

STATUS AND DISTRIBUTION OF BONELLI'S EAGLE (*Hieraaetus fasciatus*) IN PORTUGAL

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Introduction

Data about the present situation of this species in Europe is somewhat incomplete at a regional level and some doubts still remain about the main causes of decline (Rocamora, 1994; Arroyo & Garza, 1994).

In Portugal, studies and estimates of this bird's population, were in the past, limited or non-systematic. The first estimates of the Bonelli's Eagle population in Portugal were presented in 1982 (Palma, 1985; Rufino *et al.*, 1985) and further countrywide surveys were carried out in 1986 and 1987 (Parellada & cols., 1986; Granado & Rocha, 1987).

Detailed studies of a woodland tree-nesting population began in 1992 in the hills of Southwest Portugal (Palma, 1994). Complementary surveys and systematic studies on ecology and reproduction later began in other parts of the distribution range (Pais, 1996; Fráguas, *in prep.*).

Here we present an approach to the Bonelli's Eagle current situation in the country that updates and clarifies previous estimates and assumptions on the population status, trends and range. We include data collected till the end of 1997 breeding season.

Distribution and present status

Data on the distribution parameters of this species in Portugal are presented in Fig. 1.

Bonelli's Eagle range covers a large part of the upper Douro catchment in the Northeast (*see Figure 1*), with expansions to the Northwest and the Southwest. Further South the species spreads over much of the area from the upper Tejo (Tagus) basin to the extreme Southwest. A few pairs occur in the Estremadura hills North of Lisbon.

In the Southwest (20 pairs) and core areas of the Northeast (31-36 pairs) the species is regularly distributed and shows fairly high densities while in intermediate areas densities are quite low and pairs spacing irregular. Known densities (average nearest-neighbour distance) vary from e.g. 13.1 ± 3.7 km in the Southwest hills (Palma, 1995) to 40.1 ± 20.8 km in the lowlands of the Alentejo in the South (Pais, 1996). In the latter, 22-31 pairs are scattered in low density or grouped in small numbers, most of them (60-68%) along the border where some, as others in the Douro's basin, have their territories at the edge or in the continuity of the neighbouring Spanish populations (Pais, 1996; Fráguas, *in prep.*).

The current estimate for the whole country is 85-106 pairs, when about 80% of the territory is covered.

A decrease of about 15% has been detected in the known population between 1986-1996. Deserted locations are known only from near the Spanish border and from the coast, whilst in turn at the western and southwestern ends of the range some long vacant territories were re-occupied and new ones established.

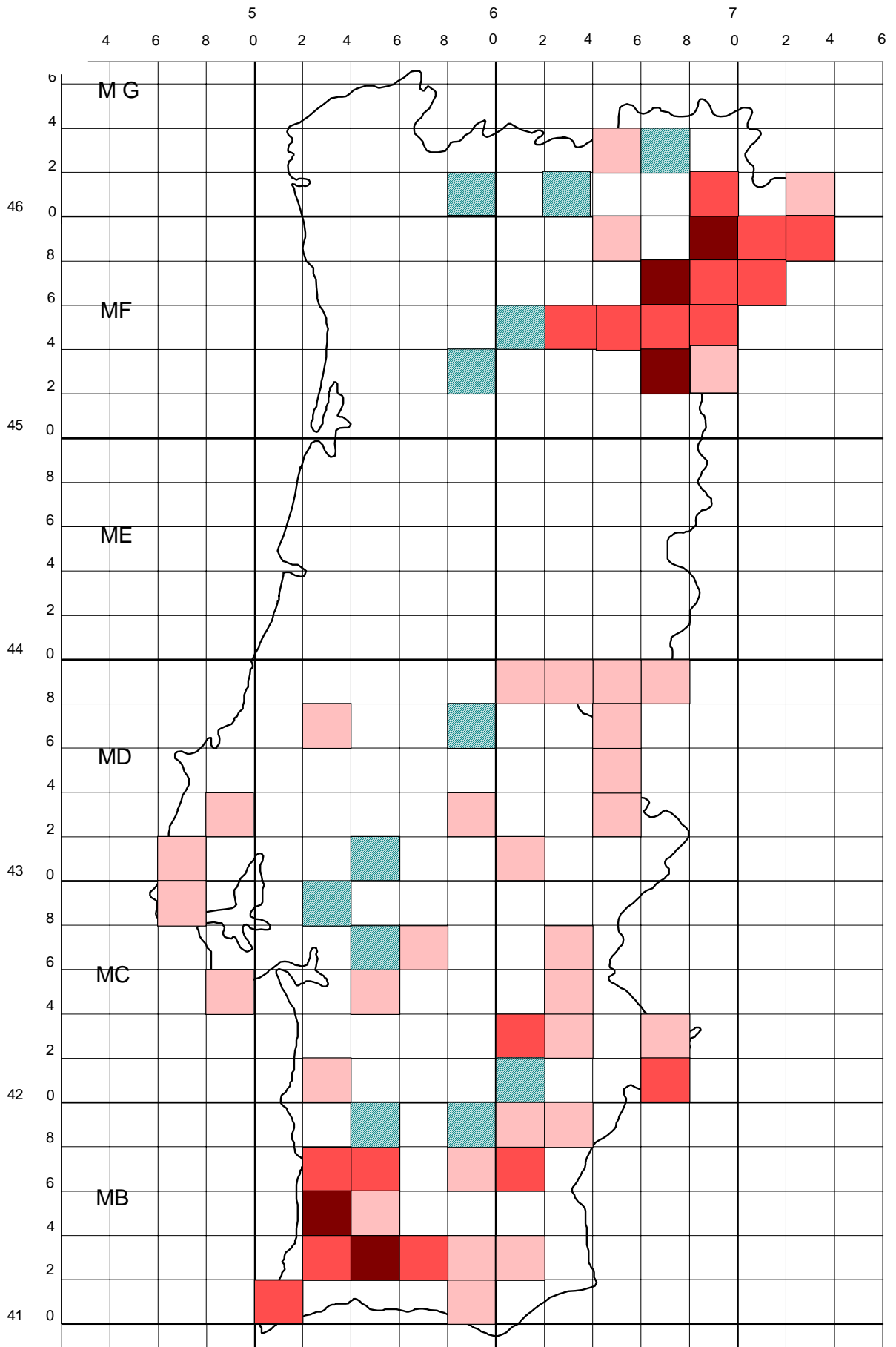


Figure 1. Distribution and densities of Bonelli's Eagle in Portugal. Striped squares: probable; dotted squares, from lighter to darker: 1, 2 and 3 pairs. Square area = 400 km².

Current and future research

Studies of habitat selection, diet, food resources and reproductive performance have been developed in three areas - Southwest, Alentejo and Northeast (Palma, 1995; Pais, 1996; Fráguas, *in prep.*) and will be continued and extended to whole Portugal in the next years. In the Southwest, wing-tagging and leg-banding has been carried out since 1993, in co-ordination with the Equip d'Estudi de l'Àliga Perdiguera from the University of Barcelona (Spain). Data on pre-adult mortality, dispersion and specially on recruitment patterns are expected.

In 1995 we began collecting blood samples from nestlings and birds held in rehabilitation centres for investigating genotypic variability and inter-populational genetic relationships. Preliminary results from electrophoretic protein analysis seem promising. This will be continued and extended to an DNA approach. Blood collecting will be expanded to the whole country and samples started to be received from Spain and France, and hopefully will be obtained also from North Africa and Middle East in the future.

Conservation problems

Although it does not exist reliable data on the population trends in Portugal in the last years, the situation in Europe is preoccupying, due to the pronounced decline in some regions (Real & Mañosa, 1992; Rocamora, 1994).

In Portugal, habitat alteration, disturbance of breeding sites and deliberate or incidental persecution are negative impacts detected in several areas of the range. Extensive agriculture and grazing have been gradually replaced by intensive farming and pine and eucalyptus plantations or merely left over to the natural recover of shrubby vegetation. The favoured feeding areas of many pairs have thus retracted and food resources diminished. Forestry has sometimes implied serious disturbance and even the loss of breeding sites. Recreational activities such as climbing and river boat trips also disturb cliff-dwelling pairs. Angling was responsible for the disappearance of most coastal pairs. The killing or injuring of several birds, both adults and non-adults, has been reported often inside private game estates. Conservation measures should include effective nest-site protection and management of human activities, namely forestry and recreation in breeding

areas, and strict surveillance of anti-predator actions inside game estates. Building of pigeon houses to compensate for shortened natural prey should also be considered, providing that disease control is strictly taken into account. Other fundamental basis for conservation actions in the country which could prevent or reverse negative demographic trends is the follow-up of research on the main threats, together with the population monitoring, and the biological, ecological, demographic and genetic studies of the populations.

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