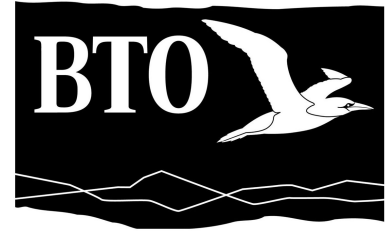


# Breeding Plover Survey for Common Standards Monitoring in Scotland, 2007: assessments of changes in numbers of breeding waders on SPAs designated for breeding Ringed Plovers *Charadrius hiaticula*

Conway, G.J., Burton, N.H.K. & Fuller, R.J.





**BTO Research Report No. 514**

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October 2008

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## EXECUTIVE SUMMARY

1. In 2007, UK-wide surveys of breeding Ringed Plover *Charadrius hiaticula* and Little Ringed Plover *Charadrius dubius* were undertaken, the first national surveys for these species since 1984. Since then, declines had been reported in some local populations of Ringed Plover – notably in the stronghold of the Outer Hebrides where several waders have suffered greatly from egg predation by introduced Hedgehogs *Erinaceus europaeus*.
2. This report provides an update on the current population sizes of Ringed Plover and other wader species in four Scottish Special Protection Areas (SPAs) designated for Ringed Plover. Population changes for feature wader species are calculated using recent previous estimates for the SPAs taken from the UK SPA Review (Stroud *et al.* 2001).
3. Breeding numbers of Ringed Plovers and other feature wader species are provided for four Scottish SPAs – North Uist Machair and Islands and South Uist Machair and Lochs in the Outer Hebrides, Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast) and Papa Stour in Shetland – following surveys in spring 2007 (Table 2.1).
4. Declines in breeding Ringed Plover numbers were noted on all four SPAs. On Papa Stour, numbers have decreased by 22% since those published in the SPA Review; numbers on the other SPAs showed smaller decreases (3-6%; over various timescales).
5. Oystercatcher *Haematopus ostralegus* breeding numbers have increased by 9% and 20% respectively on the South Uist and Tiree SPAs since previous published estimates, but have decreased by 5% on the North Uist SPA.
6. Numbers of breeding Dunlin *Calidris alpina* have declined marginally (by 6 and 7% respectively) on the North and South Uist SPAs since previous published estimates. Larger declines were reported over North Uist, Benbecula and South Uist as a whole since a previous survey in 2000.
7. Redshank *Tringa totanus* breeding numbers have increased by 8% on the North and South Uist SPAs since previous published estimates, reflecting increases on North Uist, Benbecula and South Uist as a whole since 2000.
8. Numbers of Lapwing *Vanellus vanellus* and Snipe *Gallinago gallinago* – neither features of the SPAs surveyed – are also summarised.



## 1. INTRODUCTION AND METHODS

As part of the national surveys for Ringed Plover *Charadrius hiaticula* and Little Ringed Plover *Charadrius dubius* undertaken in 2007, four Scottish Special Protection Areas (SPAs) designated for Ringed Plover were surveyed. These were North Uist Machair and Islands (4876 ha) and South Uist Machair and Lochs (5017 ha) in the Outer Hebrides, Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast) (1939 ha) and Papa Stour (569 ha) in Shetland. In addition, all other breeding wader species, some also features of the above SPAs, were surveyed.

A single visit was made to each site between 23 May and 06 June 2007, following the methods of Reed and Fuller (1983). Further details of the methodology are given in Fuller *et al.* (1986) and Fuller and Jackson (1999). All visits were made on mild, dry days with little wind, starting at least one hour after sunrise and finishing one hour before sunset.

For Tiree and Papa Stour a 1:7,500 scale map of each tetrad (2 km x 2 km square) was provided onto which the location of each bird, their sex, if determined, and activity was plotted. For the Uists, birds were plotted on 1:10,000 scale maps, covering the SPAs and a substantial extra area of suitable breeding habitat (including Benbecula). Here, virtually the entire area of 'machair' was covered, together with areas of adjacent 'blackland' allowing comparisons with previous published surveys (Jackson *et al.* 2004).

Observers were required to survey all areas of potentially suitable breeding habitat within the SPA boundary, defined as areas with bare or sparsely vegetated ground near water, on the coast or inland, with landowners' permission, if off public rights of way.

Surveys aimed to determine the number of breeding pairs of each wader species present in each SPA and, for the Outer Hebrides, other areas surveyed. For Ringed Plover, and also Oystercatcher *Haematopus ostralegus*, Lapwing *Vanellus vanellus*, Dunlin *Calidris alpina* and Redshank *Tringa totanus*, all individuals recorded were considered to be breeding. For Snipe *Gallinago gallinago*, the counting unit was 'displaying males'. Birds in flocks, not exhibiting any behaviour indicative of breeding (e.g. alarm calling), were excluded from the totals. For Dunlin and Redshank all individuals encountered on intertidal habitats were excluded from breeding totals, unless suitable breeding habitat was immediately adjacent.

Population estimates for feature wader species on the four SPAs in 2007 are compared to recent previous estimates for the SPAs taken from the UK SPA Review (Stroud *et al.* 2001). Totals for the whole of the islands of Benbecula, North Uist and South Uist are also compared with results from the previous comprehensive survey in 2000 (Jackson *et al.* 2004).

It is important to interpret the population changes cautiously as the survey method used cannot be reliably used to detect small changes in populations. Fuller and Jackson (1999) thus make the following conclusions in interpreting change:

- (1) that changes of less than 20% for Lapwing, Dunlin and Redshank could well be due to variation in factors such as annual variation in timing of breeding which will affect detectability at the time of the surveys;
- (2) that although Oystercatcher and Ringed Plover may be less susceptible to such sources of variation in detectability, it seems sensible to adopt a similar threshold for these species;
- (3) that Snipe are not surveyed well by this method and thus conclusions concerning population change should not be drawn for this species.



## 2. RESULTS

Complete coverage was obtained for both the South Uist Machair and Lochs and Papa Stour SPAs. All of the North Uist Machair and Islands SPA was also covered with the exception of the island of Pabbay for which there were access difficulties. Habitat used by breeding Ringed Plover was fully covered on the Tirie Wetlands and Coast SPA network; however, some other habitat used by Dunlin and Redshank was not covered – a list of one-km squares not covered is noted below in Table 2.1.

The numbers of breeding pairs of Ringed Plover, as well as Oystercatcher, Lapwing, Dunlin, Snipe and Redshank recorded on each SPA in 2007, and changes since the previous estimates for the SPAs (Stroud *et al.* 2001), are shown in Table 2.1.

Declines in the numbers of breeding Ringed Plover were noted on all four SPAs, with the largest decrease being on Papa Stour (22%).

Oystercatcher breeding numbers have increased by 9% and 20% respectively on the South Uist and Tirie SPAs since previous published estimates, but decreased by 5% on the North Uist SPA.

Numbers of breeding Dunlin have declined marginally (by 6 and 7% respectively) on the North and South Uist SPAs since previous published estimates, whereas those of Redshank have increased slightly (by 8%). Note that the apparent changes in numbers of Dunlin and Redshank on Tirie may be artefacts due to coverage (see above).

A broader comparison of change in the number of breeding pairs of waders, including areas outside the SPA network, on the island systems of North Uist, Benbecula and South Uist between 2000 and 2007, is shown in Table 2.2. These population estimates are based on virtually the entire area of machair, together with some tracts of adjacent blackland. A small number of areas surveyed in 2007 (these are mainly in North Uist) have been omitted from the estimates because they were not surveyed in 2000. Therefore, the totals for the two years are directly comparable.

Ringed Plover numbers were stable on South Uist, but increased on North Uist west and Baleshare and possibly Benbecula. On North Uist north, Vallay and Berneray, however, they decreased.

Oystercatcher numbers increased on South Uist by 20%, but decreased elsewhere by 21-27%. In contrast to Ringed Plover, Lapwing numbers decreased on North Uist west and Baleshare but increased elsewhere. Dunlin and Snipe numbers have declined in all areas and by up to 54% and 70% respectively. In contrast, Redshank numbers have increased in all four areas, though only marginally on North Uist west and Baleshare.

Following the precautionary approach to assessing change proposed in Fuller and Jackson (1999), it can be broadly concluded that numbers of Redshank have generally increased while those of Dunlin have continued to decline. Information on changes across the same region between 1983 and 2000 are given in Jackson *et al.* (2004).

**Table 2.1** Breeding wader numbers (pairs or displaying males for Snipe) on four Scottish SPAs (designated for Ringed Plover) in 2007 and percentage changes (% chg) since previous surveys (prev). A = North Uist Machair and Islands, B = South Uist Machair and Lochs, C = Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast) and D = Papa Stour. Superscripts identify the year(s) of previous surveys.

SPA	Oystercatcher			Ringed Plover			Lapwing			Dunlin			Snipe			Redshank		
	2007	prev	% chg	2007	prev	% chg	2007	prev	% chg	2007	prev	% chg	2007	prev	% chg	2007	prev	% chg
A	599	630 <sup>1</sup>	-5	225	240 <sup>2</sup>	-6	654	-	-	244	260 <sup>3</sup>	-6	58	-	-	509	470 <sup>3</sup>	+8
B	629	577 <sup>3</sup>	+9	375	393 <sup>4</sup>	-5	979	-	-	332	357 <sup>4</sup>	-7	63	-	-	379	350 <sup>3</sup>	+8
C	192	160 <sup>3</sup>	+20	156	160 <sup>5</sup>	-3	59	-	-	72*	125 <sup>3</sup>	-42*	115	-	-	65*	140 <sup>3</sup>	-54*
D	65	-	-	69	89 <sup>6</sup>	-22	10	-	-	10	-	-	0	-	-	2	-	-

\* Breeding habitats for Dunlin and Redshank on the SPA were incompletely covered (one-km squares not covered: NL9541, NL9542, NL9545, NL9641, NL9642, NL9643, NL9644, NL9645, NL9741, NL9744, NL9745, NL9844 & NL9845).

Year of previous population estimate (see Stroud *et al.* 2001):

- <sup>1</sup> 1993-1997
- <sup>2</sup> 1993-1995
- <sup>3</sup> 1994, 1995
- <sup>4</sup> 1995
- <sup>5</sup> 1998
- <sup>6</sup> no date.

**Table 2.2** Changes in breeding wader numbers (pairs or displaying males for Snipe) on the islands of North Uist, Benbecula and South Uist between 2000 and 2007. The breeding wader totals in 2000, along with areas covered, were reported in Jackson et al. (2004).

Location	Species	2007	2000	% change
North Uist west and Baleshare	Oystercatcher	757	1007	-25
	Ringed Plover	228	185	+23
	Lapwing	719	949	-24
	Dunlin	233	360	-35
	Snipe	67	138	-51
	Redshank	602	589	+2
North Uist north, Vallay and Berneray	Oystercatcher	344	436	-21
	Ringed Plover	159	200	-21
	Lapwing	476	458	+4
	Dunlin	111	243	-54
	Snipe	6	20	-70
	Redshank	258	180	+43
Benbecula	Oystercatcher	212	291	-27
	Ringed Plover	114	99	+15
	Lapwing	316	278	+14
	Dunlin	126	201	-37
	Snipe	67	75	-11
	Redshank	276	196	+41
South Uist	Oystercatcher	1021	854	+20
	Ringed Plover	464	486	-5
	Lapwing	1639	1031	+59
	Dunlin	383	702	-45
	Snipe	130	208	-37
	Redshank	819	573	+43
TOTAL	Oystercatcher	2334	2588	-10
	Ringed Plover	965	970	-1
	Lapwing	3150	2716	+16
	Dunlin	853	1506	-43
	Snipe	270	441	-39
	Redshank	1955	1538	+27



### 3. DISCUSSION

Populations of Ringed Plover have declined on all four Scottish SPAs surveyed in 2007 since earlier estimates published in the UK SPA Review (Stroud *et al.* 2001), though except on Papa Stour where a 22% decline occurred, most changes were small.

Oystercatcher breeding numbers have increased on the Tiree and South Uist SPAs, but decreased on the North Uist SPA, the changes on the latter two sites reflecting wider changes in South and North Uist as a whole.

Numbers of breeding Dunlin declined by 6 and 7% on the North and South Uist SPAs, though these changes are certainly within the margins of survey error. Larger declines were reported over North Uist, Benbecula and South Uist as a whole since a previous survey in 2000. No valid comparison could be made for Tiree as coverage of suitable habitat for this species was incomplete.

Redshank numbers have increased by 8% on the North and South Uist SPAs, reflecting increases of North Uist, Benbecula and South Uist as a whole since 2000. Again, no valid comparison could be made for Tiree as coverage of suitable habitat for this species was incomplete.

Survey results from the national Ringed Plover survey will be used to generate new population estimates, from which it will be possible to assess wider population changes. This will allow the declines apparent on the four SPAs for which results are reported here to be put in context and help in evaluating possible causes.

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Front cover: Ringed Plover nest, by Hugh Insley / BTO. Back cover: Ringed Plover distraction display, by Edmund Fellowes / BTO

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