

Results of a coordinated count of Eurasian Golden Plovers *Pluvialis apricaria* in Northern Europe, October 2003

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In October 2003, a coordinated count of Eurasian Golden Plovers took place in Sweden, Poland, Denmark, Germany, the Netherlands, Britain and Ireland. A little over 1 million birds were counted which for pragmatic reasons we assign to two ‘groups’ of populations: the Continental and Atlantic groups. Of these, 917,000 were from the Continental group of breeding populations and represent a good estimate of population size and baseline for future counts. The remaining 167,000 counted in Britain and Ireland represent only a fraction of the likely number in the Atlantic group. Country-level totals suggest a continuing tendency for more northerly staging. Reasons for this change are discussed along with the need for future surveys in 2008 and beyond.

INTRODUCTION

The Eurasian Golden Plover *Pluvialis apricaria* is one of the most numerous waders migrating through Europe. Of the four recognised flyway populations, three occur in Europe: *P. a. altifrons* breeding in NW Europe; *P. a. altifrons* breeding in Iceland/Faeroes; *P. a. apricaria* with a fragmented breeding range to the south. Though they are geographically distinct during the breeding season considerable mixing occurs on passage and in winter: during autumn, the NW European *P. a. altifrons* population mixes with the much smaller population of *P. a. apricaria* breeding in southern Scandinavia, the Baltic States, Germany and Denmark. For practical purposes in this paper we combine these birds as the ‘Continental group’. Concurrently, in Britain and Ireland, the Icelandic/Faeroese *P. a. altifrons* mix with the smaller local breeding population of *P. a. apricaria*. Again, for practicality, we refer to these birds as the ‘Atlantic group’. Better counts of flyway populations or groups are needed (Gillings 2003, 2005, Piersma *et al.* 1987).

Since selected staging sites include both coastal areas and extensive inland areas, the Golden Plover is not well monitored by established coordinated counts of coastal waders and dedicated surveys are needed. During the late 1970s, several countries independently counted Golden Plovers and ideas were mooted for a coordinated count, ideally in October or November when, at least for the Continental group, there is a ‘bottle-neck’ (van Eerden & Keij 1979) of birds in countries bordering the North Sea. Not until October 1993 did this become a reality, when a total of 415,000 Golden Plovers was counted across Lower Saxony, Schleswig-Holstein and Denmark (Busche 1993, Flore *et al.* 1994, Rasmussen 1994). One conclusion from this 1993 survey was that future counts should be extended to include the Netherlands and countries around the Baltic Sea.

Acting on this conclusion, a coordinated count was planned

for October 2003. The main objectives of the count were to assess population size and identify the most important sites along the autumn migration route throughout north-western Europe. It also provided an opportunity to investigate whether changes in hunting pressure, farm management and climate over the intervening 10 years had affected numbers and distributions. Some national and regional results have already been published (Table 1) but this paper aims to give a flyway-level overview.

METHOD

The count was drafted as an International Wader Study Group (WSG) Project. This gave it the advantage of working within an international framework that provided contacts with potential national coordinators and publicity through the WSG Bulletin to potential counters. The countries surveyed along with the named country coordinators are given in Table 1 and shown in Fig. 1. Coordinators were given guidelines to ensure a similar approach across countries. The main count date, Saturday 11 October 2003, was selected as it was one day after the full moon. The species is known to concentrate in larger flocks for day-roosting on and around the full moon (Meltøfte 2003, Spencer 1953). It also coincided with existing coordinated counts of waterbirds on wetlands in UK and the Wadden Sea. To minimise the effect of movements of flocks between regions and countries, it was recommended to accept counts from the 11th±3 days, which would leave a window of 7 days for this count. Counts from outside these dates were treated as estimated counts. To ensure a common standard, the following data were requested from each coordinator: year, month, day, site number, site name, region name, country, number counted, number estimated. Coordinators were also invited to submit data on weather and accuracy to allow an evaluation of the counting quality, and additional parameters on behaviour, habitat or other site-related information.



RESULTS

Over 1 million Golden Plovers were recorded as part of the coordinated count, with over 50% located in Denmark (35%) and Germany (20%) alone (Table 2). Figure 1 shows the distribution of large flocks. Brief details of counts and completeness for each country are given below.

The first ever coordinated count in Sweden found 109,689 Golden Plovers, with an estimated total of 115,000 present. Most were present in the southern half of the country, with *c.* 100,000 concentrated in Scania, the southernmost county of Sweden. In Denmark a total of 346,363 Golden Plovers was counted. Based on knowledge from uncovered sites, it was estimated that some 380,000 individuals were present. In Poland *c.* 22,000 Golden Plovers were counted, and more than 80% of the birds were found in the northernmost part of the country, near the Baltic Sea. The coverage was not complete and true numbers could be somewhat higher (Meissner pers. com.). In Germany 213,193 Golden Plovers were counted, and a total of 220,000 was estimated. The coverage of this vast country was almost complete. By far the majority was concentrated in the north of the country on sites near the coasts of the Baltic Sea and the Wadden Sea. In the southern parts of Germany, Golden Plover were found in very low numbers or were absent. In the Netherlands, 190,000 Golden Plovers were estimated in a count with a very good coverage of both coastal and inland sites. In the UK 142,983 Golden Plovers were counted. This comprised a near complete count of birds associated with wetlands (65,763) and casual records totalling 120,387. The latter included repeat counts of the same site by the same observer and also some duplication of wetland counts. Coverage of terrestrial sites was probably incomplete and the figure of 143,000 should be regarded as a minimum. In the Republic of Ireland data were submitted for 51 sites and totalled 24,000 birds, which should also be regarded as an under-estimate.

DISCUSSION

Overall, the survey was successful, in counting over 1 million Golden Plovers and achieving generally good coverage in individual countries, especially considering the large number of sites, both coastal as well as inland, that had to be surveyed. It is very important to visit and record numbers from a large number of sites that regularly hold Golden Plovers for a survey such as this. Information from sites with very few or no birds is essential to detect gaps in coverage and to record distribution of this species which will fluctuate in occurrence from year to year.

Changes since earlier surveys

The total counted in the survey is higher than the 1993 survey but since the extent of coverage differed, it is more revealing, at this stage, to look at individual regions.

The counts in Sweden and Poland were the first of their kind. The Swedish count, which achieved good coverage of the likely regions, revealed many more birds than were expected. The departure of birds from south Sweden is dependent on the timing of frosts and since 2003, mild autumns have seen

Table 1. Countries taking part in the coordinated count, their national and regional coordinators and the publication arising from each.

Country/region	Coordinators	Publication
Sweden	Åke Lindström, Martin Green	Green <i>et al.</i> 2004
Denmark	Lars Maltha Rasmussen	Rasmussen 2007
Poland	Włodzimierz Meissner	Meissner <i>et al.</i> 2006
Germany		
Countrywide	Hermann Hötker	Hötker 2005
Niedersachsen	Peter Südbeck, Thorsten Krüger	Krüger 2004
Schleswig-Holstein	Klaus Günther	
The Netherlands	Romke Kleefstra	Kleefstra & Tanger 2004
Republic of Ireland	Olivia Crowe	Rasmussen 2004
United Kingdom	Simon Gillings	Gillings 2006

larger numbers staying later (J. Dänhardt pers. comm.).

The Danish count in 2003 was almost 60% higher than the estimated 240,000 from October 1993, and six times higher than estimates from the late 1970s (63,722: in van Eerden & Keij 1979). Birds were distributed across Denmark similarly to 1993, but the increase in numbers was strongest on the western and eastern coasts of Jutland, and on the island of Funen. The international criterion of 8,000 individuals was met in eight out of 13 Special Protection Areas (SPAs) designated for the species, and on an additional four sites outside SPAs.

The German counts were around 40% lower than previous counts in the Wadden Sea states in 1993. The Dutch total was almost the same as in October 1996 (195,000 Golden Plovers: van der Winden *et al.* 1997) but less than half of the numbers in the 1970s (400,000 Golden Plovers; Jukema *et al.* 2001). A count in November 2003 (November was the usual peak month) estimated 257,000 Golden Plovers, which is again comparable with the November 1993 count (217,000: van der Winden *et al.* 1997) but considerably less than the 405,164 counted in November 1976 (van Eerden & Keij 1979). There are no comparable previous surveys in Britain or Ireland. Long-term counts of Golden Plovers on wetlands in Britain indicate marked changes in numbers, probably as a result of redistribution (Gillings *et al.* 2006). The Republic of Ireland total represents approximately one tenth of the Irish mid-winter population (Rasmussen 2004).

The Continental group

For the Continental group, the 2003 survey had coverage gaps in the Baltic States and potentially to the south of the Netherlands (Belgium, France and the Iberian Peninsula). A

Table 2. Numbers of Golden Plovers counted in October 2003 in NW European countries. For each country the main group to which birds can be ascribed is given. Quality indicates the approximate level of completeness of the count.

Country	Major group	Total	Quality
Sweden	Continental	115,000	Good
Denmark	Continental	380,000	Good
Poland	Continental	22,000	Underestimate
Germany	Continental	220,000	Good
The Netherlands	Continental	180,000	Good
United Kingdom	Atlantic	143,000	Underestimate
Republic of Ireland	Atlantic	24,000	Underestimate
Total counted		1,084,000	–
Total, predominantly of Continental group		917,000	Good
Total, predominantly of Atlantic group		167,000	Major underestimate



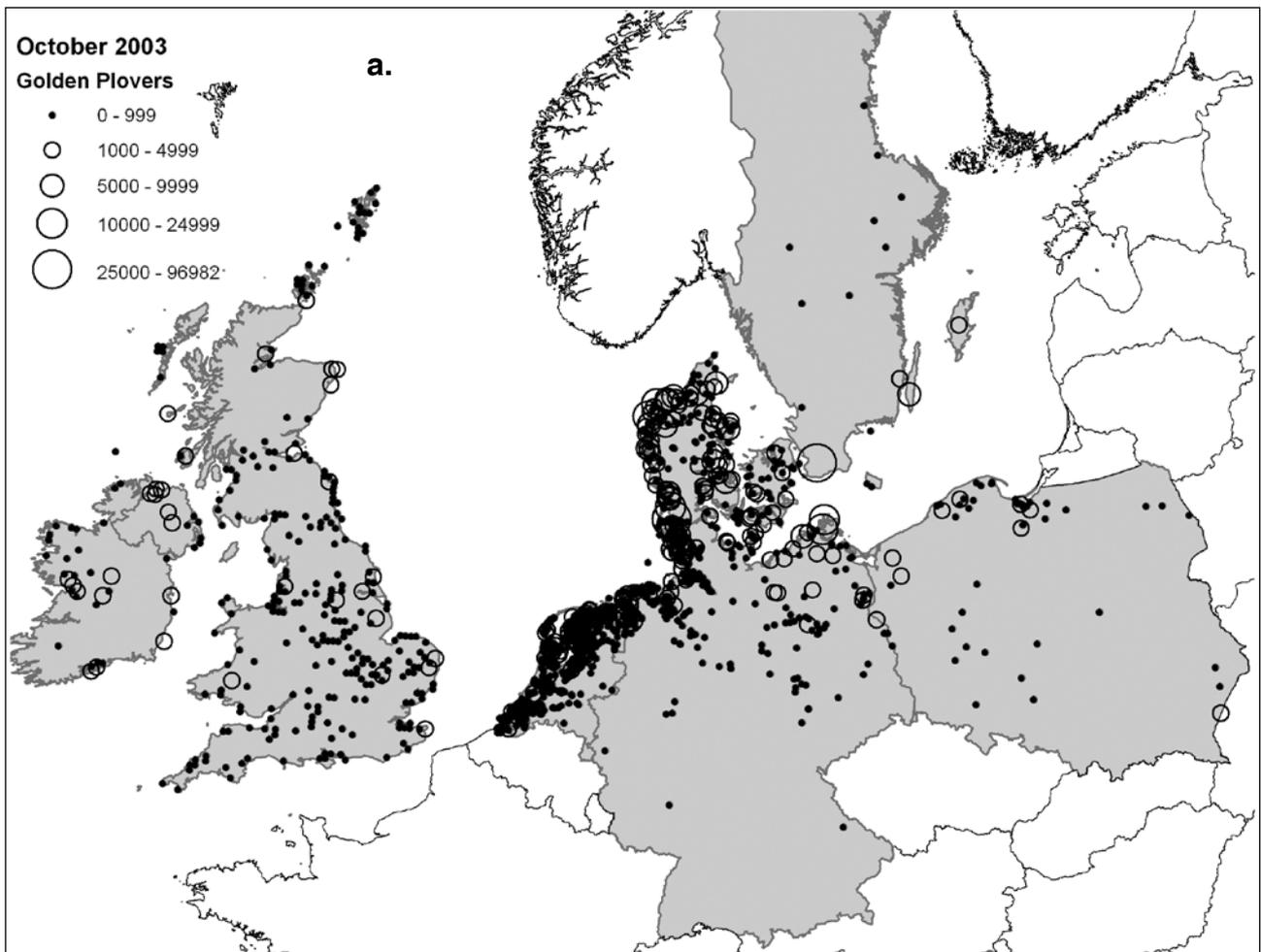
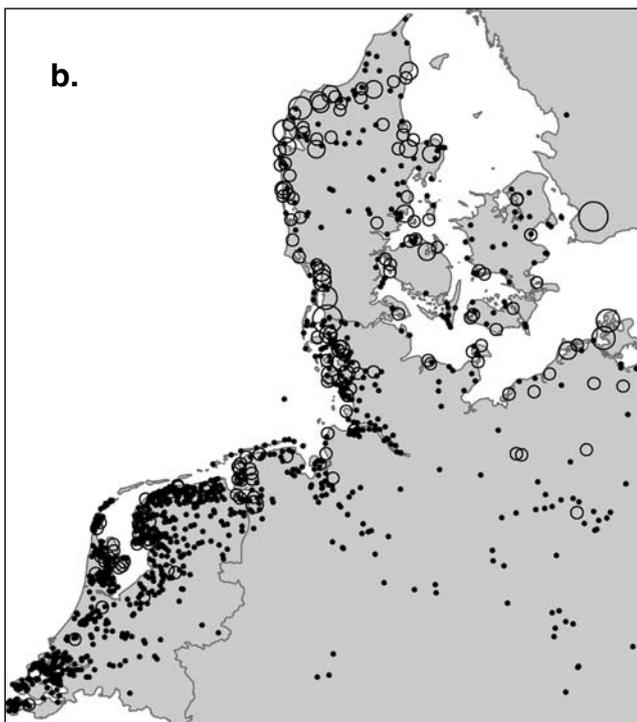


Fig. 1. The distribution of reported flocks* of Eurasian Golden Plovers in NW Europe during October 2003 in a) Europe and b) the area with highest apparent density of flocks.
 (* Symbols in Sweden represent totals for administrative regions rather than individual sites. Shaded countries are those for which counts were organised.)



few counts in some areas of Spain and France indicated that very few Golden Plovers had arrived there by the time of the survey. Furthermore, the distribution in Germany (where most were still in the north), and the very high numbers in Denmark and around the Baltic Sea, suggest that few birds may have been missed in countries south of the Netherlands. It is unclear whether any Continental birds are included in those counted in eastern Britain. Otherwise, the total of 917,000 birds is likely to be a good estimate of the population size for the Continental group.

For comparison, Wetlands International (2006) give 500,000 to 1,000,000 for the NW Europe *P. a. altifrons* population and 140,000–210,000 for the whole *P. a. apricaria* population. From information in Thorup (2006), the breeding population of the Continental group can be estimated at between 226,058 and 374,398 breeding pairs. The wide range mainly stems from uncertainty over the estimates of the Norwegian and Russian populations of *P. a. altifrons*. From these figures, and using the approach of Meininger *et al.* (1995), the Continental group's biogeographic population can be estimated at 873,000 individuals (range 678,000–1,123,000) (assuming an early wintering population consists of breeding adults and one fledgling per pair). The coordinated count estimated 917,000 individuals in the Continental group (Table 1), approximately 40,000 birds higher than the estimate from the



breeding population but well within the range. The figure derived from the October count is probably more reliable and repeatable for the group as a whole but to assess population trends more information would be needed on how the different populations contribute to the total.

Piersma *et al.* (2005) estimated demographic parameters from mark–recapture data of Golden Plovers migrating through the Netherlands (i.e. the Continental group) and found a 4.5 fold increase between c.1963 and the early 1990s but stability thereafter. This is the first survey to achieve sufficiently complete coverage from which to assess future population trends. The initial increase is attributed in part to the decrease in European hunting pressure (Jukema *et al.* 2001, Piersma *et al.* 2005) and the following stability is attributed to density-dependent factors that now limit further population growth. Though the Danish hunting ban in 1983 has not been reflected in survival rates, it may have made Denmark a more attractive staging and moulting area for Golden Plovers. Other explanations for the distribution shift include landscape change and climate. Since the species is highly dependant on farmland outside the breeding season, changes in farming practice could influence the suitability of that habitat. Kleefstra and Tanger (2005) suggest that the decrease in numbers in the Netherlands could be related to intensification in farming which has reduced the area of permanent grassland. However, in Britain at least, Golden Plovers appear to make effective use of arable farmland where pasture is lacking (Gillings *et al.* 2007). Krüger (2004) suggested that habitat suitability is negatively influenced by trees and windfarms obscuring the open landscapes. Gillings *et al.* (2006) found evidence for numbers of Golden Plovers being higher in eastern Britain in milder winters, a pattern similar to the large-scale northerly redistribution shown by many intertidal waders (Austin & Rehfisch 2005, Rehfisch *et al.* 2004).

The Atlantic group

Coverage of the Atlantic group was far from complete. The estimates of 311,000 breeding pairs in the Iceland/Faeroes *P. a. altifrons* population, plus 38,700–59,750 pairs of the *P. a. apricaria* population breeding in Britain (Thorup 2005) suggest a combined passage population for the Atlantic group of c.1,081,000 individuals (range 1,050,000–1,112,000) (assuming breeding adults are accompanied by one fledgling per pair). The October 2003 count of 167,000 represents just 15% of the likely total. Britain and Ireland suffered from serious under-recording due to the scale of the suitable habitat; the paucity of duplicate records from different observers suggests coverage was well below saturation. However, it is unlikely that Britain and Ireland held numbers approaching 1 million individuals by October. Indeed this figure is significantly greater than current estimates of the mid-winter UK totals (Baker *et al.* 2006). It is more likely that many Golden Plovers were still in Iceland where large numbers may remain until November (T.G. Gunnarsson pers. com.).

Golden Plovers associated with wetlands have been regularly counted in Britain since the early 1970s; after a low in the late 1970s/early 1980s, numbers rapidly increased four-fold until the early 1990s, followed by stability (Gillings *et al.* 2006). In Britain, it is suggested that these increases are a response to milder winters, and reflect a greater tendency for Golden Plovers to winter further east (where many are then counted near wetlands) rather than a true population increase, though the similarity with the trends reported by Piersma *et al.* (2005) for the Continental group is notable.

CONCLUSIONS AND FUTURE SURVEYS

We consider the coordinated survey to have been very successful in the main countries occupied by the Continental group, but more work is needed to provide better information for the Atlantic group. The figure of 917,000 individuals for the Continental group is comparable with extrapolations from breeding estimates and will be a useful baseline with which to compare future surveys. Until techniques are found for separating or apportioning flocks into flyway populations, monitoring using the Continental and Atlantic groupings may be the only pragmatic option.

At present, Denmark and Germany hold over 50% of passage Continental group Golden Plovers during October; whilst many are in SPAs, they may need a better network of protected sites. However, if the trend for later northerly staging continues, similar areas of Sweden and the Baltic coast may become extremely important for this species. Following the recommendations of the International Wader Study Group workshop on Golden Plovers it is the intention to repeat the coordinated survey in 2008 and every six years thereafter (Gillings 2005). Better coverage of neighbouring countries (Baltic States, Belgium) is planned for the Continental group. Problems of separating *apricaria* and *altifrons* birds in Britain and Ireland currently limit better estimation of the Atlantic group but autumn counts in Iceland would be beneficial.

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REFERENCES

- Austin, G.E. & Rehfisch, M.M. 2005. Shifting nonbreeding distributions of migratory fauna in relation to climatic change. *Global Change Biology* 11: 31–38.
- Baker, H., Stroud, D.A., Aebischer, N.J., Cranswick, P.A., Gregory, R.D., McSorley, C.A., Noble, D.G. & Rehfisch, M.M. 2006. Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 99: 25–44.
- Busche, G. 1993. Westküstenmitteilungen 1993/76. Rundschriften der Ornithologischen Arbeitsgemeinschaft für Schleswig-Holstein und Hamburg. Report. Heide.
- Flore, B.-O., Frölich, J. & Südbeck, P. 1994. Wegzugbestände des Goldregenpfeiffers *Pluvialis apricaria* in Niedersachsen – Ergebnisse einer landesweiten Synchronzählung am 30./31. Oktober 1993. *Vogelkdl. Ber. Niedersachsen*. 26: 17–26.
- Gillings, S. (compiler) 2005. International workshop on passage and wintering Golden Plovers: workshop summary. *Wader Study Group Bulletin* 108: 5–7.
- Gillings, S., Austin, G.E., Fuller, R.J. & Sutherland, W.J. 2006. Distribution shifts in wintering Golden Plovers *Pluvialis apricaria* and Lapwings *Vanellus vanellus* in Britain. *Bird Study* 53: 274–284.
- Gillings, S., Fuller, R.J. & Sutherland, W.J. 2007. Winter field use and habitat selection by Eurasian Golden Plovers *Pluvialis apricaria* and Northern Lapwings *Vanellus vanellus* on arable farmland. *Ibis* 149: 509–520.
- Green, M., Grönroos, J. & Lindström, Å. 2004. Fler än 100.000 ljunpipare i Sverige i oktober! *Vår Fågelvärld* 63: 24–25.



- Hötter, H.** 2004. Goldregenpfeifer *Pluvialis apricaria* in Deutschland im Oktober 2003. *Vogelwelt* 125: 83–87.
- Jukema, J., Piesma, T., Hulscher, J.B., Bunschoeke, E.J., Koolhaas, A. & Veenstra, A.** 2001. *Goudplevieren en Wilsterflappers: Eeuwenoude fascinatie voor trekvogels*. Utrecht. 272 pp.
- Kleeftra, R & Tanger, D.** 2004. Hoeveel 'steltjes' in het binneland in najaar 2003? *Sovon-Nieuws* jaargang 17. 2004 No 2: 9–10. http://www.sovon.nl/pdf/sovon2004_2.pdf
- Krüger, T.** 2004. Wegzugbestand des Goldregenpfeifers *Pluvialis apricaria* in Niedersachsen: Ergebnisse einer landesweiten Synchronzählung am 11./12. Oktober 2003. *Vogelschutzwarte im Niedersächsischen* 36: 35–52.
- Meininger, P.L., Schekkerman, H. & van Roomen, M.W.J.** 1995. Population estimates and 1% criteria for waterbird species occurring in the Netherlands: suggestions for standardization. *Limosa* 68: 41–48.
- Meissner, W., Sikora, A., Antczak, J. & Guentzel, S.** 2006. Liczebność i rozmieszczenie siewek złotych *Pluvialis apricaria* i czajek *Vanellus vanellus* w Polsce jesienią 2003 roku. *Notatki Ornitologiczne* 47: 11–22.
- Meltofte, H.** 1993. Vadefugletrækket gennem Danmark. *Dansk Orn. Foren. Tidsskr.* 87: 1–180.
- Piersma, T., Beintema, A.J., Davidson, N.C., Munster, O.A.G. & Pienkowski, M.W.** 1987. Wader migration systems in the East Atlantic. *Wader Study Group Bull.* 49 (Supplement 1): 35–56.
- Rasmussen, L.M.** 1994. Landsdækkende optælling af Hjejler *Pluvialis apricaria* i Danmark, oktober 1993. *Dansk Orn. Foren. Tidsskr.* 88: 163–169.
- Rasmussen, L.M.** 2004. Co-ordinated census of Golden Plover in Europe 11–12 October 2003. *I-WeBS Issue* 8. P 5. August 2004. Web site: http://www.birdwatchireland.ie/Portals/0/pdfs/iw_IWeBSNews2004-05.pdf
- Rasmussen, L.M.** 2007. Koordineret optælling af Hjejler *Pluvialis apricaria* i Danmark i oktober 2003. *Dansk Orn. Foren. Tidsskr.* 101: 15–23.
- Rehfishch, M.M., Austin, G.E., Freeman, S.N., Armitage, S.J. & Burton, N.H.K.** 2004. The possible impact of climate change on the future distributions and numbers of waders on Britain's nonestuarine coast. *Ibis* 146 S1: 70–81.
- Spencer, K.G.** 1953. *The Lapwing in Britain: some accounts of its distribution and behaviour, and of its role in dialect, folk-lore and literature*. A. Brown and Sons Ltd, London.
- Thorup, O.** (comp.) 2006. *Breeding waders in Europe*. International Wader Studies 14. International Wader Study Group. UK. 131 pp.
- van Eerden, M. & Keij, P.** 1979. Counting of Golden Plovers *Pluvialis apricaria* on passage: some results of two country-wide surveys in the Netherlands. *Wader Study Group Bulletin* 27: 25–27.
- Wetlands International.** 2006. *Waterbird Population Estimates – 4th edition*. Wetlands International, Wageningen, The Netherlands.



Flock of Golden Plovers in the Wadden Sea area of south-western Denmark, 4 October 2005.
Photo by Lars Maltha Rasmussen

