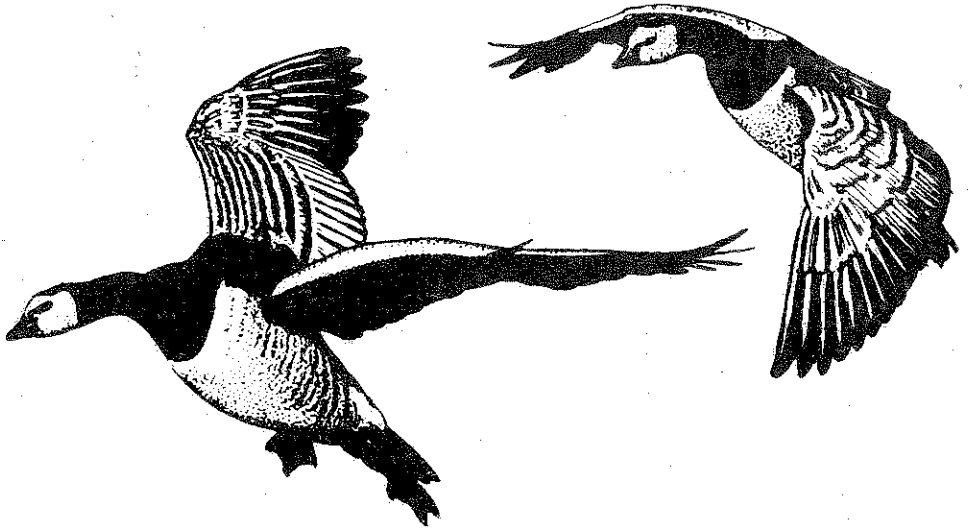
ROW

WILDFOWL AND WADER COUNTS 1986-87



Wildfowl and Wader Counts 1986 - 87

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

By
D. G. Salmon, R. P. Prys-Jones and J. S. Kirby

Cover drawing by	Sir Peter Scott
Published by	The Wildfowl Trust, Slimbridge Under contract to the Nature Conservancy Council
Printed by	Nimsfeilde Press Limited Church Street, Nympsfield Near Stonehouse, Glos. GL10 3UA

1987

NATIONAL WILDFOWL COUNTS

organised by The Wildfowl Trust
Slimbridge
Gloucester
GL2 7BT

funded by The Nature Conservancy Council

BIRDS OF ESTUARIES ENQUIRY

organised by The British Trust for Ornithology
Beech Grove
Tring
Hertfordshire
HP23 5NR

funded by The British Trust for Ornithology,
Nature Conservancy Council and
Royal Society for the Protection of Birds

ACKNOWLEDGEMENTS

The following are thanked for their help and advice in the production of this eighth combined report of the National Wildfowl Counts and the Birds of Estuaries Enquiry:

Dr A.D.Fox, Miss H.Inglefield, Mrs K.Kirby, Prof G.V.T.Matthews, Mr C.Mitchell, Dr M.E.Moser, Mrs J.Owen, Dr M.Owen, Dr M.W.Pienkowski, Mrs J.Portlock, Miss E.C.Rees and Mrs D.Smallwood.

As ever, our greatest debt of gratitude is to the many hundreds of volunteer observers who undertook the counts on which this report is based, often braving very difficult conditions to do so.

CONTENTS

WEATHER

The autumn and early winter were dominated by westerlies, apart from brief breaks in early October and late December. On 10th January, however, a cold north-easterly airstream began, bringing up to ten days of sub-zero temperatures and snow to southern and eastern districts in particular. Conditions were particularly severe in East Anglia, where many counters were housebound throughout the middle of the month! Winds were strong, keeping some large waters partially open. Early February was milder, but there was a further, less severe, spell of northerlies in the middle of the month. The end of the month was mild again, but northerlies and easterlies were predominant in early and mid-March, delaying return migration for some wintering species.

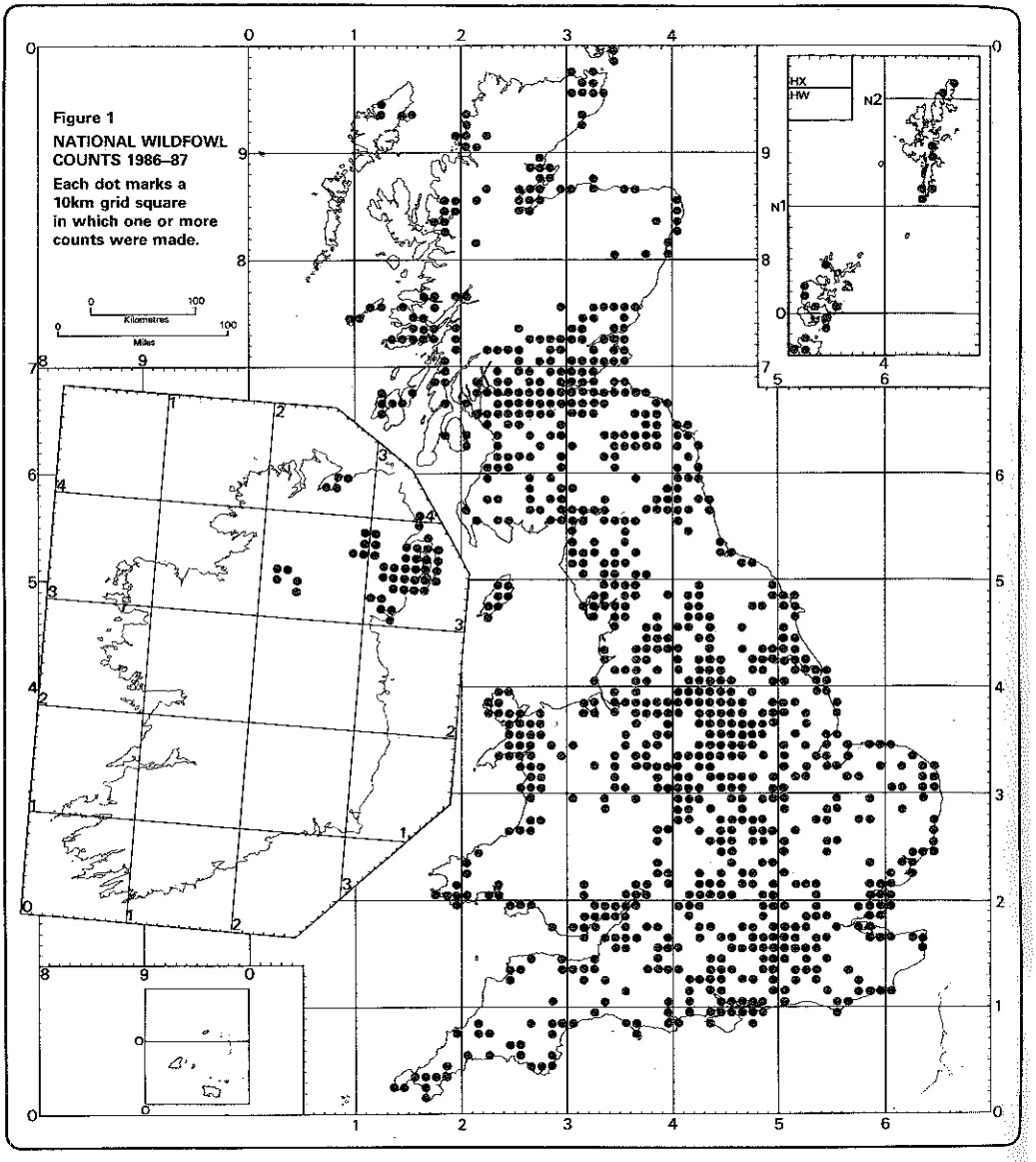


Figure 1
NATIONAL WILDFOWL COUNTS 1986–87
Each dot marks a 10km grid square in which one or more counts were made.
0 100
Kilometres
0 100
Miles
HX
HW
N2
N1

WILDFOWL

by D.G.Salmon

COUNT COVERAGE

1986–87 was the 40th season of the National Wildfowl Counts, which are organised by the Wildfowl Trust under contract to the Nature Conservancy Council. The counts cover Great Crested Grebes, swans, geese, ducks and Coots at as many localities – coastal and inland – as possible from September to March. The set dates in 1986–87 were:– September 14th, October 12th, November 16th, December 14th, January 18th, February 15th, March 15th. Coastal areas were counted on different dates where necessary to coincide with appropriate tidal conditions. The British Trust for Ornithology very kindly supplied data from the Birds of Estuaries Enquiry for some areas not reported to the Wildfowl Trust.

Coverage in Northern Ireland was the best for many years, thanks to efforts in conjunction with the RSPB's N.Ireland office to improve the coverage there; in addition to all the estuaries and the Lough Neagh/Beg basin, the major waters of Co. Fermanagh and a hundred lakes in Co. Down were counted.

Following the onset of the cold weather in January an extra count was requested at as many major sites as possible around the weekend of 31st January/1st February. This proved possible at 53 localities, and provided valuable information on the movements of many species, particularly Pink-footed Goose, Great Crested Grebe, Wigeon, Shoveler and Goldeneye. These are discussed in the individual Species Accounts concerned.

The regular special censuses were held of Pinkfooted and Greylag Geese in November, Greenland White-fronted Geese in November and April (by the Greenland Whitefront Study Group) and Dark-bellied Brent Geese in December and January. The results of these are incorporated in the tables and Species Accounts.

A total of 1,870 sites in Britain and Northern Ireland were covered at least once in 1986–87, including 1,581 in January, when a special effort is made for the International Waterfowl Census, and 997 in all seven months. Figure 1 shows opposite the extent of the coverage by 10km grid squares.

NOTICES

Site Issues

In addition to numerous requests from the NCC for data to help evaluations of sites proposed for national and international designations, the National Wildfowl Count results have been used, either by the Wildfowl Trust or other agencies, to assess the likely impacts of proposals involving 29 localities so far in 1987 (up to the end of October).

Projects

A number of new research projects have been launched by the Wildfowl Trust which will make use of the count data. They cover the following subjects:–

– The effects of shooting and other recreational activities as a possible disturbance factor on waterfowl populations. All counters have been sent questionnaires (which also form a baseline for the Wetland Register), and many have been contacted over specific aspects of the study.

– The movements of wildfowl in Europe in cold weather.

– The numbers and distribution of Shelduck in the Severn Estuary, to provide baseline data on the importance of the Severn Estuary as a moulting and breeding area and as a pilot for a national summer survey.

– The movements and turnover of Wigeon in Britain and Ireland. A pilot colour-ringing programme has been planned for the 1987–88 winter.

– The biology of the feral Ruddy Duck population, especially possible competition with Tufted Ducks.

Ringing

The Wildfowl Trust co-ordinates all colour marking schemes for wildfowl in Britain. These currently involve Mute Swan, Bewick's Swan, Whooper Swan, Pink-footed Goose, Greenland Whitefronted Goose, Barnacle Goose, Shelduck and Wigeon. The birds are fitted with plastic coded leg-rings readable in the field with a telescope. Please send any sightings and requests for information to Carl Mitchell at Slimbridge. (See also the Species Accounts which follow.)

"Wildfowl in Great Britain"

We are again able to offer this massive (613 page) review of the status of Britain's wildfowl and wetlands at a discount: £22 (plus £2.50 p&p), instead of the usual £30. Write to the Research Department, The Wildfowl Trust, Slimbridge, Gloucester, GL2 7BT.

TOTAL COUNTS

Table 1 gives the total count of each species month by month in 1986–87 in England, Scotland and Wales; Table 2 shows the same information for Northern Ireland. Certain sea ducks (Eider, Long-tailed Duck and Common and Velvet Scoter) are omitted, as many of their major resorts are covered irregularly. (The Appendix contains the 1% levels of National Importance, based on the maximum numbers estimated to be in Britain at any one time.)

Table 1. TOTAL NUMBER OF WILDFOWL COUNTED IN GREAT BRITAIN, 1986-87

Monthly totals (no. of sites) Figures over 1,000 rounded to nearest 100, over 100 to nearest 10.

	Sep (1,228)	Oct (1,269)	Nov (1,319)	Dec (1,338)	Jan (1,471)	Feb (1,362)	Mar (1,336)	Average Max. 1981-82 to 1985-86
Great Crested Grebe	6,000	5,400	5,100	6,000	3,600	5,100	5,300	6,100*
Mute Swan	8,700	8,700	8,600	8,900	8,100	7,700	6,800	8,200
Bewick's Swan	7	7	650	2,100	8,000	7,600	3,200	6,100
Whooper Swan	18	1,500	2,600	4,300	2,600	2,500	1,600	3,100
Bean Goose	15	0	1	49	180	440	3	310
Pink-footed Goose	11,500	103,100	137,700**	51,100	34,900	48,300	35,300	99,300
European White-fronted G	3	6	390	1,200	3,900	5,400	2,700	6,600
Greenland White-fronted G	0	260	10,800**	1,000	810	1,200	1,100	9,000*
Greylag Goose (incl feral)	6,800	33,700	120,600**	43,500	33,600	45,800	36,600	97,100
Canada Goose	31,400	27,700	30,500	29,800	21,300	22,400	16,300	25,100
Barnacle Goose: Islay**	0	23,900	22,000	21,900	23,000	19,100	23,000	17,100
Solway**	0	10,300	10,500					9,200
Dark-bellied Brent Goose	4,760	48,500	54,900	85,700**	87,200**	96,300	79,900	82,500
Light-bellied Brent Goose	47	50	980	2,100	3,600	2,600	850	1,290
Shelduck	19,900	21,000	26,200	45,500	65,200	92,000	62,300	73,600
Wigeon	28,400	128,000	151,100	176,700	299,800	195,300	150,900	224,600
Gadwall	3,800	4,900	4,900	4,500	3,500	3,500	2,700	4,500
Teal	42,100	60,400	78,400	83,200	51,700	60,100	37,200	95,300
Mallard	140,100	147,100	156,100	171,600	164,600	128,100	66,800	177,200
Pintail	7,300	14,600	17,900	14,600	14,700	17,100	8,000	24,000
Shoveler	6,400	7,800	6,900	6,200	3,100	3,300	3,500	7,900
Pochard	11,300	22,300	33,100	35,400	28,800	30,800	23,000	34,500
Tufted Duck	33,300	35,400	43,100	45,900	43,000	40,000	36,800	44,000
Scaup	570	1,100	520	2,100	2,300	2,900	760	3,100
Goldeneye	150	900	6,000	8,600	12,400	13,900	11,200	9,600
Smew	0	1	10	30	290	240	110	110
Red-breasted Merganser	1,900	3,400	2,700	5,200	5,700	3,600	2,300	3,400
Goosander	570	1,300	900	2,500	3,700	4,200	2,400	2,400
Ruddy Duck	1,200	1,300	1,600	2,100	2,400	2,000	1,800	1,900
Coot	65,700	79,200	78,100	78,200	76,300	60,400	43,500	85,300*

* 1982-83 to 85-86 only

** Complete censuses attempted. (Nos. of Barnacle Geese on the Solway are constant through the winter.)

Table 2. TOTAL COUNT OF WILDFOWL IN NORTHERN IRELAND, 1986-87
(For sites covered see text)

	Monthly totals		Figures over 1000 rounded to nearest 100, over 100 to nearest 10					Maximum
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	1985-86
Gt Crested Grebe	1,100	1,600	1,200	1,300	430	940	1,300	1,400
Mute Swan	1,300	1,300	1,600	1,500	1,400	1,200	1,200	740
Bewick's Swan	1	0	5	58	210	350	130	340
Whooper Swan	1	1,100	1,500	1,300	1,600	2,200	2,000	1,100
Gd Whitefront	0	10	23	8	59	50	78	73
Greylag G (incl feral)	150	150	380	470	510	760	730	1,070
L-b Brent Goose	6,200	16,400	6,100	4,700	3,400	3,200	2,500	17,600
Canada Goose	120	100	230	280	240	130	70	550
Shelduck	130	220	790	1,300	2,400	2,600	2,400	3,100
Wigeon	3,100	16,700	6,500	4,900	6,800	7,900	4,500	14,300
Gadwall	130	110	150	150	90	140	140	120
Teal	1,900	2,900	3,300	3,700	3,600	4,200	4,400	4,700
Mallard	9,300	8,500	5,200	6,000	6,900	5,000	2,800	6,300
Pintail	30	120	110	160	230	250	70	420
Shoveler	80	440	170	120	100	110	170	170
Pochard	2,500	10,500	14,900	16,500	16,800	14,500	4,200	17,000
Tufted Duck	1,700	7,700	8,000	8,400	9,600	7,800	7,000	6,800
Scaup	56	300	670	1,300	1,100	2,000	1,500	2,000
Goldeneye	90	630	6,200	10,100	7,700	8,900	10,900	5,600
Smew	0	0	0	0	0	3	2	2
R-b Merganser	380	280	440	370	340	350	240	730
Goosander	0	0	0	0	3	0	4	2
Ruddy Duck	29	27	2	29	12	10	14	27
Coot	4,500	6,100	5,200	4,400	4,300	3,800	2,800	2,630

MONTHLY FLUCTUATIONS

Since the coverage is not uniform in every month, for instance being best in January, when a special effort is made for the International Census, the monthly count totals do not necessarily provide a reliable picture of the relative importance of each month. Table 3, therefore, uses the data only from those sites in Britain counted in all seven months from September to March – 990 in 1986–87. Each month's total is expressed as a percentage of those present in the peak month. This enables fairly confident comparisons to be made between different months. (It is hoped to carry out the same analysis for Northern Ireland in future years, when more sites are covered.)

Table 3. NOS. OF WILDFOWL COUNTED IN BRITAIN IN EACH MONTH OF 1986-87 EXPRESSED AS PERCENTAGES OF THE TOTAL FOR THE PEAK MONTH, based on sites covered in each month, September to March.
(Bracketed figures = average percentages for previous three seasons, 1983-84 to 85-86.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
G C Grebe	100 (100)	93 (91)	86 (87)	89 (69)	58 (62)	75 (62)	85 (77)
Mute Swan	100 (98)	96 (90)	97 (92)	98 (89)	84 (79)	83 (66)	76 (66)
Bewick's Swan	0 (0)	0 (0)	8 (42)	25 (69)	100 (92)	93 (92)	36 (38)
Whooper Swan	1 (1)	36 (39)	67 (95)	100 (92)	69 (83)	71 (77)	43 (70)
E Whitefront	0 (0)	0 (1)	7 (14)	22 (50)	71 (87)	100 (94)	51 (34)
D-b Brent G.	3 (0)	53 (41)	63 (86)	79 (81)	80 (88)	100 (92)	74 (69)
L-b Brent G.	1 (0)	1 (8)	28 (33)	61 (69)	100 (92)	75 (63)	25 (13)
Shelduck	20 (25)	36 (39)	48 (65)	55 (79)	89 (88)	100 (93)	86 (84)
Wigeon	10 (12)	36 (42)	50 (68)	57 (69)	100 (91)	68 (66)	57 (37)
Gadwall	78 (70)	100 (76)	97 (98)	86 (98)	66 (76)	67 (78)	50 (57)
Teal	55 (42)	77 (60)	100 (82)	100 (97)	56 (78)	70 (51)	47 (35)
Mallard	84 (86)	90 (85)	95 (93)	100 (99)	91 (86)	74 (72)	41 (34)
Pintail	42 (26)	83 (80)	100 (79)	80 (100)	74 (83)	68 (52)	40 (22)
Shoveler	82 (86)	100 (95)	82 (91)	75 (75)	35 (58)	42 (53)	44 (47)
Pochard	34 (34)	64 (57)	98 (91)	100 (99)	84 (96)	88 (90)	68 (64)
Tufted Duck	80 (92)	83 (83)	99 (98)	100 (99)	87 (89)	82 (84)	81 (71)
Goldeneye	1 (2)	6 (11)	47 (73)	64 (84)	80 (93)	100 (97)	89 (100)
Smew	0 (0)	0 (0)	4 (5)	11 (39)	100 (64)	85 (92)	37 (37)
Goosander	13 (12)	13 (18)	25 (40)	39 (67)	67 (71)	100 (91)	77 (86)
Coot	84 (87)	100 (93)	94 (99)	94 (94)	88 (87)	72 (75)	53 (50)

PRINCIPAL SITES

At the conference of Contracting Parties to the Ramsar Convention at Regina, Canada, in May 1987, the criterion whereby a site holding 10,000 or more wildfowl qualified as Internationally important was replaced by a general criterion covering 20,000 or more waterfowl (Smart in press; see Appendix). However, for continuity, and to provide a ranking based on the total number of wildfowl, the list of sites with over 10,000 swans, geese and ducks is retained here. Table 4 shows those areas in Britain and Northern Ireland where the maximum total count of wildfowl averaged at least 10,000 between 1983–84 and 1986–87.

Table 4. SITES WITH AVERAGE MAXIMUM TOTAL COUNT OF 10,000+ WILDFOWL, 1983-84 TO 86-87. Geese, swans and ducks only. (Incl. goose roosts.)

	Average	Maximum
The Wash (Norfolk/Lincs)	47,500	58,500
Ouse Washes (Norfolk/Cambs)	46,300	58,000
L Neagh/Beg (Cos Down/Antrim/Derry/Tyrone/Armagh) **	38,800	40,700
Ribble Estuary (Lancs)	38,000	48,700
Inner Solway Firth (Cumbria/Dumfries & Galloway)	34,100	42,500
Mersey Estuary (Cheshire/Merseyside)	28,800	36,300
Loch of Strathbeg (Grampian)	25,400	31,600
Lough Foyle (Cos Derry/Donegal)	24,100	31,800
Foulness/Leigh/Canvey (Essex)	23,100	26,700
Lindisfarne (Northumberland)	23,000	37,700
Strangford Lough (Co Down)	20,200	22,300
Dee Estuary (Cheshire/Clwyd/Merseyside)	20,100	22,300
The Swale (Kent)	19,100	29,900
Montrose Basin (Tayside)	18,600	22,400
Westwater Reservoir (Borders)	17,000	25,100
Loch Leven (Tayside)	17,000	17,600
Hamford Water (Essex)	16,700	31,400
Morecambe Bay (Lancs/Cumbria)	16,700	22,100
Dornoch Firth (Highland)	16,000	21,500
Chichester Harbour (W Sussex/Hants)	15,900	17,100
Cromarty Firth (Highland)	15,800	17,600
The Humber (Lincs/Humberside)	15,500	17,300
Blackwater Estuary (Essex)	15,100	20,500
Abberton Reservoir (Essex)	14,900	17,400
Slains Lochs (Grampian)	14,100	18,500
Outer Firth of Tay (Fife/Tayside) *	14,100	14,100
Firth of Forth (Lothian/Central/Fife)	14,000	17,400
New Grounds, Slimbridge (Glos)	14,000	15,700
Lower Derwent Ings (Humberside/N Yorks)	13,500	14,800
Rutland Water (Leics)	12,500	13,900
Martin Mere (Lancs)	12,200	16,800
Loch Eye (Highland) **	11,800	13,200
Scolt Head (Norfolk)	11,300	17,300
Langstone Harbour (Hants)	11,200	13,400
Burry Inlet (W Glamorgan)	11,100	14,500
Castle Loch, Lochmaben (Dumfries & Galloway)	11,000	16,400
Crouch/Roach Estuary (Essex)	11,000	16,200
Lochs Davan & Kinord (Grampian)	10,700	15,900

* Only one season of full data
** Only two seasons of full data

INDICES

Table 5 shows the trend indices for 1986–87, preceeded by 1985–86 and five-years means for the period 1960–61 to 84–85. The indices are based on the 1970–71 season equalling 100, and obtained by comparing the counts from sites covered in consecutive years. Although 1970–71 is used as the arbitrary "anchor" for the index, all years are given equal weight in the analysis. (On average 80–90% of the wildfowl counted are included in the paired comparisons.) 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. Those species which are fully censused each year (e.g. Pink-footed and Greylag Geese) and those with particularly erratic coverage (e.g. the sea ducks) are omitted. It is intended to publish the indices for 1986–87 and 87–88 in the next report.

Table 5. INDICES OF ABUNDANCE OF WILDFOWL IN BRITAIN,
based on 1970-71 = 100
(Five-year means 1960-61 to 84-85; seasonal figures 1985-86)

		Mean 1960-61 - 64-65	Mean 1965-66 - 69-70	Mean 1970-71 - 74-75	Mean 1975-76 - 79-80	Mean 1980-81 - 84-85	85-86	86-87
Mute Swan	-Sep	105	96	103	93	119	125	132
	Jan	88	106	90	85	89	89	90
Bewick's S.	-Jan	15	50	72	153	215	298	360
Whooper Swan	-Nov	69	77	104	148	164	164	152
	Jan	202	146	118	114	116	144	130
E.Whitefront	-Jan	62	85	56	39	40	51	45
Canada Goose	-Sep/Jan	47	72	127	175	275	366	351
D.b.Brent	-Jan	61	87	134	305	455	520	455
Shelduck	-Dec	101	100	108	153	206	189	136
	Jan	92	106	102	132	133	148	121
Wigeon	-Oct	111	112	138	149	183	148	185
	Jan	83	91	84	85	97	122	127
Gadwall	-Oct	42	50	146	149	259	351	462
	Dec	86	81	164	336	781	1,112	1,017
Teal	-Dec/Jan	94	76	115	150	193	174	132
Mallard	-Sep	73	83	92	82	92	89	91
	Dec	78	89	86	80	90	102	91
	Jan	83	98	87	94	98	98	93
Pintail	-Dec	27	54	151	177	147	144	75
Shoveler	-Oct/Nov	91	97	144	193	201	215	219
	Jan	50	63	113	139	127	108	70
Pochard	-Jan	64	105	124	122	101	87	78
Tufted Duck	-Sep	44	64	110	122	134	126	115
	Dec	73	91	119	123	123	138	132
	Jan	67	82	113	105	104	101	105
Scaup	-Jan	64	110	114	33	11	10	13
Goldeneye	-Jan	115	92	126	109	98	99	108
RbMerganser	-Jan	49	101	115	245	222	228	295
Goosander	-Jan	92	80	121	285	213	271	283
	Feb	171	115	153	123	171	143	272

SPECIES ACCOUNTS

NB: The tables show sites exceeding the criteria for national importance for each species (see Appendix) ranked according to the average maxima for the last five seasons. However, where this would involve an unmanageably long list a convenient higher "cut-off" point has been used. A cross indicates incomplete or no data. For sites which have been covered in fewer than four recent seasons the average is placed in brackets. The "month" column shows when the peak occurred in 1986–87.
Although the Late Summer Wildfowl Survey was not repeated in 1986, July/ August wildfowl counts were received from a number of major sites, and these are included in the tables where applicable. Extra winter counts, away from the set dates, are also included if they represent seasonal maxima.

Great Crested Grebe *Podiceps cristatus*

The September peak count was slightly below the level of the last two years, but a marked "slump" occurred in January (see Tables 1, 2 and 3). The cold weather certainly drove many birds onto the coast, and some of the estuarine gatherings were in regions where Great Crested Grebes are normally scarce, suggesting sizeable movements and probably some immigration. There must, however, have been a major exodus from Britain and Northern Ireland. The extra count in late January/early February suggested a further decline at the sampled sites. By February the numbers had largely recovered.

Table 6 shows sites with average maxima of 150 or more Great Crested Grebes over the period 1982–83 to 86–87. Five other places held that many in 1986–87, mostly on the coast: Seasalter, Kent (450, December); Medway Estuary, Kent (260, January); Morecambe Bay (200, February); Titchfield Haven, Hampshire (160, February) and Queen Mother Reservoir, Berkshire (160, January).

Table 6. GREAT CRESTED GREBE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Lough Neagh/Beg	x	x	x	1,015	1,104	(Oct)	(1,060)
Rutland Water	191	771	966	705	472	(Jan)	621
Grafham Water, Cambs	225	350	950	411	524	(Jan)	492
Chew Valley Lake, Avon	445	510	465	530	445	(Aug)	479
Firth of Forth	170	263	326	542	759	(Feb)	412
Queen Mary Resr, Surrey	255	340	348	310	410	(Jan)	333
Upper L Erne, Co Fermanagh	x	x	x	263	374	(Mar)	(319)
Belfast L, Co Antrim/Down	x	x	x	282	279	(Oct)	(281)
Aber Ogwen, Gwynedd	x	x	x	260	x		(260)
Carlingford L, Co Down	164*	x	x	199	186	(Dec)	(183)
Eyebrook Reservoir, Leics	154	x	353	91	101	(Nov)	176
Pitsford Resr, Northants	223	176	139	151	169	(Jan)	172
Abberton Reservoir	185	87	57	220	229	(Oct)	156

* Irish Bird Report

Mute Swan *Cygnus olor*

Table 7 lists all sites with an average seasonal maximum of 180 or more Mute Swans, the qualifying level for national importance among British sites, between 1982–83 and 86–87. The following additonal resorts held over 180 in 1986–87: Colne Estuary, Essex (440, January); Loch of Stenness, Orkney (210, January); Loch Eye (200, October); Upper Lough Erne (200, November). Although the Lough Neagh/Beg basin holds much the largest concentration of Mute Swans in the whole of Ireland, the Co. Down lakes held a grand total of 330 in January 1987, 5.5–6.5% of the latest estimates of the Irish population, at 5–6,000 (Ogilvie 1972; Hutchinson 1979).

As part of the long-term study of the dynamics of the colonially breeding Mute Swans at Abbotsbury Swannery on the Chesil Fleet initiated by the Edward Grey Institute and the Wildfowl Trust, 516 birds were rounded up at Abbotsbury on 31st July 1987. Those which had not already been were fitted with large plastic leg rings – yellow (juveniles) or white (adults) – with three-letter codes. Please contact the Wildfowl Trust if you see birds with these or any other coloured rings (see also Notices)

Table 7. MUTE SWAN: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Chesil Fleet, Dorset	890	740	681	635	812	(Sep)	751
Lough Neagh/Beg	x	x	x	314	1,069	(Sep)	(692)
Tweed Estuary, Northumb'd *	564	767	674	602	309	(Aug)	583
Ouse Washes	621	643	570	477	500	(Dec)	562
Abberton Reservoir *	346	427	432	450	547	(Aug)	440
Strangford Lough	276	384	242	300	193	(Sep)	326
Christchurch Hbr, Dorset *	250	363	345	x	x		(319)
R.Welland: Spalding-Borough Fen, Lincs	269	265	316	305	254	(Nov)	282
Stour Estuary, Essex/Suffolk	314	225	165	212	349	(Dec)	253
Loch of Strathbeg	309	280	242	263	163	(Nov)	252
Loch of Harray, Orkney	183	234	177	216	293	(Dec)	220
Montrose Basin	245	231	161	223	187	(Sep)	216

* moulting concentration

Bewick's Swan *Cygnus columbianus bewickii*

After low autumn numbers the total British count reached yet another record level in January, of 8,000. Overall there was the normal decline in March, but at Slimbridge as many as 270 remained on 12th March. (Two of those birds were seen in Finnish Bay near Leningrad on 8th May, among a flock of 200 Bewick's and one Whooper Swan, during a visit to the Soviet Union by the Wildfowl Trust's swan researcher.) A total of 548 Bewick's Swans were identified at Slimbridge during the course of the winter, including 16% juveniles. This is a much higher proportion of young than elsewhere, with 8% recorded on the Ouse Washes and in the Netherlands (Rees 1987).

Table 8 shows those localities averaging at least 150 over the last five seasons. In addition, Breydon Water, Norfolk (180, March), Martham Broad, Norfolk (180, February), Alde Estuary, Suffolk (150, March) and Walmore Common, Glos (210, December) exceeded that number in 1986–87.

There was widespread concern at the possible effect of the Chernobyl nuclear accident on Bewick's Swans, which had started their spring migration later than usual in 1986 and possibly passed through the area affected by the radioactive cloud around the Baltic. Forty-six swans caught at Slimbridge on 7th January were tested using a gamma-ray spectrophotometer, capable of detecting minute amounts of radioactivity, but it found a degree of radiation no higher than the background level (Hancock & Woollam 1987).

Table 8. BEWICK'S SWAN: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Ouse Washes	2,792	3,364	5,227	4,743	6,164 (Jan)	4,458
Nene Washes, Cambs	600	396	211	937	x	536
Slimbridge	285	281	421	475	414 (Jan)	376
Martin Mere/Ribble Est.	220	374	330	410	415 (Jan)	350
Lough Neagh/Beg	x	x	x	338	234 (Feb)	(286)
Hampshire Avon: Ringwood-Harbridge	173	171	219	236	311 (Jan)	223
L Foyle, Co.Londonderry	128	193	128	293	110 (Feb)	170
Walland Marsh, Kent	143	173	x	x	x	(158)

Whooper Swan *Cygnus cygnus*

Table 9 lists all individual places in the U.K. with an average maximum of 160 or more since 1982–83. Note the record count in February 1987 in the Lough Neagh/Beg area. The three main Northern Irish sites – Lough Neagh/Beg, Lough Foyle and Upper Lough Erne – held 2,157 between them at that time, 12–13% of the British and Irish population, according to the results of the 1986 census (Salmon & Black 1986). Apart from those qualifying for inclusion in the Table, the following places held over 160 in 1986–87: Hirsel Lake, Berwick (320, November); Loch of Brow, Shetland (310, October); Loch of Sabiston, Orkney (230, October); Loch Leven (210, December); Inner Solway Firth (180, November).

Table 9. WHOOPER SWAN: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Lough Foyle	521	674	1,162	2,597	1,030 (Oct)	1,196
Lough Neagh/Beg	x	x	x	723	1,266 (Feb)	(995)
Upper Lough Erne	x	x	x	876	821 (Mar)	(849)
Loch of Strathbeg	633	382	234	508	406 (Dec)	432
Ouse Washes	223	248	230	330	520 (Dec)	310
Ribble Est/Martin Mere	76	177	127	475	243 (Jan)	219
L Eye/Cromarty Firth	103	62	60	405	461 (Dec)	218
Wigtown Bay	x	x	211	281	120 (Jan)	(204)
R.Eden: Low Crosby, Cumbria	x	x	x	192	190 (Jan)	(191)
L of Spiggie, Shetland	336	66	147	327	38 (Oct)	183
Caerlaverock, Dumfries	150	165	104	218	220 (Feb)	172
Paisley/Inchinnan, Renfrew	236	113	99	220	147 (Nov)	163

Bean Goose *Anser fabalis*

Despite the cold weather the main area – the Yare Valley, Norfolk – held only slightly more than normal, with a peak of 310 in February. The vicinity of Kilsyth, between Glasgow and Stirling, held 14 in September (at Carron Valley Reservoir) and 115 in February, the latter being seen at Fannyside Muir on one data and Carron Valley Reservoir a fortnight later. The possibility of a link between the Norfolk and Scottish birds has prompted plans to catch Bean Geese at Carron Valley as part of a study at the University of East Anglia. Elsewhere, only 11 birds were found in the U.K. in February, and the largest flock during the season was 11 at Amberley Wildbrooks, W.Sussex, in December.

In a very detailed study of the status of the two forms of Bean Geese in Europe Huyskens (1986) concluded that *fabalis* has declined greatly this century and now numbers 100,000 at most, but that *rossicus* has remained stable at roughly 500,000.

Pink-footed Goose *Anser brachyrhynchus*

Although coverage was not as good as in November, over 100,000 Pinkfeet were found in October for the first time, with over half at just two sites: the Loch of Strathbeg and Westwater Reservoir (see Table 10). In the November 1986 census a record 135,720 Pinkfeet were found in Scotland and northern and eastern England (Salmon 1987). There were a further 1,940 on sites reported later for the monthly counts but not the census, bringing the total to 137,700. This compares with a total of 130,000 (not 134,000 as stated in the last report) in November 1985. With the onset of the cold weather in January the birds at Scolt Head and the Wash immediately left, apparently moving north-west. Many were seen crossing central England, and the numbers in Lancashire increased to 25,000, with small groups in North Wales. There was no March census in 1987, but the first April survey is planned for 1988.

Intensive ringing of Pinkfeet has been recommenced by the Wildfowl Trust after many years. 200 have been caught at Martin Mere and 43 in Iceland in 1987. They were fitted with white plastic leg-rings, on the right leg in Martin Mere and the left leg in Iceland. Further catches are anticipated in 1987–88, so please look out for marked birds, especially in spring (see Notices).

Table 10 shows the sites with an average maximum of over 2,000 Pinkfeet over the last five seasons, taking data from the monthly counts as well as the censuses. The following localities also held over 2,000 in 1986–87: Overy Marshes, Norfolk (2,700, December); Cromarty Firth (2,700, February); Auchencairn Bay, Dumfries & Galloway (2,500, January); Loch Watston, Central (2,100, October); Cowgill Reservoir, Lanark (2,000, October); Lune Estuary, Lancs (2,000, January).

The British wintering birds breed in Iceland and Greenland. The Svalbard breeding population, wintering from Denmark to Belgium, has numbered 21–27,000 in the 1980s (Madsen 1987).

Table 10. PINK-FOOTED GOOSE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
South Lancs Mosses	18,410	23,335	21,060	22,990	25,245 (Jan)	22,208
L of Strathbeg	6,200	7,400	20,200	27,900	29,800 (Oct)	18,300
Westwater Reservoir	10,680	19,400	8,700	13,780	24,610 (Oct)	15,434
Inner Solway Firth	11,293	16,250	27,000	6,895	14,125 (Feb)	15,112
Meikle/Ythan, Gramp	6,500	17,400	11,400	15,300	9,590 (Nov)	12,038
Loch Leven	12,000	11,500	12,670	10,000	10,500 (Nov)	11,334
Wigtown Bay	7,000	12,000	12,000	17,000	3,910 (Mar)	10,382
Montrose Basin	6,130	9,500	9,425	12,000	12,600 (Nov)	9,931
Scolt Head	3,000	8,000	x	9,800	12,000 (Dec)	8,200
Castle L, Dumfries	1,200	8,900	6,950	13,400	5,000 (Feb)	7,090
Gladhouse R, Lothian	13,700	12,000	2,300	3,800	3,500 (Nov)	7,040
Dupplin L, Perth*	5,012	5,570	6,960	6,075	8,448 (Dec)	6,413
The Wash	5,811	5,500	9,500	8,288	2,712 (Dec)	6,362
Cameron Res, Fife	3,000	8,000	4,000	8,000	7,500 (Nov)	6,100
Aberlady Bay, Loth	5,165	3,710	4,610	12,500	3,000 (Oct)	5,797
Hule Moss, Borders	4,500	4,000	5,500	4,400	5,500 (Nov)	4,780
L of Menteith, Central	8,700	4,007	6,010	2,774	1,040 (Jan)	4,506
Carsebreck, Perth	4,920	2,840	500	7,200	5,840 (Oct)	4,260
Fala Flow, Lothian	1,068	6,548	3,240	1,352	6,500 (Oct)	3,740
Crombie L, Tayside	x	5,500	1,500	1,250	5,000 (Nov)	3,313
Hoselaw L, Borders	4,100	3,600	2,900	2,700	2,300 (Oct)	3,120
Lour, Tayside	2,110	3,680	380	5,000	3,850 (Nov)	3,004
Whitton L, Borders	2,750	1,900	118	6,000	810 (Nov)	2,315

* November/March census data only

European White-fronted Goose *Anser albifrons albifrons*

The January numbers were low, but there was a marked influx in February. As usual north Kent was the main recipient of the extra birds; most other areas retained lower than average levels.

The flocks at Slimbridge contained 18.1% young.

Table 11. EUROPEAN WHITE-FRONTED GOOSE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Slimbridge	3,040	3,400	4,200	4,300	3,500 (Feb)	3,687
Swale	1,493	876	1,300	2,570	2,070 (Feb)	1,662
Hampshire Avon	292	385	530	510	520 (Jan)	447
S.Thames Marshes	331	464	360	730	224 (Mar)	422
R Tywi: Dryslwyn, Dyfed	320	305	290	x	175 (Feb)	273
Holkham, Norfolk	270	295	240	500	105 (Dec)	282
Alde Estuary	x	x	x	235	140 (Jan)	(188)

Greenland White-fronted Goose *Anser albifrons flavirostris*

The autumn census of Britain located 10,900, including 6,100 (56%) on Islay. This represents a slight decline over the 1985 autumn total of 11,000. There was apparently a small increase in the spring to 11,400 in the March/April census. The Islay flocks contained 10.1% juveniles, those elsewhere in Scotland 11.8%. The numbers on Islay rose to 6,300 in December, fell to 4,400 in January and reached a peak of 6,500 in early April (GWGS 1987). A total of 11,886 were found in Ireland in the spring census – 7,780 at Wexford and 4,106 in the rest of Ireland. The Irish total was similar to last year's. The numbers at Wexford showed a slight and unexpected decline, whereas for the first time on record there was a clear-cut increase elsewhere in Ireland. The Wexford flocks contained 16.6% first-winter birds and those in the rest of Ireland 14.4% (Norriss & Wilson 1987). The total number counted in the spring of 1987 therefore amounted to 23,300.

Greylag Goose *Anser anser*

Like the Pinkfeet the Icelandic Greylags had an average breeding season in 1986, with 19% young in the wintering flocks in Scotland and northernmost England. The November census located 101,940 (Salmon 1987). The addition of data from the monthly counts brings the total to a record 107,930, of which 78% were in northern and east central Scotland.

Table 12 shows sites with average annual maxima over 2,000. In addition, the following localities held over 2,000 Greylags in 1986–87: Dupplin Lochs (3,300, November); Loch Scarmclate, Highland (3,000, November); River Tweed: Kelso-Coldstream (2,000, December); Cameron Reservoir, Fife (2,000, November); Loch Lomond: Endrick Mouth (2,000, February).

The status of the feral population of Britain and Ireland, concentrated mainly in southern and central England, has just been reviewed, with the assistance of the counters in the areas concerned (to whom many thanks). The population is much larger than previously thought, and is increasing at the rate of 12% annually. It now stands at c.13,000 (Owen & Salmon in press). The largest feral flock reported in 1986–87 was at Bough Beech Reservoir, Kent, with 1,200 in December.

Table 12. GREYLAG GOOSE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Loch Eye	10,000	12,000	x	10,000	x		(10,667)
L Davan/Kinord/R.Dee	9,500	6,000	7,000	19,900	8,200	(Nov)	10,120
Tay/Isla, Blairgowrie	6,176	5,212	2,351	18,295	3,685	(Nov)	7,144
Loch of Skene, Grampn	4,500	4,100	5,060	8,500	4,200	(Nov)	5,272
Loch of Strathbeg	9,600	3,600	1,750	4,600	6,250	(Feb)	5,160
Beauly Firth, Highland	3,514	x	x	5,550	5,890	(Nov)	(4,985)
Drummond Pond, Perths**	3,950	4,500	4,810	7,500	4,000	(Nov)	4,952
Haddo House L, Grampian	8,900	4,600	4,200	1,100	4,320	(Dec)	4,620
Loch of Spynie, Grampian	2,790	1,349	3,170	6,000	7,750	(Nov)	4,212
Hoselaw Loch, Borders	4,100	3,600	2,900	5,700	3,000	(Oct)	3,860
Lindisfarne	3,000	3,010	3,000	3,500	4,500	(Mar)	3,402
Carsebreck, Perth	2,180	4,310	4,000	1,688	4,450	(Nov)	3,326
Stranraer Lochs	2,600	3,100	2,400	2,900	3,500	(Nov)	2,900
Lintrathen/Kinordy Lochs, Tayside	1,000	6,200	500	3,100	3,200	(Nov)	2,800
Findhorn Bay, Grampian	2,400	2,600	2,400	2,300	3,200	(Mar)	2,580
Holborn Moss, North'bld	1,600	3,800	1,790	2,200	3,000	(Dec)	2,478
Cromarty Firth	2,570	3,701	550	442	4,774	(Nov)	2,407
Castle Loch, Lochmaben	1,900	2,150	3,100	2,850	1,600	(Feb)	2,320
Fedderate Resr, Gramp**	1,800	2,000	2,400	2,700	2,500	(Nov)	2,280
Dornoch Firth	650	x	280	3,450	4,389	(Oct)	2,193
Loch Leven	2,500	2,200	500	3,000	2,100	(Jan)	2,060

* Hogg et al. (1986) ** November/March data only

Canada Goose *Branta canadensis*

The combined September/January index (Table 5) showed a slight reduction, but this will probably prove only a temporary hiatus in the upward trend. Many major sites recorded a further increase.

Table 13 shows sites with average maxima of over 500 between 1982–83 and 86–87. The following places also held that many in 1986–87: Wellington Country Pk, Hants (1,200, November); Clumber Park, Notts (920, September); Eyebrook Reservoir, Leics (710, October); Eccup Reservoir, W. Yorkshire (690, September); Harewood Lake, W. Yorkshire (610, November); Kingsbury Water Pk/Coton Pools, Warwickshire (560, November); Port Meadow, Oxon (550, November).

Table 13. CANADA GOOSE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Stratfield Saye, Hants	1,800	2,450	1,900	1,750	1,850	(Sep)	1,950
Kedleston Park, Derbys	1,800	800	650	1,350	1,600	(Oct)	1,240
Bewl Water, Kent/E.Sussex	900	1,028	1,158	1,150	1,500	(Sep)	1,147
Livermere, Suffolk	x	x	800	1,102	874	(Oct)	(925)
Shavington Park, Staffs	x	x	1,150	847	676	(Sep)	(891)
Lackford G.P., Suffolk	x	x	797	856	834	(Nov)	(829)
Ellesmere, Shropshire	923	513	924	813	568	(Nov)	748
Amberley Wildbrooks	284	437	1,037	780	670	(Nov)	642
Blithfield Resr, Staffs	493	520	669	585	624	(Sep)	578
Rutland Water	194	266	694	691	856	(Sep)	540
Dorchester G.P., Oxon	630	430	232	461	895	(Oct)	530
Abberton Reservoir	132	572	543	821	539	(Sep)	521
Aqualate Mere, Staffs	556	483	618	261	650	(Nov)	514
Pentney G.P., Norfolk	x	x	x	424	592	(Sep)	(508)
Drakelow G.P., Derbys	600	370	650	450	450	(Nov)	504
Welbeck, Notts	367	680	*975	782	2	(Oct/Mar)	501

Barnacle Goose *Branta leucopsis*

The results of monthly counts of the Greenland breeding population's main haunt, Islay, are shown in Table 1. Age counts showed the flocks there to contain 15.5% young, with a mean brood size of 2.1. The numbers remained fairly stable throughout the season, apart from a temporary drop in February, which was considered to have possibly been associated with the cold weather. Flocks of 100 or more were found in three other parts of this population's winter range: Isle of Danna, Argyll (300, November); Clett, Skye (200, April) and Eilean Iosal, Ascrib, Skye (150, April), while the isolated flock on Skomer Island and Marloes Mere, Dyfed, almost certainly from the Greenland population, reached 76 in February.

Three Wildfowl Trust expeditions followed the Svalbard population away from its Solway Firth wintering grounds in 1986. Firstly two observers stayed in Helgeland, Norway, the spring staging area, from late April to mid-May. The first detectable decrease on the Solway, where the birds are intensively watched throughout the winter, was on April 27th, and subsequent arrivals of marked birds in Helgeland confirmed conclusions from previous expeditions that the birds make the 1600km journey non-stop, taking 24–36 hours. The geese spent on average 85% of the 19/20-hour daylight period at Helgeland feeding. Next, the Wildfowl Trust's largest ever expedition, run jointly with the Norsk Polarinstitutt and largely financed by Earthwatch (USA), who provided volunteer personnel, spent the period 22nd July to 11th August in Svalbard. They studied breeding success, locating 3,276 adult geese and 744 (18.5%) young, and caught 2,437 moulting birds, of which 1,849 were newly fitted with plastic rings. Two observers then spent late September on Bear Island, the autumn staging area, but the abnormally early arrival of snow meant that the birds had already passed through, apart from 15 flying south on 25th September. Publicity in the local "media" in Scotland and northern England resulted in many reports of Barnacle Geese reaching these shores in late September and early October. The earliest was of 50 near Aberdeen on 17th

September, the largest 700 over Lindisfarne on 27th and 500 there the next day. A number of rings were read. The first arrivals at Caerlaverock, the main wintering site, were on 19th September – the earliest date on record. They built up unusually rapidly, to 10,300 on October 1st, with a peak of 10,500 in early November. The proportion of young was by then down to 11.9%, so there had been high mortality of juveniles on migration. With further assistance from Earthwatch volunteers the geese were watched particularly intensively throughout the winter, and 1,600 ringed birds were located – probably over 95% of those alive and 15% of the entire population (Owen 1987).

Three large flocks were reported away from the normal range, at Hanningfield Reservoir, Essex (100, September), Hornsea Mere, Humberside (99, December/February) and Bittell Reservoirs, Worcester (67, January). The origins of these are unclear, but the first record at least may be of birds from the isolated breeding population in Gotland which migrates to the Netherlands in September (B.Ebbinge).

Dark-bellied Brent Goose *Branta bernicla bernicla*

The 1986 breeding season was almost a complete failure, for the third year in four, with only about 0.1% young in the winter flocks. The December and January counts, again returned directly on postcards, showed a slight reduction on 1985–86 (Salmon 1987b). The totals of 85,700 and 87,200 respectively in Table 1 include data received late. Snow prevented access to Foulness and small parts of the Colne and Blackwater Estuaries in January. By February a further influx had occurred, presumably because of the cold weather on the Continent, and that month's total reached a record level of over 96,000. This may be a slight overestimate, as the main area in that month, the Wash with 16,900, was counted early, on the 1st. By the middle of the month some of these may have moved on and been counted elsewhere. Some birds went abnormally far inland in the cold weather, to areas where few if any have been seen before. Most remarkable was a flock of 53 present for a week at Pitsford Reservoir, Northants, nearly 100km inland.

Table 14 lists all sites with an average maximum of over 2,000 between 1982–83 and 1986–87. The following places also held 2,000 or more during 1986–87: Wells, Norfolk (2,900, February); Stour Estuary, Essex/Suffolk (2,400, January); Portsmouth Harbour, Hants (2,300, October); Deben Estuary, Suffolk (2,200, February); Hurst-Oxey Creek, Solent, Hants (2,100, January).

Preliminary reports from Britain and the Continent suggest that the 1987 breeding season was again an almost complete failure.

Table 14. DARK-BELLIED BRENT GOOSE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Foulness/Leigh	18,208	21,025	23,810	16,307	19,844	(Oct)	19,659
The Wash	24,297	17,039	14,219	23,071	17,619	(Dec)	19,465
Blackwater Estuary	11,500	x	13,410	10,300	12,387	(Feb)	11,730
Chichester Harbour	10,547	11,849	8,859	11,764	9,998	(Feb)	10,603
Hamford Water	8,000	10,000	9,500	6,000	8,000	(Jan)	8,300
Langstone Harbour	7,536	7,380	7,000	8,646	8,567	(Oct)	7,825
Crouch/Roach	5,059	3,960	8,990	5,185	5,600	(Jan)	5,759
Colne Estuary, Essex	2,500	3,700	4,690	5,265	7,748	(Mar)	4,780
Scolt Head, Norfolk	4,000	4,250	4,000	6,000	3,500	(Jan)	4,350
Blakeney Hbr, Norfolk	3,200	5,000	4,000	3,000	3,200	(Nov)	3,680
Pagham Hbr, W.Sussex	3,093	2,477	4,219	3,188	2,251	(Feb)	3,046
Holkham, Norfolk	4,000	4,250	2,435	2,100	2,000	(Feb)	2,957
Humber/N.Lincs	x	2,135	2,765	2,559	2,229	(Jan)	2,422
Exe Estuary, Devon	1,402	1,895	2,493	3,729	2,500	(Oct)	2,244
Medway Estuary	2,654	1,576	1,158	2,659	2,888	(Feb)	2,187

Light-bellied Brent Goose *Branta bernicla hrota*

The annual Irish census, in late October, has resulted in a provisional estimate of 19,200 birds of the Canada/Greenland breeding population, compared to 24,100 in 1985–86. Breeding success in 1986 was poor, with only 1.2% young in the wintering flocks (M.O'Briain). The autumn peak at Strangford Lough amounted to 14,500. Elsewhere in Northern Ireland there were 1,700 at Lough Foyle in October, 370 at Carlingford Lough (January), 220 at Dundrum Bay (January), 200 along the outer Ards peninsula (February) and 190 at Larne Lough (March).

The Danish wintering population, comprising the Svalbard breeding population, now numbers c.4,000, mainly concentrated in Mariager Fjord in mid-winter (Madsen 1984, 1987). Despite the cold spell no more birds crossed the North Sea to Lindisfarne in 1986–87 than in the previous two winters, with a maximum of 3,000 in mid-January. The Spurn/Easington area, at the mouth of the Humber, had its normal small hard weather influx, however, with 30–50 present in January and February, while there were several flocks along the east coast of Scotland in January, presumably belonging to this population. The most notable was 130 on the Ythan Estuary, Grampian. A group of 61 on the south shore of the Solway Firth in February was perhaps more likely to have come from Ireland.

Shelduck *Tadorna tadorna*

The December index (Table 5) was the lowest since 1974–75, and may indicate a slow return from the moulting grounds. The total January count, 65,000, was second only to last year's record level, but as explained then coverage has improved since the late 1970s and early 80s, when the index was sometimes higher. The massive February total of 92,000 (Table 1) should be treated with caution as it includes 23,800 on the Wash as early as the 1st. By the middle of the month many of these may have moved on or returned to the Continent. This assemblage was the highest on record, confirming the status of the Wash as the most important winter area for Shelduck in north-west Europe away from the Wadden Sea. In contrast, the peak on the Mersey was the lowest for 14 years.

Table 15 gives the sites where an average maximum of at least 2,500 was recorded between 1982–83 and 1986–87. Two other places carried that many in January 1987: the Rhymney Estuary, S.Glamorgan (3,000) and Langstone Harbour (2,783).

The numbers and distribution of Shelduck in the Severn Estuary throughout the year are being studied by the Wildfowl Trust over the next 18 months under contract to the Severn Tidal Power Group (see Notices).

Table 15. SHELDUCK: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
The Wash	16,948	13,700	12,011	21,309	23,755 (Feb)	19,111
Dee Estuary	4,975	5,745	6,540	5,670	6,130 (Oct)	5,798
Mersey Estuary	7,110	6,800	7,605	4,000	2,355 (Mar)	5,574
The Humber	1,568	6,495	3,874	4,492	4,727 (Sep)	4,229
Morecambe Bay	1,948	x	4,236	2,476	3,865 (Dec)	3,100
Ribble Estuary	2,077	2,660	2,243	3,078	5,055 (Feb)	3,023
Chichester Hbr	2,255	2,571	3,126	2,556	3,772 (Feb)	2,856
Medway Estuary	1,530	2,232	1,415	2,984	5,305 (Jan)	2,693
Firth of Forth	x	x	x	2,086	2,404 (Dec)	(2,245)
Poole Hbr, Dorset	1,329	1,136	2,891	2,223	3,588 (Jan)	2,233
Hamford W, Essex	863	3,050	2,360	3,000	1,368 (Feb)	2,129

Mandarin *Aix galericulata*

No more than 290 were counted in any one month, presumably a big underestimate. All records of five or more came from within the normal range of south-east England and Perth. The largest flock was 180 at Witley Park, Surrey in February.

Wigeon *Anas penelope*

The autumn numbers were about their normal recent level, though the peak at Lough Foyle was again relatively low, while Lindisfarne showed only a slight further recovery from the low point of 1984–85. In January the total British count almost reached 300,000 in January, the second highest on record, following the normal massive cold weather influx. The extra late January/early February count revealed a further influx to many areas, which had passed through by mid-February. Unusually large concentrations appeared, particularly in the west, including 9,400 in the Milford Haven/Cleddau Estuary complex, Dyfed, and 6,200 on the Taw/Torridge Estuary, Devon, in mid-January, and 6,900 on the Dyfi Estuary in early February. On the Ouse Washes a December and January gathering of 26,000 increased to 38,900 in February and 42,175 in March – the most since February 1975.

In Table 16 all sites with an average maximum of 5,000 or more over the last five seasons are listed.

A detailed analysis of ringing recoveries of Wigeon has highlighted differences between the sexes. 50% more males than females have been recovered, a similar proportion to that present in the population as a whole. The imbalance appears to be because the smaller females lose out in competition for food. The males migrate earlier in the autumn, and the spring route is more southerly. It is estimated that the number of Wigeon using Britain in the winter is half as many again as is present at the peak (Owen & Mitchell in press). As part of a long-term study of the movements and turnover of Wigeon a pilot colour-ringing programme is planned for 1987–88 (see Notices).

Table 16. WIGEON: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Ouse Washes	28,073	25,456	23,755	34,495	42,175	(Mar)	30,880
Lindisfarne	41,000	30,000	10,000	12,495	18,000	(Oct)	22,299
Lough Foyle	28,475	25,797	26,310	12,262	12,220	(Oct)	21,000
Ribble Estuary	13,823	11,655	17,600	24,150	24,462	(Dec)	18,338
Abberton Resr	4,070	3,300	35,000	10,180	10,000	(Jan)	12,510
Dornoch Firth	8,275	12,060	8,310	14,925	15,029	(Oct)	11,719
Elmley, Kent	14,000	5,737	19,500	5,610	10,714	(Feb)	11,110
Cromarty Firth	9,380	10,215	9,705	12,364	8,871	(Dec)	10,107
Mersey Estuary	9,050	5,800	9,300	11,650	12,000	(Jan)	9,560
Derwent Ings	4,755	5,836	8,000	7,048	6,100	(Jan)	6,348
Chesil Fleet	2,008	2,232	7,434	5,077	10,399	(Jan)	5,430
Burry Inlet	3,276	2,506	5,685	6,090	9,200	(Jan)	5,351

Gadwall *Anas strepera*

The early autumn numbers were very high, but the season's peak count, in November, was slightly below the record level of 1985–86.

Table 17 shows the top ten U.K. sites. Five others held over 200 in 1986–87: King George VI Reservoir, Surrey (380, November); Eyebrook Reservoir, Leics (260, September); Hanningfield Reservoir, Essex (240, December); Bewl Water, Kent/E.Sussex (230, January).

The increase in the British breeding population since 1960 has shown considerable regional variations, being most marked in southern England. In East Anglia and south-east Scotland, however, where colonisation was earliest, the trend has been more stable (Fox in press).

Table 17. GADWALL: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Rutland Water	493	947	1,109	1,577	1,031 (Nov)	1,031
Abberton Resr	280	332	325	169	410 (Oct)	303
Narford Lake, Norfolk	274	x	x	x	x	(274)
Gunton Park, Norfolk	427	200	144	327	266 (Oct)	273
Slimbridge	250	210	237	321	200 (Feb)	244
Ouse Washes	205	213	284	255	356 (Feb)	263
Stanford Meres, Norf	47	358	77	245	316 (Nov)	208
Loch Leven	169	220	210	195	250 (Oct)	208
Strumpshaw Fen, Norf	x	x	x	x	200 (Oct)	(200)
Hornsea Mere, H'side	228	222	105	235	70 (Oct)	172

Teal *Anas crecca*

The usual cold weather exodus from Britain was if anything more marked than in previous years. By February the numbers had partly recovered. In Northern Ireland, although the total count was fairly stable (Table 2) several sites showed significant declines in January.

Table 18 lists localities with average maxima of over 2,000 since 1982–83. In addition, Abberton Reservoir held 2,700 in October 1986.

Table 18. TEAL: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Mersey Estuary	26,100	11,050	8,580	4,300	8,350 (Nov)	11,670
Ribble Estuary	4,808	4,486	4,800	3,076	6,177 (Dec)	4,670
Dee Estuary	2,710	3,815	3,865	5,720	2,940 (Nov)	3,809
Hamford Water	2,575	5,700	3,500	5,000	366 (Dec)	3,428
Martin Mere	4,000	4,000	3,000	3,400	2,600 (Jan)	3,400
Ouse Washes	4,319	2,513	1,934	3,177	3,551 (Feb)	3,099
Woolston Eyes, Ches	4,590	2,500	1,600	1,530	3,000 (Dec)	2,644
The Humber	3,663	2,917	1,397	2,904	1,675 (Sep)	2,511
Milford Haven/ Cleddau, Dyfed	1,683	x	2,867	2,450	2,241 (Jan)	2,299
Derwent Ings	1,183	1,919	1,966	2,573	3,620 (Feb)	2,252
Lough Neagh/Beg	x	x	x	2,290	2,173 (Mar)	(2,232)
Teesmouth	1,788	2,150	4,400	1,030	1,060 (Feb)	2,086
Elmley Marshes	1,797	3,787	1,618	1,683	1,268 (Sep)	2,031

Mallard *Anas platyrhynchos*

The December peak did not attain last year's record level, but was still the second highest since 1979–80. Note the much greater autumn than mid-winter numbers in Northern Ireland (Table 2)

Because the species is so dispersed there are only two nationally important concentrations, i.e. with more than 5,000 Mallard – on the Ouse Washes and the Humber. Table 19 shows sites with average maxima of 2,000 or more over the last five seasons. The following places also held that many in 1986–87: Inner Solway Firth (2,600, February); Lindisfarne (2,400, January); South Thames Marshes (2,100, September).

There was a mis-print in last year's report; the average maximum for the Ouse Washes should have read 5,957 not 4,970.

Table 19. MALLARD: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
The Humber	6,001	5,687	4,838	6,311	5,992 (Jan)	5,766
Ouse Washes	5,547	6,377	3,781	7,815	4,216 (Feb)	5,547
Dee Estuary	3,750	5,045	4,480	4,450	5,325 (Dec)	4,610
Lough Neagh/Beg	(203)	x	x	3,778	5,282 (Oct)	4,530
The Wash	4,745	2,360	2,502	5,949	5,852 (Dec)	4,282
Morecambe Bay	(1,151)	(1,159)	4,037	4,463	3,625 (Sep)	(4,042)
Martin Mere	3,000	3,000	3,200	4,600	3,600 (Oct)	3,480
Abberton Resr	5,900	4,525	1,450	2,100	2,700 (Sep)	3,335
Lough Foyle	2,387	3,024	3,006	2,965	3,300 (Sep)	2,936
Lr Derwent Ings	1,559	1,700	2,500	5,240	3,000 (Jan)	2,800
Elmley Marshes	3,744	4,547	1,877	1,839	1,965 (Dec)	2,795
L of Strathbeg	1,850	2,100	3,800	3,450	2,650 (Dec)	2,770
Rutland Water	2,162	2,240	2,781	2,832	1,816 (Sep)	2,512
Livermere, Suff	x	x	2,000	2,300	x	(2,150)
Loch Leven	2,200	1,220	3,288	1,737	2,300 (Sep)	2,149
Slimbridge	1,500	2,300	2,000	2,400	2,439 (Oct)	2,128
Firth of Forth	x	x	x	2,165	2,082 (Jan)	(2,124)
Ribble Estuary	1,557	2,295	1,548	1,965	2,677 (Dec)	2,008

Pintail *Anas acuta*

The peak month in Britain was November, and there was a sharp reduction thereafter. The maximum count on the Mersey Estuary was the lowest since 1970–71, but the Wash held a record February peak. In Northern Ireland the numbers are much smaller, the most important site, Strangford Lough, having reached 220 in February.

Table 20 lists places with average maxima of at least 700 over the last five seasons. In addition, Caerlaverock (1,000, October) and the Medway Estuary (1,000, January) exceeded that level in 1986–87.

Table 20. PINTAIL: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Mersey Est	13,750	8,000	16,000	9,000	6,000 (Nov)	10,550
Dee Estuary	7,360	11,265	6,280	6,800	4,620 (Nov)	7,265
The Wash	1,822	1,249	4,397	2,866	4,562 (Feb)	2,980
Morecambe Bay	x	x	2,869	2,889	2,072 (Dec)	(2,610)
Burry Inlet	2,535	1,332	2,290	1,180	2,085 (Jan)	1,885
Martin Mere	3,700	2,300	720	1,500	1,200 (Oct)	1,884
Ouse Washes	1,123	769	802	1,300	1,803 (Feb)	1,160
Duddon Estuary	158	x	722	820	1,102 (Sep)	701

Garganey *Anas querquedula*

These were found at 19 sites. As usual the vast majority of records were in September and October. The largest groups were 8 on the Ouse Washes in September, 7 on the Chesil Fleet in October and 4 at Wath Ings, South Yorkshire in September.

Shoveler *Anas clypeata*

The total October count was just below the record level of the last two seasons, but the combined October/November index (Table 5) was the highest ever. As in 1984–85, the previous hard winter, the January and February numbers were particularly low. The computer-generated map in Figure 2 clearly shows the exodus which occurred from Britain between the December and January counts. Some movement to the coast by the remaining birds between mid-January and mid-February was also revealed by the extra count.

Table 21 shows the top ten U.K. sites, based on their average maxima. In addition, Lough Neagh/Beg (390, October), Ranworth Broad, Norfolk (360, November), Queen Elizabeth II Reservoir, Surrey (260, October) and William Girling Reservoir, Gt London (260, October) held over 250 in 1986–87. The Staines area reservoirs held a total of 1,170 Shoveler in December, 13% of the estimated British peak population of 9,000 (Owen *et al.* 1986).

Table 21. SHOVELER: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Rutland Water	443	616	612	655	525 (Aug)	570
Ouse Washes	685	397	403	505	445 (Mar)	487
Woolston Eyes	453	362	427	510	475 (Aug)	453
Loch Leven	60	610	595	177	780 (Jan)	448
Abberton Reservoir	612	303	313	379	522 (Oct)	426
Staines Resr, Surrey	638	284	564	275	252 (Dec)	403
Elmley Marshes	386	401	428	397	253 (Dec)	373
K G VI Resr, Surrey	539	391	219	365	270 (Oct)	356
Q Mother Resr, Berks	x	x	422	222	137 (Jan)	(260)
Q Mary Resr, Surrey	1	374	110	356	432 (Dec)	255

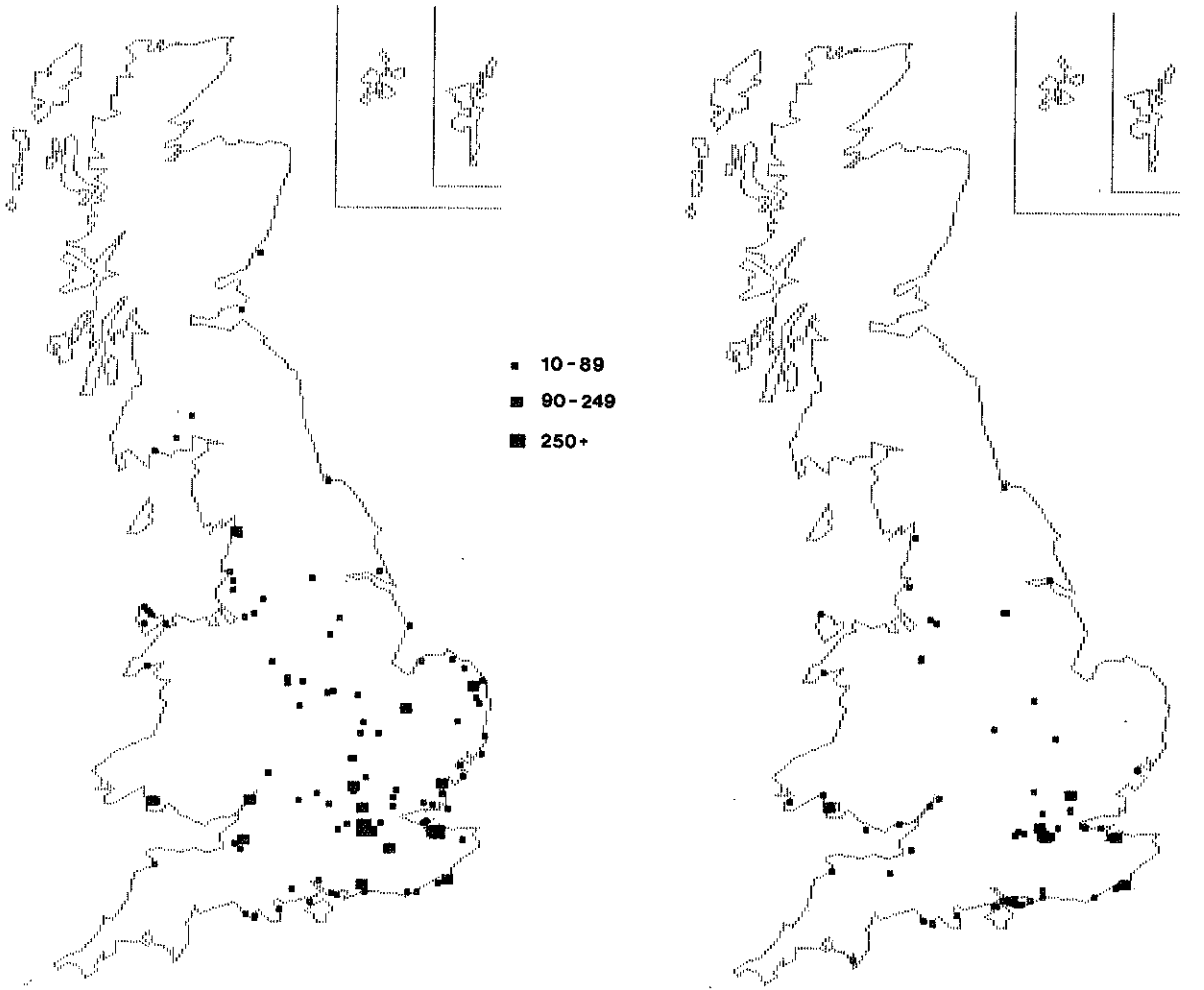


Figure 2. The distribution of Shoveler counted in Britain in December and January, 1986–87.

Pochard *Aythya ferina*

As usual during freeze-ups the January and February numbers showed a marked reduction. Although some may have been missed on open parts of the coast it is probable that there was an exodus from Britain. The vast majority of the birds in Northern Ireland in all months were in the Lough Neagh/Beg basin, which again held five per cent of the north-west European population, now estimated at 350,000 (Ruger *et al.* 1986).

Table 22 lists all U.K. sites with a recent average maximum of 750 or more Pochard. In addition the following places held over 750 in 1986–87: King George VI Reservoir (1,600, December); Grafham Water, Cambs (1,100, February); Rhymney Estuary (1,100, February); Poole Harbour (910, January); Dungeness, Kent (810, September); Colne Estuary (800, February).

Table 22. POCHARD: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Lough Neagh/Beg	x	x	x	17,346	16,348	(Jan)	(16,847)
L of Harray, Orkney	4,500	4,300	1,401	1,549	1,569	(Dec)	2,664
Abberton Reservoir *	2,450	2,525	2,700	2,024	3,000	(Aug)	2,540
Ouse Washes	1,607	1,901	2,355	1,975	1,511	(Feb)	1,869
Kingsbury/Coton, Warw	2,300	1,184	1,700	1,500	2,000	(Jan)	1,736
L of Boardhouse, Ork	1,105	1,505	2,358	627	2,402	(Nov)	1,599
Cotswold W. Pk E, Glos	1,687	1,897	886	1,806	1,578	(Dec)	1,572
Rostherne Mere, Ches	651	480	1,273	1,900	2,850	(Feb)	1,431
Cotswold W. Pk West	762	1,497	1,475	1,138	1,176	(Nov)	1,210
Woolston Eyes	765	1,420	359	1,716	984	(Feb)	1,048
Slimbridge	1,020	840	900	1,172	1,230	(Feb)	1,032
Staines Reservoir	224	731	661	1,060	1,646	(Oct)	864
Lower Derwent Ings	23	2,250	1,678	390	245	(Feb)	917
Loch Leven	1,160	1,648	326	280	780	(Nov)	839
Chew Valley Lake	425	1,285	580	410	1,080	(Nov)	756

* Moulting concentration

Tufted Duck *Aythya fuligula*

The British population normally peaks in December, so the drop in January (see Table 3) may not have been caused by the particularly cold weather. Both the total count and the population index itself for December 1986 were slightly below the 1985 level, but still the second highest on record.

The recent numbers in Lough Neagh/Beg are well below the 15–30,000 of the 1960s and 70s, but still represent 12% of the estimated north-west European population, 750,000 (Ruger *et al.* 1986).

Table 23 shows sites with an average maximum of at least 600 Tufted Ducks, the level for National Importance. The following places also held over 600 in 1986–87: Loch of Stenness, Orkney (1,300, January); Rostherne Mere (1,300, February); Ouse Washes (1,100, March); Longman Outfall, Inverness (1,000, January); Clifford Hill Gravel Pits (1,000, January); St James's Park, London (800, January); King George VI Reservoir (790, November); Hampton/Kempton Reservoirs, Gt London (770, December).

In an analysis of Tufted Duck ringing recoveries Ogilvie (1987) concluded that there are three separate populations moulting and/or wintering in Britain: from Iceland, northern Scandinavia/USSR and the native breeding population. Scottish breeders winter in Ireland, while those in the southern half of Britain are probably sedentary as a rule, but move south and south-west to France and Iberia in severe weather.

Table 23. TUFTED DUCK: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Lough Neagh/Beg	x	x	x	6,442	8,943 (Jan)	(7,693)
Rutland Water *	2,380	3,062	3,379	3,000	3,301 (Aug)	3,024
Loch Leven	3,455	4,830	1,463	3,310	1,800 (Oct)	2,972
Abberton Reservoir *	3,130	3,025	2,700	2,200	3,375 (Aug)	2,886
Loch of Harray	2,279	1,483	1,267	1,447	987 (Dec)	1,493
Kingsbury W. Pk/Coton	1,514	1,055	1,417	1,620	1,300 (Jan)	1,381
Staines Reservoir	605	853	442	807	3,313 (Oct)	1,216
Wraysbury GPs, Berks	1,512	1,267	x	630	1,101 (Dec)	1,128
Loch of Strathbeg	1,950	1,150	1,100	550	220 (Sep)	994
Queen Mother Resr	x	x	1,036	1,029	824 (Jan)	963
Walthamstow R, Lond	820	737	1,031	894	x	871
Rhymney Estuary	x	535	1,250	600	835 (Jan)	805
Ouse Washes	365	492	617	675	1,078 (Mar)	645
Hanningfield R, Essex	304	466	1,010	460	790 (Oct)	606

Scaup *Aythya marila*

The peak British total of only 2,900, and the January index (Table 5), provide further evidence that the numbers have stabilised at a low level since the final disappearance of the huge Edinburgh concentration in the late 1970s. Away from Edinburgh the total British numbers have shown no significant change over the past twenty-five years. In Ireland there have been indications of a decline in the 1970s followed by a slight recovery (Salmon in press).

Table 24 shows British and Irish sites with average maxima of at least 100 Scaup since 1982–83. Unusually there was no noticeable influx to southern Britain during the cold weather early in 1987. Only one area in the south and east of England held over 50 at any time in the winter, the Orwell Estuary, with 61 in January.

Table 24. SCAUP: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Lough Neagh/Beg	x	x	x	1,712	1,586	(Feb)	(1,649)
Inner Solway Firth	1,244	1,144	1,709	1,400	1,438	(Dec)	1,387
Loch Indaal, Islay	1,200	770	1,189	1,505	817	(Feb)	1,096
Largo Bay, Fife	717	1,400	1,100	x	950	(Feb)	1,042
Carlingford L, Co.Down	950	x	1,050	720	435	(Jan)	788
Belfast Lough	x	450	x	344	422	(Jan)	(405)
Edderton B, Dornoch Firth	325	230	495	311	194	(Feb)	311
L Ryan, Dumf & Galloway	210	280	160	x	340	(Feb)	248
St Andrews Bay, Fife	x	130	390	54	140	(Feb)	179
Dee Estuary	221	14	135	128	240	(Feb)	148
Loch of Harray	106	96	144	163	218	(Nov)	145
Inner Firth of Clyde	87	46	166	99	x		100

Eider *Somateria mollissima*

Table 25 shows sites with average maxima of at least 1,000 Eiders between 1982–83 and 86–87. The Shetland birds are now believed to be mainly resident. Counts made at 20 moulting sites there between 1980 and 1984 found totals of 8–10,000 Eiders, with a maximum of 10,100 in 1984. The late summer population on Shetland is estimated from this at 11,500–12,000. This represents a decline of 25–30% since 1977, when an estimated 16,000–16,500 were present. The main factors behind the decline are thought to be the "Esso Bernicia" oilspill early in 1979 and major mortality of unknown cause the following winter (Heubeck 1987).

Belfast Lough is by far the most important area in Northern Ireland, the highest count there in 1986–87 being 346 in November. As with Scaup the cold weather did not bring the usual small influx to southern Britain; only three sites south of Morecambe Bay held over a hundred, the main one being the Wash, with 480 in March.

Table 25. EIDER: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Outer Firth of Tay	x	14,100	x	x	x	(14,100)
Murcar, Grampian	9,500	8,000	9,000	5,300	x	7,950
S.Walney I, Cumbria	5,000	4,000	6,122	4,346	4,000 (Oct)	4,694
Lindisfarne	5,900	3,000	3,000	3,020	5,300 (Aug)	3,704
Firth of Forth	3,959	2,325	3,659	3,515	4,698 (Dec)	3,685
Inner Firth of Clyde	2,600	1,601	3,501	2,560	x	2,585
Loch Fleet	2,000	x	3,000	1,608	2,200 (Oct)	2,202
Montrose Bay, Tayside	1,350	x	1,679	1,840	2,772 (Feb)	1,910
Sumburgh, Shetland	+1,771	+2,259	+1,484	1,800	x	1,750
Ythan Est, Grampian	1,670	2,000	1,316	1,689	1,661 (Oct)	1,667
N.Bressay/Noss, Shet	+1,624	+1,021	+1,415	x	x	(1,353)
Fraserburgh, Grampian	1,780	x	650	1,480	x	(1,303)
Westerwick/ Skelda Ness, Shetl'd	+1,120	+990	+1,400	x	x	(1,170)
Rattray Head, Grampian	1,500	x	650	1,200	x	(1,167)
Tentsmuir, Fife	700	1,100	785	870	1,670 (Jan)	1,025

+ From Heubeck (1987)

Long-tailed Duck *Clangula hyemalis*

The main area, the outer Moray Firth, held 4,600 in October, including 2,000 in Burghead Bay (RSPB/Britoil). This is a similar number to 1985–86, but many fewer than in 1983–84 and 84–85.

Elsewhere, the Firth of Forth carried 700 in December, Tentsmuir, Fife 360 (January), Lindisfarne 305 (February), Water Sound, Scapa Flow 240 (February), Loch Fleet, Sutherland 200 (December) and Broad Bay, Lewis 200 (November).

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

The largest counts of Common Scoters in 1986–87 were in Dundrum Bay, Co Down, where there was a peak of 4,000 in December.

There were 2,800 scoters in the outer Moray Firth in October, including 2,000 in Burghead Bay. The highest records of the individual species were 2,300 Common Scoters, also in October, including 1,600 in Burghead Bay, and 590 Velvet Scoters in April, including 270 in Burghead Bay and 210 off Culbin Bar. The latter area held 950 Common Scoters in February (RSPB/Britoil).

The first surveys for many years of Carmarthen Bay, the other major scoter area, were carried out by the NCC between November 1985 and December 1986. Four aerial surveys were made and the peak count was 10,600 Common Scoters in February, many fewer than in the previous survey – 25,000 in March 1974. In December 1986 only 800 birds were present.

Elsewhere the highest counts of Common Scoters in 1986–87 were in St. Andrews Bay, Fife (2,400, November), the adjacent Tentsmuir coast (1,900, January), Firth of Forth (1,300, January) and Lindisfarne (1,000, January); of Velvet Scoters in Lunan Bay, Angus (1,000, September), St. Andrews Bay (500, March), Montrose Bay, Angus (400, November) and the Firth of Forth (110, February). There was a total of 2,500 scoters in Lunan Bay on one day in September, when the species could not be separated.

Goldeneye *Bucephala clangula*

The Lough Neagh/Beg basin held 9,300 in December, then, after a drop in January and February, 9,900 in March – by far the largest count ever made in Britain and Ireland, and over 3% of the north-west European population, now estimated at 300,000 (Ruger *et al.* 1986). The surveys of Lough Neagh/Beg in the mid-1960s and late 70s/early 80s found peaks of 5–6,000.

In Britain the February total of 13,900 was by far the highest on record, suggesting a substantial cold weather influx, an impression confirmed by the monthly trends in Table 3 and by the extra late January/early February counts. The latter suggested that the main influx was in the first half of February.

Table 26 shows sites with average maxima of at least 250 over the last five seasons. The Colne Estuary (430, January), Inner Solway Firth (421, February), Invergowrie Bay, Angus (350, March) and the Doon Estuary, Ayr (308, December) also exceeded that level in 1986–87.

Table 26. GOLDENEYE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Lough Neagh/Beg	x	x	x	4,851	9,906 (Mar)	(7,379)
Firth of Forth	1,549	2,017	(881)	996	1,855 (Jan)	1,604
Belfast Lough	x	x	x	372	692 (Jan)	(532)
Abberton Reservoir	503	431	575	364	677 (Mar)	508
Firth of Clyde	405	418	359	706	x	471
Inverness Firth	275	268	598	497	449 (Feb)	417
Strangford Lough	312	400	429	553	280 (Mar)	396
Blackwater Estuary	226	269	639	329	490 (Jan)	391
Cromarty Firth	233	511	352	445	275 (Feb)	364
Windermere	273	x	287	329	345 (Jan)	309
Morecambe Bay	74	261	315	349	411 (Feb)	281
Nigg Bay, Aberdeen	196	279	370	395	235 (Jan)	273
The Wash	138	184	352	258	376 (Feb)	261
Tweed Estuary	126	303	375	388	340 (Dec)	252
L of Auchlossan, Grampn	x	x	250	x	x	(250)

Smew *Mergus albellus*

The total of 290 in Britain in January represents a noticeable cold weather influx, though not on the scale of 1984–85. Two or more were found at no less than 85 localities in Britain at some time and 2 in Northern Ireland. Two of the largest flocks were at regular resorts: Dungeness, Kent (21, February) and Wraysbury Gravel Pits (18, January). Seven less usual sites also held over ten: Rutland Water (21, January); Rye Harbour, E.Sussex (15, January); Hickling Broad, Norfolk (14, March); Alton Water, Suffolk (13, January); Bewl Water (12, February); Barton/Barrow Pits, Humberside (11, January); Great Linford Pits, Bucks (10, February).

Red-breasted Merganser *Mergus serrator*

Table 27 shows sites averaging at least 100 over the last five seasons. The record concentration in the Beauly and inner Moray Firths in January 1987 represented 4% of the revised estimate of 75,000 for the north-west European population (Ruger *et al.* 1986) and 30–50% of the estimated British stock of 6–10,000 (Owen *et al.* 1986). That month's index (Table 5) was the third highest since 1961.

In addition to the places in Table 27, the following also held over 100 in 1986–87: Camas Shallachain, Loch Linnhe, Highland (180, September); Culbin/Nairn Bar, Highland (170, October); Hodbarrow Lagoon, Cumbria (163, October), Chichester Harbour, W.Sussex/ Hants (130, December); Portland Harbour, Dorset (110, February); Loch of Stenness (110, February); Broad Bay, Lewis (100, November).

Table 27. RED-BREASTED MERGANSER: MAXIMA AT MAIN RESORTS

	1982–83	83–84	84–85	85–86	86–87 (Mth)	Average
Beauly/Inner Moray Firth, Highland	1,219	727	485	2,450	3,063 (Jan)	1,589
Tentsmuir	865	649	465	1,050	600 (Oct)	726
Firth of Forth	862	395	454	383	547 (Nov)	528
Cromarty Firth	130	594	401	588	615 (Dec)	465
Poole Harbour	280	241	270	528	302 (Dec)	324
Dundrum B, Co. Down	150	420	203	540	104 (Jan)	284
Strangford Lough	161	293	381	305	183 (Nov)	264
Morecambe Bay	34	95	309	210	177 (Oct)	175
Langstone Harbour	194	113	128	152	131 (Dec)	143
Lindisfarne	50	130	81	229	217 (Jul)	141
Loch Ryan	126	42	246	72	85 (Sep)	114
Chesil Fleet	80	126	95	58	185 (Jan)	109

Goosander *Mergus merganser*

As usual, in mild or cold seasons, there was a large influx in the latter part of the winter, in this case apparently in two stages in January and February.

Table 28 shows sites with an average maximum of 50 or more. In 1986–87 the following waters also held that many (all peaking in February unless stated): Hamilton Low Parks, Strathclyde (94, January); Wraysbury Gravel Pits (85); Tallington Gravel Pits, Lincs (77); Abberton Reservoir (74, January); Pitsford Reservoir (71); Kedleston Park, Derbyshire (65, March); Foremark Reservoir, Derbys (64); Kitmere, Cumbria (63, September); Blea Tarn/Langthwaite Reservoir, Lancs (63, October); Farmoor Reservoirs, Oxon (58); Walton Reservoirs, Surrey (56); Lochwinnoch, Renfrew (56); Grafham Water (55). Note the fluctuations occurring at individual resorts from year to year. It may be in certain cases that roosting birds, feeding on rivers during the day, have been counted in some seasons but not others.

Table 28. GOOSANDER: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Beauly Firth	2,400	2,150	1,280	1,700	1,241 (Jan)	1,754
Cromarty Firth	5	358	136	238	73 (Feb)	162
Loch of Skene	80	101	197	57	61 (Sep)	100
R.Tweed:Norham/Kelso	x	105	152	86	145 (Feb)	122
Eccup Resr, W. Yorks	75	50	134	68	108 (Feb)	87
Q Mary Resr, Surrey	66	29	98	92	171 (Feb)	91
Castle L, Lochmaben	36	61	138	71	120 (Feb)	85
Blithfield R, Staffs	76	79	105	66	80 (Feb)	81
Besthorpe/Girton GPs & Fleet, Notts	62	95	160	60	67 (Mar)	89
Thrapston GPs, N'hants	63	72	63	75	174 (Mar)	89
Castle Howard L, Yorks	20	29	70	154	120 (Feb)	79
Rutland Water	48	119	69	89	55 (Dec)	76
Chew Valley Lake	59	55	96	60	105 (Jan)	75
Hoselaw Loch	36	106	20	35	164 (May)	72
Leighton/Roundhill Resrs, N. Yorkshire	74	74	45	27	90 (Dec)	62
R.Eden: Stainton - Rockcliffe, Cumbria	x	x	x	x	56 (Jan)	(56)
Abberton Reservoir	28	43	74	54	74 (Jan)	55
R.Clyde: Lamington - Hyndford Br, Lanark	x	x	37	54	67 (Jan)	(53)
King George VI Reservoir	40	41	51	59	68 (Feb)	52
Pitsford Reservoir	20	46	93	25	71 (Feb)	51

Ruddy Duck *Oxyura jamaicensis*

The total count reached another record level, the gathering at Chew Valley Lake in March being by far the largest ever found among the feral British population. The Northern Irish birds were all on the small lakes of the Lough Neagh basin. Table 29 lists those sites averaging over 100 at peak over the last five seasons. Eight other places held 50 or more in 1986–87, while the usual dispersal in cold weather was not apparent.

A detailed study of the ecology of Ruddy Ducks in Britain has begun at the Wildfowl Trust (see Notices).

Table 29. RUDDY DUCK: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87 (Mth)	Average
Chew Valley Lake	600	526	611	680	1,064 (Mar)	696
Blithfield Resr	358	340	680	581	570 (Jan)	506
Blagdon Reservoir	415	384	320	197	603 (Jan)	384
Belvide Reservoir	290	242	248	320	212 (Sep)	262
Rutland Water	60	132	229	188	287 (Jan)	179
Eyebrook Resr, Leics	43	101	318	221	125 (Dec)	162
Combermere, Cheshire	x	164	87	x	x	(126)
Woolston Eyes	61	86	138	179	162 (Oct)	125
Swithland R, Leics	97	180	76	84	66 (Feb)	101

Coot *Fulica atra*

The total British count was the lowest since 1983–84; but showed the usual slight autumn peak. The Lough Neagh/Beg basin held 93% of the peak Northern Irish count.

Table 30 shows sites with an average maximum of at least 1,000 Coot between 1982–83 and 86–87. The following additional places held over 1,000 in 1986–87: Stanford Reservoir, Leics (1,700, December); Shepperton GPs, Surrey (1,300, January); Rye Harbour Pits (1,100, February); Eyebrook Reservoir (1,100, November); Avon Valley: Ringwood-Fordingbridge, Hants (1,000, November). A further 30 carried 500 or more.

Table 30. COOT: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Mth)	Average
Abberton Resr	8,600	10,055	10,000	9,450	8,703	(Oct)	9,361
Rutland Water	3,633	5,401	7,453	5,660	4,623	(Dec)	5,355
Lough Neagh/Beg	x	x	x	2,307	5,687	(Oct)	(3,992)
Hanningfield Resr	x	x	2,557	x	4,930	(Nov)	(3,744)
Cotswold W Pk. West	3,322	3,375	3,677	2,521	2,606	(Nov)	3,100
Ouse Washes	3,375	2,134	1,757	2,970	2,388	(Mar)	2,525
Chesil Fleet	x	x	2,281	2,080	2,673	(Nov)	(2,345)
Cheddar Reservoir	2,450	2,450	2,100	1,900	2,050	(Nov)	2,190
Cotswold W Pk. East	1,674	2,416	1,716	2,217	1,888	(Dec)	1,982
Loch Leven	2,564	1,905	1,361	1,370	1,150	(Sep)	1,670
Hornsea Mere	2,300	1,350	2,000	1,100	600	(Dec)	1,470
Chew Valley Lake	1,570	1,904	1,625	1,625	460	(Aug)	1,437
Windermere	929	x	1,663	1,287	1,320	(Jan)	1,298
Bewl Water	1,158	1,358	610	1,068	2,013	(Jan)	1,242
Brogborough GP, Beds	444	950	1,600	1,820	1,300	(Oct)	1,223
Pitsford Reservoir	1,789	1,420	1,136	744	645	(Jan)	1,159
Chichester GPs, S'x	x	595	938	1,543	1,227	(Nov)	1,076

WADERS

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) and Royal Society for the Protection of Birds (RSPB) and is organised by staff of the BTO Estuaries Programme based at Tring, Hertfordshire. The seventeenth consecutive season of coordinated counts for the BoEE took place between July 1986 and June 1987. 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

Certain changes have been introduced in the presentation of this report with the aim of progressing towards a more systematic, comprehensive and useful synopsis of BoEE data. In his recent revision of population estimates for waders wintering on the coastline of Britain, Moser (1987) designated and named 112 estuarine sites. All information relating to estuaries is referred to here in terms of these 112 sites along with seven additional ones in Northern Ireland (Figure 3). Where information is available on non-estuarine sites this is also incorporated, but such sites are clearly marked by an asterisk (*).

The revitalisation of the BoEE in recent years has produced an upsurge in information for months outside the midwinter period (December-February) on which this report has previously focused. These additional data are highly relevant to any assessment of the conservation importance of sites. Presentation of results here has therefore been expanded to encompass information available from the entire winter period (November-March), with tabulations of data in the species accounts for years prior to 1986–87 being adjusted where necessary to take account of this. Further expansion of data presentation to encompass the passage periods in autumn (August-October) and spring (April-May) is envisaged for the future.

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.

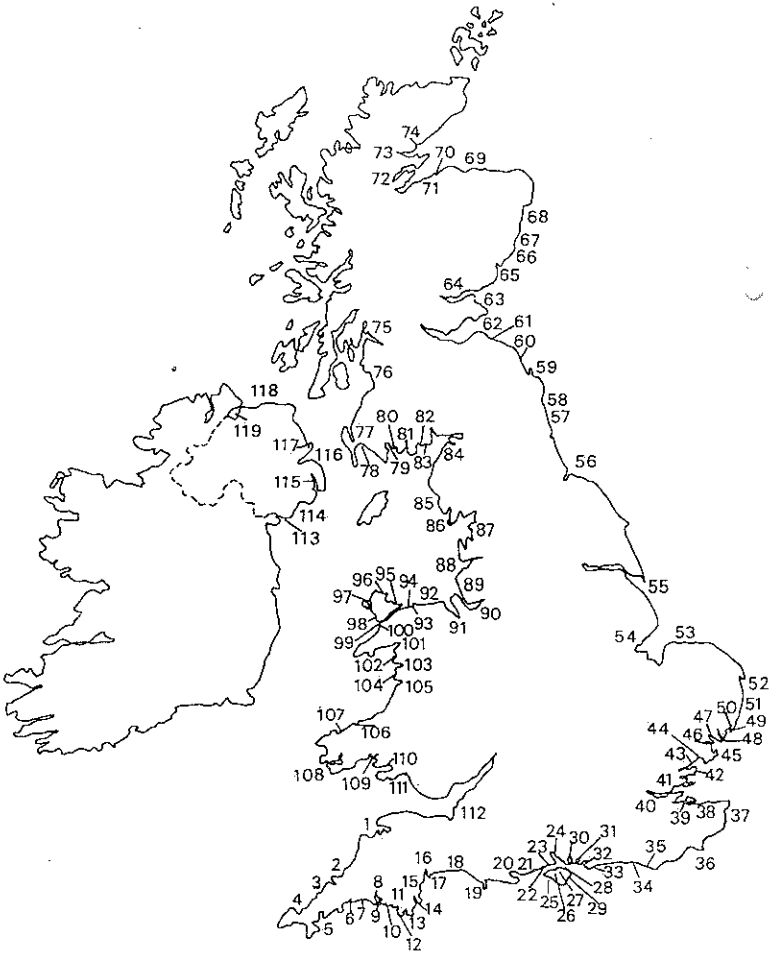


FIGURE 3. Map of the British Isles showing the locations of all estuaries considered in this report. Site code numbers are as follows: 1, Taw/Torridge; 2, Camel; 3, Gannel; 4, Hayle; 5, Fal complex; 6, Fowey; 7, Looe; 8, Tamar complex; 9, Plym; 10, Yealm; 11, Erme; 12, Avon; 13, Kingsbridge; 14, Dart; 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, Tywi; 108, Gleddau; 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.

COVERAGE

Of the 119 estuarine sites shown in Figure 3, no winter counts for eight were received in time for incorporation here: Gannel, Fowey, Beaulieu, Wootton, Luce Bay, Fleet Bay, Kirkcudbright Bay, Dulas Bay. For a further ten sites, unfortunately including some major ones, only incomplete counts were carried out during the winter: Fal complex, Tamar complex, NW Solent, Swale, Crouch/Roach, Humber, Forth, Solway, Morecambe Bay, Severn. For all other sites, at least one, and normally four or five, complete counts were made during the winter.

DEVELOPMENTS IN THE ESTUARIES PROGRAMME

The 1986–87 season saw an unprecedented expansion in the scope of the BTO Estuaries Programme. Dr Mike Moser left the post of Estuaries Officer at the end of August 1986. At the beginning of September 1986, Jeff Kirby assumed the new post of Assistant Estuaries Officer, with responsibility for promoting and administering the BoEE, servicing data requests, and carrying out short-term fieldwork studies at the request of the NCC or RSPB. In early February 1987, Dr Robert Prys-Jones took up the post of Estuaries Officer, with responsibility for supervising the overall development of the Estuaries Programme, carrying out research based on its databanks, and providing expert advice to the NCC and RSPB. In April, Barry Phillips and Ian Shepherd joined the Estuaries Programme on 15-month contracts funded by the Central Electricity Generating Board to assess the implications for birds of proposed power station developments on Southampton Water and the Humber respectively. In early May, Dr Nigel Clark started an 18-month contract funded by the Energy Technology Support Unit (Department of Energy) to investigate the ornithological implications of the proposed Severn tidal barrage.

Threats to estuaries in the United Kingdom are now more severe than ever (Cadbury 1987). With the expertise and data available to it, the BTO has a key role to play in providing the factual basis for assessing the implications that development proposals pose for birdlife. Particularly topical, and possibly unique in the scale of their environmental implications, are proposals for estuarine barrages, whether for power generation, freshwater storage or recreation and urban renewal. Currently the front-runners among major estuaries for barrage construction are the Severn and Mersey, both of which are internationally important for their wader populations. The contract awarded to the BTO in relation to the Severn proposal is a recognition of the objective scientific value of the data provided by estuary counters and illustrates the way in which their efforts can feed through into important decision-making processes.

A total of 59 requests for data were received during the 1986–87 season, well up on the previous year and again highlighting the increasing value of the Estuaries Programme databanks. The majority of these requests were concerned with the evaluation of the importance of particular sites or the provision of information in response to development proposals.

Early 1987 saw the publication both of results from the Winter Shorebird Count (Moser & Summers 1987) and of revised population estimates for waders wintering on the British coastline (Moser 1987). Reports based on a combination of BoEE data and short-term field studies were produced for the NCC/RSPB on the ornithological significance of two areas of the Dee estuary threatened by development proposals (Kirby 1987a, b). A further multi-part report for the NCC/RSPB summarised BoEE population statistics for waders on all United Kingdom estuaries over the five-year period 1981–82 to 1985–86 (Prys-Jones & Kirby 1987). The regular feature "Shorelines" was established in *BTO News* to provide up-to-date feedback both on developments in the Estuaries Programme and on other information relating to shorebirds within Britain and worldwide.

KEY RECENT PUBLICATIONS ON WADERS

A number of major publications on waders appeared during 1986 and early 1987. Perhaps the most compelling of these for the avid estuary watcher was *Shorebirds: an Identification Guide to the Waders of the World* by Peter Hayman, John Marchant and Tony Prater (London: Croom Helm). This book was voted "Best Bird Book of 1986" by the journal *British Birds* and is clearly the indispensable guide to wader identification in the field. The core of *Waders, their Breeding, Haunts and Watchers* by Desmond & Maimie Nethersole-Thompson (Calton: Poyser) deals with the 18 common breeding waders in Britain, each account being comprehensive in detail yet easy to read. One of the main habitats for British breeding waders is the Scottish flow country, and threats to this habitat and its birds are the subject of *Birds, Bogs and Forestry: the Peatlands of Caithness and Sutherland* (Peterborough: NCC). Volume 1 of the new *RSPB Conservation Review* contains strikingly illustrated articles covering the breeding waders of moorland, lowland wet grassland and saltmarsh, as well as others on the importance of and threats to the estuaries of the United Kingdom. Finally, two major supplements to the *Wader Study Group Bulletin* provided overviews of European breeding waders and world wader flyways respectively. *Breeding Waders in Europe* (WSG Bulletin, vol.48, suppl.) incorporates information on population estimates for most European countries together with an 85-page bibliography, compiled by subject, species and country. *The Conservation of International Flyway Populations of Waders* (WSG Bulletin, vol.49, suppl.) contains the proceedings of the 1986 Wader Study Group Workshop and includes key reviews of the four major wader flyways of the world (Eastern Asia/ Australasia, Western Asia/Eastern Africa, East Atlantic and New World). If you are a wader enthusiast, membership of the Wader Study Group (PO Box 247, Tring, Hertfordshire HP23 5SN, UK) is well worthwhile.

UNITED KINGDOM POPULATION TOTALS

Table 31 shows the total populations of each wader species counted in each winter month of 1986–87 in both Britain and Northern Ireland. The peak United Kingdom population of 1.16 million waders in February 1987 was considerably lower than the record 1.45 million of December 1985. A dip in numbers in January 1987 was largely a result of a mass exodus of Golden Plover and, in particular, Lapwing from British coastal areas during the cold spell which occurred at this time. Noticeable dips in numbers of Curlew and Redshank counted also occurred in January, with increases the following month. By contrast, Knot and Bar-tailed Godwit showed sharp increases in January, suggesting an influx of birds from the continent of Europe.

Table 31. TOTAL NUMBERS OF WADERS RECORDED BY BOEE COUNTS IN THE UNITED KINGDOM DURING WINTER 1986-87.

	November	December	January	February	March
BRITAIN					
Oystercatcher	171,445	201,017	199,635	226,419	136,522
Avocet	466	479	174	217	309
Ringed Plover	9,039	10,976	6,848	7,232	4,795
Dotterel	0	1	0	0	0
Golden Plover	25,100	30,718	3,872	4,047	4,086
Grey Plover	19,270	21,488	20,027	29,113	23,959
Lapwing	90,264	90,069	7,922	36,289	14,593
Knot	86,970	157,137	217,318	237,925	148,189
Sanderling	5,752	4,798	6,018	5,397	4,819
Little Stint	1	2	0	0	0
Curlew Sandpiper	2	0	0	0	0
Purple Sandpiper	1,324	1,884	1,495	1,465	1,344
Dunlin	213,105	314,012	304,919	327,970	215,294
Ruff	107	132	75	160	141
Jack Snipe	11	16	14	20	15
Snipe	1,373	2,292	1,112	1,179	702
Woodcock	6	3	13	3	6
Black-tailed Godwit	5,228	4,325	3,107	4,072	2,745
Bar-tailed Godwit	23,145	31,700	59,243	58,901	32,852
Whimbrel	2	2	2	3	8
Curlew	45,856	59,892	43,623	74,860	45,133
Spotted Redshank	49	47	28	28	41
Redshank	59,765	63,144	50,118	64,093	46,880
Greenshank	185	162	126	128	137
Green Sandpiper	26	24	10	18	16
Common Sandpiper	9	18	6	2	11
Spotted Sandpiper	1	1	0	0	0
Turnstone	15,556	16,878	14,001	14,672	12,443
Red-necked Phalarope	1	0	0	0	0
Grey Phalarope	0	1	0	0	0
Total	774,058	1,011,216	939,706	1,094,213	695,040

NORTHERN IRELAND

Oystercatcher	15,178	13,433	13,590	13,306	8,978
Ringed Plover	901	983	950	959	236
Golden Plover	5,365	3,529	5,873	6,614	3,928
Grey Plover	68	76	142	92	66
Lapwing	13,356	16,036	6,519	10,460	1,564
Knot	4,370	439	9,145	3,473	400
Sanderling	0	9	20	48	35
Dunlin	7,459	11,952	11,166	13,711	3,074
Ruff	3	0	6	0	1
Jack Snipe	1	1	0	2	0
Snipe	138	128	53	121	26
Black-tailed Godwit	20	87	38	41	41
Bar-tailed Godwit	512	971	3,984	3,609	521
Curlew	4,120	3,536	3,785	5,007	4,240
Spotted Redshank	0	2	1	0	0
Redshank	6,508	6,362	5,723	6,625	5,497
Greenshank	134	83	44	62	49
Green Sandpiper	0	1	1	0	0
Turnstone	2,885	3,182	2,862	3,152	2,856
Total	61,018	60,810	63,902	67,282	31,512
U.K. TOTAL	835,076	1,072,026	1,003,608	1,161,495	726,552

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 5), except that 1973 is used as the arbitrary anchor year.

The indices for the period 1971–1987 are shown in Table 32. 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. Population levels of all species except Bar-tailed Godwit were lower in January 1987 than in the preceding year, with Dunlin dropping to their lowest ever levels.

Table 32. JANUARY INDICES FOR WADER POPULATIONS IN THE UNITED KINGDOM, 1971-87.

	1971	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
Oystercatcher	109	121	100	123	126	152	160	147	156	177	186	180	161	159	179	203	171
Ringed Plover	84	108	100	125	117	143	116	134	124	128	151	125	161	138	128	162	105
Grey Plover	90	86	100	140	160	161	189	99	145	191	171	148	180	179	186	221	199
Knot	110	155	100	121	74	83	86	61	112	80	100	83	70	87	77	92	82
Sanderling	72	178	100	101	196	199	109	51	96	143	102	120	120	105	90	104	85
Dunlin	72	97	100	125	112	113	105	80	84	82	79	75	73	63	64	68	55
Bar-t.Godwit	91	87	100	119	107	108	115	103	150	207	143	234	198	128	218	166	190
Curlew	88	130	100	135	143	136	96	85	87	111	113	100	112	79	62	75	69
Redshank	74	110	100	103	111	125	97	78	92	92	91	75	78	68	74	78	69
Turnstone	97	141	100	130	124	145	150	140	143	139	127	126	122	131	142	192	144

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 always distinguished by being 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 annual peak count.

Oystercatcher *Haematopus ostralegus*

Numbers of Oystercatchers were down on the record levels of 1985–86, with the January 1987 index showing a decline of 16% from the previous year. Nine sites, including a non-estuarine one, currently hold winter populations of international importance, and these are listed in Table 33 along with a further site of national importance, the Duddon. A further 12 sites, listed in rank order, had peak counts exceeding 2,800 in winter 1986–87: Belfast Lough, Findhorn/Culbin/Nairn, Strangford Lough, Lavan Sands, Exe, N Norfolk Marshes, Montrose Basin, Eden, Inner Clyde, Inner Moray, Swansea Bay and Carmarthen Bay.

Goss-Custard & Durell (1987) have recently examined how age influences the feeding success of Oystercatchers foraging communally through the autumn and winter months on mussel beds on the Exe estuary. Early in the autumn, the foraging proficiency of juveniles was much lower than that of adults, but the skills of juveniles rapidly improved through the winter months. However, aggressive interference from older birds also increased during the winter, and appeared to be the cause of many juveniles leaving the intertidal area to feed in fields on earthworms. The overall outcome of these differences is a higher winter mortality among juveniles than adults, even in mild winters, with the level of juvenile mortality being at least partly dependent on Oystercatcher population density.

Table 33. OYSTERCATCHER: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Morecambe Bay	29,754	61,833	54,366	49,700	(38,945)	(Dec)	48,913
Dee (Eng/Wales)	28,430	30,360	29,000	38,000	24,600	(Feb)	30,078
Solway	21,994	26,491	40,396	17,415	(14,624)	(Jan)	26,574
Wash	23,803	23,009	25,820	29,159	23,202	(Feb)	24,999
Burry	16,170	13,105	16,550	19,420	21,390	(Jan)	17,327
Thames	8,661	7,417	(10,832)	19,258	13,703	(Mar)	12,260
Outer S Solway *	x	7,892	10,203	10,053	9,284	(Feb)	9,358
Forth	8,267	(5,645)	(6,575)	(8,121)	(8,807)	(Dec)	8,537
Ribble	3,521	8,719	7,417	9,332	10,963	(Feb)	7,990
Duddon	10,655	5,725	4,488	6,627	6,933	(Nov)	6,886

Avocet *Recurvirostra avosetta*

The only site of international importance for the Avocet in the United Kingdom is Ore/Butley/Havergate, which held at least 345 birds in November 1986 (Table 34). The Alde and the Exe both regularly support over 50 birds and are thus of national importance. It is

also probable that the Tamar complex should rank as nationally important, but no complete counts of this estuarine system have been carried out over the past five years. Poole Harbour had a record 59 birds in December 1986. The only other sites with peak 1986–87 winter counts exceeding 10 individuals were Thames (36 in March, split between Foulness and the North Kent Marshes) and Hamford Water (26 in December).

Table 34. AVOCET: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	Month	Average
Ore/Butley/Havergate	(211)	(54)	(308)	334	(345)	Nov	340
Exe	92	113	141	135	121	Feb	120
Alde	x	x	x	109	66	Nov	88

Ringed Plover *Charadrius hiaticula*

Ringed Plover numbers were markedly down on the record totals of 1985–86, with the January index falling to its lowest level since 1973. Numbers were considerably higher in December 1986 than in January 1987, and it seems possible that birds dispersed or died during the cold spell of the latter month. Evidence for increased mortality during cold spells, but not for cold weather movements, has been documented by Baillie *et al.* (1986). Eight sites, two of them non-estuarine, regularly hold more than the 400 wintering birds which Scott (1982) puts forward as the qualifying level for international importance at this time of year. These sites are listed in Table 35 along with two further nationally important sites, Lindisfarne and the Blackwater. Ten further sites held peak populations exceeding 400 birds in winter 1986–87: Colne, Morecambe Bay, Swansea Bay, Southampton Water, Taw/Torridge, Jersey*, Stour, Forth, Swale and Isle of Thanet*.

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 1986, over 1,000 birds were present in September at Lindisfarne and on the Thames, as well as just under 1,000 in August at Langstone Harbour and on the Severn. In spring 1987, the Solway, Humber and Ribble each held over 1,000 birds in May, and Lindisfarne and Morecambe Bay only slightly less.

Table 35. RINGED PLOVER: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Medway	(515)	752	1285	(539)	(571)	(Jan)	1019
Thames	828	668	(463)	821	(955)	(Dec)	818
Tiree *	x	x	987	555	872	(Dec)	805
Outer Ards *	x	x	571	693	630	(Dec)	631
Orwell	482	513	620	782	292	(Nov)	538
Chichester Hbr.	364	388	(572)	341	624	(Nov)	458
Langstone Hbr.	300	452	391	640	460	(Dec)	449
Humber	(209)	445	(309)	(403)	(278)	(Jan)	445
Lindisfarne	205	310	483	716	216	(Nov)	386
Blackwater	237	717	(173)	243	269	(Nov)	367

Golden Plover *Pluvialis apricaria*

Golden Plover numbers recorded in Britain by BoEE counts during winter 1986–87 reached a peak of just over 30,000 in December, subsequently crashing by 87% in January and remaining low for the remainder of the winter. By contrast, numbers recorded on estuaries in Northern Ireland went up by 66% between December and January. British Golden Plovers are known to undertake hard weather movements, mostly southerly or south-westerly (Fuller, in Lack 1986). No estuarine site in the United Kingdom regularly supports internationally important numbers, but six sites rank as nationally important (Table 36). It is notable from this table that peaks at all five British sites were in November or December, but in February at the single Irish site. No other site had a count exceeding 2,000 birds during winter 1986–87.

Table 36. GOLDEN PLOVER: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Humber	(711)	8,014	(7,414)	(6,846)	(10,233)	(Dec)	9,124
Strangford Lough	5,352	2,184	13,510	7,277	6,454	(Feb)	7,174
Ribble	6,968	1,400	2,441	4,333	4,291	(Nov)	4,157
Solway	2,576	4,059	3,031	2,206	(1,311)	(Nov)	3,008
Taw/Torridge	2,037	2,983	3,350	2,178	1,458	(Dec)	2,921
Burry	1,700	3,200	1,740	2,500	1,106	(Nov)	2,153

Grey Plover *Pluvialis squatarola*

A decline of 10% in the January 1987 index of Grey Plovers from the all-time high of the previous year brought four successive years of increase to an end, although the index still remains at its second highest ever level. Indeed, a substantial rise in numbers in February 1987 resulted in a record peak count of over 29,000. Fifteen sites in the United Kingdom regularly support internationally important wintering populations (Table 37). Other estuaries with peak counts exceeding 800 birds in winter 1986–87 were the Alt, Pagham Harbour, Burry and Colne, and a further 16 sites held in excess of 210 birds.

A review of the Grey Plover population increase between 1970 and 1986 has shown clearly that patterns of increase have varied greatly among estuaries (Moser, in prep). On some, numbers recorded in BoEE winter counts have remained essentially stable; on others, initial upsurges have substantially levelled off; still elsewhere, there have been rapid and sustained increases. These results suggest that estuaries can be ranked according to the Grey Plover's preference for them, with the species achieving ceiling densities on its more preferred sites even at relatively low overall population levels.

Table 37. GREY PLOVER: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Wash	2,807	2,694	5,343	4,600	5,512	(Feb)	4,191
Thames	1,788	2,615	(2,998)	1,947	(4,411)	(Feb)	2,752
Swale	1,409	1,487	2,971	(1,748)	(420)	(Dec)	1,956
Ribble	2,086	1,453	2,177	1,963	2,048	(Mar)	1,945
Chichester Hbr.	2,647	1,541	2,048	1,243	1,631	(Feb)	1,822
Dee (Eng/Wales)	1,490	846	2,070	1,975	1,607	(Nov)	1,598
Medway	848	1,026	1,813	(1,134)	(1,121)	(Nov)	1,229
Stour	1,125	943	783	1,122	1,430	(Jan)	1,081
Morecambe Bay	398	879	(1,055)	1,846	(617)	(Mar)	1,045
Blackwater	716	(656)	(745)	(868)	1,290	(Nov)	1,003
Langstone Hbr.	1,320	474	839	984	1,281	(Nov)	980
Dengie	400	1,180	(1,700)	630	840	(Nov)	950
Humber	(226)	577	(1,031)	(952)	(891)	(Jan)	863
Lindisfarne	400	316	360	1,104	2,100	(Feb)	856
Hamford Water	835	2,282	500	445	200	(Nov)	852

Lapwing *Vanellus vanellus*

Numbers of Lapwing recorded in BoEE counts in 1986–87 crashed from over 105,000 in November and December to less than 15,000 in the January cold spell, before showing a partial recovery to nearly 47,000 in February. Increased mortality of Lapwings occurs in cold weather, as well as increased movements southwards onto the continent of Europe (Baillie *et al.* 1986). No estuarine sites in the United Kingdom are internationally important for this predominantly inland species, but three (Morecambe Bay, Ribble, Strangford Lough) regularly hold over 10,000 individuals and are thus nationally important. Table 38 lists the nine sites regularly holding 5,000 or more birds.

Table 38. LAPWING: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Morecambe Bay	(5,171)	15,692	(13,077)	10,635	(9,520)	(Nov)	13,162
Ribble	15,482	7,294	13,562	9,445	8,917	(Nov)	10,940
Strangford Lough	6,730	7,855	15,729	14,839	6,740	(Nov)	10,379
Humber	(2,689)	8,687	(10,418)	(6,421)	(6,306)	(Dec)	9,553
Severn	(6,022)	7,488	(9,177)	(4,864)	(1,759)	(Nov)	8,333
Thames	5,977	(2,499)	(7,521)	5,200	(3,751)	(Nov)	6,233
Dee (Eng/Wales)	4,925	4,320	6,950	8,125	5,175	(Dec)	5,899
Swale	11,466	1,030	5,037	(4,036)	(2,968)	(Nov)	5,844
Taw/Torridge	8,930	6,152	5,087	5,558	2,431	(Dec)	5,632

Knot *Calidris canutus*

The January 1987 index of Knot was down 11% relative to that of a year earlier. Sixteen sites regularly support winter populations of international importance (Table 39). Among these, the Alt achieved another record peak count of 46,000 whereas Dee populations again declined, confirming the apparent switch in roosting sites documented by Mitchell *et al.* (in press). No sites additional to those listed regularly rank as of national importance, but Lindisfarne had a peak count of 2,300 birds in February 1987.

The Wader Study Group's studies of the East Atlantic Flyway continued in 1986–87, with British and foreign participants focusing their attentions on the spring migration of both Nearctic (i.e. the Greenland/Canadian breeding population) and Siberian Knot. Most Nearctic Knot were previously thought to stop-over in May on migration in western Iceland, and those staging in northern Norway to breed in Siberia. However, studies of Knot at Balsfjord (Uttley *et al.* 1987) and Porsangerfjord (Davidson & Piersma 1987) in N Norway in May revealed that these birds were in fact of Nearctic origin. Meanwhile, another important spring staging area site has been discovered in NE Iceland (Whitfield & Magnusson 1987). This was used in May 1987 by at least three birds ringed at Balsfjord in the previous spring, thus establishing a link between the two sites.

Studies of the migration of Siberian Knot were initiated in 1979 by a co-operative WSG project studying the spring migration from west and south African wintering grounds north along the western seaboards of Africa and Europe. These birds stage in the W German Wadden Sea and migrate to central Siberia most probably through the Gulf of Finland (Dick *et al.* 1987). Further studies indicate that, as with Nearctic Knots, the story is far from clear cut. There is much between-year variation in the timing of migration and the staging sites used, and in addition to the Wadden Sea, smaller numbers of Knot use the intertidal areas of the Tejo estuary in Portugal, west-central France and the Dutch Delta. These consist mainly of birds that are unable, through shortage of energy reserves, to cover the distance from Africa to the Wadden Sea in one flight (Piersma *et al.* 1987).

Table 39. KNOT: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Wash	108,739	53,495	77,050	117,886	83,340	(Feb)	88,102
Alt	18,000	30,000	40,303	42,000	46,000	(Feb)	35,261
Humber	(14,829)	33,054	25,317	(23,647)	(29,247)	(Jan)	29,206
Morecambe Bay	28,087	24,555	18,146	27,954	(8,081)	(Mar)	24,661
Thames	13,751	29,098	(21,546)	16,147	(25,826)	(Feb)	21,274
Dee (Eng/Wales)	28,390	(17,960)	19,500	22,230	12,170	(Jan)	20,573
Ribble	11,078	13,619	9,963	22,098	27,007	(Nov)	16,753
Strangford Lough	6,274	9,424	18,977	21,450	8,700	(Jan)	12,965
Forth	11,419	(8,720)	(7,718)	(4,478)	(8,145)	(Dec)	11,419
Solway	8,149	8,189	7,191	4,627	(1,942)	(Jan)	7,039
Tees	5,900	6,502	5,410	6,462	4,640	(Jan)	5,783
N Norfolk Marshes	x	x	(6,121)	5,240	4,930	(Jan)	5,430
Burry	4,740	6,150	3,550	4,900	7,100	(Feb)	5,288
Dengie	520	4,290	(120)	5,000	10,280	(Feb)	5,023
Montrose Basin	1,000	3,000	4,000	10,000	2,000	(Jan)	4,000
Duddon	2,921	2,500	140	750	12,000	(Jan)	3,662

Sanderling *Calidris alba*

The January 1987 population index for Sanderling was 18% down compared with that of a year earlier. Seventeen BoEE sites, including three non-estuarine ones, hold average peak winter counts exceeding 150 (Table 40), which is currently the qualifying level for international importance for a site at this time of year. However, with the winter qualifying level for national importance now increased to 140 as a result of the review of Moser (1987), it is clear that the international estimate requires revision upwards. In addition to the sites listed, Isle of Thanet *, Morecambe Bay, Clwyd coast * and Jersey * held over 150 wintering birds in 1986–87, and Brading Harbour and Carmarthen Bay between 140 and 150.

It has been generally held that Sanderling wintering in north-western Europe come largely from the Siberian breeding population, whereas birds from the Greenland population pass through the area to winter in Africa. During the migration seasons, no discrete populations are identifiable, and higher qualifying levels for national (300) and international (500) importance apply (Scott 1982). Concentrations of birds during the 1986–87 passage periods exceeded 500 in both autumn and spring on Morecambe Bay, Ribble and Alt, and during spring alone on Solway, Dee (Eng/Wales) and Tees.

A recent paper on the biology of Sanderling in southern Africa highlights our limited understanding of the true facts of Sanderling migration. Ringing recoveries demonstrate that Siberian-breeding birds winter in southern Africa and on migration pass, at least in part, through north-western Europe (Summers *et al.* 1987). A particularly fascinating finding is that the proportion of first-year Sanderlings in the southern African wintering population shows a striking correlation with the abundance of lemmings on the birds' Siberian breeding grounds. Similar relationships have also been suggested to hold true for Curlew Sandpipers *Calidris ferruginea* in southern Africa (Underhill 1987) and Dark-bellied Brent Geese *Branta b. bernicla* in north-west Europe (Summers & Underhill 1987), both of which also breed in the same area of Siberia. The results are consistent with the hypothesis that, in years of lemming scarcity, Arctic foxes *Alopex lagopus* switch to preying on breeding waders and wildfowl, causing radically reduced breeding success in affected populations.

Table 40. SANDERLING: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Ribble	1,733	1,644	1,431	2,038	1,193	(Mar)	1,608
Humber	(78)	641	(412)	(270)	(408)	(Feb)	641
Tay	475	(100)	(232)	750	560	(Feb)	595
Alt	547	537	555	326	727	(Nov)	538
Wash	182	166	802	427	768	(Jan)	469
Tees	245	210	490	476	800	(Nov)	444
Dee (Eng/Wales)	435	(290)	427	268	374	(Jan)	376
Chichester Hbr.	422	330	600	291	206	(Nov)	370
Tiree *	x	x	402	305	353	(Jan)	353
Duddon	(195)	226	606	238	291	(Dec)	340
Swansea Bay	430	191	400	262	342	(Nov)	325
Outer S Solway *	x	403	106	133	266	(Mar)	227
Hamford Water	395	140	152	100	(156)	(Feb)	197
Arun-Middleton *	338	205	145	150	130	(Jan)	194
Colne	108	98	330	140	245	(Nov)	184
Clwyd	x	0	102	x	450	(Jan)	184
Rye Hbr/Pett Levels	200	98	(290)	210	38	(Feb)	167

Purple Sandpiper *Calidris maritima*

Estuaries hold less than 5% of the British wintering population of Purple Sandpipers, and none has average peak winter counts qualifying as of national importance. During 1986–87, however, three Scottish east-coast estuaries, the Spey (224 in February), Dee (205 in December) and Dornoch Firth (200 in January), had peak winter counts exceeding 160; in addition, an incomplete count on the Forth (158 in December) was only just below. Among non-estuarine sites counted, a number in Scotland and north-east England held over 160 birds in winter 1986–87: Tiree * (Inner Hebrides), Ayre-Deerness * (Orkney), Rosehearty-Fraserburgh * (Grampian), Budle-Seahouses * and Seahouses-Beadnell * (Northumberland) and St.Mary's Island * (Tyne & Wear).

Dunlin *Calidris alpina*

Total numbers of Dunlin wintering in the United Kingdom in 1986–87 were down on the previous year, and the January index declined 19% to its lowest ever value, continuing the pattern of decline evident over the past 12 years. An analysis by Goss-Custard & Moser (in press), based largely on BoEE data, has shown that decreases in Dunlin numbers on particular estuaries have been closely correlated with spread of the cordgrass *Spartina anglica*. This has the effect of reducing available upper tidal feeding areas and, perhaps more importantly, restricting the time available to birds for feeding. Particularly striking declines over the past decade have been observed on the Dee (Eng/Wales), Ribble and Lindisfarne. More detailed study of the causal nature of this relationship is clearly of considerable conservation relevance, in particular because Dunlin numbers have so far failed to recover on estuaries at which *Spartina* has died back.

Table 41 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 41, a further 13 estuaries held wintering populations exceeding 4,300 in 1986–87.

Table 41. DUNLIN: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Severn	(26,916)	56,830	34,746	(34,193)	(25,410)	(Jan)	45,788
Morecambe Bay	28,223	31,134	(50,211)	33,912	(33,084)	(Dec)	35,313
Wash	29,082	27,044	38,139	41,105	37,257	(Feb)	34,525
Thames	28,643	29,502	(13,296)	18,893	(34,987)	(Feb)	28,006
Langstone Hbr.	29,000	27,150	30,250	27,700	25,800	(Nov)	27,980
Humber	(22,736)	24,223	21,635	(32,026)	(28,089)	(Jan)	26,493
Chichester Hbr.	30,084	28,293	(27,028)	26,997	19,361	(Dec)	26,353
Mersey	30,100	28,000	34,700	25,000	12,000	(Feb)	25,960
Medway	13,786	22,047	18,366	(8,412)	14,777	(Feb)	17,244
Stour	16,478	16,205	20,854	15,466	11,852	(Dec)	16,171
Dee (Eng/Wales)	21,135	21,950	12,000	12,230	12,300	(Jan)	15,923
Blackwater	10,655	12,350	(21,800)	16,700	16,400	(Feb)	15,581
Ribble	18,612	20,586	10,652	8,506	17,943	(Mar)	15,270

Ruff *Philomachus pugnax*

Numbers of wintering Ruff recorded during BoEE counts were similar to those of the previous year, with a peak of 132 in December. The only coastal site of national importance in the United Kingdom is Pagham Harbour, which held 60 birds in February 1987 and has a five-year average peak winter count of 157. Four other estuaries, all in eastern or southern England, held 20 or more birds during winter 1986–87: Humber (48 in December), Tees (34 in March), Poole Harbour (25 in December) and Exe (20 in February).

Jack Snipe *Lymnocryptes minimus*

Jack Snipe are so difficult to census that BoEE counts provide no more than evidence of occurrence. Birds were reported from 19 sites during winter 1986–87, but only Morecambe Bay (8 in February) had a peak count exceeding three individuals.

Snipe *Gallinago gallinago*

Snipe numbers counted were down to c.2,400 in December 1986 compared to 3,000 a year earlier. Only four sites held 200 or more individuals: Cleddau (294 in December), Ribble (286 in December), Morecambe Bay (206 in November) and Lodmoor * (Dorset) (200 in both December and February).

Black-tailed Godwit *Limosa limosa*

Table 42 shows the nine United Kingdom estuaries which regularly support internationally important numbers of wintering Black-tailed Godwits, as well a further site of national importance, Southampton Water. During winter 1986–87, the Colne (445 in January) also held over 400 birds and a further 11 sites held over 50.

Beintema & Drost (1986) have recently reviewed the migration system of the Black-tailed Godwit. Icelandic birds, *L. l. islandica*, winter in the British Isles and along the Atlantic coasts of France and Iberia, with some very probably reaching Morocco. Western European populations of *L. l. limosa* migrate down the Atlantic coast to tropical Africa, whereas eastern European populations cross the Sahara via the Mediterranean; the easternmost populations of *L. l. limosa*, breeding in Asia, may winter in India. Recoveries of large numbers of Dutch godwits show that the movements of young birds prior to breeding are complex, with many summering when one-year old along the flood-plains of the Niger river in west Africa. The small number of Black-tailed Godwits breeding when one-year old are very largely those hatched in the early part of the previous breeding season.

Table 42. BLACK-TAILED GODWIT: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Ribble	1,120	459	1,280	2,110	560	(Feb)	1,106
Stour	1,050	957	945	1,660	906	(Dec)	1,104
Langstone Hbr.	485	583	1,037	906	1,019	(Nov)	806
Dee (Eng/Wales)	500	1,285	371	430	773	(Jan)	672
Chichester Hbr.	1,360	617	395	487	521	(Nov)	672
Hamford Water	556	500	240	580	1,477	(Nov)	671
Exe	800	494	756	617	582	(Dec)	650
Poole Harbour	550	x	791	682	569	(Feb)	648
Swale	773	413	139	(14)	(22)	(Nov)	442
Southampton Water	515	236	319	407	306	(Feb)	357

Bar-tailed Godwit *Limosa lapponica*

Over 63,000 Bar-tailed Godwits were recorded during BoEE counts in January 1987, about 17% up on those found in January 1986. Similarly, the January population index rose by 15%, the species being the only one to show a rise. At least part of the reason for this may have been a cold weather influx of birds across the North Sea from continental Europe. Five sites in the United Kingdom are internationally important for this species, and a further five sites are nationally important (Table 43). In addition to these, during winter 1986–87 the Eden, Humber, Tay, Chichester Harbour and N Norfolk Marshes all held peak counts exceeding 610 birds.

The count of over 11,000 Bar-tailed Godwits in January 1987 is easily a record for the Alt, which over the past decade has dramatically increased in importance as a roost site for this species. Concurrent with this increase has been a major decline on the Dee, and it appears that the birds, many of which feed along the north Wirral shore, have switched roost sites, apparently as a result of disturbance (Mitchell *et al.* in press). The Outer S Solway * also had record numbers in winter 1986–87, whereas BoEE counts on the Solway have declined since the early 1980's; possibly alterations in roosting distribution are occurring here also.

Table 43. BAR-TAILED GODWIT: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Ribble	10,875	6,138	7,461	13,880	10,836	(Feb)	9,838
Wash	8,131	5,976	7,846	8,204	12,809	(Jan)	8,593
Alt	6,000	8,620	4,503	4,956	11,310	(Jan)	7,078
Thames	4,655	3,524	(16,217)	3,277	(5,066)	(Feb)	6,548
Lindisfarne	4,520	3,600	4,765	9,600	8,900	(Jan)	6,277
Morecambe Bay	4,268	5,752	5,301	4,105	(2,028)	(Nov)	4,857
Forth	(3,008)	(3,194)	(3,396)	(4,509)	(2,663)	(Feb)	(4,509)
Solway	3,271	2,846	4,185	3,160	(2,230)	(Jan)	3,366
Lough Foyle	2,915	3,160	3,300	3,842	3,210	(Jan)	3,285
Outer S Solway *	x	388	571	(4,064)	5,600	(Feb)	2,656

Curlew *Numenius arquata*

Numbers of Curlew recorded peaked at nearly 80,000 in February 1987, well above the December 1985 count of c.71,000 which itself had previously been a record BoEE midwinter count. However, the January index showed a decline of 8%, apparently as a result of a temporary large-scale movement away from British estuaries during the cold spell occurring in this month. Table 44 shows the five British estuaries which are internationally important for the species on the basis of five-year average counts, along with a further five nationally important estuaries. Lough Foyle and the Severn are on the borderline of international importance based on the counts available, and it seems probable that the improved coverage which will be available for the latter site in 1987–88 will place it firmly in the higher category. A further 21 sites had peak counts exceeding 910 birds in winter 1986–87.

Table 44. CURLEW: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Morecambe Bay	4,422	10,012	10,979	7,715	(9,887)	(Dec)	8,603
Solway	5,633	3,129	6,663	5,173	(3,383)	(Nov)	5,150
Wash	2,723	4,817	3,500	5,149	2,265	(Feb)	3,691
Thames	3,067	2,707	(2,719)	2,808	(4,864)	(Feb)	3,361
Dee (Eng/Wales)	2,015	(2,600)	2,526	4,680	3,510	(Dec)	3,183
Lough Foyle	4,000	2,130	2,800	4,323	1,670	(Nov)	2,985
Severn	(2,847)	2,033	3,289	(2,777)	3,416	(Feb)	2,872
Humber	(1,282)	1,499	(2,065)	(3,095)	(2,370)	(Feb)	2,257
Swale	3,119	1,540	1,904	(1,261)	(1,591)	(Feb)	2,188
Forth	1,831	(1,452)	(1,540)	(2,141)	(2,161)	(Jan)	2,044

Spotted Redshank *Tringa erythropus*

Peak numbers of Spotted Redshank during the 1986–87 midwinter period were very similar to those of a year earlier, with 47 and 48 birds respectively recorded in December. The only sites holding ten or more birds in winter 1986–87 were the Swale (17 in November) and Medway (11 in March). During autumn passage, three sites held over 50 individuals: Medway (173 in October), Swale (74 in September) and Langstone Harbour (54 in August).

Redshank *Tringa totanus*

The January 1987 index for Redshank was down 11% relative to the previous year. However, these low numbers were only a temporary phenomenon, with a marked recovery in February, so the magnitude of any real decline was probably less than indicated by the index. Redshank are known to suffer increased mortality during severe weather, but there is no evidence that they undertake hard weather movements (Baillie *et al.* 1986). The January 1987 count took place immediately following ten days of severe weather, and it seems probable that many Redshank may have been overlooked because they were feeding inland over the high tide period in order to replenish their energy reserves.

Fifteen estuaries in the United Kingdom support wintering Redshank in numbers regularly exceeding the international qualifying level (Table 45), with the Dee (Eng/Wales) among these being notable for an exceptional peak of over 9,000 birds in November 1986. High numbers were also apparent on the adjacent Mersey which, although not regularly of international importance, held 3,300 Redshank in February 1987. A further 17 sites additional to those listed had peak counts exceeding 750 individuals in winter 1986–87.

Table 45. REDSHANK: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Morecambe Bay	2,454	5,816	5,995	(7,802)	(5,806)	(Nov)	5,575
Dee (Eng/Wales)	3,430	(3,155)	3,000	4,510	9,220	(Nov)	5,040
Thames	3,695	4,456	(5,105)	3,866	(3,892)	(Nov)	4,281
Wash	2,893	2,603	5,124	5,566	3,346	(Dec)	3,906
Humber	(1,885)	3,209	(2,896)	(3,588)	(3,145)	(Jan)	3,399
Lindisfarne	2,845	2,380	2,400	4,041	3,500	(Jan)	3,033
Inner Clyde	2,574	2,887	3,169	3,051	2,423	(Feb)	2,821
Forth	2,919	(2,492)	(1,925)	2,475	(3,067)	(Dec)	2,820
Medway	1,510	2,841	2,844	(2,424)	(2,926)	(Nov)	2,509
Strangford Lough	2,092	2,292	2,573	2,366	2,645	(Nov)	2,394
Swale	1,561	1,707	2,500	(3,730)	(910)	(Dec)	2,375
Orwell	2,475	3,105	2,972	1,070	1,170	(Mar)	2,158
Chichester Hbr.	2,516	2,230	2,437	1,871	1,522	(Dec)	2,115
Severn	(2,336)	(2,027)	1,950	(1,803)	(1,908)	(Nov)	2,104
Stour	2,039	2,062	3,221	2,033	936	(Nov)	2,058

Greenshank *Tringa nebularia*

No United Kingdom estuary regularly achieves the 50 wintering birds necessary for national importance for this species, but Lough Foyle held 83 birds in November 1986. Other sites with 20 or more individuals in winter 1986–87 were the Cleddau (27 in November), Strangford Lough (26 in November), Kingsbridge (23 in January) and N Norfolk Marshes (20 in March). During the passage season, four sites held 50 or more birds: Langstone Harbour (182 in August), Wash (99 in September), Thames (96 in September) and Medway (95 in September).

Green Sandpiper *Tringa ochropus*

Green Sandpipers were recorded at 25 BoEE sites during winter 1986–87. Of these, six held more than two birds: Thames (4 in November), Deben (4 in December), Carmarthen Bay (4 in February and March), Taw/Torridge (3 in March), Colne (3 in November and December) and Burry (3 in December and February).

Common Sandpiper *Actitis hypoleucos*

Common Sandpipers were recorded on 14 sites in winter 1986–87, of which only four held more than two individuals: Solway (6 in March), Fal complex (4 in December), Tamar complex (4 in November) and Taw/Torridge (3 in November and December). During passage periods, the only site recording 50 or more birds was the Severn (75 in August).

Turnstone *Arenaria interpres*

The December 1986 count of just over 20,000 birds was a BoEE record, exceeding the previous figure of 18,200 set exactly a year earlier. However, although numbers recorded declined only to a limited extent in January 1987, the index was 25% down on the unprecedentedly high level of January 1986. The discrepancy between total numbers and the index is largely explained by the continued increase in non-estuarine sites covered by the BoEE. Many of these are excellent for Turnstone, but would only have contributed to the index if counted both in January 1986 and January 1987.

Of sites counted in more than one year, nine currently rank as of international importance, including three non-estuarine ones (Table 46). As a result of the revised British population estimate of Moser (1987), the national qualifying level is now only slightly less than the international one, and no sites additional to those in Table 46 are regularly of national importance. During 1986–87, however, the Isle of Thanet* (1,010 in November), Medway (721 in November), English/Welsh Dee (721 in March), Rosehearty-Fraserburgh* (593 in February) and Colne (530 in March) all recorded peak winter counts exceeding 500 birds, and the Stour, Strangford Lough and Swansea Bay recorded totals of between 450 and 500.

Table 46. TURNSTONE: MAXIMA AT MAIN RESORTS.

	1982-83	83-84	84-85	85-86	86-87	(Month)	Average
Outer Ards *	x	x	987	1,949	1,803	(Dec)	1,580
Morecambe Bay	770	1,026	(755)	1,703	(1,569)	(Feb)	1,267
Forth	1,195	(888)	(842)	937	(959)	(Dec)	1,066
Belfast Lough	(16)	(292)	(192)	1,183	929	(Feb)	1,056
Tiree *	x	x	966	861	1,196	(Jan)	1,008
Wash	496	973	1,216	764	754	(Feb)	841
Thames	481	892	(537)	630	(888)	(Dec)	723
Guernsey *	580	665	717	708	582	(Dec)	650
Burry	555	710	470	745	630	(Nov)	622

PRINCIPAL SITES

The most important sites for waders wintering in the United Kingdom are shown in Table 47 in order of their average peak winter counts over the five-year period 1982–83 to 1986–87. In addition, data on the peak counts at principal sites in winter 1986–87 are 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 1986–87 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 1986–87. 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 annual 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.

All BoEE sites with either a 1986–87 peak winter count or an average peak winter count exceeding 10,000 waders are listed. Twenty-one, all estuarine, average in excess of 20,000 wintering waders and thereby rank as internationally important (Atkinson-Willes *et al.* 1982). Among these, the Alt is notable for its steadily increasing importance, apparently largely resulting from the presence of numerous Knot and Bar-tailed Godwit which formerly roosted further south on the Dee (Mitchell *et al.* in press). A further 21 sites, including two non-estuarine ones, hold on average more than 10,000 waders, thus exceeding the national qualifying level. In addition to the sites listed, Pagham Harbour, Portsmouth Harbour and Cromarty Firth verge on national importance, falling just below the qualifying level.

Table 47. OVERALL WADER COUNTS AT PRINCIPAL BOEE SITES IN WINTER

	Peak winter count, 1986-87		Average peak winter count, 1982-83 to 1986-87	
Wash	172,107	(4/0)	152,884	(5/0)
Morecambe Bay	(111,097)	(0/5)	143,552	(4/1)
Dee (Eng/Wales)	70,949	(5/0)	83,529	(5/0)
Humber	(85,884)	(0/3)	83,127	(2/3)
Thames	99,347	(1/4)	82,882	(4/1)
Ribble	86,514	(5/0)	72,438	(5/0)
Solway	(37,275)	(0/5)	70,028	(4/1)
Severn	(34,474)	(0/5)	52,899	(2/3)
Alt	65,701	(5/0)	47,533	(5/0)
Strangford Lough	37,968	(5/0)	46,568	(5/0)
Chichester Harbour	31,472	(5/0)	41,037	(5/0)
Langstone Harbour	35,770	(5/0)	37,444	(5/0)
Forth	(37,500)	(0/5)	36,415	(2/3)
Burry	38,245	(5/0)	35,427	(5/0)
Mersey	18,654	(5/0)	33,699	(5/0)
Swale	(13,065)	(0/4)	33,413	(3/2)
Lindisfarne	31,200	(5/0)	31,587	(5/0)
Stour	20,685	(5/0)	25,120	(5/0)
Medway	24,774	(2/3)	24,620	(4/1)
Blackwater	24,111	(3/2)	22,067	(4/1)
Duddon	29,211	(5/0)	21,628	(5/0)
Outer S Solway *	23,812	(4/1)	18,791	(4/0)
Orwell	13,775	(5/0)	17,778	(5/0)
Lough Foyle	13,293	(5/0)	17,522	(5/0)
Tees	17,001	(5/0)	16,640	(5/0)
N Norfolk Marshes	15,821	(3/2)	15,805	(3/0)
Taw/Torridge	11,234	(5/0)	15,572	(5/0)
Lavan Sands	14,147	(4/1)	14,100	(5/0)
Colne	21,529	(4/1)	13,504	(5/0)
Exe	13,296	(5/0)	13,090	(5/0)
Tay	11,951	(5/0)	12,965	(3/2)
Inner Clyde	12,771	(5/0)	12,729	(5/0)
Hamford Water	6,870	(3/2)	12,578	(5/0)
Eden	11,464	(5/0)	12,356	(5/0)
Dengie	20,639	(5/0)	12,106	(4/1)
Southampton Water	7,925	(5/0)	12,047	(5/0)
Outer Ards *	12,330	(5/0)	12,010	(2/0)
Belfast Lough	12,240	(5/0)	11,519	(2/3)
Crouch/Roach	(6,028)	(0/5)	11,277	(2/3)
Montrose Basin	10,981	(4/0)	11,146	(5/0)
Cleddau	9,603	(5/0)	10,993	(5/0)
Poole Harbour	8,750	(5/0)	10,466	(3/1)

REFERENCES

Atkinson-Willes,G.L., Scott,D.A, & Prater,A.J. 1982. Criteria for selecting wetlands of international importance. *Proc. Conf. Cons. Wetlands of Int. Imp. esp. as Waterfowl Habitat, Cagliari 1980*: 1017–1042. Ist. Naz. di Biologia d. Selvaggina, Bologna.

Baillie,S.R., Clark,N.A. & Ogilvie,M.A. 1986. Cold weather movements of waterfowl and waders: an analysis of ringing recoveries. BTO Research Report 19.

Beintema,A.J. & Drost,N. 1986. Migration of the Black-tailed Godwit. *Gerfaut* 76: 37–62.

Cadbury,C.J. 1987. UK estuaries under threat. *RSPB Conservation Review* 1: 41–46.

Davidson,N. & Piersma,T. 1987. International wader migration studies along the East Atlantic flyway: news from spring 1987. *Wader Study Group. Bull.* 50:5–6.

Dick,W.J.A., Piersma,T. & Prokosch,P. 1987. Spring migration of the Siberian Knots *Calidris canutus canutus*: results of a co-operative Wader Study Group Project. *Ornis Scand.* 18: 5–16.

Fox,A.D. In press. The breeding status and September distribution of the Gadwall (Anas strepera) in Britain and Ireland. *Brit. Birds.*

Goss-Custard,J.D. & Durell,S.E.A.le V.dit. 1987. Age-related effects in Oystercatchers, *Haematopus ostralegus*, feeding on mussels, *Mytilus edulis. J. Anim. Ecol.* 56: 521–558 (in three parts).

Goss-Custard,J.D. & Moser,M.E. In press. Rates of change in numbers of Dunlin *Calidris alpina* wintering in British estuaries in relation to the spread of *Spartina anglica. J. Appl. Ecol.*

Greenland White-fronted Goose Study 1987. Greenland White-fronted Geese in Britain: 1986/87. Unpubl. Rep.

Hancock,R. & Woollam,P.B. 1987. Radioactivity Measurements on Live Bewick's Swans. CEGB, Berkeley.

Heubeck,M. 1987. Changes in the status of the Common Eider in Shetland, 1977–1984. *Scot. Birds* 14:146–152.

Hutchinson, C.D. 1979. *Ireland's Wetlands and their Birds.* Irish Wildbird Conservancy, Dublin.

Kirby,J.S. 1987a. The ornithological significance of the Mostyn Docks area of the Dee Estuary to wildfowl and waders. BTO Research Report 24.

Kirby,J.S. 1987b. The ornithological significance of Flint marshes and mudflats to wildfowl and waders. BTO Research Report 25.

Lack,P.C. (Ed.) 1986. *The Atlas of Wintering Birds in Britain and Ireland.* Poyser, Calton.

Madsen,J. 1984. Status of the Svalbard population of Light-bellied Brent Geese *Branta bernicla hrota* wintering in Denmark 1980–1983. *Nor. Polarinst. Skr.* 181:119–124.

Madsen,J. 1987. Status and management of goose populations in Europe, with special reference to populations resting and breeding in Denmark. *Danish Rev. Game Biol.* 12/4.

Mitchell,J.R., Moser,M.E. & Kirby,J.S. In press. Declines in midwinter counts of waders roosting on the Dee estuary. *Bird Study.*

Moser,M.E. 1987. A revision of population estimates for waders (Charadrii) wintering on the coastline of Britain. *Biol. Conserv.* 39: 153–164.

Moser,M.E. In prep. Limits to the density of Grey Plovers *Pluvialis squatarola* wintering on British estuaries.

Moser,M.E. & Summers,R.W. 1987. Wader populations on the non-estuarine coasts of Britain and Northern Ireland: results of the 1984–85 Winter Shorebird Count. *Bird Study* 34: 71–81.

Norriss,D.W. & Wilson,H.J. 1987. Greenland White-fronted Geese in Ireland 1986/87. A Progress Report. Office of Public Works, Wildlife Service. Dublin.

Ogilvie,M.A. 1972. Distribution, numbers and migration. In Scott,P. and the Wildfowl Trust. *The Swans*: 29–54.

Ogilvie,M.A. 1987. Movements of Tufted Ducks ringed in Britain: a preliminary assessment. *Wildfowl* 38: 28–36.

Owen,M. 1987. The Wildfowl Trust Barnacle Goose Project 1986 Report. Wildfowl Trust.

Owen,M., Atkinson-Willes,G.L. & Salmon,D.G. 1986. *Wildfowl in Great Britain.* 2nd Edition. The University Press, Cambridge.

Owen,M. & Mitchell,C. In press. Movements and migrations of Wigeon (Anas penelope) wintering in Britain and Ireland. *Bird Study.*

Owen,M. & Salmon,D.G. In press. Feral Greylag Geese in Britain and Ireland, 1960–1986. *Bird Study.*

Piersma,T.O., Bredin,D. & Prokosch,P. 1987. Continuing mysteries of the spring migration of Siberian Knots: a progress note. *Wader Study Group. Bull.* 49:9–10.

Prater,A.J. 1981. *Estuary Birds of Britain and Ireland.* Poyser, Calton.

Prys-Jones,R.P. & Kirby,J.S. 1987. Summary statistics for waders on United Kingdom estuaries, 1981–82 to 1986–87. BTO Research Report 26 (in four parts).

Rees,E. 1987. Swan Supporter Scheme Seasonal Report 1986–87. Wildfowl Trust, Slimbridge.

Ruger,A., Prentice,C. & Owen,M. 1986. *Results of the IWRB International Waterfowl Census 1967–1983.* IWRB Special Publ. No. 6, Slimbridge.

Salmon,D.G. 1987a. Pink-footed and Greylag Geese in Britain, November 1986. Unpubl. Rep. Wildfowl Trust to NCC.

Salmon,D.G. 1987b. The numbers of Dark-bellied Brent Geese in Britain, December 1986 and January 1987. Unpubl. Rep. Wildfowl Trust to NCC.

Salmon,D.G. In press. The numbers and distribution of Scaup *Aythya marila* in Britain and Ireland. *Biol. Conserv.*

Salmon,D.G. & Black,J.M. 1986. Results of the January 1986 Whooper Swan census in Britain, Ireland and Iceland. *Wildfowl* 37: 172–174.

Scott,D.A. 1980. *A Preliminary Inventory of Wetlands of International Importance for Waterfowl in Western Europe and North-west Africa.* IWRB Special Publ. No.2, Slimbridge.

Scott,D.A. 1982. Biogeographical populations and numerical criteria for selected waterfowl species in the western Palearctic. *Proc. Conf. Cons. Wetlands of Int. Imp. esp. as Waterfowl Habitat, Cagliari 1980*: 1135–1150. Ist. Naz. di Biologia d. Selvaggina, Bologna.

Smart,M. (Ed.) 1976. *Proc. Int. Conf. Cons. Wetlands and Waterfowl, Heiligenhafen, FRG 1974.* IWRB, Slimbridge.

Smart,M. (Ed.) In press. *Prel. Proc. Conf. Contr. Part. Ramsar Convention, Regina, Canada 1987.* Ramsar Convention Bureau. Gland, Switzerland.

Summers,R.W. & Underhill,L.G. 1987. Factors related to breeding production of Brent Geese *Branta b. bernicla* and waders (Charadrii) on the Taimyr Peninsula. *Bird Study* 34: 161–171.

Summers,R.W., Underhill,L.G., Waltner,M. & Whitelaw,D.A. 1987. Population, biometrics and movements of the Sanderling *Calidris alba* in southern Africa. *Ostrich* 58: 24–39.

Underhill,L.G. 1987. Changes in the age structure of Curlew Sandpiper populations at Langebaan lagoon, South Africa, in relation to lemming cycles in Siberia. *Trans. Roy. Soc. S. Afr.* 46: 209–214.

Uttley,J.D., Thomas,C.J., Davidson,N.C., Strann,K.-B. & Evans,P.R. 1987. The spring migration system of Nearctic Knots *Calidris canutus islandica*: a re-appraisal. *Wader Study Group. Bull.* 49 (suppl.): 80–84.

Whitfield,J.P. & Magnusson,J. 1987. The migration of waders through north-east Iceland. *Wader Study Group. Bull.* 49 (suppl.): 85–89.

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 48 (below) gives the qualifying levels among wildfowl and waders for both these categories of importance. Please note that the category of National Importance applies to Great Britain only; equivalent figures have not been assessed for Ireland.

Forty-five countries are now Contracting Parties to the Ramsar Convention on Wetlands of International Importance; they have designated a total of 379 sites covering 24,000,000 ha. On 28th October 1987 the United Kingdom designated a further site under the Ramsar Convention and the EEC Directive on the Conservation of Wild Birds – Langstone and Chichester Harbours.

The following 31 sites in Great Britain have now been designated as Wetlands of International Importance under the Ramsar Convention by the U.K. Government, out of the 152 G.B. sites identified by the Nature Conservancy Council as eligible for designation (one area in Northern Ireland, Lough Neagh/Beg, having also been designated):

Bridgwater Bay
Bure Marshes
Cors Fochno/Dyfi
Hickling Broad/Horsey Mere
Lindisfarne
*Lochs Druidibeg, a'Machair & Stilligary
Loch Leven
Loch Lomond
Minsmere/Walberswick
North Norfolk coast
Ouse Washes
Rannoch Moor
Abberton Reservoir
Cairngorm Lochs
*Rockcliffe Marshes (pt of Solway Firth)
*Langstone/Chichester Harbour
Claish Moss
Loch of Lintrathen
Rostherne Mere
Silver Flowe
Chesil Beach/Fleet
*Dee Estuary
*Derwent Ings
*Holburn Moss
*The Swale
*Alt Estuary
*Leighton Moss
*Martin Mere
*Loch Eye
*Loch of Skene
Irthinghead Mires

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

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

A further 186 localities in Great Britain have been identified by the Nature Conservancy Council as being eligible for designation as SPAs.

Table 48. QUALIFYING LEVELS FOR NATIONAL AND INTERNATIONAL IMPORTANCE

	National (G.B.)	International
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	500	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
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	?
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: Scott (1980, 1982); Ruger et al. (1986).
Sources for National Importance: wildfowl - Owen et al. (1986); waders - Prater (1981) revised by Moser (1987).

NATURE
CONSERVANCY
COUNCIL

Printed on Recycled Paper