

Abundance, Status and Vulnerability of Raptors and Owls in Parts of the Spanish Pyrenees

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INTRODUCTION

For several years past, raptor populations in Southern Europe have been regularly monitored in wider areas and using quantitative methods. Hitherto our knowledge of the distribution and breeding biology of many south European species has been fragmentary. Expeditions in the Pyrenees (1981, 1985 and 1986), each lasting several weeks, have brought fresh material to light. This was greatly facilitated by the co-operation of a local ornithologist from Jaca - co-author of this report - who has been accumulating data on raptors in this region since 1968. The present work gives the results of a roadside census in comparison with data collected by Meyburg (1973, Table 3), augmented and supported by Ferrer-Lerin's 17 years of observations.

STUDY AREA

Aragon is bounded to the north by France, to the west by the province of Navarra, to the east by the river Gallego and to the south by the provincial capital of Huesca. The level of inhabitants (15 per km²) is amongst the lowest in Spain (Breuer 1982). A decrease in the human population combined with the extreme tranquillity of those parts of the region lying in the mountains, makes this a good biotope for birds of prey. In earlier times cattle pasturing only took place in summer; for the colder times of year the herds were driven further south to Extremadura (transhumance). Nowadays intensive pig breeding is also practised. Part of the resulting carcasses are supplied to carrion-eating vultures at "vulture restaurants".

Birds of prey enjoy legal protection in Spain; however, there is considerable illegal shooting, particularly during the hunting seasons, 1st August to 15th September and 15th October to the first week in March.

MATERIAL AND METHODS

1. Roadside Census

Within the study area, during a total of 12 hours 35 minutes, all raptors visible to the naked eye from a car were counted and identified. During this time 118 individuals were recorded by an assistant who also took part in the counting. This method corresponds to that applied by Meyburg (1973, 1981) and permits relative comparison within the same area (cf. Mathisen & Mathisen 1968).

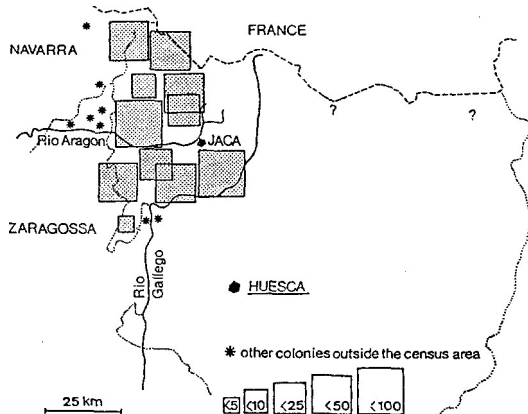


Fig.1 : Position and size of Griffon Vulture Colonies. Data from counts of 1981 and 1985. Colony size in individuals. ? = breeding not confirmed.

2. Observations

In addition to this census we incorporated all recorded observations made by us on other occasions. Ferrer-Lerin further contributed his data acquired over 17 years of study.

RESULTS

1. Roadside Census

118 individuals of 10 species of Falconiformes were identified. All regular breeders were recorded. The following seven species (*Gypaetus barbatus*, *Aquila chrysaetos*, *Accipiter nisus*, *A. gentilis*, *Pernis apivorus*, *Falco subbuteo* and *F. peregrinus*) can only be located from a car with difficulty due to their low density or ecological requirements (forest dwellers). Despite this limitation and the unfavourable time of year for making counts, the species frequently seen, (*Gyps* to *Buteo*), (see Table 1) corresponded in their dominance to the results of many years' observations. In comparison with the data collected by Meyburg (1973), a few clear-cut differences emerged between the records for 1971 and 1985 (see Table 1, Comparison Index): *Gyps fulvus* and *Milvus milvus* had increased in numbers, whereas *Buteo buteo*, *Circus gallicus* and *Falco tinnunculus* had declined, the last-named particularly sharply. For the Short-toed Eagle the low number may have been due to extremely bad weather in

1984/85, although one should not discount its being accidental (sightings of rare species probably due to chance). With the frequent species the difference as regards Neophron percnopterus is striking: according to the roadside census it would seem to have declined, whereas in fact an increase is apparent from long-term observations. One possible explanation for this lies in the breeding cycle of this species, since at that time the young had not yet fledged.

2. Griffon Vulture

In addition to the counts from the car, all known Griffon colonies were visited and attempts made to count or estimate the numbers of individuals. Several new breeding colonies were thereby discovered. The numbers shown were collected in (1981) and 1985. Other colonies were also recorded outside the proper study area in Aragon. The numbers given in Figure 1 are to be taken as minimum. The locations of the colonies are withheld for reasons of protection.

The largest concentration of vulture colonies is in the NW of Huesca Province, in the general vicinity of Jaca. Overall, there were an estimated 250-515 Griffon Vultures in the area travelled. The true number may well be higher, since we do not know whether we located all breeding sites. Ferrer-Lerin (1981) gives 243 individuals for the same area. A distinct increase since his count in 1978/79 can therefore be concluded. This corresponds with the new established colonies we found since the last count of Ferrer. The result of our travels shows that the Aragonese Pyrenees retain the highest density of these vultures in the whole range (cf. Leconte 1985 for the northern face of the western Pyrenees, Muntaner & C.R.P.R. 1985 for Catalonia).

3. Status and Threats

In the area searched, 26 Falconiformes and 6 Strigiformes have been recorded. The diurnal raptors include 15 breeding species; all the owls are breeding species.

Falconiformes:

Neophron percnopterus: A breeding species. Breeds only on cliffs, often at low levels. Normally rears one young, but in some nests two young are regularly reared, although not every year. Up to 40 individuals can be seen on rubbish dumps. Egyptian Vultures are found at their nest sites between February and October (Ferrer-Lerin 1984).

Threats: In 1984/85 an increase in the population was recorded for the first time. Since 1984 the use of poisoned bait against foxes and crows has been banned throughout Spain. Poisoned bait had no longer been put out in Huesca Province for a number of years, but along its migration route across Spain the species was still exposed to this danger. Birds occasionally get shot or their nests are robbed.

Gyps fulvus: A breeding species in the process of expanding. The increased supply of carrion has led to a marked rise in its numbers. Many nests, abandoned for the past 17 years, are now being reoccupied, and under favourable conditions up to 250 vultures can be seen crowding round one large carcass. The colonies situated near feeding places are the most densely populated. Wild animals, e.g. Cervus, Capreolus, Sus and Rupicapra today form only about 15% of the birds' diet.

Threats: Shooting and high tension cables. During the autumn migration young birds perish for lack of food within Spain.

Aegypius monachus: Extinct. No sighting since 1940. Last recorded, doubtfully, by Olivier (1941). According to Degland (1839), up to 100 were seen on the French side of the Pyrenees near Agens, but Yeatman (1971) believed this to have been a stray flock. The only data concerning Aragon refer to a possible breeding in Zaragossa Province prior to the 1940s, which, if so, represented the northernmost occurrence of the species (Ferrer-Lerin 1984).

Gypaetus barbatus: A breeding species. About 16 pairs. Population stable with a slight increase in the past 17 years. The Aragonese Pyrenees remain the most important area for the species. Birds still occur on the French side, e.g. in the Pyrenean National Park (Kostrzewa, pers. obs.). From one nest near Jaca eggs or young have been systematically robbed and only one young has been successfully fledged in the last 6 years. A translocation project drawn from this population - re-introduction in the Cantabrian Mountains - was stopped by the authorities.

Threats: in the last 4 years 3 or more adults have been shot by hunters.

Aquila chrysaetos: Resident breeder occupying all possible nest sites. At least 2 pairs nest in trees.

Threats: Since 1968 one bird has been shot by hunters.

Aquila heliaca adalberti: No evidence of breeding. One immature seen at the artificial feeding site at Oroel (Ferrer-Lerin 1984). Further sightings on both Spanish and French sides (Iribarren 1969; Voous 1968).

Hieraaetus pennatus: A widespread breeding species. Nests in pine trees (particularly Pinus sylvestris). Present from March to October.

Hieraaetus fasciatus: Breeds on the southern borders of the province.

Threats: Shooting of one adult.

Buteo buteo: A breeding species. Nests in conifers. The population augmented in autumn and winter by birds from north of the Pyrenees.

Threats: Frequently shot.

Accipiter nisus: A breeding species, widespread in wooded biotopes. A numerous passage migrant.

Threats: Shooting.

Accipiter gentilis: A breeding species. Very sedentary, hence scarcely noticed by hunters.

Threats: Shooting.

Milvus milvus: A widely distributed breeding species, increasing in number, like all carrion eaters. In winter additional livestock arrives from the north.

Threats: Shooting, (poison).

Milvus migrans: Breeds in annually fluctuating numbers; present from March to August (Ferrer-Lerin 1984).

Threats: Shot only rarely, since its period of residence lies outside the hunting season.

Elanus caeruleus: Has been observed in the south of the province (Ferrer-Lerin 1984).

Pernis apivorus: A rare breeding species. Does not breed every year (cf. Kostrzewa 1985, 1986). A numerous passage migrant (Ferrer-Lerin 1984).

Circus aeruginosus: A passage migrant.

Circus cyaneus: Rare. No evidence of breeding.

Circus pygargus: Rare. No evidence of breeding.

Circus gallicus: A breeding species. Present from March to October. Very dependent on the weather in spring (as is P. apivorus, cf. Kostrzewa 1986).

Threats: Shooting and electrocution.

Pandion haliaetus: A passage migrant, from March to May and September/October. Rare.

Falco subbuteo: Breeds in low numbers. Present April to September.

Threats: None known.

Falco peregrinus: A breeding species. Only known to breed on cliffs. A low reproduction rate (? pesticides).

Threats: Neither shooting nor trapping known.

Falco columbarius: A rare winter visitor.

Falco vespertinus: On 1st April 1977 one individual photographed whilst perched on a post, the sole record.

Falco naumanni: A summer visitor; does not at present appear to breed.

Threats: Shooting.

Falco tinnunculus: A breeding species severely declining in numbers. Has disappeared from more than half its known range, in parallel with an increase in the number of hunters and amounts of pesticides applied.

Strigiformes:

Tyto alba: Resident breeder. Occurs up to 1,250m. Very dependent on weather conditions.

Threats: Shooting and motor-cars.

Otus scops: Breeds up to 1,000m. No known threat.

Bubo bubo: Breeds in all suitable habitats (like the Golden Eagle).

Threats: A few shot.

Athene noctua: A breeding species. Population decreasing. Occurs up to 1,200m.

Threats: Demolition of old barns and houses; lack of suitable breeding sites; heavily hunted.

Strix aluco: A breeding species. Widespread to the edge of forest areas.

Threats: Shooting

Asio otus: A breeding species up to 1,200m.

Threats: Shooting.

Aegolius funereus: First record in Spain at the eastern border of Aragon (Alamany & Tico 1984) outside our census area.

DISCUSSION

The area searched ranks amongst the most interesting in Spain as regards density and variety of species of raptors. In this it can stand comparison with only parts of Extremadura (cf. Garzon-Heydt 1971; Meyburg 1973, 1981; and pers. obs. 1983 and 1985).

Following a decline, a recovery in the numbers of carrion-eaters has been taking place since the early 1970s. This is attributable in the main to the establishment of "vulture restaurants", which has also led to increased numbers in other parts of the Pyrenees (Leconte 1985; Muntaner, J. & C.R.P.R. 1985; Terrasse 1985).

Between 1981 and 1985 there has been a marked expansion of summer and winter tourism in the High Pyrenees, accompanied by development projects. Road building, camping sites and the (still only sparse) construction of hotels are factors which will in all probability have a negative impact on raptors, not to mention the rest of the fauna and flora, through deterioration of the biotope (cf. Kostrzewa 1986).

In Aragon, despite legal protection, there is still a high level of human persecution which has led to the decline of Falco tinnunculus, Buteo buteo and Athene noctua. The two falconiforms are also on the decline in Catalonia for the same reasons (Muntaner, J. & C.R.P.R. 1985).

Apart from Neophron, the different methods used (census and long-term observations) produced comparable results. A roadside census permits travelling observers, with very little effort, to obtain a preliminary quantitative view of the density and diversity of a raptor population. This method above all means that repeated counts can be made in the field by only a small group of ornithologists and produce evidence on population trends which is confirmed by long-term data.

SUMMARY

A region of the Spanish Pyrenees (Huesca and Zaragoza Provinces) was searched, for a census of raptors. A roadside count made in 1985 was compared with data from Meyburg (1983, Table 3). This revealed an increase in the carrion-eaters Gyps fulvus and Milvus milvus, whereas Falco tinnunculus, Buteo buteo and Athene noctua have declined due to persecution and deterioration of the habitat. Long-term observations confirmed these findings with one exception: Neophron percnopterus is also in fact on the increase.

The improved status of the carrion-eaters is attributable to the establishment of feeding places. The area in question ranks amongst the richest raptor habitats in Spain as regards both the number of species and of individuals: of the 26 Falconiformes identified, 15 are breeders, as are all 6 Strigiformes.

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Roadside Census : 29th July to 10th August 1985 by ARK					Data from MEYBURG 1973		Comparison Index
Species	Number of Individuals	%	km/ind.	t/ind.	km/ind.	t/ind.	
<u>Gyps fulvus</u>	66	55,9	6,0	11 min	13,5	24 min	2,25 : 1
<u>Milvus milvus</u>	22	18,6	18,1	34 min	27,5	49 min	1,52 : 1
<u>Neophron percnopterus</u>	9	7,6	44,3	1h 21 min	24,2	43 min	0,55 : 1
<u>Milvus migrans</u>	7	5,9	57,0	1h 48 min	61,4	1h 50 min	1,10 : 1
<u>Buteo buteo</u>	4	3,4	99,7	3h 09 min	24,9	45 min	0,25 : 1
<u>Circus cyaneus</u>	1	0,8	399,0	12h 35 min	0,0	--	1,00 : 1
<u>Circaetus gallicus</u>	1	0,8	399,0	12h 35 min	88,6	2h 40 min	0,22 : 1
<u>Hieraaetus pennatus</u>	1	0,8	399,0	12h 35 min	399,0	11h 58 min	1,00 : 1
<u>Hieraaetus fasciatus</u>	1	0,8	399,0	12h 35 min	798,0	23h 56 min	2,00 : 1
<u>Falco tinnunculus</u>	1	0,8	399,0	12h 35 min	57,0	1h 42 min	0,14 : 1
Unidentified	5	4,2	--	--	--	--	--
Summation	118 ind	100,0%	399,0 km	12h 35 min	798,0 km	23h 56 min	

Table 1 : Census results

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Species	Number of Breeding Pairs
<u>N.pernopterus</u>	100
<u>G.fulvus</u>	more than 100
<u>G.barbatus</u>	6
<u>A.chrysaetos</u>	18
<u>H.pennatus</u>	25 - 100
<u>H.fasciatus</u>	?
<u>B.buteo</u>	100
<u>A.nisus</u>	25 - 100
<u>A.gentilis</u>	25 - 100
<u>M.milvus</u>	100
<u>M.migrans</u>	25 - 100
<u>P.apivorus</u>	10 - 25
<u>C.gallicus</u>	25 - 100
<u>F.subbuteo</u>	10 - 25
<u>F.peregrinus</u>	* * *
<u>F.tinnunculus</u>	25 - 100
	data : FFL

Table 2 Estimate of breeding raptors in 'Alto Aragon Occidental'