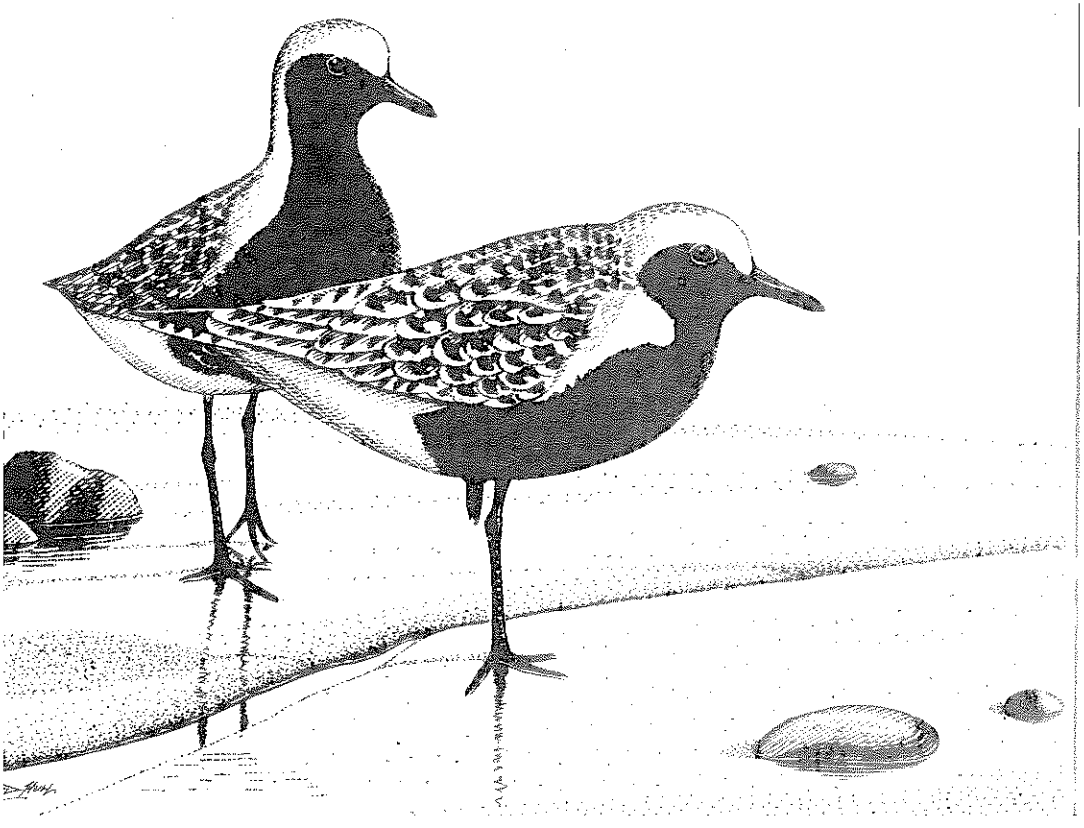
WILDFOWL AND WADER COUNTS 1987-88



Wildfowl and Wader Counts 1987 - 88

The Results of the National Wildfowl Counts and Birds of Estuaries Enquiry in the United Kingdom

By
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This ninth combined report of the National Wildfowl Counts and the Birds of Estuaries Enquiry is the result of the efforts of several thousand volunteer observers, to whom we owe an enormous debt of gratitude.

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CONTENTS

WEATHER IN 1987–88

The autumn was extremely wet, apart from a dry spell in late September, with strong westerly or southerly winds most of the time. Violent storm force winds – with mean speeds exceeding hurricane force in places – hit southern England early on Friday October 16th, accompanied by heavy rain. Some counters were unable to get out for Sunday's count (the first time anything other than snow has caused such a problem!), and many observers at inland sites noted that birds normally feeding on fields during the day, such as Canada Geese, were sitting out on the water.

Late November and early December brought the first cold weather, with easterly or northerly winds, and some waters in the north were still frozen for the December count. Thereafter it was mild and wet, with frequent strong winds, apart from very brief cold snaps in mid and late February, early March and, in northern Scotland, mid-March. Mean monthly temperatures for December to March were above normal in all districts, except northern Scotland in March.

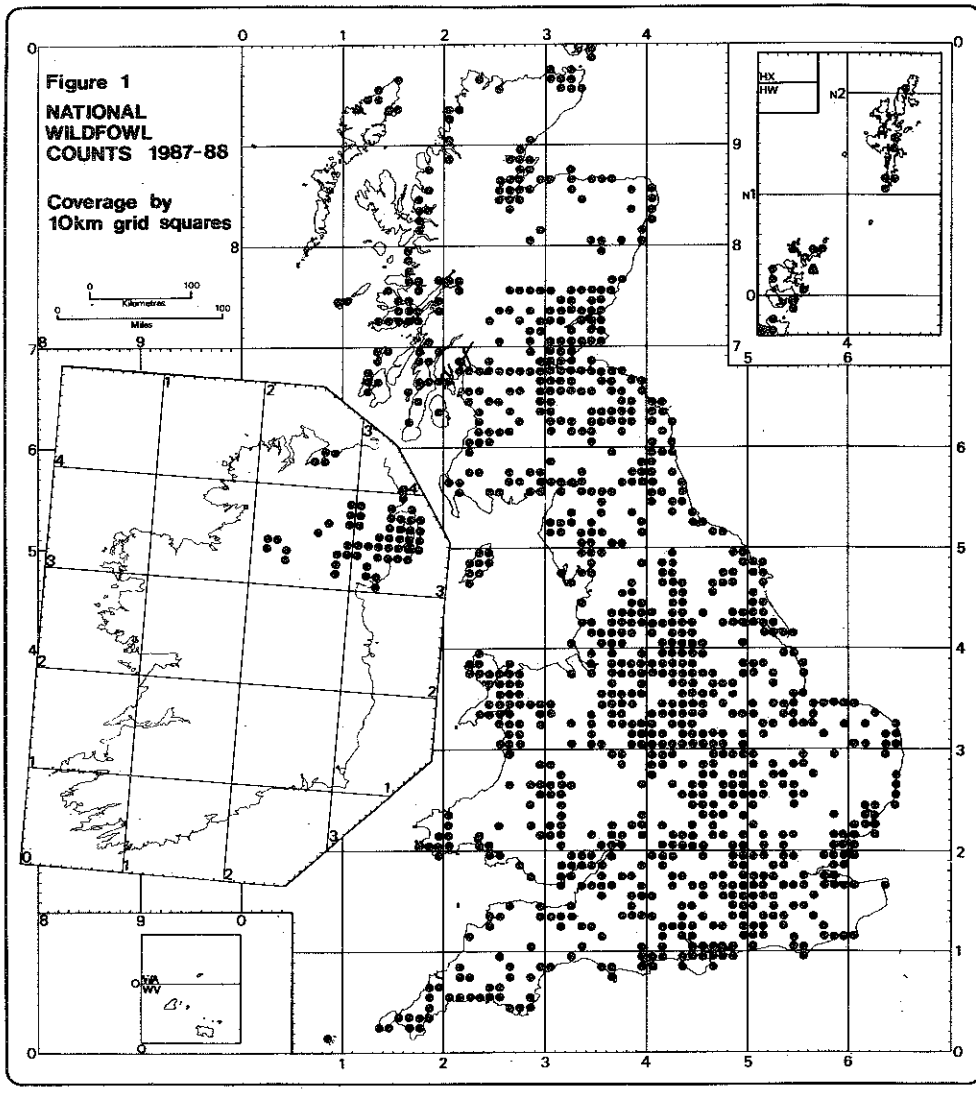
Figure 1
NATIONAL
WILDFOWL
COUNTS 1987-88
Coverage by
10km grid squares
Kilometres
Miles
HX
HW
N2
N1
OHW
WV

WILDFOWL

by D.G.Salmon

The National Wildfowl Counts are organised by the Wildfowl Trust under contract to the Nature Conservancy Council and (since 1988) the Department of the Environment for Northern Ireland. Instigated in 1947, they cover swans, geese and ducks, together with certain co-incident wetland species (Cormorant, Great Crested and Little Grebe and Coot) at as many U.K. wetlands – coastal and inland – as possible from September to March. A special effort is made in January for the International Waterfowl Census (co-ordinated by the IWRB). Supplementary counts of certain swans and geese, which feed away from water by day, are regularly held. Data are also collected for the major moulting concentrations.

COVERAGE AND DEVELOPMENTS IN 1987–88

The set dates were September 13th, October 18th, November 15th, December 14th, January 18th, February 21st and March 13th. Coastal areas were counted on different dates if necessary to coincide with appropriate tides. The British Trust for Ornithology again kindly supplied data from the Birds of Estuaries Enquiry (see later in this booklet) for certain coastal areas.

The usual special censuses of Pink-footed and Greylag Geese in November, Greenland White-fronted Geese in November and April (by the Greenland White-fronted Goose Study) and Dark-bellied Brent Geese in January were also made. In addition, surveys were undertaken of Pinkfeet and Greylags in March and April, Barnacle Geese in March and Dark-bellied Brents in February (instead of December as in 1986–87).

A total of 1,979 sites in Britain and Northern Ireland were covered at least once, including 1,534 in January and 1,124 in all seven months. Among the areas with major improvements in coverage were the north-west mainland of Scotland (for which the NCC's Seabirds At Sea team provided extensive data) and Northern Ireland, where 141 sites were counted, including a number of inland waters in Cos. Armagh and Tyrone. Figure 1 (opposite) shows the extent of the coverage by 10km grid squares.

Since the publication of the last report requests for data have been answered involving 120 sites. Most of these were by the NCC to help evaluate areas under consideration for SSSI or international designations, or under threat of development, but numerous requests were also received from other organisations.

In-depth reviews of the numbers and distribution of the following species have been published in the last year: Greenland White-fronted Goose, feral Greylag Goose, Wigeon, Gadwall, Pochard, Tufted Duck and Scaup.

Research projects making use of National Wildfowl Count data are currently in progress at the Wildfowl Trust on the following subjects: impact of disturbance from shooting; impact of night shooting; cold weather movements in Europe; local movements of Bewick's Swans; numbers and distribution of Shelduck in the Severn Estuary; movements and turnover of Wigeon; sex ratio of Pochard; ecology of Ruddy Ducks.

NOTICE!

Wildfowl Trust expeditions during the summer of 1988 visited the breeding or moulting grounds of Whooper Swans and Pink-footed, Greenland White-fronted and Barnacle Geese. In some cases birds were caught and fitted with coloured plastic leg-rings engraved with 2 or 3 letter codes. For further details of these and species which have been similarly ringed in Britain see the individual species accounts which follow. Please send all sightings of colour-ringed wildfowl, noting ring-code, colour, date, time, place, habitat, flock size and family assoctiations to Carl Mitchell at Slimbridge.

TOTAL COUNTS

Tables 1 and 2 give the total counts of each species month by month in 1987–88 for Great Britain (i.e. England, Scotland and Wales) and Northern Ireland respectively. Certain sea ducks and geese are omitted as many of their major resorts are covered irregularly; the numbers found in 1987–88 are given in the species accounts. (The Appendix contains the 1% levels of National Importance for Britain, based on the maximum numbers estimated to be present at any one time.)

Table 1. TOTAL NUMBER OF WILDFOWL COUNTED IN GREAT BRITAIN, 1987/88

	Monthly totals (no of sites) Sep (1,161)	Oct (1,230)	Nov (1,335)	Dec (1,300)	Jan (1,498)	Feb (1,316)	Mar (1,309)	Average Max. 1982/83 to 1986/87
	(Figures over 1,000 rounded to nearest 100; 100–1,000 to nearest 10.)							
Great Crested Grebe	6,800	6,300	5,600	4,500	4,700	5,900	5,800	6,100
Mute Swan	9,300	9,500	10,200	9,900	8,700	8,200	7,000	8,400
Bewick's Swan	2	60	1,900	4,500	5,000	1,400	70	6,700
Whooper Swan	20	2,400	2,800	3,100	2,900	2,300	2,000	3,500
Bean Goose	1	0	5	310	270	100	2	310
Pink-footed Goose	410	90,300	172,000*	118,400	73,000	54,200	85,800*	108,800
European White-fronted G	4	14	120	3,700	7,500	6,200	110	6,300
Greenland White-fronted G	1	1,200	12,400*	2,700	2,200	1,600	3,200	9,400
Greylag Goose (incl feral)	8,900	77,000	105,000*	53,100	48,900	34,800	53,900*	100,000
Canada Goose	32,600	29,100	28,100	31,500	30,500	22,700	16,900	27,500
Dark-bellied Brent Goose	5,900	33,300	58,600	80,200	91,400	87,600	30,100	91,000
Light-bellied Brent Goose	3	250	1,600	1,800†	1,300	6	1	1,600
Shelduck	13,800	19,600	39,800	55,000	58,200	64,200	43,800	79,000
Wigeon	16,200	122,000	155,000	234,100	214,800	132,700	77,400	242,600
Gadwall	4,200	4,500	5,200	6,100	4,900	4,400	2,800	4,700
Teal	33,500	57,900	67,600	90,100	82,900	58,800	35,290	91,500
Mallard	129,400	139,100	150,400	192,100	172,700	107,700	53,700	181,500
Pintail	2,600	15,500	26,800	28,400	20,300	14,500	2,900	23,700
Shoveler	5,900	7,300	6,400	5,000	4,300	4,800	4,500	7,800
Pochard	8,300	22,000	30,000	32,400	32,200	32,200	15,800	35,200
Tufted Duck	33,700	34,100	41,100	43,800	45,100	38,300	31,200	44,500
Scaup	310	3,000	920	2,100	5,600	5,400	3,500	2,700
Goldeneye	130	780	6,100	10,300	11,400	12,200	10,000	10,200
Smew	0	1	3	67	94	69	45	150
Red-breasted Merganser	1,100	2,300	3,500	3,600	3,900	3,300	2,100	4,100
Goosander	700	1,300	880	3,300	4,000	2,500	1,500	2,800
Ruddy Duck	1,100	1,400	1,900	2,200	2,300	2,200	1,800	2,100
Coot	63,200	75,100	85,300	86,300	73,600	53,100	35,800	84,100

* Complete censuses attempted. † 2,000 late November/early December.

Table 2. TOTAL COUNT OF WILDFOWL IN NORTHERN IRELAND, 1987/88

	Monthly totals (no. of sites)							Maximum
	Sep (108)	Oct (104)	Nov (105)	Dec (125)	Jan (136)	Feb (132)	Mar (136)	1986–87
Gt Crested Grebe	1,500	2,100	1,100	970	710	1,400	1,300	1,600
Mute Swan	1,900	1,600	1,600	1,700	1,800	1,600	1,600	1,600
Bewick's Swan	0	1	33	340	330	220	60	350
Whooper Swan	3	1,800	1,800	1,500	1,900	2,200	2,200	2,200
Gd White-fronted Goose	0	11	210	300	71	180	38	78
Greylag G (incl feral)	230	210	540	400	770	450	850	760
Light-bellied Brent	5,700	16,900	8,100	5,500	4,700	3,400	3,200	16,400
Canada Goose	120	74	130	140	190	210	120	280
Shelduck	170	130	300	1,500	2,200	2,900	2,000	2,600
Wigeon	3,200	16,000	13,100	7,500	6,400	6,700	2,600	16,700
Gadwall	130	120	170	200	160	170	180	150
Teal	1,000	2,600	2,500	5,600	5,300	4,000	2,100	4,400
Mallard	8,300	7,000	7,400	9,400	7,500	4,200	2,400	9,300
Pintail	37	97	170	210	120	110	79	250
Shoveler	90	70	250	190	200	140	110	440
Pochard	890	13,000	12,600	21,500	25,000	7,700	1,600	16,800
Tufted Duck	3,000	11,300	11,500	18,400	21,000	17,500	9,400	9,600
Scaup	15	1,100	1,400	820	620	1,300	700	2,000
Eider	120	140	120	200	260	370	340	380
Goldeneye	120	560	9,100	9,800	11,600	12,000	9,800	10,900
Smew	0	0	0	2	2	2	1	3
R-b Merganser	420	460	520	360	410	650	610	440
Goosander	0	0	0	3	7	6	0	4
Ruddy Duck	7	4	14	32	25	18	23	29
Coot	6,600	6,000	6,300	5,800	4,700	3,500	3,200	6,100

MONTHLY FLUCTUATIONS

Since the coverage is not identical in every month, the monthly count totals do not necessarily give a reliable guide to changes in relative numbers during the season. By using data only from sites covered in all seven months from September to March, Tables 3 and 4 overcome this. Each month's total for the sites in question is expressed as a percentage of those present in the peak month. Non-migratory, scarce and irregularly covered species are excluded.

Table 3. NOS. OF WILDFOWL COUNTED IN BRITAIN IN EACH MONTH OF 1987/88 EXPRESSED AS PERCANTAGES OF THE TOTAL FOR THE PEAK MONTH, based on sites covered in all seven months, September to March (n=1,033)

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
G C Grebe	100	94	84	66	57	83	83
Bewick's Swan	0	1	37	81	100	21	1
Whooper Swan	0	66	90	99	100	87	60
Eur. Whitefront	0	0	2	48	100	84	2
D-b Brent Goose	0	57	74	93	100	96	27
Shelduck	20	44	58	74	86	100	79
Wigeon	7	42	64	94	100	62	39
Gadwall	80	85	93	100	85	73	48
Teal	41	66	80	100	89	65	44
Mallard	76	79	83	100	85	54	31
Pintail	11	64	100	89	50	30	10
Shoveler	80	100	82	61	53	59	59
Pochard	25	66	84	92	93	100	47
Tufted Duck	85	85	96	98	100	88	72
Scaup	9	54	49	92	79	86	100
Goldeneye	1	6	54	81	93	100	92
Goosander	34	22	41	90	100	95	74
Coot	81	93	100	99	85	62	43

Table 4. NOS. OF WILDFOWL COUNTED IN N.IRELAND IN EACH MONTH OF 1987/88 EXPRESSED AS PERCENTAGES OF THE TOTAL FOR THE PEAK MONTH, based on sites covered in all seven months, September to March (n=91).

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
G C Grebe	100	100	33	56	37	48	45
Bewick's Swan	0	0	10	100	96	65	18
Whooper Swan	0	100	95	74	65	86	85
Shelduck	4	5	11	51	81	100	75
Wigeon	20	100	81	43	26	31	13
Gadwall	67	59	84	100	80	83	89
Teal	13	37	44	100	73	59	33
Mallard	89	75	81	100	73	42	24
Pintail	17	45	79	100	56	50	34
Shoveler	34	24	100	76	77	54	35
Pochard	4	52	51	87	100	30	5
Tufted Duck	7	25	25	40	100	38	19
Scaup	1	79	100	46	30	78	49
Goldeneye	1	5	78	85	100	99	83
Coot	100	91	95	83	63	46	41

COAST v INLAND

During the course of the season several species show a movement from freshwater to the coast. Table 5 shows the proportions of selected species counted on the coast (i.e. estuaries and open shore) in each month in Britain and Northern Ireland. To allow for variations in coverage, only those sites counted in all seven months, September to March, were included in the analyses.

Table 5. THE PERCENTAGE OF SELECTED SPECIES OCCURRING ON THE COAST IN EACH MONTH OF 1987/88. (x = total count in sample below 1,000).

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
BRITAIN:							
Great Crested Grebe	9	15	12	15	17	23	12
Mute Swan	27	28	32	34	35	34	33
Bewick's Swan	x	x	6	10	9	12	7
Wigeon	58	67	65	55	51	43	37
Gadwall	7	7	8	13	14	20	13
Teal	46	51	54	57	47	46	45
Mallard	24	27	26	24	26	29	24
Pintail	85	81	95	93	88	79	44
Shoveler	17	20	25	25	28	38	17
Pochard	6	3	7	11	10	10	5
Tufted Duck	3	2	3	5	4	3	3
Goldeneye	x	x	29	42	42	40	34
Coot	3	2	3	4	4	6	5
N.IRELAND:							
Great Crested Grebe	1	4	55	41	66	65	24
Mute Swan	14	20	25	26	23	25	25
Wigeon	99	93	94	68	64	43	27
Gadwall	25	32	34	28	33	46	37
Teal	57	73	66	46	53	55	38
Mallard	38	40	45	49	47	38	30
Pintail	x	x	99	95	95	98	x
Shoveler	x	x	49	71	65	38	x
Pochard	3	0	1	1	1	4	3
Tufted Duck	6	2	3	2	1	2	3
Coot	9	12	15	11	14	14	9

TOTAL NUMBERS AT INDIVIDUAL SITES

In addition to the criteria for individual species, any site regularly holding a total 20,000 or more waterfowl (i.e. wildfowl, waders, grebes, divers, etc.) qualifies as internationally important, as agreed by the contracting parties to the Ramsar Convention (see Appendix). Table 6 lists all places in the U.K. which have held an average of 10,000 or more wildfowl, Cormorants, Great Crested and Little Grebes and Coots over the last five seasons. These "peak totals" are the sum of the seasons' peak counts for individual species, regardless of the month in which they occurred. The second column shows the mean of each season's highest total count of wildfowl (excluding Cormorants, etc.) in a single month, this being the method used in previous reports.

Table 6. SITES WITH AVERAGE PEAK TOTALS OF 10,000 OR MORE BIRDS IN THE WILDFOWL COUNTS, 1983/84 TO 1987/88.

	Average Peak Total	Average Maximum Total Wildfowl
Loughs Neagh/Beg (Cos Down/Antrim/Derry/Tyrone//Armagh)	59,937	46,543
The Wash (Norfolk/Lincs)	58,445	49,522
Ouse Washes (Norfolk/Cambs)	55,359	47,883
Ribble Estuary (Lancs)	44,069	40,365
Loch of Strathbeg (Grampian)	35,874	25,518
Mersey Estuary (Cheshire/Merseyside)	33,731	28,770
Upper Solway Firth (Cumbria/Dumfries & Galloway)†	33,544	32,333
Thames Estuary (Kent/Gt London/Essex)	31,554	27,763
Lindisfarne (Northumberland)	31,264	24,332
Morecambe Bay (Lancs/Cumbria)*	30,756	23,347
Abberton Reservoir (Essex)	29,340	13,361
North Norfolk Coast	28,000	23,777
Severn Estuary (Glos/Avon/Somerset/Gwent/S Glam)	26,254	24,210
Montrose Basin (Tayside)	25,826	23,330
Lough Foyle (Cos Derry/Donegal)	25,737	22,559
Strangford Lough (Co Down)	25,267	20,103
Dee Estuary (Cheshire/Clwyd/Merseyside)	24,127	20,600
Loch Leven (Tayside)	23,805	16,655
The Swale (Kent)	22,870	18,816
Firth of Forth (Lothian/Central/Fife)	22,251	15,508
Dornoch Firth (Highland)*	22,158	16,983
Cromarty Firth (Highland)*	21,486	15,237
Rutland Water (Leics)	21,389	12,119
The Humber (Lincs/Humberside)	21,046	16,149
Southwest Lancs (Pinkfeet, incl. Martin Mere/Ribble)	19,230	19,230
Hamford Water (Essex)	18,996	14,525
Martin Mere (Lancs)	18,800	13,168
Westwater Reservoir (Borders)	18,388	18,198
Chichester Harbour (W Sussex)	18,218	15,495
Slains Lochs (Grampian)	17,761	15,610
Blackwater Estuary (Essex)	16,879	14,884
Wigtown Bay (Dumfries & Galloway)	16,676	13,709
Derwent Ings (Humberside/N Yorks)	15,192	14,057
Moray Firth (Grampian/Highland) Sea Ducks	13,064	††
Burry Inlet (W Glam/Dyfed)	13,016	11,316
Beauly Firth (Highland)*	12,972	6,963
Langstone Harbour (Hants)	12,447	10,790
Loch Eye (Highland)**	12,433	11,800
Medway Estuary (Kent)	12,387	10,846
Dinnet Lochs (Grampian)	11,729	10,776
Crouch Estuary (Essex)	11,684	10,174
Inner Moray/Inverness Firths (Highland)*	11,379	9,186
Chesil Fleet (Dorset)	11,165	9,298
Carsebreck/Rhynd Lochs (Tayside)	11,069	9,453
Castle Loch, Lochmaben (Dumfries & Galloway)	10,064	9,249

* Only four seasons of full data
** Only three seasons of full data
† Incl Caerlaverock (average peak total 23,437)
†† Peak seasonal species maxima only available

INDICES

Table 7 shows the trend indices for Britain for 1987–88, with earlier years for comparison. The indices are obtained by comparing counts from sites covered in consecutive years and relating the resultant ratios to a running figure based abitrarily on 1970–71 = 100. The months chosen for each species are those in which the greatest numbers are usually counted. For species which may peak in either of two months, the average indices for these months are given; for those with significant populations at different times of year (usually autumn and mid-winter), separate sets of indices are given. Species for which full censuses are attempted each year (e.g. Pink-footed and Greylag Geese) and those with erratic coverage (e.g. the sea ducks) are omitted.

Similar analyses will be undertaken for Northern Ireland when a long enough run of seasons is available from the present degree of coverage.

Table 7. INDICES OF ABUNDANCE FOR WILDFOWL IN BRITAIN, based on 1970–71=100. (Five–year means 1965/66 to 84/85; seasonal figures thereafter)

		Mean 1965/66 to 69/70	Mean 1970/71 to 74/75	Mean 1975/76 to 79/80	Mean 1980/81 to 84/85	85/86	86/87	87/88
Mute Swan	Sep	96	103	93	119	125	132	140
	Jan	106	90	85	89	89	90	101
Bewick's S.	Jan	50	72	153	215	298	360	227
Whooper S.	Nov	77	104	148	164	164	152	166
	Jan	146	118	114	116	144	130	174
E.Whitefront	Jan	85	56	39	40	51	45	89
Canada G.	Sep/Jan	72	127	175	275	366	351	425
Db Brent	Jan	87	134	305	455	520	455	469
Shelduck	Jan	106	102	132	133	148	121	120
Wigeon	Oct	112	138	149	183	148	185	185
	Jan	91	84	85	97	122	127	107
Gadwall	Oct	50	146	149	259	351	462	425
	Dec	81	164	336	781	1112	1017	1292
Teal	Dec/Jan	76	115	150	193	174	132	178
Mallard	Sep	83	92	82	92	89	91	89
	Dec	89	86	80	90	102	91	101
Pintail	Dec	54	151	177	147	144	75	167
Shoveler	Oct/Nov	97	144	193	201	215	219	197
	Jan	63	113	139	127	108	70	88
Pochard	Jan	105	124	122	101	87	78	86
Tufted Duck	Sep	64	110	122	134	126	115	113
	Dec	91	119	123	123	138	132	140
Scaup	Jan	110	114	33	11	10	13	29
Goldeneye	Jan	92	126	109	98	99	108	110
RbMerganser	Jan	101	115	245	222	228	295	204
Goosander	Jan	80	121	285	213	271	283	325
	Feb	115	153	123	171	143	272	177

SPECIES ACCOUNTS

NB: The tables show sites exceeding the G.B. criteria for national importance for each species (see Appendix), ranked according to the average maxima for the five seasons 1983–84 to 87–88. Where this would involve an unmanageably long list a convenient higher "cut-off" point has been used. A cross indicates no counts made; brackets incomplete data. The "month" column shows when the peak occurred in 1987–88. In addition to the main September-March counts, "off-date" and July/August data are received for some resorts. These are included where applicable.

Great Crested Grebe *Podiceps cristatus*

After the usual autumn peak and mid-winter decline in the numbers counted there was a marked increase in February in both Britain and Northern Ireland, sustained into March (Tables 1 to 4). These birds were particularly concentrated on the coast (Table 5). In addition to the sites in Table 8 (below) three estuaries held over 150 in February – Lough Foyle (308), Colne (255) and Blackwater (190) – and two inland areas at other times – the western sector of the Cotswold Water Park, Glos/Wilts (157, March) and Stewartby Lake, Beds (155, December). In Table 8 note the massive autumn 1987 gathering on one estuary, Belfast Lough (the February count there being 237), and the decline at Eyebrook Reservoir. The large flock off the Borth/Ynyslas coastline just south of the Dyfi Estuary, usually peaks in January and February, and may be linked to the moult concentration at Aber Ogwen, further north on the Welsh coast (H.W.Roderick).

The British population is estimated at roughly 10,000; a regularly attained level of 100 is therefore required for national importance (see Appendix).

Table 8. GREAT CRESTED GREBE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Loughs Neagh/Beg	x	x	1,105	1,104	1,356	(Sep)	1,158
Rutland Water	771	966	705	472	382	(Sep)	659
Firth of Forth	263	326	542	759	795	(Jan)	537
Grafham Water, Cambs	350	950	411	524	288	(Dec)	505
Chew Valley Lake, Avon	510	465	530	445	430	(Aug)	476
Belfast Lough, Antrim/Down	x	x	282	279	703	(Oct)	421
Queen Mary Resr, Surrey	340	348	310	410	413	(Dec)	364
Upper L Erne, Fermanagh	x	x	263	374	446	(Mar)	361
Borth/Ynyslas, Dyfed	317	138	310	177	(103)		236
Aber Ogwen, Gwynedd	x	x	260	x	189	(Sep)	225
Carlingford Lough, Down	x	x	199	186	164	(Sep)	183
Pitsford Resr,Northants	176	139	151	169	189	(Sep)	165
Eyebrook Reservoir, Leics	180	353	91	101	55	(Nov)	156

Mute Swan *Cygnus olor*

With the banning in January 1987 of the use of most sizes of lead weights the main factor which is believed to have depressed the population, particularly along the main lowland river systems, has been removed. A gradual improvement in Mute Swan numbers in these areas can be expected. Figure 2 suggests that such an increase may already be under way in the Thames basin. The September population indices are given for the six

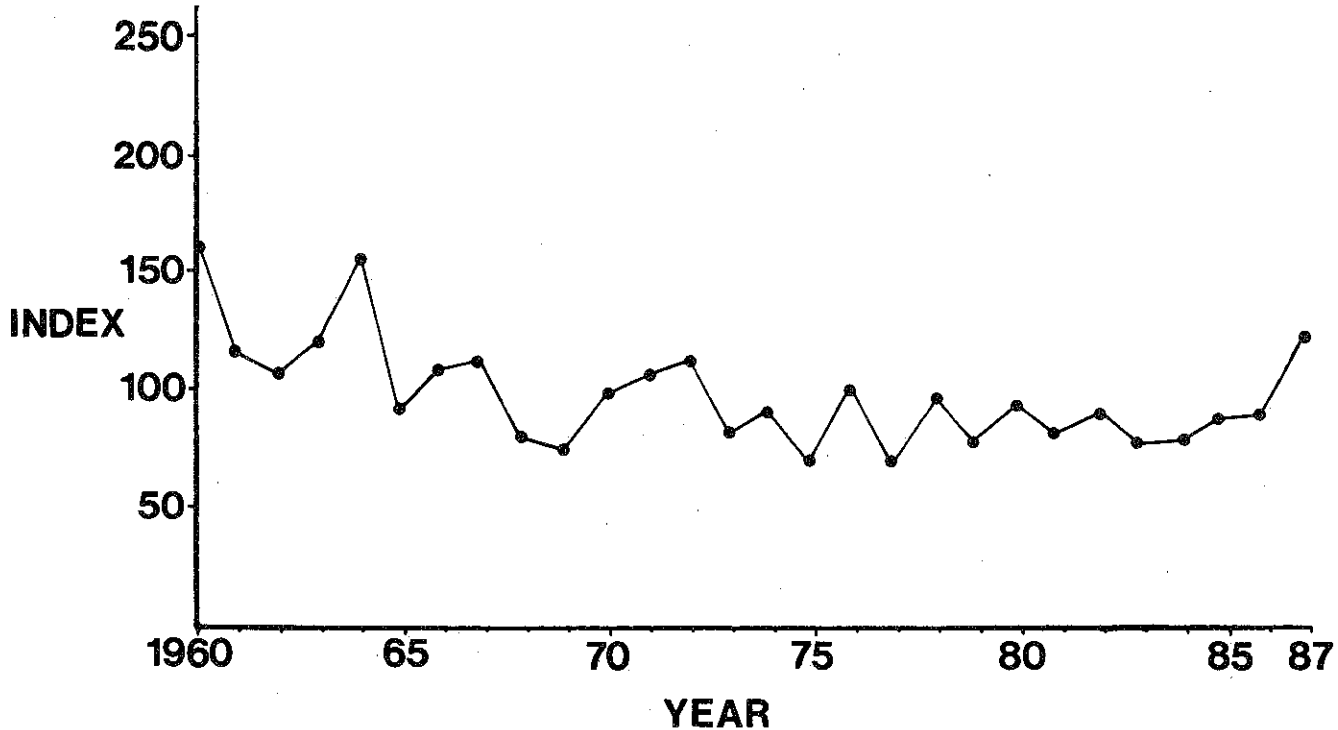

Figure 2. September trend of Mute Swan in Thames Valley

counties bordering the Thames above London (Oxfordshire, Berkshire, Buckinghamshire, Hertfordshire, Surrey and Greater London). Annual or short-term fluctuations in the indices should be treated with caution, and the size of the increase in 1987 may well be misleading. Nevertheless, the recent trend does appear more healthy and gives rise to considerable optimism. Furthermore, a survey by Thames Fisheries Consultative Council in July 1988 found 684 Mute Swans along the 236 km of the Thames and its backwaters above Richmond, compared to 404 in July 1983 (French 1988).

Table 9 lists the major concentrations around the country. Note the high counts at the Colne Estuary (mainly at Colchester Hythe) and the Loch of Harray in 1987–88. Intensive monthly surveys of the Somerset Levels found a maximum total of 286 Mute Swans.

Table 9. MUTE SWAN: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Loughs Neagh/Beg	x	x	314	1,069	1,269	(Sep)	884
Chesil Fleet	740	681	635	812	774	(Nov)	728
Ouse Washes	643	570	477	500	586	(Jan)	555
Tweed Estuary, Northumb'nd	767	674	602	309	268	(Jan)	524
Abberton Reservoir	427	432	450	547	481	(Jul)	467
Colne Estuary, Essex	(50)	350	341	435	618	(Nov)	436
Christchurch Harbour, Dorset	363	345	370	392	341	(Aug)	362
Strangford Lough	384	242	300	193	176	(Oct)	306
Somerset Levels	(110)	(29)	(74)	(55)	286	(Dec)	286
Loch of Harray, Orkney	234	177	216	293	456	(Dec)	275
R Welland: Spalding to Borough Fen, Lincs	265	316	305	254	164	(Nov)	261
Stour Estuary, Essex/Suffolk	225	165	212	349	290	(Oct)	248
Rutland Water	184	181	171	462	229	(Dec)	245
Loch of Strathbeg	280	242	263	163	187	(Sep)	228
Montrose Basin	231	161	223	187	112	(Jan)	189

Bewick's Swan *Cygnus columbianus bewickii*

The 1987–88 January population index for Britain was the lowest for four years, and the total count the lowest for five, not surprisingly in such a mild winter. Against the general pattern, the flock which roosts at Martin Mere and feeds mainly on the south shore of the Ribble Estuary reached a record level in December. On the Ouse Washes excessively high water levels in February caused birds to move to the Nene Washes, 20km north-west.

The peak at Slimbridge was the lowest for 13 years, although a total of 364 birds are known to have visited the site at some time during the winter. Of these, 13.5% were juveniles, compared with 8.5% in a sample of 3,200 on the Ouse Washes and 9.8% out of 143 at Martin Mere (Rees 1988).

Table 10 lists all U.K. sites averaging more than 150 over the period 1983–84 to 87–88. Additionally, Martham Broad, Norfolk, held 193 in February 1988. No more than 111 Bewick's Swans were found during the Somerset Levels surveys; there was very little standing water to attract such species, despite the high rainfall.

Table 10. BEWICK'S SWAN: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Ouse Washes	3,364	5,227	4,743	6,164	3,787	(Jan)	4,657
Nene Washes, Cambs	396	211	937	x	1,400	(Feb)	736
Martin Mere/Ribble Est	374	330	410	415	552	(Dec)	416
Slimbridge, Upr Severn Est	281	421	475	414	240	(Dec)	367
Loughs Neagh/Beg	x	x	338	234	264	(Jan)	279
Walland Marsh, Kent	212	300	227	220	225	(Jan)	237
Hampshire Avon: Ringwood/Harbridge	171	219	236	311	136	(Mar)	216
Lough Foyle, Derry	193	128	293	110	145	(Feb)	173
Walmore Common, Glos	105	167	154	211	200	(Feb)	167

Whooper Swan *Cygnus cygnus*

The January index was the highest since 1967, and the Ouse Washes count in that month the biggest made in England since the peak period at Lindisfarne in the early 1960s. Ten colour-ringed birds reached the Ouse Washes last winter, of which two had been caught in Iceland, five at Caerlaverock on the Solway Firth and three at Welney on the Washes themselves (Rees 1988). With 405 Whoopers ringed in Iceland this summer (many of which were marked with yellow dye on the back of the head or the top of the breast) and more catches planned in Britain in 1988–89, it is hoped to learn much more about the movements of this species.

As well as Mute Swans (see earlier), exceptional numbers of Whoopers were present at the Loch of Harray, Orkney, reaching 485 in December. The only other record of over 170, apart from those qualifying for Table 11, was at Loch Leven, with 199 in November.

There was a mistake in last year's table; the figure for Martin Mere/Ribble in 1985–86 should have read 238 not 475.

Table 11. WHOOPER SWAN: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Lough Foyle	674	1,162	2,597	1,030	1,288	(Oct)	1,349
Loughs Neagh/Beg	x	x	723	1,266	1,105	(Mar)	1,031
Upper Lough Erne	x	x	876	821	669	(Jan)	789
Ouse Washes	248	230	330	520	582	(Jan)	382
Loch of Strathbeg	382	234	508	406	202	(Oct)	346
L Eye/Cromarty Firth	62	60	405	461	500	(Oct)	297
Martin Mere/Ribble Est	177	127	238	243	429	(Dec)	243
Wigtown Bay	x	211	281	120	212	(Nov)	206
R Eden: Low Crosby, Cumbria	x	x	192	190	x		191
Caerlaverock, Upr Solway	165	104	218	220	225	(Nov)	187

Bean Goose *Anser fabalis*

The regular flock in the Carron Valley, Central Region, amounted to 122 in December and remained in the general area until February. The main wintering area, the Yare Valley,

Norfolk, was occupied from early December to mid-February, with a peak of 420, the highest on record. Neck collars have been fitted to several hundred Bean Geese on their moulting grounds in Sweden by the Swedish Hunting Association. Of these, 22 were seen in Norfolk last winter. In addition, as part of a re-introduction project to parts of southern Sweden where the species formerly bred naturally, 292 juveniles have been colour ringed. Six of these appeared in the Carron Valley last autumn.

Pink-footed Goose *Anser brachyrhynchus*

The autumn flocks contained a high proportion of young – 25.6% – and there was a further substantial increase in the number found in the November census, to 172,000 (Salmon 1988a). Of these, 53% were in Fife and Tayside Districts, including a remarkable 35,000 at Montrose Basin. In October, when coverage is less comprehensive and some birds have probably not yet arrived in Britain, the national total of 90,300 included 33,000 in Lothian and Tweeddale, 20,000 of them at Westwater Reservoir.

On 9th and 10th January over 2,000 Pinkfeet were observed flying in a westerly or north-westerly direction over South and West Yorkshire and 500 over Nottinghamshire, presumably on their way from Norfolk and the Wash to Lancashire.

A new programme of spring monitoring of Pink-footed and Greylag Geese was instigated in 1988, with surveys based on the November system of roost and field counts in both March and, for the first time, April (Salmon 1988b). Coverage was better in April, when 114,600 Pinkfeet were found, 55% of them north of Aberdeen, including a total of 42,600 at the lochs of Slains and Strathbeg. Observers were asked to monitor movements thereafter. The main departure from Grampian was between 21st and 26th April, but at Carsebreck, further south, 5,200 remained on 2nd May.

Table 12 highlights the recent importance of Westwater Reservoir and the decline at nearby Gladhouse, now heavily disturbed. The "South Lancs Mosses" site shown in previous reports has been split between South-west Lancs (including the major centres at Martin Mere and the Ribble Estuary) and the separate group which feeds in the Fylde area and roosts at Pilling on the south shore of Morecambe Bay. The following sites not qualifying for the table held 2,000 in 1987–88: Watchwater Reservoir, Borders (4,000, November); Hightae Loch, Dumfries & Galloway (4,000, February); Cowgill Reservoir, Lanark (2,000, November); Lunan Bay, near Montrose, Tayside (2,000, November).

During an expedition to north-east Greenland in July 1988, 21 moulting Pinkfeet were ringed, bringing the total of the Iceland/Greenland population marked in the current project to 379. They carry WHITE (ringed in Iceland or Britain) or ORANGE (Greenland) plastic rings with a three-letter code. Already several birds have been shown to move between sites within one winter, including one which went from Martin Mere to Norfolk. A total of 230 Pinkfeet of the Svalbard population have been ringed in their Danish and Dutch wintering grounds. These bear BLUE rings with a two-digit code and may reach Britain (particularly Norfolk), so please look out for them.

Table 12. PINK-FOOTED GOOSE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Loch of Strathbeg	7,400	20,200	27,900	29,800	20,900	(Apr)	21,240
South-west Lancs	20,635	20,660	19,990	16,220	22,815	(Dec)	20,064
Westwater Reservoir	19,400	8,700	13,780	24,610	22,400	(Dec)	17,778
Slains Lochs	17,400	19,000	15,300	9,590	21,700	(Apr)	16,598
Montrose Basin	9,500	9,425	12,000	12,600	35,000	(Nov)	15,705
Upper Solway Firth	16,250	27,000	6,895	14,125	11,467	(Mar)	15,146
Loch Leven	11,500	12,670	10,000	10,500	9,700	(Nov)	10,874
Wigtown Bay	12,000	12,000	17,000	3,910	7,000	(M/A)	10,332
Scolt Hd, N Norfolk	8,000	x	9,800	12,000	4,000	(Dec)	8,450
Fylde/Morecambe Bay	5,000	8,950	4,000	12,795	8,700	(Feb)	7,889
Dupplin Loch, Tayside	5,570	6,960	6,075	8,448	11,300	(Nov)	7,671
Castle Loch	8,900	6,950	13,400	5,000	950	(Feb)	7,040
Aberlady B, F of Forth	3,710	4,610	12,500	3,000	11,000	(Nov)	6,964
Cameron Reservoir	8,000	4,000	8,000	7,500	6,000	(Nov)	6,700
The Wash	5,500	9,500	8,288	2,712	6,621	(Dec)	6,524
Carsebreck/Rhynd Lochs	2,840	500	7,200	5,840	11,100	(Nov)	5,496
Fala Flow, Lothian	6,548	3,240	1,352	6,500	6,800	(Apr)	4,886
Hule Moss, Borders	4,000	5,500	4,400	5,500	5,000	(Jan)	4,880
Gladhouse R, Lothian	12,000	2,300	3,800	3,500	2,500	(Apr)	4,800
Lour, Tayside	3,680	380	5,000	3,850	7,660	(Nov)	4,114
Crombie Loch, Tayside	5,500	1,500	1,250	5,000	6,000	(Nov)	3,850
L of Menteith, Central	4,007	6,010	3,145	1,040	2,056	(Mar)	3,250
Hoselaw Loch, Borders	3,600	2,900	2,700	2,300	750	(Oct)	2,450

European White-fronted Goose *Anser albifrons albifrons*

Despite the mild winter the population index was the highest since 1970–71, and the peak number counted – both in the country as a whole and at the main centre, Slimbridge – was the highest since 1978–79. As well as the regular areas in Table 13 sizeable flocks turned up in several unusual places, including the Yare Valley, Norfolk (210, January), Minsmere (142, January) and the Deben Estuary, Suffolk (109, December). The large numbers at the last two sites may, however, have been connected with a reduction on the nearby Alde.

A group of up to 78 was present at Marshside on the Ribble Estuary, well outside the usual range, for most of the winter, and another of 39 at Carnforth Marsh on Morecambe Bay.

Table 13. EUROPEAN WHITE-FRONTED GOOSE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Slimbridge	3,400	4,200	4,300	3,500	4,600	(Jan)	4,000
Swale	876	1,300	2,570	2,070	1,400	(Jan)	1,643
Sth Thames Marshes	464	360	730	224	640	(Feb)	484
Hampshire Avon	385	530	510	520	205	(Dec)	430
Holkham, N Norfolk	280	247	326	232	290	(Feb)	275
R Tywi: Dryslwyn, Dyfed	305	290	298	175	175	(Jan)	249
Alde Estuary	x	x	350	140	11	(Dec)	167

Greenland White-fronted Goose *Anser albifrons flavirostris*

The annual censuses organised by the Greenland White-fronted Goose Study found 12,404 in Britain and 11,900 in Ireland in November, and 12,000 and 13,000 respectively in April, giving grand totals of 24,300 in November and 25,000 in April. This compares with a total of 23,300 in April 1987. At the two main centres the season's maxima were 7,900 on Islay (February) and 8,800 in Wexford (April). Other large concentrations were at Rhunahaorine, Argyll (1,000, March), Stranraer Lochs (830, November), Machrihanish, Argyll (690, December), Caithness Lochs (280, March), Tiree (270, December) and Endrick Mouth, Loch Lomond (240, March). The proportion of young in the British flocks was 17.7%, both on Islay and elsewhere.

The Wildlife Service of the Office of Public Works in the Irish Republic caught 93 Greenland Whitefronts at Wexford and 14 at Sheskinmore, Co Donegal in 1987–88. They were fitted with white plastic leg-rings bearing 3-digit codes repeated on orange neck-collars. The total of geese so marked in Ireland is now 582, of which there have been over 10,000 sightings.

Greylag Goose *Anser anser*

As with the Pinkfeet the breeding season in Iceland was very good, with 33% young in the autumn flocks. However, the mid-November census total was only 105,000 (Salmon 1988a), compared with 108,000 in 1986, and many birds were clearly missed. Two main factors probably contributed to the undercounting. Firstly, it is understood that the Greylags were unusually slow to leave Iceland due to mild conditions in their lowland breeding areas, many remaining into December (*per* A.Gardarsson). Secondly, the wet autumn in Britain created numerous small areas of flooding, a habitat often used by Greylags for roosting, and delayed the harvest, resulting in plentiful unploughed stubble and spilt grain at the time of the census. This probably caused the birds to be more scattered than usual and therefore harder to locate. Conditions were particularly favourable around the northern firths, north of Inverness, and a total of 23,400 Greylags was found there. By the time of the mid-April census most had apparently left Britain, only 19,500 being found, 70% of them in the north of Scotland, compared with 14% of 52,000 in March. In addition to the sites qualifying for Table 14, the following held over 2,000 in 1987–88: Munlochy Bay, Highland (5,000, November) and Lomond Reservoirs, Fife (2,300, December).

The Wildfowl Trust is undertaking research on the three principal resident populations of Greylags in Scotland. The native population in the Western Isles, estimated at nearly 2,000 in 1987 (Paterson 1988), is receiving continued study. During a survey of breeding waterfowl in Caithness and Sutherland in 1988, 229 birds were found in Caithness, including 32 successful breeding pairs, and partial coverage in Sutherland located a further 479 birds, including 42 families; these birds are partly of introduced stock. Censuses of the feral population in Dumfries & Galloway (which mixes with winter visitors) were held in June and September 1988, locating 1,469 birds, compared to 880 in the last complete census in 1966. This suggests a much smaller rate of increase in Dumfries & Galloway than in the U.K. feral population as a whole, probably due to control measures (Shimmings *et al.* 1988).

Table 14. GREYLAG GOOSE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Dinnet Lochs/R Dee	6,000	7,000	19,900	8,200	10,800	(Oct)	10,380
Loch Eye	12,000	x	10,000	x	3,970	(Nov)	8,657
Beauly Firth	x	x	5,550	5,890	10,000	(Nov)	7,147
Tay/Isla Valley, Tayside	5,212	2,351	18,295	3,685	3,663	(Nov)	6,641
Loch of Skene, Grampian	4,100	5,060	8,500	4,200	10,000	(Oct)	6,372
Loch Spynie, Grampian	1,349	3,170	6,000	7,750	9,000	(Oct)	5,454
Loch of Strathbeg	3,600	1,750	4,600	6,250	9,700	(Jan)	5,180
Drummond Pond, Tayside	4,500	4,810	7,500	4,000	5,000	(Oct)	5,162
Caithness Lochs, Highland	7,447	1,950	3,334	5,879	4,995	(Mar)	4,721
Lindisfarne	3,010	3,000	3,500	4,500	4,000	(Dec)	3,602
Haddo House L, Grampian	4,600	4,200	1,100	4,320	3,500	(Jan)	3,540
Carsebreck & Rhynd Lochs	4,310	4,000	1,688	4,450	3,150	(Nov)	3,520
Findhorn Bay, Grampian	2,600	2,400	2,300	3,200	6,000	(Oct)	3,300
Hoselaw Loch, Borders	3,600	2,900	5,700	3,000	220	(Dec)	3,184
Stranraer Lochs, Dumf & G	3,100	2,400	2,900	3,500	2,800	(Nov)	2,940
Dornoch Firth	x	280	3,450	4,389	3,406	(Nov)	2,881
Holborn Moss, Northumb'd	3,800	1,790	2,200	3,000	3,000	(Nov)	2,758
Cromarty Firth	3,701	550	442	4,774	4,042	(Nov)	2,701
Fedderate Resr, Grampian	2,000	2,400	2,700	2,500	2,750	(Nov)	2,470
Lintrathen/Kinordy Lochs, Tayside	6,200	500	3,100	3,200	4,220	(Nov)	2,404
Castle Loch, Lochmaben	2,150	3,100	2,850	1,600	1,435	(Mar)	2,227
Loch Leven	2,200	500	3,000	2,100	2,250	(Dec)	2,010

Canada Goose *Branta canadensis*

As expected the population index has resumed its upward trend. Such annual changes should be treated with caution, but the long-term pattern is still a steady increase averaging 8% per annum. The population is now probably nearing 50,000.

Figure 3 plots the current distribution, based on the mean seasonal maxima for each site over the last five available seasons (up to 1987–88). The relative size of the symbols corresponds to the numbers, with a minimum level of 50. It is striking that despite the continued increase the main range is still confined to central and southern England, with a few major centres. The high ground of northern England and southern Scotland appears to have been a barrier to a spread into lowland Scotland as yet, despite the annual moult migration to the Beauly Firth (outside the months contributing to the map). There are, however, signs of significant populations now becoming established outside the main range; a total of 609 Canada Geese were found during the Greylag census in Dumfries & Galloway in September 1988 (Shimmings *et al.* 1988).

In addition to those in Table 15 the following places held over 600 in 1987–88: Eversley/Yateley Pits, Hants (1,300, September); Twyford Pits, Oxon (1,200, September); Port Meadow, Oxon (1,000, September); Rostherne Mere, Cheshire (820, September); Fleet Pond, Hants (790, March); Drakelow Pits, Derbys (790, January); Barcombe Mills Reservoir, W Sussex (730, November); Harwood Lake, W Yorks (650, October); Willen Balance Lake, Bucks (640, September); Kingsbury Water Park, Warwicks (600, September).

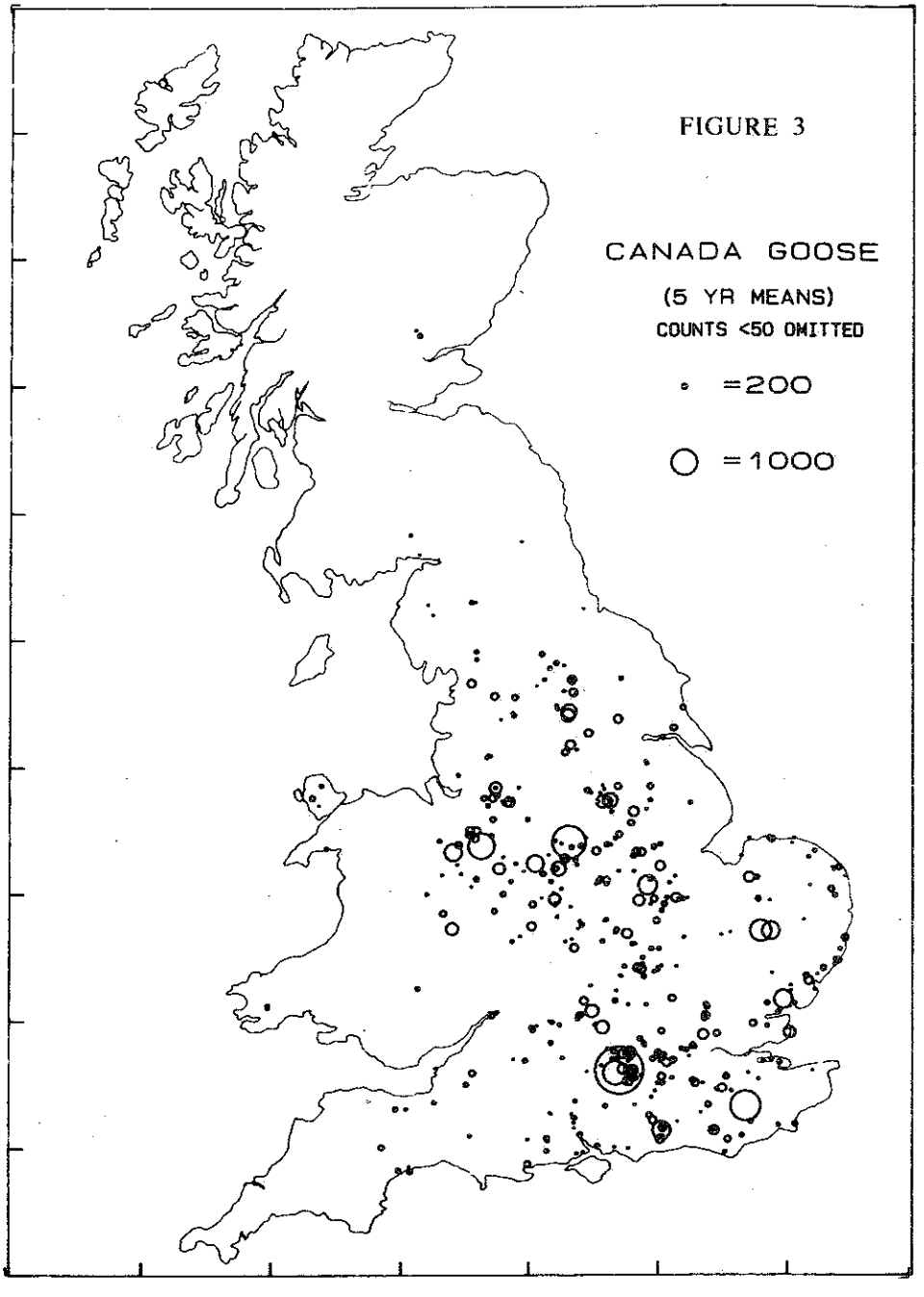
FIGURE 3
CANADA GOOSE
(5 YR MEANS)
COUNTS <50 OMITTED
=200
=1000

Table 15. CANADA GOOSE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Stratfield Saye, Hants	2,450	1,900	1,750	1,850	1,400	(Dec)	1,870
Kedleston Park, Derbys	800	650	1,350	1,600	2,000	(Sep)	1,280
Bewl Water, Kent/E Sussex	1,028	1,158	1,150	1,500	1,150	(Sep)	1,197
Livermere, Suffolk	x	800	1,102	874	x		925
Shavington Park, Staffs	x	1,150	847	676	800	(Oct)	868
Lackford Gravel Pits, Suff'k	x	797	856	834	x		829
Rutland Water	266	694	691	856	1,181	(Sep)	737
Abberton Resevoir	572	543	821	539	1,122	(Sep)	719
Amberley Wildbrooks, W S'x	437	1,037	780	670	540	(Nov)	693
Ellesmere, Shropshire	513	924	813	568	570	(Oct)	677
Blithfield Resr, Staffs	520	669	585	624	830	(Dec)	645

Barnacle Goose *Branta leucopsis*

A complete census of the wintering grounds of the Greenland breeding population was held in March/April 1988, the first for five years. A total of 34,550 was found, compared to 25,250 in 1983 and a previous highest of 33,820 in 1978. There were 26,960 in Scotland and 7,590 in Ireland, compared with 20,820 and 4,430 respectively in 1983. Of the Scottish total, 20,380 were on Islay, while in Ireland the Inishkea Islands, Mayo, held 2,315 (Fox & Ogilvie 1988; Walsh & Merne in press). Counts of Islay were also undertaken in November, February and March, the season's maximum being 21,900 in late November, and the proportion of juveniles 12.3–12.8%. On the upper Solway Firth, where the whole of the Svalbard breeding population winters, centred at Caerlaverock, a record 11,400 were present, containing 15.1% young. The long-term study of this population by the Wildfowl Trust has been expanded, with the appointment of an additional staff member at Slimbridge and the start of a new PhD study. Elsewhere, the Skomer Island/Marloes Mere flock, Dyfed, reached 110 in February. It is thought possible that this regular late winter flock comprises birds displaced from Lambay Island, Dublin, where there has been a steady decline since 1983 (Walsh & Merne in press).

Feral flocks of over 100 were reported from three localities in England. There was a serious processing error in last year's report; the flock of 100 at Hanningfield Reservoir in September 1986 in fact consisted of Canada Geese.

Table 16 shows the peak numbers over the past ten years at the two main British centres, Islay and the upper Solway Firth.

Table 16. BARNACLE GEESE: MAXIMA AT MAIN RESORTS

	1978/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	Av. max. 83/84 to 87/88
Islay	22,000	17,300	20,500	17,000	14,000	16,600	21,000	19,200	23,900	21,900	17,900
Solway	8,800	7,700	9,050	8,300	8,500	8,400	10,500	10,400	10,500	11,400	10,200

Dark–bellied Brent Goose *Branta bernicla bernicla*

The 1987 breeding season was virtually a complete failure, the second in succession, with 1.6% young in the British flocks (Salmon 1987) and 2.7% in France (R.Maheo). Nevertheless, the total of 91,400 counted in Britain in January and an estimate of 93,000 for the actual numbers present (Salmon 1988c) represent only a slight decrease on the 1986–87 maximum of 97,000 in February. This may be an example of a phenomenon previously noted in Wigeon whereby a cold weather influx, as in 1986–87, is followed by a lesser one the next season, even if that is mild. The January index (Table 7) actually showed a slight increase. In France the 1987–88 peak was 76,200 in December.

Brents stay on the Wash much later into the spring than elsewhere in Britain, and in 1988 an exceptional 7,200 remained on 15th May.

Most of the major sites in Table 17 did show a reduction in their seasonal maximum. Three further places held over 2,000 in 1987–88: the West Solent, Hants (3,400, January); Dengie, Essex (2,600, February) and the Orwell Estuary, Suffolk (2,000, December).

Table 17. DARK–BELLIED BRENT GOOSE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Foulness/Leigh, Essex	21,025	23,810	16,307	19,844	18,539	(Oct)	19,725
The Wash	17,039	14,219	23,071	17,619	23,166	(Feb)	19,239
Blackwater Estuary	x	13,410	10,300	12,387	7,709	(Dec)	10,782
Chichester Harbour	11,849	8,859	11,764	9,998	9,721	(Feb)	10.438
North Norfolk coast	12,534	7,147	12,592	9,800	9,450	(Jan)	10,305
Langstone Harbour	7,380	7,000	8,646	8,567	6,800	(Jan)	7,618
Hamford Water	10,000	9,500	6,000	8,000	3,750	(Feb)	7,450
Colne Estuary	3,700	4,690	5,265	7,748	5,487	(Feb)	5,377
Crouch Estuary, Essex	3,960	8,990	5,185	5,600	2,853	(Dec)	5,318
Pagham Harbour, W Sussex	2,477	4,219	3,188	2,251	2,551	(Feb)	2,938
Exe Estuary, Devon	1,895	2,493	3,729	2,500	1,724	(Dec)	2,308
Medway Estuary	1,576	1,158	2,659	2,888	2,910	(Feb)	2,238
The Humber	2,135	2,765	2,559	2,229	1,263	(Dec)	2,190
Portsmouth Hbr, Hants	2,236	1,855	1,610	2,347	2,129	(Dec)	2,035

Light–bellied Brent Goose *Branta bernicla hrota*

This subspecies had a moderate breeding season in Canada and Greenland, with 15.2% young among the autumn flocks in Ireland. The October census in Ireland yielded 20,690 birds, compared to 19,200 in 1986 (M.O'Briain). Of these Strangford Lough held 15,000 in 1987 and 14,500 in 1986, the average for the last five years at this site being 14,400. Elsewhere in Northern Ireland the 1987–88 maxima were 2,500 at Lough Foyle (November; five-year mean 1,590), 380 at Carlingford Lough (December), 250 Killough Harbour, Co Down (March) and 240 Dundrum Bay, Co Down (December).

At Lindisfarne, where many of the Svalbard breeding birds winter, the peak was 2,000 in Late November/early December, compared with the usual 3,000.

Shelduck *Tadorna tadorna*

In both Britain and Northern Ireland there was a distinct February peak, which probably included a proportion of winter visitors as well as native birds. In that month a record count was made on the Ribble Estuary, while the principal site in Northern Ireland, Strangford Lough, held its season's peak of 1,600.

Complete monthly surveys of the Severn Estuary were carried out by the count teams during the summer of 1988 to ascertain the breeding and moulting populations of Shelduck, as part of the Wildfowl Trust's contract with the Severn Tidal Power Group.

A total of 161 Shelducks have been fitted with blue leg-rings bearing 2-letter codes over the past year, most of them at Silloth on the south shore of the Solway Firth, and more catches are planned for this season. This work is being co-ordinated with colour-ringing in France and West Germany.

Table 18. SHELDUCK: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
The Wash	13,700	12,011	21,309	23,755	16,332	(Jan)	18,988
Dee Estuary	5,745	6,540	5,670	6,130	4,600	(Oct)	5,723
Mersey Estuary	6,800	7,605	4,000	2,355	2,225	(Dec)	4,597
The Humber	6,495	3,784	4,492	4,727	2,944	(Nov)	4,500
Ribble Estuary	2,660	2,243	3,078	5,055	6,037	(Feb)	3,815
Morecambe Bay	(770)	4,236	2,476	3,865	2,729	(Feb)	3,295
Medway Estuary	2,232	1,415	2,984	5,305	3,300	(Feb)	3,047
Chichester Hbr	2,571	3,126	2,556	3,772	2,451	(Feb)	2,895
Firth of Forth	(476)	(474)	2,086	2,404	2,468	(Sep)	2,319
Severn Estuary	1,867	2,802	1,611	2,459	2,707	(Oct)	2,289
Poole Hbr, Dorset	1,136	2,891	2,223	3,588	1,439	(Feb)	2,255
Hamford W, Essex	3,050	2,360	3,000	1,368	493	(Nov)	2,055

Wigeon *Anas penelope*

The winter influx to Britain came earlier than usual, in December, although there was a slight further increase in January (see Table 3), when the Ouse Washes held its third highest peak on record. In Northern Ireland the usual marked October peak (presumably comprising birds from the Icelandic breeding population) occurred, Lough Foyle holding 75% of the total count. The numbers at this site have in fact been much lower in the last three seasons than in the early 1980s, reminiscent of the considerably greater decline at Strangford Lough in the late 1970s from a peak of over 20,000 to 4–5,000 (now c. 2,000). A major decrease also occurred at Lindisfarne in the mid-1980s, although the numbers are slowly recovering, while the Ribble Estuary has become the most important autumn and early winter resort in the U.K., holding a record concentration last December. Such shifts suggest changes in the patterns of movement of Wigeon through the country and have prompted the Wildfowl Trust's current study of this phenomenon. In the pilot programme in 1987–88 over 400 Wigeon were marked with coloured leg-rings and yellow dye. An expansion to the project, taking in many more sites, is now planned.

Table 19 lists the places exceeding an average of 7,500 over the latest five seasons. One other site held that many in 1987–88: the Derwent Ings, with 8,100 in March.

Table 19. WIGEON: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Ouse Washes	25,456	23,755	34,495	42,175	38,672	(Jan)	33,000
Ribble Estuary	11,655	17,600	24,150	24,462	35,000	(Dec)	22,573
Lindisfarne	30,000	10,000	12,495	18,000	22,000	(Nov)	18,499
Lough Foyle	25,797	26,310	12,262	12,220	11,997	(Oct)	17,704
Dornoch Firth	12,060	8,310	14,925	15,029	14,194	(Oct)	12,903
Abberton Resr	3,300	35,000	10,180	10,000	2,453	(Dec)	12,187
Elmley, Swale	5,737	19,500	5,610	10,714	9,125	(Feb)	10,135
Cromarty Firth	10,215	9,705	12,364	8,871	8,392	(Oct)	9,909
Severn Estuary	7,880	14,072	9,264	9,256	5,359	(Jan)	9,167
Mersey Estuary	5,800	9,300	11,650	12,000	6,000	(Jan)	8,950

Gadwall *Anas strepera*

Record December numbers continue a steady upward trend, which amounted to 12–17% per annum during December-February between 1960–61 and 85–86, compared with 4.6% in September. It appears that the number of overseas breeders reaching Britain has increased as well as the native population. The rise in the British wintering population mirrors that in north-west Europe as a whole (Ruger *et al.* 1986; Fox 1988; Fox & Salmon in press a).

Table 20 shows the top ten U.K. sites. Three others held over 150 in 1987–88: Chesil Fleet (187, December); Thrapston Gravel Pits, Northants (186, November); and Dinton Pastures, Berks (186, December).

STOP PRESS! The count of Gadwall at Rutland Water on October 16th 1988 was 1,805!

Table 20. GADWALL: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Rutland Water	947	1,109	1,577	1,031	1,387	(Sep)	1,210
Abberton Resr	332	325	169	410	160	(Oct)	279
Ouse Washes	213	284	255	356	277	(Feb)	277
Gunton Park, Norfolk	200	144	327	266	389	(Oct)	265
Slimbridge	210	237	321	200	322	(Jan)	258
Stanford Meres, N'k	358	77	245	316	67	(Jan)	212
Loch Leven	220	210	195	250	140	(Sep)	202
Hornsea Mere, H'side	222	105	235	70	281	(Nov)	183
Strumpshaw Fen, N'k	x	x	x	200	120	(Nov)	160
Cheshunt GPs	125	145	215	105	185	(Nov)	155

Teal *Anas crecca*

After the massive January exodus of 1987 a more normal pattern was re-established, with a gradual decrease from the December peak. The major floodlands of the Ouse Washes and Derwent Ings, however, had optimum conditions for Teal in March, when the latter site held its largest concentration on record.

Table 21. TEAL: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Mersey Estuary	11,050	8,580	4,300	8,350	12,730	(Dec)	8,996
Ribble Estuary	4,486	4,800	3,076	6,177	3,435	(Nov)	4,396
Dee Estuary	3,815	3,865	5,720	2,940	3,640	(Jan)	3,995
Martin Mere	4,000	3,000	3,400	2,600	4,700	(Dec)	3,540
Hamford Water	5,700	3,500	5,000	366	1,700	(Dec)	3,253
Ouse Washes	2,513	1,934	3,177	3,551	2,753	(Mar)	2,786
Derwent Ings	1,919	1,966	2,573	3,620	3,750	(Mar)	2,765
Milford Haven/ Cleddau Est	x	2,867	2,450	2,241	2,728	(Dec)	2,560
Severn Estuary	2,144	1,915	3,383	2,515	2,451	(Jan)	2,482
Woolston Eyes, Ches	2,500	1,600	1,530	3,000	3,500	(Nov)	2,426
Loughs Neagh/Beg	x	x	2,290	2,173	2,619	(Dec)	2,361
Elmley	3,787	1,618	1,683	1,268	2,880	(Jan)	2,248
Teesmouth, Cleve'd	2,150	4,400	1,030	1,060	1,440	(Jan)	2,016
The Humber	2,917	1,397	2,904	1,675	1,183	(Jan)	2,015

Mallard *Anas platyrhynchos*

Apart from an increase in the late 1960s the September index, representing mainly the British breeding stock, has been remarkably constant since 1960. The level for December, however, when the numbers are at their peak and include many winter visitors, has shown signs of an upward trend in recent years, perhaps suggesting an increase in immigration (Table 7).

The December 1987 total for the Humber (Table 22) was the largest ever count of Mallard at a single site in the U.K. Three places not qualifying for the table held 2,000 at some time in the winter: the upper Solway Firth (2,700, December); Stour Estuary (2,300, December) and Montrose Basin (2,300, February).

Table 22. MALLARD: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
The Humber	5,687	4,838	6,311	5,992	10,040	(Dec)	6,573
Ouse Washes	6,377	3,781	7,815	4,216	5,553	(Oct)	5,544
Dee Estuary	5,045	4,480	4,450	5,325	3,880	(Nov)	4,636
The Wash	2,360	2,502	5,949	5,852	5,448	(Jan)	4,423
Loughs Neagh/Beg	x	x	3,778	5,282	4,054	(Sep)	4,371
Morecambe Bay	(1,159)	4,037	4,463	3,625	3,344	(Sep)	3,867
Martin Mere	3,000	3,200	4,600	3,600	3,200	(Nov)	3,520
Severn Estuary	3,820	2,800	3,183	3,520	4,263	(Jan)	3,516
Derwent Ings	1,700	2,500	5,240	3,000	3,420	(Mar)	3,172
L of Strathbeg	2,100	3,800	3,450	2,650	3,450	(Dec)	3,090
Lough Foyle	3,024	3,006	2,965	3,300	2,274	(Dec)	2,913
Elmley	4,547	1,877	1,839	1,965	2,320	(Nov)	2,512
Abberton Resr	4,525	1,450	2,100	2,700	1,471	(Sep)	2,449
Rutland Water	2,240	2,781	2,832	1,816	1,635	(Sep)	2,407
Firth of Forth	(1,003)	(1,352)	2,165	2,082	2,609	(Jan)	2,285
Livermere	x	2,000	2,300	x	x		2,150
Ribble Estuary	2,295	1,548	1,965	2,677	2,007	(Dec)	2,098
Loch Leven	1,220	3,288	1,737	2,300	1,060	(Oct)	2,041

Pintail *Anas acuta*

For the second year running the peak month was November, although in the longer term more have generally been present in December. The national index for the latter month was well above average. In the main area, the adjacent Mersey and Dee Estuaries, a total of 17,600 was present in November, when both sites held their seasonal maxima. This represented two-thirds of the British total for that month. The combined numbers for the two estuaries dropped to 13,600 in December and rapidly thereafter to only 130 in March. In contrast, the Wash, which has been assuming an increasing importance in recent years, held its usual February peak, amounting to a record 7,700.

In Northern Ireland December is the principal month, but the numbers are very much smaller, 188 of the total 200 being at Strangford Lough.

In addition to the localities in Table 23, whose average numbers over the last five seasons exceed the qualifying level for international importance (see Appendix), the Medway Estuary held 1,000 in December 1987.

Table 23. PINTAIL: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Mersey Estuary	8,000	16,000	9,000	6,000	8,050	(Nov)	9,410
Dee Estuary	11,265	6,280	6,800	4,620	9,550	(Nov)	7,703
The Wash	1,249	4,397	2,866	4,562	7,715	(Feb)	4,129
Morecambe Bay	(253)	2,869	2,889	2,072	1,979	(Dec)	2,452
Burry Inlet	1,332	2,290	1,180	2,085	2,005	(Dec)	1,723
Martin Mere	2,300	720	1,500	1,200	1,370	(Oct)	1,418
Ouse Washes	769	802	1,300	1,803	1,080	(Mar)	1,151
Duddon Est, Cumbria	x	722	820	1,102	x		882

Garganey *Anas querquedula*

A survey of the Ouse Washes in May found 12. Otherwise no more than three were reported from any one site, that many being found at Staunton Harold Reservoir (Derbyshire) and Rutland Water in September.

Shoveler *Anas clypeata*

The usual concentration on the Ouse Washes in March was at its highest ever level, comprising nearly a third of the total British count. Most of the major autumn resorts held fewer than the average for recent years. A notable feature of Table 5 is the relatively larger importance of coastal areas for Shoveler in February than other months.

Table 24 lists the top ten U.K. sites. Two others carried over 250 in 1987–88: Dungeness, Kent (267, October) and Pitsford Reservoir (262, September). The main areas in Northern Ireland are Strangford Lough (135, December) and Loughs Neagh/Beg (117, November).

Table 24. SHOVELER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Ouse Washes	397	403	505	445	1,443	(Mar)	639
Rutland Water	616	612	655	525	285	(Sep)	538
Loch Leven	610	595	177	780	391	(Oct)	514
Woolston Eyes	362	427	510	475	230	(Sep)	408
Elmley	401	428	397	253	532	(Oct)	402
Chew Valley Lake	490	275	190	390	440	(Nov)	357
Abberton Reservoir	303	313	379	522	240	(Sep)	352
K G VI Resr, Surrey	391	219	365	270	361	(Feb)	320
Staines Reservoir	284	564	275	252	187	(Nov)	313
Q Mary Resr, Surrey	374	110	356	432	71	(Dec)	269

Pochard *Aythya ferina*

The numbers in Britain showed their usual uniformity from November to February in a mild winter. At Loughs Neagh/Beg, however, a November count of 12,100 was followed by an increase to 20,800 in December and 24,100 in January. In February 6,600 remained.

In October a total of 4,900 Pochard was found on Orkney's Mainland lochs, over three-quarters of them on the Loch of Boardhouse. At the other end of the country the gravel pits of the Cotswold Water Park held 4,100 in December, with a record 3,300 in the eastern section, mostly at Dudgrove. There has been a steady increase on gravel pits generally since 1960 (Fox & Salmon in press b), against the general trend in Britain, which shows signs of a decline since the peak numbers of the 1970s.

As well as the sites qualifying for Table 25, three others held over 1,000 Pochard in 1987–88: Loch Leven (1,300, February); Poole Harbour (1,200, December) and Barton Pits, Humberside (1,200, March).

As a follow up to the pilot survey of sex ratios in ducks in 1983–84 (Owen & Dix 1986) a PhD study on Pochard is now in progress at the Wildfowl Trust.

Table 25. POCHARD: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Loughs Neagh/Beg	x	x	17,436	16,348	24,072	(Jan)	19,255
Abberton Reservoir	2,525	2,700	2,024	3,000	2,102	(Jul)	2,470
Ouse Washes	1,901	2,355	1,975	1,511	3,750	(Feb)	2,298
L of Boardhouse, Ork	1,505	2,358	627	2,402	3,755	(Oct)	2,129
L of Harray, Orkney	4,300	1,401	1,549	1,569	1,043	(Oct)	1,973
Cotswold W Pk E, Glos	1,897	886	1,806	1,578	3,291	(Dec)	1,893
Rostherne Mere, Chesh	480	1,273	1,900	2,850	2,395	(Feb)	1,780
Kingsbury/Coton, Warw	1,184	1,700	1,500	2,000	1,775	(Nov)	1,631
Cotswold W Pk W, Glos	1,497	1,475	1,138	1,176	1,119	(Dec)	1,281
Slimbridge	840	900	1,172	1,230	1,484	(Feb)	1,125
Derwent Ings	2,250	1,678	390	245	850	(Feb)	1,082
Woolston Eyes	1,420	359	1,716	984	620	(Feb)	1,019

Tufted Duck *Aythya fuligula*

The September index, representing the large native breeding population, was the lowest for 11 years, but still well above the level of the 1960s. In contrast, the December index, including winter visitors, was the highest on record. The mildness of the winter probably contributed to this, birds breeding in southern Britain being prone to move to France and Spain in severe weather, as experienced in several recent winters (Ogilvie 1987).

The counts at Loughs Neagh/Beg (Table 26) were much the highest since full coverage there resumed, and included 93% of all Tufted Ducks found in Northern Ireland in January. Two of the main British sites held very low numbers, the Loch of Strathbeg, where the period of importance for Tufted Ducks which began in the late 1960s seems to have ended, and the Rhymney Estuary, a major cold weather resort in recent years. The Ouse Washes held its largest ever concentration, in February, while Stanford Reservoir, Leics (700, September) and Hornsea Mere, Humberside (608, September) also carried more than usual.

Table 26. TUFTED DUCK: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Loughs Neagh/Beg	x	x	6,442	8,943	19,603	(Jan)	11,663
Rutland Water	3,062	3,379	3,000	3,301	3,237	(Sep)	3,195
Abberton Reservoir	3,025	2,700	2,200	3,375	3,463	(Jul)	2,953
Loch Leven	4,830	1,463	3,310	1,800	2,580	(Sep)	2,797
Kingsbury W Pk/Coton	1,055	1,417	1,620	1,300	2,271	(Nov)	1,532
Loch of Harray	1,483	1,267	1,447	987	1,142	(Nov)	1,266
Staines Reservoir	853	442	807	3,313	303	(Sep)	1,156
Wraysbury GPs, Berks	1,267	(741)	630	1,101	(456)		1,000
Walthamstow R, London	737	1,031	894	1,347	760	(Jan)	954
Ouse Washes	492	617	675	1,078	1,847	(Feb)	941
Queen Mother Resr	x	1,036	1,029	824	231	(Sep)	780
Hanningfield R, Essex	466	1,010	460	790	870	(Sep)	719
Rhymney Estuary	535	1,250	600	835	30	(Nov)	650
Loch of Strathbeg	1,150	1,100	550	220	80	(Dec)	620

Scaup *Aythya marila*

After years of decline a sudden increase occurred in Britain, thanks to a remarkable gathering at Carse Bay in the Solway Firth. The count of 4,000 in February was by far the largest made at Carse Bay since one of 4,500 in November 1960, and the biggest in the U.K. since the assemblage of 20–30,000 off Edinburgh in the 1970s. In late April 2,500 remained. There may have been a shift from Northern Ireland, where the numbers at Carlingford and Belfast Loughs and, late in the season, Lough Neagh, were well below average, but this still cannot explain the whole of the increase in the Solway. The total counted in the U.K. in February 1988 was 6,700, compared to 4,900 in 1987.

The numbers in Carse Bay may well reach the same level in 1988–89; by early October 2,400 were already present.

Table 27. SCAUP: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Upper Solway Firth	1,144	1,709	1,400	1,438	4,000	(Feb)	1,938
Loughs Neagh/Beg	x	x	1,712	1,586	1,432	(Nov)	1,577
Largo Bay, F of Forth	1,400	1,100	1,650	950	850	(Jan)	1,190
Loch Indaal, Islay	770	1,189	1,505	817	1,198	(Dec)	1,096
Carlingford L, Co Down	x	1,050	720	435	178	(Feb)	595
Belfast Lough	450	x	344	422	44	(Jan)	315
Dornoch Firth	230	495	311	194	107	(Feb)	267
L Ryan, Dumf & Galloway	280	160	x	340	120	(Jan)	226
Loch of Harray	96	144	163	218	137	(Mar)	151
St Andrews Bay, Fife	130	390	54	140	31	(Feb)	149
Cromarty Firth	102	x	120	193	155	(Jan)	143
Dee Estuary	14	135	128	240	171	(Feb)	138

Eider *Somateria mollissima*

The total in the Firth of Forth was the highest since the late 1970s. In the Firth of Clyde the September count was the highest on record; the numbers dropped to 1,300 in October. The RSPB/Britoil survey found 2,200 in the Moray Firth in December (including Loch Fleet, listed separately in Table 28). The NCC's Seabirds at Sea Team carried out four surveys of the main sea lochs of north–west Scotland from the Kyle of Tongue to the Kyles of Bute between October and May. The highest total of Eiders they found was 1,300 in December. In Northern Ireland the usual principal site, Belfast Lough, held only 108 in February but there were 296 along the outer Ards shoreline, immediately to the south, in March.

Table 28. EIDER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Outer Firth of Tay	14,100	x	12,000	6,000	x		10,700
Murcar, Grampian	8,000	9,000	5,300	x	(1,000)		7,433
S Walney Is, Cumbria	4,000	6,122	4,346	4,000	4,200	(Apr)	4,534
Firth of Forth	2,325	3,659	3,515	4,698	5,021	(Feb)	3,897
Lindisfarne	3,000	3,000	3,020	5,300	2,505	(Sep)	3,025
Inner Firth of Clyde	1,601	3,501	2,560	x	4,325	(Sep)	3,016
Montrose Basin	x	1,679	1,840	2,772	2,230	(Sep)	2,130
Loch Fleet	x	3,000	1,608	2,200	550	(Dec)	1,840
Sumburgh, Shetland	2,259	1,484	1,800	x	x		1,743
Ythan Est, Grampian	2,000	1,316	1,689	1,661	1,831	(Oct)	1,699
N Bressay/Noss, Shet	1,021	1,415	x	x	x		1,218
Westerwick/ Skelda Ness, Shetland	990	1,400	x	x	x		1,195
Fraserburgh, Grampian	x	650	1,480	x	x		1,065

Long–tailed Duck *Clangula hyemalis*

The RSPB/Britoil surveys of the Moray Firth found a further reduction to 3,900 Long-tailed Ducks. The largest concentrations were at the Riff Bank (2,100, February), Dornoch-Strathsteven (1,100, October/November), Culbin-Burghead (810, December), Inverness/Beauly Firth (560, December) and Spey Bay (510, December). Table 29

tabulates, for the first time, the major Long-tailed Duck sites, the qualifying level being that for national importance, 200. However, because of the difficulties of counting sea ducks, and the consequent irregularity of coverage of many areas, the figures should be treated with caution. In 1987–88, additionally, Lindisfarne held 386 (December), Murcar 334 (February) and Branahuie Banks, adjacent to Broad Bay, Lewis, 300 (November). The NCC's surveys of the north-west mainland of Scotland found no more than 105 Long-tailed Ducks, the chief localities being the Kyles of Tongue and Durness and Loch Fyne. The main site in Northern Ireland is Belfast Lough, which held 27 in December.

Table 29. LONG–TAILED DUCK: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Moray Firth *	10,100	15,000	4,500	4,600	3,900	(Oct/Nov)	7,620
Wyre/Egilsay, Ork **	x	x	1,200	x	x		7,620
Bluemull Sd, Ork **	950	632	712	x	x		763
South Yell Sd, Ork **	x	x	573	x	x		573
Firth of Forth	550	323	312	700	898	(Feb)	557
New Aberdour, Gramp **	x	520	x	x	x		0
Eynhallow Sd, Orkney **	x	450	x	530	x		490
Broad Bay, Lewis	(45)	153	1,000	200	210	(Nov)	391
Dunnet B, Caithness **	x	350	x	x	x		350
Tentsmuir, Fife	88	128	29	660	442	(Nov)	269
Water Sound, Orkney	220	400	212	240	240	(Mar)	262

* From RSPB/Britoil ** From Scottish Bird Reports

Common Scoter *Melanitta nigra* and Velvet Scoter *M. fusca*

Dundrum Bay, Co Down, was again the principal locality, with 2,680 Common Scoters in January. St Andrews Bay, Fife, held 2,400 Common Scoters and 1,600 Velvet in February, the Firth of Forth 1,000 Common in February. No more than 1,540 scoters – Common and Velvet combined – were found in the Moray Firth by the RSPB/Britoil surveys, compared to 2,800 in 1986–87. This is the lowest figure since intensive studies of sea ducks in that area began in the early 1970s.

At least 50 females were present in Caithness and Sutherland during the Wildfowl Trust's breeding waterfowl survey. Only 16 broods were found to have hatched.

Goldeneye *Bucephala clangula*

A further increase in Loughs Neagh and Beg overshadows everywhere else, but note the record count in Strangford Lough in February (Table 29). Since the decline of the flocks off Edinburgh the most important area in the Firth of Forth, as with Scaup, has been Largo Bay on the north shore, where 730 were found in December. The only site not qualifying for Table 30 which held over 300 in 1987–88 was Nigg Bay, Aberdeen, with 305 in January.

Table 5 suggests that the shift to the coast in the New Year was less marked than in the hard winter of 1984–85 (see report for that season).

Table 30. GOLDENEYE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Loughs Neagh/Beg	x	x	4,851	9,906	10,463	(Jan)	8,407
Firth of Forth	2,017	881	996	1,855	1,425	(Dec)	1,573
Belfast Lough	x	x	372	692	580	(Feb)	548
Firth of Clyde	418	359	706	x	580	(Mar)	515
Abberton Reservoir	431	575	364	677	389	(Feb)	485
Strangford Lough	400	429	553	280	725	(Feb)	479
Inverness Firth	268	598	497	449	501	(Jan)	462
Blackwater Estuary	269	639	329	490	228	(Feb)	391
Cromarty Firth	511	352	445	275	192	(Feb)	356
Morecambe Bay	261	315	349	411	288	(Feb)	324
Windermere *	x	287	329	345	246	(Jan)	302

* January data only.

Smew *Mergus albellus*

Despite the mild winter nearly 100 were counted in January. At the beginning of that month there were 27 at Wraysbury Gravel Pits, and in mid-December 20 at Dungeness. Draycote Water, Warwickshire, held 11 in mid-January.

Red–breasted Merganser *Mergus serrator*

The largest total found in the NCC's sea loch survey of the north-west Scottish mainland was 487 in October, including only 28 adult males out of 287 birds aged. Table 31 lists sites averaging at least 100, the qualifying level for national importance, over the last five seasons and includes one freshwater site, Hodbarrow Lagoon, close to the Duddon Estuary. The table contains two regularly watched moulting areas (Lindisfarne and Turnberry Bay), but excludes isolated late summer records from earlier years. In addition, the following sites held over 100 in 1987–88: Larne Lough, Co Antrim (165, March); The Wash (154, November); Branahuie Banks, Lewis (150, October); Lavan Sands, Gwynedd (133, September); Portsmouth Harbour (117, February); Loch Sunart, Lochaber (115, November); Lough Foyle (115, February); Dyfi Estuary, Dyfed/Gwynedd (106, February); Loch Indaal, Islay (102, October).

Table 31. RED–BREASTED MERGANSER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Beauly/Inr Moray F	727	485	2,450	3,063	1,374	(Dec)	1,620
Tentsmuir	649	465	1,050	600	1,102	(Nov)	773
Cromarty Firth	594	401	588	615	584	(Jan)	556
Firth of Forth	395	454	383	547	317	(Feb)	419
Poole Harbour	241	270	528	302	309	(Nov)	330
Strangford Lough	293	381	305	183	213	(Mar)	274
Dundrum Bay	420	203	540	104	93	(Jan)	273
Sd of Gigha, Argyll	x	x	x	x	251	(Oct)	251
Hodbarrow Ln, Cumbria	x	x	x	163	69	(Dec)	215
Morecambe Bay	(95)	309	210	177	140	(Jan)	209
Lindisfarne	130	81	229	217	310	(Aug)	193
Loch Ryan	42	246	280	210	147	(Oct)	185
Inner Firth of Clyde	104	102	156	x	253	(Jan)	154
Langstone Harbour	113	128	152	131	214	(Nov)	147
Turnberrry Bay, Ayr *	81	171	102	207	x		140
Culbin Bar, Moray Fth	x	x	21	313	12	(Jan)	115
Belfast Lough	x	x	39	92	209	(Sep)	113
Chesil Fleet	126	95	58	185	69	(Oct)	107
Portland Hbr, Dorset	75	140	70	110	105	(Feb)	100

* From Scottish Bird Reports

Goosander *Mergus merganser*

Despite the mild winter the January index was at a record level. Note the remarkable September count off Tentsmuir in Table 32. This appears to be a regular moulting area; the 1986–87 record refers to July.

The following sites not qualifying for Table 32 held over 50 in 1987–88: Talkin Tarn, Cumbria (84, January); Hirsel Lake, Borders (79, October); Whitton Loch, Borders (71, September); Talybont Reservoir, Powys (65, December); Spey Bay, Grampian (55, September).

Table 32. GOOSANDER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Beauly Firth	2,150	1,280	1,700	1,241	1,900	(Jan)	1,654
Glenlatterach R, Gramp	x	x	x	180*	x		180
Cromarty Firth	358	136	238	73	35	(Dec)	167
Tentsmuir	x	x	(0)	70*	225	(Sep)	148
R Tweed: Norham/Kelso	105	152	86	145	102	(Dec)	118
Loch of Skene	101	197	57	61	92	(Feb)	102
Besthorpe/Girton, Notts	95	160	60	67	97	(Mar)	96
Castle Loch	61	138	71	120	81	(Jan)	94
Thrapston GPs	72	63	75	174	66	(Jan)	90
Queen Mary Resevoir	29	98	92	171	49	(Dec)	88
Castle Howard L, Yorks	29	70	154	120	57	(Dec)	86
Eccup Reservoir	50	134	68	108	62	(Feb)	84
Blithfield Reservoir	79	105	66	80	48	(Jan)	75
Rutland Water	119	69	89	55	44	(Dec)	75
Chew Valley Lake	55	96	60	105	55	(Jan)	74
Hamilton Low Pks, Lanark	31	67	59	94	97	(Dec)	70
Hoselaw Loch	106	20	35	164	6	(Jan)	66
R Eden: Stainton/ Rockcliffe, Cumbria	x	x	x	56	65	(Apr)	61
Leighton/Roundhill Resrs, N Yorkshire	74	45	27	90	65	(Dec)	60
Pitsford Reservoir	46	93	25	71	46	(Dec)	56
Abberton Reservoir	43	74	54	74	29	(Dec)	55
R Clyde: Lamington/ Hyndford Br, Lanark	x	37	54	67	x		53
King George VI Reservoir	41	51	59	68	28	(Mar)	50

* From Scottish Bird Reports

Ruddy Duck *Oxyura jamaicensis*

Surprisingly, in view of the long-term increase in this introduced species, the count total dropped slightly compared to 1986–87. Such a phenomenon has occurred in previous cold winters, but not in such a mild one. It may be merely a temporary break in the overall trend, or a function of the count scheme itself. Next season's results should clarify this.

A site not in Table 33 – Hollowell Reservoir, Northants – held 84 Ruddy Ducks in March. Note the high count at Blithfield Reservoir and the relatively low one at Chew Valley Lake compared to the cold winter of 1986–87. To study the movements of Ruddy Ducks from Chew Valley Lake it is planned to mark birds there with white plastic wing-tags this winter, as part of the Wildfowl Trust's three-year project on the ecology of the species in Britain. The tags, which have been shown at Slimbridge to cause no harm to the birds, will bear a two-digit alpha-numeric code.

Table 33. RUDDY DUCK: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Chew Valley Lake	526	611	680	1,064	610	(Feb)	698
Blithfield Reservoir	340	680	581	570	909	(Jan)	616
Blagdon Reservoir	384	320	197	603	121	(Dec)	325
Belvide Reservoir	242	248	320	212	156	(Oct)	235
Rutland Water	132	229	188	287	305	(Mar)	228
Eyebrook Reservoir	101	318	221	125	230	(Feb)	199
Woolston Eyes	86	138	179	162	116	(Sep)	136
Combermere, Cheshire	164	87	x	x	x		126
Farmwood Pool, Chesh	114	85	105	72	104	(Jan)	96
Stanford Reservoir	40	160	50	83	142	(Oct)	95
Cheddar Resr, Somerset	x	113	130	9	x		84
L Traffwll, Anglesey	46	80	113	52	107	(Dec)	80

Coot *Fulica atra*

The peak total count in Britain, in autumn, usually amounts to 80–90,000, and the actual population is estimated at a minimum of 100,000. Coot are very widely scattered, so this figure (and the resultant level of 1,000 for national importance shown in the Appendix) may well be too low, but there is insufficient evidence for a more precise estimate. In Northern Ireland the maximum count is slightly earlier: in October of 1986–87 and September of 1987–88. Away from Loughs Neagh/Beg the largest concentration is at Strangford Lough (898 in November 1987).

Three sites not qualifying for Table 34 held over 1,000 in 1987–88: Slapton Ley, Devon (1,500, November); Shepperton Gravel Pits, Surrey (1,098, January) and Fen Drayton Pits, Cambs (1,021, December).

Table 34. COOT: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Abberton Reservoir	10,055	10,000	9,450	8,703	10,274	(Oct)	9,696
Rutland Water	5,401	7,453	5,660	4,623	3,062	(Jan)	5,240
Loughs Neagh/Beg	x	x	2,307	5,687	5,008	(Sep)	4,334
Cotswold Water Pk West	3,375	3,677	2,521	2,606	2,731	(Oct)	2,982
Hanningfield Resr	x	2,557	x	4,930	1,450	(Sep)	2,979
Ouse Washes	2,134	1,757	2,970	2,388	3,005	(Jan)	2,451
Chesil Fleet	x	2,281	2,080	2,673	2,000	(Nov)	2,258
Cheddar Reservoir	2,450	2,100	1,900	2,050	x		2,125
Cotswold Water Pk East	2,416	1,716	2,217	1,888	2,112	(Dec)	2,070
Loch Leven	1,905	1,361	1,370	1,150	1,150	(Oct)	1,387
Chew Valley Lake	1,904	1,625	1,625	460	1,180	(Aug)	1,359
Bewl Water	1,358	610	1,068	2,013	1,500	(Dec)	1,310
Brogborough GP, Beds	950	1,600	1,820	1,300	720	(Nov)	1,278
Hornsea Mere	1,350	2,000	1,100	600	994	(Nov)	1,209
Windermere *	x	1,663	1,287	1,320	324	(Jan)	1,147
Fairburn Ings, N Yorks	848	1,086	1,289	1,284	1,053	(Dec)	1,112
Chichester GPs, W Sussex	595	938	1,543	1,227	1,210	(Oct)	1,103
Pitsford Reservoir	1,420	1,136	744	645	1,212	(Dec)	1,044
Kingsbury W Pk/Coton	935	683	822	839	1,747	(Nov)	1,005

* January data only

by R.P.Prys-Jones & J.S.Kirby

The Birds of Estuaries Enquiry (BoEE) is co-sponsored by the British Trust for Ornithology (BTO), Nature Conservancy Council (NCC), Royal Society for the Protection of Birds (RSPB) and Department of the Environment for Northern Ireland (DoENI), and is organised by staff of the BTO Estuaries Programme based at Tring, Hertfordshire. The eighteenth consecutive season of co-ordinated counts for the BoEE took place between July 1987 and June 1988. Counts are made on selected dates near the middle of each month, timed to coincide with the best tidal conditions for censusing estuarine birds. Records of wildfowl from both the BoEE and the National Wildfowl Counts are analysed by the Wildfowl Trust and are presented in the first section of this booklet.

DATA PRESENTATION

Data presentation in this report closely follows that for the preceding season. The period of year covered comprises the entire winter (November–March). All information relating to estuaries is referred to in terms of the 112 British sites designated by Moser (1987) along with seven additional ones in Northern Ireland (Figure 4). Where information is available on non-estuarine sites this is also incorporated, but such sites are clearly marked by an asterisk (*). The table giving overall wader counts at BoEE sites in winter has, however, been expanded to include results from all estuarine sites, whereas the January indices for wader populations have been presented in a more consolidated form.

Explanation of the basis for the qualifying levels used in this report for defining the international and national importance of sites for waders is provided in the Appendix. In the "Species Accounts" and "Principal Sites" sections, it is necessary to bear in mind the distinction between sites *regularly* (i.e. based on five-year averages) holding wintering populations of national/international importance and those which may merely happen to exceed the appropriate qualifying levels in occasional winters. Use of the term "national importance" results in one anomaly which will require rectification when appropriate information becomes available, namely that the sites in Northern Ireland are considered in terms of what are strictly British qualifying levels.

COVERAGE

Of the 119 estuarine sites shown in Figure 4, no winter counts for nine were received in time for incorporation here: Camel, Gannel, Wootton, Chichester Harbour, Dee (Scotland), Don, Ythan, Kirkcudbright Bay and Rough Firth. For a further five sites, only incomplete counts were carried out during the winter: Tamar complex, Medway, Hamford Water, Lavan Sands, Swansea Bay. For all other sites, at least one, and normally four or five, complete counts were made during the winter.

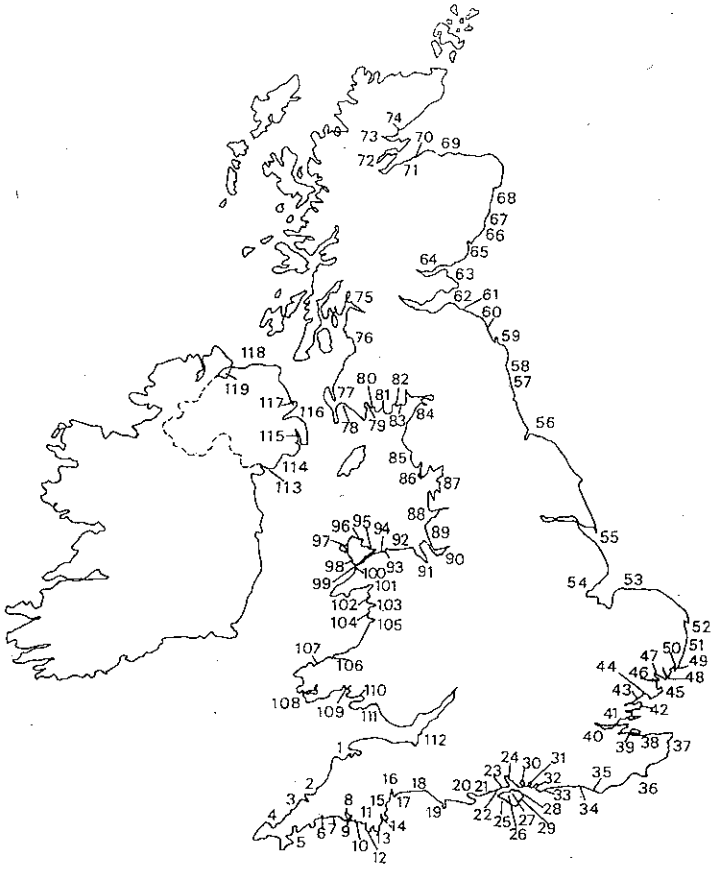

FIGURE 4. Map of the British Isles showing the locations of all estuaries considered in this report. Site code numbers are as follows: 1, Taw/Torridge; 2, Camel; 3, Gannel; 4, Hayle; 5, Fal complex; 6, Fowey; 7, Looe; 8, Tamar complex; 9, Plym; 10, Yealm; 11, Erme; 12, Avon; 13, Kingsbridge; 14, Dart; 15, Teign; 16, Exe; 17, Otter; 18, Axe; 19, The Fleet; 20, Poole Harbour; 21, Christchurch Harbour; 22, NW Solent; 23, Beaulieu; 24, Southampton Water; 25, Yar; 26, Newtown; 27, Medina; 28, Wootton; 29, Brading Harbour; 30, Portsmouth Harbour; 31, Langstone Harbour; 32, Chichester Harbour; 33, Pagham Harbour; 34, Adur; 35, Newhaven; 36, Rye Harbour/Pett Levels; 37, Pegwell Bay; 38, Swale; 39, Medway; 40, Thames; 41, Crouch/Roach; 42, Dengie; 43, Blackwater; 44, Colne; 45, Hamford Water; 46, Stour; 47, Orwell; 48, Deben; 49, Ore/Butley/Havergate; 50, Alde; 51, Blyth; 52, Breydon Water; 53, N Norfolk Marshes; 54, Wash; 55, Humber; 56, Tees; 57 Blyth; 58, Coquet; 59, Lindisfarne; 60, Tweed; 61, Tyninghame; 62, Forth; 63, Eden; 64, Tay; 65, Montrose Basin; 66, Dee; 67, Don; 68, Ythan; 69, Spey; 70, Findhorn/Culbin/Nairn; 71, Inner Moray Firth; 72, Cromarty Firth; 73,Dornoch Firth; 74, Loch Fleet; 75, Inner Clyde; 76, Irvine; 77, Loch Ryan; 78, Luce Bay; 79, Wigtown Sands; 80, Fleet Bay; 81, Kirkcudbright Bay; 82, Auchencairn Bay; 83, Rough Firth; 84, Solway; 85, Irt/Mite/Esk; 86, Duddon; 87, Morecambe Bay; 88, Ribble; 89, Alt; 90, Mersey; 91, Dee; 92, Clwyd; 93, Conwy; 94, Lavan Sands; 95, Red Wharf Bay; 96, Dulas Bay; 97, Inland Sea; 98, Cefni; 99, Braint; 100, Foryd Bay; 101, Traeth Bach; 102, Artro; 103, Mawddach; 104, Dysynni; 105, Dyfi; 106, Teifi; 107, Nyfer; 108, Cleddau; 109, Carmarthen Bay; 110, Burry; 111, Swansea Bay; 112, Severn; 113 Carlingford Lough; 114, Dundrum Bay; 115, Strangford Lough; 116, Belfast Lough; 117, Lough Larne; 118, Bann; 119, Lough Foyle.

DEVELOPMENTS IN THE ESTUARIES PROGRAMME

After the rapid expansion of Estuaries Programme activities in 1986–87, the 1987–88 season was more one of consolidation. In June 1988, Paul Rose (who had replaced Barry Phillips in January 1988) and Ian Shepherd submitted reports to the Central Electricity Generating Board in completion of 15–month contracts assessing the implications for birds of proposed power station developments on Southampton Water and the Humber. Earlier, in December 1987, Robin Ward had joined the Estuaries Programme on a 15–month contract from Dorset County Council to assess the implications for intertidal birds of development proposals in Poole Harbour. Data collection and analysis for the Severn tidal barrage studies funded by the Energy Technology Support Unit (Department of Energy) proceeded well. Under the organisation of Nigel Clark, a dedicated group of about 40 counters carried out comprehensive low-tide censuses of birds on the Severn estuary every second week throughout the winter; moreover, the best ever level of high-tide BoEE coverage was also achieved. On behalf of the NCC, Robert Prys-Jones and Jeff Kirby organised low-tide surveys throughout the winter on the Cleddau (Milford Haven), Carmarthen Bay (Taf/Tywi/Gwendraeth) and Burry Inlet. Subsequently, in May 1988, a five-man Estuaries Programme team visited the Uists to carry out studies on the spring passage of Nearctic-breeding waders as a follow-up to the West Coast Spring Passage Project.

A total of 41 requests for data was received during the 1987–88 season. As usual, the majority of these requests concerned the evaluation of the importance of particular sites or the provision of information in response to development proposals. The most frequent user was the NCC.

Many BoEE sites are sufficiently large to require coverage by a team of counters co-ordinated by a site organiser or, in the case of the largest estuaries, by teams of counters co-ordinated by a number of organisers; in some cases there may also be co-ordination at a county level. Experience has shown that annual estuary counters' meetings for the larger sites or at the county level are an effective means both of improving coverage and engendering enthusiasm, as well as of facilitating interaction with the BTO Estuaries Office whose staff welcome invitations to participate. During 1987–88, we attended site meetings for the Wash, Humber, Duddon, Morecambe Bay, Cleddau and Severn and county meetings for Cornwall, Dorset, Essex and Suffolk. We look forward to increased development of such meetings in the future. Suffolk has progressed a substantial step further; with support from the Central Electricity Generating Board, the Suffolk Wildlife Trust has appointed a full-time Estuaries Officer and the BoEE organisers publish an excellent annual county Estuaries Report.

The increasing importance of long-term BoEE and Winter Shorebird Count (WSC) data sets is well illustrated in a number of recent publications. Goss-Custard & Moser (1988) showed that the national decrease in the wintering population of Dunlin has been correlated with spread of the cord-grass *Spartina anglica*, with major declines taking place on those estuaries on which *Spartina* has spread most in recent years. Similarly, Moser (1988) found that, whereas the overall British wintering population of Grey Plovers has increased substantially over the past 15 years, there have been large differences in the rate of change in numbers on individual estuaries: on some, numbers increased faster than the national population, whilst on others there was a small, or even no, increase. These patterns indicated that sites were being filled sequentially, allowing each estuary to be classified according to its preference by Grey Plovers.

Mitchell *et al.* (1988) used BoEE counts to demonstrate that major declines in roosting populations of Knot and Bar-tailed Godwit on the Dee (Eng/Wales) estuary appear to be due to their having switched roost sites in favour of the neighbouring Alt, probably as a consequence of increased levels of disturbance on the Dee roost sites. By contrast, there was no evidence of increasing numbers on any neighbouring estuary corresponding to a similar major decline in Dunlin populations on the Dee. Prater & Prys–Jones (1988) carried out a countrywide analysis of BoEE results in a review of conservation priorities for wintering and passage waders. Moser & Prys–Jones (1988) integrated BoEE and WSC data to provide population estimates, mid-winter distribution patterns and site evaluations for waders wintering on the coast of Northern Ireland. In an important extension to results provided by the WSC, Green *et al.* (1988) documented the status of wintering waders on the non-estuarine west coast of Ireland, based on counts conducted during December 1987.

The Estuaries Programme "Shorelines" feature in *BTO News* was a regular double-page spread throughout the 1987–88 season, carrying major items on three British estuaries (Humber, Orwell, Severn), on wader studies in Australia and southern Africa, and on the colour-marking of waders. In addition, it has developed into a useful source of information on current events and publications relating to estuaries and waders. BoEE counters who at present are not BTO members might find much to interest them if they joined!

UNITED KINGDOM POPULATION TOTALS

Table 35 shows the total populations of each wader species counted in each winter month of 1987–88 in both Britain and Northern Ireland. Recorded totals of the highly cryptic Jack Snipe and Snipe are likely to be far smaller than the populations of those species actually present on the BoEE sites covered, but for other species they should provide a reliable estimate. A peak United Kingdom population exceeding 1.25 million waders from December 1987 to February 1988 averaged 18% higher than for the equivalent period in 1986–87. The generally mild winter resulted in numbers of Lapwing and Golden Plover remaining high through February, in marked contrast to the striking decline which followed the severe cold spell in early January 1987. Similarly, Knot and Redshank numbers were less variable during the mid-winter months than in 1986–87. For the fifth successive year, Ringed Plover numbers showed a noticeable decline between December and January, for reasons which remain obscure. (N.B. Purple Sandpiper occurring in Northern Ireland were omitted from the 1986–87 report in error.)

Table 35. TOTAL NUMBERS OF WADERS RECORDED BY BOEE COUNTS IN THE UNITED KINGDOM DURING WINTER 1987/88

BRITAIN

	November	December	January	February	March
Oystercatcher	194,664	236,132	52,896	246,800	139,879
Avocet	412	606	520	456	223
Ringed Plover	8,817	9,410	7,840	7,585	3,137
Golden Plover	22,148	34,797	34,292	25,820	9,573
Grey Plover	25,256	30,015	31,073	29,848	25,375
Lapwing	97,388	123,109	111,370	107,327	12,049
Knot	213,935	221,294	247,695	255,888	115,455
Sanderling	5,604	5,842	6,809	4,532	5,487
Curlew Sandpiper	0	0	0	1	0
Purple Sandpiper	1,651	2,558	2,505	2,415	1,713
Dunlin	247,211	330,773	327,087	321,326	116,590
Ruff	76	113	49	107	97
Jack Snipe	9	27	15	14	19
Snipe	2,499	3,359	1,941	2,485	1,151
Long-billed Dowitcher	2	0	0	0	0
Woodcock	3	1	0	0	3
Black-tailed Godwit	4,338	4,813	3,518	5,622	5,513
Bar-tailed Godwit	26,276	34,401	52,791	39,484	6,563
Whimbrel	6	30	2	3	10
Curlew	50,174	48,076	69,259	75,654	54,107
Spotted Redshank	53	37	29	33	45
Redshank	71,336	74,565	70,873	79,383	59,201
Greenshank	175	140	173	129	115
Green Sandpiper	19	22	16	17	10
Common Sandpiper	13	10	13	7	11
Turnstone	15,545	16,799	16,860	19,096	14,846
Total	987,610	1,176,929	1,237,626	1,224,032	571,172

NORTHERN IRELAND

Oystercatcher	12,105	15,522	9,313	14,590	8,865
Ringed Plover	1,037	451	950	427	113
Golden Plover	6,373	9,687	6,078	8,206	3,011
Grey Plover	49	108	100	142	23
Lapwing	11,673	29,608	15,009	10,471	1,130
Knot	3,000	2,246	3,228	683	701
Sanderling	6	4	1	0	6
Little Stint	3	0	0	0	0
Purple Sandpiper	82	94	107	138	118
Dunlin	7,142	7,661	8,845	6,649	1,495
Ruff	3	3	1	4	2
Jack Snipe	0	0	0	1	0
Snipe	75	206	204	116	63
Long-billed Dowitcher	1	0	0	0	0
Black-tailed Godwit	74	120	35	105	38
Bar-tailed Godwit	750	1,026	530	700	356
Curlew	3,402	3,897	5,172	6,696	2,888
Spotted Redshank	4	0	1	1	0
Redshank	6,958	6,246	4,563	6,844	5,655
Greenshank	53	80	85	70	74
Turnstone	2,256	2,058	1,746	2,202	2,568
Total	55,046	79,017	55,968	58,045	27,106
U.K. Total	1,042,656	1,255,946	1,293,594	1,282,077	598,278

INDICES OF WINTERING NUMBERS

The geographical coverage achieved by the Estuaries Enquiry varies from year to year; it is not therefore possible to derive satisfactory data on population changes between winter seasons by simply examining totals of the birds counted. To overcome this problem, an index of wintering numbers has been devised, based on the January counts. The indices have been calculated by the same method as for wildfowl (see Table 7), except that 1973 is used as the arbitrary "anchor" year. Species which occur in small total numbers only are excluded. Lapwing and Golden Plover are also excluded because such a high proportion of the population occurs on inland fields; as a result, the indices are highly sensitive to cold weather movements rather than reflecting true changes in population levels from year to year.

Table 36 shows the five-year mean indices for the period 1971–85, followed by the indices for 1986, 1987 and 1988. Population levels recorded for all species except Bar-tailed Godwit were higher in January 1988 than in the preceding year, in some cases markedly so, precisely reversing the trend observed between 1986 and 1987. Highest increases were recorded for Curlew (57% increase), Grey Plover (50% increase to a new record level) and Redshank (45% increase). However, interpretation of these index changes for Curlew and Redshank must be treated with great caution: the dip in their index values between 1986 and 1987, followed by the sharp increase in 1988, almost certainly more closely reflects a short-term redistribution of their populations during the extremely cold January 1987 rather than mortality and/or productivity factors. Whereas long-term trends in index values (e.g. for Oystercatcher, Grey Plover, Dunlin) certainly indicate real changes in overall wintering populations, the same cannot necessarily be concluded from short-term fluctuations.

Table 36. JANUARY INDICES FOR WADER POPULATIONS IN THE UNITED KINGDOM, 1971–88

	Mean 1971 to 75	Mean 1976 to 80	Mean 1981 to 85	1986	1987	1988
Oystercatcher	116	158	173	203	171	215
Ringed Plover	107	129	141	162	105	129
Grey Plover	115	157	173	221	199	299
Knot	112	84	83	92	82	88
Sanderling	129	120	107	104	85	103
Dunlin	101	93	71	68	55	64
Bar-t. Godwit	101	137	184	166	190	161
Curlew	119	103	93	75	69	108
Redshank	100	97	77	78	69	100
Turnstone	118	143	130	192	144	173

SPECIES ACCOUNTS

The tables presented in this section rank the principal sites for each species in the United Kingdom on the basis of the average winter maxima recorded over the last five seasons. Incomplete counts presented for individual years are bracketed. The five-year averages for each site were in the first instance calculated using only complete counts, but if any incomplete counts exceeded this initial average they were then also incorporated in order to give the best possible estimate of the average winter peak count.

Oystercatcher *Haematopus ostralegus*

The January population index for Oystercatchers reached a record level in 1988, being 26% up on the previous year. Nine sites, including a non-estuarine one, currently hold winter populations of international importance. These are listed in Table 37 along with the only further site of national importance regularly to hold over 5,500 birds, the Duddon. The Wash total was the highest ever in winter at this site, and that for the Ribble the highest since December 1976. A further nine sites, listed in rank order, had peak counts exceeding 2,800 in winter 1987–88: Belfast Lough, Swale, Strangford Lough, Exe, N Norfolk Marshes, Inner Clyde, Humber, Inner Moray Firth and Eden.

Table 37. OYSTERCATCHER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Morecambe Bay	61,833	54,366	49,700	(45,395)	61,664	(Jan)	56,891
Dee (Eng/Wales)	30,360	29,000	38,000	24,600	28,890	(Jan)	30,170
Solway	26,491	40,396	17,415	(14,624)	26,297	(Jan)	27,650
Wash	23,009	25,820	29,159	23,202	35,421	(Feb)	27,322
Burry	13,105	16,550	19,420	21,390	19,334	(Feb)	17,960
Thames	7,417	(10,832)	19,258	13,703	(9,438)	(Nov)	13,459
Ribble	8,719	7,417	9,332	10,963	15,062	(Nov)	10,299
Outer S Solway *	7,892	10,203	10,053	9,284	(6,619)	(Jan)	9,358
Forth	(5,645)	(6,575)	(8,121)	(8,807)	(7,574)	(Jan)	(8,807)
Duddon	5,725	4,488	6,627	6,933	6,650	(Feb)	6,085

Avocet *Recurvirostra avosetta*

The only site of international importance for the Avocet in the United Kingdom is Ore/Butley/Havergate, which has an average peak winter count of just over 300 birds. The Exe, Alde and Tamar complex are each nationally important, and two additional wintering sites, Hamford Water and Poole Harbour, appear to be establishing themselves (Table 38). The birds on the Alde and Ore complex should almost certainly be considered as one wintering population; combining these sites gives an average peak winter population over the past three years of 343, with a peak count of 411 in November 1986.

In the absence of adequate BoEE counts, the five years of data for the Tamar complex were derived from the most useful, timely and comprehensive review of the Tamar Avocet population by Reay (1988). As such, they comprise a combination of information from local bird reports and previously unpublished observations, and their presentation raises the issue of how comparable such information is likely to be to BoEE counts.

Fortunately, a direct comparison can be made for the Exe, again using data presented by Reay (1988). Over the most recent five-year period, the once-monthly BoEE counts produced average peak winter counts for the Exe which averaged 10% (range 6%–16%) lower than estimates derived in an equivalent fashion to those for the Tamar complex. This provides reassuring evidence that BoEE counts produce realistic, albeit minimum, estimates of wintering populations for this species.

Both Reay (1988) and Hill (1988) point out that no discrete British population of Avocets appears to exist. British breeding birds winter both in Britain and abroad (e.g. in Iberia), and British wintering birds include foreign breeders (e.g. from The Netherlands). There is, however, much scope for a better understanding of the proportion of British breeders which emigrate in winter and the proportion of British wintering birds which arrive from abroad. In an informative study based on data from the breeding populations on the RSPB reserves at Havergate and Minsmere, Hill (1988) shows that whereas chick loss is the key factor explaining most variation in total losses between years, the main regulatory mortality on the populations is overwinter loss. He concludes by suggesting that increases in Avocet productivity in Britain depend importantly on the creation of conditions whereby new populations can be founded.

(Copies of the 58–page report by Reay (1988) can be obtained from the author, Dept. of Biological Sciences, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AA. Price 2 pounds inc. postage (cheques payable to Plymouth Polytechnic).)

Table 38. AVOCET: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Ore/Butley/Havergate	(54)	(308)	334	(345)	230	(Dec)	304
Exe	113	141	135	121	152	(Dec)	132
Alde	x	x	109	66	188	(Feb)	121
Tamar complex	88	95	96	172	132	(Dec)	117
Hamford Water	7	16	38	26	(64)	(Nov)	30
Poole Harbour	x	12	0	59	48	(Feb)	30

Ringed Plover *Charadrius hiaticula*

The January 1988 population index for Ringed Plovers was 23% higher than in January 1987. Ten sites, two of them non-estuarine, regularly hold internationally important numbers, and an additional two, Colne and Blackwater, verge on this status (Table 39). Two further sites, Jersey* (442 in January) and Forth (427 in December), held peak populations exceeding 400 birds in winter 1986–87; another four, Southampton Water, Severn, Burry and Thanet* (Kent), held 230 or more birds.

Birds wintering on our coasts belong largely to local temperate breeding populations, whereas the large numbers of Arctic breeding birds winter further south. These latter birds move through north-western Europe on passage, at which times discrete populations are not identifiable and a qualifying level for international importance of 1,000 individuals applies. In autumn 1987, over 2,000 birds were present in September on the Thames, and over 1,000 in August on the Wash and in September on the Medway. In spring 1988, the Ribble held 4,000 birds in May, and Morecambe Bay, the Solway and the Wash over 1,000 each in the same month.

Waters (1988) has produced a useful article reviewing knowledge of Ringed Plovers, with particular reference to Suffolk populations. In it, he combines analyses of ringing and count data, information on habitat use and feeding ecology, and a brief discussion of threats. The annual county Estuaries Report in which this paper appears is a model production which could usefully be followed elsewhere.

Table 39. RINGED PLOVER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Medway	752	1,285	(539)	(571)	(1,003)	(Dec)	1,019
Thames	668	(463)	821	(955)	(505)	(Nov)	815
Tiree *	x	987	555	872	x		805
Outer Ards *	x	571	693	630	710	(Nov)	651
Morecambe Bay	289	(1,083)	322	(348)	514	(Jan)	552
Langstone Hbr.	452	391	640	460	615	(Nov)	512
Orwell	513	620	782	292	243	(Dec)	490
Chichester Hbr.	388	(572)	341	624	x		481
Lindisfarne	310	483	716	216	480	(Nov)	441
Humber	445	(309)	(403)	(278)	395	(Feb)	420
Colne	190	550	401	382	469	(Nov)	398
Blackwater	717	(173)	243	269	291	(Dec)	380

Golden Plover *Pluvialis apricaria*

Peak Golden Plover numbers recorded on BoEE sites in winter 1987–88 were 30% up on those in 1986–87. More strikingly, however, high numbers remained present in the 1987–88 winter through February whereas, in response to a fairly brief spell of severe weather, they had almost entirely vacated British sites by January in the previous winter. The Humber just ranks as internationally important, and four further sites support nationally important numbers; in addition, Boulmer-Howick* (Northumberland) and the Burry verge on national importance (Table 40). No other site had a count exceeding 2,000 birds during winter 1987–88.

Table 40. GOLDEN PLOVER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Humber	8,014	(7,414)	(6,846)	(10,233)	(14,219)	(Dec)	10,822
Strangford Lough	3,276	13,510	7,277	6,454	7,333	(Dec)	7,570
Ribble	1,400	2,441	4,333	4,291	3,660	(Nov)	3,225
Solway	4,059	3,031	2,206	(1,311)	2,590	(Dec)	2,972
Taw/Torridge	2,983	3,350	2,178	1,458	1,050	(Dec)	2,204
Boulmer/Howick *	3,000	4,000	600	150	2,000	(Jan)	1,950
Burry	3,200	1,740	2,500	1,106	1,064	(Dec)	1,922

Grey Plover *Pluvialis squatarola*

A massive increase of 50% in the January index brought the Grey Plover population level to an all-time high in winter 1987–88. Peak numbers exceeding 31,000 in December constituted a record count, and the Wash alone held well over 8,000 birds in February.

Sixteen sites in the United Kingdom now regularly support internationally important wintering populations (Table 41). Other estuaries with peak BoEE counts exceeding 800 birds in winter 1987–88 were the Colne (1,234 in February) and Alt (849 in December), and a further 16 sites held in excess of 210 birds.

Although the peak winter BoEE count of Grey Plovers on the Severn in 1987–88 was only 330 individuals, two out of 14 comprehensive low-tide counts of the estuary carried out during this winter provided evidence of much larger flocks, i.e. over 800 in mid-December and over 1,600 in early January, being present for brief periods despite mild prevailing weather (cf. Townshend 1982). Goodall (1988, p.86) reports a strikingly similar situation on the Humber where, in addition to the stable wintering population, "....flocks of up to 1,000 arrive quite suddenly, stay a short time and then leave." This would seem to be a phenomenon worthy of closer investigation.

Table 41. GREY PLOVER: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Wash	2,694	5,343	4,600	5,512	8,385	(Feb)	5,307
Thames	2,615	(2,998)	1,947	(4,411)	4,884	(Mar)	3,464
Ribble	1,453	2,177	1,963	2,048	3,872	(Jan)	2,303
Swale	1,487	2,971	(1,748)	(420)	1,409	(Nov)	1,956
Medway	1,026	1,813	(1,134)	(1,121)	(2,534)	(Feb)	1,791
Dee (Eng/Wales)	846	2,070	1,975	1,607	1,800	(Jan)	1,660
Chichester Hbr.	1,541	2,048	1,243	1,631	x		1,616
Morecambe Bay	879	(1,055)	1,846	(1,167)	1,146	(Mar)	1,290
Blackwater	(656)	(745)	(868)	1,290	1,150	(Feb)	1,220
Stour	943	783	1,122	1,430	1,629	(Dec)	1,181
Dengie	1,180	(1,700)	630	840	1,082	(Mar)	1,086
Lindisfarne	316	360	1,104	2,100	1,200	(Nov/Dec)	1,016
Langstone Hbr.	474	839	984	1,281	1,271	(Feb)	970
Pagham Hbr.	667	949	801	967	1,040	(Jan)	885
Humber	577	(1,031)	(952)	(891)	(365)	(Dec)	863
Hamford Water	2,282	500	445	200	(664)	(Feb)	857

Lapwing *Vanellus vanellus*

Peak numbers of Lapwing recorded in winter 1987–88 were 44% higher than in 1986–87. As for Golden Plover, numbers on BoEE sites remained high through February in the mild 1987–88 winter, whereas they had crashed in January of the previous year in response to severe weather. No estuarine site in the United Kingdom is internationally important for this predominantly inland species, but four regularly hold over 10,000 individuals and are thus nationally important. Table 42 lists the nine sites regularly holding 5,000 or more birds. In addition, the Outer Ards*, Ore/Butley/Havergate, Inner Clyde and Wash all held over 5,000 individuals during winter 1987–88.

Shrubb (1988) has studied the influence of crop rotations and field size on a wintering population of Lapwing on coastal mixed farmland in West Sussex. For feeding, Lapwings selected cereal crops following leys and, to a lesser extent, grass fields and cereals following oil-seed rape; crop rotations and management were the primary factors influencing selection of feeding sites. Roosting sites differed sharply from feeding sites, the most favoured habitat being old pasture. Roosting flocks preferred fields of above average size, but size of roosting flocks was not related to field size.

Table 42. LAPWING: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Strangford Lough	7,855	15,729	14,839	6,740	18,057	(Dec)	12,644
Morecambe Bay	15,692	(13,077)	10,635	(9,520)	6,672	(Feb)	11,519
Humber	8,687	(10,418)	(6,421)	(6,306)	13,165	(Feb)	10,926
Ribble	7,294	13,562	9,445	8,917	10,883	(Nov)	10,020
Solway	6,501	9,096	4,102	(7,115)	(7,012)	(Nov)	6,765
Thames	(2,499)	(7,521)	5,200	(3,751)	(7,530)	(Jan)	6,750
Dee (Eng/Wales)	4,320	6,950	8,125	5,175	5,490	(Dec)	6,012
Swale	1,030	5,037	(4,036)	(2,968)	11,184	(Dec)	5,750
Severn	7,488	(9,177)	(4,864)	(1,759)	1,413	(Jan)	5,736

Knot *Calidris canutus*

The January 1988 index for Knot was 7% up relative to that of a year earlier. Sixteen sites regularly support winter populations of international importance; these are listed in Table 43 together with the Swale, the only additional BoEE site regularly to hold nationally important numbers. Totals of around 50,000 Knot on the Ribble in both November and December are exceptional, although autumn populations of this size are not uncommon on this estuary.

Among other sites, Hartlepool Bay* (3,400 in February) and Langstone Harbour (2,950 in February) held over 2,200 birds during winter 1987–88. Hartlepool Bay is a site adjacent to the Tees estuary and is not covered by BoEE counts in most winters. Its high Knot population in 1987–88 coincided with low counts for the Tees (Table 43); the peak count for the combined Tees/Hartlepool Bay* site was 4,030 in February.

Table 43. KNOT: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Month)	Average
Wash	53,495	77,050	117,886	83,340	93,666	(Feb)	85,087
Alt	30,000	40,303	42,000	46,000	40,000	(Jan/Feb)	39,661
Humber	33,054	25,317	(23,647)	(29,247)	22,438	(Jan)	27,514
Ribble	13,619	9,963	22,098	27,007	52,400	(Nov)	25,017
Morecambe Bay	24,555	18,146	27,954	(28,081)	23,968	(Jan)	24,541
Thames	29,098	(21,546)	16,147	(25,826)	(20,794)	(Jan)	23,690
Dee (Eng/Wales)	(17,960)	19,500	22,230	12,170	18,860	(Jan)	18,190
Strangford Lough	9,424	18,977	21,450	8,700	2,918	(Jan)	12,294
Forth	(8,720)	(7,718)	(4,478)	(8,145)	9,803	(Dec)	9,803
Solway	8,189	7,191	4,627	(1,942)	(6,668)	(Nov)	6,669
Dengie	4,290	(120)	5,000	10,280	5,200	(Feb)	6,193
Burry	6,150	3,550	4,900	7,100	5,740	(Jan)	5,488
N Norfolk Marshes	x	(6,121)	5,240	4,930	(4,200)	(Jan)	5,430
Tees	6,502	5,410	6,462	4,640	2,000	(Jan)	5,003
Duddon	2,500	140	750	12,000	5,500	(Feb)	4,178
Montrose Basin	3,000	4,000	10,000	2,000	450	(Dec/Feb)	3,890
Swale	5,209	1,753	(4,612)	(1,750)	1,904	(Dec)	3,370

Sanderling *Calidris alba*

The January 1988 population index for Sanderling was 21% up compared with that of a year earlier. Nineteen BoEE sites, including six non-estuarine ones, hold average peak winter counts exceeding 150, the current qualifying level for international importance, with one additional site holding nationally important numbers (Table 44). Among these sites, the importance of Thanet* (Kent) in a national context was not fully appreciated until the Winter Shorebird Count of 1984–85 (Moser & Summers 1987), but has since been confirmed (Henderson 1988). The only additional sites holding over 150 wintering Sanderling in 1987–88 were the Burry (170 in February) and Forth (152 in December).

During the migration seasons, no discrete populations of Sanderlings are identifiable, and higher qualifying levels for national (300) and international (500) importance apply. Despite frequently being incomplete, passage BoEE counts nevertheless indicate clearly the enormous importance of sites in north-west England for migrating Sanderling. In August 1987, the Ribble held nearly 3,000 birds, and the Alt and Dee (Eng/Wales) each over 500; in addition, the Duddon had over 500 in October. In May 1988, Morecambe Bay held over 8,500, the Ribble nearly 7,000, the Outer S Solway* over 3,000, the Alt over 1,500 and the Solway over 300. Elsewhere, the Wash held over 500 birds in August and over 300 in April, and Thanet* (Kent) almost 500 in April. Unfortunately, no spring counts were made on the Humber, known to be an important Sanderling passage site at this time (Goodall 1984).

Table 44. SANDERLING: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Ribble	1,644	1,431	2,038	1,193	2,801	(Nov)	1,821
Thanet *	x	x	x	659	722	(Jan)	681
Tay	(100)	(232)	750	560	362	(Jan)	557
Alt	537	555	326	727	625	(Mar)	554
Humber	641	(412)	(270)	(408)	461	(Feb)	551
Wash	166	802	427	768	572	(Jan)	547
Tees	210	490	476	800	200	(Mar)	435
Dee (Eng/Wales)	(290)	427	268	374	477	(Mar)	387
Duddon	226	606	238	291	447	(Nov)	362
Chichester Hbr.	330	600	291	206	x		357
Tiree *	x	402	305	353	x		353
Swansea Bay	191	400	262	342	(234)	(Dec)	286
Outer S Solway *	403	106	133	266	277	(Mar)	237
Colne	98	330	140	245	212	(Nov)	205
Clwyd coast *	x	x	x	180	225	(Mar)	203
Clwyd	0	102	x	450	190	(Jan)	186
Jersey *	x	x	x	154	191	(Jan)	173
Arun/Middleton *	205	145	150	130	173	(Jan)	161
Morecambe Bay	82	32	(194)	315	177	(Jan)	160
Rye Hbr/Pett Levels	98	(290)	210	38	70	(Jan)	141

Purple Sandpiper *Calidris maritima*

Estuaries hold less than 5% of the British wintering population of Purple Sandpipers (Moser 1987), and none has average peak winter counts of even national importance. Considering all BoEE sites counted during the 1987–88 winter, Budle–Seahouses* (Northumberland) held over 500 birds, the qualifying level for international importance tentatively suggested by Prater (1981). In addition, listed in rank order, St.Mary's Island* (Tyne and Wear), Hartlepool Bay* (Cleveland), Spey, Forth, Lossie* (Grampian), Seahouses–Beadnell* (Northumberland) and Ayre–Deerness* (Orkney) all held over 160 birds.

Nicoll *et al.* (1988) present some important results on regional, seasonal and annual variations in the structure of Purple Sandpiper populations in Britain. They find that, in winter, "long-billed" birds predominate in northern and western Scotland, Wales and southern and south-eastern England, whereas "short-billed" birds predominate in eastern Scotland and north-east England. The short-billed birds belong to the Norwegian breeding population, but the origins of the long-billed population are unclear. However, it is suggested that the long-billed birds may, in fact, comprise two distinct populations, with the small numbers in south-east England coming from the USSR and the large numbers in the north and west coming from Canada, Greenland and/or Iceland.

Dunlin *Calidris alpina*

The January 1988 index for Dunlin was up 17% relative to the nadir reached a year earlier, but wintering Dunlin numbers still remain well down on those present in the 1970s. Table 45 lists the 13 sites which have average peak winter counts exceeding 15,000 individuals. The eight holding more than 20,000 rank as internationally important in terms of the current qualifying level, which does not distinguish between birds of the three races, *alpina*, *arctica* and *schinzii* (Scott 1982). However, almost all wintering birds in the United Kingdom are of the race *alpina* which has a global population size of only c. 1,500,000. In addition to sites shown in Table 45, a further 11 estuaries held wintering populations exceeding 4,300 in 1987–88.

Table 45. DUNLIN: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Severn	56,830	34,746	(34,193)	(25,410)	44,580	(Jan)	45,385
Morecambe Bay	31,134	(50,211)	33,912	(36,404)	40,409	(Dec)	38,917
Wash	27,044	38,139	41,105	37,257	46,239	(Feb)	37,957
Langstone Hbr.	27,150	30,250	27,700	25,800	32,900	(Dec)	28,760
Thames	29,502	(13,296)	18,893	(34,987)	(23,892)	(Dec)	26,819
Humber	24,223	21,635	(32,026)	(28,089)	(16,090)	(Dec)	26,493
Chichester Hbr.	28,293	(27,028)	26,997	19,361	x		25,420
Mersey	28,000	34,700	25,000	12,000	16,040	(Jan)	23,148
Medway	22,047	18,366	(8,412)	14,777	(19,663)	(Dec)	18,713
Stour	16,205	20,854	15,466	11,852	16,134	(Feb)	16,102
Blackwater	12,350	(21,800)	16,700	16,400	11,265	(Dec)	15,703
Dee (Eng/Wales)	21,950	12,000	12,230	12,300	19,490	(Jan)	15,594
Swale	13,890	18,014	(15,470)	(4,520)	13,276	(Dec)	15,163

Ruff *Philomachus pugnax*

BoEE counts of wintering Ruff during 1987–88 peaked at only 116 (in December), of which 76 were present on Bracklesham Bay* (West Sussex). This is an irregularly covered BoEE site adjacent to Pagham Harbour, which is the only well-counted coastal site regularly holding nationally important wintering numbers. The peak Pagham Harbour count was only 34 (in March), giving the site a five-year average peak count of 103. Three other estuaries, all in eastern or southern England, held 20 or more birds during winter 1987–88: Breydon Water (34 in February), Humber (30 in January) and Swale (28 in November). The Humber (184 in September) was also the only BoEE site with a recorded passage total exceeding 100.

Jack Snipe *Lymnocryptes minimus*

Jack Snipe are so difficult to census that BoEE counts provide no more than evidence of occurrence. Among BoEE sites, only the Dee (Eng/Wales) (6 in March) and Morecambe Bay (4 in December) had peak counts exceeding three individuals.

Snipe *Gallinago gallinago*

Snipe numbers counted were high at over 3,500 in December 1987 compared to under 2,500 a year earlier. Seven sites held 200 or more individuals: Swale (338 in December), Colne (275 in February), Orwell (268 in December), Humber (268 in February), Severn (254 in December), Thames (229 in December) and Cleddau (229 in January).

Black–tailed Godwit *Limosa limosa*

Table 46 shows the nine United Kingdom estuaries which currently hold internationally important wintering populations of Black-tailed Godwits. The tenth site shown, the Wash, verges on international importance, but has highly variable numbers of birds present from year to year. The Swale is no longer internationally important after a series of years with low counts. During winter 1987–88, the Medway (565 in March), Beaulieu (500 in March) and Colne (500 in December) all held over 400 birds and a further 11 sites held over 50.

Ward & Bullock (1988) have recently carried out a study of the winter feeding ecology of Black-tailed Godwits on the Eden estuary. They found that a flock of around 100 birds was regularly present, feeding on an area of glutinous black mud. Some feeding occurred throughout the tidal cycle, but most took place on the rising tide. Estimates made of energy intake rates during daylight hours suggested that the birds must have been feeding extensively by night in order to balance their theoretical energy expenditure.

Table 46. BLACK-TAILED GODWIT: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Ribble	459	1,280	2,110	560	1,497	(Mar)	1,181
Stour	957	945	1,660	906	1,067	(Nov)	1,107
Langstone Hbr.	583	1,037	906	1,019	869	(Dec)	883
Poole Hbr.	x	791	682	569	874	(Feb)	729
Hamford Water	500	240	580	1,477	(250)	(Feb/Mar)	699
Dee (Eng/Wales)	1,285	371	430	773	400	(Feb)	652
Exe	494	756	617	582	520	(Dec)	594
Chichester Hbr.	617	395	487	521	x		505
Southampton Water	236	319	407	306	(750)	(Feb)	404
Wash	3	1,239	10	72	654	(Nov)	396

Bar-tailed Godwit *Limosa lapponica*

The peak monthly BoEE count of Bar-tailed Godwit in winter 1987–88 was nearly 10,000 fewer than during the previous winter, with the January index declining by 15%. The five United Kingdom sites with internationally important wintering numbers are shown in Table 47, along with five further sites which regularly support over 2,000 birds. The January 1988 count on the Ribble is a winter record for this site, exceeding the previous highest count of 15,885 in February 1982. It also may be a winter record for any site in the United Kingdom, just exceeding the 16,217 recorded in January 1985 on the Thames, almost all of which were at Foulness (Salmon & Moser 1985). Additional sites holding over 610 birds in winter 1987–88 were, in rank order, the Inner Moray Firth, Tay, Eden, Langstone Harbour, Dengie and Humber.

Salmon *et al.* (1987) reviewed current knowledge of the distinctively different migration patterns of the Nearctic and Siberian Knot populations. Interestingly, Prokosch (1988) presents evidence, based on morphology, timing of migration and ringing recoveries, for two discrete populations of Bar-tailed Godwits using the Wadden Sea. The earlier migrating population, peaking in abundance in late April, is thought to overwinter mainly in W Europe and probably breed in N Scandinavia and N Russia. The later population, present in larger numbers in late May, seems to overwinter in W Africa and is possibly destined for W and C Siberia. We await further studies with interest!

Table 47. BAR-TAILED GODWIT: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Ribble	6,138	7,461	13,880	10,836	16,756	(Jan)	11,014
Wash	5,976	7,846	8,204	12,809	10,691	(Feb)	9,105
Alt	8,620	4,503	4,956	11,310	9,001	(Feb)	7,678
Lindisfarne	3,600	4,765	9,600	8,900	7,000	(Nov)	6,773
Thames	3,524	(16,217)	3,277	(5,066)	2,076	(Feb)	6,032
Forth	(3,194)	(3,396)	(4,509)	(2,663)	(3,621)	(Feb)	(4,509)
Morecambe Bay	5,752	5,301	4,105	2,877	3,570	(Jan)	4,321
Solway	2,846	4,185	3,160	(2,230)	2,015	(Jan)	3,052
Lough Foyle	3,160	3,300	3,842	3,210	651	(Dec)	2,833
Outer S Solway *	388	571	(4,064)	5,600	295	(Jan)	2,184

Curlew *Numenius arquata*

For the third successive winter, the peak monthly BoEE count of Curlew reached record levels, with over 82,000 recorded in February 1988. The January index increased by a massive 57%, at least part of which is likely to have been due to a temporary large-scale movement away from British estuaries which apparently took place during the exceptionally cold spell of January 1987. Table 48 shows the six British estuaries which are internationally important for Curlew on the basis of five-year average counts, together with the three additional nationally important sites holding populations in excess of 2,500. As predicted in last year's report, greatly improved coverage of the Severn in 1987–88 has placed it firmly in the internationally important category, and it seems likely that regular comprehensive coverage on the Humber would do likewise for it also. In addition to those in Table 48, a further 25 sites had peak counts exceeding 910 birds in winter 1987–88.

Table 48. CURLEW: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Morecambe Bay	10,012	10,979	7,715	(9,897)	12,888	(Mar)	10,399
Solway	3,129	6,663	5,173	(3,383)	(7,841)	(Nov)	5,702
Wash	4,817	3,500	5,149	2,265	4,814	(Feb)	4,109
Dee (Eng/Wales)	(2,600)	2,526	4,680	3,510	3,840	(Jan)	3,639
Thames	2,707	(2,719)	2,808	(4,864)	(3,698)	(Jan)	3,519
Severn	2,033	3,289	(2,777)	3,416	4,576	(Jan)	3,329
Humber	1,499	(2,065)	(3,095)	(2,370)	4,107	(Feb)	2,900
Forth	(1,452)	(1,540)	(2,141)	(2,161)	(2,709)	(Feb)	(2,709)
Lough Foyle	2,130	2,800	4,323	1,670	2,370	(Jan)	2,659

Spotted Redshank *Tringa erythropus*

Fairly typical numbers of Spotted Redshank were recorded in winter 1987–88, with a peak monthly BoEE count of 57 in November. Top individual sites were the Fal complex (9 in November/December), Dee (Eng/Wales) (8 in February) and Cleddau (8 in November). During autumn passage, two sites held over 50 individuals: Wash (210 in September) and Swale (123 as early as July, with over 100 in both August and September).

Redshank *Tringa totanus*

The January 1988 index for Redshank was up by a striking 45% relative to the previous year. However, in common with the Curlew, Redshank numbers counted in January 1987 were temporarily depressed during the extremely cold weather then prevailing; the rise in the index since then certainly cannot be interpreted as indicating a real population increase of equivalent magnitude. Fourteen estuaries currently support internationally important numbers of wintering Redshank, and the Orwell and Solway verge on this status (Table 49).

Relatively low numbers on the Stour for the second successive year have pushed this site below the international qualifying level; by contrast, last winter's high count on the Mersey was exceeded, firmly establishing this site above the qualifying level. The adjacent Dee (Eng/Wales) also exceeded the exceptional count of the previous year, and the winter peak for the Wash was notably high. The Tay (2,506 in November) and Inner Moray Firth (2,021 in January) both held peak counts exceeding 2,000 individuals in winter 1987–88, and Belfast Lough (1,999 in February) fell just short; in addition, a further 19 sites supported populations exceeding 750.

Table 49. REDSHANK: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Dee (Eng/Wales)	(3,155)	3,000	4,510	9,220	9,930	(Nov)	6,665
Morecambe Bay	5,816	5,995	(7,802)	(5,806)	6,575	(Mar)	6,547
Wash	2,603	5,124	5,566	3,346	7,501	(Feb)	4,828
Thames	4,456	(5,105)	3,866	(3,892)	3,563	(Mar)	4,248
Humber	3,209	(2,896)	(3,588)	(3,145)	(4,295)	(Dec)	3,697
Forth	(2,492)	(1,925)	2,475	(3,067)	(4,952)	(Jan)	3,247
Lindisfarne	2,380	2,400	4,041	3,500	3,800	(Nov)	3,224
Medway	2,841	2,844	(2,424)	(2,926)	(3,557)	(Nov)	3,042
Inner Clyde	2,887	3,169	3,051	2,423	2,798	(Nov)	2,866
Severn	(2,027)	1,950	(1,803)	(1,908)	3,286	(Jan)	2,618
Swale	1,707	2,500	(3,730)	(910)	2,492	(Dec)	2,607
Strangford Lough	2,292	2,573	2,366	2,645	3,079	(Nov)	2,591
Mersey	1,020	1,855	1,620	3,300	4,100	(Feb)	2,379
Chichester Hbr.	2,230	2,437	1,871	1,522	x		2,015
Orwell	3,105	2,972	1,070	1,170	1,600	(Jan)	1,983
Solway	1,575	2,573	1,883	(606)	1,713	(Dec)	1,936

Greenshank *Tringa nebularia*

No United Kingdom estuary regularly achieves the 50 wintering birds necessary for national importance for this species. The peak monthly BoEE count in winter 1987–88 was just over 250 birds in January, and four sites held 20 or more individuals: Strangford Lough (35 in March), Lough Foyle (29 in January), Cleddau (26 in January) and Taw/Torridge (25 in January). During the passage season, the Wash had a striking peak count of 425 in September, but no other site recorded a count exceeding 100.

Green Sandpiper *Tringa ochropus*

As in 1986–87, only six sites had counts exceeding two birds in winter 1987–88, all in southern Britain: Swale (6 in November), Taw/Torridge (3 in January/February), Beaulieu (3 in November), Thames (3 in February), Crouch/Roach (3 in March) and Burry (3 in December). An interesting paper by Ormerod & Tyler (1988) compares the diet of wintering Green Sandpipers on the Loughor (upper Burry) and Gwendraeth (Carmarthen Bay) estuaries and on a nearby freshwater area in south Wales, with that of birds in Morocco and Ethiopia. As might be expected, diet differed considerably both between countries and between different habitats in south Wales. On the Welsh estuarine sites, the birds took predominantly annelid worms when feeding along muddy, saltmarsh channels at low tide, but caddis larvae and the crustacean *Gammarus* when feeding on adjacent brackish *Phragmites* pools at high tide.

Common Sandpiper *Actitis hypoleucos*

As in 1986–87, only four sites had counts exceeding two individuals in winter 1987–88, all in southern Britain: Kingsbridge (5 in March), Taw/Torridge (4 in March), Cleddau (4 in January) and Severn (3 in December). During passage periods, the only site recording over 50 birds was the Wash (73 in August).

Turnstone *Arenaria interpres*

The peak monthly BoEE count in winter 1987–88 reached record levels for the third successive year, with over 21,000 recorded in February, and the January index increased by 20%. Eleven sites now rank as internationally important for Turnstone, including four non-estuarine ones; a further site, the Medway, is of national importance, and the Stour and Strangford Lough verge on being so (Table 50). In addition, during winter 1987–88 the Outer S Solway* (703 in February) had a peak count exceeding 500 individuals, and the Colne held between 450 and 500.

There is a remarkable amount of individual variability in plumage patterns among wintering Turnstone. Whitfield (1988) studied a population on the East Lothian coast with the aim of finding out what information these patterns might communicate. In particular, he examined whether differences in plumage might signal differences in dominance status (status signalling hypothesis) and/or allow individuals to be recognised by conspecifics (individual recognition hypothesis). The former might be predicted to be more probable in a species forming very large or unstable flocks, in which repeat encounters between individuals would be low, and the latter more probable among species forming relatively small flocks with stable membership. Consistent with their known winter flocking habits, several lines of evidence combined to reject the status signalling hypothesis but to support the role of plumage variability in individual recognition among the Turnstone.

Table 50. TURNSTONE: MAXIMA AT MAIN RESORTS

	1983/84	84/85	85/86	86/87	87/88	(Mth)	Average
Morecambe Bay	1,026	(755)	1,703	2,269	2,189	(Feb)	1,797
Outer Ards *	x	987	1,949	1,803	1,990	(Mar)	1,682
Thanet *	x	x	x	1,010	1,674	(Jan)	1,342
Forth	(888)	(842)	937	(959)	1,642	(Dec)	1,290
Wash	973	1,216	764	754	1,995	(Feb)	1,140
Tiree *	x	966	861	1,196	x		1,008
Belfast Lough	(292)	(192)	1,183	929	322	(Feb)	811
Thames	892	(537)	630	(888)	(640)	(Nov)	803
Guernsey *	665	717	708	582	752	(Nov)	685
Dee (Eng/Wales)	(41)	50	890	721	909	(Jan)	643
Burry	710	470	745	630	481	(Nov)	607
Medway	378	212	(238)	(721)	(558)	(Nov)	467
Stour	430	408	354	483	571	(Feb)	449
Strangford Lough	448	440	443	470	428	(Dec)	446

PRINCIPAL SITES

All estuarine sites in the United Kingdom covered by BoEE counts are listed in Table 51, ranked in order of their average peak winter counts over the five-year period 1983–84 to 1987–88. Included with them are non-estuarine sites ranking as of at least national importance in terms of the total numbers of waders they support. Information on peak counts in winter 1987–88 at all these sites is also presented.

For each of the included five winters, the peak count for each site was first calculated by listing the highest count for each species between November and March, irrespective of the month in which it was made, and then totalling these counts. The results for the 1987–88 winter are shown in the first column. The numbers in brackets following these indicate the numbers of complete and incomplete counts (before and after the slash respectively) available for each included site in winter 1987–88. Where no complete counts were performed, the peak count is itself placed in brackets to indicate that it is no more than a minimum estimate.

The average peak winter count for each site was initially calculated using only the totals from winters in which at least one complete count was conducted. However, in the few cases where totals from other winters exceeded this initial average, they were then also incorporated in order to give the best possible estimate of the average peak count. In the brackets following, the numbers of winters with at least one complete count are given before the slash and the number without after it.

Twenty-one sites, all estuarine, average in excess of 20,000 wintering waders and thereby rank as internationally important (Atkinson–Willes *et al.* 1982). A further 21 sites, including two non-estuarine ones, hold on average more than 10,000 waders, thus exceeding the national qualifying level (Prater 1981). Five additional sites verge on national importance, each averaging over 9,000 waders. Three of these (Findhorn/Culbin/Nairn, Inner Moray Firth and Cromarty Firth) are adjacent sites forming an "Inner Moray complex". It is known that there is considerable movement of wader populations of some species between these sites (Symonds & Langslow 1986), and treatment of them as a single, internationally important unit would provide a better impression of the significance of this northerly area for wintering waders. Similarly, Ore/Butley/Havergate and Alde are both part of the same estuarine system and should probably be combined as a single, nationally important site, as is indeed done in the 1988 Suffolk Estuaries Report. Close attention to such compelling cases for changes in treatment will form an important part of a sites review currently being undertaken by Estuaries Programme staff.

Table 51. OVERALL WADER COUNTS AT BOEE SITES IN WINTER

Site No.†	Site	Peak winter count 1987/88		Average peak winter count 1983/84 to 1987/88	
54	Wash	217,491	(3/2)	179,197	(5/0)
87	Morecambe Bay	160,594	(4/1)	154,635	(5/0)
40	Thames	80,058	(2/3)	84,578	(4/1)
91	Dee (Eng/Wales)	91,142	(5/0)	83,452	(5/0)
55	Humber	80,406	(2/2)	82,583	(3/2)
88	Ribble	122,989	(5/0)	82,159	(5/0)
84	Solway	64,881	(4/1)	65,545	(4/1)
112	Severn	57,051	(2/3)	54,283	(3/2)
89	Alt	56,942	(5/0)	53,581	(5/0)
115	Strangford Lough	42,825	(5/0)	47,613	(5/0)
32	Chichester Harbour	x		39,487	(4/0)
31	Langstone Harbour	44,611	(5/0)	38,811	(5/0)
62	Forth	41,658	(1/4)	37,204	(2/3)
110	Burry	36,097	(5/0)	35,464	(5/0)
38	Swale	37,651	(2/3)	33,193	(3/2)
90	Mersey	25,125	(5/0)	32,434	(5/0)
59	Lindisfarne	28,935	(3/0)	28,941	(5/0)
39	Medway	(34,162)	(0/5)	28,732	(3/2)
46	Stour	27,731	(5/0)	25,743	(5/0)
43	Blackwater	20,195	(3/2)	22,965	(4/1)
86	Duddon	24,172	(5/0)	22,171	(5/0)
47	Orwell	13,211	(5/0)	17,755	(5/0)
	Outer S Solway *	12,469	(4/1)	17,526	(5/0)
44	Colne	22,270	(5/0)	16,752	(5/0)
119	Lough Foyle	11,710	(5/0)	16,110	(5/0)
56	Tees	11,109	(5/0)	15,777	(5/0)
53	N Norfolk Marshes	13,849	(1/4)	15,316	(4/1)
42	Dengie	15,219	(4/1)	14,992	(4/1)
16	Exe	16,140	(5/0)	14,036	(5/0)
1	Taw/Torridge	9,872	(5/0)	13,892	(5/0)
94	Lavan Sands	(5,960)	(0/3)	13,656	(4/1)
	Outer Ards *	16,466	(4/1)	13,495	(3/0)
75	Inner Clyde	13,967	(5/0)	13,064	(5/0)
63	Eden	8,177	(5/0)	12,046	(5/0)
116	Belfast Lough	12,851	(4/0)	11,933	(3/2)
45	Hamford Water	(9,380)	(0/5)	11,873	(4/1)
64	Tay	10,027	(5/0)	11,636	(3/2)
65	Montrose Basin	8,864	(5/0)	11,563	(5/0)
108	Cleddau	9,488	(4/0)	10,931	(5/0)
24	Southampton Water	8,775	(2/3)	10,858	(5/0)
41	Crouch/Roach	10,698	(4/1)	10,546	(3/2)
20	Poole Harbour	8,774	(5/0)	10,043	(4/0)

Table 51 contd.

71	Inner Moray Firth	10,913	(3/2)	9,856	(4/0)
72	Cromarty Firth	9,443	(3/1)	9,518	(5/0)
70	Findhorn/Culbin/Nairn	6,894	(4/0)	9,226	(4/0)
33	Pagham Harbour	8,820	(5/0)	9,150	(5/0)
30	Portsmouth Harbour	9,654	(5/0)	9,018	(5/0)
73	Dornoch Firth	4,828	(3/0)	7,158	(5/0)
50	Alde	6,922	(5/0)	7,123	(3/0)
111	Swansea Bay	(5,119)	(0/5)	7,035	(1/4)
48	Deben	8,717	(5/0)	6,973	(5/0)
79	Wigtown Sands	7,323	(5/0)	6,931	(3/1)
2	Camel	x		6,731	(3/0)
109	Carmarthen Bay	4,698	(1/0)	6,711	(2/3)
49	Ore/Butley/Havergate	8,097	(5/0)	6,604	(3/2)
22	NW Solent	3,873	(2/3)	6,509	(4/1)
114	Dundrum Bay	5,489	(5/0)	6,322	(5/0)
8	Tamar complex	(4,295)	(0/5)	(5,640)	(0/5)
36	Rye Hbr/Pett Levels	8,233	(5/0)	5,491	(5/0)
97	Inland Sea	3,720	(5/0)	5,096	(5/0)
37	Pegwell Bay	3,502	(5/0)	4,845	(5/0)
113	Carlingford Lough	4,037	(3/0)	4,775	(5/0)
34	Adur	2,540	(5/0)	4,755	(5/0)
61	Tyninghame	4,064	(5/0)	4,721	(5/0)
5	Fal complex	4,509	(5/0)	4,509	(1/4)
23	Beaulieu	3,870	(5/0)	4,316	(4/0)
93	Conwy	3,430	(4/0)	4,136	(4/0)
52	Breydon Water	4,835	(5/0)	4,034	(5/0)
74	Loch Fleet	4,072	(3/1)	4,011	(4/0)
68	Ythan	x		3,914	(1/0)
118	Bann	2,758	(5/0)	3,734	(5/0)
117	Lough Larne	2,066	(5/0)	3,499	(5/0)
4	Hayle	3,373	(5/0)	3,030	(5/0)
105	Dyfi	2,146	(5/0)	2,976	(4/0)
77	Loch Ryan	1,374	(4/0)	2,695	(5/0)
85	Irt/Mite/Esk	2,331	(4/1)	2,618	(5/0)
51	Blyth (Suffolk)	2,275	(4/1)	2,549	(5/0)
13	Kingsbridge	1,145	(5/0)	2,215	(5/0)
82	Auchencairn Bay	1,955	(5/0)	2,176	(3/0)
26	Newtown	2,727	(5/0)	2,154	(5/0)
101	Traeth Bach	1,626	(5/0)	1,989	(5/0)
21	Christchurch Harbour	1,826	(5/0)	1,914	(5/0)
19	The Fleet	584	(4/1)	1,913	(4/0)
76	Irvine	4,145	(3/0)	1,838	(5/0)
92	Clwyd	2,231	(5/0)	1,615	(4/0)
95	Red Wharf Bay	1,117	(1/0)	1,546	(5/0)
100	Foryd Bay	1,663	(5/0)	1,404	(5/0)
98	Cefni	1,391	(4/0)	1,391	(5/0)
35	Newhaven	929	(3/0)	1,385	(5/0)
99	Braint	1,299	(4/0)	1,230	(4/0)
83	Rough Firth	x		1,220	(2/0)
29	Brading Harbour	1,032	(5/0)	1,185	(5/0)
60	Tweed	597	(5/0)	1,156	(5/0)
104	Dysynni	584	(5/0)	1,129	(4/0)
96	Dulas Bay	360	(4/0)	984	(2/0)

Table 51 contd.

58	Coquet	608	(5/0)	888	(5/0)
9	Plym	510	(5/0)	885	(5/0)
81	Kirkcudbright Bay	x		869	(2/0)
27	Medina	974	(5/0)	782	(5/0)
78	Luce Bay	726	(2/0)	726	(1/0)
57	Blyth (Northumberland)	428	(4/0)	675	(5/0)
18	Axe	514	(5/0)	674	(5/0)
103	Mawddach	718	(5/0)	667	(3/0)
69	Spey	1,139	(3/0)	642	(4/0)
106	Teifi	485	(2/0)	560	(4/0)
25	Yar	396	(2/0)	553	(2/0)
28	Wootton	x		538	(3/0)
66	Dee (Scotland)	x		537	(3/0)
67	Don	x		502	(3/0)
107	Nyfer	210	(3/0)	496	(5/0)
12	Avon	268	(5/0)	460	(5/0)
3	Gannel	x		450	(2/1)
15	Teign	226	(4/0)	432	(5/0)
102	Artro	256	(5/0)	397	(4/0)
80	Fleet Bay	23	(1/0)	341	(3/0)
7	Looe	238	(4/0)	230	(5/0)
14	Dart	82	(4/0)	192	(5/0)
10	Yealm	107	(4/0)	187	(4/0)
17	Otter	249	(5/0)	181	(5/0)
6	Fowey	162	(1/0)	162	(1/0)
11	Erme	118	(5/0)	159	(5/0)

† see Figure 4
* non-estuarine site
x no count

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APPENDIX

INTERNATIONAL AND NATIONAL IMPORTANCE

Criteria for International Importance have been agreed by the Contracting Parties to the Ramsar Convention. Under one criterion a wetland is considered Internationally Important if it regularly holds 1% of the individuals in a population of one species or subspecies of waterfowl (Smart 1976; Atkinson-Willes *et al.* 1982), while any site regularly holding a total of 20,000 waterfowl also qualifies (Smart in press). Britain and Ireland's wildfowl belong to the north-west European populations, and the waders to the west European. A wetland in Britain is considered Nationally Important if it regularly holds 1% of the estimated British population of one species or subspecies of waterfowl. Table 53 gives the qualifying levels among wildfowl and waders for both these categories of importance. The category of National Importance applies to Great Britain only; equivalent figures have not been assessed for Ireland.

Forty-nine countries are now Contracting Parties to the Ramsar Convention on Wetlands of International Importance; they have designated a total of 412 sites covering 29,000,000 ha. The United Kingdom has designated a further seven sites under the Ramsar Convention and the EC Directive on the Conservation of Wild Birds in the last year: The Wash, Pagham Harbour, Gladhouse Reservoir, Din Moss/Hoselaw Loch, Gruinart Flats, Duich Moss and Bridgend Flats. The last four of these are on Islay, where an additional site – the Laggan Peninsula – has been designated under the EC Directive.

The following 38 sites in Great Britain – along with one, Lough Neagh/Beg, in Northern Ireland – have now been designated as Wetlands of International Importance under the Ramsar Convention by the U.K. Government:

Abberton Reservoir
*Alt Estuary
*Bridgend Flats
Bridgwater Bay
Bure Marshes
Cairngorm Lochs
Chesil Beach/Fleet
Claish Moss
Cors Fochno/Dyfi
*Dee Estuary
*Derwent Ings
*Din Moss/Hoselaw Loch
*Eilean na Muice Duibhe (Duich Moss)
*Gladhouse Reservoir
*Gruinart Flats
Hickling Broad
*Holburn Moss
Irthinghead Mires
*Langstone/Chichester Harbours
*Leighton Moss
Lindisfarne
*Lochs Druidibeg/a'Machair/Stilligary
*Loch Eye
Loch Leven
Loch of Lintrathen
Loch Lomond
*Loch of Skene
*Martin Mere
Minsmere/Walberswick
North Norfolk Coast
Ouse Washes
*Pagham Harbour
Rannoch Moor
*Rockcliffe Marsh (pt of Solway F)
Rostherne Mere
Silver Flowe
*The Swale
*The Wash

Those marked with an asterisk have also been designated as Special Protection Areas under the EC Directive, as have the following 11 sites:

Chew Valley Lake
Coquet Island
Farne Islands
Grassholm
Laggan Peninsula
Moor House
Orfordness/Havergate
Priest Island
Ribble Estuary (part)
Rhum
Skomer

Table 53. QUALIFYING LEVELS FOR NATIONAL AND INTERNATIONAL IMPORTANCE

	National (G.B.)	International
Great Crested Grebe	100	?
Mute Swan	180	1,200
Bewick's Swan	50	120
Whooper Swan	60	100
Bean Goose	†*	700
Pink-footed Goose:		
Iceland/Greenland pop.	1,000	1,000
European White-fronted Goose	60	2,000
Greenland White-fronted Goose	100	150
Greylag Goose: Iceland pop.	1,000	1,000
Barnacle Goose: Greenland pop.	200	300
Svalbard pop.	100	100
Dark-bellied Brent Goose	900	1,300
Light-bellied Brent Goose		
Canada/Greenland pop.	†*	150
Svalbard pop.	30*	40
Shelduck	750	1,250
Wigeon	2,000	5,000
Gadwall	50	550
Teal	1,000	2,000
Mallard	5,000	20,000**
Pintail	250	750
Shoveler	90	1,000
Pochard	500	2,500
Tufted Duck	600	5,000
Scaup	40*	1,500
Eider	700	20,000**
Long-tailed Duck	200	5,000
Common Scoter	350	10,000**
Velvet Scoter	30*	2,000
Goldeneye	150	2,000
Smew	†*	200
Red-breasted Merganser	100	400
Goosander	50	750
Coot	1,000	10,000

Table 53 contd.

Oystercatcher	2,800	7,500
Avocet	5*	260
Ringed Plover	230(Passage:300)	400(Passage:1,000)
Golden Plover	2,000	10,000
Grey Plover	210	800
Lapwing	10,000	20,000**
Knot	2,200	3,500
Sanderling	140(Passage:300)	150(Passage:500)
Purple Sandpiper	160	500
Dunlin	4,300(Pass:2,000)	20,000**
Ruff	15*	10,000
Snipe	?	10,000
Black-tailed Godwit	50	400
Bar-tailed Godwit	610	5,500
Whimbrel	†(Passage:50)	500
Curlew	910	3,000
Spotted Redshank	2*	500
Redshank	750(Pass:1,200)	2,000
Greenshank	4*	500
Turnstone	450	500

† British population too small for meaningful figure to be obtained.
* Where 1% of the British wintering population is less than 50 birds, 50 is normally used as a minimum qualifying level for national importance.
** A site regularly holding more than 20,000 waterfowl qualifies as internationally important by virtue of the absolute numbers.

Sources for criteria for International Importance: Prater (1981); Scott (1982). Sources for National Importance: wildfowl – Owen *et al.* (1986); waders – Prater (1981) as revised by Moser (1987).