

# The Autumn Migration of Raptors through the Pyrenees

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for Organbidexka Col Libre

Since 1979, by using a standardized methodology including collection of meteorological variables (Urcun & Devisse, in prep.), the French non-profit association «Organbidexka Col Libre» (O.C.L.) has been studying bird autumn transpyrenean migration, and especially raptor migration. Thirty-six sites were tested all along the Pyrenees, four main ones have been chosen to carry out a long term study.

Figure 1. Location of sites prospected and the main ones.

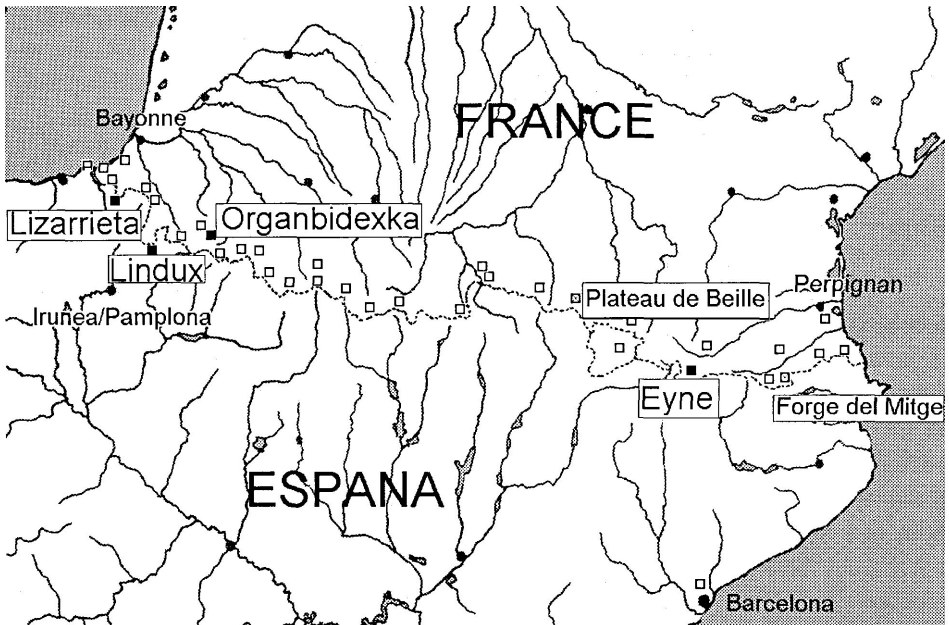
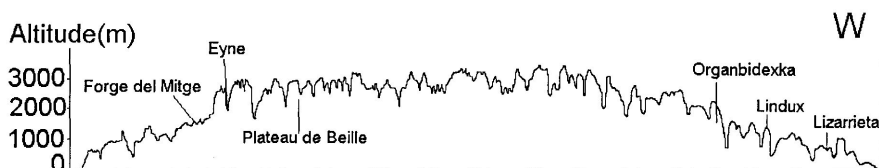


Figure 2. Location of main sites referring to altitude.



Seasonal and hourly timing as well as annual variations in the number of migrants are presented for the most abundant species, except for the Red Kite, which is the subject of a separate study. On «Seasonal timing», first and last days of field observation and strength per day and for ten days are figured. On «Hourly timing», we have figured the number of individuals and the average per flight. Hours are GMT ones. «Interannual evolution» gives annual total for each locality and cumulated data for the four main sites.

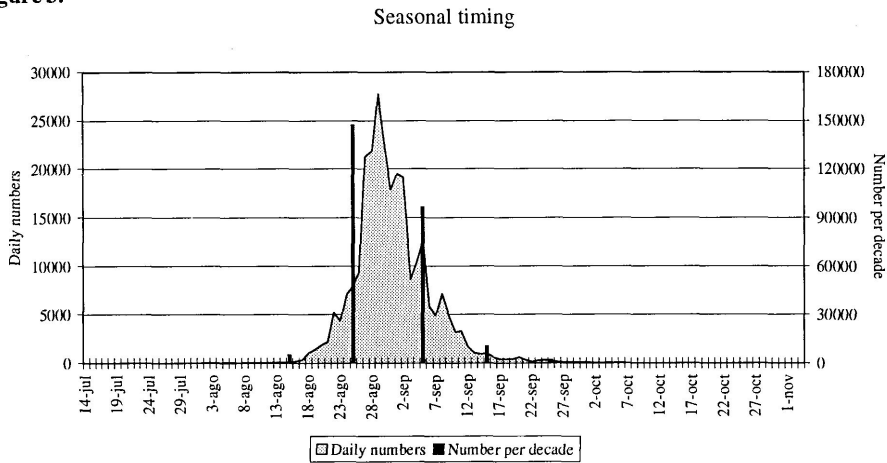
Concerning the estimate of the passage throughout the Pyrenees, the informations we give results from the following theoretical calculation (Sagot 1989): for each species (i) we pool data over all years for each site; (ii) we divide the number of working days at Organbidexka (which is the reference) by the number of working days at each site during the period of migration in this species; (iii) we multiply by the number of individuals found at the site and then divide by the theoretical numbers at all sites. This calculation does not distort the reality too much.

## REGULAR MIGRATORY SPECIES

### Honey Buzzard (*Pernis apivorus*):

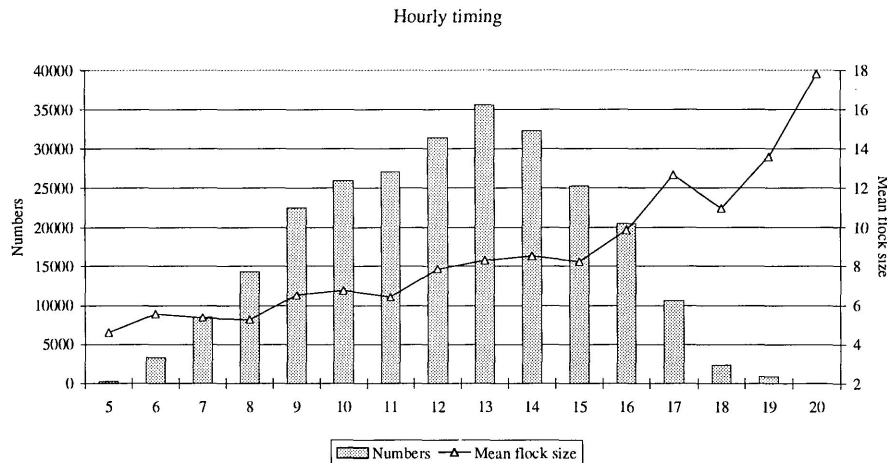
80% of birds are concentrated within two weeks and a half; however passage takes place from the last days of July until mid-October. The percentage of juveniles increases in the course of time. Meteorological conditions on the European continent have a direct influence on the dates of movements and on the shape of the migration curve: a sharp peak followed by a smaller one (in most cases) or a single peak. However, the migration simultaneously takes place at all sites, and the date of the peak (mean 30 August) hardly varies from one year to the next.

Figure 3.



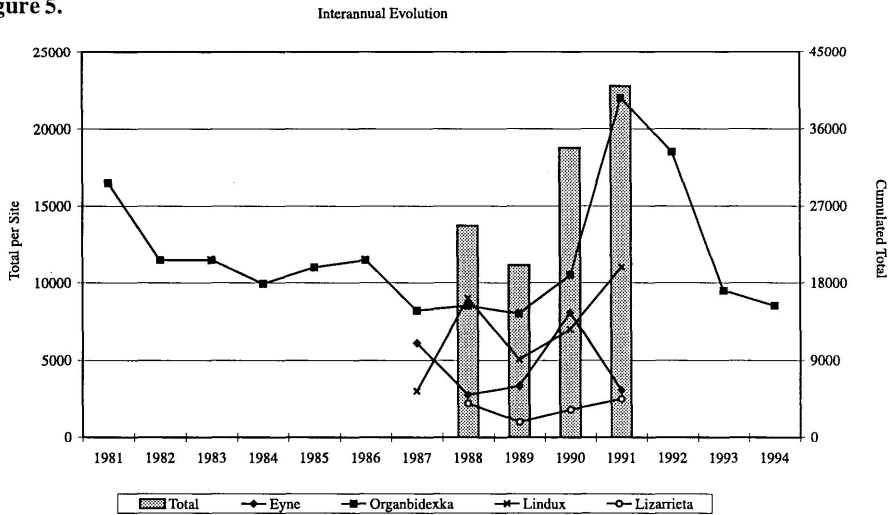
Like other soaring species, Honey Buzzards tend to migrate during the warmest hours of the daytime. The mean flock size increases all day long, becoming largest at the end of the day. At this moment, birds use flapping flight to reach the southern slope of the Pyrenees, which is more suitable for establishing roosting places. As they migrate in summer, they profit from thermals to cross the highest uplands. Meteorological conditions can also constrain them to avoid the four main sites (where about 60% of passage has been recorded) and to migrate through the high valleys in the central Pyrenees. Fewer individuals cross the extremities of the chain. Despite their ability to fly over water, Honey Buzzards seem to avoid shores and stretches of sea.

Figure 4.



There are no long term demographic trends; variations are due to the weather conditions during the breeding season. This species also breeds on the French slope of the Pyrenees.

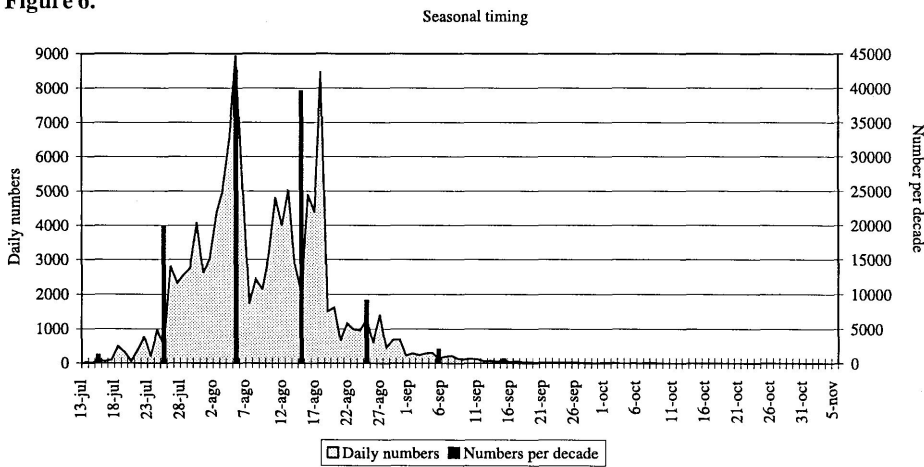
Figure 5.



### Black Kite (*Milvus migrans*):

The period of intensive movements is longer than in the Honey Buzzard. The shape of the migration curve is affected by a very late peak (almost 6000 individuals at Organbidexka on 18 August 1988, after a ten-day period of bad weather conditions on the entire Pyrenean chain). Organbidexka is the only site where field work starts on 15 July; however migration can occur earlier. Movements start at the same time whatever the site, but they seem to last longer over the eastern part; there are no differences between young and old birds.

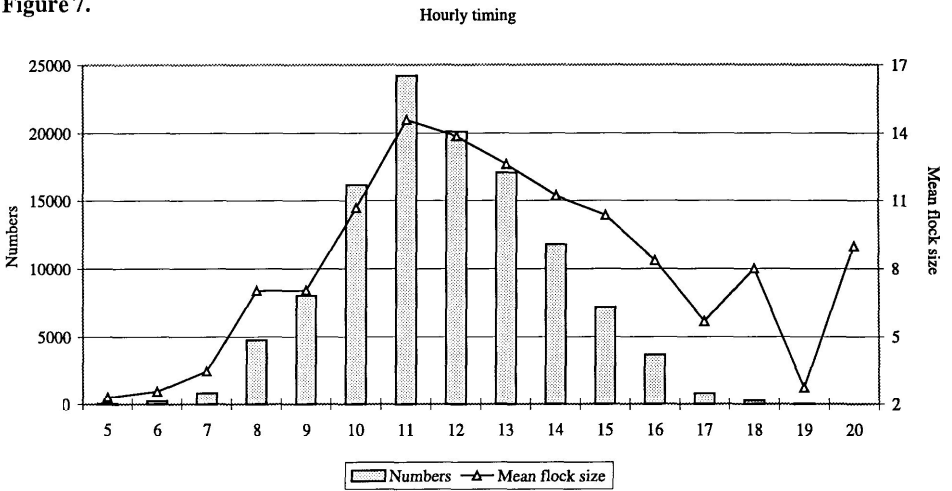
Figure 6.





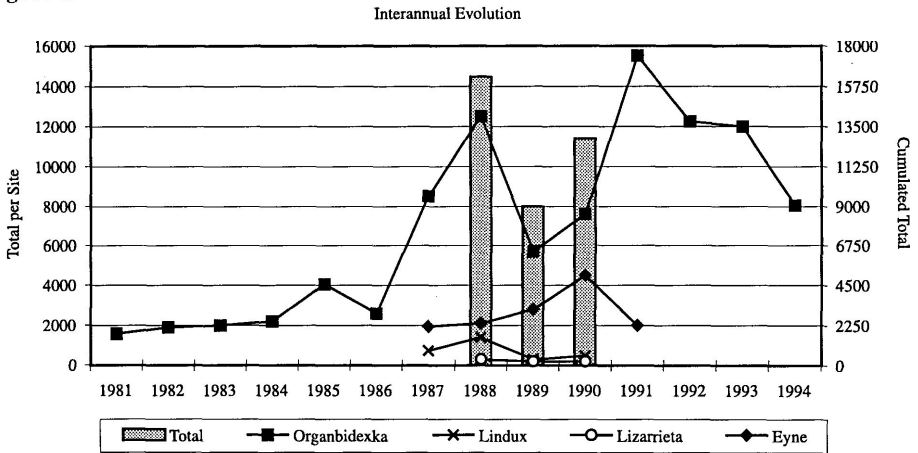
The number of migrants and the mean flock size are highest during the warmest moments of the daytime. So the Black Kite is a typical soaring species, being more dependent on thermals than the Honey Buzzard. Unlike the latter, birds gather in smaller numbers before roosting.

Figure 7.



Concerning population dynamics, this species seems to get increasingly abundant on passage, especially at Organbidexka. However interannual variations remain dependent on breeding success and local meteorological conditions. Moreover the Black Kite, which migrates in July and in August, is able to use thermals to join the upland valleys in the central Pyrenees. Nonetheless, 50% of the theoretical passage occurs over the four main sites. This species also seems reluctant to cross the chain at its extremities. It breeds at the foot of the northern slope.

Figure 8.

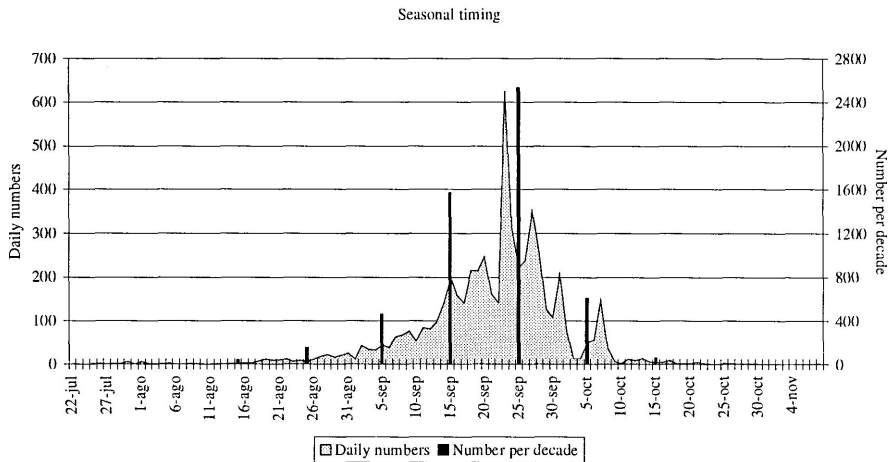


**Red Kite (*Milvus milvus*):** See other communication, this volume.

**Short-toed Eagle (*Circaetus gallicus*)**

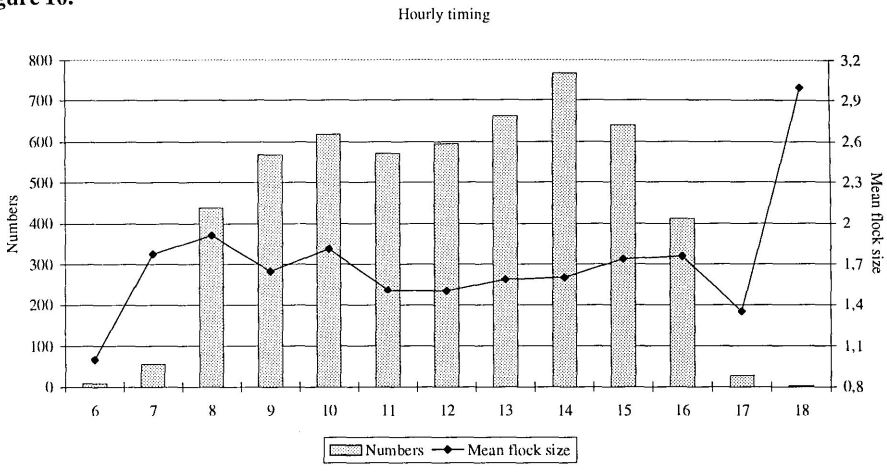
Migration takes place simultaneously over all Pyrenean sites. Intensive movements occur from early September until early October, with a peak in late September. The migration seems to occur suddenly at Eyne (often more than 30% of passage within one day), where detected birds are much more numerous than in the Basque mountains. The trios observed very often involve one juvenile and might be families. However there are almost no differences (jizz, plumage) between first year and older birds, so that it is very difficult to differentiate age classes.

**Figure 9.**



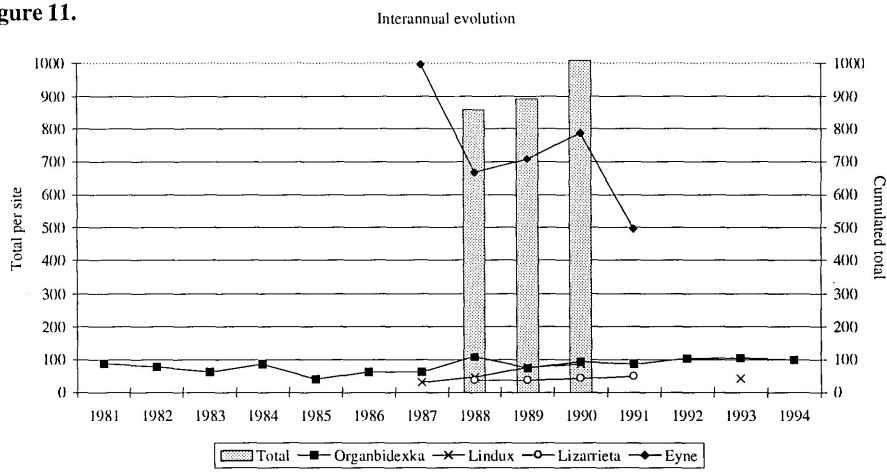
Short-toed Eagles tend to migrate at the end of the morning and in the afternoon. This behaviour could be linked to the feeding behaviour of this species. Individuals have often been seen foraging or swallowing preys (snakes and lizards) at the warmest moments of the day, before they carried on migrating. The number of flocks increases until 14-15.00 (GMT) before decreasing. Flocks are largest from one hour after sunrise to one hour before sunset.

Figure 10.



The interannual variations of the number of migrants at Organbidexka suggest that their population is stable. The lack of a sufficient number of years of study at Eyne cannot allow of firm conclusions; however the number of migrants has been noticeably decreasing since 1987. The main sites for this species are Eyne and the Plateau de Beille, where 63% and 15% of migrants are recorded, respectively. The origin of these birds is eastern France. Western migrants are native of southwestern France. They only represent 14.24% of passage.

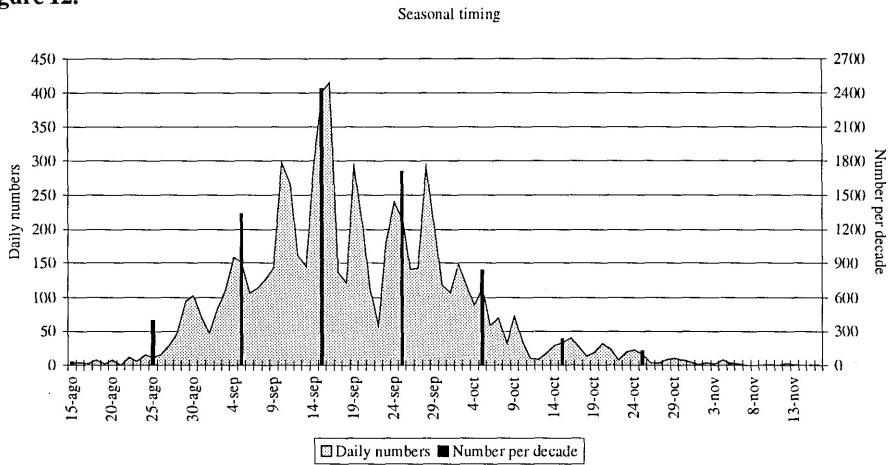
Figure 11.



**Marsh Harrier (*Circus aeruginosus*)**

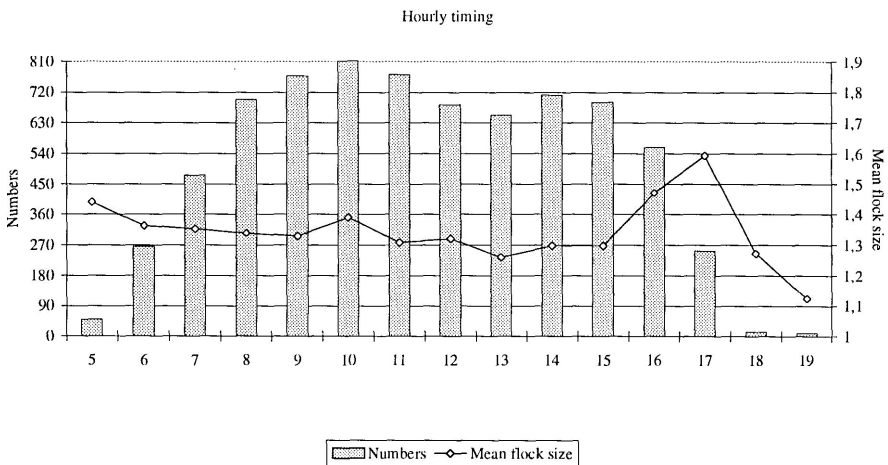
The Marsh Harrier's period of migration lasts more than three months, with a peak during the second fortnight of September. Movements occur at the same time on the entire Pyrenean chain. Males seem to migrate earlier than females and young birds.

**Figure 12.**



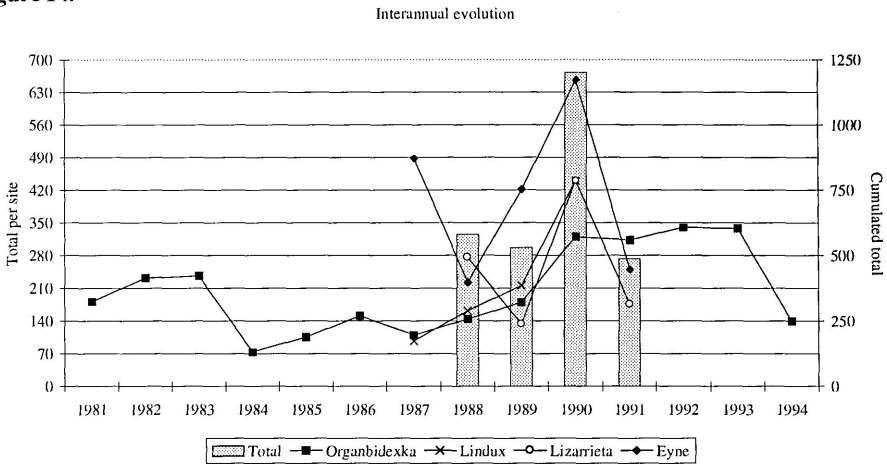
The hourly timing of migration differs from that of typical soaring birds. Although they can easily utilize thermals, Marsh Harriers tend to avoid the hottest hours of the daytime. They do not hesitate to use flapping flight either, especially early in the morning and at sunset. Furthermore, many migrating individuals have been observed after sunset. Birds migrate singly in most cases, although small flocks have been recorded. The mean flock size increases before sunset. However there are no marshes in the vicinity of the study sites. So birds must roost in groves or in woodlands.

**Figure 13.-**



The migrants at Organbidexka seemed to become more and more abundant until 1994, when a noticeable decrease occurred, maybe due to weather conditions. Birds do not congregate at the lowest sites while crossing the Pyrénées. Only 44% of the theoretical migrating flow travels over Lizarrieta, Lindux, Organbidexka and Eyne.

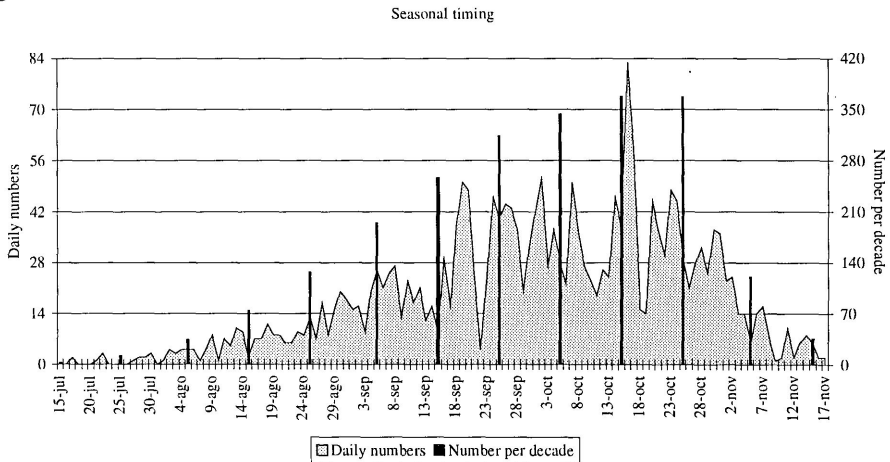
Figure 14.



### Hen Harrier (*Circus cyaneus*)

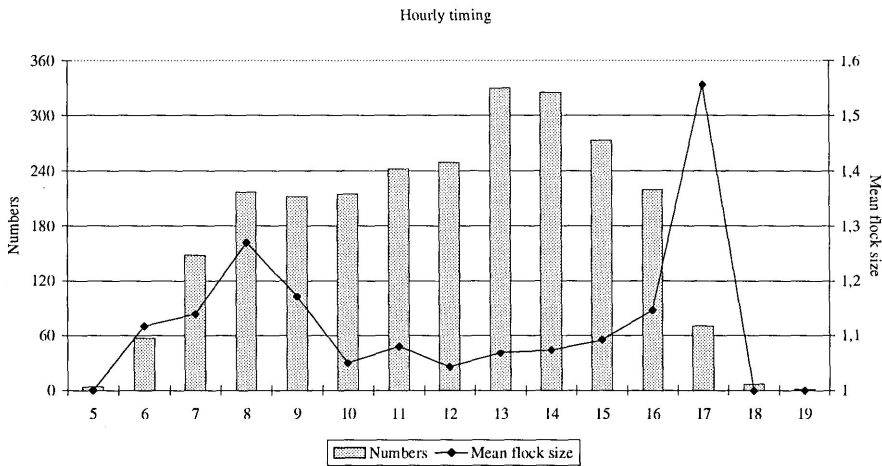
Migrants are recorded from early August to mid-November. Because of the paucity of data, differences between sites must not be regarded as significant. The peak only represents a low percentage of passage. Young birds migrate slightly earlier than older ones. Both sexes seem to migrate simultaneously.

Figure 15.



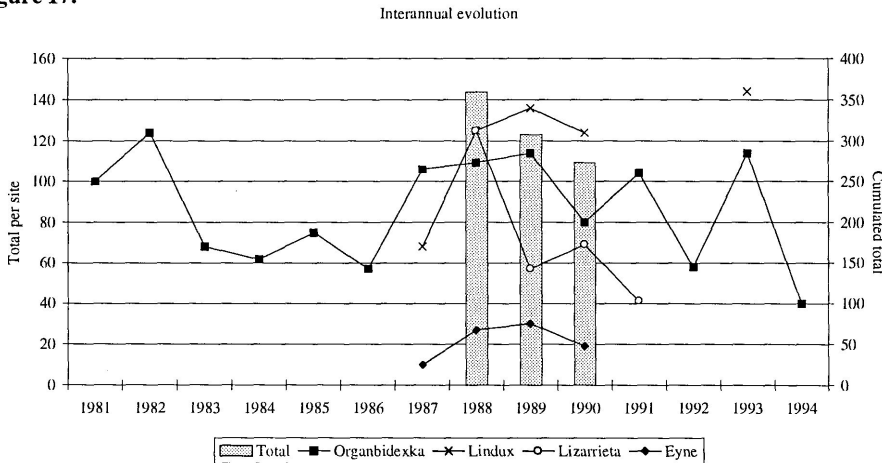
The timing during the day is similar to that in the Marsh Harrier; however there are more birds late in the afternoon. Likewise, flocks tend to be larger during this period, birds congregating before roosting. The mean flock size is also larger early in the morning, but at a lesser extent. As a whole, migrating Hen Harriers are not very gregarious.

Figure 16.



Despite important interannual variations at Organbidexka, populations seem to be stable. However, the Hen Harrier is partially migratory, so that it is impossible to draw firm conclusions. Its flying abilities allow this species to cross the Pyrenees on a wide front, even though fewer birds are recorded on the eastern part of the chain. Migrants have also been recorded over the Atlantic Ocean, a few miles offshore. 40% of birds would theoretically concentrate at the main four sites. The Hen Harrier is also a local breeder.

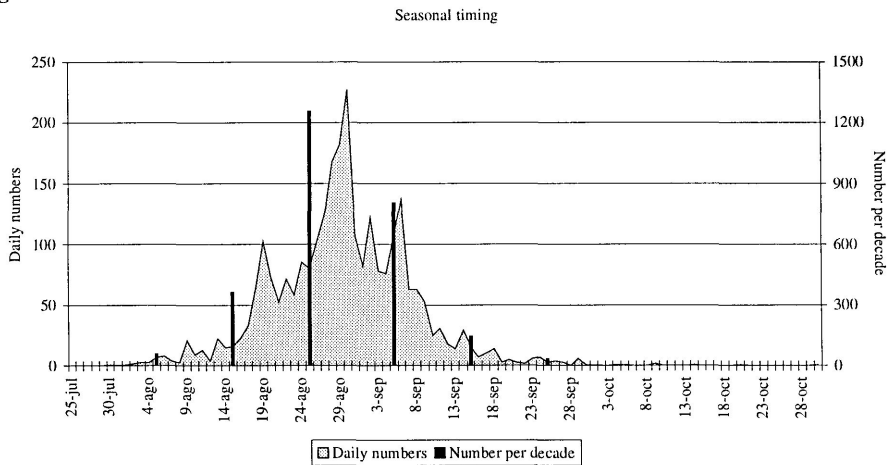
Figure 17.



Montagu's Harrier (*Circus pygargus*)

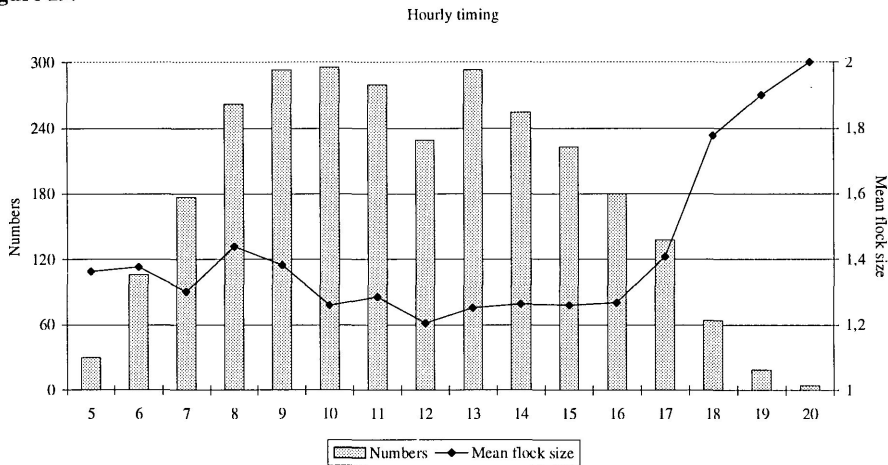
As in other transsaharian migrants, movements are concentrated within a short period (less than six weeks), being more intensive from the last third of August until 7-8 September. The peak occurs on about 29 August and represents a high percentage of migrants, as in the Honey Buzzard. Concerning dates, no rules can explain the differences between years and sites. First year old birds migrate later than older ones, but males and females travel at the same time.

Figure 18.



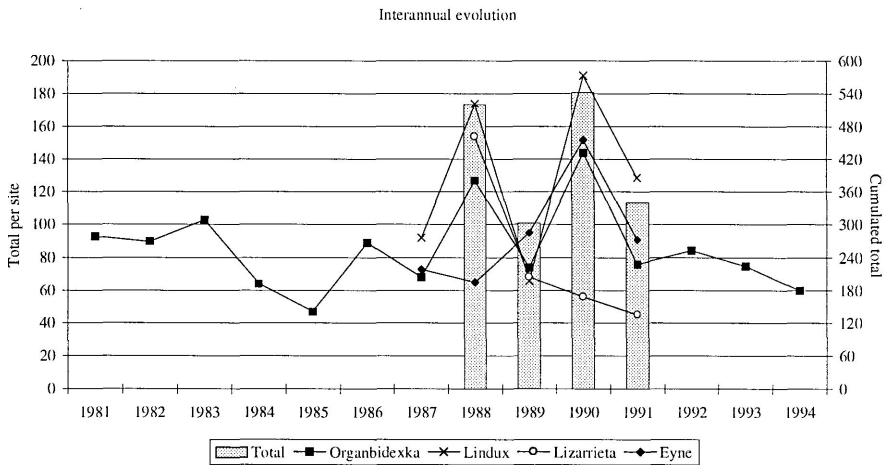
The horary timing is similar to that in the Marsh Harrier, with a more noticeable tendency to reassemble before roosting.

Figure 19.



Annual variations are similar at Lindux, Organbidexka and Eyne, due to reproductive performances. Montagu's Harriers cross the Pyrenees on a wide front, and often at a very high altitude. So, if we consider the population size in France and in northern Europe, a low proportion of migrants is observed. The four main sites gather *ca* 70% of the theoretical passage. It is to be noted that some individuals which have been banded in western France have migrated southeast, being recorded at Eyne. This species breeds near Eyne.

Figure 20.

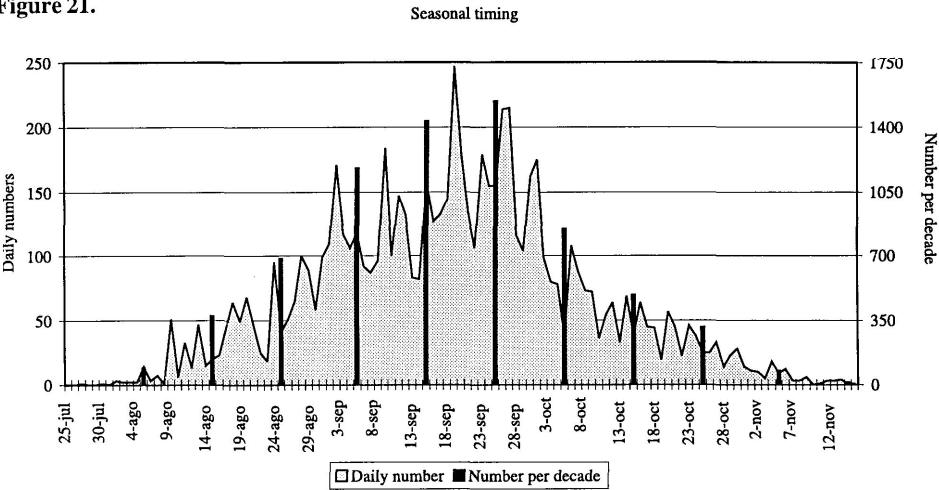


### Sparrowhawk (*Accipiter nisus*)

The migration is spread over a long period: from early August to mid-November. Intensive movements take place during the last two weeks of September, with a highly variable peak, which corresponds to a low percentage of migrants only. Migratory activity seem to occur earlier at Eyne than on the Basque mountains. It is sometimes difficult to separate age and sex classes in the field, so that we have not found any significant differences between their migration patterns.

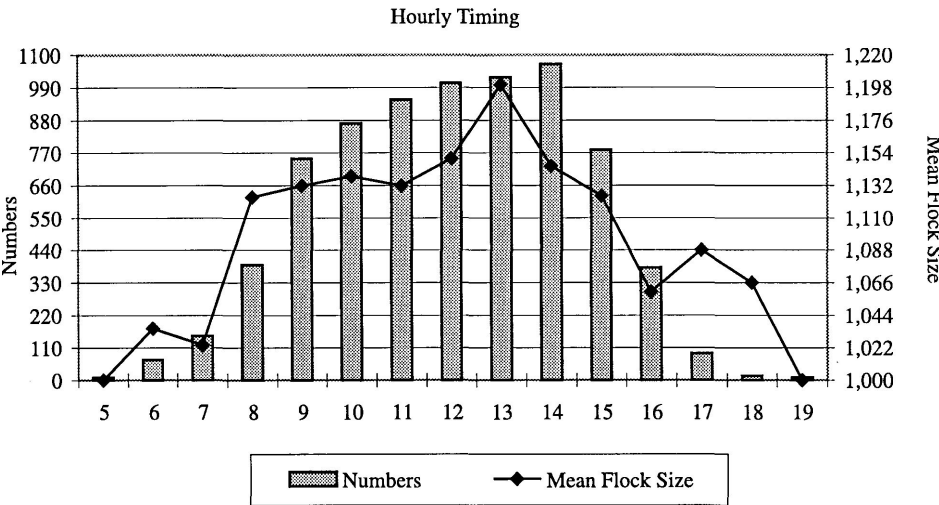


Figure 21.



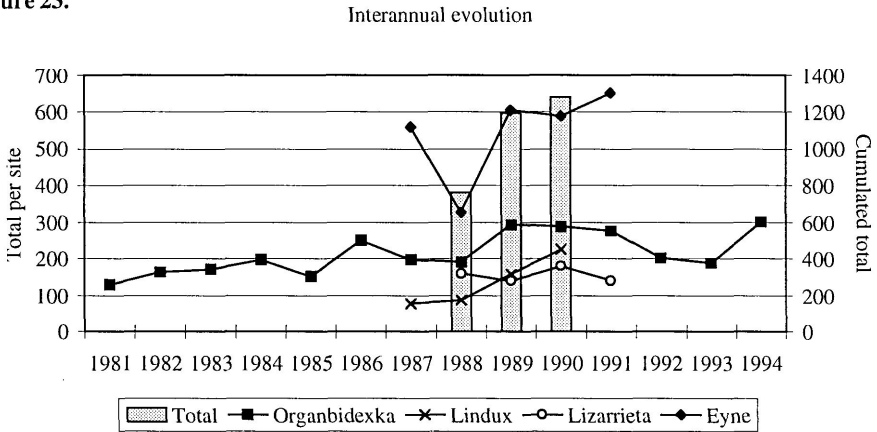
Sparrowhawks are not very gregarious while migrating. However duos (young birds) have been recorded. Migrants are recorded all day long, being slightly more numerous during the warmest hours.

Figure 22.



Despite annual variations, the number of migrants at Organbidexka seems to have increased since the beginning of our study. This species also travels over the central Pyrenees. 65% of the theoretical passage takes place at the four main sites. Many pairs breed in the Pyrenees.

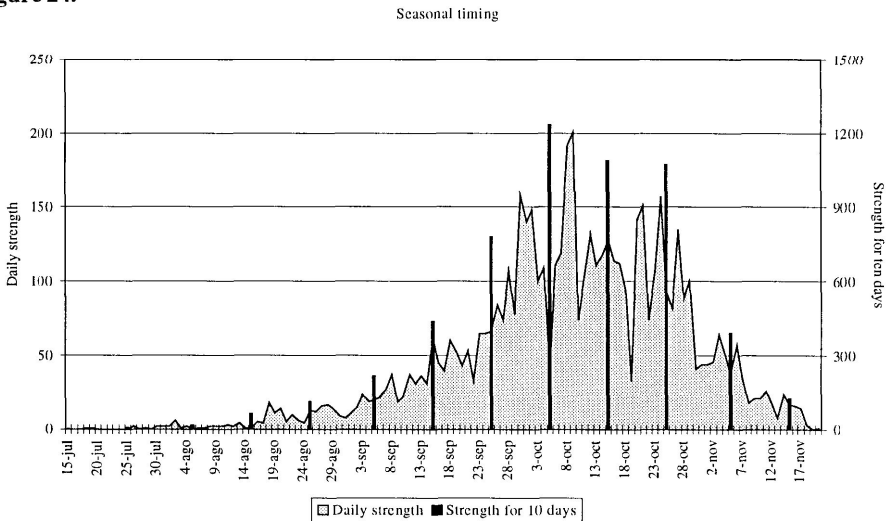
Figure 23.



### Buzzard (*Buteo buteo*)

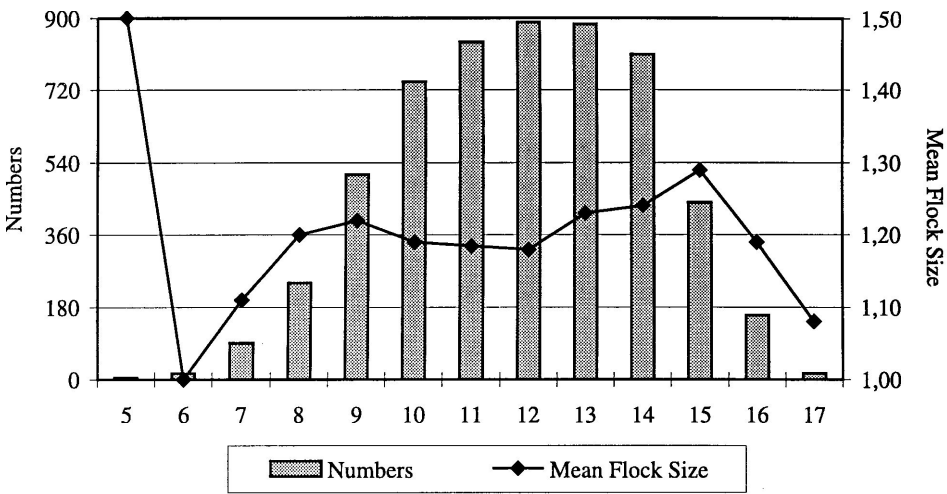
Migratory activity is spread over three months and a half, and might end late November. Numbers increase progressively from mid-September, being highest in October. They decrease quickly during the first half of November. However there is no true peak. Passage takes place later over western Pyrenees. Young birds migrate earlier than old ones. This species travels singly or in small loose flocks.

Figure 24.



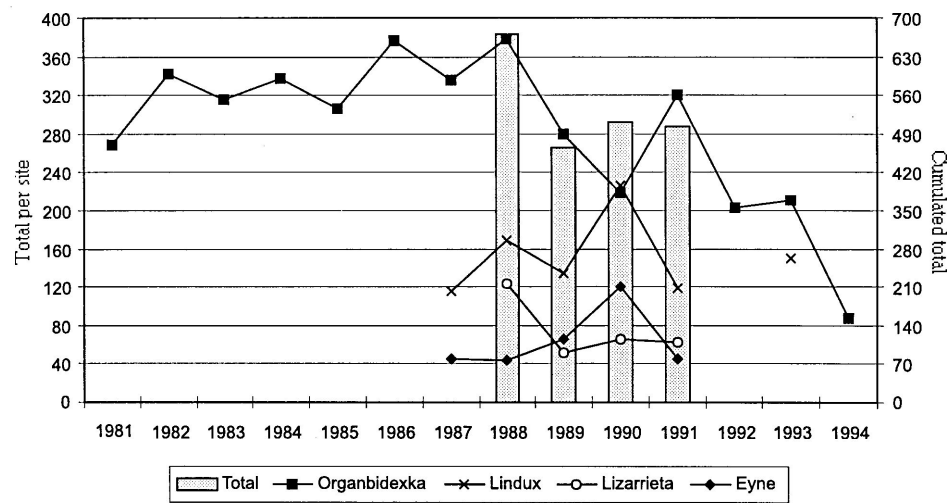
The mean flock size is largest during the warmest moment of the daytime. Migrating populations at Organbidexka would have declined since the last four years. The Buzzard avoids the highest reliefs, as typical soaring raptors do. Moreover, it migrates late in autumn, so that it can almost never rely on thermals, unlike the Black Kite and the Honey Buzzard.

Figure 25. Hourly Timing



Individuals tend to drift towards the western part of the chain. The four main sites collect *ca* 70% of passage. Individuals belonging to the wholly migratory *vulpinus* subspecies are recorded quasi annually. They are natives of Sweden, at least partly, and they represent about 1.3% of the passage at Organbidexka. They seem to be concentrated within a narrower time frame (late September). However they can be observed until late October. The Buzzard is common as a breeding species at the foot of the Pyrenees.

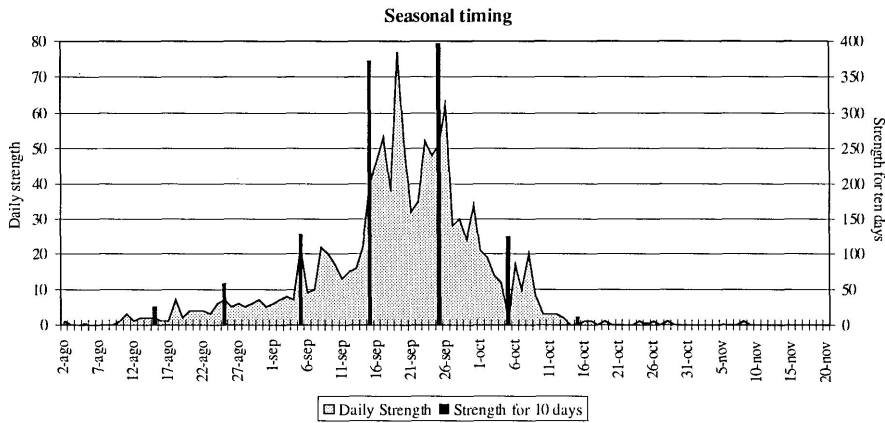
Figure 26. Interannual evolution



**Booted Eagle (*Hieraaetus pennatus*)**

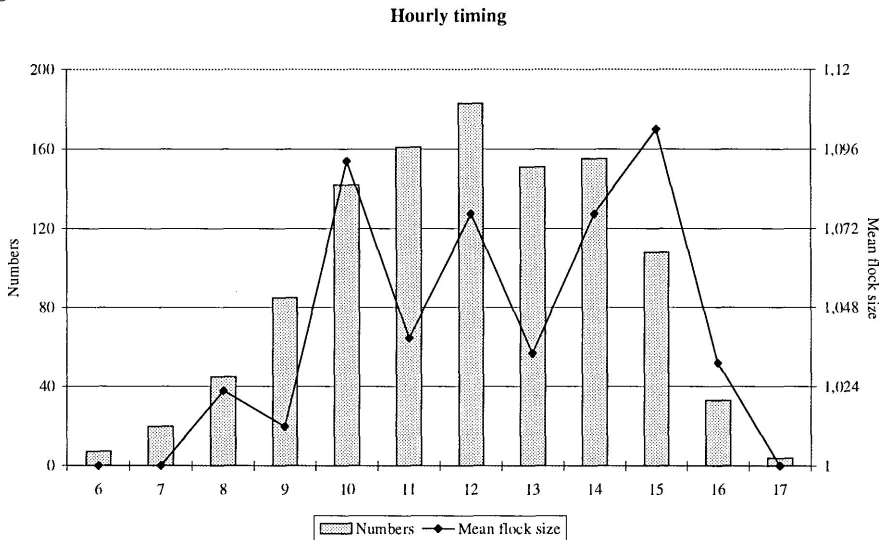
Most migrants are French individuals. The passage takes place from late August until early October, being more intensive during the second half of September. The peak occurs towards 20-22 September and it corresponds to *ca* 20% of the flow. About 70% of migrants belong to the pale morph and 30% to the dark morph. The intermediate morph is very scarce. Separating juveniles and older birds remains very difficult. The latter seem to be more numerous at the beginning of the migration.

**Figure 27.**



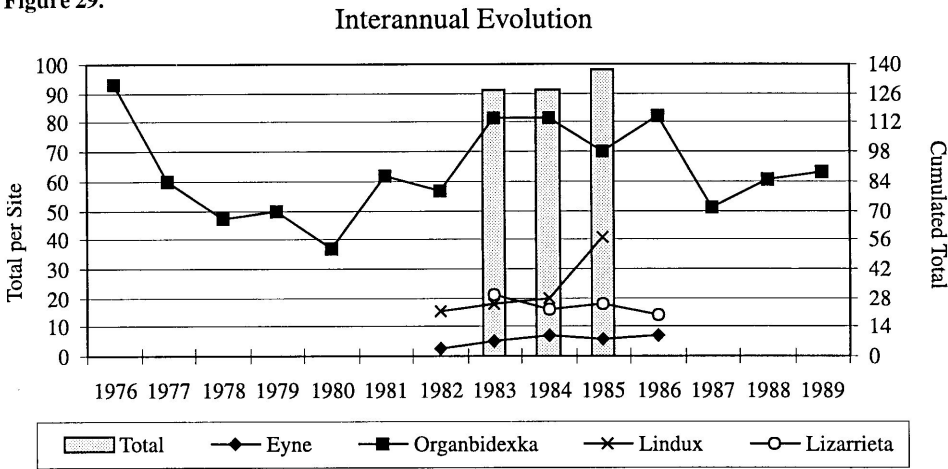
Most individuals are recorded between 10.00 and 15.00, the size of the flocks being largest at 10.00 and at 16.00. However, birds generally migrate singly.

**Figure 28.**



The annual variations at the western localities suggest a tendency to stability. 80% of passage takes place over the Basque mountains. Nevertheless, regular movements occur across the eastern part of the chain, at the Plateau de Beille (F-09), where migrants must belong to the southeastern France population. The breeding area of the western transpyrenean migrants lies from the Ardennes to the Pyrénées Atlantiques, where densities are highest. The four main sites gather 80% of migrants. This species winters south of the Sahara.

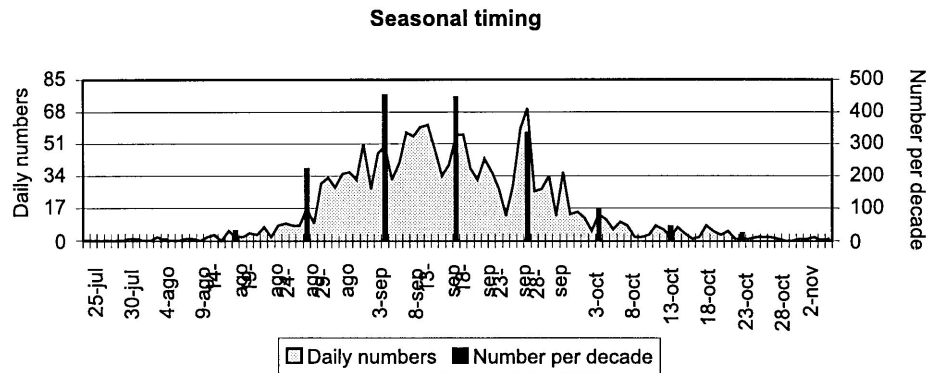
Figure 29.



### Osprey (*Pandion haliaetus*)

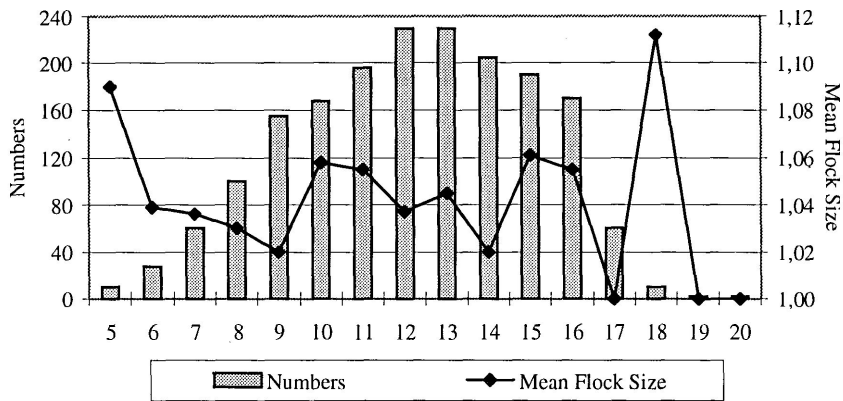
The period is spread from late August to the end of October. Steady passage takes place in September, with a peak during the first three weeks. Migration occurs at the same time throughout the chain. Young birds would migrate later than older ones.

Figure 30.



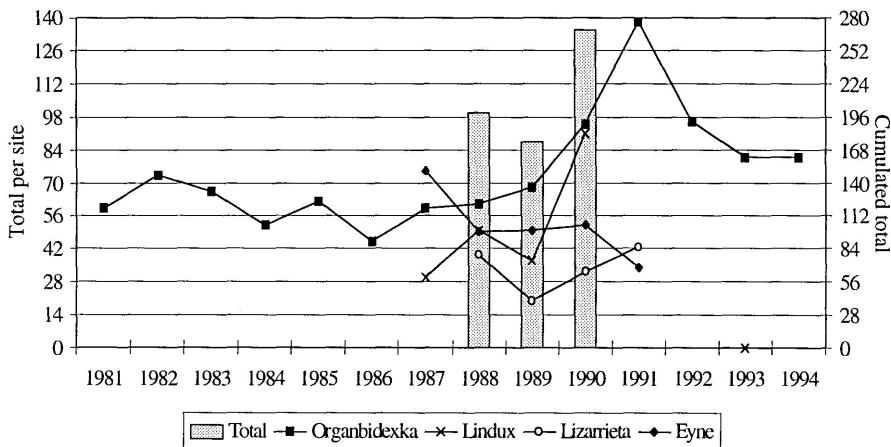
Like other non soaring raptors, Ospreys can utilize flapping flight over a long distance. They tend to pass throughout the day; however they would be more numerous in the afternoon, maybe due to the absence of suitable roosting places. Many observations of individuals carrying fish suggest that Ospreys have an opportunistic foraging strategy while migrating.

**Figure 31.** Hourly Timing



They mainly cross the Pyrenees via the extremities of the chain, but also via the upland valleys in Ariège (F-09, central part of the chain). Ospreys are solitary when migrating. Despite the small sample size; it appears that the migrants at Organbidexka have become increasingly abundant since 1988. 65% of passage takes place at the main four localities. It is also to be noted that one individual fitted with a radiotransmitter has been observed on passage, and that another one, at least, has been wintering in the Pyrénées Atlantiques since 1985-1986.

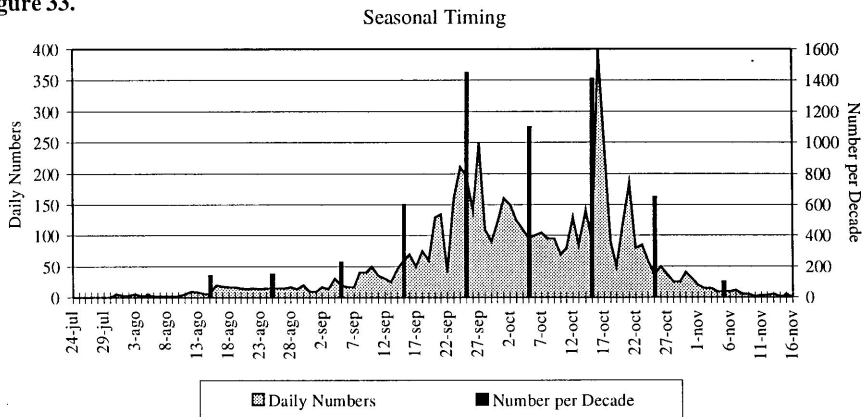
**Figure 32.** Interannual evolution



**Kestrel (*Falco tinnunculus*)**

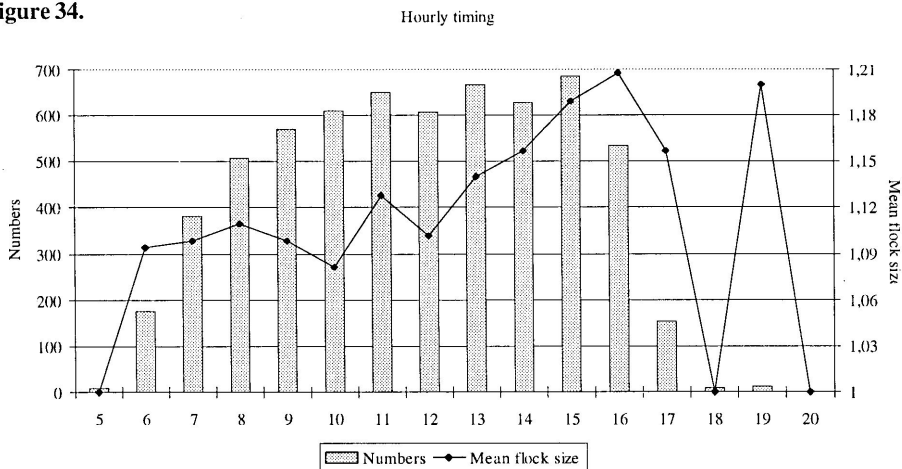
There is a little activity during the first fortnight of August. Then passage increases slowly, being most intensive between mid-September and late October before it declines quickly during the first third of November. Birds tend to migrate later in the western part of the chain. Females seem to travel earlier than males, but juveniles and older individuals seem to migrate simultaneously. However, plumage differences between females and young birds are sometimes difficult to see in the field.

**Figure 33.**



Kestrels migrate all day long and can travel in the evening.

**Figure 34.**

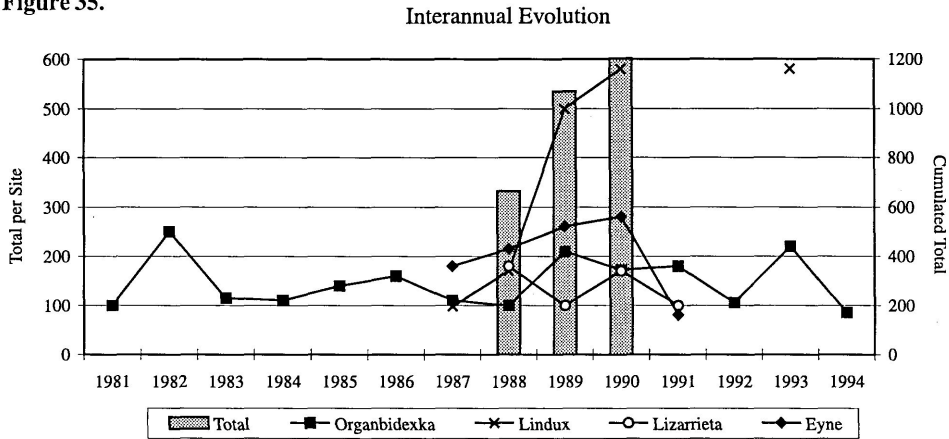


Movements would be more pronounced in the Basque Country and in eastern Pyrenees than in the central part of the chain. Kestrels travel singly or in small groups (less than five individuals). They often hunt while migrating (lizards, small rodents, dragonflies). Demographic variations in this partially migratory species are closely linked to changes in habitats and winter cold

spells. The number of migrants recorded varies irregularly from one year to the next, so that no conclusions about population dynamics can be drawn.

Lizarrieta, Lindux, Organbidexka and Eyne gather about three fourths of passage. The Kestrel also breeds in the vicinity of the study sites.

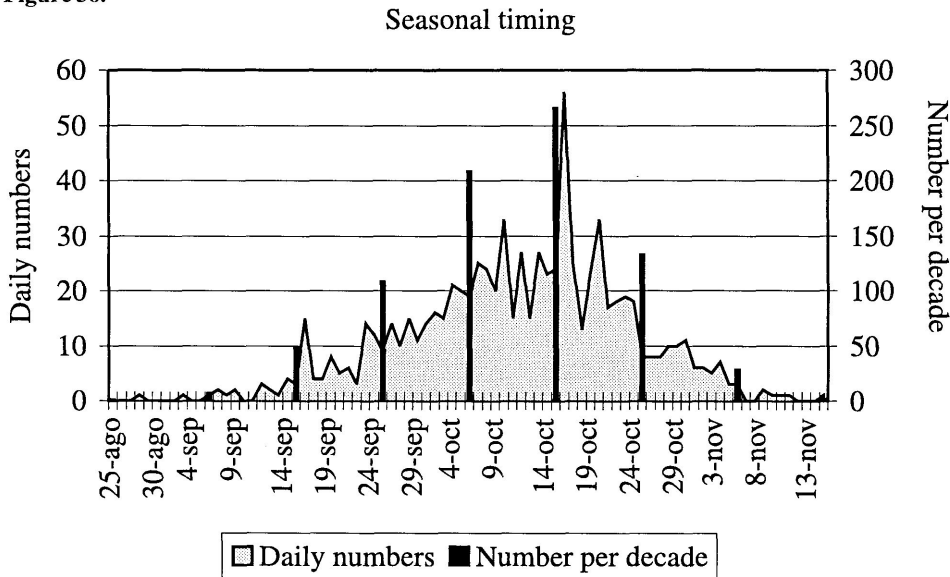
Figure 35.



### Merlin (*Falco columbarius*)

Merlins migrate from mid-September until early November, with a maximum about mid-October. Most of them belong to the British and continental *aesalon* subspecies. There seems to be no difference between eastern and western Pyrenees.

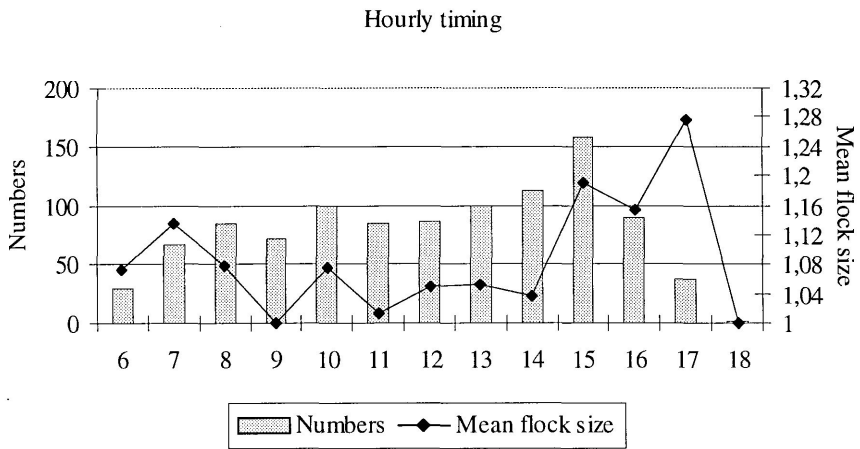
Figure 36.





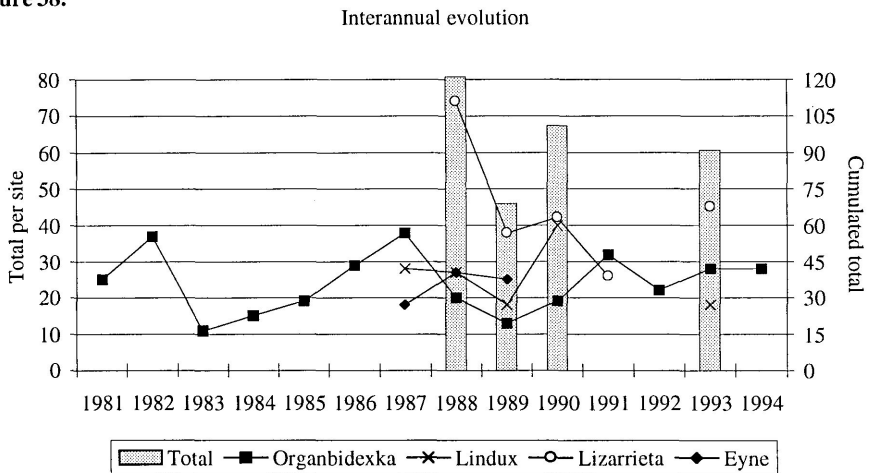
Birds migrate all day long; however the numbers tend to be largest between 13.00 and 16.00. Merlins travel singly most of the time, small groups being formed during some moments of intense activity. But this phenomenon seems to occur by chance.

Figure 37.



Merlins cross the Pyrenees on a wide front. However activity seems to be more important over the western part of the chain, especially at Lizarrieta. 75 % of the flow concentrates at the main four sites. The numbers recorded vary greatly in the course of the years, but with no particular trend. Overwintering at the foot of the Pyrenees must be possible, although there are no records in the Pays Basque. It is noteworthy that the migration of this species coincides with that of the Meadow Pipit *Anthus pratensis*, which is part of its dietary spectrum. Merlins sometimes hunt while migrating.

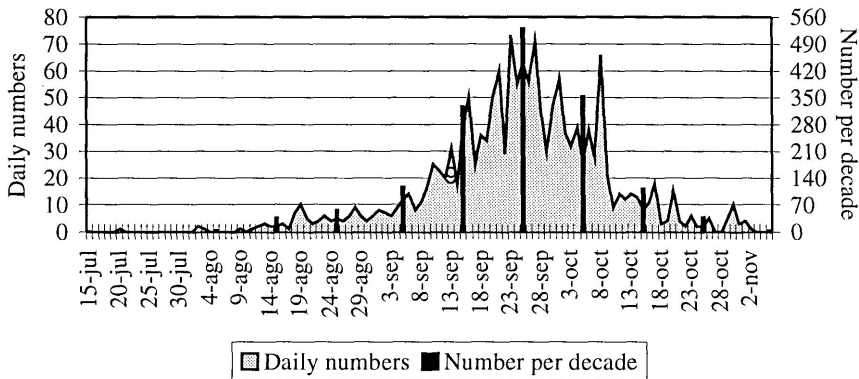
Figure 38.



**Hobby (*Falco subbuteo*)**

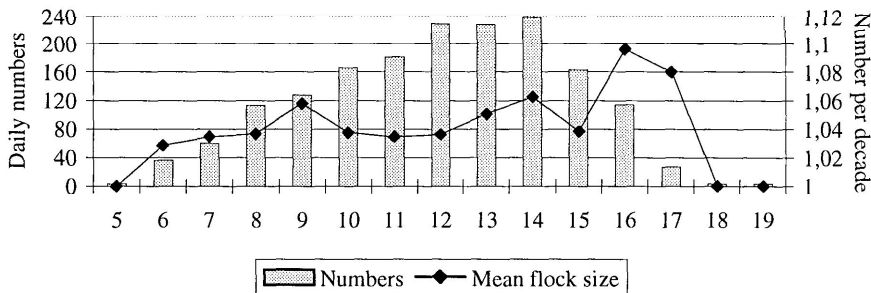
The first migrants are noted in mid-August, but they are the most abundant from 15 September until 15 October, with a little peak during the last ten days of September. In this species, migratory activity simultaneously occurs across the width of the chain, and during the same period as that of its preys (pipits, swallows and finches). Hobbies are transsaharian migrants. First year old individuals might migrate later than older ones.

**Figure 39.** Seasonal timing



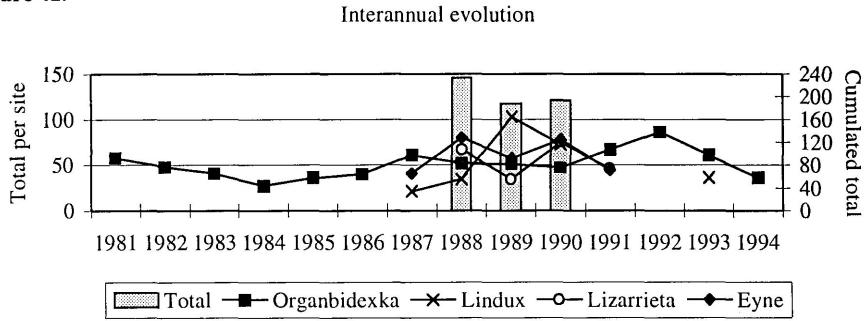
The major part of passage takes place from 10.00 until 15-16.00, numbers tending to be largest between 12.00 and 14.00. Hobbies are usually solitary on migration. Groups of two often include two juveniles, maybe siblings.

**Figure 40.** Hourly timing



The annual variations of the numbers are heavily dependent on the meteorological conditions during the breeding season; they do not show any tendency. Hobbies tend to migrate over the western part of the chain only, 98% of theoretical passage being recorded west of Organbidexka. Lizarrieta is the most frequented site. This species breeds at the foot of the northern slope of the Pyrenees.

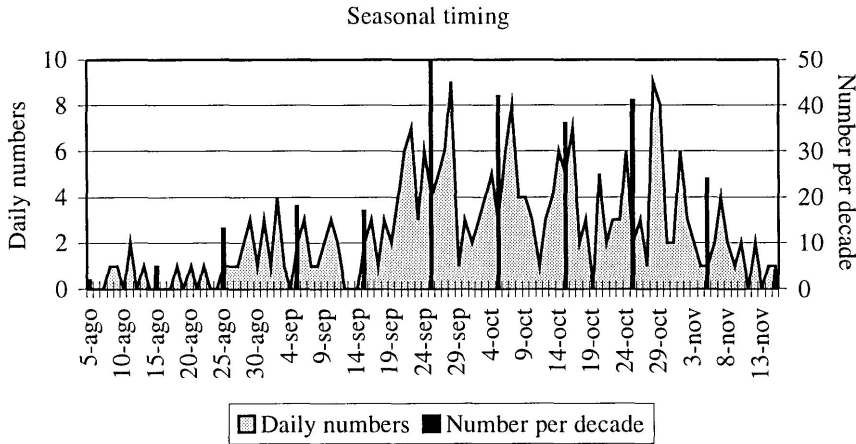
Figure 41.



### Peregrine (*Falco peregrinus*)

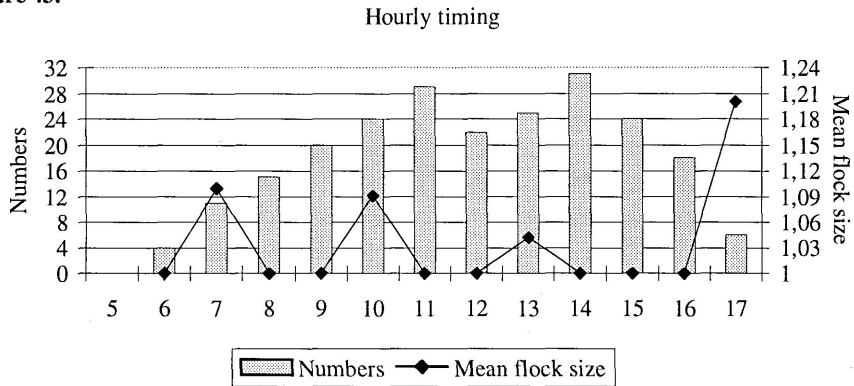
Peregrines are recorded from September to November, but in small numbers. Movements are more intensive between mid-September and early November.

Figure 42.



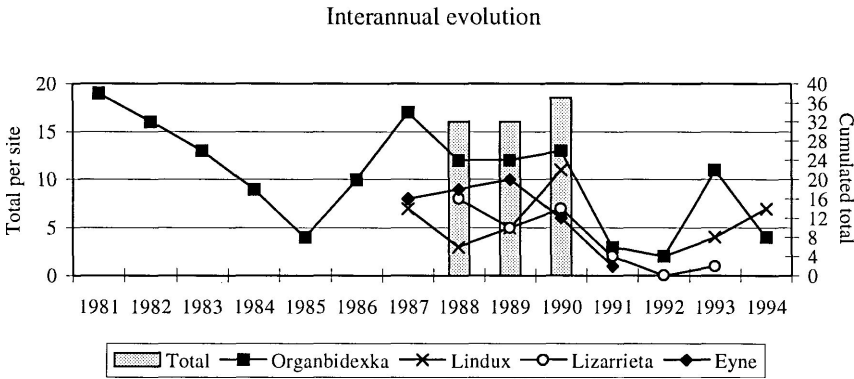
Passage birds are solitary; they belong to both *peregrinus* and *calidus* subspecies. The passage seems evenly distributed throughout the day and across the width of the chain. However the presence of the resident breeding population (which belongs to the *peregrinus* and *brookei* subspecies) makes the identification of migrants difficult, except for the larger and paler *calidus* individuals.

Figure 43.



The European populations of this species have been increasing in recent years.

Figure 44.



## RARE MIGRATORY OR VAGRANT SPECIES

**Egyptian Vulture (*Neophron percnopterus*):** The species breeds in the Pyrenees, mainly in the western part of the chain. Most migrants are recorded between mid-August and mid-September, but in little numbers. Those which travel over the eastern Pyrenees must belong to the southeastern France population. It is more difficult to state the migrating status of the birds in the western part of the chain, some individuals foraging over both northern and southern slopes. Furthermore, the number of wintering birds is increasing in Spain. There are no records from the central Pyrenees.

Adult, immature and first year old birds are recorded, the former being the more numerous. A juvenile can also migrate with one or two adults (maybe fledglings with their parents).

**Goshawk** (*Accipiter gentilis*): less than 100 individuals have been recorded since the study has been carried out. Movements take place from late August until early November. A few pairs breed on the northern slope of the Pyrenees

**Lesser Spotted Eagle** (*Aquila pomarina*): This species was recorded at Organbidexka, on 8 September 1981 (there might have been a doubt about identification) and 9 October 1986 (a juvenile; no doubt concerning the species). This eagle breeds in eastern Europe and in Greece. It migrates in large numbers over the Bosphorus and Israel and winters in East Africa. These two stragglers have been observed at normal dates.

**Lesser Kestrel** (*Falco naumanni*): two individuals were seen on 10 September 1988 at Forge del Mitg (eastern Pyrenees). About 25 pairs breed in the Camargue. This species is wholly migratory.

**Red-footed Falcon** (*Falco tinnunculus*): since 1981, only six individuals have been recorded, at Lindux and Organbidexka. This species breeds in East Europe and Asia and it migrates via the Bosphorus and the Middle East. However, the dates of passage (from the second decade of September to mid-October) are similar to those in the eastern Mediterranean. Three pairs bred in France in 1993.

**Eleonora's Falcon** (*Falco eleonora*): 12 individuals have been recorded at Eyne and Forge del Mitg (F-66), at the end of August. Most of them were light morph ones. Birds can linger at the sites and form groups up to three individuals. Their origin at this time of the year is unknown: Balearics or South France (Camargue)? These non-breeding individuals follow their potential prey (Passerines) on passage.

**Saker** (*Falco cherrug*) : they are only two records of this species concerning one bird at Eyne on 4 September 1993 and one pale morph adult on 26 September 1994, at Organbidexka. As it was actively migrating, this last bird has been mobbed by a resident Peregrine. An individual ringed in Czechoslovakia in 1968 was found dead the following autumn at Tarbes-Ossun airport, at the foot of the central Pyrenees. This species breeds in East Palearctic. Some European individuals winter in Sardinia and in southern Italy.

## NON-MIGRANT SPECIES

**Bearded Vulture** (*Gypaetus barbatus*): It has been recorded commonly at the western sites only, which are situated within its breeding range.

**Griffon Vulture** (*Gyps fulvus*): This is the most common local breeding species seen on the western sites. Flocks involving more than 200 individuals have been recorded in the western Pyrenees, where the populations are increasing. This species is sometimes observed at Eyne.

**Black Vulture** (*Aegypius monachus*): there is only one record (28, 29 and 31 July 1994, at Organbidexka), probably concerning an erratic non-breeding individual. This species breeds in Spain and was recently reintroduced in France.

**Black-shouldered Kite** (*Elanus caeruleus*): only three individuals have been recorded, on 24 October 1989 at Eyne, on 9 August 1988 at Lindux and on 7 and 8 October 1994 at Lizarrieta. They were probably erratic birds, although two pairs breed in southwestern France.

**Golden Eagle** (*Aquila chrysaetos*): the species breeds in the Pyrenees. Adults are sedentary in France. There are only very few records, at Eyne, Organbidexka and Lindux.

**Bonelli's Eagle** (*Hieraaetus fasciatus*): from 1980 until 1990, five individuals were recorded at Organbidexka and one at Lindux. The juvenile observed at Organbidexka in 1994 was probably found dead a few days later at Marais d'Orx (Landes, F-40), from electrocution. Observations at the Basque sites often take place in September. Less than 30 pairs breed in southeastern France. This species also breeds on the Spanish slope of the Pyrenees. Adults tend to be very sedentary, but juveniles and immatures can wander far from their birthplaces.

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