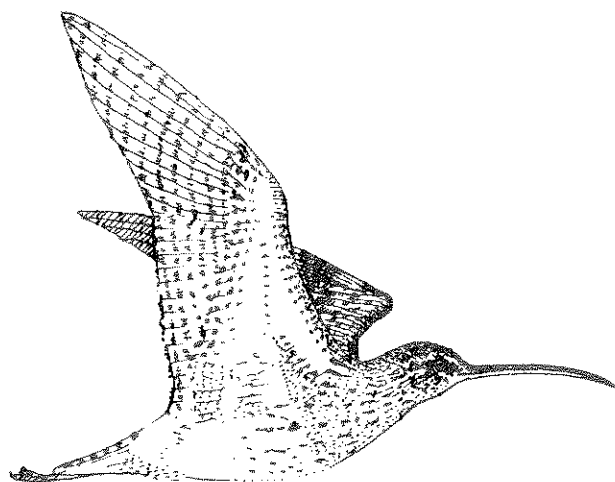


BIRDS OF
ESTUARIES
ENQUIRY
1976-77
to 1978-79



Birds of Estuaries Enquiry 1976-77 to 1978-79

Edited by J.H. Marchant,
British Trust for Ornithology

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BIRDS OF ESTUARIES ENQUIRY 1976-77 TO 1978-79

INTRODUCTION

This report covers the seventh, eighth and ninth seasons of the Birds of Estuaries Enquiry, incorporating the National Wildfowl Counts at coastal sites.

Previous reports on the Birds of Estuaries Enquiry (e.g. Prater 1975, 1979) have summarized the annual intakes of count data during the main period of the Enquiry. On completion in 1975-76 of the fieldwork for the full Enquiry, observers were requested to concentrate for subsequent seasons on mid-winter counts, and the practice of producing annual Estuaries Enquiry reports was discontinued. The present report brings up to date the documentation of Estuaries Enquiry results by covering the three seasons 1976-77, 1977-78 and 1978-79. Subsequent reports will be published annually, and the first of this series has already appeared (Hyde 1981). The conclusions from the main period of the Enquiry are fully reported by Prater (1981).

An important feature of the weather in the three-year period reviewed was the very cold winter of 1978-79, the coldest since 1962-63 in terms of mean temperatures in January and February. Several passerine birds showed high mortality during this period (Cawthorne and Marchant 1980) and there is evidence in this report that counts of certain waders and wildfowl were also affected by the unusually severe weather.

The report is in two sections, on wildfowl and waders respectively. The Wildfowl section has been written at the Wildfowl Trust using the National Wildfowl Counts, and the wildfowl data collected for the Birds of Estuaries Enquiry. Both sections incorporate counts from the Irish Wetlands Enquiry kindly supplied by P.Smiddy of the Irish Wildbird Conservancy.

ACKNOWLEDGMENTS

The primary acknowledgment must be given to the many counters who provided the data, especially the regional organisers (see Salmon 1981). Previous Estuaries Enquiry national organisers Tony Prater and Philip Hyde provided advice and assistance during the writing of the report. Stephanie Peyton was responsible for the initial collation of wader count data. The authors are also grateful to Dr. R.J. O'Connor, Dr. Myrfin Owen, Pauline Jackson, Elizabeth Murray, Caroline Hunt, Claudia Ferri, Gladys Rance and Jackie Hawkes for help in various ways. The publication of this report has been made possible by a grant from the Royal Society for the Protection of Birds and by financial assistance from the Nature Conservancy Council.

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WILDFOWL COUNTS 1976-77 TO 1978-79

D.G. Salmon,
Wildfowl Trust

The National Wildfowl Counts, organised by the Wildfowl Trust at Slimbridge, and currently financed by a grant from the Nature Conservancy Council, were instigated in 1947. The aim is to cover all the important wildfowl haunts, both inland and coastal, in the middle of each month from September to March. The International Wildfowl Censuses, introduced in 1967 and organised at Slimbridge through the International Waterfowl Research Bureau, cover as many sites as possible in January and one other month (which was March during the period of this report). Several important coastal sites are better covered by the Birds of Estuaries Enquiry; counts of wildfowl made for the Estuaries Enquiry are incorporated into this section of the report.

Tables 1-3 give the total numbers of each species counted at both coastal and inland sites in England, Scotland and Wales for the three seasons 1976-77 to 1978-79. Certain sea-ducks and geese have been excluded, as their specialist feeding and habitat requirements mean that many are missed by the standard counts. The sea-ducks are discussed in the individual species accounts. Note that the coverage was much better in January and March, the International Census months, than at other times.

In the individual species accounts (which deal only with the main estuarine species) the maximum counts at the principal coastal resorts in each season are tabulated, together with the months in which they occurred. The counts from Northern Ireland and the Irish Republic have been included here, the latter by kind permission of their organiser, P.Smiddy of the Irish Wildbird Conservancy.

TABLE 1. Total monthly counts, England, Scotland and Wales, 1976-77.

No. sites counted	Sep 794	Oct 936	Nov 997	Dec 936	Jan 1141	Feb 998	Mar 1142
Mute Swan	5421	6088	5795	6168	5616	4775	4716
Bewick's Swan	0	40	957	1898	3247	2668	913
Whooper Swan	14	684	1652	1430	1355	1274	1579
European White-front	1	9	302	3014	5903	4087	427
Canada Goose	10367	10267	8282	8695	11220	7945	6410
Dark-bellied Brent	121	17759	38416	39031	47446	35864	12136
Light-bellied Brent (Lindisfarne)	0	7	32	780	480	19	21
Shelduck	9427	10381	21213	34971	47988	46005	30620
Wigeon	16469	71636	114143	133926	182357	76769	48861
Gadwall	923	723	1182	863	1206	1043	860
Teal	21311	36117	60223	51814	62988	33781	19024
Mallard	101973	107898	114366	127706	118817	69866	40759
Pintail	2956	9497	15310	19312	20115	11302	4369
Shoveler	3537	5842	6071	5280	5683	4894	3255
Pochard	9413	19773	27476	28141	32306	28224	9036
Tufted Duck	23958	28386	32016	32204	33682	30307	26964
Scaup	236	1028	3020	4335	4894	3686	1342
Goldeneye	171	1404	5779	7796	8471	8339	7709
Smew	0	0	7	15	28	38	23
Red-breasted Merganser	1712	2085	2413	1965	2381	1812	1791
Goosander	106	518	965	608	1113	1112	1024

TABLE 2. Total monthly counts, England, Scotland and Wales, 1977-78.

No. sites counted	Sep 830	Oct 856	Nov 912	Dec 926	Jan 1144	Feb 854	Mar 1081
Mute Swan	5143	5589	5501	5914	5815	4468	4375
Bewick's Swan	6	19	705	2722	3051	3250	1999
Whooper Swan	20	558	2239	1740	1659	910	1391
European White-front	1	53	267	2664	3049	3482	145
Canada Goose	11951	11081	9925	9372	11764	8490	8179
Dark-bellied Brent	982	3814	13711	47528	39755	42043	20327
Light-bellied Brent (Lindisfarne)	0	0	3	654	247	190	0
Shelduck	6389	9822	10153	37221	39896	35824	26976
Wigeon	24555	64936	74755	134766	114095	102660	48152
Gadwall	1495	1576	1775	1667	1468	1265	1012
Teal	27967	32698	35569	59522	42341	36530	23997
Mallard	102400	104351	112850	109774	116850	93543	43632
Pintail	3225	12163	18891	18994	8516	13108	3724
Shoveler	4470	5955	5999	5796	4641	4928	3984
Pochard	9661	19404	23583	38486	41241	28115	11112
Tufted Duck	25977	28601	33426	37269	38806	30570	27915
Scaup	325	771	1668	6205	6410	3777	1557
Goldeneye	87	517	3787	7733	10092	7881	9015
Smew	0	0	3	19	21	56	11
Red-breasted Merganser	996	1550	1789	2130	2380	2006	1754
Goosander	166	249	428	1150	1426	772	1607

TABLE 3. Total monthly counts, England, Scotland and Wales, 1978-79

No. sites counted	Sep 831	Oct 874	Nov 906	Dec 923	Jan 1104	Feb 885	Mar 1010
Mute Swan	5770	6031	5270	6188	6079	4971	5259
Bewick's Swan	3	16	682	2440	4337	2958	2521
Whooper Swan	92	1090	1486	1491	1164	675	1243
European White-front	2	8	63	1935	8298	7365	1342
Canada Goose	14825	12245	11838	12205	10580	7261	7020
Dark-bellied Brent	95	4411	20196	47522	57177	37327	23884
Light-bellied Brent (Lindisfarne)	0	0	2	410	2170	1510	8
Shelduck	6739	8168	13207	38996	68926	49856	34707
Wigeon	19017	71284	81787	118686	208796	144496	47838
Gadwall	1873	1267	1285	1682	1297	1366	1291
Teal	24124	30861	43781	70635	59196	46279	22743
Mallard	106037	114570	119591	129290	147935	86441	47279
Pintail	3364	6677	5029	12497	13556	8772	2882
Shoveler	5533	5365	6985	5546	4308	3105	2560
Pochard	7829	21564	24130	34189	29911	25716	14383
Tufted Duck	28848	32357	38787	40104	36444	27335	26997
Scaup	45	285	1208	5715	5993	2549	981
Goldeneye	134	649	5037	7549	9961	7959	6443
Smew	0	0	2	14	191	225	26
Red-breasted Merganser	1315	1542	1198	1764	1794	1808	1534
Goosander	204	260	197	782	1899	1644	1184

SPECIES ACCOUNTS

The tables give the peak count in the most important coastal sites for each species together with the month when the seasonal maximum was recorded. The average of the maxima for the three seasons is also shown.

The following conventions have been used in the tables:-

- * no data
- () incomplete data, excluded from average
- + from Scottish Bird Report
- ++ from Irish Bird Report.

Mute Swan

	1976-77	1977-78	1978-79	Average
Chesil Fleet	736 Oct	772 Oct	922 Oct	810
Strangford Lough	415 Nov	380 Dec	351 Dec	382
Tacumshin	287 Nov	459 Dec	341 Nov	362
Lady's Island Lake	156 Sep	180 Sep	339 Oct	225
Stour	201 Jan	224 Dec	212 Feb	212
Montrose Basin	229 Dec	180 Jan	200 Sep	203
Orwell	200 Jan	160 Jan	183 Jan	181
Poole Harbour	419 Dec	59 Sep	36 Oct	171

Although only about a third of the British population is included in the counts, nearly all the major haunts are covered regularly. Many Mute Swans occur on small, unrecorded stretches of water. Most of the major estuarine gatherings have shown little change of late. The abnormal concentration at Poole Harbour in December 1976 was caused by a temporary movement away from Chesil Fleet (where the Abbotsbury colony has increased slightly). The main freshwater site is the Loch of Strathbeg, Grampian (1976-77 to 1978-79 average maximum 360).

Bewick's Swan

	1976-77	1977-78	1978-79	Average
Inner Severn	354 Jan	291 Dec	610 Jan	418
Wexford Slobs	547 Feb	467 Jan	183 Feb	399
Breydon Water	229 Feb	88 Mar	149 Jan	155
Ribble	91 Jan	103 Feb	213 Feb	136

The marked increase in the British population (in line with that in Europe as a whole) has been centred at two sites in the Fens - the Ouse Washes (average maximum 1,973) and Nene Washes (499); elsewhere the numbers have been fairly stable. However, in January 1979 there was a major influx, caused by the severe weather which had gripped northern Europe. The Inner Severn (at Slimbridge) and the Ribble held record numbers. The extra birds did not reach Ireland, where there has been a general decline, following the gains of the early 1970's.

Whooper Swan

	1976-77	1977-78	1978-79	Average
Strangford Lough	490 Dec	301 Dec	413 Nov	401
Lough Foyle	383 Nov	521 Nov	287 Dec	397
Cromarty Firth	57 Jan	693 Nov	242 Nov	331
Lindisfarne	216 Dec	267 Dec	170 Dec	218
Inner Solway	115 Mar	147 Dec	*	131

Its habit of feeding on fields well away from its main centres means that many of the fluctuations in the counts of this species are merely the result of local movements; the Cromarty Firth figures include birds feeding some distance inland. The Inner Solway Whoopers occur mainly at Islesteps, near Dumfries. As with the Mute Swan the

Loch of Strathbeg (average maximum 336) is the chief freshwater resort.

European White-fronted Goose

	1976-77	1977-78	1978-79	Average
Inner Severn	4000 Jan	2600 Feb	5100 Jan	3900
Swale	455 Jan	405 Feb	2008 Feb	956
North Kent Marshes	560 Feb	*	1100 Feb	830
Medway	190 Jan	*	100 Jan	145

The decline in the British population, which had been apparent for some years, was arrested by the hard weather influxes from the Netherlands of January and February 1979. However, fewer arrived in Britain than expected, most preferring to move to France. In February 1979 the largest numbers were in Kent, while the main inland resort, the Hampshire Avon, held 1100.

Greenland White-fronted Goose

	1976-77	1977-78	1978-79	Average
Wexford Slobs	6504 Dec	6715 Jan	5798 Feb	6339
Islay	4120 Nov	3300 Nov	3380 Nov	3600

No other locality holds over a thousand. The world population, confined in winter to Scotland and Ireland, is estimated at 15,000. There has been an overall increase in Scotland, but a big decline in Ireland, caused by a combination of habitat destruction and shooting pressure (Ruttledge and Ogilvie 1980).

Dark-bellied Brent Goose

	1976-77	1977-78	1978-79	Average
Foulness/Leigh	13806 Oct	13417 Dec	12488 Nov	13137
Blackwater	8097 Jan	7205 Feb	13287 Jan	9530
Wash	7798 Jan	6418 Dec	9067 Jan	7761
Chichester Harbour	5719 Jan	5669 Feb	8143 Jan	6510
Langstone Harbour	6112 Jan	4969 Jan	5529 Jan	5537
Hamford Water	6250 Jan	3310 Feb	4000 Jan	4520
Dengie	1800 Dec	2536 Jan	1065 Jan	1800
Cley/Salthouse	1800 Mar	*	*	
Colne	2640 Feb	1542 Jan	1000 Dec	1727
Crouch/Roach	*	550 Feb	2392 Feb	1471
Wells	1800 Dec	1000 Dec	*	1400
Portsmouth Harbour	680 Jan	1465 Jan	1559 Jan	1235
Pagham Harbour	1500 Feb	650 Jan	1500 Jan	1217
Exe	900 Nov	920 Feb	1575 Jan	1132
Humber	581 Feb	1283 Dec	1309 Dec	1058

Between 1971-72 and 1978-79 the world population (confined in winter to north-west Europe) rose from 34,000 to 130,000 and the British contingent from 22,000 to 63,000. After a poor breeding season in 1976 and a total failure in 1977, the 1978 summer was successful,

with 35 percent young in the autumn flocks. The proportion of the total population reaching Britain fell from 63 percent to 48 percent between 1971-72 and 1978-79. Although the numbers at most of the regular centres have risen, no new sites have been colonised; the long stretch of unsuitable coast north of the Humber could well be a barrier to expansion in that direction. The largest increases have been on the Blackwater, which in 1978-79 held more than Foulness/Leigh for the first time, and at Chichester Harbour.

Light-bellied Brent Goose

A full census of the Irish wintering population (which emanates from Greenland and Canada) was undertaken in January 1978 (Irish Bird Report). The total counted was 9164 and the results from the main sites were as follows:

Strangford Lough	2873
Dublin Bay	1844
Tralee Bay	833
Tacumshin	725
Rogerstown	497
Bannow Bay	281
Carlingford Lough	270
Broadhaven	263
Dungarvan Harbour	259
Tramore Bay	229
Sligo Bay	217
Dingle Bay	172

Four other sites are known to have held over 150 during the period 1976-77 to 1978-79:

Castlemaine Harbour	(555, October 1976)
Wexford Slobs/Harbour	(502, January 1977)
Galway Bay	(300, March 1977)
Lough Foyle	(438, October 1978).

At Strangford Lough there is a huge gathering each autumn. In the three seasons under review the following maxima were recorded: 11,163 (November 1976); 13,830 (December 1977); and 11,577 (November 1978).

The counts from the only regular British haunt, Lindisfarne, which receives birds from Svalbard, are given in Tables 1-3. In the hard weather of 1978-79 the Danish wintering flocks crossed the North Sea, so that in all probability the entire Svalbard breeding population was at Lindisfarne.

Shelduck

	1976-77	1977-78	1978-79	Average
Wash	12501 Feb	9754 Jan	11754 Jan	11336
Mersey	4023 Mar	3844 Dec	7082 Feb	4983
Hamford Water	2853 Dec	1230 Jan	10000 Jan	4696
Medway	2150 Jan	*	5150 Jan	3650
Firth of Forth	3596 Jan	2496 Dec	2943 Dec	3012
Teessmouth	3500 Dec	2165 Jan	2100 Jan	2588
Bridgwater Bay	1535 Nov	2400 Oct	2164 Nov	2033
Chichester Harbour	1500 Feb	1432 Mar	3130 Feb	2021
Blackwater	1143 Jan	1648 Mar	3004 Jan	1932
Ribble	1960 Feb	(699 Dec)	1790 Jan	1875
Cork Harbour	(300 Jan)	1077 Jan	2683 Jan	1845
Dee	2525 Oct	1094 Feb	*	1810
Stour	1544 Mar	1367 Mar	2511 Feb	1807
Inner Solway	1693 Nov	(234 Jan)	(765 Mar)	1693
Eden	1568 Mar	1503 Feb	1740 Jan	1604
Poole Harbour	2027 Jan	1717 Mar	1017 Jan	1587
Humber	1493 Feb	1329 Feb	1303 Oct	1375
Morecambe Bay	1293 Jan	1002 Jan	1635 Jan	1310
Strangford Lough	1070 Jan	1251 Feb	1303 Feb	1208
Swale	1408 Feb	868 Dec	1308 Feb	1195

After two poor seasons in 1976-77 and 1977-78 there was a large influx in January 1979, and the numbers were as high as in the early 1970's. The Wash remains by far the most important area (with over a quarter of the total British count in February 1977), and the Mersey and Hamford Water have improved considerably. However, there have been decreases at Teessmouth, the Blackwater, the Dee and Morecambe Bay. Many birds had not returned from their German moulting grounds until early December - rather later than usual - in all three years.

Wigeon

	1976-77	1977-78	1978-79	Average
Lindisfarne	26745 Dec	21550 Nov	29500 Nov	25932
Wash	13434 Dec	2255 Dec	7898 Jan	7862
Ribble	9470 Jan	(1550 Dec)	4480 Feb	6975
Humber	5540 Dec	5487 Dec	9569 Feb	6865
Dornoch Firth	8508 Oct	6724 Oct	4637 Oct	6623
Shannon/Fergus	6570 Dec	*	*	
Swale	4020 Jan	2286 Nov	12965 Jan	6424
Cromarty Firth	5805 Nov	(2950 Oct)	6972 Nov	6388
Lough Foyle	5591 Nov	5080 Dec	8051 Nov	6241
Medway	6850 Jan	*	4636 Jan	5743
Exe	5000 Nov	6800 Dec	5280 Dec	5693
Hamford Water	8100 Dec	780 Dec	5500 Jan	4793
Strangford Lough	7493 Dec	1543 Feb	4380 Nov	4473

As with several other species, remarkable numbers came into Britain during the severe weather of January 1979, and the total count for that month was the highest ever. At Hamford Water an amazing

25,300 were found in early January (Essex Bird Report), although most had left by the middle of the month. At Abberton Reservoir, three miles from the Essex coast, 11,574 were present in mid-January. Along the coast from the Swale to the Wash inclusive, together with Abberton Reservoir, 67,000 were counted in January 1979. A similar, though lesser, influx occurred in the New Year of 1977, but in 1977-78 the peak was both early (December) and low. Overall, the only estuary to have shown a significant recent increase is the Humber, where the majority congregate at the Wildfowl Refuge on the inner estuary. (The average maximum for 1973-74 to 1975-76 was only 2800.) The reduction at Strangford Lough is baffling. As recently as December 1975, 12,000 were present there.

The principal freshwater resort, the Ouse Washes, held an average maximum of 22,705 between 1976-77 and 1978-79, compared with 33,328 over the previous three seasons. The decline was caused by excessive mid-winter water-levels reducing the available feeding area.

Teal

	1976-77	1977-78	1978-79	Average
Mersey	8750 Nov	5310 Dec	12870 Dec	9020
Medway	5300 Jan	*	1276 Jan	3288
Hamford Water	1867 Dec	3000 Dec	2500 Jan	2456
Southampton Water	2912 Dec	2383 Jan	1545 Dec	2280
Burry Inlet	2657 Jan	1285 Feb	1380 Dec	1774
Inner Thames	300 Dec	600 Feb	4000 Dec	1633
Poole Harbour	1737 Jan	1369 Dec	1787 Dec	1631
Chichester Harbour	1379 Dec	1233 Jan	1636 Jan	1416
Crouch/Roach	*	2058 Dec	751 Feb	1405
Blackwater	1123 Jan	1063 Dec	1234 Dec	1140
Swale	490 Nov	870 Dec	2000 Nov	1120

The maxima on the Mersey represented, on average, 14 percent of the numbers counted in Britain. As with several other species Hamford Water, Essex, has shown a substantial gain in the last few years. At Rainham Marsh, on the Inner Thames, an unprecedented increase occurred in 1978-79. The two chief inland sites are Martin Mere, Lancashire (average maximum 6333) and Abberton Reservoir (3280). In Ireland there has apparently been a decline at nearly all the main resorts. The highest count in the current period was 1441 on the Shannon/Fergus Estuary in November 1976.

Mallard

	1976-77	1977-78	1978-79	Average
Humber	6923 Dec	4596 Dec	5447 Jan	5655
Firth of Forth	2938 Jan	3263 Feb	6066 Jan	4089
Wexford Slob	3962 Sep	2762 Sep	3782 Sep	3504
Inner Solway	2025 Sep	(617 Sep)	(1000 Sep)	
Bridgwater Bay	1850 Dec	1500 Oct	2000 Dec	1783

The Humber remained the prime site until 1978-79, when the Firth of Forth held a record concentration, owing to an increase on the inner estuary. On the Wash, once the second most important locality, the largest gathering during the three seasons was 1585 (December 1978). The total numbers counted in Britain and Ireland do not represent the true population, which may be as high as 400,000.

Pintail

	1976-77	1977-78	1978-79	Average
Mersey	9220 Dec	15500 Nov	8240 Jan	10987
Dee	6000 Oct	*	*	
Inner Solway	2870 Nov	1557 Sep	1400 Sep	1942
Burry Inlet	1679 Jan	1020 Jan	617 Dec	1105
Hamford Water	700 Jan	350 Jan	1150 Dec	738
Medway	670 Jan	*	540 Feb	605
Wigtown Bay	506 Jan	*	*	
Stour	389 Jan	454 Feb	614 Jan	486
North Bull Island	*	420 Jan	521 Jan	471
Inner Severn	659 Jan	250 Jan	250 Jan	386
Wash	487 Feb	132 Feb	434 Jan	351
Ribble	508 Dec	(58 Feb)	138 Dec	323
Cromarty Firth	350 Jan	350 Jan	250 Dec	317
Piltanton/Luce	*	220 Jan+	200 Feb+	210

While the Mersey (where the November 1977 count was a record) and the Dee have maintained their importance, there has been a reduction just to the north, on the Ribble and at the nearby Martin Mere. At the former the average maximum has dropped from 4227 (1973-74 to 1975-76) to 323 (1976-77 to 1978-79) and at the latter from 4666 to 1400. The apparent decline in the British population over the three current seasons, indicated in Tables 1-3, is misleading. Some of the main resorts were not covered in 1977-78 and 1978-79, while the variations in the peak on the Mersey have caused the total count to fluctuate considerably throughout the last ten years.

Scaup

	1976-77	1977-78	1978-79	Average
Firth of Forth	4182 Jan	4978 Jan	4716 Dec	4625
Loch Indaal	1180 Nov	1200 Dec	950 Jan	1110
Lough Gill	800 Jan	*	*	
Inner Solway	974 Dec	600 Feb	600 Feb	725
St. Andrews Bay	*	*	700 Jan	
Carlingford Lough	560 Jan++	369 Dec++	536 Feb++	488
Lady's Island Lake	94 Mar	460 Mar	262 Nov	272
Shannon/Fergus	267 Nov	*	*	
Loch Ryan	225 Jan	(52 Jan)	300 Jan	263
Dornoch Firth	230 Jan	130 Jan	250 Feb	203
Wexford Slobbs/Harb.	260 Dec	59 Nov	239 Feb	186

The gathering on the south shore of the Firth of Forth, around Edinburgh (formerly over 30,000) declined from 10,280 in 1975-76 to

1530 in 1976-77. In the following two seasons, despite the partial introduction of sewage treatment facilities, which further reduced the amount of grain discharged into the firth, there was a slight recovery to 3640 and 2270 respectively. (The Scaup have, however, since decreased to under a thousand). The numbers on the north side of the Firth of Forth (about 2500) and at the other British and Irish centres have been largely constant throughout the period of decline at Edinburgh; the "missing" birds in the latter area are presumably wintering on the Continent.

Eider

	1976-77	1977-78	1978-79	Average
Outer Tay	(4853 Feb) (a)	9360 Nov(a)	9015 Nov(a)	9188
Don Mouth-Balmedie	10250 Sep+	6140 Sep	10500 Aug+	8963
Hascosay, Shetland	6150 Jan+	*	*	
Firth of Forth	5883 Feb	7460 Nov(a)	5010 Nov(a)	6118
Bluemull, Shetland	5000 Oct+	*	*	
Morecambe Bay	(650 Mar)	*	4000 Sep	
Inner Clyde	3200 Jan	1400 Sep+	2500 Sep+	2366
Usan, Tayside	*	*	2350 Sep+	
Lindisfarne	2400 Sep	2800 Sep	1670 Jan	2290
Loch Fleet	3000 Oct+	1900 Sep	1500 Dec	2133
Sumburgh, Shetland	3000 Jul(b)	2000 Aug(b)	1050 Sep+	2017
Ythan	2418 Sep	1729 Oct	1849 Oct	1999

[Sources: (a) Milne 1977a, 1977c and 1978; (b) Hope Jones and Kinnear 1979]

Some of the above figures consist of moulting concentrations, such as those between Don Mouth and Balmedie, north of Aberdeen, which are centred at Murcar. Hope Jones and Kinnear (1979) estimated that 15,000 moult around the Shetlands. In the Outer Tay, the peak always occurs in the late autumn and there is a steady fall after that. The Morecambe Bay birds are found at the south end of Walney Island, where there is a large breeding colony.

20,000-30,000 Eiders are counted in Britain each year, but these probably represent less than half the true population, owing mainly to their abundance in the unrecorded parts of western Scotland. They are very scarce in Ireland.

Long-tailed Duck

	1976-77	1977-78	1978-79	Average
Outer Moray Firth	(765 Jan)	5000 Dec(a)	6500 Jan(b)	5750
Scapa Flow (excluding Loch of Stenness)	1271 Apr (c)	1158 Feb(c)	*	1215
Dornoch-Kintradwell	309 Nov	1625 Dec(a)	520 Jan(b)	818
Sullom /Yell Sound	759 Mar+	*	*	
Firth of Forth	462 Dec	789 Jan	724 Jan	658
Hascosay	600 Dec+	*	*	
North Ronaldsay	500 Feb+	*	*	

[Sources: (a) Mudge 1978; (b) Allen 1979; (c) Lea 1978]

Nearly all the major concentrations have been surveyed in recent years, but it is still difficult to assess the size of the British population; it may well be in excess of 20,000. The figures for the Outer Moray Firth in 1977-78 and 1978-79 consist of those roosting in Burghead Bay, which attracts the birds feeding throughout the outer firth from Spey Bay to Tarbat Ness. Mudge and Allen (1980) estimated that over 10,000 were present between Spey Bay and Kintradwell in both winters. Similar numbers have occurred in the area since at least the early 1970's, although the local distribution has changed. Hope Jones (1979) reckoned that 6000 winter in the Orkneys. There are no large gatherings in Ireland.

Common Scoter

	1976-77	1977-78	1978-79	Average
Outer Moray Firth	(1881 Jan)	8122 Mar(a)	7048 Jan(b)	7585
Red Wharf Bay	1800 Dec	*	*	
Clougher Head, Louth	1750 Oct++	*	*	
Forvie, Grampian	1500 Jul	*	*	
Tentsmuir Point	*	1275 Nov(c)	1500 Aug(c)	1388
Firth of Forth	1171 Feb	555 Jan	971 Jan	899
Wash	2024 Feb	500 Apr	50 Jan	858
Bondoran, Donegal	700 Mar++	800 Dec++	*	750
Lindisfarne	1510 Dec	790 Nov	260 Jan	733
Llanfairfechan	575 Feb	*	*	
Montrose Sands	*	745 Aug(c)	400 Nov(c)	573
Dornoch-Kintradwell	303 Jan	662 Dec	637 Dec	534

[Sources: (a) Mudge 1978; (b) Allen 1979; (c) Milne 1977c,1978]

For the Outer Moray Firth the sums of the counts nearest the middle of the month for each sector are given, the birds being relatively static. As with the Long-tailed Duck, similar numbers have apparently been present in the Moray Firth and Dornoch areas for some time, but their favoured locations have varied. Note the large numbers at Red Wharf Bay and Llanfairfechan, North Wales, in 1976-77; these probably occur every year but escape detection, as presumably do many other flocks throughout Britain and Ireland. The British population is estimated at 50,000.

Velvet Scoter

	1976-77	1977-78	1978-79	Average
Outer Moray Firth	(80 Oct)	5029 Apr (a)	3000 Jan (b)	4015
St. Cyrus, Angus	*	225 Aug (c)	*	
Firth of Forth	347 Feb	20 Sep/Oct	120 Sep	162

[Sources: (a) Mudge 1978; (b) Allen 1979; (c) Milne 1977b]

The Moray Firth birds were found almost entirely in Spey Bay, and represented the most ever counted in the area. Nowhere else have concentrations approaching this level been recorded in Britain and Ireland.

Goldeneye

	1976-77	1977-78	1978-79	Average
Firth of Forth	3572 Jan	3417 Jan	3665 Nov	3551
Turnberry-Dipple	*	500 Feb	620 Feb	560
Cromarty Firth	338 Jan	369 Feb	389 Dec	365
Blackwater	253 Jan	236 Dec	414 Jan	301
Outer Tay	360 Jan	72 Mar	360 Jan	264
Ness Mouth	212 Mar	366 Jan	145 Dec	241
Ayr-Prestwick	88 Feb	230 Feb	386 Feb	235

Campbell (1979) attributed the decline on the south shore of the Firth of Forth around Edinburgh (1975-76 to 1978-79 maxima: 3050; 2070; 2190; 1080) to the change in the sewage regime. Meanwhile, the numbers on the north shore of the firth have varied between 1000 and 2500, with no set pattern. Elsewhere, there have been increases on the Ayrshire coast and at several important inland sites. Among the latter the largest counts were at Abberton Reservoir (510, February 1979) and the Loch of Strathbeg (400, December 1978). The overall British total has been surprisingly constant, at 8000-11,000, over the past 10 years.

In Ireland, the principal estuary was Broadmeadows, Dublin (average maximum 179).

Red-breasted Merganser

	1976-77	1977-78	1978-79	Average
Firth of Forth	793 Dec	809 Dec	840 Feb	814
Dornoch Firth/Coast	862 Oct	615 Feb	150 Nov	542
Strangford Lough	272 Feb	305 Sep	350 Dec	309
Galway Bay	114 Jan	*	486 Mar	300
Outer Moray Firth	83 Sep	505 Oct	138 Dec(a)	242
Poole Harbour	388 Feb	244 Dec	90 Dec	241
Loch Ryan	250 Sep	(40 Jan)	220 Sep	235
Cork Harbour	237 Jan	69 Jan	304 Nov++	203
Portland Harbour	200 Jan	*	*	

[Source: (a) Allen 1979]

The Firth of Forth population is scattered throughout the area, with a large proportion on the inner estuary. Those at Dornoch are usually found on the open coast, but 700 were counted at Tain Bay, inside the Firth, in October 1976. A count of 472 at Nairn Bar in October 1977 was abnormally high and constituted most of the Outer Moray Firth total.

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WADER COUNTS, 1976-77 TO 1978-79

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The Birds of Estuaries Enquiry was started in the 1969-70 season. Under its auspices, volunteer counters collect monthly count data for estuarine birds from a large number of coastal sites. The information provided by the Enquiry is in great demand as it is the only extensive survey on the birds of our estuaries. The data have been used by the Nature Conservancy Council, by local and county planning authorities, and by voluntary bodies, for example in the evaluation of planning proposals for estuarine sites. The species counted include waders, wildfowl, divers, grebes, gulls and terns: this section deals with wader counts only, while the counts for wildfowl are incorporated into the Wildfowl section of the report. Counting sites are not purely estuarine but also include a variety of non-estuarine intertidal habitats. Rocky coastline is poorly represented in the counts, however.

In the absence of regular feedback to Estuaries Enquiry counters during this period, and perhaps also because of the reduction in the information requested, there has been some decline in the Enquiry over the period of this report. It will be evident from the tables that not all of the major sites were covered in all three seasons, and that at some large sites only partial cover was achieved. Although fewer estuaries are under acute threat during the current economic recession than during the mid-1970s, we must expect an increase in the number of development schemes coming forward as soon as the economy begins to improve. Effort is therefore required to improve and extend the coverage achieved by the Estuaries Enquiry.

Throughout the three-year period under review, there was emphasis on the three mid-winter counts in the months December, January and February, but many observers made counts in passage periods and some carried on with year-round monthly counts. The extent to which counts made in spring and autumn passage periods give information as to the turnover of birds at a site or as to the total number of individuals using the site at that season is poorly understood; and this aspect is currently being studied in a project based at Durham University. The Estuaries Enquiry counts do however give useful information about the relative importance of a large number of sites in terms of their attractiveness to passage waders.

The comparative data from the Republic of Ireland are presented by courtesy of the Irish Wildbird Conservancy.

MONTHLY TOTALS

The grand totals of wader species counted in each of the three midwinter months are given in Table 1 for each of the three winters. This information is presented largely for comparison with similar

TABLE 1. Winter population levels of waders in UK estuaries, December 1976 to February 1979, and Republic of Ireland January totals 1977-79.

		December	January	February	Republic of Ireland (Jan)
Oystercatcher	1976-77:	218227	193191	122233	4040
	1977-78:	99167	141111	93245	6126
	1978-79:	102103	96348	75450	7025
Avocet	1976-77:	13	20	24	0
	1977-78:	84	59	118	0
	1978-79:	88	69	113	0
Ringed Plover	1976-77:	6631	6922	6595	780
	1977-78:	6887	6796	5009	1058
	1978-79:	5895	5680	6149	953
Killdeer	1977-78:	0	0	1	0
Kentish Plover	1976-77:	1	1	1	0
Greater Sandplover	1978-79:	1	0	0	0
Golden Plover	1976-77:	29505	39144	34776	4348
	1977-78:	34941	37171	25961	10020
	1978-79:	31615	10427	7248	4058
Grey Plover	1976-77:	10886	16002	13818	655
	1977-78:	9429	7039	7794	1036
	1978-79:	11735	11366	11241	1677
Lapwing	1976-77:	73314	108429	105308	9312
	1977-78:	95103	84810	66977	8958
	1978-79:	82035	22564	30268	11367
Knot	1976-77:	170132	235035	180885	4816
	1977-78:	90872	141385	86837	9673
	1978-79:	131795	162412	84082	9799
Sanderling	1976-77:	2482	3874	4776	313
	1977-78:	3547	2189	4266	207
	1978-79:	5033	3859	4476	254
Little Stint	1976-77:	6	7	5	0
	1977-78:	2	1	10	0
	1978-79:	3	8	6	0
Curlew Sandpiper	1978-79:	2	0	0	1
Purple Sandpiper	1976-77:	1317	1277	1114	0
	1977-78:	1267	2073	1569	0
	1978-79:	1191	1578	1229	0

Table 1, continued

Dunlin	1976-77:	514252	546270	509643	20714
	1977-78:	386824	376927	251883	25845
	1978-79:	362176	365073	318793	32013
Ruff	1976-77:	60	144	188	0
	1977-78:	243	247	244	0
	1978-79:	624	84	45	4
Jack Snipe	1976-77:	62	66	52	2
	1977-78:	34	84	85	1
	1978-79:	11	25	20	4
Snipe	1976-77:	1879	3574	4184	153
	1977-78:	2874	3626	4229	341
	1978-79:	1946	1252	1489	221
Long-billed Dowitcher	1977-78:	1	1	1	0
Woodcock	1977-78:	3	0	1	0
	1978-79:	0	4	0	0
Black-tailed Godwit	1976-77:	2507	3149	3777	1803
	1977-78:	2744	2493	3080	2178
	1978-79:	3885	3307	2604	1732
Bar-tailed Godwit	1976-77:	38890	48172	46399	6824
	1977-78:	28995	34600	27734	4226
	1978-79:	34279	38948	22852	4702
Whimbrel	1976-77:	0	4	0	0
	1977-78:	1	0	1	1
	1978-79:	1	0	2	3
Curlew	1976-77:	49730	42893	44724	9566
	1977-78:	28723	33223	31810	7947
	1978-79:	34036	25921	26443	7512
Spotted Redshank	1976-77:	45	42	39	18
	1977-78:	49	81	62	3
	1978-79:	37	45	35	10
Redshank	1976-77:	54887	64554	51171	3507
	1977-78:	39432	44163	37257	3979
	1978-79:	51293	42174	38063	3948
Greenshank	1976-77:	226	177	232	72
	1977-78:	129	131	95	104
	1978-79:	204	113	140	84
Green Sandpiper	1976-77:	12	11	17	0
	1977-78:	18	16	13	0
	1978-79:	11	15	9	2

Table 1, continued

Common Sandpiper	1976-77:	16	12	7	0
	1977-78:	19	11	7	0
	1978-79:	10	9	13	0
Turnstone	1976-77:	12343	13158	11620	727
	1977-78:	11726	11652	9881	488
	1978-79:	10129	9813	7669	465
Grey Phalarope	1978-79:	1	0	0	0
GRAND TOTALS	1976-77:	187423	1326124	1141588	67650
	1977-78:	843111	929859	658169	82191
	1978-79:	870139	801090	638439	85834

tables in earlier reports. It should be noted however that these tables present only the numbers of birds counted, and the counts have become progressively less comprehensive over the period. Consequently count totals from these tables do not reflect year to year changes in population levels. These changes are instead documented in a population index which was devised to minimize the effects of changes in estuary coverage. For the minor estuarine species Whimbrel, Common Sandpiper, Little Stint, Curlew Sandpiper and Avocet, the counts presented may be numerically close to the real wintering totals.

SPECIES ACCOUNTS

A summary of wintering distribution and numbers is given below for each of the thirty-one species recorded in the winter months. In addition to these, Wood Sandpiper, Little Ringed Plover, Buff-breasted Sandpiper, Wilson's Phalarope, Baird's Sandpiper, Pectoral Sandpiper and Dotterel were also recorded at passage times only.

The index of wintering wader populations is similar to that used in the BTO Common Birds Census (Bailey 1967) and is based on the January counts (Prater 1979). The current data extend the continuous run of January counts needed for the calculation of such indices and, with the 1979-80 counts previously published (Hyde 1981), allow the reporting here of population trends for sixteen species over the period 1973-80.

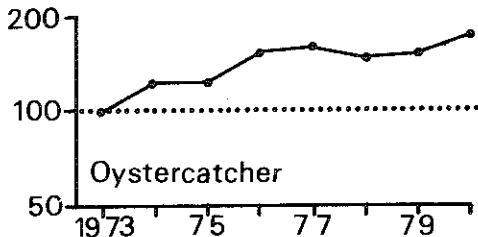
The first stage of the indexing procedure is to tabulate January counts for each pair of years for each estuary or site consistently covered in those two years. The paired counts are then summed to give grand totals from which a percentage change for the year is calculated. This percentage change is applied to the previous year's index to give the new value. All index values were arbitrarily set at 100 in January 1973. Since there will always be new sites available in each season, while other sites may have to be excluded from the index because there was no suitable January count, the complement of sites varies from season to season. The pairing procedure neatly avoids most of the problems resulting from a changing sample of sites, but if there were changes between years in the characteristics of the sites included this could introduce a bias. No systematic check for such biases has yet

been carried out, however.

The indices are presented using a semi-logarithmic scale, which effectively improves the treatment of large percentage changes occurring when the index value is low. Since the datum level was arbitrarily set at the 1973 population level, regardless of whether this was a good or a bad year for the species concerned, changes of index value from 25 to 50 are as important as changes from 100 to 200. On the semi-logarithmic plot, the slope of the graph between years is directly proportional to the corresponding percentage change in population.

The number of sites referred to in the heading for each species account below is the number from which December-February records were received over the three-year period. The total number of sites is 180. The tables list the major sites in the order of the highest peak counts in any one year, not in the order of the average peak counts obtained over the three years. The midwinter peak is given together with the month in which the peak occurred. The county or counties in which the various sites lie can be found by reference to Table 4. The criteria for national and international importance of sites for the various species are given by Prater (1981).

Oystercatcher (164 sites)



The population increase recorded for Oystercatcher by Prater (1979) up to 1976 has continued in subsequent seasons, but at a rather lower overall rate. The reasons for this increase are not known.

	1976-77	1977-78	1978-79
Morecambe Bay	48250 (Dec)	43600 (Jan)	*
Solway	35489 (Dec)	*	*
Wash	25480 (Feb)	20019 (Jan)	17589 (Dec)
Dee	21781 (Jan)	4100 (Feb)	2950 (Jan)
Ribble	20861 (Dec)	11507 (Dec)	9989 (Jan)
Burry Inlet	11760 (Dec)	9085 (Jan)	8805 (Dec)
Duddon	11000 (Dec)	4200 (Dec)	4800 (Feb)
Firth of Forth	9565 (Jan)	9219 (Dec)	10254 (Jan)
Humber	4500 (Jan)	8244 (Dec)	5061 (Jan)
Foulness	8096 (Jan)	5547 (Feb)	5157 (Jan)

All sites of international importance for Oystercatchers are listed in the table. It was unfortunate that neither Morecambe Bay nor the Solway was counted in 1978-79; the monthly totals in Table 1 are correspondingly low. Note also that the Dee was only partially covered in the second and third seasons. The high count on the Ribble in 1976-77 may be associated with the considerable increase there of cockles Cerastoderma edule following a heavy spatfall in 1975 (Sutherland in press).

Avocet (20 sites)

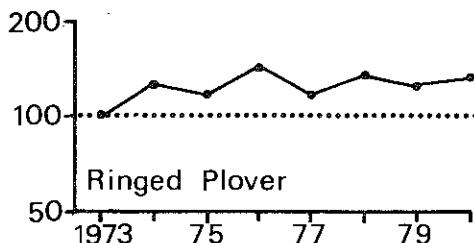
	1976-77	1977-78	1978-79
Tamar	*	40 (Dec)	62 (Dec)
Tavy	2 (Dec)	52 (Feb)	37 (Feb)
Exe	16 (Jan)	1 (Feb)	38 (Feb)
Ore/Butley Creek	10 (Feb)	23 (Dec, Feb)	35 (Feb)
Severn	2 (Dec)	1 (Dec-Feb)	1 (Dec-Feb)

No sites other than those tabulated held Avocets in all three winters. Records elsewhere were all of ones and twos except for three at Pagham Harbour in January 1977, and eleven at Hamford Water in February of the same year. British wintering numbers are very small compared with the estimated twenty-six thousand in western Europe.

All the British sites lay between the Humber and Lavan Sands. There were no birds found wintering in Ireland.

Ringed Plover (149 sites)

Ringed Plover wintering populations have been fairly stable; there is no statistical evidence for the shallow increasing trend suggested by the Figure. Most birds wintering in Britain breed in temperate western Europe and are less likely to fluctuate due to variable breeding success than the arctic populations of Ringed Plovers which winter further south.



	1976-77	1977-78	1978-79
Solway	800 (Dec)	*	*
Firth of Forth	502 (Feb)	650 (Jan)	747 (Feb)
Langstone Harbour	551 (Feb)	671 (Dec)	82 (Dec)
Leigh-Canvey	530 (Dec)	662 (Jan)	559 (Feb)
Galway Bay	212 (Jan)	600 (Jan)	216 (Jan)
Foulness	542 (Dec)	88 (Dec)	194 (Jan)
Morecambe Bay	460 (Dec)	290 (Jan)	*
Sussex coast	209 (Jan)	433 (Jan)	244 (Feb)
Humber	178 (Dec)	111 (Jan)	423 (Feb)
Dee	416 (Jan)	288 (Feb)	218 (Jan)

The sites tabulated are those at which one percent or more of the Western European population was recorded in a winter month. Note that in each season the adjoining Foulness and Leigh-Canvey sites together formed the most important area for this species.

Killdeer (1 site)

One was present on coastal grazing adjoining the Burry Inlet in February 1978.

Kentish Plover (1 site)

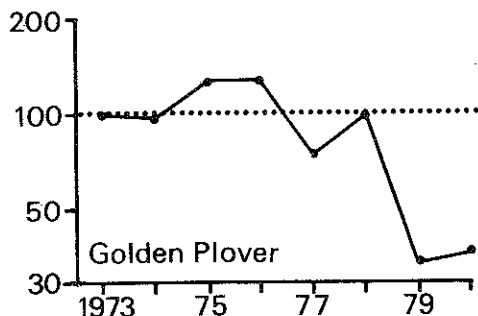
A single bird wintered at West Kirby on the Dee in 1976-77.

Greater Sandplover (1 site)

The first British example spent most of December 1978 at Pagham Harbour (Kitson *et al.* 1980)

Golden Plover (117 sites)

After relative stability since 1973, the numbers of Golden Plovers counted fell sharply in January and February 1979 (see Table 1). This coincided with a period of severe winter weather, and it is likely that



the low counts were the result of birds being displaced from their regular sites. The destination of onward movements is unknown however; fewer birds than usual were also found in Ireland at this time. There may also have been some extra mortality during the cold weather, and the low numbers found in January 1980 suggest that mortality could well have been important.

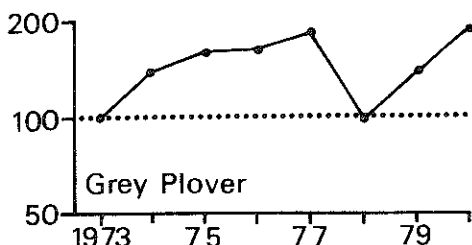
For Lapwing, Ruff, Spotted Redshank and Greenshank the January 1979 index was the lowest yet recorded, and these species may also have been affected by the hard weather. Considerable mortality of small passerines occurred at this time (Cawthorne and Marchant 1980).

A full national survey of winter numbers, distribution and habitats was conducted by the BTO in 1977-78 in order to supplement the information available from the Estuaries Enquiry. The total British population was thought to be close to two hundred thousand, but intertidal flats and saltmarsh were everywhere of considerably less importance for feeding than grassland (Fuller and Lloyd 1981).

	1976-77	1977-78	1978-79
Solway	8412 (Dec)	*	*
Clonakilty	*	3000 (Dec)	6500 (Dec)
Cork Harbour	1700 (Dec)	5500 (Jan)	3450 (Jan)
Lindisfarne	3200 (Jan)	5370 (Jan)	870 (Feb)
Sussex coast	5300 (Feb)	1301 (Feb)	293 (Feb)
Strangford Lough	1660 (Feb)	4341 (Jan)	5062 (Dec)
Firth of Forth	4553 (Feb)	4931 (Jan)	2368 (Dec)
Taw/Torridge	3690 (Feb)	4400 (Dec)	2812 (Dec)
Camel	400 (Jan)	4000 (Feb)	*
Burry Inlet	3250 (Feb)	2890 (Jan)	1550 (Dec)

The estuaries listed above, together with the Swale, Ballymacoda, Lough Foyle, Bannow Bay, the Shannon, Piltanton/Luce, Loch Ryan, and the Severn held more than two thousand Golden Plovers in a midwinter month and are thus of national importance.

Grey Plover (134 sites)



The index graph shows that 1973 and 1978 were poor for Grey Plover. The January 1978 figures were also low for three other high-arctic breeders - Dunlin, Knot and Sanderling - which might suggest that a poor breeding season affected these species. However, index values were also low for Black-tailed Godwit and Redshank which breed at lower latitudes.

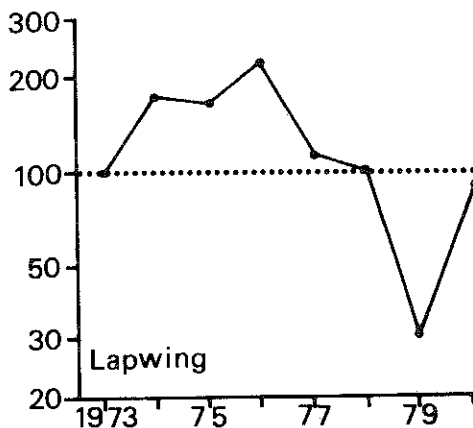
	1976-77	1977-78	1978-79
Wash	2045 (Feb)	1653 (Feb)	1639 (Jan)
Hamford Water	1515 (Dec)	665 (Jan)	580 (Jan)
Langstone Harbour	1501 (Feb)	1065 (Dec)	713 (Dec)
Severn	580 (Feb)	573 (Dec)	1440 (Feb)
Chichester Harbour	1183 (Feb)	1127 (Dec)	765 (Dec)
Foulness	971 (Jan)	247 (Dec)	1113 (Dec)
Ribble	482 (Dec)	434 (Feb)	1109 (Feb)
Swale	795 (Jan)	554 (Dec)	1100 (Jan)
Crouch/Roach	1000 (Jan)	7 (Jan)	12 (Jan)
Dengie	1000 (Jan)	750 (Jan)	700 (Dec)

Of the top ten sites for Grey Plover, all but two (the Ribble and the Severn) are in the south-east corner of England. These ten, together with the Medway, Leigh-Canvey and Wexford Harbour and Slobs, each held more than eight hundred birds, one percent of the West European/West African wintering total.

Lapwing (156 sites)

Like Golden Plover, Lapwing is not particularly an estuarine or coastal species but occurs in large numbers at some sites. Numbers of

Lapwing wintering inland are unknown, but those found on estuaries must represent only a small fraction of the total.

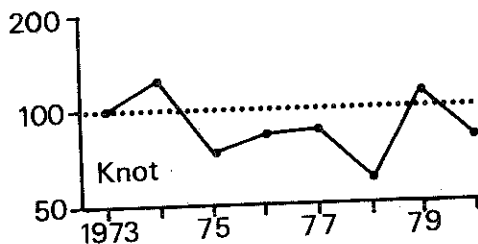


As with Golden Plover, numbers dropped sharply in January and February 1979 during the period of hard weather. Part of this drop is perhaps accounted for by movement to Ireland, where numbers in January 1979 were 27 percent higher than in the previous January. There was no significant change in numbers of breeding Lapwings between the 1978 and 1979 breeding seasons (Marchant and Hyde 1980), whereas they were 55 percent less numerous on Common Birds Census plots following the 1962-63 cold winter (Bailey 1967); the Estuaries Enquiry data for 1980 show an almost complete recovery of winter numbers. Thus it seems likely that Lapwings performed weather movements at the onset of the cold spell, and were successful in finding food at new sites.

	1976-77	1977-78	1978-79
Sussex coast	17690 (Jan)	10252 (Jan)	1456 (Jan)
Solway	13322 (Dec)	*	*
Rye Harbour/Pett Level	4500 (Feb)	3300 (Jan)	13000 (Dec)
Cork Harbour	1480 (Dec)	2484 (Jan)	12851 (Dec)
Lindisfarne	4000 (Jan)	12000 (Jan)	1450 (Dec)
Swale	7400 (Jan)	11740 (Dec)	20 (Dec)
Wexford Harbour and Slobs	2418 (Feb)	1184 (Dec)	10254 (Feb)
Taw/Torridge	9375 (Feb)	7446 (Jan)	6328 (Feb)
Severn	5740 (Dec)	9322 (Dec)	8910 (Dec)
Strangford Lough	6231 (Feb)	8151 (Jan)	*

The site called 'Sussex coast' is a composite encompassing minor estuaries and coastal areas in both West and East Sussex but excluding the major areas Chichester Harbour, Pagham Harbour and Rye Harbour/Pett Level. It is largely on the strength of the high counts of Lapwing and Golden Plover that this is the twentieth site in order of importance for waders (Table 2).

Knot (106 sites)



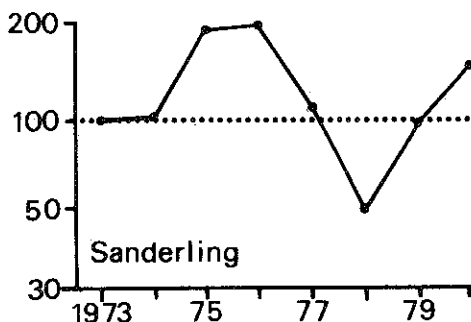
Poor seasons for Knot were 1974-75 and, in common with Grey Plover and Sanderling, 1977-78. In clear contrast to Lapwing and Golden Plover, Knot produced a high count in January 1979; this may have been the result of unusually large numbers moving across from the Waddensee in response to the cold weather.

	1976-77	1977-78	1978-79
Morecambe Bay	69500 (Jan)	58500 (Jan)	*
Dee	46318 (Feb)	4800 (Dec)	5000 (Jan, Feb)
Wash	26965 (Feb)	35935 (Feb)	51416 (Dec)
Humber	32000 (Jan)	10140 (Jan)	31800 (Jan)
Solway	31844 (Dec)	*	*
Ribble	21184 (Feb)	9110 (Jan)	8480 (Dec)
Firth of Forth	16638 (Feb)	10724 (Dec)	18565 (Jan)
Foulness	9218 (Jan)	7462 (Dec)	16855 (Feb)
Strangford Lough	12011 (Jan)	7901 (Dec)	10608 (Dec)
Severn	8026 (Feb)	3001 (Feb)	11343 (Jan)
North Bull Island	4000 (Dec)	6000 (Jan)	8600 (Jan)
Teesmouth	4600 (Feb)	5280 (Jan)	6200 (Jan)

The sites listed, together with Dengie, the Swale, the Alt, Lindisfarne, the Burry Inlet, and the Eden, recorded more than one percent of the Western European total in a winter month. It is noticeable that large flocks of Knot are only found on the larger estuaries; a graph of wader numbers against estuary size shows that this is the species showing the greatest response to increasing estuary size (Prater 1981). There was only partial cover of the Dee in 1977-78 and 1978-79.

The totals in Table 2 (next section) show that in most midwinter months in the period under review Knot was the second most numerous estuarine wader in the United Kingdom. Counts for Dunlin were consistently higher, while Oystercatcher and Lapwing totals were sometimes higher than for the present species.

Sanderling (74 sites)



The wide range of the Sanderling index perhaps reflects the vagaries of the high arctic breeding season. Ringing recoveries show that birds from both the Greenland/Canadian and Siberian populations occur in Britain, but the origins of our wintering birds are not fully understood (Prater and Davies 1978).

	1976-77	1977-78	1978-79
Ribble	1291 (Jan)	1772 (Dec)	2324 (Dec)
Dee	840 (Feb)	19 (Jan)	106 (Jan)
Teesmouth	805 (Feb)	330 (Dec)	510 (Jan)
Clwyd	32 (Dec)	205 (Feb)	600 (Dec)
Duddon	106 (Jan)	556 (Feb)	231 (Dec)
Sussex coast	436 (Jan)	339 (Jan)	199 (Feb)
Wash	408 (Feb)	201 (Feb)	249 (Dec)
Alt	380 (Jan)	250 (Feb)	331 (Dec)
Hamford Water	248 (Jan)	280 (Feb)	306 (Dec)
Humber	183 (Dec)	280 (Feb)	205 (Feb)

In each season the Ribble was conspicuously the most important site, while the relatively short stretch of coast between the Duddon and the Dee held more than half the Sanderlings counted. The sites listed, together with a further eleven, were all of international importance.

Little Stint (15 sites)

Of the fifteen wintering sites for Little Stints during the period, only two - Southampton Water and Langstone Harbour - recorded them in more than one of the three winters. All counts were of ones and twos except for six in February 1978 and four in February 1979 at Southampton Water, six on the Severn in January 1979, three at Langstone Harbour in December 1976, and three on the Wash in January 1977. There was no evidence of either onward movement or mortality during the cold spell of early 1979.

Curlew Sandpiper (3 sites)

In 1978-79, single Curlew Sandpipers were found on the Wash and in Southampton Water in December, and in Cork Harbour in January and March. Most birds of this species passing through western Europe in autumn spend the winter in West Africa (Wilson *et al.* 1980).

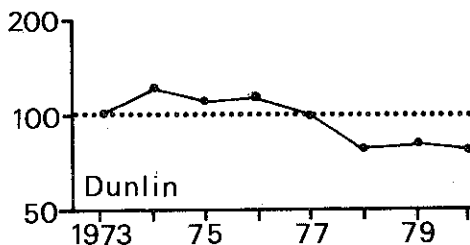
Purple Sandpiper (3° sites)

The Purple Sandpiper is not strictly an estuarine bird and it occurs chiefly on those Estuaries Enquiry sites including some rocky coast. Total numbers are grossly under-estimated by the Enquiry owing to the large tracts of rocky coast which are not counted. The sites at which over a hundred birds were counted are listed in the table.

	1976-77	1977-78	1978-79
Firth of Forth	532 (Dec)	647 (Feb)	614 (Dec)
Rosehearty-Philorth	308 (Dec)	512 (Jan)	*
North Yorkshire coast	319 (Jan)	455 (Jan)	188 (Dec)
Brora-Golspie	120 (Jan)	130 (Jan)	214 (Jan)
Budle Point-Lynemouth	169 (Feb)	158 (Jan)	171 (Dec)
Tynemouth-Blyth	87 (Dec)	76 (Jan)	193 (Feb)
Whitehills-Banff	*	*	131 (Jan)
Ardrossan-Portencross	101 (Jan)	44 (Dec)	46 (Jan)

Important sites are all in Scotland or north-east England, and all except the last in the table are on the east coast.

Dunlin (161 sites)



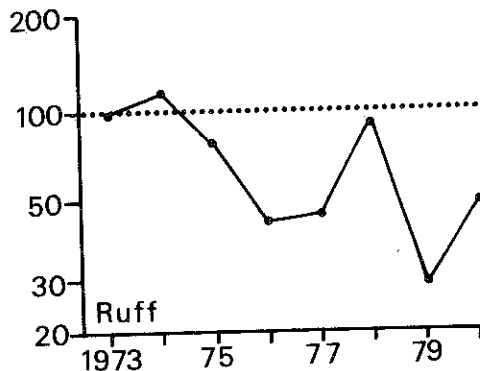
The index for Dunlin reveals a declining trend since at least 1974, independent of the decreases in coverage achieved by the Estuaries Enquiry counters. The 1977-78 season was a particularly poor one for the species.

This is the most numerous wader species wintering in Britain, except possibly for Lapwing which is poorly covered by the Enquiry. In the nine midwinter months under review, between 38 and 50 percent of the waders counted were Dunlin.

	1976-77	1977-78	1978-79
Ribble	61100 (Dec)	22875 (Dec)	23782 (Dec)
Morecambe Bay	56600 (Jan)	54200 (Jan)	*
Mersey	46500 (Feb)	18500 (Dec)	28250 (Feb)
Severn	41571 (Feb)	36239 (Dec)	46146 (Feb)
Dee	44671 (Feb)	7500 (Feb)	5000 (Dec-Feb)
Humber	44200 (Jan)	24211 (Dec)	25608 (Jan)
Firth of Forth	35800 (Feb)	15683 (Jan)	13256 (Dec)
Langstone Harbour	30160 (Feb)	35000 (Dec)	16228 (Dec)
Lindisfarne	21000 (Dec, Jan)	30200 (Dec)	31700 (Dec)
Wash	30971 (Jan)	22991 (Jan)	23748 (Jan)
Chichester Harbour	20339 (Dec)	29035 (Dec)	18706 (Dec)

Relative to their size, the Ribble, the Mersey, Langstone Harbour and Lindisfarne seem particularly favoured by this species. The table shows all sites found to be of international importance for Dunlin.

Ruff (34 sites)



Britain lies on the northern edge of the wintering grounds for Ruff, and so the large-scale fluctuations in the index may be the result of retreat or advance of the winter range due to weather conditions. The same may apply to Spotted Redshank, and perhaps also Greenshank to a lesser degree. For all three species, the index in the very cold January of 1979 was the lowest recorded in the 1973-80 period.

	1976-77	1977-78	1978-79
Pagham Harbour	48 (Jan)	160 (Feb)	540 (Dec)
Chichester Harbour	9 (Jan)	70 (Dec)	7 (Feb)
Inner Thames	58 (Feb)	*	*
Southampton Water	49 (Feb)	46 (Dec)	13 (Dec)
Beaulieu River	*	*	42 (Jan)
Langstone Harbour	15 (Feb)	36 (Dec)	10 (Dec)
Axe	*	36 (Jan)	*
Hamford Water	13 (Dec)	6 (Jan)	28 (Jan)
Ythan	*	26 (Jan)	*
Rye Harbour/Pett Level	4 (Jan)	22 (Dec)	*

Six of the ten most important sites are in Hampshire and Sussex. Only Pagham Harbour is of international importance, while the sites listed, together with a further six, are important nationally. The mobility and unpredictability of this species is clear from the table (here the asterisks probably represent absence in most cases). Only three sites recorded double figures in each of the three seasons.

Jack Snipe (52 sites)

This elusive and largely fresh-water species is very poorly represented by the Estuaries Enquiry counts. Most counts were of ones and twos. The following sites recorded double figure counts in the period under review.

	1976-77	1977-78	1978-79
Orwell	1 (Jan)	31 (Feb)	*
Sussex coast	18 (Jan)	21 (Jan)	*
Severn	9 (Jan)	11 (Feb)	5 (Jan)
Chichester Harbour	11 (Jan-Feb)	6 (Jan)	1 (Dec)
Bude Haven	10 (Feb)	*	*

Snipe (125 sites)

As with Jack Snipe the typically fresh or brackish water habitat means that the Estuaries Enquiry counts grossly under-record numbers of wintering Snipe. The following sites recorded more than three hundred birds: all are in the south of England.

	1976-77	1977-78	1978-79
Sussex coast	2110 (Feb)	2443 (Feb)	144 (Feb)
Rye Harbour/Pett Level	325 (Jan)	350 (Dec)	330 (Dec)
Taw/Torridge	346 (Feb)	178 (Feb)	318 (Feb)
Southampton Water	214 (Feb)	206 (Dec)	334 (Feb)

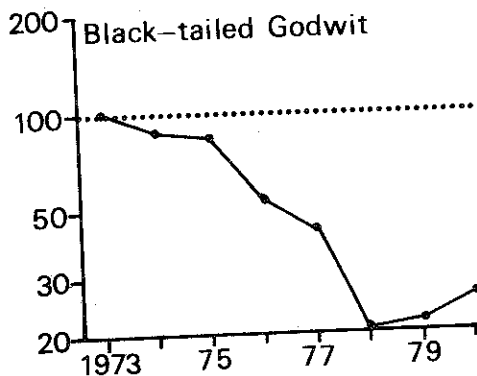
Long-billed Dowitcher (1 site)

One wintered at Langton Herring on the Fleet in Dorset in 1977-78.

Woodcock (3 sites)

Woodcock is in no sense an estuarine wader, but it is occasionally seen in coastal areas especially on migration or during cold weather. Birds were recorded at the Humber (four in January), Lindisfarne (three in December) and the Wash (one in February).

Black-tailed Godwit (66 sites)

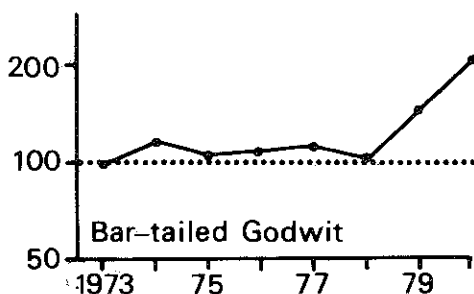


A strong declining trend is evident from the index data, from 1972-73 to at least 1977-78. The last two points on the graph may represent some degree of recovery, if only from the especially poor 1977-78 season, or at least a halt to the decline.

	1976-77	1977-78	1978-79
Cork Harbour	573 (Dec)	1010 (Jan)	1637 (Feb)
Stour	466 (Dec)	880 (Feb)	936 (Jan)
Exe	692 (Feb)	638 (Feb)	905 (Dec)
Langstone Harbour	824 (Jan)	904 (Dec)	207 (Dec)
Dungarvan	563 (Dec)	890 (Dec)	*
Portsmouth Harbour	*	240 (Feb)	809 (Dec)
Dee	797 (Feb)	22 (Jan)	722 (Jan)
Chichester Harbour	785 (Jan)	302 (Dec)	256 (Dec)
Ballymacoda	700 (Jan)	109 (Jan)	*
Wexford Harbour and Slobs	215 (Dec)	285 (Jan)	649 (Feb)

In addition to the sites listed, Youghal Bay, Hamford Water and Pagham Harbour were also of international importance, supporting at least four hundred birds. The short stretch of coast between Portsmouth and Pagham Harbours includes four such sites. Birds commute between Langstone and Portsmouth Harbours however and the December 1978 high count in Portsmouth Harbour probably related to godwits feeding chiefly in Langstone Harbour. Note that the Irish sites, poorly represented in the index sample, show some sign of increasing numbers.

Bar-tailed Godwit (131 sites)



The Bar-tailed Godwit numbers were stable over the 1973-78 period but the following two seasons showed large increases averaging 42 percent. The reasons behind this increase are unknown as yet.

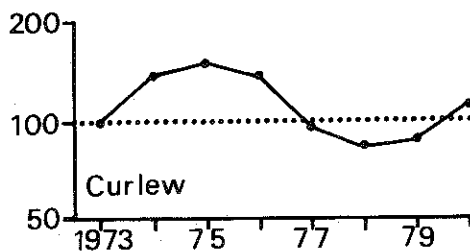
	1976-77	1977-78	1978-79
Wash	8182 (Feb)	7473 (Feb)	11849 (Jan)
Dee	11149 (Feb)	1800 (Dec)	850 (Jan)
Morecambe Bay	7450 (Jan)	8240 (Jan)	*
Foulness	3999 (Jan)	2109 (Jan)	5752 (Jan)
Ribble	3625 (Feb)	5207 (Feb)	5543 (Dec)
Lindisfarne	5240 (Dec)	4105 (Dec)	3910 (Dec)
Lough Foyle	4815 (Jan)	2314 (Jan)	1482 (Dec)
Solway	3667 (Dec)	*	*
Firth of Forth	2749 (Feb)	2695 (Feb)	3055 (Jan)
Alt	2190 (Feb)	2500 (Dec)	1100 (Dec)

A further fourteen sites were of international importance, holding at least one percent of the north-west European total. Note that the Dee was only partially covered in 1977-78 and 1978-79. Increases in these two seasons were widespread geographically, but there were decreasing trends at Lindisfarne, Lough Foyle and the Alt.

Whimbrel (7 sites)

Most winter in West Africa, but four were counted on the Dee in January 1977, one on the Looe River in December 1977 and February 1978, one on Guernsey in December 1978, and two on the Taw/Torridge in February 1979. In Ireland, there was one at Cork Harbour in January 1978, one in Bantry Bay in December 1978, and three at Wexford South Slob in January 1979.

Curlew (165 sites)

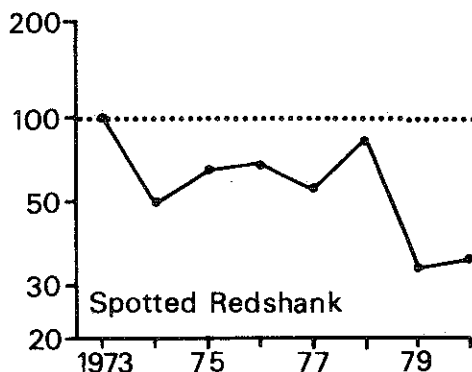


It will be interesting to see whether this neat six or seven year population cycle of Curlews between 1973 and 1980 will be repeated. The closest parallels are with Redshank which comes from largely sympatric breeding grounds, and with Sanderling and Grey Plover which are allopatric as breeders.

	1976-77	1977-78	1978-79
Solway	12842 (Dec)	*	*
Morecambe Bay	7850 (Dec)	5280 (Jan)	*
Swale	3500 (Feb)	1060 (Dec)	690 (Dec)
Wash	2794 (Feb)	2144 (Feb)	1658 (Jan)
Cork Harbour	759 (Dec)	824 (Dec)	2740 (Feb)
Severn	1994 (Dec)	2713 (Jan)	2408 (Dec)
Taw/Torridge	1472 (Feb)	2685 (Dec)	1638 (Feb)
Firth of Forth	2049 (Feb)	2090 (Feb)	2610 (Jan)
Lough Foyle	1843 (Jan)	997 (Jan)	2586 (Dec)
Ballymacoda	2500 (Jan)	1900 (Jan)	200 (Jan)

On the basis of the only available counts, the Solway is by far the most important site for Curlews in winter. Peaks from here and from Morecambe Bay were more than twice as high as peak counts from any other sites. Only the Solway, Morecambe Bay and the Swale were of international importance.

Spotted Redshank (58 sites)



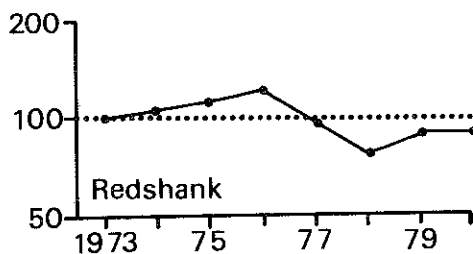
As with Ruff, the large changes evident in the index figures perhaps reflect changes in the northern boundary of the winter range due to weather conditions. There was a substantial drop in the wintering population of Spotted Redshanks in January 1979, during the cold weather, and a poor recovery the next winter suggesting perhaps that there had been considerable additional mortality in the cold spell. It should be noted however that sample sizes are relatively low for Ruff, Spotted Redshank and Greenshank, and this may give rise to

spurious variation in the index figures.

	1976-77	1977-78	1978-79
Millbrook/St.John's Lake	20 (Feb)	*	*
Wexford Harbour and Slobs	17 (Jan)	*	2 (Jan)
Solent(north-west)	3 (Jan)	14 (Feb)	16 (Feb)
Medway	1 (Jan)	2 (Jan, Feb)	12 (Jan)
Beaulieu River	12 (Dec)	12 (Dec)	4 (Jan)
Swale	4 (Feb)	12 (Jan)	1 (Dec)
Poole Harbour	3 (Dec, Feb)	11 (Dec)	1 (Jan, Feb)
Lough Foyle	*	11 (Feb)	*
Strangford Lough	*	11 (Jan)	*

All sites recording more than ten birds in winter are tabulated. These numbers are very small compared with those wintering further south in western Europe, and no British sites are of international importance. There is a clear southerly and westerly bias in the distribution of the tabulated sites.

Redshank (166 sites)

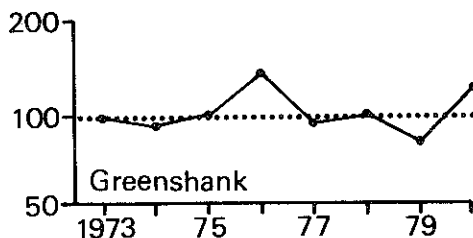


Changes in Redshank winter populations have been relatively small over the 1973-80 period. The pattern of change recalls that for Curlew but with a smaller amplitude and lacking the smooth curves apparent for the latter species.

	1976-77	1977-78	1978-79
Inner Clyde	9200 (Feb)	*	3522 (Feb)
Morecambe Bay	8750 (Jan)	7320 (Jan)	*
Humber	5205 (Jan)	2489 (Dec)	2940 (Jan)
Firth of Forth	3461 (Dec)	3639 (Feb)	4317 (Dec)
Stour	1229 (Dec)	2142 (Feb)	3831 (Dec)
Dee	3793 (Dec)	500 (Jan)	1200 (Dec)
Solway	3324 (Dec)	*	*
Lindisfarne	1670 (Feb)	1800 (Feb)	2430 (Dec)
Medway	1230 (Jan)	738 (Dec)	2402 (Feb)
Hamford Water	1636 (Jan)	1300 (Jan)	2324 (Dec)

The sites tabulated, together with the Wash and the Swale are of international importance. The distribution of major sites is clearly more northerly than that for the previous species: indeed, there is almost a complete geographical separation between the sites listed for the two species.

Greenshank (100 sites)



The Greenshank index has been relatively stable over the 1973-80 period. Perhaps coincidentally, the lowest recorded value was found during the severe winter of 1978-79.

	1976-77	1977-78	1978-79
Lough Foyle	61 (Feb)	14 (Jan)	48 (Dec)
Strangford Lough	39 (Dec)	*	16 (Jan)
Inner Clyde	29 (Feb)	*	9 (Dec)
Taw/Torridge	24 (Feb)	27 (Jan)	23 (Dec)
Broadmeadows	*	25 (Jan)	5 (Jan)
Gwendraeth	24 (Dec)	*	*
Cork Harbour	17 (Dec)	22 (Jan)	23 (Dec)
Shannon	23 (Dec)	3 (Jan)	*
North Bull Island	*	21 (Jan)	17 (Jan)

The British and Irish winter population of Greenshanks is very small compared with numbers wintering further south, and no sites here are of international importance. All sites recording more than twenty Greenshank are tabulated; note that all these sites are in Ireland or western Britain. The largest concentrations are in the north of this range, but this region is a short distance from the main British breeding areas and probably represents the winter range of the British population.

Green Sandpiper (23 sites)

The bulk of the wintering population of this mainly fresh-water species is found inland, and relatively few are detected during Estuaries Enquiry counts. The highest totals were eight on the Taw/Torridge in January 1979, falling to six in February. All other counts were of fewer than five birds.

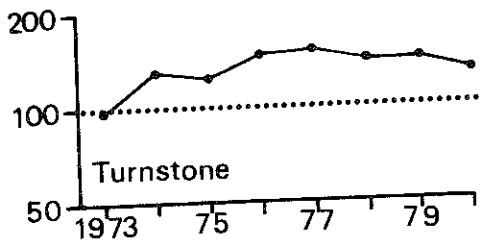
Common Sandpiper (23 sites)

A few Common Sandpipers winter inland but most are estuarine at this season. All counts above two are tabulated.

	1976-77	1977-78	1978-79
Severn	1(Dec,Jan)	*	6(Feb)
Southampton Water	1(Dec,Feb)	5(Dec)	1(Dec)
Taw/Torridge	5(Dec)	4(Dec)	2(Feb)
Tavy	1(Dec)	4(Feb)	1(Dec,Feb)
Langstone Harbour	*	1(Dec)	3(Dec)

There was a strong south-westerly bias to the sites, but one bird was on the Northumberland coast in February 1977, and one on the Conwy in December 1978.

Turnstone (138 sites)



Apart from an increase of 30 percent between the first two seasons, the Turnstone index has not shown any marked changes so far. For this species the index sample is probably a smaller proportion of the total population than for any of the other coastal waders monitored, since many Turnstones winter on rocky shores between counting sites.

	1976-77	1977-78	1978-79
Firth of Forth	2281 (Feb)	2819 (Dec)	2015 (Dec)
Morecambe Bay	1850 (Jan)	1610 (Jan)	*
Rosehearty-Philorth	1005 (Jan)	947 (Jan)	30 (Feb)
Budle Pt-Lynemouth	857 (Jan)	988 (Dec)	531 (Feb)
Wash	601 (Feb)	830 (Feb)	884 (Dec)
Lindisfarne	840 (Feb)	223 (Feb)	91 (Jan)
Blackwater	313 (Jan)	493 (Jan)	730 (Jan)
Orwell	552 (Dec)	460 (Dec)	695 (Dec)
North Yorkshire coast	394 (Jan)	578 (Jan)	262 (Dec)
Guernsey	*	*	500 (Dec)

Counts along the Firth of Forth and at Morecambe Bay were consistently higher than elsewhere. The numbers of Turnstone wintering in western Europe are incompletely known, since large tracts of rocky shore have not yet been properly surveyed, but the provisional criterion for international importance is the presence of five hundred birds. The distribution of sites passing this criterion is predominantly eastern, with Morecambe Bay the only major west coast site.

Grey Phalarope (1 site)

One was found at Scarborough on the North Yorkshire coast in December 1978.

SITES FOR WADERS

Peak counts for the various estuaries are presented in Tables 2 and 3. To calculate the peak, the highest of the monthly counts for each species are listed separately and then added to give a grand total for all wader species recorded.

For the winter peak counts in Table 2, the peak is the sum of the highest midwinter counts (December to February) recorded for each species, while in Table 3, giving counts for the whole year, the highest count made during the year (July to June) is used. Where sites were counted only in the midwinter months, the winter peak and the whole year peak will be the same, but where counts were made in passage months the whole year peak takes account of the importance of spring and autumn passage at the site. Winter peaks are given in Table 2 for all sites at which winter counts were made, while in Table 3 whole year peaks are only given for sites at which more than twenty thousand waders were counted. The estuaries appear in the tables in descending order of importance, in terms of the maximum recorded in any one year. The approximate location of sites can be found by reference to the full

TABLE 2. Peak counts of waders in winter, 1976-77 to 1978-79.

	1976-77	1977-78	1978-79
Morecambe Bay	202457	184213	*
Dee (total)	137508	19341	16929
Solway Firth (total)	123709	*	*
Ribble	114245	61465	56428
Wash	100061	96474	112703
Humber	90989	51011	70303
Firth of Forth	83855	54093	60420
Severn (total)	62220	54494	73719
Lindisfarne	45079	60592	46800
Mersey	53000	20871	31540
Langstone Harbour	42514	45378	24541
Foulness	44579	27796	44772
Cork Harbour	21786	15548	41768
Chichester Harbour	30648	39489	30012
Strangford Lough	31484	37631	24642
Shannon	34508	8745	3131
Swale	33334	34108	30181
Burry Inlet	29443	25647	18240
North Bull Island	17210	17215	27920
Sussex (minor coastal sites)	27775	17718	4902
Duddon	27356	23085	13188
Southampton Water	15098	18755	25220
Stour	15073	25155	19767
Medway	24302	10040	20627
Inner Clyde	24189	*	10835
Taw/Torridge	22452	20741	16967
Leigh-Canvey	21775	17927	11640
Hamford Water	21154	10809	20573
Blackwater	20671	13070	20411
Wexford Harbour and Slobbs	9592	5269	18671
Menai Straits/Lavan Sands	18266	16258	14599
Lough Foyle	17909	10603	17367
Rye Harbour/Pett Level	7754	6750	16666
Dengie	15020	16112	12830
Teesmouth	15975	14086	12379
Exe	14689	15424	14758
Eden	14981	6000	11562
Clonakilty	*	3915	14543
Portsmouth Harbour	6342	7580	11939
Ballymacoda	11897	11441	2412
Gwendraeth	11437	*	*
Crouch/Roach	10995	1055	3170
Alt	7234	10569	5990
Pagham Harbour	10175	6264	5203
Poole Harbour	6994	9935	5865
Bannow Bay	9723	6473	6095
Camel	3661	9389	*
Solent (north-west)	9291	8738	6229
Ythan	4388	8462	4719
Dungarvan	5799	7888	*
Dornoch Firth	3316	7585	6280

Table 2, continued

Budle Point-Lynemouth	7125	7321	6215
Tramore	7110	*	*
Troon	2364	6944	2150
Carlingford Lough	6738	5845	5142
Wigtown Merse	6620	*	*
Piltanton/Luce	6504	*	*
Taff/Ely	6307	2974	4476
Cledgau	4094	2288	6282
Cromarty Firth	5603	6218	1845
Conwy	6210	4909	5938
Moray Firth	5912	1976	3891
Inland Sea/Beddmanarch Bay	5806	4559	5544
Rogerstown	3913	5462	5757
Firth of Tay	5402	4519	5645
Clwyd	5360	3666	4749
Brora-Golspie	3581	1884	5291
Waterford Harbour	5243	*	*
Blackpill	*	5197	*
Orwell	3331	5117	3303
Loch Ryan	5092	*	310
Boyne	4629	4839	*
Tynninghame	3099	3600	4545
Broadmeadows	2514	4506	2304
Dundrum Bay	2928	4429	2857
Colne	3128	4411	310
Tacumshin	4284	1753	3177
Loch Fleet	2283	1260	3950
Afonwen Beach	3946	2885	2393
Pegwell Bay	*	*	3939
Plym	3041	3486	3880
Dipple-Chapeldonan	3803	3521	3620
Ardrossan-Portencross	3761	1307	1682
Blyth	3714	2416	3304
Cull/Killag	3655	1727	1856
Beaulieu River	3628	2770	1512
North Yorkshire (coastal sites)	2600	3481	3214
Millbrook/St. John's Lake	3449	*	*
Hayle	*	*	3399
Galway Bay (inner)	2641	3381	2796
Youghal Bay	1697	3269	2352
Traeth Bach	3098	3233	1503
Rosehearty-Philorth	3191	2955	575
Deben	3013	2405	1954
North Kent Marshes	1484	2989	819
Tynemouth-Blyth	930	2369	2823
Kingsbridge	2118	2738	1173
Newtown	*	2652	2545
Guernsey	*	*	2642
Irvine (Garnock estuary)	2595	2143	1113
Brading Harbour	1291	1044	2588
Larne Lough	2556	*	*
Wells Harbour	1390	2022	2515
Foryd Bay	*	*	2481
Tamar (inner)	*	1692	2266
Hunterston-Fairlie	1728	2206	2157

Table 2, continued

Ballycotton	*	*	2138
Beaully Firth	1972	987	415
Doon	675	1971	506
Ore	1883	310	755
Dyfi	1798	1425	*
Donegal (coastal sites)	1676	*	*
Traeth Melynog	*	*	1644
Red Wharf Bay	1351	1166	1483
Tavy	724	1469	1038
Teign	1083	951	1463
Angle Bay	1018	1334	589
Axe	1334	260	310
Inner Thames	761	408	1329
Western Isles (various sites)	*	*	1266
Sandymount Strand	*	1208	*
Kilcoole	1185	*	198
Pwllheli Harbour	875	965	1164
Fleet/Lodmoor/Radipole/Portland	1159	677	646
Courtnacsherry	1155	*	*
Ayr-Pow Burn	774	1132	1043
Baldoyle Bay	1043	886	1081
Fowey	989	1060	*
Bann	*	*	1037
Yealm	946	983	224
Medina	*	979	*
Lissadell	*	*	974
Lady's Island Lake	958	741	551
Pembroke River	628	212	926
Wootton Creek	920	625	528
Lade Sands	*	*	909
Arran	766	909	860
Esk	894	*	*
Butley Creek	345	881	459
Maidens-Culzean	782	868	781
Ballyness Bay	858	*	425
Lynher River	851	*	*
Lossie	443	846	463
Tweed	695	630	827
Dart	74	689	402
Gann	467	659	*
Broad Lough	549	339	542
Avon	497	503	288
Cummeen Strand	*	*	467
Arthro	*	319	445
Bude Haven	445	*	*
Ballysadare	320	421	193
Whitehills-Banff	*	*	370
Reenydonegan	*	*	369
Looe	293	296	*
Cahore	*	*	254
Sandy Haven	231	213	203
Nyfer	200	95	194
Cloonagh	*	197	*
Bunduff	*	5	182
Tyne-Wear	*	*	166

Table 2, continued

Skye (various sites)	*	*	142
Devlin	*	129	*
Wester Ross (various sites)	*	*	115
Alde	*	97	*
Lisagriffin	*	*	93
Otter	90	82	77
Erme	38	41	37

* No December to February counts available.

TABLE 3. Peak counts of waders for the whole year, 1976-77 to 1978-79.

	1976-77	1977-78	1978-79
Morecambe Bay	202457+	184213+	*
Dee	171093	19341+	18644
Solway	165087	*	*
Wash	100061+	96474+	124346
Ribble	114245+	61465+	56428+
Humber	92634	53544	70303
Firth of Forth	83855+	54093+	60420+
Severn(total)	70938	65507	78163
Lindisfarne	58714	69904	52282
Mersey	54603	20877	31540+
Foulness	52871	31759	53218
Shannon	46448	9176	5448
Langstone Harbour	43361	45965	43496
Chichester Harbour	43486	43368	35142
Cork Harbour	23234	16185	43384
Burry Inlet	41968	34876	26864
Strangford Lough	35311	38626	31565
Swale	34320	38466	32572
Duddon	37894	26419	18754
Inner Clyde	29965	*	10835+
North Bull Island	24198	17839	28261
Sussex(minor coastal sites)	27775+	26154	4902+
Southampton Water	16909	20127	27667
Dengie	26786	17712	26408
Medway	26187	10990	21373
Stour	16688	25416	19767
Blackwater	22251	15051	24641
Taw/Torridge	23342	21433	18553
Hamford Water	22874	12115	21355
Wexford Harbour and Slobs	15032	11036	22682
Leigh-Canvey	22502	19679	12770
Lough Foyle	22223	15032	18957

+ No counts made outside the winter months.

list of sites in Table 4.

Morecambe Bay was once again clearly the most important site for wintering waders in Britain and Ireland. Note that no data were available for Dundalk Bay (Louth) and that there were no full counts reported from the North Kent marshes; both these sites held more than thirty thousand birds in 1975-76. The low counts at the Dee and the Shannon in the second and third seasons are known to be the result of partial cover.

FULL LIST OF ESTUARIES AND COASTS COVERED BETWEEN 1976/77 AND 1978/79

A full list of sites counted for waders during the period is given in Table 4, together with the seasons for which data are available. Unless it is stated otherwise, counts were made in all three seasons, but in some cases only partial cover was achieved and in others no counts were made during the important midwinter months. In many cases the site names given here represent the sum of a number of points on an estuary or stretches of coastline, and more detailed data relating to the individual counting areas are also available.

TABLE 4. List of sites at which waders were counted, 1976-77 to 1978-79.

EAST SCOTLAND (19)

Balmedie - Ythan, Grampian (77-78 only)
 Beaully Firth, Highland
 Brora - Golspie, Highland
 Cromarty Firth, Highland
 Dee - Don, Grampian (77-78 only)
 Dornoch Firth, Highland
 Eden, Fife
 Forth, Fife/Central/Lothian
 Greg Ness - Girdle Ness, Grampian (77-78 only)
 Loch Fleet, Highland
 Lossie, Grampian
 Montrose Basin, Tayside (76-77 only)
 Moray Firth, Highland
 Peterhead - Philorth, Grampian (77-78 only)
 Rosehearty- Philorth, Grampian
 Tay, Tayside/Fife
 Tynninghame, Lothian
 Whitehills - Banff, Grampian (78-79 only)
 Ythan, Grampian

WEST SCOTLAND (18)

Ardrossan - Portencross, Strathclyde
 Arran, Strathclyde
 Ayr - Pow Burn, Strathclyde
 Clyde (inner), Strathclyde (not 77-78)
 Dipple - Chapeldonan, Strathclyde
 Doon, Strathclyde
 Hunterston - Fairlie, Strathclyde
 Irvine (Garnock), Strathclyde
 Loch Ryan, Dumfries and Galloway

Maidens - Culzean, Strathclyde
 Piltanton/Luce, Dumfries and Galloway (not 78-79)
 Skye, Highland (various sites, 78-79 only)
 Solway (inner), Dumfries and Galloway (76-77 only)
 Tiree, Strathclyde (76-77 only)
 Troon, Strathclyde
 Western Isles (various sites, not 77-78)
 Wester Ross, Highland (various sites, 78-79 only)
 Wigtown Merse, Dumfries and Galloway (not 78-79)

NORTH-WEST ENGLAND (8)

Alt, Merseyside
 Dee, Merseyside/Cheshire (not 78-79)
 Duddon, Cumbria
 Esk, Cumbria (76-77 only)
 Mersey, Cheshire/Merseyside
 Morecambe Bay, Lancashire/Cumbria (not 78-79)
 Ribble, Lancashire/Merseyside
 Solway, Cumbria (76-77 only)

WALES (24)

Afonwen Beach, Gwynedd
 Angle Bay, Dyfed
 Artro, Gwynedd (not 76-77)
 Blackpill, West Glamorgan (77-78 only)
 Burry Inlet, West Glamorgan/Dyfed
 Cleddau, Dyfed
 Clwyd, Clwyd
 Conwy, Gwynedd
 Dee, Clwyd
 Dyfi, Gwynedd/Dyfed (not 78-79)
 Foryd Bay, Gwynedd (78-79 only)
 Gann, Dyfed (not 78-79)
 Gwendraeth, Dyfed
 Inland Sea/Beddmanarch Bay, Gwynedd
 Menai Straits/Lavan Sands, Gwynedd
 Nyfer, Dyfed
 Pembroke River, Dyfed
 Pwllheli Harbour, Gwynedd
 Red Wharf Bay, Gwynedd
 Sandy Haven, Dyfed
 Severn, Gwent/South Glamorgan
 Taff/Ely, South Glamorgan
 Traeth Bach, Gwynedd
 Traeth Melynog, Gwynedd (78-79 only)

SOUTH-WEST ENGLAND (21)

Avon, Devon
 Axe, Devon
 Bude Haven, Cornwall (76-77 only)
 Camel, Cornwall (not 78-79)
 Dart, Devon
 Erme, Devon
 Exe, Devon
 Fowey, Cornwall (not 78-79)

Table 4, continued

Hayle, Cornwall (78-79 only)
 Kingsbridge, Devon
 Looe, Cornwall (not 78-79)
 Lynher, Cornwall (76-77 only)
 Millbrook/St.John's Lake, Cornwall (76-77 only)
 Otter, Devon
 Plym, Devon
 Severn, Gloucestershire/Avon/Somerset
 Tamar (inner), Devon/Cornwall
 Tavy, Devon
 Taw/Torridge, Devon
 Teign, Devon
 Yealm, Devon

SOUTHERN ENGLAND (16)

Beaulieu River, Hampshire
 Brading Harbour, Isle of Wight
 Chichester Harbour, West Sussex/Hampshire
 Fleet/Lodmoor/Radipole/Portland, Dorset
 Lade Sands, Kent (78-79 only)
 Langstone Harbour, Hampshire
 Medina, Isle of Wight (not 76-77)
 Newtown, Isle of Wight
 Pagham Harbour, West Sussex
 Poole Harbour, Dorset
 Portsmouth Harbour, Hampshire
 Rye Harbour/Pett Level, East Sussex
 Solent (north-west), Hampshire
 Southampton Water, Hampshire
 Sussex, minor coastal sites
 Wootton Creek, Isle of Wight

EASTERN ENGLAND (29)

Alde, Suffolk (not 78-79)
 Blackwater, Essex
 Blyth, Suffolk
 Budle Point - Lynemouth, Northumberland
 Butley Creek, Suffolk
 Colne, Essex
 Crouch/Roach, Essex
 Deben, Suffolk
 Dengie, Essex
 Foulness, Essex
 Hamford Water, Essex
 Humber, Humberside/Lincolnshire
 Leigh - Canvey, Essex
 Lindisfarne, Northumberland
 Medway, Kent
 North Kent marshes
 North Yorkshire, coastal sites
 Ore, Suffolk
 Orwell, Suffolk
 Pegwell Bay, Kent (not 77-78)
 Stour, Essex/Suffolk
 Swale, Kent

Teesmouth, Cleveland
 Thames (inner), Essex
 Tweed, Northumberland
 Tyne - Wear, Tyne and Wear (78-79 only)
 Tynemouth - Blyth, Northumberland/Tyne and Wear
 Wash, Lincolnshire/Norfolk
 Wells Harbour, Norfolk

CHANNEL ISLANDS (1)
 Guernsey (78-79 only)

NORTHERN IRELAND (6)
 Bann, Londonderry (78-79 only)
 Carlingford Lough, Down/Louth
 Dundrum Bay, Down
 Larne Lough, Antrim (76-77 only)
 Lough Foyle, Londonderry
 Strangford Lough, Down

REPUBLIC OF IRELAND (38)
 [Counts for wetlands in the Republic of Ireland are held by the Irish Wildbird Conservancy. Data from the following estuarine sites are also available from Birds of Estuaries Enquiry files.]
 Akeragh Lough, Kerry (76-77 only)
 Baldoyle Bay, Dublin
 Ballycotton, Cork (not 77-78)
 Ballymacoda, Cork
 Ballyness Bay, Donegal (not 77-78)
 Ballysadare, Sligo
 Bannow Bay, Wexford
 Boyne, Louth/Meath (not 78-79)
 Broad Lough, Wicklow
 Broadmeadows, Dublin
 Bunduff, Sligo (not 76-77)
 Cahore, Wexford (78-79 only)
 Clonakilty, Cork
 Cloonagh, Sligo (77-78 only)
 Cork Harbour, Cork
 Courtmacsherry, Cork (76-77 only)
 Cull/Killag, Wexford
 Cummeen Strand, Sligo (78-79 only)
 Devlin, Meath/Dublin (77-78 only)
 Donegal, coastal sites (76-77 only)
 Dungarvan, Wexford (not 78-79)
 Galway Bay (inner), Galway
 Kilcoole, Wicklow
 Kinsale, Cork (76-77 only)
 Lady's Island Lake, Wexford
 Lisagriffin, Cork (78-79 only)
 Lissadell, Sligo (78-79 only)
 North Bull Island, Dublin
 Reenydonegan, Cork (78-79 only)
 Rogerstown, Dublin
 Rosscarbery, Cork (76-77 only)
 Sandymount Strand, Dublin (77-78 only)

Shannon, Limerick/Clare
 Tacumshin, Wexford
 Tramore, Waterford (76-77 only)
 Waterford Harbour, Waterford (76-77 only)
 Wexford Harbour and Slobs, Wexford
 Youghal Bay, Cork/Waterford

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APPENDIX OF SCIENTIFIC NAMES

English names of birds used in the text refer to the following species or subspecies:-

Mute Swan	<u>Cygnus olor</u>
Bewick's Swan	<u>C. columbianus</u>
Whooper Swan	<u>C. cygnus</u>
European White-fronted Goose	<u>Anser albifrons albifrons</u>
Greenland White-fronted Goose	<u>A. a. flavirostris</u>
Canada Goose	<u>Branta canadensis</u>
Dark-bellied Brent Goose	<u>B. bernicla bernicla</u>
Light-bellied Brent Goose	<u>B. b. hrota</u>
Shelduck	<u>Tadorna tadorna</u>
Wigeon	<u>Anas penelope</u>
Gadwall	<u>A. strepera</u>
Teal	<u>A. crecca</u>
Mallard	<u>A. platyrhynchos</u>
Pintail	<u>A. acuta</u>
Shoveler	<u>A. clypeata</u>
Pochard	<u>Aythya ferina</u>
Tufted Duck	<u>A. fuligula</u>
Scaup	<u>A. marila</u>
Eider	<u>Somateria mollissima</u>
Long-tailed Duck	<u>Clangula hyemalis</u>
Common Scoter	<u>Melanitta nigra</u>
Velvet Scoter	<u>M. fusca</u>
Goldeneye	<u>Bucephala clangula</u>
Smew	<u>Mergus albellus</u>
Red-breasted Merganser	<u>M. serrator</u>
Goosander	<u>M. merganser</u>
Oystercatcher	<u>Haematopus ostralegus</u>
Avocet	<u>Recurvirostra avosetta</u>
Little Ringed Plover	<u>Charadrius dubius</u>
Ringed Plover	<u>C. hiaticula</u>
Killdeer	<u>C. vociferus</u>
Kentish Plover	<u>C. alexandrinus</u>
Greater Sandplover	<u>C. leschenaultii</u>
Dotterel	<u>C. morinellus</u>
Golden Plover	<u>Pluvialis apricaria</u>
Grey Plover	<u>P. squatarola</u>
Lapwing	<u>Vanellus vanellus</u>
Knot	<u>Calidris canutus</u>
Sanderling	<u>C. alba</u>
Little Stint	<u>C. minuta</u>
Baird's Sandpiper	<u>C. bairdii</u>
Pectoral Sandpiper	<u>C. melanotos</u>
Curlew Sandpiper	<u>C. ferruginea</u>
Purple Sandpiper	<u>C. maritima</u>
Dunlin	<u>C. alpina</u>
Buff-breasted Sandpiper	<u>Tryngites subruficollis</u>
Ruff	<u>Philomachus pugnax</u>
Jack Snipe	<u>Lymnocyptes minimus</u>
Snipe	<u>Gallinago gallinago</u>

Long-billed Dowitcher
Woodcock
Black-tailed Godwit
Bar-tailed Godwit
Whimbrel
Curlew
Spotted Redshank
Redshank
Greenshank
Green Sandpiper
Wood Sandpiper
Common Sandpiper
Turnstone
Wilson's Phalarope
Grey Phalarope

Limnodromus scolopaceus
Scolopax rusticola
Limosa limosa
L. lapponica
Numenius phaeopus
N. arquata
Tringa erythropus
T. totanus
T. nebularia
T. ochropus
T. glareola
Actitis hypoleucos
Arenaria interpres
Phalaropus tricolor
P. fulicarius