflicted with this assessment. Perhaps, the nestlings in the brood resulted from extra pair copulations with a nonbreeding, melanistic male. During the 1999 breeding season, the Monte della Mattered site was monitored three times/wk with a mean of 5.5 hr of observation/d. Useful copulations can occur only during a female's fertile period which, for the Montagu's Harrier, is about 10 d; 7 d before the deposition of the first egg and ending about 1 d before deposition of the last egg (Pandolfi et al., 1998, *J. Raptor Res.* 32:269–277). During the 4-wk courtship period, which includes the fertile period, we made 65 hr of direct, on-site observations of the pair, but no melanistic bird was observed. In all the other breeding sites of the population (a total of 17 pairs recorded and 8–10 nonbreeding harriers), no melanistic individual was observed up to the departure of all birds on migration (first half of August). Extra-pair copulations in Montagu's Harriers seem to be low. In fact, in the population we studied, they were recorded during only 3.4% of the copulations we observed (Pandolfi et al. 1998), while Arroyo has recorded 4–8% in Spain (Arroyo, 1999, *Condor* 101:340–346). Considering these data, it does not seem very likely, although it is remotely possible, that a single vagrant, dark male arrived in this heavily-monitored area during the breeding period, copulated with the female of an existing pair, and immediately left the territory vanishing.

I would like to thank B. Arroyo, K. Bildstein, and an anonymous referee for improving the earlier version of this manuscript and for their helpful suggestions.—**Massimo Pandolfi, Istituto di Scienze Morfologiche, Laboratory of Zoology, University of Urbino, 61029 Urbino, Italy.**