BREEDING RAPTORS IN PORTUGAL: DISTRIBUTION AND POPULATION ESTIMATES

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ABSTRACT

Detailed up-to-date information is presented on the status of various diurnal raptor and owl species in Portugal, based on an atlas survey. Attempts are made to estimate the population sizes of the diurnal raptors, and an indication of relative abundance is given for the owls.

INTRODUCTION

Until the 1970s, the breeding distribution of raptors in Portugal was known only empirically, and the few published accounts date from the first half of this century (Reis Júnior 1934; Coverley n.d.). Recently, some publications dealing with raptor distribution have appeared, but they refer only to restricted areas, such as the southwest coast (Palma 1980), or to particular species, such as the Griffon Vulture (*Gyps fulvus*) (Palma & Rufino 1981) and Osprey (*Pandion haliaetus*) (Cancela da Fonseca & Palma 1980).

With the start of the *Atlas of Breeding Birds in Portugal* in 1978, we began to collect information systematically, using a grid of 175 rectangles, each covering 32 × 20 km. The main objective of the atlas is to map the breeding distribution, although we believe we can also obtain good population estimates for some species, particularly certain raptors. Today, at the start of our fifth year, we already have a good knowledge of certain populations, namely vultures, cliff-nesting eagles and Peregrine Falcons (*Falco peregrinus*). For the more widespread species the estimates are less accurate, because data on breeding densities in the various known habitats are incomplete, except for a few well-known areas. The project is scheduled to end after seven years.

PRESENTATION OF DATA AND ESTIMATION TECHNIQUES

To facilitate interpretation of the species maps, we first present four others. In the first (*Figure 1*), the degree of coverage achieved to date is shown; and in the three others (*Figures 2, 3* and *4*), the main types of vegetation are plotted on the atlas grid.

On the distribution maps (*Maps 1* to *27*), the presence of each species is plotted, ignoring the breeding evidence, which is generally low. However, for most species the maps will reflect the main breeding range. Records since 1978 are combined with previous information, mostly collected by Luis Palma.
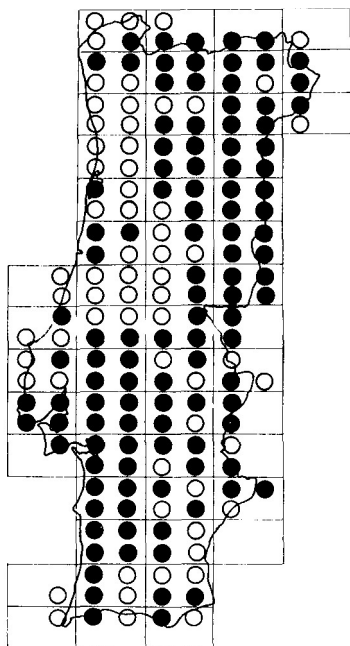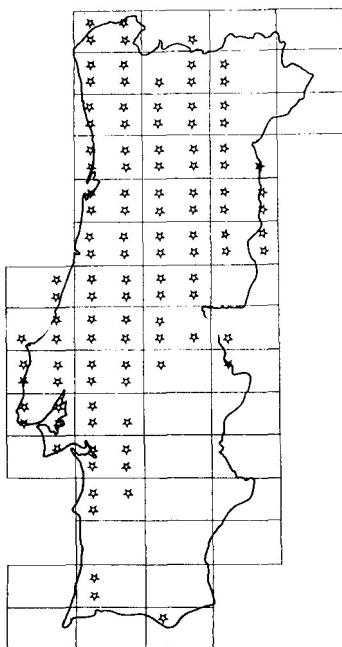
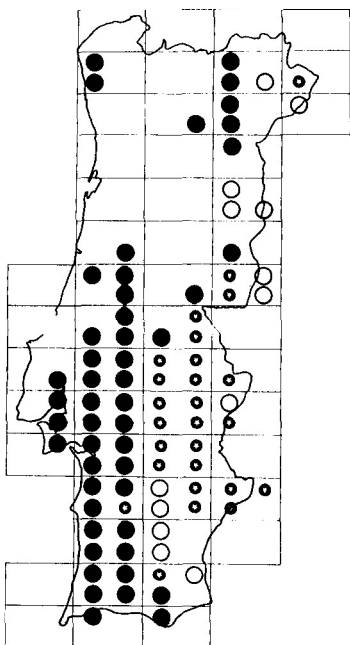*Figure 1:*   Atlas coverage.

Figure 2:   Pine woodland.

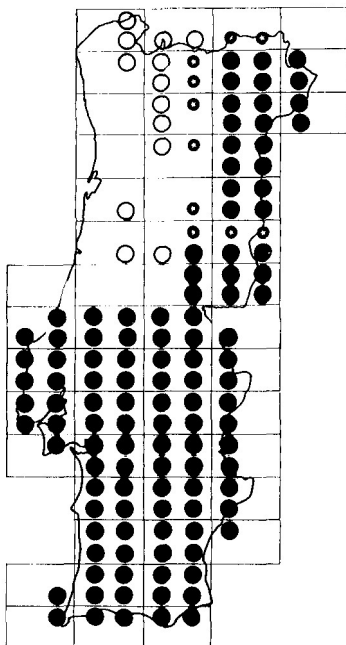*Figure 3:*   Oak woodland.

Figure 4:   Farmland and uplands.

Table 1:   Population estimates summarized. Entries marked * see discussion in text:
entries marked ** are partial estimates.

Species	Pairs	Species	Pairs
Neophron percnopterus	40–60	Milvus milvus	100–120
Gyps fulvus	100–150	M. migrans	900–1200
Aegypius monachus	*	Elanus caeruleus	150–200
Aquila chrysaetos	15–20	Pandion haliaetus	2–5
A. adalberti	*	Circus aeruginosus	30–40
Hieraaetus fasciatus	30–40	C. cyaneus	5**
H. pennatus	130–150	C. pygargus	1000–1300
Circaetus gallicus	80–100	Falco peregrinus	20–30
Buteo buteo	2000–3000	F. eleonorae	*
Pernis apivorus	5–10**	F. subbuteo	MIN–300
Accipiter nisus	MIN–300	F. naumanni	MIN–300
A. gentilis	MIN–100	F. tinninculus	1000–1500

For diurnal species, population estimates are presented in numbers (*Table 1*),
while for the owls we give a hierarchic scale of abundance. The estimation
techniques include, for some species, an actual knowledge of nests/pairs, and for
other species an extrapolation from knowledge of breeding densities in single
rectangles or groups of rectangles. Most of the estimates were made by the
authors, working in collaboration, and using Luis Palma's information, but
several other ornithologists have also contributed. Together with the species
maps (Appendix 1), a short discussion is presented on the accuracy of the
distribution and estimates. For security reasons, we have not included distribution
maps for the Spanish Imperial Eagle, Osprey and Peregrine. Questions relating
to the status and conservation of raptors in Portugal are dealt with elsewhere in
this volume by Palma (1984).

DIURNAL RAPTORS

Egyptian Vulture (*Neophron percnopterus*)   Map 1
The distribution shown can be considered more or less accurate. The dot in the
north-west is possibly a non-breeding bird. On the other hand, the three dots in
the south may indicate a scattered distribution in this part of the range.

Nearly 40 pairs/nests are known in the eastern and northeastern parts of the
range, and our estimate for the total population in Portugal is 40–80 breeding
pairs.

Figure 1:   Atlas coverage. Solid dot indicates more than 60 species per map; open circle
indicates 60 or less species per map.

Figure 2:   Distribution of pine woodland (mainly *Pinus pinaster*).

Figure 3:   Distribution of oak woodlands. Solid dot represents Cork Oak (*Quercus suber*);
open circle represents Holm Oak (*Q. rotundifolia (Q. ilex)*). Dot with star indicates overlap
areas.

Figure 4:   Distribution of cereal fields (solid dots) and upland areas (open circles). Dot with
star indicates overlap areas.

Griffon Vulture (*Gyps fulvus*)   **Map 2**
We believe the map shows the whole range of the species in Portugal. The most southerly dot may well be a non-breeder, as we have no recent information, but it is included because the species has bred in this area in previous years (Palma & Rufino 1981). More than 90 nests/pairs are known. Considering that some suitable habitats within the range have not been surveyed, the total population may number 100–150 pairs.

Black Vulture (*Aegypius monachus*)   **Map 3**
Probably extinct as a breeding species in Portugal. The dots represent sightings during the breeding season, although no evidence of nesting was found.

Spanish Imperial Eagle (*Aquila heliaca adalberti*)
As with the previous species, no breeding confirmed at present, but we have some recent (1977) information (Palma, pers. comm.) on a used nest.

Golden Eagle (*Aquila chrysaetos*)   **Map 4**
The map outlines the main breeding range, which is likely to be more continuous than shown since the gaps contain large areas of good habitat. We know of 15 pairs/nests and, considering the available habitat, think that an estimate of 15–20 pairs is close to reality.

Bonelli's Eagle (*Hieraaetus fasciatus*)   **Map 5**
The distribution shown is likely to be incomplete, particularly in the inland southern range, while the cliff areas have been quite well covered. Our estimate of 30–40 pairs is based on knowledge of nearly 30 pairs, taking into account the possibility that 10 more pairs breed in the south. In the north-west the species is probably extinct.

Booted Eagle (*Hieraaetus pennatus*)   **Map 6**
The distribution is thought to be fragmented in the centre and north-east, but more continuous in the south. Even so, we believe the main range is outlined. The estimate was made on the basis of breeding densities of seven pairs per survey area (20 × 32 km) in the central-southern region and one pair in the north-east. The total estimate was 130–150 pairs.

Short-toed Eagle (*Circaetus gallicus*)   **Map 7**
A similar distribution to the previous species, but extending farther south. This map is likely to be fairly accurate as the species is generally easy to detect, even though known to breed at low densities. The estimates are three pairs per survey area in the best areas (central-south), and one pair per survey area for most of the range. The total estimate is 80–100 pairs.

Common Buzzard (*Buteo buteo*)   **Map 8**
The most widespread species, as shown on the map, with gaps only in areas not yet surveyed. The estimate is made by regions, with a maximum of 40 pairs per survey area and an average of 11–17 pairs per survey area. The total population is probably between 2000 and 3000 pairs.

Honey Buzzard (*Pernis apivorus*)   **Map 9**
The map shows three different areas for this species, although only in the north-west are observations considered to be regular. The number estimated

(5–10 pairs) concerns this area exclusively (M. Pimenta, pers. comm.). The two other areas are indicated out of fidelity to atlas methods and because they are coincident with information prior to 1978.

Sparrowhawk (*Accipiter nisus*)   Map 10
The actual distribution is probably less fragmented, although the map shows the range. In the southern part, the species is thought to be less common and more difficult to find, due to the nature of the habitat (vast areas of open woodland in a flat landscape). Densities of two pairs per survey area in the north and one pair per survey area in the south give a minimum of 300 pairs for the whole country.

Goshawk (*Accipiter gentilis*)   Map 11
As with the previous species, the known distribution is still fairly incomplete. Apparently this hawk is widespread in the northern half of the country but rare in the south. Considering that the Goshawk is less abundant than its congener throughout the range and particularly in the south, our estimate is a minimum of 100 pairs. For both hawks we indicate only a minimum number, as our information is insufficient.

Red Kite (*Milvus milvus*)   Map 12
The actual range is thought to be outlined on the map but with some gaps, perhaps due to low breeding numbers, which makes this kite difficult to locate in some areas. We presume that it is absent in the north-west and south-east.

Estimated densities vary from four pairs per survey area in the best areas, to one to two pairs per survey area in most of the range, giving a total of 100–120 pairs.

Black Kite (*Milvus migrans*)   Map 13
Almost as widespread as the Buzzard (*Buteo buteo*) this species is far more common than its congener and breeds in very variable densities ranging from 40 pairs per survey area in restricted localities to 5 pairs per survey area in a good part of its range. Our estimate is 900–1200 pairs for the whole country.

Black-shouldered Kite (*Elanus caeruleus*)   Map 14
Again, although incomplete, the map outlines the main range, the westernmost dot probably representing a non-breeding bird. With densities varying from seven pairs per survey area in the best areas to four pairs per survey area in the worst, the total is 150–200 pairs.

Osprey (*Pandion haliaetus*)
Very local. The estimates that have been made (Palma 1980) give two to five pairs.

Marsh Harrier (*Circus aeruginosus*)   Map 15
Restricted to coastal wetlands and large expanses of rice fields. We estimate the population to be 30–40 pairs, with the highest densities in the three major estuarine areas.

Hen Harrier (*Circus cyaneus*)   Map 16
Sightings in the south were irregular, and evidence of breeding very sparse. We have included these records on the map out of fidelity to atlas methods, and also because they coincide with information from the 1930s (Coverly, n.d.).

The north-west dots refer to sightings and confirmed breeding in highlands repeated over the last few years. The estimate for this part of the range is *c.* five pairs (M. Pimenta, pers. comm.).

Montagu's Harrier (*Circus pygargus*)   **Map 17**
Fairly restricted in habitat and easily detected, this species has a reasonably accurate map. It uses cereal fields as breeding habitat in the southern and eastern part of its range and, in the rest, occupies the tops of mountains, provided they are not forested. The circle shows one of these areas which has been recently afforested and where, in consequence, the bird has ceased to breed.

Our estimate is 100 pairs in mountain habitats, with densities varying from 30 pairs per survey area in the central-south to 5 pairs per survey area in the north-west. The grand total is 1000–1300 pairs.

Peregrine Falcon (*Falco peregrinus*)
A fairly accurate distribution record. Very local and scarce, it does not occupy all the fringes of suitable habitat, namely the cliffs in central-west Portugal and northern mountains. Knowing of 20 pairs/nests, our estimate for the whole country is 20–30 pairs.

Eleonora's Falcon (*Falco eleonorae*)   **Map 18**
One sighting given, with no confirmed breeding. This, in 1981 (Luis Palma, pers. comm.), was in an area with suitable breeding habitat.

Hobby (*Falco subbuteo*)   **Map 19**
Scarce and difficult to detect, its distribution has not yet been fully mapped. Considering the highest density as five pairs per survey area in the north and one to two pairs per survey area in the south, our estimate is a minimum of 300 pairs.

Lesser Kestrel (*Falco naumanni*)   **Map 20**
This species poses particular problems. In typical nesting-places (cliffs, ruins and castles) it is easy to find. But when in trees it is much more difficult to detect, and most bird-watchers working on the atlas project can only distinguish the two kestrel species at very close range. For these reasons, the distribution shown is likely to be incomplete.

The estimate of a minimum of 300 pairs is based on knowledge of several colonies in ideal nesting sites and of relative densities in other places. Again because of lack of information, a maximum number is not given.

Kestrel (*Falco tinnunculus*)   **Map 21**
Possibly as widespread as the Common Buzzard, but seemingly lower in numbers. The estimate is based on personal observations comparing sightings of Buzzard and Kestrel, which are on average at a ratio of 2 : 1. The population is likely to be 1000–1500 pairs.

OWLS

Owls are far more difficult to detect than diurnal raptors, and any estimates of numbers would be very imprecise, so we have classified them in order of abundance as follows:

Little Owl (*Athene noctua*)   **Map 22**
Of all owls in Portugal, this is the most widespread and common species. It is also the easiest to find because of its partially diurnal activity.

Barn Owl (*Tyto alba*)   **Map 23**
Frequently present in human settlements, even in big towns. The species is fairly
widespread, although the map shows more fragmented distribution than for
Athene noctua.

Tawny Owl (*Strix aluco*)   **Map 24**
Again fairly widespread, but more limited by habitat availability. In appropriate
habitat (mainly woodland) its breeding density is reasonably high.

Scops Owl (*Otus scops*)   **Map 25**
Apparently commoner in the northern half of the country, but also breeds in the
south. In some areas it may well be commoner than the Tawny Owl but, taking the
country as a whole, we think the latter species more abundant.

Eagle Owl (*Bubo bubo*)   **Map 26**
Probably more common than the map indicates, as it uses a wide variety of
habitats. Fairly widespread, but difficult to detect during normal atlas survey time.

Long-eared Owl (*Asio otus*)   **Map 27**
At present our information about this uncommon and secretive species is scant.

APPENDIX 1:
SPECIES
DISTRIBUTION MAPS

Key

● Information obtained
from 1978 onwards.

○ Information obtained
before 1978. (For
Montagu's Harrier,
Map 17, see text.)
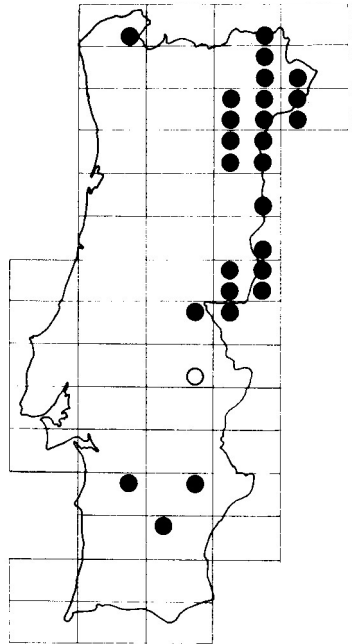
Map 1:   Neophron percnopterus
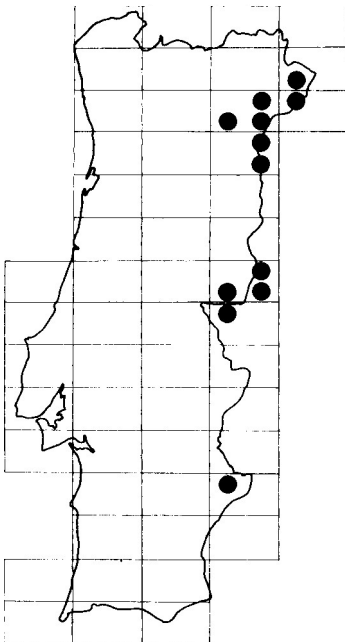
Map 2:   Gyps fulvus
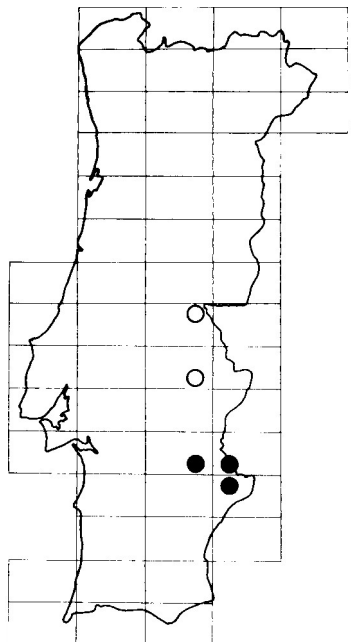
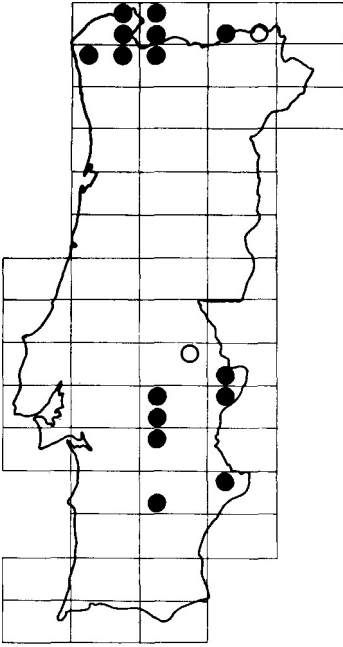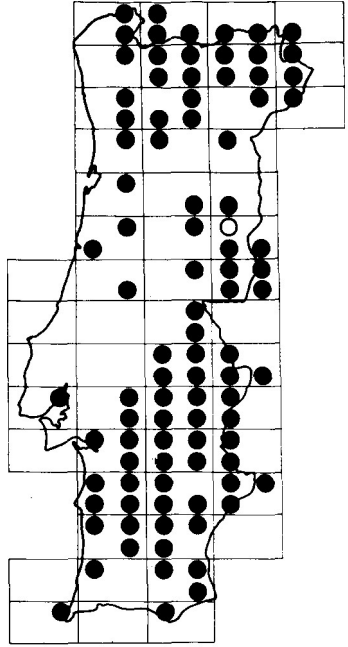*Map 3:   Aegypius monachus*
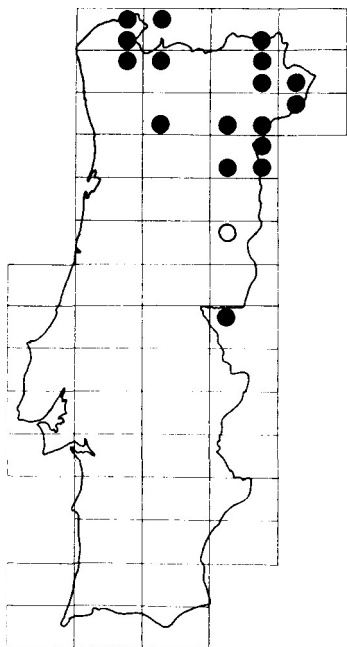
Map 4:   Aquila chrysaetos
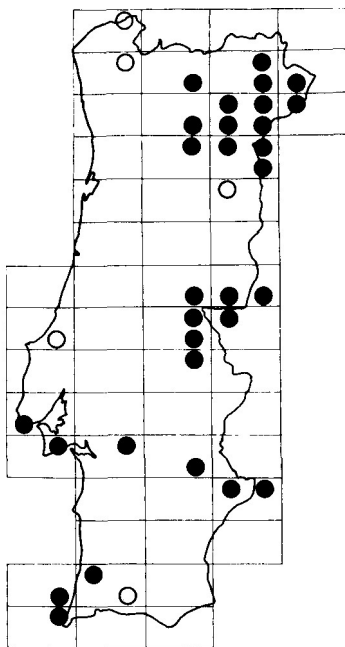
Map 5:   Hieraaetus fasciatus
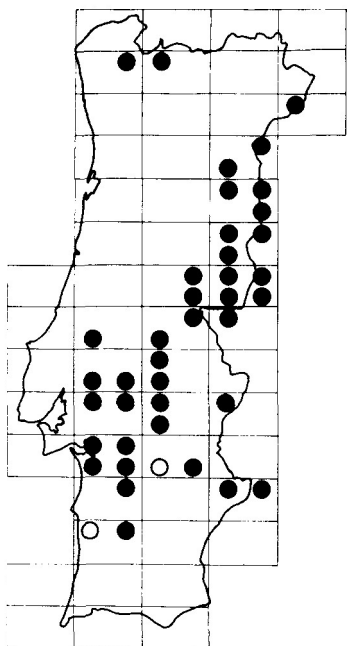
Map 6:   Hieraaetus pennatus
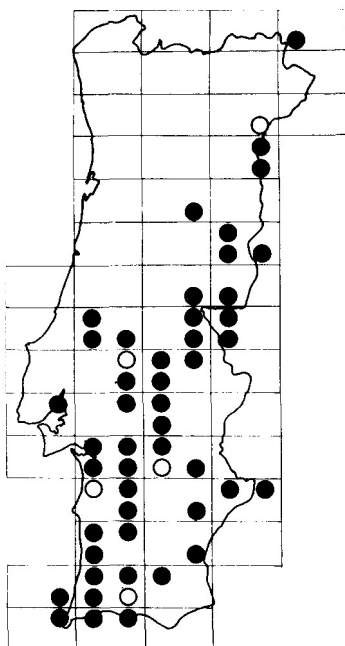
Map 7:   Circaetus gallicus
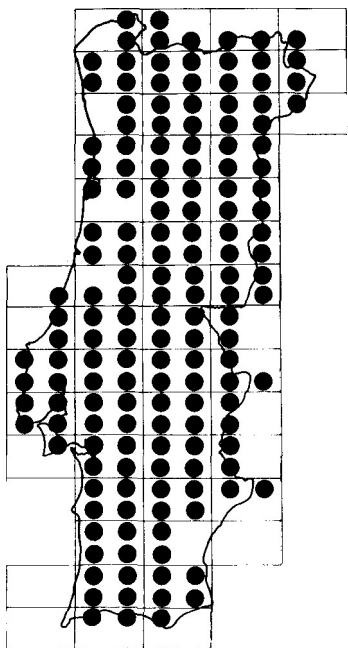
Map 8:   Buteo buteo
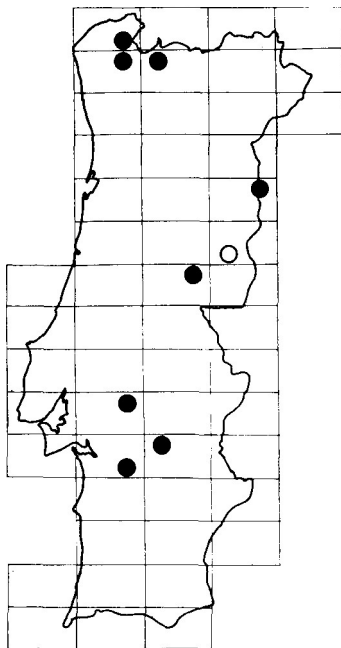
Map 9:   Pernis apivorus
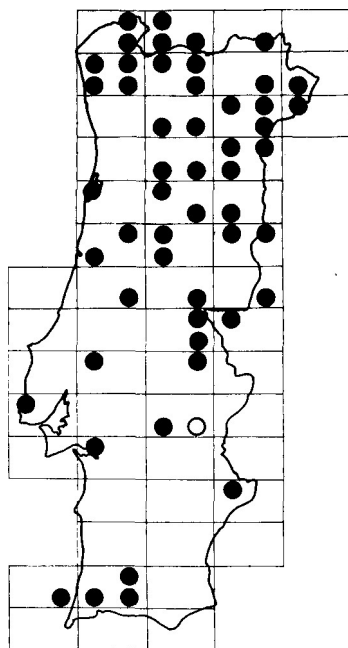
Map 10:   Accipiter nisus
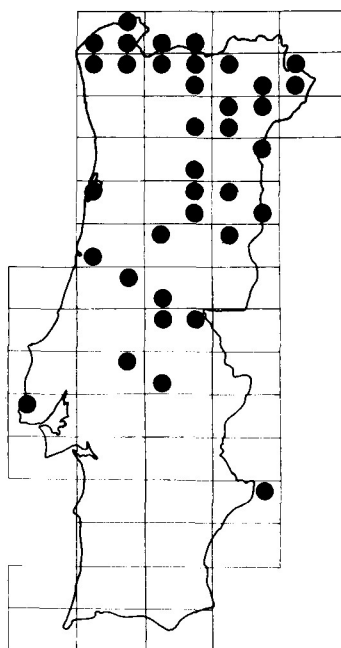
Map 11:   Accipiter gentilis
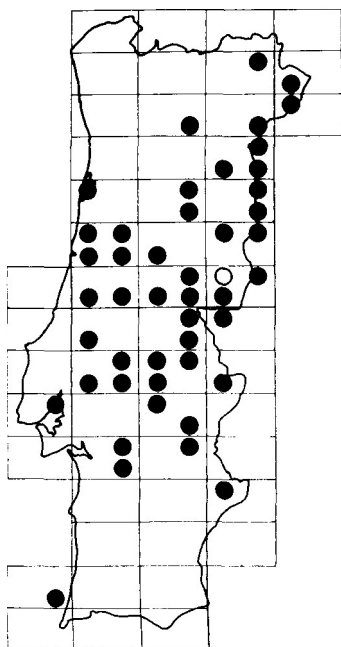
Map 12: *Milvus milvus*
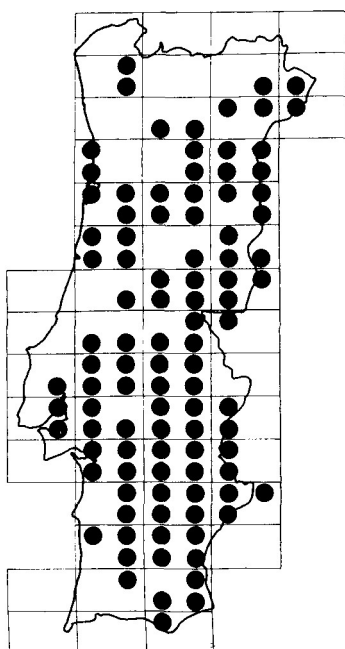
Map 13: *Milvus migrans*
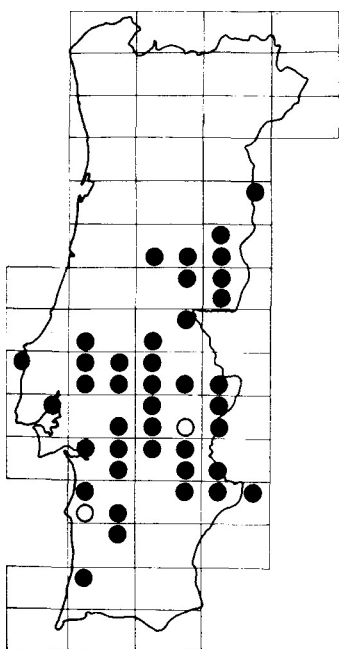
Map 14: *Elanus caeruleus*
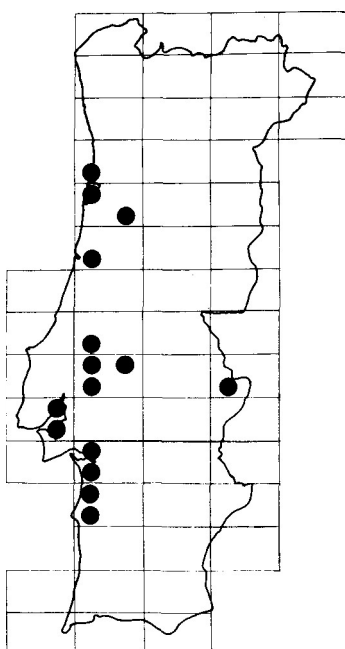
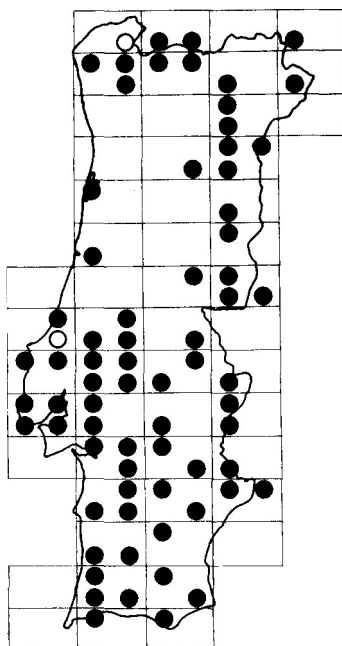Map 15: *Circus aeruginosus*

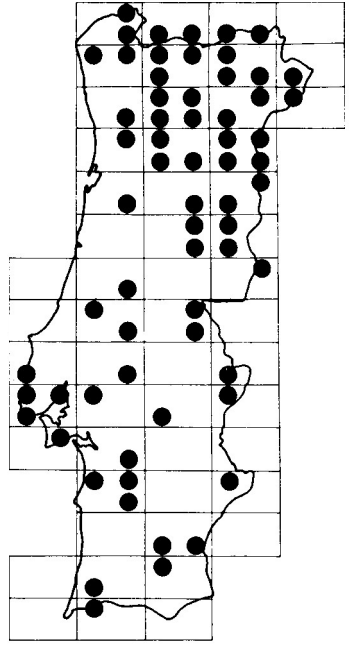*Map 16:   Circus cyaneus*

Map 17:   Circus pygargus
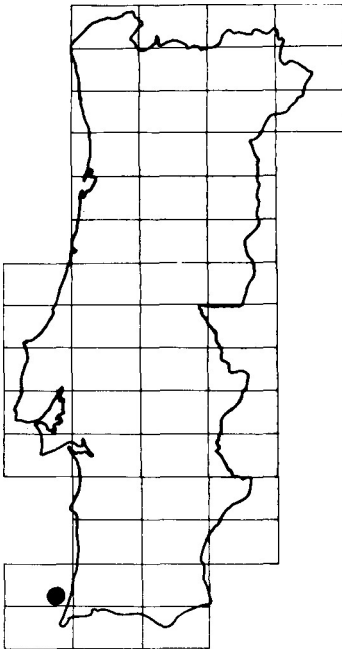
Map 18:   Falco eleonorae
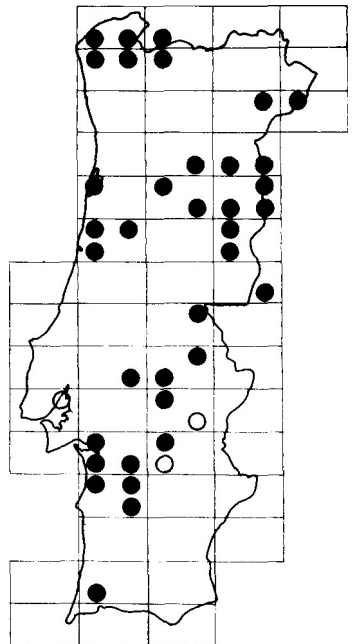
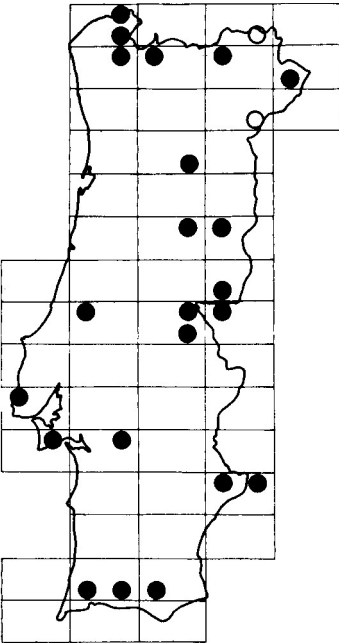

Map 19:   Falco subbuteo
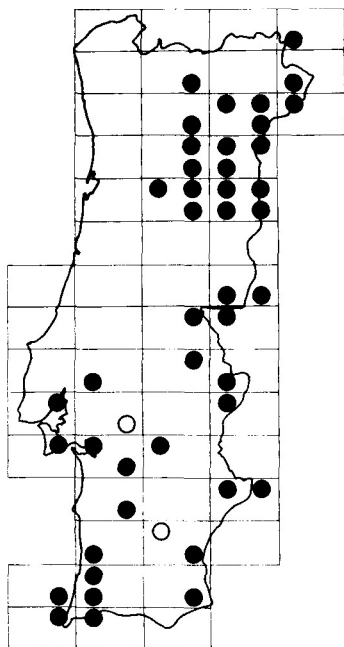
Map 20:   Falco naumanni
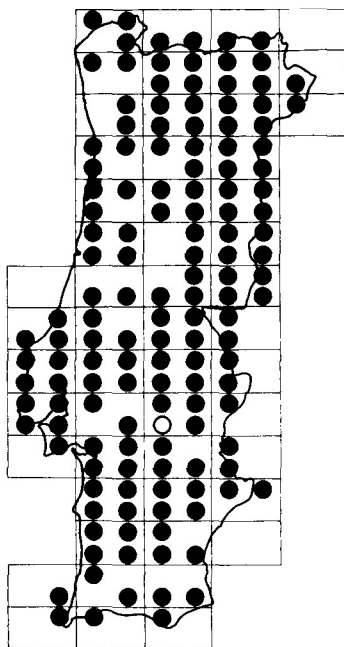
Map 21:   Falco tinnunculus
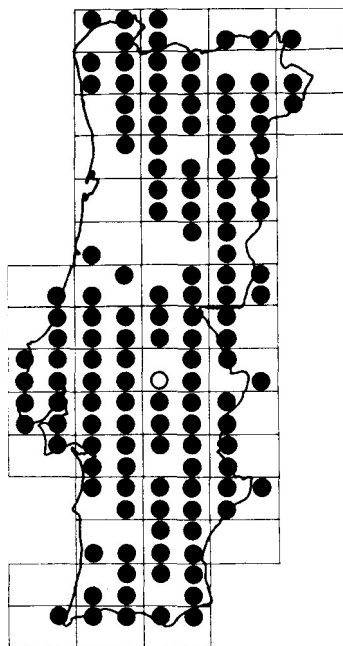
Map 22:   Athene noctua
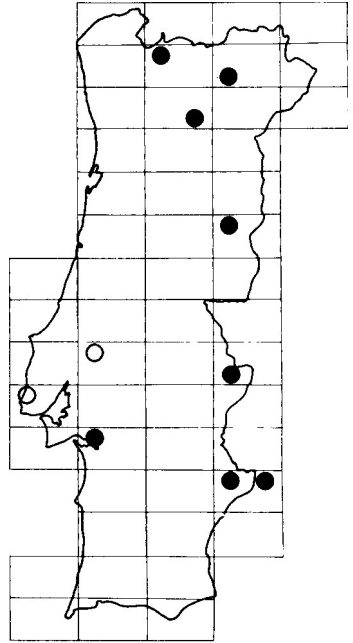

Map 23:   Tyto alba
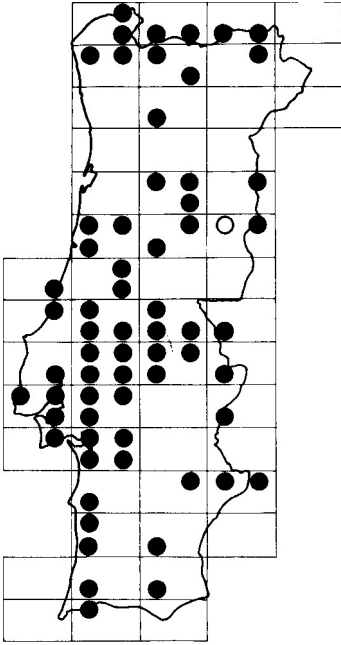
Map 24:   *Strix aluco*

Map 25:   *Otus scops*

Map 26:   *Bubo bubo*

Map 27:   *Asio otus*