

# Plugging the gaps – winter studies of Eurasian Golden Plovers and Northern Lapwings

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Autumn migration patterns and the winter distribution of open-habitat inland waders in the East Atlantic Flyway were identified as major gaps in knowledge 16 years ago. For Eurasian Golden Plover and Northern Lapwing in NW Europe, these gaps remain, with relatively few international surveys and ecological studies. Against a background of changing climate and modified farmland landscapes, shifts in distribution and habitat use are becoming evident. There is a need for internationally coordinated surveys of these species in autumn and winter to estimate abundance, identify key sites and migration routes and understand the timing of migration.

## INTRODUCTION

Piersma *et al.* (1987) reviewed the state of knowledge concerning wader populations and migration systems in the East Atlantic Flyway, listing 14 “majors gaps in knowledge”. Two of these were: to determine autumn migration patterns of inland waders and to determine the winter distribution over Europe of open-habitat inland waders (Eurasian Golden Plovers *Pluvialis apricaria*, Northern Lapwings *Vanellus vanellus* and Eurasian Curlews *Numenius arquata*). In many respects these remain important gaps in our knowledge 16 years on.

Estuarine waders have received far more attention than terrestrial waders, perhaps partly because of the multitude of threats historically faced by bird populations in estuarine environments. They are also easier to catch in large numbers than terrestrial waders. Furthermore, Lapwings and Golden Plovers are amongst the most widespread of European waders during the winter (Table 1), with at least 73% of those wintering in Britain located inland (Cayford & Waters 1996). These birds occupy large areas of farmland where they may be difficult to locate and census. Up-to-date information is essential to enable conservation agencies to identify and designate key sites. However, at least in the UK, our knowledge of the distribution and abundance of these species is incomplete, and may even be outdated. The aim of this paper is to summarise current knowledge, to highlight threats and pressures on plovers and hint at how they may be responding. Ultimately, I emphasise the need for coordinated winter surveys and studies of Golden Plovers and Lapwings throughout Europe.

## A CHANGING WORLD

Like their estuarine counterparts, migrant or wintering terrestrial waders such as Golden Plovers and Lapwings are dependent upon the abundance and availability of food resources. Resources and their exploitation are subject to complex interactions between biological (competition), climatic (winter severity), and anthropogenic factors (agricultural regimes, hunting).

The agricultural landscapes of NW Europe and Iberia have seen major changes in the latter part of the 20th century, many of which have potential impacts on terrestrial wintering waders. The preferred food of plovers is earthworms, which are relatively more abundant in pastoral landscapes than in arable and it is the former that traditionally supported large numbers of wintering plovers (Fuller & Lloyd 1981), and locally Curlews and Snipes. During the last 50 years, however, pastoral systems have seen major changes in management (Vickery *et al.* 2001), as well as in extent and distribution (Chamberlain *et al.* 2000). Though the arable land that has replaced pasture may potentially support large numbers of waders, it also has been subject to intense management (Robinson & Sutherland 2002), which may have affected its suitability as wintering habitat. However, it is not all doom and gloom. Whilst 90% of lowland wet grassland has been lost (particularly inland), many remaining areas of coastal wet permanent pasture are now nature reserves or under management agreements that may benefit passage and wintering plovers. It is also possible that intensified sheep grazing may have improved some lowland pastures by reducing sward height.

In addition to availability and quality of habitats, climatic factors are also likely to influence Golden Plover and Lapwing distribution. Both species are known to respond to severe winter weather, typically moving further south or west (Jukema & Hulscher 1988, Kirby & Lack 1993). Forecasts of climate change indicate less severe winters (Hulme *et al.* 2002) suggesting that these movements could become a thing of the past. Climate change may act directly by altering thermoregulatory costs and/or indirectly through the effects of flooding and temperature on prey populations, their availability, and rates of depletion. Climate change may also affect agricultural practices (particularly crop selection and harvest schedules) with uncertain impacts on prey populations and plover foraging behaviour.

## STATUS AND DISTRIBUTION

In the non-breeding season, NW Europe supports Golden Plovers from three biogeographic flyways totalling 1.6–2.0



**Table 1.** Percentage of squares surveyed for winter atlas fieldwork that held various wader species. B & I = Britain and Ireland from Lack (1986), 3862 10-km squares. NL = Netherlands November distribution from SOVON (1987), c.1760 5-km squares. Both provided near complete geographic coverage.

Species	B & I (%)	NL (%)
Eurasian Oystercatcher <i>Haematopus ostralegus</i>	40	37
Ringed Plover <i>Charadrius hiaticula</i>	27	9
Eurasian Golden Plover <i>Pluvialis apricaria</i>	57	50
Grey Plover <i>Pluvialis squatarola</i>	16	19
Lapwing <i>Vanellus vanellus</i>	79	86
Red Knot <i>Calidris canutus</i>	12	11
Common Snipe <i>Gallinago gallinago</i>	76	72
Eurasian Curlew <i>Numenius arquata</i>	57	67
Redshank <i>Tringa totanus</i>	42	22

million individuals (Wetlands International 2002). Just one Lapwing population is identified in the region, comprising 2.8–4.0 million birds (Wetlands International 2002). The Golden Plover's breeding origins are in the tundra and taiga zones of Iceland, Scandinavia and European Russia and the moorlands of Britain and Ireland. The Lapwings originate from more temperate zones throughout Europe. Broadly speaking, during autumn and winter, both Golden Plovers and Lapwings occupy the Netherlands, Germany, Britain and Ireland, France and Iberia, with fewer in the Mediterranean basin, Middle East and North Africa. Areas in the north of this range including Denmark, the Netherlands and Germany are mainly used as stopover or moulting sites in autumn (Cramp & Simmons 1983; Byrkjedal & Thompson 1998).

There are few sources of information for monitoring trends in winter. Interpretation of periodic surveys is hampered by incomplete coverage of the range at any given time and the species' tendency to shift distribution in response to cold weather (e.g. Delany *et al.* 1999). In Great Britain, the Wetland Bird Survey (WeBS) provides monthly counts of the proportion of the population of both species that winters on coastal and inland wetland sites (Musgrove *et al.* 2001). Analyses of data from estuaries shows marked increases on eastern coasts since the 1970s and particularly since the mid-1980s (Fig. 1, S. Gillings, unpublished analysis). Whether these changes are due to redistribution, population increase or habitat shift is unclear.

However, simultaneous to this increase in the east, a parallel decline in numbers in central (R.J. Fuller pers. comm.) and western Britain has occurred. This is particularly evident in the distribution of flocks reported in the British Trust for Ornithology/Joint Nature Conservation Committee Winter Farmland Bird Survey (Fig. 2), which shows a more easterly winter distribution during 1999–2002 compared with the early 1980s (see *Winter Atlas*, Lack 1986). Whilst these results are based on casually collected records and may be biased to some extent by the distribution of observers, records for other farmland species (e.g. thrushes, finches, buntings, shown in grey in Fig. 2) indicate geographic coverage was good. Other shifts in distribution are evident from coordinated counts showing a decrease in the Netherlands and increases (or birds remaining later) in Denmark and northern Germany (van der Winden *et al.* 1997). Similar distribution changes may be occurring further south, for example in Portugal (D. Leitao pers. comm.), but to what extent is unclear.

Distribution changes have repercussions for conservation. The new sites that become occupied may need protection. However, sites that are abandoned may still need to be con-

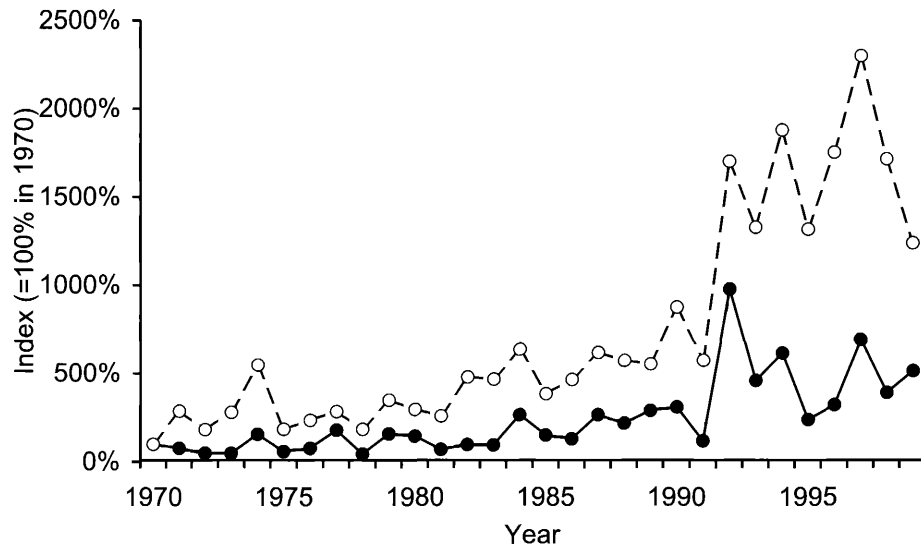
served as refuges during occasional severe winter weather. Furthermore, for these wide-ranging species for which site-based conservation may be less appropriate, it is particularly important to have knowledge of the effects of land-use change across large areas of the countryside. As a result of the changes in pasture and plover distribution mentioned above, a high proportion of Golden Plovers and Lapwings wintering in Britain now occupies the predominantly arable zone of Britain where there have been very few ecological studies (Mason & MacDonald 1999; S. Gillings, unpublished data) on which management recommendations might be based.

## MIGRATION STUDIES

Understanding movements requires coordinated counting and ringing studies. Excellent work, much of it by amateur ornithologists, during autumn and early winter in Denmark, Germany and the Netherlands has shed important light on understanding movements of Golden Plovers in these countries (Jukema *et al.* 2001). However, movements to (and within) countries further south and west later in the winter are less well understood. In the Netherlands, large numbers of birds are caught annually by traditional techniques (Jukema *et al.* 2001) providing much information on movements and demography. Interpretation of these ring-recoveries is complicated because high reporting rates in France and Iberia may have been due to high hunting pressure, whereas low reporting rates in Britain may be due to difficulties of catching adult plovers. Between 1909 and 2000, only 5,837 Golden Plovers were ringed in Britain and Ireland of which only 50% were fully grown (Fig. 3). For Lapwings, the proportion of full-grown birds ringed is much smaller: only 6% of total of 214,897 birds (Fig. 3). Furthermore, it is likely that a high proportion of these were caught as breeding adults rather than in winter. By contrast, in the Netherlands, at least 1,000–2,000 Golden Plovers, all fully grown, have been captured annually since the mid-1970s.

To better understand the dynamics of Golden Plover and Lapwing movements requires targeted catching and ringing of full-grown birds during autumn and winter especially in Britain and Ireland, but ideally also in Iceland, France and Iberia. In many countries, plovers are regularly observed by birdwatchers and probably more use could be made of colour-marking to understand movements as has worked so successfully for other species, such as Black-tailed Godwits *Limosa limosa* (Gill *et al.* 2001).





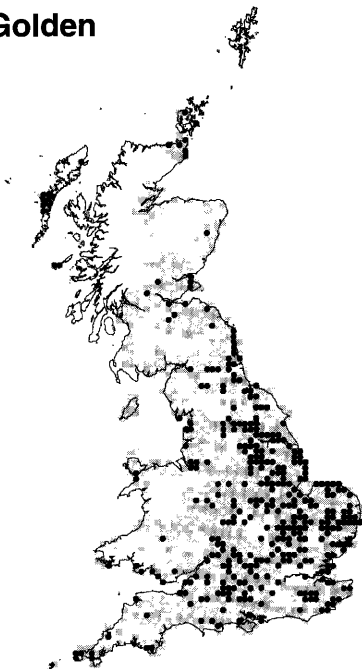
**Fig. 1.** Trends in the numbers of Eurasian Golden Plovers (open circles) and Northern Lapwings (solid circles) on east coast estuaries of Britain in December between 1970/71 and 1999/2000. Data from WeBS, index set to 100% in 1970/71 (S. Gillings unpublished analysis).

## THE FUTURE

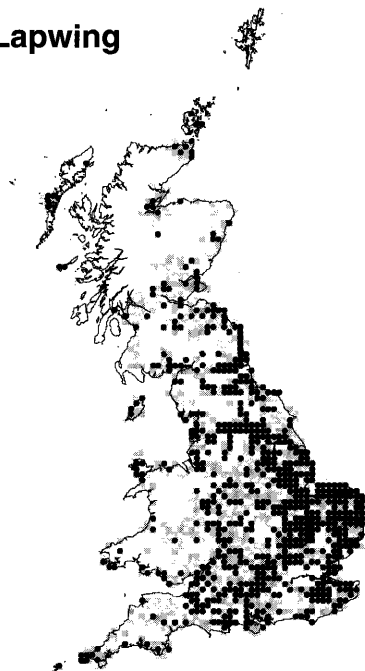
In a changing world, our knowledge of the status and ecology of migrating and wintering Golden Plovers and Lapwings may be incomplete and potentially outdated. This is an untenable situation if we are to meet future conservation challenges. The Golden Plover is listed in Annex I of the EC Birds Directive (79/409/EEC). This means that Member States have a duty to classify their most suitable wintering grounds as Special Protection Areas (SPAs). Currently only 22% of the wintering population in Great Britain and 6% of

the population in Ireland is found in SPAs (4% of the biogeographic population; Stroud *et al.* 2001). The majority of these sites are coastal and none include areas of intensive agriculture where much of the remaining population occurs. Habitat protection will only be possible with updated information on abundance and distribution. Even if site-based conservation measures are deemed unsuitable for terrestrial plovers away from wetlands, an equivalent level of new information will be required to facilitate their conservation in the wider countryside.

## Eurasian Golden Plover

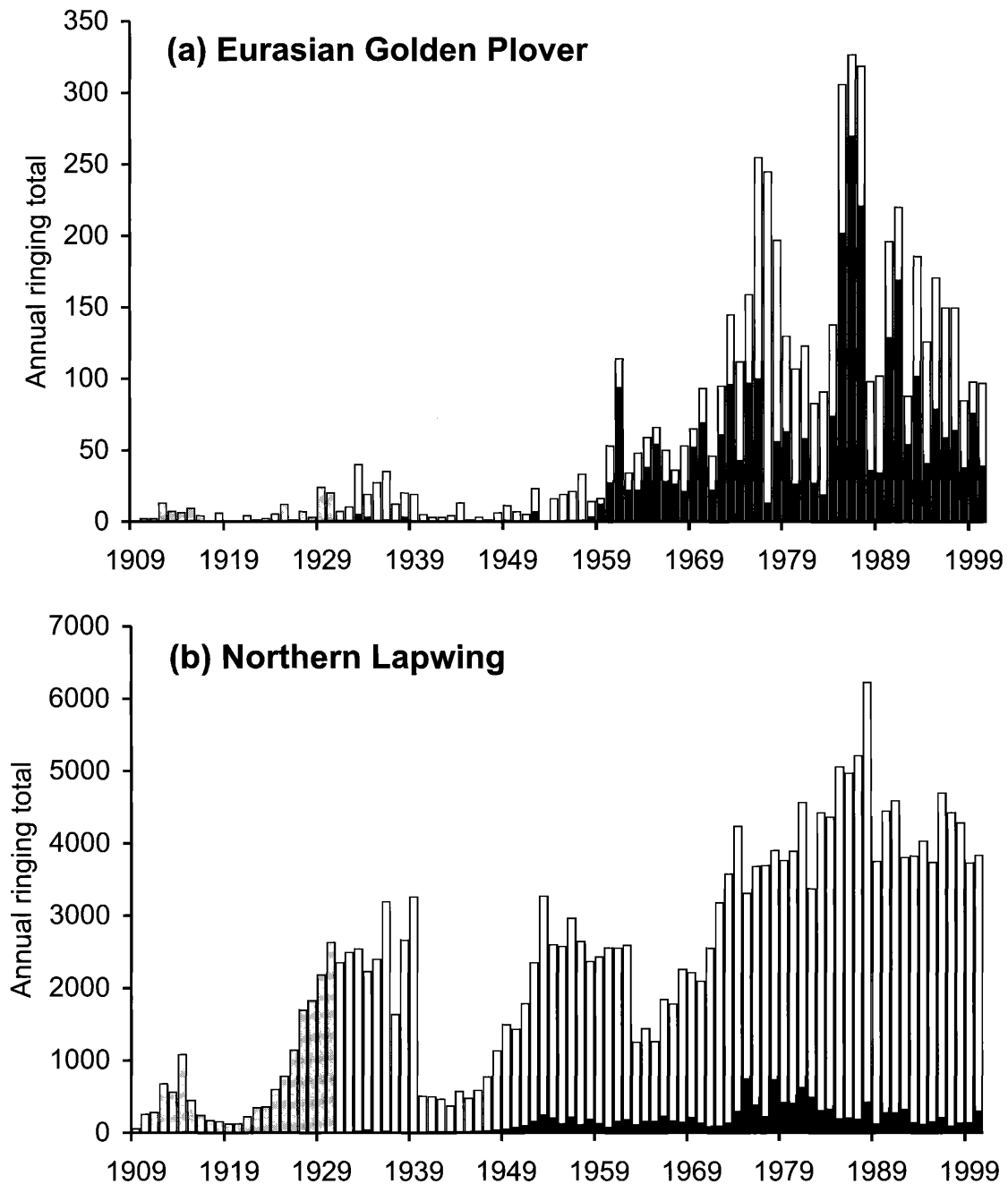


## Northern Lapwing



**Fig. 2.** The distribution of Eurasian Golden Plovers and Northern Lapwings in Britain during November–February 1999/2000 to 2001/2002 based on casual records of flocks of 100 or more individuals (single species or both combined) contributed for the British Trust for Ornithology/Joint Nature Conservation Committee Winter Farmland Bird Survey. In grey is shown the distribution of 10-km squares from which records of all other species were received – i.e. approximating to coverage. Note that only lowland farmland was surveyed, hence some white gaps represent the uplands of Wales, north England and Scotland.





**Fig. 3.** Annual British & Irish ringing totals for (a) Eurasian Golden Plover and (b) Northern Lapwing from 1909 to 2000. Bars are divided into totals of the number of fully grown birds ringed (black section) and the number of pulli ringed (white section). Note that prior to 1931 the age at ringing was not available (grey bars).

### SO WHAT IS NEEDED? SOME THOUGHTS AND QUESTIONS

The gaps in knowledge, highlighted at the beginning of this article, still exist in several countries, and much could be gained from a coordinated survey of Golden Plovers and Lapwings throughout Europe. This should be augmented by ringing and ecological studies aimed at answering the following questions:

1. How many Golden Plovers and Lapwings are there in W Europe during migration and in winter?
2. How many occur in each country at different times of the

non-breeding season and where are the most important sites?

3. What are the migration routes?
4. What is the timing of migratory movements across the non-breeding range, and what influences this pattern?

Any survey designed to answer these questions would need to be coordinated with more or less synchronised counts in different countries to minimise double-counting or missing flocks for these highly mobile species. Owing to the latitudinal range of the species through autumn and winter the survey period would have to be lengthy. It would need to start in October to record the main moulting and passage sites



in Iceland, Britain, Sweden, Denmark and Germany. Counts would have to be made in November and December when numbers peak in the Netherlands and Britain, and continue into January and February as it seems that birds then move into Ireland, France, Spain, Portugal and Italy. Would it be possible for monthly surveys to be coordinated across the whole winter range? These synchronised counts would provide population estimates without double counting and would record the early arrivals in the south or hangers-on in the north? Such base-line information would be invaluable should distributions change further in the future. Repeating surveys in each month would also provide movement and timing information.

What are the logistics of surveying in different countries? The Netherlands has coordinated near-complete censuses in the past (e.g. van der Winden 1997), but this is almost certainly impossible in many other countries. How should surveys be carried out in those places? In Britain, a combined approach of counts on known important wetland, coastal and terrestrial sites plus a sample survey of other areas may be the only way to achieve reasonably good coverage and accuracy.

I invite comments from other people who are interested in these problems, particularly concerning the need for a survey of passage and wintering terrestrial plovers and the ways in which one might be coordinated and designed, and the timescale necessary.

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