

Eurasian Golden Plover (*Pluvialis apricaria*)
wintering in Portugal: recent trend and estimates

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Sociedade Portuguesa para o Estudo das Aves



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Introduction

Eurasian Golden Plover (*Pluvialis apricaria*) is a widespread breeder in northern Europe, provisionally evaluated as Secure (BirdLife International 2004). On the other hand, in winter more than 800,000 birds (around 60% of its global population) concentrate in only six countries of Western Europe: Ireland, UK, Netherlands, France, Spain and Portugal. This concentration in a small geographic area, together with vulnerability to severe weather and the huntable status in some countries during winter and fall migration makes Golden Plover more vulnerable in this time of the year.

In Portugal Golden Plover occurs mostly from 1st November to 15th February (Leitão 2003a). It is a widespread and locally abundant species in the grasslands and farmlands of the south, particularly in the regions of Lisboa and Vale do Tejo and Alentejo (Leitão 2003b). Since 1999, SPEA develops the bird count programme called CANAN, to monitor Golden Plover and other farmland bird populations in winter. With this report we want to produce an overview of the status of Eurasian Golden Plover wintering in Portugal. We aim to know the population trend and estimates for the last six years. These will be presented in the workshop about "Status and ecology of passage and wintering Eurasian Golden Plovers", that will take place in Cork (Republic of Ireland), on 10th October 2005, by occasion of the 2005 Annual Conference of the International Wader Study Group.

Methods

Programme CANAN

CANAN means "Christmas and New Year's Bird Counts". We ask voluntary birdwatchers to perform road transects in farmland and grassland dominated areas, between 15th December and 31st January. The transects were performed one time per winter and repeated each year, ideally by the same observer. The number of birds and the species observed in both sides of the transect were recorded in forms, along with the habitat category and hunting regime.

The programme CANAN was tested in 2000 and 2001. After these two trial editions, the counts were performed each year with growing number of participants and transect coverage (Table 1). The most recent edition (2005) reached for the first time a transect sum larger than 1000km. Transects were not evenly distributed in mainland Portugal (Figure 1A). Only, two regions are well represented in the CANAN survey, Lisboa e Vale do Tejo and Alentejo, in the south. But these two regions cover the largest part of the distribution area of Golden Plover in Portugal (Figure 1B).

Table 1. Transects performed in the programme CANAN.

Year	Edition	No. Voluntaries	No. Transects	Transect sum (Km)
2000	Trial	3	12	590
2001	Trial	3	9	287
2002	Effective	18	29	549
2003	Effective	17	34	616.5
2004	Effective	37	40	636.1
2005	Effective	39	58	1,029.9

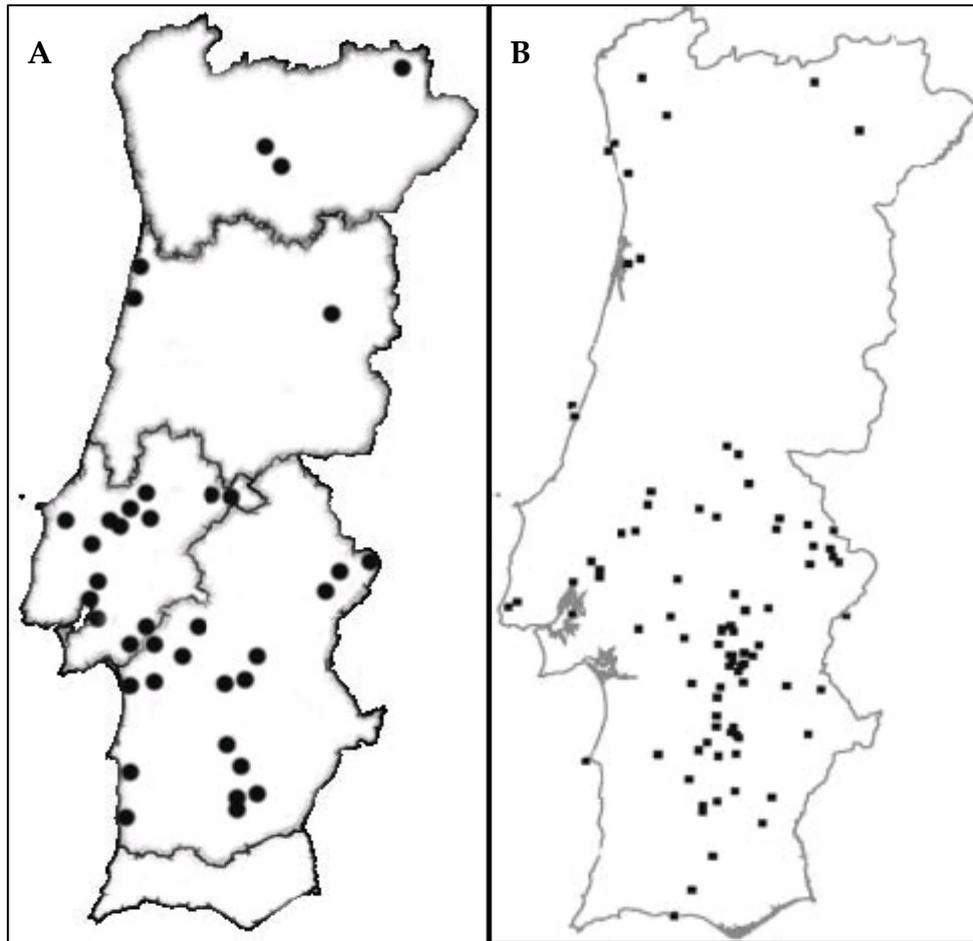


Figure 1. A - Distribution of the CANAN's road transects in 2000, 2001 and 2002.
 B - Distribution of Eurasian Golden Plover in Portugal based on ring recoveries.

Trend calculation

We used the chain method to calculate a chain index based on transects surveyed in consecutive years (Marchant *et al* 1990). The number of Golden Plover recorded from each transect was paired with that from the same transect in the previous year (winter), and the counts summed across all pairs to produce an overall estimate of percentage change. This estimate was applied to the previous year's index value. We started with the year 2000, giving to it the index value 100%. We use the Jack-Knife method to calculate the Standard Error of the index to cope with the small sample of paired transects (n=6 to n=21). Only consecutive transects with Golden Plover records at least in one of the two winters were included.

Population estimate

Lisboa and Alentejo regions are rather flat, farmland and grassland is rather open with scarce tree cover, very few hedgerows and almost no other visual obstructions. We consider that Golden Plover flocks can be spotted in the ground until 500m away. We used this assumption to calculate the area surveyed in each road transect.

The estimate (E) of the Golden Plover wintering population was based on the average density of birds recorded, extrapolated to the potential area available:

$$E = \left(\frac{n}{as} \right) \times aa$$

where n is the number of birds recorded, as is the area surveyed and aa is the potential occurrence area available. To calculate the surveyed area we summed the area covered by all road transects where Golden Plovers had been recorded at least once in the six editions of CANAN. The potential area available was based on land cover statistics (INE – National Statistics Institute and CORINE Land Cover Programme). We summed the area covered by each potential habitat for Golden Plover (Leitão & Peris 2003): treeless and low tree cover permanent and temporary grassland, dry cereal, corn, rice, beet and other strictly spring irrigated crops. The percentage of the potential area surveyed varied across regions and years (Table 2).

Table 2. Percentage of potential Eurasian Golden Plover occurrence area surveyed per year and region.

Region	Potential area available	Percentage of potential area surveyed per year					
		2000	2001	2002	2003	2004	2005
Lisboa e Vale do Tejo	300,000ha	9.0%	3.8%	8.9%	7.0%	5.3%	8.1%
Alentejo	1,200,000ha	2.7%	2.0%	1.8%	2.9%	2.2%	4.7%

Results

Population trend

The abundance Index of Golden Plover wintering in Portugal increased until 2003, reaching 358% (Figure 2). Then decreased dramatically in the last two winters, reaching the lowest value since 2000 (55%).

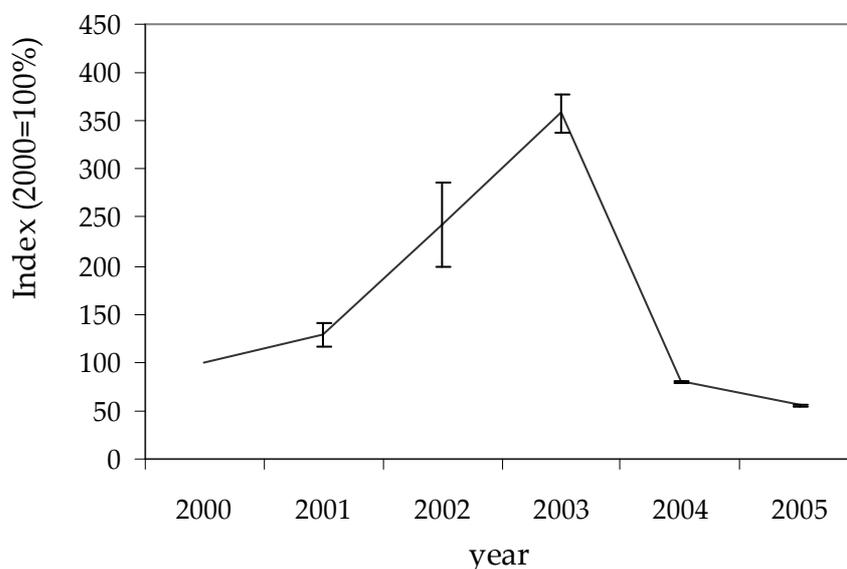


Figure 2. Abundance Index (2000=100%) \pm SE of Eurasian Golden Plover wintering in Portugal.

Population estimates

The number of Golden Plovers estimated wintering in Lisboa and Vale do Tejo varied between a minimum of 6,400 birds in 2004 and a maximum of 33,700 in 2001 (Table 3). In Alentejo the numbers of this species varied between a minimum of 32,000 birds in 2005 and a maximum of 435,700 in 2003. These two regions together had a minimum 44,500 Golden Plovers in the winter of 2005 and an amazing estimated maximum of 453,700 Golden Plovers in the winter of 2003. The average sum of the two regions for six winters is 190,700 Golden Plovers (Table 3).

Table 3. Population estimates of Eurasian Golden Plover wintering in two regions of South Portugal between 2000 and 2005.

Region	Number of Golden Plover (x1000)						Average
	2000	2001	2002	2003	2004	2005	
Lisboa e Vale do							
Tejo	20.0	33.7	22.2	18.0	6.4	12.6	18.8
Alentejo	90.6	206.5	147.4	435.7	119.4	32.0	171.9
<i>SUM</i>	<i>110.5</i>	<i>240.2</i>	<i>169.6</i>	<i>453.7</i>	<i>125.8</i>	<i>44.5</i>	<i>190.7</i>

Discussion

The precision of the abundance Index presented here is being improved each year with the increase of CANAN's sample size. The variations in the Golden Plover Index, particularly after 2002 (effective editions of programme CANAN), should represent real variations in the wintering populations. As referred by many authors, the short term variation in Golden Plover wintering in a particular region should be driven mainly by weather factors (Jukema & Hulscher 1988, Kirby & Lack 1993, Leitão & Peris 2004): cold spells in the North and drought episodes in the South. That seems also to be the case in Portugal. The high Index value recorded in 2003 should be related with a cold spell in North West Europe in the first half of January, when there were minimum temperatures lower than -10°C and permanent ice cover in large areas of Great Britain and Netherlands during more than 10 days. On the other side, the low Index value recorded in 2005 should be related with the severe drought that stroke the Southern Iberian Peninsula, particularly South Portugal, with no rainfall from October 2004 onwards.

Considering that the two administrative regions studied here represent more than 90% of the distribution area of Golden Plover in Portugal (Leitão & Peris 2003), the population estimates presented should be representative of the total population wintering in this country. The estimates presented for six years suggests the average number of Golden Plover wintering in Portugal should be close to 200,000 birds. In more favourable situations, like the winter of 2003, this number can be double, and in extremely adverse situations, like a severe drought, this number is not bigger than 50,000 birds.

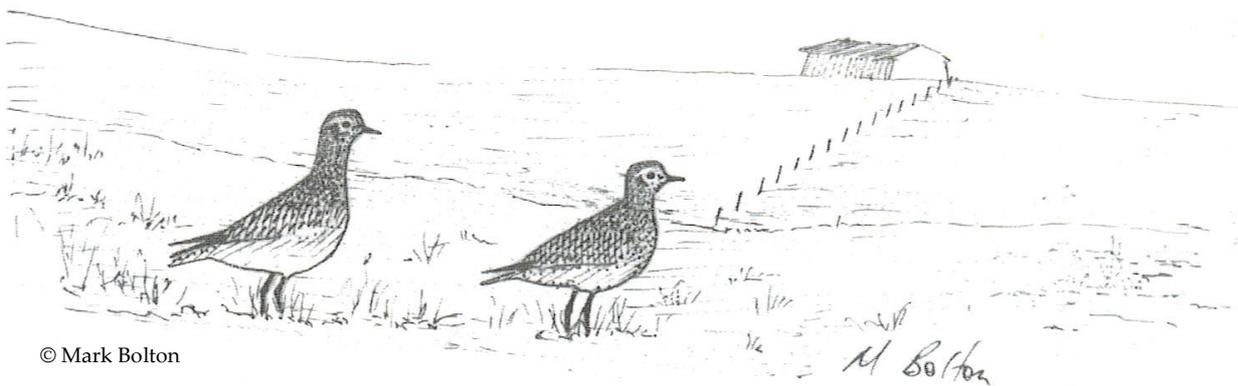
To better understanding the dynamics of Eurasian Golden Plover populations in winter we need more data. In particular, we need to cross data on winter counts for several western European countries (Gillings 2003), namely Republic of Ireland, United Kingdom, the Netherlands, France, Spain and Portugal.

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