Black Vultures in Mallorca

Andrew S. Richford

This report of the author's six-week study of the European black vulture in Mallorca suggests that this endangered species has declined still further in the island and now numbers about 40. He believes that disturbance and direct persecution could be having a serious effect on such a small population, but food may be a factor and needs closer study. The FPS aided this study with an Oryx 100% Fund grant.

The European black vulture *Aegypius monachus* is a declining species over its entire range; only in southern Russia and parts of Spain, including the island of Mallorca, is it now relatively common. Like many other raptors it has been persecuted and deprived of habitat by man's changing land-use patterns. The Mallorcan population is an isolated one, estimated by Thiollay in 1967 at about 67 birds, although some ornithologists doubted whether there was sufficient food to support such a large number. In order to assess present numbers and also to look for practical conservation possibilities, Gavin Stewart and I undertook a seven-week field survey in July and August 1973, under the supervision of David Houston.

Numbers

Initial fieldwork showed that the vultures were restricted to the island's main mountain range, which runs parallel to the north-west coast, from Formentor to Andraitx. Although inhabited and the main roads much used by sightseeing tourists, the human population here is very concentrated, leaving large areas of rugged and often inaccessible mountain terrain undisturbed.

To estimate numbers we used a method based on the capture-mark-recapture rationale. Individual vultures may show recognisable patterns of feather loss, as a result of moult or accidental damage, which make it possible to identify them through binoculars as they cruise along the mountain ridges in search of food. The relative proportions of sightings of the known and of the unknown unmarked birds enables one to calculate a population total, to within certain error limits.

Fifteen observation stations within the vultures' range were chosen, and watches made at times when the birds were active – between about 0900 hours, when thermals began to develop, and about 1600 to 1700 hours when the birds went to roost. Over a three-week-period, 270 hours of observation yielded some 380 sightings, of which only about 100 were sufficiently close for identification. Our estimate of the number of birds involved was 40, plus or minus ten.

The observations bore out the assumptions inherent in the method, that all the birds mix freely over the whole range and that they are all equally observable. Errors may have arisen due to some birds losing feathers during the course of the study period, but in the short space of three weeks this is unlikely to have been a serious complication. Confidence limits were unavoidably wide due to the low number of useful sightings, but the figure is

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accurate enough to demonstrate a real decrease in the population since Thiollay's 1967 count. The current trend of course, is not known, and regular censuses are vital to detect any further decline.

The possibility of food shortage as a cause of this decline cannot be ignored, particularly in view of the doubts expressed about Thiollay's census. We investigated this, from the point of view of both the overall supply and in relation to the vultures' distribution in the mountains. Figure 1 shows that vultures are much commoner at the north-east end of the range, and the reasons for this soon became apparent.

The only important food source for the vultures is carrion from the sheep and feral goats that die in the mountains. We were able to calculate a mean figure for sheep density using farmers' counts in representative areas where vultures were numerous, and this we applied to the whole north-east region. Farmers gave us information on their husbandry methods, their expected yearly lamb production and sheep losses, and finally their attitude towards black vultures. It was heartening to find that most of them appreciated the good done by the birds in clearing unhygienic carcasses, and few thought that they would harm healthy lambs, although one otherwise enlightened farmer admitted that he would still try his skill with a slingshot if a vulture should come within range! From this information we estimated that carrion production from adult sheep alone might amount to three times the vultures' yearly needs, quite apart from lamb mortality, which may be as high as 50 per cent. Goats, too, must provide vulture food, for, although no figures are available, there appear to be as many goats as sheep in the mountains. Ravens and a few kites are the only other potential competitors for carrion. Observations at carcasses in Iberia have shown the black vulture to be dominant to other scavengers, having first option on any food available. The only other vultures on Mallorca are four escaped Indian white-backed vultures *Gyps bengalensis* from the island's safari park. In previous years small numbers of Egyptian vultures *Neophron percnopterus* have been seen, but not by us in 1973.

Food Distribution

Thus there seems to be sufficient food in gross terms, but its distribution, both in space and time, may well be uneven. Changing husbandry methods seem to have caused a contraction in the birds' range, although if there is abundant food, this would not necessarily affect numbers in a non-territorial species. Formerly sheep were merely put out on to the mountains and left there until late summer when a harvest was taken. Periodic burning of the scrubby vegetation promoted young plant growth and helped maintain the quality of the feed, although inexpert overburning combined with excessive numbers of goats is probably the cause of much of the bare ground now apparent. More recently, the Government's growing interest in forestry has produced laws to control this burning as a fire hazard, and farmers at the south-west end of the mountains now keep their sheep to the lower slopes where the grazing is a little better. Moreover, old and sick animals are now removed for slaughter, thus reducing the amount of carrion. In the last decade charcoal burning has ceased, so that the south-western mountains have developed an extensive ground cover that may make it more difficult for vultures to locate a carcass. All this is in marked contrast to the north-

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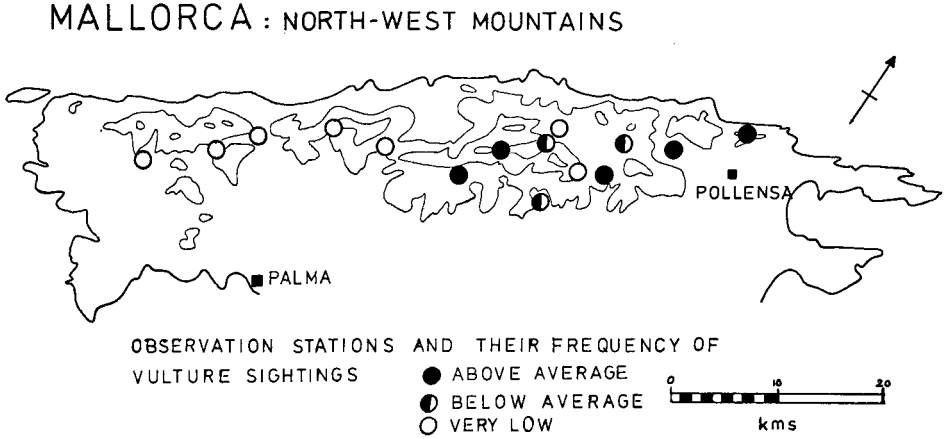

eastern mountain areas where old husbandry methods persist on the poorly vegetated upper slopes. This wild impoverished habitat, with its high livestock mortality in terrain suitable for foraging vultures, appears to be the better habitat, and indeed the highest vulture densities are here. What the precise relationship between this pattern of food distribution and the decline in black vulture numbers may be is problematical, but it seems likely that any further improvements in husbandry practice will affect vulture distribution and possibly numbers as well.

Any variation in food abundance during the year may also affect the vultures, although, of course, we could make no observations on this in our short stay. Most sheep deaths probably occur in the cold, wet winter months of January and February, and the lambing mortality soon after, in early spring. The results could be a relative food shortage later in the year, possibly when young birds are in the nest. Food stress at this time has been observed in African vultures and appears to be an important factor affecting breeding success. It is interesting that Mallorcan black vultures breed in June-July, apparently rather earlier than has been recorded in Iberia, a possible adaptation to the seasonal pattern of food abundance. Certainly our observations at a carcass in early August, after chicks had fledged and when one might have expected a food shortage, did not suggest that the vultures were particularly hungry.

Obviously much more needs to be discovered about the precise details of the black vulture's feeding ecology, although in our view food shortage does not appear to be a major factor influencing numbers at present.

Breeding Success

We were fortunate in having the help of local ornithologists to locate nest sites and get information on breeding success in recent years. About a dozen nest sites are known in several loose colonies, all in the tops of pine trees half way up the imposing sea cliffs of the north-west mountains. These nests are used year after year and soon become massive, often over two metres in diameter and sixty centimetres deep. We visited several such sites and, although too late to observe breeding, found regurgitated pellets composed entirely of sheep and goat hair, and some fledgling feathers.

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From our guides' observations it appears that only one chick was fledged that year, one the year before, and two in 1971, though the inaccessibility of the nest sites makes thorough observations difficult for observers with limited spare time. Other nests were started but abandoned at various stages. Large vultures are long-lived, possibly 20–30 years (Houston, pers. comm.), and if juvenile survival is good and adult birds go unmolested, even this low chick production may suffice to maintain the population.

Persecution and Disturbance

The black vulture is protected in Mallorca, but the law is difficult to enforce and prosecutions are not always pursued. Shooting is popular and anything that moves is considered fair game, so that a number of adult vultures fall to the gun each year. Perhaps equally serious is disturbance, especially to nesting birds. Vultures appear to be particularly shy at the nest, so that even goat shooting in the neighbourhood may cause an incubating bird to leave its eggs for many hours, and there have been instances of eggs being left overnight and chilling, due to disturbance of this kind. For this reason the practice of shooting goats on the sea cliffs from small boats is particularly deplorable. Small populations are very susceptible to slight pressures, and a combination of lowered breeding success and increased adult mortality, even on a small scale, can tip the balance towards decline. Protection laws must therefore be tightened and measures taken to ensure that the birds can breed in peace. A fully designated national park, free of any shooting and with controlled access, should be created in the area of the nest sites.

WWF, together with the Sociedad de Historia Natural de Baleares, is at present organising a vulture-feeding station in the north-west mountains, in the belief that lack of food is a cause of the decline. We do not think this is of first importance, but it may increase fledging success, and will at least provide opportunities for the further study of food and feeding behaviour, as well as publicising the plight of a very impressive endangered species.

Finally, it must be for the Spanish Government to act to save the black vulture. Mallorca's rich raptor population includes Eleonora's falcon, common and lesser kestrel, booted eagle, Bonelli's eagle, osprey, black and red kites, and peregrine, but the black vulture is the show piece, and ornithologists come from all over Europe to see it. But for how much longer?

Acknowledgments

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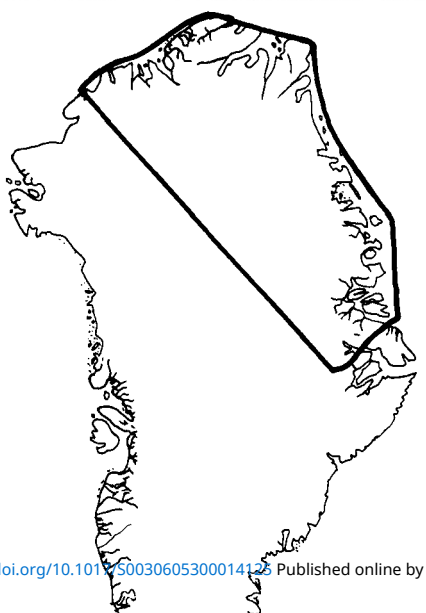

Chr. Vibe

The STAUNING ALPS in the world's largest national park. The Greenland National Park, declared by Denmark in May 1974, covers 700,000 sq km, ranging from sea level to over 9500 ft. It is a major breeding area for polar bears (population 200–500) and musk oxen (6000–12,000), and one of the last areas in East Greenland for Atlantic walrus. Four seal species occur – ringed, bearded, harp and hooded, and narwhal and white whales occasionally. There are also lemmings, Arctic hares, blue and white Arctic fox and stoat, and the birds include barnacle, brent and pink-footed geese, gyrfalcon and snowy owl.

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IN THE GREENLAND NATIONAL PARK

ARCTIC HARES
Ivars Silis

ATLANTIC WALRUS
Hans Meltofte

MUSK OXEN at Rype Fjord
Chr. Vibe

POLAR BEAR and CUBS
Ivars Silis

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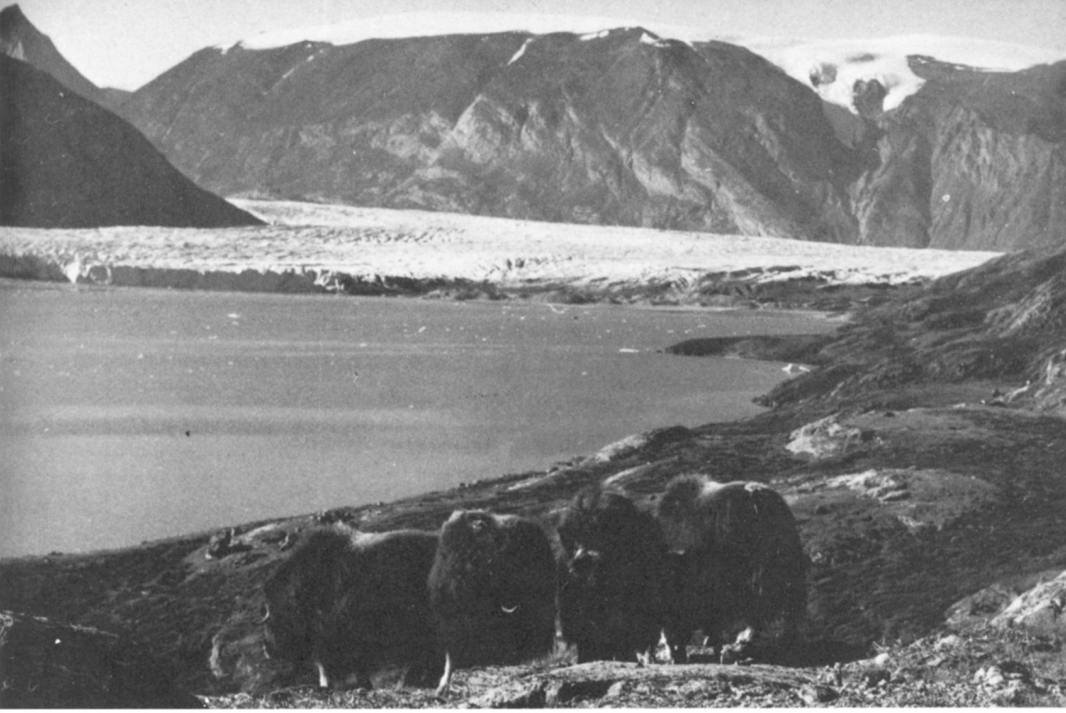

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