

BTO/WSG WINTER SHOREBIRD COUNT 1984-1985

Members who attended the WSG meeting at Haamstede, the Netherlands, in November 1983 will have heard about the forthcoming survey of waders on the open coast of Britain. The plans for this project are now well under way, and fieldwork will be carried out in December 1984 and January 1985. A full description of the project and methods are given in the enclosed loose insert (an off-print from *BTO News* No. 134, September 1984). Help is required, particularly in remote areas. If you would like to take part (friends from outside Britain are also welcome), please contact the local organiser(s) (see insert) for the area in which you are interested. Some funds may be available

for expeditions to remote areas. Please contact Mike Moser, British Trust for Ornithology, Beech Grove, Tring, Herts. HP23 5NR, U.K.

Stop Press. Generous funding for the winter shorebird count has now been received from EARTHWATCH (The American Center for Field Research). This will allow us to make a survey of the entire coastline of Britain and Northern Ireland. 3 teams of 12 ornithologists each (half from America and half from Britain) will be organised to cover the coasts of western Scotland. Each team will spend 2 weeks on the coast. Anyone interested in participating should contact Mike Moser at the address above.

THE VALUE OF SINGLE COUNTS OF WADERS ON ROCKY SHORES

by R.W. Summers, C.J. Corse, E.R. Meek, P. Moore and M. Nicoll

INTRODUCTION

Ever since the first systematic counts were made on rocky shores in Scotland (Atkinson 1971, Summers *et al.* 1975), it was recognised that what was counted at low tide on one day on a stretch of coast need not be an accurate representation of the population wintering on that shore. Instead, the counts gave a broad indication of the winter situation, although for certain species like the Purple Sandpiper *Calidris maritima*, which shows site tenacity (Atkinson *et al.* 1981) and is restricted to rocky shores, a single count may be representative (Summers *et al.* 1975).

With the advent of the Winter Shorebird Count this winter (see elsewhere in this *Bulletin* and *BTO News* No. 134) it was felt that some assessment of the value of a single count in winter, and at low tide, on a stretch of rocky shore should be made. da Prato & da Prato (1979a, b) have already established that waders on rocky shores are best counted at low tide.

Several factors can affect the counts. The counts may be imprecise (poor repeatability) or inaccurate (not representative of what is there) due to the limitations of observers. Note that counts can be precise yet inaccurate. Furthermore, movements by birds during low tide within the rocky shore habitat, or between rocky shores and other habitats, may make it difficult to describe what is present on that day, and movements over a period of days or weeks may make it difficult to describe the overall winter situation. It is difficult to tease out the effects of each of these factors separately, but one can go some way to checking the value of doing repeat counts on a section of coastline.

METHODS

Counts were carried out along two sections of rocky shore in Scotland. One was in Orkney (5 km from Point of Ayre to the castle Deerness) and one in Angus (3.5 km from Needle E'e to Arbroath bathing pool) at "low tide" (within three hours before and after low tide). Observers walked the length of each section, staying close to the water's edge where waders concentrated. Only those birds which were

walked past, or which flew behind or inland, were counted.

Precision, accuracy, and the effect of movements by birds during low tide were examined by having two observers surveying the same section of coast on the same day, either counting together, or from opposite ends of the section. The effect of day to day variations in numbers was examined by counting the birds on the same section one or two days after the first count.

RESULTS

Counts A and B in Orkney (Table 1) show the totals from two observers counting together. Quite large differences (A-B) occurred for Redshanks *Tringa totanus* and Curlews *Numenius arquata*. The difference in the number of Redshanks can be attributed to a flock which flew out of an adjacent field and was seen by only one observer. Counts C and D (Table 1) were done simultaneously from opposite ends of the shore. Big differences (C-D) occurred with Ringed Plovers *Charadrius hiaticula* and Redshanks. Ringed Plovers occur at all shore levels and have a feeding technique which involves standing motionless for short periods. Thus it is easy to miss plovers when surveying from near the water's edge.

No counts were done by two observers together in Angus. A-B and C-D in Table 2 show the differences when the section was walked simultaneously from opposite ends on two consecutive days. Generally, there was good agreement within a pair of counts. Largest percentage differences occurred with those species where only small numbers were counted. There was a tendency for observers to flush birds along the shore, thus bunching them. Eventually, large groups of mixed species flew back, making counting difficult, and leading to imprecise and inaccurate results.

By counting the section from opposite ends, one half of each observer's section had already been disturbed by the other counter. Most species remained on the same section of shore but Golden Plovers *Pluvialis apricaria* tended to fly inland when flushed. Therefore for this

Table 1. Repeat counts of waders between Point of Ayre and the Castle, Deerness (Orkney) by two observers on 24 February 1984 (counts A and B) and 26 February (counts C and D). Counts A and C were carried out by one observer, and B and D by the other.

	Counts				Percentage differences between two counts*			
	A	B	C	D	A-B	C-D	A-C	B-D
Oystercatcher	24	19	75	80	20.8	6.3	68.0	76.3
Ringed Plover	12	11	27	1	8.3	96.3	55.6	90.9
Lapwing	64	82	162	100	22.0	38.3	60.5	18.0
Turnstone	76	78	96	73	2.6	24.0	20.8	6.4
Purple Sandpiper	130	150	152	191	13.3	20.4	14.5	21.5
Redshank	47	22	44	83	53.2	47.0	6.8	73.5
Curlew	2	14	160	122	85.7	23.8	98.8	88.5

* the difference expressed as a percentage of the larger count.

Table 2. Repeat counts of waders between Arbroath bathing pool and Needle E'e (Angus) by three observers on 10 March 1984 (counts A and B) and 11 March (counts C and D). Counts on each day were started from opposite ends of the section. Counts B and D were carried out by the same person.

	Counts				Percentage difference between two counts		
	A	B	C	D	A-B	C-D	B-D
Oystercatcher	141	163	98	100	13.5	2.0	38.7
Ringed Plover	3	3		2	0.0		33.3
Golden Plover	5	1	31		80.0		
Turnstone	198	156	158	170	21.2	7.1	8.2
Purple Sandpiper	224	216	120	153	3.6	21.6	29.2
Dunlin	28	38	5	20	26.3	75.0	47.4
Redshank	127	130	90	126	2.3	28.6	3.1
Curlew	14	20	15	28	30.0	46.4	28.6
Knot	79	105	200	230	24.8	13.0	54.4

species precision of counting cannot be checked by this method. In Orkney, where observers counted together, and from opposite ends, the percentage differences for those species which tend to use inland fields (Oystercatcher *Haematopus ostralegus*, Lapwing *Vanellus vanellus*, Redshank and Curlew) were not consistently greater for the latter method (C-D in Table 1) compared with the former (A-B in Table 1). In fact, bigger percentage differences tended to occur when counting together. Therefore disturbance by the other observer was not a major problem.

There is an indication that observer experience can affect precision, since in Angus count C (inexperienced observer) tended to be lower than D (experienced observer) (Table 2). A and B were carried out by experienced observers and there was no trend for one set of these counts to be higher than the other.

Some of the counts in Tables 1 and 2 were very close (precise estimates), for example counts of Redshanks and Purple Sandpipers by A and B in Table 2. However it is difficult to

establish how accurate these counts were. To a certain extent this can be examined by subdividing the section of coast and comparing the sub-totals for the two observers. This is done for the precise counts of Redshanks and Purple Sandpipers in Table 3.

It can be seen that the sub-totals for Redshanks did not match, whereas there was good agreement for Purple Sandpipers. It was probably due to chance that one observer missed some Redshanks in sub-section 1, while the other observer missed a similar number in sub-section 2. In this case there were no observed movements by Redshanks between sub-sections. Thus a more accurate estimate would be 159 obtained by adding the higher count for each sub-section in Table 3.

Table 1 (columns A-C and B-D) and Table 2 (B-D) show the size of differences in counts made one and two days apart. In Orkney there was a very big increase in the numbers of Oystercatchers, Redshanks, Lapwings and Curlews on the second day. All these species use grass fields as well as the rocky shore for feeding. Only Turnstones

Table 3. Repeat counts (A and B) of Redshanks and Purple Sandpipers in Angus, where the total has been subdivided for three sections of the shore. Count letters as in Table 2.

	Subsection						Total	
	1		2		3			
	A	B	A	B	A	B	A	B
Purple Sandpiper	137	129	18	26	69	61	224	216
Redshank	40	19	19	51	68	60	127	130

Arenaria interpres and Purple Sandpipers showed little change in numbers, amounting to the variation one might expect between observers counting on the same day (Table 1). In Angus only one observer counted on both days (B-D Table 2). Numbers of Oystercatchers and Purple Sandpipers fell whilst those of Knots *Calidris canutus* increased. The Oystercatchers may have gone to nearby fields, but the change in numbers of Purple Sandpipers and Knots was more than would be expected from errors in counting, so must be due to movements from neighbouring shores.

CONCLUSIONS

Repeat counts of waders along short sections of rocky coast in Orkney and Angus have shown and measured the extent of the problem in attempting to obtain estimates of the numbers of waders on rocky shores at low tide. Imprecise and inaccurate results can result if waders occur at shore levels where the observer is not walking, if waders are bunched into large mixed-species flocks, and if an observer is inexperienced. Also several species (Oystercatcher, Lapwing, Golden Plover, Redshank and Curlew) alternate between rocky shores and fields, making it difficult to get representative data. This problem has been noted before (da Prato & da Prato 1979a; Summers & Buxton 1983). Day to day, and presumably week to week, variations in numbers are also greatest in those species which use inland fields, but can affect species like the Purple Sandpiper which is restricted to the shore. This paper has tended to emphasise some of the problems associated with counting rocky shores. However, day to day variations

associated with short-distance movements along the shore can be overcome by surveying a long section of coastline, preferably by a team working simultaneously. Standardised techniques should yield comparable results from different sections of coastline.

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LATE RINGING TOTALS FOR 1983

The following ringing totals were received too late for inclusion in the listing in *Bulletin* 40. This listing covers the period January - December 1983, as did that in *Bulletin* 40. Totals in brackets are pulli (chicks), where these were reported separately from fully-grown birds.

		A	B	C	D
Oystercatcher	<i>Haematopus ostralegus</i>		1		
Little Ringed Plover	<i>Charadrius dubius</i>		19(1)		
Ringed Plover	<i>Charadrius hiaticula</i>	(1)	2		
Kentish Plover	<i>Charadrius alexandrinus</i>	6(1)			
Grey Plover	<i>Pluvialis squatarola</i>			23	
Lapwing	<i>Vanellus vanellus</i>		41(52)		
Knot	<i>Calidris canutus</i>			3	
Little Stint	<i>Calidris minuta</i>		13		
Temminck's Stint	<i>Calidris temminckii</i>		1		
Curlew Sandpiper	<i>Calidris ferruginea</i>		2		
Dunlin	<i>Calidris alpina</i>	28(21)	11	11	
Ruff	<i>Philomachus pugnax</i>		48	1	
Common Snipe	<i>Gallinago gallinago</i>		147	1	
Black-tailed Godwit	<i>Limosa limosa</i>		28	51	
Bar-tailed Godwit	<i>Limosa lapponica</i>			1	
Whimbrel	<i>Numenius phaeopus</i>		1		
Curlew	<i>Numenius arquata</i>			8	
Spotted Redshank	<i>Tringa erythropus</i>		12		
Redshank	<i>Tringa totanus</i>		7(1)	14	
Greenshank	<i>Tringa nebularia</i>		49		
Green Sandpiper	<i>Tringa ochropus</i>		25		
Wood Sandpiper	<i>Tringa glareola</i>		27		
Common Sandpiper	<i>Actitis hypoleucos</i>		22		
Spotted Sandpiper	<i>Actitis macularia</i>				55

A = Paul E. Jonsson: Foteviken Bay and Falsterbo Peninsula, SW Scania, Sweden; B = OAG Münster: Sewage farms of Münster, Federal Republic of Germany; C = Office National de la Chasse (Section Oiseaux d'eau): Baie de l'Aiguillon, Vendée, France; D = Lewis W. Oring: Little Pelican Is., Leech Lake, Minnesota, U.S.A.