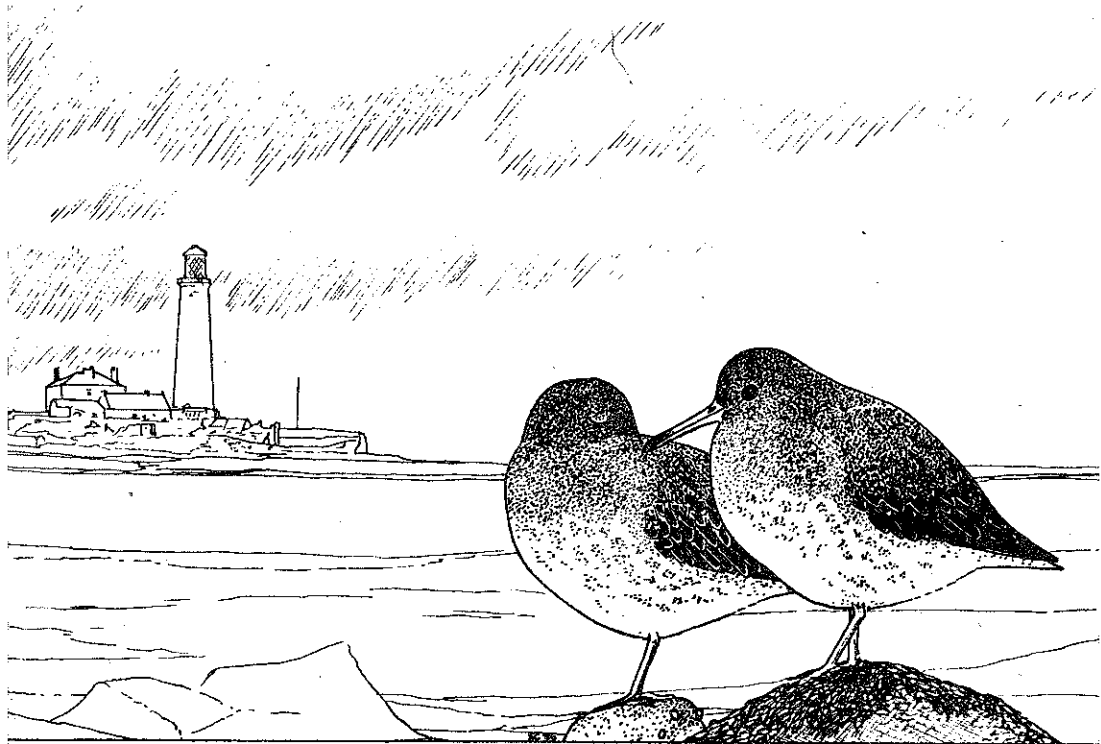


# WILDFOWL AND WADER COUNTS 1985-86

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*Purple Sandpipers at St. Mary's Island, Northumberland.*

# **Wildfowl and Wader Counts 1985 - 86**

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

**By  
D. G. Salmon, M. E. Moser and J. S. Kirby**

Cover drawing by	Steven Carter
Published by	The Wildfowl Trust, Slimbridge
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

A C K N O W L E D G E M E N T S

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

Mr C. Mitchell, Dr. M. Owen and Mrs J. Portlock (Wildfowl Trust);  
Dr. R. J. O'Connor, Mr S. Carter, Miss C. Ray and  
Mrs D. Smallwood (BTO); Dr. L. H. Campbell (RSPB).

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.

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## WEATHER

September and October were mild, but strong winds and rain hampered the September count. Water levels were high following a very wet summer. Mid-November was cold with north-easterlies, and some northern waters froze. December was generally mild until the end of the month, when a sequence of short alternating spells of cold north/north-easterly or mild westerly airstreams began, each lasting a few days. A cold snap from 15th to 18th January caused many waters to freeze. On 24th January a sustained period of very cold weather from Siberia began, lasting until 4th March. Inland waters were frozen for a long time, and there was snow in much of northern England and Scotland. The remainder of March was mild, with westerly winds. Very little ice remained by the March count, but strong winds and poor visibility caused problems.

## FIGURE 1

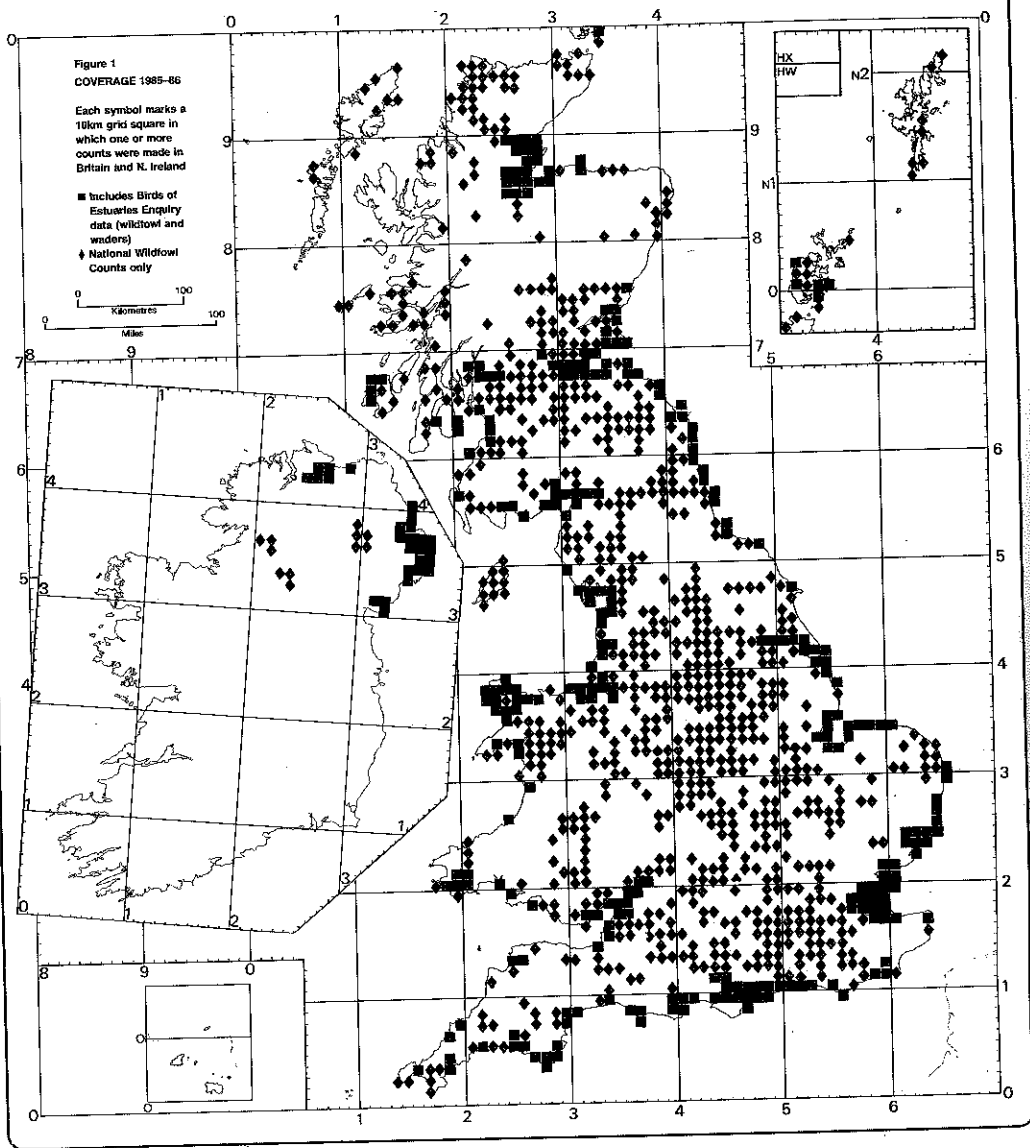
The extent of coverage for the National Wildfowl Counts and Birds of Estuaries Enquiry in Britain and Northern Ireland in 1985-86 is shown in Figure 1.

Figure 1  
COVERAGE 1985-86

Each symbol marks a 100m grid square in which one or more counts were made in Britain and N. Ireland

■ Includes Birds of Estuaries Enquiry data (wildfowl and waders)  
♦ National Wildfowl Counts only

0 100  
Kilometres  
0 100  
Miles



## W I L D F O W L

1985-86 was the 39th 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 1985-86 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.

Between July 15th and August 31st 1985 a national Late Summer Survey - the first of its kind - was held by the Wildfowl Trust to ascertain the numbers and distribution of moulting wildfowl in Britain and Northern Ireland. Observers were asked to count at least once during the period, and also to record the species which had bred and any broods seen. Over a thousand sites were covered, many of them more than once. The results are incorporated throughout this section.

The number of places in Britain counted at any time between July 1985 and March 1986 was a remarkable 2,100 - 350 more than in any previous season. 621 localities were visited in July or August and all seven months from September to March, and 999 throughout the latter period. Over 60 sites were covered in Hampshire, Nottinghamshire, Derbyshire, Cumbria, Merioneth and Borders, and 190 in Strathclyde!

Special censuses were held of Pinkfooted and Greylag Geese in November, Dark-bellied Brent Geese in December and January, and Whooper Swans in January. The results of these are incorporated in the tables and species accounts, but sites covered only in these censuses are not included in Figure 1.

The Whooper Swan census included all of Ireland as well as Britain; 51 sites in Northern Ireland and 309 in the Republic were counted (Merne & Murphy 1986). General wildfowl counts were received for nine places in Northern Ireland, of which two were included in the Late Summer Survey. This number is expected to increase considerably in the future, thanks to efforts, in conjunction with the RSPB's N.Ireland office, to improve and coordinate the coverage in the Province.

### TOTAL COUNTS

Table 1 gives the total count of each species month by month in 1985-86 in England, Scotland and Wales; Table 2 shows the same information for Northern Ireland. Certain seaducks (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, 1985-86

Monthly totals (no. of sites)	Figures over 100 rounded to nearest 10								Average Max. 1980-81 to 1984-85	
	July/Aug (1,076)	Sep (1,152)	Oct (1,242)	Nov (1,291)	Dec (1,286)	Jan (1,712)	Feb (1,272)	Mar (1,320)		
Great Crested Grebe	5,630	6,230	6,060	5,570	4,380	3,970	3,360	4,730		6,020*
Mute Swan	7,190	7,680	8,390	8,750	8,790	8,940	8,440	6,220		7,860
Bewick's Swan	0	11	11	2,520	3,510	7,720	5,400	4,220		5,450
Whooper Swan	3	36	940	4,077	2,890	5,140**	2,700	1,930		2,490
Bean Goose	58	5	0	5	220	290	21	58		300
Pink-footed Goose	59	2,570	96,840	134,350**	63,180	70,513	63,647	105,350**		92,200
European White-fronted Goose	15	2	65	920	3,210	7,150	4,625	1,392		6,340
Greenland White-fronted Goose	0	1	3,891	11,030**	6,104	5,754	5,535	10,015**Apr		8,320
Greylag Goose (incl. feral)	4,880	6,660	53,910	117,590**	52,880	49,290	39,370	55,000		91,600
Canada Goose	24,050	31,400	30,270	26,010	28,040	28,460	21,390	14,600		22,500
Barnacle Goose: Islay**	0	10,400**	17,200	17,880	19,230	18,250	17,926	17,250		17,390
Barnacle Goose: Solway**	0	220	25,390	64,550	90,510**	89,680**	75,520	89,280		76,440
Dark-bellied Brent Goose	55	0	270	1,300	2,810	2,130	1,290	390		1,430
Light-bellied Brent Goose	0	0	18,760	34,930	63,810	75,030	52,970	47,550		71,560
Shelduck	7,510	23,260	102,210	147,370	217,280	281,700	208,060	124,830		203,490
Wigeon	630	18,390	3,810	4,850	5,130	4,000	2,790	2,570		4,100
Gadwall	1,960	3,140	47,830	64,700	91,510	82,670	48,000	36,120		96,500
Teal	5,620	32,420	146,950	167,670	195,960	185,550	136,120	65,600		171,240
Mallard	79,310	137,480	14,290	13,130	26,640	26,510	14,020	7,490		23,680
Pintail	16	6,300	14,290	7,380	6,480	4,860	3,970	3,540		7,580
Shoveler	2,500	6,550	7,950	13,380	6,480	4,860	39,670	22,540		35,630
Pochard	6,150	8,920	30,520	32,330	34,000	46,590	38,990	34,940		44,400
Tufted Duck	31,890	37,600	46,240	49,020	49,020	2,340	1,300	2,440		3,410
Scaup	19	580	2,120	2,720	2,720	2,340	10,460	9,730		9,190
Goldeneye	150	230	1,210	6,570	8,290	11,250	170	110		81
Smew	0	1	11	27	76	16	360	1,930		3,010
Red-breasted Merganser	1,040	1,190	4,590	2,210	4,010	4,820	3,550	2,280		2,260
Goosander	210	290	1,330	1,160	3,470	3,550	1,610	1,190		1,780
Ruddy Duck	570	1,210	1,550	1,670	2,000	89,140	72,400	53,350		82,290*
Coot	44,910	65,490	73,690	94,290	91,320	89,140	72,400	53,350		82,290*

\* 1982-83 to 84-85 only

\*\* Results of complete censuses. (Nos. of Barnacle Geese on the Solway are constant through the winter.)

Table 2. TOTAL COUNT OF WILDFOWL IN NORTHERN IRELAND, 1985-86  
(Lough Neagh/Beg not counted in September and October)

Monthly totals (figures over 100 rounded to nearest 10)

	September	October	November	December	January	February	March
Gt Crested Grebe	280	390	810	1,320	480	830	1,410
Mute Swan	460	570	1,010	930	970	930	740
Bewick's Swan	0	0	150	210	468	310	340
Whooper Swan	0	380	3,330	570	2,380	1,420	1,110
Gd Whitefront	38	31	66	25	73	51	26
Greylag Goose	200	230	530	700	490	1,070	1,030
L-b Brent Goose	2,790	17,580	11,260	6,790	4,610	3,530	2,320
Canada Goose	80	110	3	78	200	550	47
Shelduck	150	130	1,130	1,710	3,030	3,110	2,630
Wigeon	3,440	14,330	7,430	6,910	5,960	5,160	2,930
Gadwall	47	66	82	120	110	99	87
Teal	1,070	800	3,650	4,710	4,400	4,030	2,080
Mallard	2,960	4,480	5,960	6,340	5,690	4,830	2,220
Pintail	21	65	130	230	240	420	200
Shoveler	57	70	110	170	89	160	160
Pochard	59	18	17,500	17,040	11,440	7,990	3,180
Tufted Duck	87	88	5,880	6,010	6,840	4,180	3,960
Scaup	0	2	380	870	1,400	1,470	1,980
Goldeneye	66	12	5,430	5,050	4,710	4,710	5,610
Smew	0	0	0	1	1	2	1
R-b Merganser	730	410	710	200	320	290	320
Goosander	0	0	0	0	2	0	0
Ruddy Duck	0	0	1	8	0	27	12
Coot	630	560	2,630	2,600	2,140	2,340	2,210



# INDICES

Table 3 shows the trends in numbers of individual species in Britain for the period 1960-61 to 1984-85, expressed as five-year means, and for 1985-86. These are index values, 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 month chosen for each species is that 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 seaducks) are omitted.

Table 3. INDICES OF ABUNDANCE OF WILDFOWL IN BRITAIN,  
based on 1970-71 = 100  
(Five year means 1960-61 to 84-85; seasonal figures 85-86)

		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	1985-86
Mute Swan	-Sep	105	96	103	93	119	125
	Jan	88	106	90	85	89	89
Bewick's S.	-Jan	15	50	72	153	215	298
Whooper S.	-Nov	69	77	104	148	164	164
	Jan	202	146	118	114	116	144
E.Whitefront	-Jan	62	85	56	39	40	51
Canada Goose	-Sep/Jan	47	72	127	175	275	366
D.b.Brent	-Jan	61	87	134	305	455	520
Shelduck	-Dec	101	100	108	153	206	189
	Jan	92	106	102	132	133	148
Wigeon	-Oct	111	112	138	149	183	148
	Jan	83	91	84	85	97	122
Gadwall	-Oct	42	50	146	149	259	351
	Dec	86	81	164	336	781	1,112
Teal	-Dec/Jan	94	76	115	150	193	174
Mallard	-Sep	73	83	92	82	92	89
	Dec	78	89	86	80	90	102
	Jan	83	98	87	94	98	98
Pintail	-Dec	27	54	151	177	147	144
Shoveler	-Oct/Nov	91	97	144	193	201	215
	Jan	50	63	113	139	127	108
Pochard	-Jan	64	105	124	122	101	87
Tufted Duck	-Sep	44	64	110	122	134	126
	Jan	67	82	113	105	104	101
	Jan	64	110	114	33	11	10
Scaup	-Jan	115	92	126	109	98	99
Goldeneye	-Jan	49	101	115	245	222	228
R.b.Merganser	-Jan	92	80	121	285	213	271
Goosander	-Jan	171	115	153	123	171	143
	Feb						

# 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 in Tables 1 and 2 do not necessarily provide a reliable picture of the changes in numbers during the course of the season. Table 4, therefore, uses the British data only from those sites counted in all seven months from September to March - 999 in all - and expresses each month's total 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 4. NOS. OF WILDFOWL COUNTED IN BRITAIN IN EACH MONTH OF 1985-86  
(AND IN BRACKETS 1984-85) EXPRESSED AS PERCENTAGES OF THE TOTAL  
FOR THE PEAK MONTH  
(Based on sites covered in each month, September to March.)

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
C Grebe	100(100)	94 (97)	81 (86)	63 (70)	53 (62)	47 (63)	68 (72)
Mute Swan	95(100)	92 (97)	95 (94)	100 (86)	85 (82)	69 (66)	70 (65)
Bewick's Swan	0 (0)	0 (0)	35 (42)	48 (77)	100 (83)	75 (100)	58 (26)
Whooper Swan	1 (1)	25 (37)	95 (91)	100(100)	95 (91)	91 (89)	74 (72)
Whitefront	0 (0)	1 (3)	17 (7)	52 (36)	100 (90)	83(100)	26 (12)
Canada G.	100(100)	92 (92)	81 (84)	90 (85)	84 (88)	67 (82)	44 (49)
W-b Brent G.	0 (2)	35 (52)	76 (81)	98 (83)	87(100)	100(100)	90 (64)
L-b Brent G.	0 (0)	3 (5)	46 (33)	100 (23)	75(100)	45 (70)	14 (24)
Shelduck	31 (19)	33 (34)	50 (66)	74 (72)	100 (83)	87 (92)	73(100)
Wigeon	6 (14)	26 (23)	57 (46)	76 (55)	100(100)	78 (55)	52 (22)
Adwall	66 (60)	81 (76)	95(100)	100 (97)	75 (72)	55 (51)	52 (41)
Teal	34 (54)	48 (72)	74(100)	100 (92)	90 (67)	47 (50)	40 (36)
Mallard	77 (89)	77 (93)	87(100)	100 (96)	88 (90)	72 (78)	34 (37)
Pintail	36 (20)	85 (80)	69(100)	100(100)	91 (59)	64 (39)	36 (11)
Shoveler	80 (81)	100(100)	86 (86)	74 (67)	57 (45)	45 (39)	43 (42)
Pochard	27 (37)	50 (56)	84 (96)	97(100)	100 (96)	91 (91)	69 (44)
Tufted Duck	85 (97)	76 (92)	94(100)	100 (96)	91 (87)	80 (86)	69 (74)
Eider	92(100)	100 (95)	61 (88)	57 (62)	67 (59)	77 (76)	74 (74)
Goldeneye	2 (3)	8 (13)	66 (67)	81 (76)	98(100)	95(100)	100(100)
Smew	0 (0)	0 (0)	7 (3)	20 (8)	44 (48)	100(100)	65 (15)
R-b Merganser	46 (67)	100 (87)	79(100)	87(100)	62 (97)	71 (73)	66 (80)
Goosander	14 (11)	12 (28)	47 (39)	70 (61)	78 (69)	72(100)	100 (87)
Ruddy Duck	59 (74)	76 (86)	82(100)	99 (99)	100 (99)	79 (86)	58 (83)
Coot	75 (92)	82 (96)	100(100)	96 (90)	90 (86)	77 (77)	57 (47)

## PRINCIPAL SITES

In addition to the individual species criteria (see Appendix), anywhere regularly holding over 10,000 swans, geese and ducks is regarded as Internationally Important (Smart 1976; Atkinson-Willes et al. 1982). Table 5 lists those sites in Britain and Northern Ireland where the maximum total count of swans, geese and ducks averaged at least 10,000 between 1983-84 and 1985-86.

Table 5. SITES WITH AVERAGE MAXIMUM TOTAL COUNT OF 10,000+ WILDFOWL 1983-84 TO 85-86. Geese, swans and ducks only. (Incl. goose roosts.)

	Average	Maximum
The Wash	46,300	58,500
Ouse Washes	42,400	48,700
Inner Solway Firth	37,100	42,500
Lough Neagh/Beg*	36,900	36,900
Ribble Estuary	34,400	41,100
Mersey Estuary	31,400	36,300
Lough Foyle	26,600	31,800
Lindisfarne	23,800	37,700
Foulness/Leigh/Canvey	23,600	26,700
Loch of Strathbeg	23,300	31,400
Dee Estuary	21,100	22,300
Strangford Lough	20,500	22,300
Hamford Water	20,100	31,400
The Swale	19,900	29,900
Morecambe Bay	17,500	22,100
Montrose Basin	17,300	19,400
Loch Leven	17,200	17,600
Wigtown Bay	16,200	21,600
Abberton Reservoir	16,100	17,400
The Humber	16,100	17,300
Chichester Harbour	15,800	17,100
Cromarty Firth	15,200	17,300
Slains Lochs	15,200	18,500
Blackwater Estuary	14,400	20,500
Westwater Reservoir	14,300	19,400
New Grounds, Slimbridge	14,300	15,700
Dornoch Firth	14,200	19,500
Outer Firth of Tay	14,100	14,100
Rutland Water	13,500	13,900
Lower Derwent Ings	13,400	14,800
Firth of Forth	12,900	16,560
Castle Loch, Lochmaben	12,400	16,400
Scolt Head	12,400	17,300
Loch Eye	11,800	13,200
Lochs Davan & Kinord	11,400	15,900
Crouch/Roach Estuary	11,300	16,200
Martin Mere	10,700	13,000
Langstone Harbour	10,500	11,900

\* Only one season of full data

## SPECIES ACCOUNTS

NB: In the tables a cross indicates no data and brackets that a figure has been excluded in calculating the average, because of incomplete coverage. The averages in the final column are for the seasonal maxima 1981-82 to 1985-86. "Month" shows when the peak occurred in 1985-86.

### Great Crested Grebe Podiceps cristatus

This season's count totals were markedly lower than in 1984-85 in all months. The Late Summer Survey total of 5,629 is notable, however, being higher than that for November from fewer sites. The largest moulting concentrations were found at Rutland Water, Chew Valley Lake, the inner Firth of Forth and Aber Ogwen (see Table 6).

Table 6 shows those sites with an average maximum of 150 or more Great Crested Grebes between 1982-83 (the first season for which data for this species have been processed) and 1985-86. In addition, the following places held over 100 Great Crested Grebes in 1985-86: the Mersey Estuary (178, February); South Solway Firth (121, March); Hunstanton, The Wash, Norfolk (117, November); South Thames Marshes, Kent (107, February) and Medway Estuary (102, November). Unusually large numbers were found on many estuaries in the autumn.

An estimate of 9,000 adults was made for the summer of 1982 (Salmon 1983), based on the rate of increase between the censuses of 1965 and 1975 (Presst & Mills 1966; Hughes et al. 1979). The BTO Atlas gives a winter figure of 7-10,000 for the period 1981-82 to 83-84. It also suggests that when the Continental weather is very hard the numbers in Britain may be swelled to over 20,000 birds, but that during prolonged freeze-ups there is dispersal of over-wintering birds to France and Ireland (Lack 1986). The decline in the wildfowl count totals from September onwards, with a recovery in March, (see Tables 1 and 4) suggests that birds may leave Britain even in a mild winter. A movement onto the coast also occurs during cold spells. In February 1986 23% of Great Crested Grebes were counted on the coast, compared to 14% in January and 12% in March. There has never been evidence in the counts of any hard weather influx, however.

Table 6. GREAT CRESTED GREBE: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86 (Mth)	Average
Rutland Water, Leics	191	771	966	705 (Sep)	658
Chew Valley Lake, Avon	445	510	465	530 (Aug)	491
Grafham Water, Cambs	225	350	950	411 (Jan)	484
Firth of Forth	170	263	326	542 (Sep)	325
Queen Mary Resr, Surrey	255	340	348	310 (Jan)	313
Belfast L, Co Antrim/Down	x	x	x	282 (Oct)	282
Aber Ogwen, Gwynedd	x	x	x	260 (Aug)	260
Eyebrook Reservoir, Leics	154	x	353	91 (Dec)	200
Carlingford L, Co Down	x	x	x	199 (Feb)	199
Pitsford Resr, Northants	223	176	139	151 (Sep)	172
Cotswold Water Pk W, Glos	164	162	187	98 (Sep)	153

# Mute Swan *Cygnus olor*

The 1983 spring census resulted in an estimate of 18,750, an increase of 7% over 1978 but a decline of 8% compared to 1955-56. It is considered that the Mute Swan should be able to increase its population in line with other native waterbirds, such as Great Crested Grebe, Canada Goose and Tufted Duck. Increases are, however, only occurring in certain areas, notably the counties bordering the south coast, parts of eastern and northern England, and north-east Scotland. Elsewhere, particularly in areas with heavily-fished lowland river systems, such as the Thames and Trent, the numbers are stable or declining (Ogilvie 1986a). Between 3,000 and 3,500 Mute Swans have been dying annually in Britain from lead poisoning from anglers' weights (NCC 1981). The government has now banned the sale and import of lead weights between 0.6 and 56.7 grammes.

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 1981-82 and 85-86. Two sites held over 180 in 1985-86 in addition to those qualifying for the table: Grafham Water, Cambs (195, September) and the River Avon, Fordingbridge-Wiltshire border (186, November).

The west and central European population is estimated at 180,000, the species being largely absent from southern and eastern Europe (Rüger et al. 1986).

Table 7. MUTE SWAN: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Ghesil Fleet, Dorset	1,111	890	740	681	635 (Nov)	811
Ouse Washes, Cambs/Norf	548	621	643	570	477 (Dec)	525
Abberton Resr, Essex*	117	346	427	432	450 (Aug)	354
Christchurch Hbr, Dorset*	334	250	363	345	x	323
Lough Neagh/Beg	(24)	(23)	x	x	314 (Nov)	314
Strangford Lough, Co.Down	294	276	384	242	300 (Oct)	346
Loch of Strathbeg, Gramp	314	309	280	242	263 (Aug)	282
R.Welland: Spalding-						
Borough Fen, Lincs	243	269	265	316	305 (Nov)	280
Stour Estuary, Essex/Suff	195	314	225	165	212 (Jan)	222
Montrose Basin, Tayside	x	245	231	161	223 (Oct)	223
Loch of Harray, Orkney	153	183	234	177	216 (Nov)	192

\* moulting concentration

Bewick's Swan Cygnus columbianus bewickii

The British count total reached a new record level in January 1986, of 7,700, despite the relatively mild conditions in north-west Europe. The colder weather of February did not bring a further influx (see Tables 1, 2 and 4). In Northern Ireland, 468 Bewick's Swans were found during the January Whooper Swan census.

The European population is now estimated at 16,000-16,500 (Beekman et al. 1985; Rüger et al. 1986). Table 8 shows those sites with an average maximum of at least 160 over the last five seasons. Four more places attained that number in 1985-86: Coombe Hill, Glos (260, January); Hickling Broad, Norfolk (202, January); Wet Moor, Somerset (161, January) and Amberley Wildbrooks, W.Sussex (160, January). The peak of over 5,000 on the Ouse Washes in 1984-85 was in February; 4,400 had been present in January. In February 1986 "only" 2,400 were found.

STOP PRESS! 6,160 Bewick's Swans were counted on the Ouse Washes in January 1987!

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

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Ouse Washes	2,842	2,792	3,364	5,227	4,743 (Jan)	3,794
Nene Washes, Cambs	222	600	396	211	937 (Feb)	473
Slimbridge, Glos	576	285	281	421	475 (Mar)	408
Lough Neagh/Beg	(25)	(50)	x	x	338 (Mar)	338
Martin Mere/Ribble Est.	267	220	374	330	410 (Mar)	320
L Foyle, Co.Londonderry	370	128	193	128	293 (Jan)	222
Hampshire Avon	183	173	171	219	236 (Feb)	197
Walmore Common, Glos	380	110	94	167	82 (Dec)	167
Walland Marsh, Kent	182	143	173	x	x	166

Whooper Swan Cygnus cygnus

The census of January 1986 found a total of 16,700 in Britain, Ireland and Iceland (Salmon & Black 1986). That is a big increase over all previous estimates, due partly no doubt to the coverage having been by far the best ever achieved. It is considered that the vast majority of the birds belonged to the Icelandic breeding population. An estimated 1,300 were still in Iceland (A.Gardarsson in litt.); 7,943 were counted in the Irish Republic and 2,377 in Northern Ireland, compared with previous estimates of 4-6,000 for the Irish wintering population (Merne & Murphy 1986); 5,136 were counted in Britain, only slightly more than the 4,751 found in November 1979 (Brazil & Kirk 1979), when migration from Iceland was probably still in progress.

The November indices for Britain show an overall trend of increase, but those for January are more stable. This suggests, either that the proportion stopping off in Britain on their way to Ireland in autumn has increased, or that the proportion staying on in Britain into the winter has decreased.

Table 9 lists all individual places in the U.K. with an average maximum of 160 or more over the last five seasons. The following additional sites held that number in 1985-86: Sandwick, Orkney (264, November - Hogg et al. 1986); R.Teviot, Nisbet, Borders (251, January); Beaully Firth (220, December); Loch Insh, Highland (169, March); Lindisfarne (162, November); Loch Leven (162, November); R.Tweed, Coldstream, Borders (160, March).

The gathering of 2,600 Whooper Swans at Lough Foyle in November 1985 represented 16% of the Icelandic breeding population. The second and third most important sites, Upper Lough Erne and the Lough Neagh/Lough Beg basin, are also in Northern Ireland. A total of 1,629 Whooper Swans were counted in Orkney in November 1985, 10% of the Icelandic population (Hogg et al.). The proportion of young found among these was identical to that in the national census of January 1986 - 22.9%!

Table 9. WHOOPER SWAN: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Lough Foyle	1,110	521	674	1,162	2,597 (Nov)	1,212
Upper Lough Erne,						
Co. Fermanagh	x	x	x	x	876 (Jan)	876
Lough Neagh/Beg	(56)	(14)	x	x	723 (Mar)	723
Loch of Strathbeg	519	633	382	234	508 (Nov)*	455
Strangford Lough	255	124	243	70	83 (Dec)	296
Wigtown Bay	x	x	x	211	281 (Feb)	246
Ouse Washes	161	223	248	230	330 (Feb)	238
Loch Eye/Cromarty F	405	103	62	60	405 (Nov)*	207
R.Eden: Low Crosby,						
Cumbria	x	x	x	x	192 (Jan)	192
L of Spiggie, Shetld	44	336	66	147	327 (Oct)*	184
Ribble Est/Martin M	46	76	177	127	475 (Dec)	180
Paisley/Inchinnan,						
Renf	140	236	113	99	220 (Nov)	162

\* From Hogg et al. (1986).

#### Bean Goose Anser fabilis

The two major sites - the Yare Valley, Norfolk and Carron Valley Reservoir, Central - held peaks of 274 (in January) and 58 (in September) respectively. Only 14 were counted elsewhere in the U.K. in January. The only other site with more than 10 was Kingsbury Water Park, Warwicks, where 20 were surprisingly recorded in March. In contrast, the average number of Bean Geese (mainly of the race rossicus) wintering in the Netherlands between 1979-80 and 1983-84 was 85,900, compared with 47,400 between 1974-75 and 1978-79. All the grey geese showed big increases in that country in the early 1980s (Ebbinge et al. 1986).

#### Pink-footed Goose Anser brachyrhynchus

Despite only average breeding success, with 13.4% young in the winter flocks, the number of Pinkfeet counted in the November census reached a record 134,000 (including additional data from the general monthly counts). The numbers in south-east Scotland were especially high (Ogilvie 1985a, 1986b). The March census total was 105,000, also including data unavailable when the census was initially written up (Salmon 1986a). In March both Pinkfeet and Greylags (see later) are much more dispersed than in November and, although mortality will obviously have occurred, many thousands are probably missed by the counts. Attempts at special March censuses of these species, on top of the standard monthly count, have therefore been discontinued.

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. Two additional sites held over 2,000 in 1985-86: Titchwell, Norfolk (3,500, November) and Roseberry Reservoir, Lothian (3,000, October).



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

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
South Lancs Mosses	36,580	18,410	23,335	21,060	22,990 (Jan)	24,475
Inner Solway Firth	10,247	11,293	16,250	27,000	6,895 (Mar)	14,337
L of Strathbeg	5,900	6,200	7,400	20,200	27,900 (Oct)	13,520
Westwater Resr,						
Borders	12,390	10,680	19,400	8,700	13,780 (Oct)	12,990
L Leven, Tayside	12,460	12,000	11,500	12,670	10,000 (Jan)	11,726
Meikle/Ythan, Gramp	7,950	6,500	17,400	11,400	15,300 (Oct)**	11,710
Wigtown Bay	8,400	7,000	12,000	12,000	17,000 (Mar)	11,280
Montrose Basin	(1,800)	6,130	9,500	9,425	12,000 (Nov)	9,264
Gladhouse R, Loth	12,890	13,700	12,000	2,300	3,800 (Nov)	8,938
The Wash	10,500	5,811	5,500	9,500	8,288 (Jan)	7,920
Scotl Head, Norfolk	x	3,000	8,000	x	9,800 (Dec)	6,933
Aberlady Bay, Loth	6,590	5,165	3,710	4,610	12,500 (Nov)**	6,515
Castle L, Dumfries	1,200	1,200	8,900	6,950	13,400 (Feb)	6,330
Cameron Res, Fife	6,150	3,000	8,000	4,000	8,000 (Dec)	5,830
Dupplin L, Perth*	5,000	5,012	5,570	6,960	6,075 (Nov)	5,723
L of Menteith, Cent	4,340	8,700	4,007	6,010	2,774 (Mar)	5,166
Hule Moss, Borders	1,825	4,500	4,000	5,500	4,400 (Nov)	4,045
Carsebreck, Perth	3,380	4,920	2,840	500	7,200 (Oct)	3,768
Hoselaw L, Borders	4,050	4,100	3,600	2,900	2,700 (Nov)	3,470
Fala Flow, Lothian	(625)	1,068	6,548	3,240	1,352 (Mar)	3,052
Crombie L, Tayside	x	x	5,500	1,500	1,250 (Mar)	2,750
Whitton L, Borders	2,500	2,750	1,900	118	6,000 (Nov)	2,653
Lour, Tayside	500	2,110	3,680	380	5,000 (Mar)	2,334
Cobbinshaw Res, Loth	725	1,415	2,000	4,500	1,550 (Mar)	2,038

\* November/March census data only

\*\* From Hogg et al. (1986)

European White-fronted Goose Anser albifrons albifrons

As with Bewick's Swan, there was no influx during the cold weather of February, except a small one into Sheppey, Kent. The January index (Table 3) was, however, quite high for recent years, and it appears that the numbers reaching Britain have recovered a little from the "slump" of the mid-1970s. These should, however, be put in the context of an average peak of 259,200 in the Netherlands between 1979-80 and 1983-84 (Ebbinge et al. 1986).

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

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Slimbridge	4,508	3,040	3,400	4,200	4,300 (Jan)	3,889
Swale	1,500	1,493	876	1,300	2,570 (Feb)	1,547
Hampshire Avon	1,500	292	385	530	510 (Jan)	643
S.Thames Marshes	635	331	464	360	730 (Feb)	504
Tywi:Dryslwyn, Dyfed	720	320	305	290	x	409
Holkham, Norfolk	170	270	295	240	500 (Feb)	295
Alde Estuary, Suffolk	x	x	x	x	235 (Feb)	235

Greenland White-fronted Goose Anser albifrons albifrons

Following a remarkably good breeding season the total recorded in Britain by the November census increased to 11,000, compared to 9,490 in November 1984. Over half the British birds were aged, and the proportion of young came to 26.7%. The equivalent figure for Wexford Slobbs in Ireland, where a higher proportion of juveniles usually occurs, was 34.4%, with 22.6% in the rest of Ireland. In early April 1986 10,000 were found in Britain, compared with a total (revised slightly in the light of additional data) of 8,952 for spring 1985. The November total of 6,332 on Islay, the main British area, was the season's peak. Elsewhere, the maxima - in November except where stated - were: Rhunahaorine, Kintyre 852; I of Tiree 708; Machrihanish 590; I of Coll 548; Stranraer, Dumfries & Galloway 530; Endrick Mouth, L.Lomond 300 (December) and Loch Ken, Dumfries & Galloway 275. In Ireland, a total of 11,495 Greenland Whitefronts was found in November 1985, and 11,868 in April 1986, of which 7,930 and 7,940 respectively were in the Wexford area. The season's peak for Wexford was 8,259 in February (GWGS 1986; Norriss & Wilson 1986).

The "grand total" for Britain and Ireland in 1985-86 was therefore 22,500, representing the world population of this subspecies. The decline in Wales, from over 1,000 in the early 1960s to under 100 nowadays, has recently been documented by Fox & Stroud (1986)

Greylag Goose Anser anser

A record 110,000 were counted in Scotland and northern England in November, and 55,000 in March (see note about the March counts under Pinkfeet). These are slightly higher than the published figures (Ogilvie 1986b; Salmon 1986), due to the receipt of extra data. The flocks contained 11.2% young, below average, and were concentrated to a greater extent than usual in northern and east-central Scotland (Ogilvie 1985a). A further 7,000 were counted south of Cumbria and Northumberland, presumably feral birds, as are those under July/August and September in Table 1. The largest such concentration in 1985-86 was at Sevenoaks Gravel Pit, Kent, where 676 were counted in September. The biggest record in July or August was of 650 at Salhouse Broad, Norfolk, in August. (There must be at least a thousand feral Greylags among those censused in Galloway, so the total British feral population is probably now 8-10,000.)

Table 12 shows sites with average annual maxima over 2,000, taking monthly count data as well as the November and March censuses. In addition, the following localities held over 2,000 Greylags in 1985-86: Dow Law Dam, Borders (6,350, October); Beaulieu Firth, Highland (5,550, December) (Hogg et al. 1986); Eden Estuary, Fife (3,200, March); inner Firth of Tay (2,750, November); Eden/Eamont confluence, Cumbria (2,160, January) and Loch Ascog, Bute (2,000, December).

In a full census of the Irish population in March 1986 3,750-3,850 were found (including 625 feral birds, all but seven in Northern Ireland), compared with a total of 675 in January 1967 (Merne 1986). The main Irish haunt is Strangford Lough, which held 633, wild and feral, in February 1986.

As with Pinkfeet, the British and Irish wintering birds represent the entire Icelandic breeding stock. Although the population breeding in Norway, Denmark and Germany and wintering in north-west continental Europe and Spain has increased from 30,000 in the 1960s to 120,000 in 1983-84 (Ebbinge et al. 1986), there is no evidence that a significant number of these reach Britain.

Table 12. GREYLAG GOOSE: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Loch Eye	38,000	10,000	12,000	(4,970)	10,000 (Oct)	17,500
L Davan/Kinord/R.Deer, Grampn	3,980	9,500	6,000	7,000	19,900 (Nov)*	8,296
Tay/Isla, Blairgowrie	4,140	6,176	5,212	2,351	18,295 (Nov)	7,235
Loch of Skene, Grampn	5,700	4,500	4,100	5,060	8,500 (Nov)	5,572
Loch of Strathbeg	4,750	9,600	3,600	1,750	4,600 (Nov)	4,860
Drummond Pond**	3,440	3,950	4,500	4,810	7,500 (Nov)	4,840
Haddo House L, Grampn	3,500	8,900	4,600	4,200	1,100 (Nov)	4,460
Roselaw L, Borders	4,050	4,100	3,600	2,900	5,700 (Oct)	4,070
Lindisfarne	4,500	3,000	3,010	3,000	3,500 (Nov)	3,402
Carsebreck, Perth	4,050	2,180	4,310	4,000	1,688 (Nov)	3,246
L of Spynie, Grampn	1,580	2,790	1,349	3,170	6,000 (Nov)	2,978
Wigtown Bay	(400)	(244)	3,100	729	5,000 (Feb)	2,943
Holborn Moss, N'h'bld	3,580	1,600	3,800	1,790	2,200 (Nov)	2,594
Stranraer Lochs	1,800	2,600	3,100	2,400	2,900 (Nov)	2,560
Lintrathen/Kinordy L, Tayside	1,800	1,000	6,200	500	3,100 (Oct)	2,520
Loch Leven	3,000	2,500	2,200	500	3,000 (Jan)	2,240
Findhorn Bay, Gramp	1,400	2,400	2,600	2,400	2,300 (Mar)	2,220
Castle L, Lochmaben	800	1,900	2,150	3,100	2,850 (Feb)	2,160
Fedderate Resr, Gramp**	1,400	1,800	2,000	2,400	2,700 (Mar)	2,060

\* Hogg et al. (1986)

\*\* November/March data only

#### Canada Goose Branta canadensis

The steady increase, averaging 8% per annum, documented by Owen et al. (1986), continues. Lack (1986) estimated the British population at 34,000 during the Winter Atlas period, 1981-82 to 1983-84; Ogilvie (1985b) put the 1984 post-breeding population at near to 35,000; Owen et al. (1986) predicted 39,000 for 1985. With 31,400 actually counted in September 1985, that last prediction is probably not an overestimate.

Concentrations of over 1,000 Canada Geese were found at four resorts in 1985-86: Stratfield Saye, Hampshire (1,750 August/September); Kedleston Park, Derbyshire (1,350 October); Bewl Bridge Reservoir, Kent/E.Sussex (1,150 September) and Livermere, Suffolk (1,102, February). A further 15 held over 600. Over 24,000 were counted in the Late Summer Survey, although none of the major sites other than Stratfield Saye carried their peak numbers in July or August. The moult gathering on the Beaulieu Firth reached 612 in June (Hogg et al. 1986). The main site in Northern Ireland is Lower Lough Erne, where 371 were counted in February.

Canada Geese were reported as having bred at 215 of the 1,076 sites with Late Summer Survey data. All but 10 of these were in England, with 4 in Perth & Kinross District.

#### 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 10.7% young (Ogilvie 1986b). Otherwise only three important resorts of this population were covered: the Isle of Tiree (510, April); Loch Sween, Argyll (260, November) and the Isle of Coll (235, February).

At Caerlaverock, on the Solway Firth, where the Svalbard population spends most of the winter, the peak was 10,400, compared with 10,500 in 1984-85. The 1985 breeding season was below average, with 9.6% young among the birds reaching Britain. An October count of 115 Barnacle Geese at Aberlady Bay in the outer Firth of Forth probably comprised birds on migration to Caerlaverock; 39 remained in November.

For several years now a small flock of Barnacle Geese has regularly appeared on the island of Skomer, Dyfed, far off the normal range. Last season they numbered 51. Since no ringed birds have been found among them it is probable that they are neither feral nor from the Svalbard population (10% of which is ringed). They most likely belong to the Greenland population, whose nearest regular wintering area is in Co. Dublin, c200 km NNW.

Dark-bellied Brent Goose Branta bernicla bernicla

For the first time, virtually complete coverage was achieved throughout the British range, largely by means of a census involving special recording cards in December and January. With the late receipt of extra data the totals for those months are now put at 90,500 and 89,700 respectively. These cannot be compared to previous years without caution, as earlier coverage was slightly less complete, but there has been only one higher estimate in Britain before - 93,000 in January 1983, following a "bumper" breeding season. The overall proportion of young in the British wintering flocks of 1985-86, based on age counts in all parts of the range, was 27%, though with a wide variation between areas (Ogilvie 1986c).

The Wash was not counted in February, because of unfavourable conditions, and that month's total count (Table 1) is much lower than January's. Data from sites covered in all months (Table 4), however, show that there was an influx to Britain in February, presumably because of the cold continental weather. This is confirmed by the very high March total in Table 1, almost at the level of December and January's. The count of 23,000 on the Wash in March represented a quarter of the British population, and 12% of the world population, which amounted to an estimated 190,000 in 1985-86.

Table 13 lists all sites with an average maximum of over 2,000 between 1981-82 and 1985-86. The following places also held 2,000 or more during 1985-86: Medway Estuary (2,659, January); Swale (2,040, February); Orwell Estuary (2,000, March).

The December and January censuses, and the sample age counts, have been repeated in 1986-87. The 1986 breeding season was an almost complete failure, the fifth in ten years (Salmon 1986).

Table 13. DARK-BELLIED BRENT GOOSE: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
The Wash	(6,982)	24,297	17,039	14,219	23,071 (Mar)	19,926
Foulness/Leigh, Essex	19,961	18,208	21,025	23,810	16,307 (Oct)	19,682
Blackwater Est., Essex	9,003	11,500	(5,690)	13,410	10,300 (Jan)	11,053
Chichester Hbr, Sussex	8,632	10,547	11,849	8,859	11,764 (Dec)	10,330
Hamford Water, Essex	4,000	8,000	10,000	9,500	6,000 (Feb)	7,500
Langstone Hbr, Hants	6,185	7,536	7,380	7,000	8,646 (Jan)	7,349
Crouch/Roach, Essex	3,550	5,059	3,960	8,990	5,185 (Feb)	6,109
Scolt Head, Norfolk	2,000	4,000	4,250	4,000	6,000 (Feb)	4,050
Blakeney Hbr, Norfolk	X	3,200	5,000	4,000	3,000 (Dec)	3,800
Colne Estuary, Essex	1,106	2,500	3,700	4,690	5,265 (Jan)	3,452
Holkham, Norfolk	X	4,000	4,250	2,435	2,100 (Mar)	3,196
Pagham Hbr, W.Sussex	1,863	3,093	2,477	4,219	3,188 (Dec)	2,968
The Humber	(156)	(679)	2,135	2,765	2,559 (Dec)	2,486
Exe Estuary, Devon	1,700	1,402	1,895	2,493	3,729 (Dec)	2,244
N.Solent, Hampshire	1,532	2,299	1,832	1,905	3,216 (Jan)	2,157

Light-bellied Brent Goose Branta bernicla hrota

A census of Ireland, the main wintering area of the Greenland/Canada breeding population, in November 1985 resulted in a record estimate of 24,100, containing 24% young (M.O'Briain; Brazil et al. 1986). The peak numbers at the major sites in Northern Ireland in 1985-86 were: Strangford Lough 15,872 (October); Lough Foyle 1,562 (October); Carlingford Lough (407, January). The largest flock of this population reported in Britain was of 143 at Loch Gruinart, Islay, in October. At Lindisfarne, which receives birds from the Spitsbergen population, 3,100 were found in December, with 32% young.

Shelduck Tadorna tadorna

The January total of 75,000 in Britain was the highest on record, representing 30% of the north-west European population, now estimated at 250,000 (Rüger et al. 1986). This was partly the result of improved coverage, however, since the indices for January 1979 and 1982 (both cold winters) were higher, but it looks as though the estimate of 75,000 for the actual British population (Owen et al. 1986) may if anything be too low. Despite the cold weather in February, which might have been expected to bring an influx from the Continent, the numbers declined.

The total of 2,764 counted in Northern Ireland in January 1986 (including 2,221 at Strangford Lough) compares with an estimate of 6,500-8,000 for the whole of Ireland (Lack 1986). Rüger et al. (1986), however, consider that an estimate of 11,500 in January for Ireland, based on the sum of five-year site means, would be "certainly conservative".

Table 14 lists the sites where an average maximum of at least 2,500 were recorded between 1981-82 and 1985-86.

The coast was not as well covered as inland areas for the 1985

Late Summer Survey, and the total count of 7,511 is likely to be a great underestimate, despite the absence of birds moulting in Germany. The well known moulting ground at Bridgwater Bay held 1,276 Shelducks on 23rd July. Coverage of the Humber in July and August was incomplete, but note the very high September count there. On 23rd June 1985, 5,710 were found on the Dee Estuary, a record count of this long-standing pre-moult gathering. The east shore of the Wash was covered in mid-July, and 1,983 Shelducks found. A count of 1,710 was made between Bo'ness and Grangemouth, Firth of Forth, in September.

Table 14. SHELDUCK: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
The Wash	17,233	16,948	13,700	12,011	21,309 (Dec)	16,794
Mersey Estuary	12,170	7,110	6,800	7,605	4,000 (Jan)	7,537
Dee Estuary	3,740	4,975	5,745	6,540	5,670 (Feb)	5,334
The Humber	2,408	1,568	6,495	3,874	4,492 (Sep)	3,765
Chichester Hbr	4,552	2,255	2,571	3,126	2,556 (Jan)	3,012
Morecambe Bay	3,230	1,948	(665)	4,236	2,476 (Feb)	2,973
Hamford W, Essex	5,500	863	3,050	2,360	3,000 (Jan)	2,955

#### Mandarin Aix galericulata

Only 200 were found in the wildfowl counts, out of a British population estimated at 850-1,000 pairs (Davies 1985), which would imply a post-breeding population of roughly 3,000 birds. The Late Summer Survey located as many as the winter counts. Breeding was reported from nine counties: Gloucestershire, Hampshire, West Sussex, East Sussex, Surrey, Berkshire, Northants, Bedfordshire and Lancashire. The largest flock reported during the season was 100 near Godalming, Surrey, in February.

#### Wigeon Anas penelope

The January 1986 total of 280,000 was not far short of the record level of 320,000 during the cold weather of January 1985. The estimate of 200,000 in Britain (Lack 1986; Owen et al. 1986) may soon need revising again! Of the total of 14,300 counted in N.Ireland in October 1985, 85% were on Lough Foyle, although that site failed to attain the very high level of the previous five years. The October index for Britain showed a decline for the third successive year, despite conflicting trends at major sites in northern England and Scotland, where the bulk of the birds are at that time (see below).

The estimate of the north-west European population has been revised to 750,000 (Rüger et al. 1986). The trend in January numbers between 1966-67 and 1982-83 was generally uniform, as was that in Britain (Table 3), but fluctuations occurred as birds moved into southern Europe in hard winters. (In contrast to the trend for north-west Europe as a whole, Britain receives a net increase in cold weather.)

In Table 15 all sites with an average maximum of 7,500 or more are listed. The autumn peak at Lindisfarne in 1985 was again far

below the level of the 1970s and early 1980s, whereas record counts were made on the Dornoch Firth in October and the Ribble Estuary in January. The middle Yare Marshes, Norfolk, which do not qualify for the table, held 7,500 in January 1986.

The general status of Wigeon was discussed at a seminar organised by the British Association for Shooting and Conservation in November 1986, at which the Wildfowl Trust made a series of presentations. Extensive reviews of the movements, numbers and distribution of British and Irish Wigeon are currently in preparation by the Trust, which is also initiating a study, under contract to the Nature Conservancy Council, to see if the changes in numbers in northern England and southern Scotland are interrelated. It is expected that this will involve colour marking at a number of sites.

Table 15. WIGEON: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Ouse Washes	39,368	28,073	25,456	23,755	34,495 (Mar)	30,319
Lough Foyle	21,000	28,475	25,797	26,310	12,262 (Oct)	27,769
Lindisfarne	25,410	41,000	30,000	10,000	12,495 (Nov)	23,781
Ribble Estuary	7,242	13,823	11,655	17,600	24,150 (Jan)	14,894
Elmley, Kent	18,500	14,000	5,737	19,500	5,610 (Jan)	12,667
Abberton Resr	5,000	4,070	3,300	35,000	10,180 (Jan)	11,510
Cromarty Firth	15,022	9,380	10,215	9,705	12,364 (Oct)	11,337
Dornoch Firth	12,026	8,275	12,060	8,310	14,925 (Oct)	11,118
Mersey Estuary	10,800	9,050	5,800	9,300	11,650 (Jan)	9,320

#### Gadwall Anas strepera

The steady, substantial increase of the last 25 years shows no sign of abating, the British count total having exceeded 5,000 for the first time, and the October and December indices having reached record levels. Rüger et al. (1986) record an increase for western Europe averaging 15.2% per annum between January 1967 and January 1983, and consider that favourable factors may have included the increase in the number of impounded waters, the management of reserves and enrichment of water through the leaching of fertilisers. An estimated 12,000 Gadwall wintered in north-west Europe in 1982-83, but these are not considered separable from the Black Sea/Mediterranean population (Rüger et al. 1986), hence the much higher criterion for international importance in the Appendix. The massive increase at Rutland Water renders that site internationally important in any case, the 1985-86 peak representing 13% of the 1982-83 level for north-west Europe.

Fewer than 2,000 Gadwall were found in the Late Summer Survey, perhaps suggesting that some birds had yet to move to their moulting sites from small, unrecorded areas. The Gadwall is also particularly difficult to count at that time, and some may have been missed. The largest July and August counts were from Rutland Water (396, mid-August), Minsmere, Suffolk (360, mid-August) and Chew Valley Lake (225, mid-August). Rutland generally has higher numbers in late autumn, but all the counts in the table from Chew



Valley for 1982-83 to 85-86 are for July or August.

Table 16 shows the top ten U.K. sites. The main area in N.Ireland is Strangford Lough, which held all 116 counted in the Province in December 1985.

Major reviews of the breeding, post-breeding and winter status of Gadwall in Britain and Ireland are nearing completion by the Wildfowl Trust.

Table 16. GADWALL: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Rutland Water	380	493	947	1,109	1,577 (Nov)	901
Gunton Park, Norfolk	630	427	200	144	327 (Sep)	346
Slimbridge	440	250	210	237	321 (Jan)	291
Abberton Resr	194	280	332	325	169 (Nov)	260
Narford Lake, Norf	200	274	x	x	x	244
Chew Valley Lake	(37)	285	215	142	225 (Aug)	217
Stanford Meres, Norf	290	47	358	77	245 (Oct)	203
Loch Leven	175	169	220	210	195 (Sep)	193
Hickling Broad, Norf	228	196	254	146	92 (Dec)	183
Hornsea Mere, H'side	117	228	222	105	235 (Oct)	181

#### Teal Anas crecca

The midwinter numbers showed a steady increase between the mid-1960s and late 70s, but this was checked in the early 80s. The cold weather of 1981-82, in particular, apparently caused many birds to leave Britain, following the strategy detailed by Ogilvie (1983). In north-west Europe as a whole, however, the increase was maintained at least up to January 1983 (Rüger et al. 1986). Although the exceptional November total of 1984 was not repeated, the December and January level in 1985-86 rose again slightly.

Taking into account the species' liking for small waterbodies and its ability to remain concealed in cover, as well as its trend of increase, Rüger et al. (1986) estimated the north-west European population at 400,000. Table 17 shows all U.K. sites with average maxima of 2,000 or more between 1981-82 and 85-86. In addition, the Dornoch Firth held 2,000 in October 1985. Note that the decline on the Mersey Estuary discussed in last year's report has continued; the 1985-86 peak was the lowest since 1970-71. The largest count in 1985-86 was on the neighbouring Dee Estuary.

The returns from the Late Summer Survey were low, the biggest being 340 at the Humber Wildfowl Refuge in August. (The record of 465 at Minsmere given in the last report was an error; the count was only 150.)

Table 17. TEAL: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Mersey Estuary	35,000	26,100	11,050	8,580	4,300 (Dec)	17,006
Ribble Estuary	5,274	4,808	4,486	4,800	3,076 (Jan)	4,489
Hamford Water	5,400	2,575	5,700	3,500	5,000 (Dec)	4,435
Martin Mere	6,000	4,000	4,000	3,000	3,400 (Dec)	4,080
Dee Estuary	2,486	2,710	3,815	3,865	5,720 (Nov)	3,719
Ouse Washes	2,970	4,319	2,513	1,934	3,177 (Mar)	2,983
The Humber	1,370	3,663	2,917	1,397	2,904 (Sep)	2,450
Derwent Ings	4,000	1,183	1,919	1,966	2,573 (Feb)	2,328
Milford Haven/ Cleddau, Dyfed (1,371)		1,683	x	2,867	2,450 (Feb)	2,318
Lough Neagh/Beg	x	x	x	x	2,290 (Dec)	2,290
Woolston Eyes, Ches	1,218	4,590	2,500	1,600	1,530 (Mar)	2,288
Chichester Harbour	3,253	2,235	1,724	1,936	2,169 (Jan)	2,263
Teesmouth	1,652	1,788	2,150	4,400	1,030 (Dec)	2,204
Elmley Marshes	2,000	1,797	3,787	1,618	1,683 (Nov)	2,177
Burby Inlet, W.Glam	1,325	464	3,050	3,655	1,670 (Dec)	2,033

#### Mallard *Anas platyrhynchos*

The remarkable total count of nearly 200,000 in December, compared with a normal peak count of 150-160,000, was only partly a function of improved coverage. The index level for that month, 102, has only been attained once before, in 1965-66, while the December total at sites covered in all seven months of 1985-86 was 12% higher than those for November and January. The December numbers appear to have recovered from a decline in the early 1970s (Table 3). The January index was also amongst the highest on record, but the long-term trend for that month is relatively stable. The September index was well within the narrow limits of the last 25 years.

The actual peak number present at any one time in Britain is estimated at 600-700,000, with a post-breeding population (before immigration) of at least 500,000 (Owen *et al.* 1986). Allowing for probable turn-over and a substantial number of released birds not being included in the estimate, these figures are not inconsistent with the 600-700,000 believed to be shot annually between September and February (Harradine 1985).

Table 18 shows sites with average maxima of 2,000 over the last five seasons. Note the high December counts at some places. Two further localities held over 2,000 in 1985-86: the Cromarty Firth (2,631, November) and Hornsea Mere (2,500, December). On the Dee Estuary, 2,700 were counted in June 1985. The largest counts from the Late Summer Survey were 1,949 at Rutland Water and 1,850 at Leighton Moss, Lancashire, both in mid-July.

The north-west European population is estimated at around 5,000,000 in January, with a steadily increasing annual trend (Rüger *et al.* 1986).

Table 18. MALLARD: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Ouse Washes	6,262	5,547	6,377	3,781	7,815 (Dec)	4,970
The Humber	4,190	6,001	5,687	4,838	6,311 (Dec)	5,429
Morecambe Bay	(1,591)	(1,151)	(1,159)	4,037	4,463 (Nov)	4,250
Dee Estuary	2,830	3,750	5,045	4,480	4,450 (Dec)	4,111
The Wash	4,977	4,745	2,360	2,502	5,949 (Dec)	4,107
Martin Mere	3,000	3,000	3,000	3,200	4,600 (Jan)	3,960
Lr Derwent Ings	8,142	1,559	1,700	2,500	5,240 (Feb)	3,828
Lough Neagh/Beg	(242)	(203)	x	x	3,778 (Dec)	3,778
Abberton Resr	2,500	5,900	4,525	1,450	2,100 (Sep)	3,295
Lough Foyle	3,100	2,387	3,024	3,006	2,965 (Oct)	2,896
Elmley Marshes	2,300	3,744	4,547	1,877	1,839 (Dec)	2,862
L of Strathbeg	1,750	1,850	2,100	3,800	3,450 (Jan)	2,590
Rutland Water	2,544	2,162	2,240	2,781	2,832 (Sep)	2,512
Loch Leven	3,686	2,200	1,220	3,288	1,737 (Sep)	2,426
Stour Estuary	3,000	2,270	2,485	1,683	1,706 (Dec)	2,229
Livermere, Suff	x	x	x	2,000	2,300 (Sep)	2,150
Firth of Forth	2,091	(1,185)	(867)	(1,352)	2,165 (Dec)	2,128
Slimbridge	2,400	1,500	2,300	2,000	2,400 (Dec)	2,120
Mersey Estuary	2,290	2,283	1,520	1,595	2,550 (Jan)	2,048

Pintail Anas acuta

The exceptional early autumn numbers of 1984 in Britain were not repeated, but the peak winter count was the second highest ever. This was, however, the result of improved coverage; the indices of abundance for December (the peak month in Britain) show a fairly similar trend to those for north-west Europe as a whole in January (Rüger et al. 1986), with high levels in the mid-1970s. A slight recovery in N.W. Europe around 1980 was not reflected here, though.

The north-west European population is now estimated at 70,000, based on the January 1983 level (Rüger et al. 1986), rather than the 75,000 of Scott (1980), based on the mid 1970s. Table 19 shows all sites with an average maximum of 700 or more. The Duddon Estuary, Cumbria, held 820 in November 1985.

Table 19. PINTAIL: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Mersey Est	11,440	13,750	8,000	16,000	9,000 (Jan)	11,638
Dee Estuary	5,395	7,360	11,265	6,280	6,800 (Oct)	7,420
Morecambe Bay	(138)	(804)	(253)	2,869	2,889 (Dec)	2,879
The Wash	2,943	1,822	1,249	4,397	2,866 (Jan)	2,656
Martin Mere	2,000	3,700	2,300	720	1,500 (Oct)	2,044
Burry Inlet	2,426	2,535	1,332	2,290	1,180 (Dec)	1,952
Ouse Washes	978	1,123	769	802	1,300 (Mar)	995
Ribble Est	1,273	689	760	564	279 (Jan)	713

Shoveler *Anas clypeata*

The October index was at a record level, that for November slightly below the recent average.

The total recorded in the Late Summer Survey - 2,500 - was surprisingly low in view of the estimated 1,000-1,500 pairs breeding in Britain (Sharrock 1976; Owen et al. 1986). It may be that the native birds move south earlier than has been thought. By far the highest July/August count was at Rutland Water, with 424 in mid August.

Rüger et al. (1986) retained Scott's (1980) estimate of 100,000 Shoveler breeding, wintering or migrating through north-west Europe (hence the criterion of 1,000 for international importance), and estimated the January population at 40,000. Table 20 shows the U.K. sites with an average peak of 300 or more. Three other places exceeded that level in 1985-86: Foulness/Potton Island (463, November); Queen Mary Reservoir, Surrey (356, February) and Island Barn Reservoir, Surrey (312, January). The largest count in Northern Ireland was of 141 at Strangford Lough in February.

Table 20. SHOVELER: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Rutland Water	317	443	616	612	655 (Sep)	529
Ouse Washes	296	685	397	403	505 (Mar)	457
Woolston Eyes	516	453	362	427	510 (Oct)	453
Loch Leven	696	60	610	595	177 (Sep)	427
Abberton Reservoir	485	612	303	313	379 (Sep)	419
Staines Resr, Surrey	99	638	284	564	275 (Jan)	372
K G VI Resr, Surrey	299	539	391	219	365 (Oct)	362
Q Mother Resr, Berks	x	x	x	422	222 (Feb)	322

Pochard Aythya ferina

The January index was the lowest since 1965, continuing a trend of decrease which began in the mid 1970s, and which is mirrored in Europe as a whole. This decline, in the face of an increase both in suitable habitat and in its favourite food item - the Zebra Mussel Dreissena polymorpha - in central Europe, is thought to have resulted from severe winters and, possibly, adverse factors on the Russian breeding grounds. The counts in southern Europe show no increase in hard winters to compensate for the decline in north-west Europe. It is believed that a sizeable proportion of the north-west European wintering population occurs on relatively small, uncounted waters, and the estimated total has been revised to 350,000 (Rüger et al. 1986). Five per cent of that number were counted at Lough Neagh/Beg in November 1985.

Table 21 lists all U.K. sites with an average maximum of 750 or more Pochard. In addition, Radipole Lake, Dorset, held 1,100 in January 1986. The Abberton peaks are all moulting concentrations, as are some of those at Rutland Water. The August 1985 count at Abberton represented a third of the entire Late Summer Survey total.

There was a big influx of Pochard into Cheshire as the February ice thawed: Rostherne Mere (which as normal had remained open) and Woolston Eyes (10 km away) held 3,400 between them on one day in early March.

Table 21. POCHARD: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Lough Neagh/Beg	(2,480)	(2,535)	x	x	17,346 (Nov)	17,346
L of Harray, Orkney	1,491	4,500	4,300	1,401	1,549 (Nov)	2,648
Abberton Reservoir	896	2,450	2,525	2,700	2,024 (Aug)	2,119
Ouse Washes	1,310	1,607	1,901	2,355	1,975 (Feb)	1,829
Kingsbury/Coton, Warw	1,226	2,300	1,184	1,700	1,500 (Feb)	1,581
Cotswold W.Pk E, Glos	1,450	1,687	1,897	886	1,806 (Jan)	1,546
L of Boardhouse, Ork	1,061	1,105	1,505	2,358	627 (Oct)	1,331
Cotswold W.Pk West	1,438	762	1,497	1,475	1,138 (Jan)	1,262
Rostherne Mere, Ches	650	651	480	1,273	1,900 (Mar)	991
Slimbridge	980	1,020	840	900	1,172 (Feb)	982
Woolston Eyes	157	765	1,420	359	1,716 (Mar)	883
Lower Derwent Ings	50	23	2,250	1,678	390 (Mar)	878
Loch Leven	760	1,160	1,648	326	280 (Nov)	835
Staines Reservoir	1,100	224	731	661	1,060 (Feb)	755

# Tufted Duck *Aythya fuligula*

The mid-winter count totals for Britain were the highest ever. This is apparently a function of the improved coverage, however, since the indices of abundance (Table 3) were at their normal recent level.

The January indices for north-west Europe show no significant trend, but the estimated total has been revised to 750,000 for the same reason as with Pochard (Rüger et al. 1986).

Table 22 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 1985-86: Rostherne Mere, Cheshire (1,046, March); the Inner Moray/Inverness Firth (894, February); Cottam Power Station Lagoons, Notts (780, March); King George V Reservoir, Gt. London (764, August); Hillend Reservoir, Lanark (718, September); Draycote Reservoir, Warwicks (675, February); Ouse Washes (675, February); Radipole Lake (672, January); Henley Road Gravel Pit, Oxon (650, December).

The total number found in the Late Summer Survey - 32,000 - was exceeded only by the numbers of Mallard and Coot, and emphasises the great importance of Britain's breeding population. As with Pochard, all the figures in the table for Abberton Reservoir, and some of those for Rutland Water, represent moult gatherings.

As usual in cold weather, a small movement to the coast occurred in February, the proportion counted there amounting to nearly 10%, compared to 5% in January.

Table 22. TUFTED DUCK: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Lough Neagh/Beg	(1,853)	(1,208)	x	x	6,442 (Jan)	6,442
Loch Leven	4,560	3,455	4,830	1,463	3,310 (Sep)	3,523
Rutland Water	1,804	2,380	3,062	3,379	3,000 (Aug)	2,725
Abberton Reservoir	2,670	3,130	3,025	2,700	2,200 (Aug)	2,745
Loch of Harray	1,322	2,279	1,483	1,267	1,447 (Nov)	1,906
Kingsbury W. Pk/Coton	1,605	1,514	1,055	1,417	1,620 (Nov)	1,442
Loch of Strathbeg	1,350	1,950	1,150	1,100	550 (Sep)	1,220
Wraysbury GPs, Berks	1,343	1,512	1,267	(741)	630 (Dec)	1,188
Queen Mother Resr	x	x	x	1,036	1,029 (Feb)	1,033
Walthamstow R, Lond	1,037	820	737	1,031	894 (Feb)	904
Firth of Forth	1,854	571	379	503	492 (Feb)	759
Wraysbury Res, Surrey	893	(30)	210	(193)	605 (Aug)	749
Pitsford Res, N'hants	985	721	568	770	403 (Oct)	690
Staines Reservoir	500	605	853	442	807 (Mar)	653
Shustoke Res, Warws	930	279	165	1,600	221 (Mar)	639
Tophill Low R, H'side	766	486	695	660	520 (Feb)	624

# Scaup *Aythya marila*

The January index for Britain has hardly improved since its "nadir" of 1984, and there are no signs that the numbers will recover to the level of the late 1960s and early 70s.

Rüger et al. (1986) were unable to produce reliable trends or a recent population estimate for Scaup in north-west Europe as a whole, because of inconsistencies in the coverage of key coastal areas, notably the western Baltic. (The same applies to other seaducks.)

As usual in cold weather there was a small influx to southern Britain in February 1986.

Table 23 shows British and Irish sites with average maxima of at least 100 Scaup since 1981-82. Note the relatively stable trend at most sites, suggesting that the recent slight increase in the indices of abundance may be the result of hard weather influxes at minor sites. Over 100 Scaup were recorded at two localities in the Moray Basin, apart from Edderton Bay, during the 1985-86 Britoil/RSPB surveys: Longman Bay (145, February) and the Cromarty Firth (128, December). Lough Neagh/Beg is the only U.K. area of International Importance, and by far the most important inland site in Europe..

A detailed analysis of the status of Scaup in Britain and Ireland over the last 25 years is nearing completion by the Wildfowl Trust.

Table 23. SCAUP: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Lough Neagh/Beg	x	x	x	x	1,712 (Mar)	1,712
Largo Bay, Fife	2,680	717	1,400	1,100	x	1,474
Inner Solway Firth	(300)	1,244	1,144	1,709	*1,400 (Sep)	1,374
Loch Indaal, Islay	500	*1,200	770	1,189	1,505 (Jan)	1,033
Carlingford L, Co.Down	*1,000	*950	x	1,050	720 (Jan)	930
Belfast Lough	x	x	450	x	344 (Feb)	397
Edderton B, Dornoch F	418	325	230	495	**311 (Apr)	356
L Ryan, Dumf & Galloway	170	210	280	160	x	205
Dee Estuary	290	221	14	135	128 (Dec)	158
Inner Firth of Clyde	226	87	46	166	99 (Mar)	125

\* Scottish/Irish Bird Reports      \*\* Britoil/RSPB

# Eider *Somateria mollissima*

The winter numbers in Britain were estimated at 50,000 by Owen et al. (1986), but this appears to have been an underestimate, owing mainly to incomplete records from Orkney and Shetland. In Lack (1986) regional estimates are summed to give a total of 70,200 for Britain, including 5,000 in Orkney and 8,800 in Shetland, which is considered within 10,000 of the true value. A further 2,200 are estimated for Ireland, of which the great majority are in the north. During Winter Atlas fieldwork in December 1984 and January 1985 a total of only 2,500 Eiders were found along 1,900 km of normally uncounted coastline around Skye, Wester Ross and west Sutherland (Moser et al. 1986)

Table 24 shows sites with average maxima of at least 1,500 Eiders between 1981-82 and 85-86. In addition, 1,800 were found at Sumburgh, Shetland, in June 1985 (Hogg et al. 1986). The largest flock in Northern Ireland was 123 at Lough Foyle. The Late Summer Survey confirmed Murcar as the most important moulting site, followed by the Firth of Forth, with 3,208, and Lindisfarne, 2,816, in July/August.

Table 24. EIDER: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Outer Firth of Tay	8,700	(700)	14,100	(1,000)	(5,000)	11,400
Murcar, Grampian	9,700	9,500	8,000	9,000	5,300 (Aug)	8,300
S.Walney I, Cumbria	4,400	5,000	4,000	6,122	4,346 (Oct)	4,774
Lindisfarne	3,085	5,900	3,000	3,000	3,020 (Feb)	3,601
Firth of Forth	4,472	3,959	2,325	3,659	3,515 (Oct)	3,586
Inner Firth of Clyde	3,600	2,600	1,601	3,501	2,560 (Sep)	2,772
Loch Fleet	2,400	2,000	x	3,000	**1,608 (Oct)	2,252
Rattray Head, Grampn	4,250	1,500	x	650	*1,200 (Sep)	1,900
Ythan Est, Grampn	1,962	1,670	2,000	1,316	1,689 (Sep)	1,727
Fraserburgh, Grampn	2,600	1,780	x	650	1,480 (Jan)	1,677
Montrose B, Tayside	x	1,350	x	1,679	1,840 (Feb)	1,623

\* From Hogg et al. (1986)      \*\* Britoil/RSPB

## Long-tailed Duck *Clangula hyemalis*

The maximum number found in the Moray Firth by the Britoil/RSPB surveys was 4,500 in April, compared with 10,100 in 1983-84 and 15,000 in 1984-85. The Burghead Bay roost contained 3,358 in March 1986. Elsewhere the highest reports were from Broad Bay, Lewis (1,000, December) and Bluemull Sound, Shetland (613, December) (Hogg et al. 1986); Firth of Forth (312, November), Loch of Stenness (280, January), Balmedie, Grampian (255, December) and Water Sound, Orkney (212, March).



Common Scoter Melanitta nigra and Velvet Scoter M. fusca

A peak of 2,518 scoters (Common and Velvet combined) was recorded in the Moray Firth in October, including 1,547 in Burghead Bay. Velvet Scoters numbered 580 in Burghead Bay in October, but the species were not otherwise separable (Britoil/RSPB). The detailed results of the 1981-82 and 82-83 Moray Firth seaduck surveys have just been published, and show that the majority of the scoters occurred within 4-5 km of the shore, mainly in water less than 10m deep. The normal peak in the Moray Firth since these surveys began in the mid 1970s has been 5-10,000, but there is considerable variation from year to year (Campbell et al. 1986).

Elsewhere the highest counts of Common Scoters in 1985-86 were at Murcar (3,000, July), Dundrum Bay (2,720, January), St Andrews Bay, Fife (1,600, February) and the Firth of Forth (1,121, November), and of Velvet Scoters at Murcar (155, August) and the Firth of Forth (112, March).

A count of 2,020 Common Scoters at Dundrum Bay in February 1985 was inadvertently omitted from the 1984-85 Report.

Goldeneye Bucephala clangula

Although the January trend for Britain has been fairly uniform since the mid-1970s (see Table 3), the March counts fluctuate considerably; March 1986 had relatively high numbers. Lough Neagh overshadows all other British and Irish sites, the November 1985 figure representing 1.6% of the revised estimate of 300,000 for the north-west European population (Rüger et al. 1986).

Breeding was attempted at 66 sites in Scotland in 1985, 49 of them successful (Hogg et al. 1986).

STOP PRESS! The December 1986 count of Goldeneye at Lough Neagh was a record 9,294 - one of the highest counts ever made in Europe and 3% of the north-west European population.

Table 25. GOLDENEYE: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Lough Neagh	(323)	(826)	x	x	4,851 (Nov)	4,851
Firth of Forth	1,278	1,549	2,017	(881)	996 (Feb)	1,491
Abberton Reservoir	610	503	431	575	364 (Mar)	497
Firth of Clyde	535	405	418	359	706 (Mar)	484
Blackwater Estuary	799	226	269	639	329 (Feb)	453
Inverness Firth	348	275	268	598	497 (Jan)	397
Strangford Lough	195	312	400	429	553 (Mar)	379
Belfast Lough	x	x	x	x	372 (Mar)	372
Cromarty Firth	271	233	511	352	445 (Feb)	363
Tweed Estuary	x	x	x	x	287 (Jan)	287
Windermere	239	273	x	287	329 (Nov)	282
The Wash	359	138	184	352	258 (Jan)	258
Nigg Bay, Aberdeen	152	196	279	370	395 (Jan)	256
Morecambe Bay	288	74	261	315	349 (Feb)	256
L of Auchlossan, Grampn	x	x	x	250	x	250

Smew Mergus albellus

The numbers counted in February (165), after the cold weather, were well above average, though not attaining the level of a year previously. Over a hundred remained in March. As usual nowadays, Dungeness, Kent, carried the largest group - 19 in February, but four localities held over 10 for the first time: Hoyfield Marsh GP, Essex (15, February); Rutland Water (12, January); Cottam Lagoons, Notts (11, March) and Cliffe Pits (11, February). Two regular resorts held 10 in March: Abberton Reservoir and Thorpe Water Park (Surrey).

Red-breasted Merganser Mergus serrator

As well as the regular and long-standing concentrations in the Beaulieu and Cromarty Firths, large numbers frequently occur in other parts of the Moray Firth complex. In 1985-86 the Britoil/RSPB surveys found 1,046 at the Riff Bank in October, while 1,850 were recorded in January during the regular count of the Inverness Firth, adjacent to the Beaulieu. Elsewhere there were 156 in the inner Firth of Clyde (February) and 112 in the Duddon Estuary (January), while the Late Summer Survey located 265 at Traeth Lafan, Gwynedd and 229 at Lindisfarne in August. The total Late Summer count (1,044) was only slightly lower than that in September, but undoubtedly greatly underestimated the native post-breeding stock, estimated at 7-10,000 (Owen et al. 1986). This is because coverage of river courses was very fragmentary. Breeding was reported from within the range shown in the 1968-1972 Atlas (Sharrock 1976). The BTO are organising a national survey of Goosanders and Mergansers along rivers in March, April and July 1987.

The number of Mergansers in Britain and Ireland in winter has recently been estimated at 11,000 (Lack 1986), and in Britain alone at 6-10,000 (Owen et al. 1986). Rüger et al. (1986) have provisionally put the north-west European mid-winter population at 75,000, subject to the results of forthcoming aerial surveys of the western Baltic. The previous estimate was 40,000 (Scott 1980).

Table 26. RED-BREASTED MERGANSER: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Beaulieu F, Highld	1,744	1,200	720	485	600 (Jan)	950
Tentsmuir	205	865	649	465	1,050 (Oct)	647
Firth of Forth	653	862	395	454	383 (Sep)	549
Cromarty Firth	300	130	594	401	588 (Feb)	402
Poole Harbour	397	280	241	270	528 (Dec)	343
Dundrum B, Co. Down	296	150	420	203	540 (Sep)	322
Strangford Lough	147	161	293	381	305 (Nov)	257
Morecambe Bay	133	34	95	309	210 (Nov)	166
Langstone Harbour	185	194	113	128	152 (Dec)	154
Loch Ryan	156	126	42	246	72 (Oct)	128
Chesil Fleet	213	80	126	95	58 (Feb)	115

Goosander *Mergus merganser*

The increase in the January index for 1986 suggests that, as suspected in last year's report, the British winter numbers have recovered from a sharp fall in the early 1980s; the underlying trend since 1963 is one of increase. The February trend seems to fluctuate more, however, suggesting that hard weather movements have a greater bearing in that month. In 1986 the cold weather influx was delayed, the February numbers being unexceptional, but an immigration having occurred by March (see Table 4).

Owen et al. (1986) estimate the British post-breeding population at 5,000, supplemented by a few hundred immigrants in an average winter. There are very few Goosanders in Ireland. Rüger et al. (1986) consider that the north-west and central European wintering stocks are not separable, and that they amount to a total of 100-150,000, compared to the previous estimate of 85,000 (Scott 1980).

Table 27 shows sites with an average maximum of 50 or more. Two further places held that many in 1985-86: the Stour Estuary, Essex/Suffolk (82, March) and Thorpe Water Park (78, January).

Table 27. GOOSANDER: MAXIMA AT MAIN RESORTS

	1981-82	82-83	83-84	84-85	85-86 (Mth)	Average
Beaully Firth	1,620	2,400	2,150	1,280	1,700 (Dec)	1,830
Cromarty Firth	2	5	358	136	238 (Dec)	148
Loch of Skene	143	80	101	197	57 (Jan)	116
R.Tweed:Norham/Kelso	76	x	105	152	86 (Feb)	103
Eccup Resr, W. Yorks	132	75	50	134	68 (Jan)	92
Q Mary Resr, Surrey	146	66	29	98	92 (Feb)	86
Castle L, Lochmaben	115	36	61	138	71 (Nov)	84
Blithfield R, Staffs	82	76	79	105	66 (Mar)	81
Besthorpe/Girton GPS						
& Fleet, Notts	23	62	95	160	60 (Dec)	80
Thrapston GPS, N'hants	99	63	72	63	75 (Mar)	74
Rutland Water	34	48	119	69	89 (Dec)	72
Chew Valley Lake	49	59	55	96	60 (Feb)	64
Loch Leven	64	40	30	148	15 (Nov/Dec)	59
Castle Howard L, Yorks	1	20	29	70	154 (Dec)	55

Ruddy Duck Oxyura jamaicensis

The total count exceeded 2,000 for the first time. The number found in the Late Summer Survey, however, was disappointingly low at 570, the birds obviously being highly dispersed and inconspicuous at that time of year. Breeding was reported from 18 counties, including Greater London, Essex, Herts, Bucks, Northants, Notts, Humberside, Derbyshire, S.Yorkshire and W.Yorkshire, which have been colonised since Hudson's (1976) review of the species' breeding status.

The following sites held over 100 in 1985-86: Chew Valley Lake (680, January); Blithfield Reservoir (581, December); Belvide Reservoir (320, September); Eyebrook Reservoir, Leicestershire (221, January); Blagdon Reservoir (197, January); Rutland Water (188, December); Woolston Eyes (179, October); Cheddar Reservoir (130, February); Llyn Traffwll, Anglesey (113, October) and Farmwood Pool, Cheshire (105, December).

Coot Fulica atra

An estimate of 200,000 birds for the British and Irish wintering population is considered "not at all unreasonable" (Lack 1986). Rüger et al. (1986) put the January numbers in north-west Europe at 1,500,000, and state that 7% are in Britain and 1% in Ireland. This would put the British and Irish wintering levels at no more than 105,000 and 15,000 respectively. The National Wildfowl Counts record slightly more in autumn than mid-winter, and reached a peak of 94,000 in November of 1985-86. This included 888 birds at 54 newly counted sites, a fairly low figure, which suggests that the true numbers in Britain are nearer 100,000 than 200,000. The November total of 2,600 in Northern Ireland included no inland localities other than Lough Neagh/Beg, so is probably a substantial underestimate.

Table 28 shows sites with an average maximum of at least 1,000 Coot between 1982-83 (the first season for which Coot data have been processed) and 85-86. The following additional places held over 1,000 in 1985-86: Chichester Gravel Pits, W.Sussex (1,543, January); Fairburn Ings, N.Yorks (1,289, August); Tring Reservoirs, Herts (1,202, January); Dorchester Gravel Pits, Oxon (1,145, November); Eyebrook Reservoir, Leics (1,099, November); Cliffe Pits, Kent (1,080, January) and Shepperton Gravel Pits, Surrey (1,046, December).

The number counted in the Late Summer Survey was roughly half that at the season's peak. Even allowing for the slightly smaller coverage in the late summer this emphasises that a large proportion of our autumn and winter birds are immigrants from the Continent. The highest July/August counts were 3,000 at Abberton Reservoir and 1,879 at Rutland Water.

Table 28. COOT: MAXIMA AT MAIN RESORTS

	1982-83	83-84	84-85	85-86 (Mth)	Average
Abberton Resr	8,600	10,055	10,000	9,450 (Nov)	9,526
Rutland Water	3,633	5,401	7,453	5,660 (Dec)	5,538
Cotswold W Pk. W	3,322	3,375	3,677	2,521 (Dec)	3,224
Ouse Washes	3,375	2,134	1,757	2,970 (Feb)	2,559
Hanningfield Resr	x	x	2,557	x	2,557
Lough Neagh/Beg	x	x	x	2,307 (Nov)	2,307
Cheddar Reservoir	2,450	2,450	2,100	1,900 (Feb)	2,225
Chesil Fleet	x	x	2,281	2,080 (Feb)	2,181
Cotswold W Pk. E	1,674	2,416	1,716	2,217 (Jan)	2,006
Loch Leven	2,564	1,905	1,361	1,370 (Oct)	1,800
Hornsea Mere	2,300	1,350	2,000	1,100 (Nov)	1,688
Chew Valley Lake	1,570	1,904	1,625	1,625 (Aug)	1,681
Windermere	929	x	1,663	1,287 (Nov)	1,293
Pitsford Resr	1,789	1,420	1,136	744 (Aug)	1,287
Brogborough GP, Beds	444	950	1,600	1,820 (Jan)	1,204
*Bewl Br Res,					
Kent/Sussex	1,158	1,358	610	1,068 (Jan)	1,049
Pennington, Gt Man'r	(214)	(162)	(975)	1,000 (Nov)	1,000

## NOTICES

### WILDFOWL DISTURBANCE QUESTIONNAIRE

Dr David Bell writes:-

"In August 1986 some 2,000 questionnaires were sent to the Wildfowl Trust's counters and several hundred others distributed via the BTO. To date over 550 completed questionnaires have been returned to Slimbridge. The data will be used to update our records on habitat types and site management as well as providing a national census on recreational pressure at overwintering wildfowl sites. I would like to thank all of you who have returned questionnaires and remind others to complete and return theirs to me as soon as possible. I apologise for the 12p s.a.e's. Postage rates went up shortly after the forms were sent out. Many thanks to all who added a 1p stamp, saving us an 11p delivery charge on every envelope."

### OTHER SITE ISSUES

Threats to wetland sites in the U.K. appear if anything to be increasing. Particularly noticeable lately has been a proliferation of demand for recreational facilities on reservoirs. A number of sites are also under consideration for tidal barrages, some involving estuaries of international importance for wildfowl. The Wildfowl Trust used, or provided other conservation bodies with, National Wildfowl Count data in connection with proposed or existing developments or conservation measures in the following areas in 1986 (in geographical order): Camel Estuary, Taff Estuary, London Reservoirs, Wraysbury GPs, Pitsford Reservoir, Stour Estuary, Rutland Water, Colwick Country Park, Westwood Park, Mersey Estuary, Wigan Flashes, Bolton-on-Swale Lake, Budle Bay, Wigtown Bay, Gladhouse Reservoir and the Loch of Strathbeg. The National Wildfowl Count data also have been in constant demand by the Nature Conservancy Council for assessments of proposed Ramsar sites, Special Protection Areas (see Appendix) and Sites of Special Scientific Interest (SSSIs).

### PUBLICATIONS

Analysis of the wildfowl count data has really "taken off" over the past year. Papers are in preparation by our research team reviewing in detail the status, numbers, distribution and movements of Pink-footed Goose, Greylag Goose, Wigeon, Gadwall, Tufted Duck and Scaup. Extensive use is being made of information from ringing recoveries.

"Wildfowl in Great Britain" is available from the Research Department of the Wildfowl Trust, price thirty pounds, post free.

"Results of the IWRB International Waterfowl Census 1967-1983". Copies of this detailed review of the status of 19 species in the western Palearctic, based on the January International Counts, are available to counters at four pounds, including postage, from the Wildfowl Trust, and to others at five pounds from the International Waterfowl Research Bureau (IWRB) at Slimbridge.

## W A D E R S

by M.E. Moser & J.S. Kirby.

The Birds of Estuaries Enquiry (BOEE) is co-sponsored by the British Trust for Ornithology, Nature Conservancy Council and Royal Society for the Protection of Birds, and has a full-time organiser based at Tring, Hertfordshire. The sixteenth consecutive season of coordinated counts for the BOEE took place in 1985-86. This section of the report concerns counts of waders made during the midwinter months (December, January and February), although year-round data were collected at many sites and provided valuable information on their relative importance at all times of the year. Counts are made on selected dates in the middle of each month and are timed to coincide with the best tidal conditions for counting estuarine birds. Records of wildfowl both from the BOEE and from the National Wildfowl Counts are analysed by the Wildfowl Trust and are presented in the first section of this report.

Due to an unfortunate processing error the 1984-85 data for the Moray Basin given in the last report were wrong; corrected values appear in this report.

### COVERAGE

The level of count coverage achieved in 1985-86 was the most complete so far (see Figure 1). In N Ireland, all the major estuaries were counted comprehensively and additional data were collected from the Outer Ards peninsula. In Scotland, four complete counts were achieved on the Moray Basin - a record for recent years. The Tay also received complete coverage for the first time for a number of years, giving some very valuable results. However, no counts were received for the Ythan and coverage on the north shore of the Forth was incomplete. There was good coverage in Wales, with two new sites being the Ogmere Estuary and Traeth Dulas. Excellent coverage was achieved for most sites in England, including difficult sites such as Morecambe Bay, the Wash and the N Norfolk coast. The Alde estuary in Suffolk received its first complete coverage for a number of years.

### CONSERVATION AND RESEARCH

A total of 45 requests for data were received in the 1985-86 season, well up on the previous year. These related to the following sites: Severn, Taw/Torridge, Plym, Exe, Southampton Water, Langstone and Chichester Harbours, Bracklesham Bay, Dover/Folkestone, Isle of Thanet, Swale, Medway, N Kent Marshes, Thames, Leigh/Canvey, Foulness, Blackwater, Hamford Water, Stour, Orwell, N Norfolk marshes, Wash, Humber, Tees, Lindisfarne, Firth of Forth, Montrose Basin, Auchencairn Bay, Bann Estuary, the Outer Ards peninsula, Larne Lough, Ribble, Alt, Mersey, Dee, N Wales coast, Anglesey and Taff. 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.

BOEE data were twice presented as evidence to House of Commons Select Committees, concerning threats to the Orwell and Taff estuaries. Mr. Ken Weetch (MP for

Ipswich) referring to the BOEE in Hansard said "...I am advised that all such counts are made with great thoroughness and industry"! Further studies were initiated at Southend, in relation to a marina proposal to develop 200 ha of mudflats.

The combined results of the BOEE and Winter Shorebird Count were analysed to produce new estimates for the populations of coastal waders wintering in Britain (Moser 1987). The new significance levels relating to these estimates given in Table 44 of this report, are now being used by NCC to identify sites of national importance for waders. The results of the Winter Shorebird Count were also analysed and written up for publication (Moser & Summers 1987). The results of counts of coastal birds other than waders, which were made during this survey, have recently been published (Moser et al 1986). Work was begun to investigate the cause of the observed declines of wintering Dunlin and Redshank in Britain.

#### FORWARD PLAN

A number of changes in the Enquiry took effect from Autumn 1986. In the light of the proven value of the BOEE, both NCC and RSPB have increased their levels of funding, allowing the appointment of a full-time Assistant Estuaries Officer. Jeff Kirby took up this post on 1 September 1986 and will be responsible for the smooth running and development of the BOEE counts. Dr Mike Moser, Estuaries Officer since 1982, left this post on 1st September 1986 to become Director of Development for the BTO. Dr Robert Prys-Jones will take up the post of Estuaries Officer from early in 1987. His responsibilities will include overall development of the Estuaries Programme, research, and presentation of BOEE data as evidence in Public Inquiries, Select Committees, etc..

Proposals for barrages on the Taff, Severn and Mersey will be studied in detail over the coming months. The BOEE data will play a vital role in the environmental impact studies, and counters may be asked to help with more intensive observations. News of these schemes will be given regularly in BTO News. A second season of intensive study is underway at Southend in response to marina proposals, and studies on the Orwell continue in relation to the proposed dock development on Fagbury Flats.



# BRITISH POPULATION TOTALS

Table 29 shows the national UK totals for each wader species counted in the priority midwinter months of 1985-86. Over 1.4 million waders were recorded in December which constitutes the highest total since the start of the Enquiry. Totals fell in January and February by 14% and 35% respectively, largely as a result of a substantial decline in numbers of Lapwing, Golden Plover and Knot. In addition to the species described below small numbers of Curlew Sandpiper (1 in December), Woodcock (3 in January and 2 in February) and Whimbrel (23 in January; 22 on the Wash and 1 in Brading Harbour) were recorded during the midwinter months. The latter constitutes the highest midwinter count of Whimbrels since the Enquiry began. The following species were also recorded by BOEE counters outside the midwinter period: Wood Sandpiper, Buff-breasted Sandpiper, Pectoral Sandpiper, Little Stint, Temminck's Stint, Long-billed Dowitcher, Grey Phalarope and Little Ringed Plover.

Table 29. TOTAL NUMBERS OF WADERS RECORDED ON THE ESTUARIES OF BRITAIN AND N. IRELAND DURING MIDWINTER 1985-86.  
(Figures of over 100 have been rounded up to the nearest ten; over 1,000 to the nearest hundred).

	December	January	February
Oystercatcher	282,300	238,500	203,900
Lapwing	160,900	78,200	38,900
Ringed Plover	10,800	9,800	7,500
Grey Plover	25,600	24,600	20,500
Golden Plover	45,800	20,700	9,600
Turnstone	18,200	17,300	15,900
Common Snipe	3,000	3,000	2,300
Jack Snipe	34	53	43
Curlew	71,100	52,200	56,400
Whimbrel	1	23	2
Black-tailed Godwit	6,100	4,800	5,800
Bar-tailed Godwit	45,800	54,200	52,700
Green Sandpiper	18	14	17
Common Sandpiper	20	20	12
Redshank	78,800	62,200	57,600
Spotted Redshank	48	36	38
Greenshank	300	190	210
Knot	290,000	257,400	163,400
Dunlin	418,200	425,500	317,200
Sanderling	5,900	5,300	3,900
Ruff	140	70	55
Avocet	430	430	530
Curlew Sandpiper	1	0	0
Purple Sandpiper	1,100	1,400	1,500
Woodcock	0	3	2

## SPECIES ACCOUNTS

The tables presented in this section rank the principal sites in Britain and N Ireland on the basis of the average midwinter maxima for the last five seasons.

### Oystercatcher Haematopus ostralegus

The December Oystercatcher total of just over 282,000 birds constitutes the largest number ever recorded for a BOEE count. This reflects both the excellent coverage of the larger estuaries in 1985-86 and a real increase in the numbers of Oystercatchers overwintering in the UK (as shown by a 13% rise in the January totals for sites counted both in 1985 and 1986). This brings the January index to its highest ever value, reflecting the long-term increase in the numbers of overwintering Oystercatchers which has occurred since the inception of the BOEE.

Oystercatchers were the most frequently encountered wader during the 1984-85 Winter Shorebird Count and a total of more than 60,000 were recorded on the non-estuarine coasts of Britain (Moser & Summers 1987). A further 220,000 winter on estuaries (average January totals 1980-85), giving an estimated British wintering population of 280,000 birds (Moser 1987).

The nine estuarine sites which hold populations of international importance are listed in Table 30 ; counts of national significance were recorded in 1985-86 at a further eleven sites. December counts on Morecambe Bay, Wash, Burry Inlet and Foulness constitute record numbers for these sites. Numbers on the Dee were similar to the exceptionally high counts of 1980-81 and 1981-82. Approximately 43% of the total wintering population of Oystercatchers recorded in December were on the Irish Sea estuaries, highlighting their importance to this species.

Table 30. OYSTERCATCHER: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Morecambe Bay	x	29,754	45,220	(47,219)	49,700 (Dec)	41,558
Dee	42,505	28,430	30,360	19,600	38,000 (Dec)	31,779
Wash	19,223	23,803	23,009	(21,281)	29,159 (Dec)	23,799
Solway	31,604	21,328	21,312	23,595	17,182 (Dec)	23,004
Burry Inlet	14,300	16,170	13,105	16,550	19,420 (Dec)	15,909
Moray Basin	x	(7,744)	(4,953)	10,809	11,316 (Jan)	11,063
Foulness	7,890	7,974	5,365	10,342	18,065 (Dec)	9,927
Outer S Solway	x	x	7,602	10,203	10,053 (Dec)	9,286
Duddon, Cumbria	12,680	10,655	5,725	4,488	6,627 (Jan)	8,035

#### Avocet Recurvirostra avosetta

The numbers of Avocets wintering in Britain continued to increase, with the February 1985-86 count of 530 individuals being the highest since the start of the Enquiry. However, January counts were down by 8.6% when sites counted both in 1985 and in 1986 were compared. The Ore/Butley/Havergate estuary complex (334 in February) and the Exe (134 in December) are now firmly established as the main wintering sites for Avocets in Britain, and only three other sites recorded peak midwinter counts of more than 10 individuals: Alde (109 in December), Hamford Water (19 in January), N Kent Marshes (17 in February). The Ore complex is the first site to attain levels of international importance for this species in Britain; the Exe and the Alde are nationally important wintering sites for Avocets.

#### Ringed Plover Charadrius hiaticula

The Winter Shorebird Count revealed that almost three-quarters of Britain's Ringed Plovers winter outside estuaries, mainly on the sandy beaches of our open coasts. The discovery of these previously unrecorded populations has caused the estimated size of the British wintering population to be raised from 12,000 to 23,000 individuals, an increase of 96%. As a result, a number of estuarine sites which formerly qualified as holding wintering populations of Ringed Plovers of national importance, no longer qualify. The estuaries which now meet the 1% criterion of national importance are listed in Table 31. Two non-estuarine areas were counted in 1985-86 and found to hold important concentrations: 693 (January) on the Outer Ards coast, N Ireland (cf. 555 during the 1984-85 Winter Shorebird Count) and 555 (January) on Tiree (cf. 943 during the 1984-85 Winter Shorebird Count). The Medway, Orwell, Langstone Harbour and Southampton Water have traditionally been the most important estuaries for wintering Ringed Plovers. In addition to these sites, exceptionally good counts were made in 1985-86 at Lindisfarne, on the Stour and the Inner Thames, constituting the highest winter counts ever recorded at these sites. During the spring passage period good numbers were recorded in May, at Lindisfarne (916), the Solway (826; incomplete count), Humber (749; incomplete count), Ribble (747) and on Morecambe Bay (586; incomplete count).

The January 1986 counts resulted in the highest index value ever recorded, reflecting the general pattern of increase which has been apparent for this species since the BOEE began. The results of the 1984 national survey of breeding Ringed Plovers should indicate whether the British population is increasing. However, Briggs (1983) showed an overall decline of 26% in breeding Ringed Plover populations around Morecambe Bay between the years 1973-74 and 1978-80. This was mainly due to reductions in the numbers of coastal breeders, whilst numbers inland showed a large increase. Interestingly, inland breeders laid earlier, produced larger clutches and hatched more young than coastal pairs, despite greater egg loss during incubation. This suggests that inland breeding may indeed be a favourable strategy for this species.

Table 31. RINGED PLOVER: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86	(Month)	Average
Outer Ards, N Ire.	x	x	x	571	693	(Jan)	632
Medway	268	515	569	852	539	(Dec)	549
Orwell	370	482	513	520	448	(Dec)	467
Langstone Hbr.	547	300	254	391	640	(Jan)	426
Forth	356	320	(251)	(181)	290	(Feb)	322
Southampton Water	277	271	323	323	383	(Dec)	315
Lindisfarne	118	143	306	262	691	(Feb)	304
Moray Basin	x	(62)	(128)	288	302	(Dec)	295
Chichester Hbr.	215	364	388	(572)	203	(Jan)	293
Humber	241	(209)	305	(309)	297	(Dec)	281
Leigh/Canvey	220	272	250	274	233	(Jan)	250
Swale	333	308	(167)	124	174	(Jan)	235
Inner Thames	66	114	200	x	560	(Dec)	235
Blackpill, W Glam.	218	253	118	296	288	(Dec)	235
Stour	149	122	114	273	503	(Dec)	232

#### Golden Plover *Pluvialis apricaria*

Golden Plovers typically winter inland, where they feed mainly on permanent pasture, and roost on ploughed fields and winter cereals (Fuller & Youngman 1979). The use of estuaries by Golden Plovers fluctuates in response to weather conditions, and the BOEE counts can therefore be used to measure neither total population levels nor seasonal/long term trends. Estuaries hold relatively few Golden Plovers, 21,000 being the average January total over the last five winters (1980-85). On non-estuarine shores, Moser & Summers (1987) report a further 11,600 birds, suggesting an 'average' coastal wintering population of about 32,000 birds. The Winter Atlas, which includes coastal habitats, estimates a total wintering population of 200,000-300,000 Golden Plovers in Britain with similar numbers in Ireland (Lack 1986). Hence, coastal habitats support approximately 10-15% of the total British wintering population.

Peak midwinter counts of Golden Plovers recorded by the BOEE fluctuate erratically between years, largely as a result of winter weather conditions. The December 1985 count of 45,800 constitutes the second highest count over the last five winters, although this fell by 55% the following month, and 79% by February 1986. Davidson (1981) identified the Golden Plover as one of the species likely to be most affected by severe weather. During the severe weather of January 1985 the use of non-estuarine coasts by Golden Plovers increased (Moser & Summers 1987) and the numbers present on estuaries decreased, emphasising the importance of the former habitats in cold weather.

There is a marked concentration of Golden Plovers in northern England, with large numbers also in SW Scotland, NE England, E Kent and SW England (Lack 1986). In Ireland, the main concentrations are in the north-east and on the south coast, although there are also large numbers inland (Hutchinson 1979). In 1985-86, counts exceeding 1,000 Golden Plovers were made on fifteen UK estuaries. Table 32 presents data for the six sites of national importance, and for the two additional sites averaging more than 1,000 birds. The 1984-85 Winter Shorebird Count on non-estuarine shores revealed relatively large concentrations of Golden

Plovers in Tyne & Wear (1,081), on Orkney (2,541), Lewis & Harris (1,807) and in Co. Down (1,611).

Table 32. GOLDEN PLOVER: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Humber	2,940	(711)	8,014	7,414	6,846 (Dec)	6,304
Strangford Lough	2,200	5,352	2,184	13,510	7,277 (Dec)	6,105
Ribble	698	6,968	1,400	2,441	4,333 (Dec)	3,168
Taw/Torridge	(418)	2,037	2,983	3,350	2,178 (Dec)	2,637
Burry Inlet	2,250	1,700	3,200	1,740	2,500 (Dec)	2,278
Solway	898	975	4,059	3,031	2,206 (Dec)	2,234
Forth	(847)	1,691	1,367	1,692	(607) (Feb)	1,583
Chichester Hbr.	763	1,669	801	1,386	2,441 (Jan)	1,412

#### Grey Plover Pluvialis squatarola

The Grey Plovers that visit Britain are entirely of Siberian origin (Branson & Minton 1976) and their breeding range, encompassing the Taimyr peninsula, overlaps broadly with that of the Dark-bellied Brent Goose (Branta bernicla bernicla). The population trends of these two species correlate closely and both show dramatic increases in the numbers returning to their winter quarters over the period 1970-71 to 1985-86. The number of Grey Plovers wintering in the UK has almost quadrupled since the start of the Enquiry, constituting the most spectacular population change of any of the common waders that winter in Britain. The 1985-86 counts show a further increase, with the January index up by 19% and the December 1985 count of 25,600 close to the highest count (25,787 in February 1981) recorded since the Enquiry started. There is thus no evidence that the remarkable increase in the number of Grey Plovers wintering the UK is yet over.

The 1984-85 Winter Shorebird Count revealed only 2,000 Grey Plovers on the non-estuarine coasts of Britain. A further January average count of 19,000 wintering on estuaries brings the estimated total population to 21,000 birds. This represents an increase of 110% on the previous population estimate of 10,000 birds (Prater 1981). As a result of these changes, a number of sites which were formerly of national importance for this species, no longer meet the necessary criteria. Table 33 lists the sites of international importance for Grey Plovers in the United Kingdom and, in the 1985-86 winter, a further 20 sites held nationally important numbers.

Table 33. GREY PLOVER: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Wash	1,616	2,807	2,694	3,966	3,568 (Dec)	2,930
Chichester Hbr.	1,666	1,971	1,541	(2,005)	1,108 (Dec)	1,572
Foulness	2,213	683	749	2,264	1,439 (Feb)	1,470
Swale	682	1,126	737	2,971	1,748 (Jan)	1,453
Ribble	903	1,040	1,338	1,224	1,410 (Feb)	1,183
Dee	720	1,490	846	820	1,905 (Feb)	1,156
Medway	(213)	276	798	1,813	1,134 (Dec)	1,005
Stour	1,084	1,125	798	783	1,122 (Jan)	982
Dengie	1,380	400	1,180	(1,700)	630 (Jan)	898
Humber	x	x	577	1,031	952 (Dec)	853
Hamford Water	1,000	835	1,430	447	445 (Dec)	831

Lapwing *Vanellus vanellus*

A high proportion of Lapwings wintering in Britain originate from Scandinavia, the Low Countries, Central and Eastern Europe and Russia (Imboden 1974). Many British breeding Lapwings also remain in this country during the winter, although others move south-west to the continent or west to Ireland. The numbers of Lapwings present at any one time is thus extremely variable, for the species is highly mobile and is readily redistributed by prevailing weather conditions. Accurate winter population estimates are therefore difficult to achieve and real population changes may be masked both by local and by long-distance movements. The BOEE count of 160,900 Lapwings in December 1985 was 20% fewer than the record high (200,000) of the previous year. The January index however, calculated for those sites counted in both years, showed a substantial increase of 105%.

Many Lapwings roost on estuaries but feed inland, although estuaries may become more important feeding grounds in severe weather (Prater 1981). BOEE estuary counts normally record about 62,000 Lapwings in midwinter (average January totals 1980-85). A further 19,000 were recorded during the 1984-85 Winter Shorebird Count, 51% and 29% of these being in Scotland and N Ireland respectively (Moser & Summers 1987). Thus, over 80,000 Lapwings winter on the shores of the UK, and the Winter Atlas cautiously estimates the total wintering population of Britain and Ireland to exceed 1,000,000 birds (Lack 1986). The shoreline of the UK therefore holds only about 8% of the total wintering Lapwing population.

In 1985-86, as in previous years (eg. Salmon & Moser 1984), northern sites recorded their highest counts in December: Strangford Lough (14,839), Ribble (9,445), Dee (8,125), Lough Foyle (6,392). In contrast, peak numbers in the south occurred in January: Pevensy (6,000), Taw/Torridge (5,558). Baillie *et al* (1986) analysed recoveries of waders ringed in Britain in response to cold weather and found evidence of long-distance movements for Lapwings. This can be seen in the 1985-86 BOEE data, the December peak (160,900) declining by 51% and 76% in January and February respectively. Mortality over this period may also have been considerable since, the number of recoveries of ringed birds received by the end of May 1986 (54) was greater than those received over the same period following the severe weather of January 1985 (43).

### Knot *Calidris canutus*

Fewer than 3% of the Knots which winter in Britain occur outside estuaries, mainly on the flat, rocky, open shores of NE England and SE Scotland. Knots, along with the godwits, are one of the least dispersed species of waders occurring in very large concentrations on only a few estuaries. Indeed, the top twenty sites for Knots in Britain hold more than 90% of the British winter population.

Knot populations wintering in the UK have shown evidence of a decline during the course of the BOEE. However, as is typical for a high-arctic breeder, there have been large fluctuations in the numbers returning to winter each year as a result of dramatic changes in breeding success. The Nearctic population must have had an excellent breeding season in 1985, since the total numbers returning to the UK were well up on the 1984-85 season. In fact the December total of 290,000 was the highest UK count since February 1974, when 303,000 were recorded.

Approximately 41% of the December total were counted on the Wash, highlighting the vulnerability of Knots to damaging developments at key sites. This was the highest count of any single species ever recorded on an estuary for the BOEE, beating the previous record (also for Knot on the Wash in 1982-83) by 9,000 birds. The count of 42,000 on the Alt in December was a record high for this site, and that of 10,150 on the Dee, a record low; these patterns support the conclusions of Mitchell and Moser (in prep.) that since about 1980, there has been a switch in roosting sites between these two estuaries, possibly as a result of roost disturbance.

The UK supports a very high percentage of the Nearctic population which winters in Europe, and 14 sites hold winter populations which are of international importance (Table 34). The numbers wintering in the Montrose Basin have increased dramatically over recent years, and this site now holds similar numbers to those recorded in the early 1970's. A joint study between Durham and Tromsø Universities has recently entered another piece into the jig-saw of Knot migration patterns (Davidson *et al* 1986). Knots migrating through N Norway each spring were previously presumed to breed in Siberia but recent expeditions concluded that, on the basis of body size, ringing locations and migration timing, these birds were of nearctic origin (i.e. the Greenland/Canadian breeding population). Many nearctic Knots are already known to migrate to their breeding areas via Iceland; and these new studies indicate that a second route via N Norway is also important.

Table 34. KNOT: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86	(Month)	Average
Wash	54,139	108,739	53,495	77,050	117,886	(Dec)	82,262
Alt, Merseyside	6,200	18,000	28,502	40,303	42,000	(Dec)	27,001
Morecambe Bay	x	28,087	24,555	(17,968)	27,954	(Dec)	26,865
Humber	34,734	14,829	25,790	(17,968)	23,647	(Dec)	24,750
Dee	25,315	28,390	17,960	19,500	10,150	(Feb)	20,263
Foulness	33,380	8,727	11,941	19,441	9,638	(Dec)	16,625
Ribble	16,262	11,078	12,381	9,479	19,900	(Feb)	13,820
Strangford Lough	7,809	6,210	9,424	18,977	21,450	(Jan)	12,774
Forth	(10,952)	11,481	(8,710)	(7,718)	4,478	(Jan)	7,980
Solway	9,125	8,149	6,750	8,404	4,627	(Dec)	7,411
Leigh/Canvey	2,025	4,116	9,457	4,550	11,400	(Feb)	6,310
Teesmouth	7,100	5,900	4,900	5,410	6,462	(Jan)	5,954
Burry Inlet	3,500	4,740	6,150	3,550	4,900	(Jan)	4,568
Montrose	x	20	1,031	4,000	10,000	(Jan)	3,763

Sanderling *Calidris alba*

More than 9,000 Sanderlings were recorded during the Winter Shorebird Count on the non-estuarine coasts of Britain compared with only 4,500 on the estuaries. As a result of the comprehensive coverage provided by these surveys, a revised estimate of the size of the British wintering population is 14,000 birds (Moser 1987), up by 40% on previous estimates by Prater & Davies (1978). The majority of Sanderlings on non-estuarine coasts were found around southern and eastern England, and particularly around the Uist islands of the Outer Hebrides and Tiree. A repeat survey of this latter island in January 1986 found 305 birds, compared with 402 in 1984-85. Very few Sanderlings occur on the mainland coasts of Scotland, on Shetland or on the coasts of N Ireland.

The peak winter counts for all estuarine sites of national importance for Sanderling are shown in Table 35. The Ribble once again held the largest concentration, with a peak count of over 2,000 birds (the highest winter count on any estuary since December 1978). The December count of 750 Sanderlings on the Tay was a record for this site, which had received only partial coverage before 1985-86.

A very substantial passage of Sanderlings was recorded in May 1986 with counts of 6,400 on the Ribble, 3,900 at Pilling on the south shore of Morecambe Bay, and 1,760 on the Alt. These counts total over 12,000 individuals, which can represent only a minimum estimate of the numbers passing through, since single counts may miss the peak passage period and take no account of population turnover (Moser and Carrier 1983). Meltofte (1985) estimates the breeding population of Sanderlings in Greenland to be 17,000 pairs, and the numbers passing through NW England each spring must therefore represent a substantial proportion of this breeding population.



Table 35. SANDERLING: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Ribble	1,790	1,045	1,644	1,431	2,038 (Dec)	1,590
Alt	356	547	537	555	326 (Dec)	464
Tay	300	475	(50)	232	750 (Dec)	439
Humber	(102)	(78)	641	334	270 (Dec)	415
Chichester Hbr.	109	376	330	450	291 (Jan)	311
Blackpill	365	310	191	398	262 (Dec)	305
Duddon	169	195	226	606	122 (Jan)	264
Dee	135	435	56	427	268 (Dec)	264
Wash	212	182	166	(85)	427 (Dec)	247
Teesmouth	214	245	210	122	302 (Feb)	219
Arun-Middleton, Sussex	336	134	205	145	140 (Dec)	192
Rye Hbr & Pett Level	90	200	98	290	210 (Jan)	178

Purple Sandpiper Calidris maritima

Purple Sandpipers are virtually restricted to rocky shores although a winter peak of 800-1,500 individuals is usually recorded by BOEE counters. In the 1985-86 winter, good numbers of Purple Sandpipers were present, the January 1986 index showing an increase of approximately 17% on 1985. The sites recording the highest counts of Purple Sandpipers were mainly in NE Britain. Only 4 sites recorded more than 100 birds: Ayre-Deerness, Orkney (205 in February), Budle-Seahouses, Northumberland (190 in January), Saltwick Bay, N Yorkshire (153 in February) and the Moray Basin (120 in January). These counts indicate the first two sites to be of national importance for this species.

The 1984-85 Winter Shorebird Count located almost 16,000 Purple Sandpipers (Moser & Summers 1987). The majority (87%) of these were recorded in Scotland, mainly on the east coast and in Orkney (5,660 individuals). A further 1,670 Purple Sandpipers were recorded on the shoreline of England, mainly in the NE but with smaller numbers in Cornwall and Scilly. Counts of Purple Sandpipers from Wales and N Ireland were very low, together representing only 3% of the grand total for the UK. Based on this information Moser (1987) has estimated the British wintering population of Purple Sandpipers to be 16,000 birds. Only 3.4% of these occur on estuaries.

Dunlin Calidris alpina

The total numbers of Dunlin wintering in the UK showed a slight increase in 1985-86 on the very low levels that have characterised the 1980s. This may be the result of a very good breeding season in 1985, since Reynolds (in prep.) estimated juveniles to form 28% of his study population wintering in Poole Harbour. This was easily a record for the eight winters for which Dunlin have been studied at this site. Table 36 lists the top ten sites in the UK for wintering Dunlin, those holding more than 20,000 birds being of international importance.

The proposed barrage schemes for the Severn and Mersey estuaries will affect two of the top three Dunlin sites in Britain, and special research initiatives are

required to evaluate the potential impact of these schemes on wintering wader populations. A revision of population estimates based on the BOEE counts and on the results of the Winter Shorebird Count show a fall of 22%, from an estimated British wintering population of 550,000 at the start of the Enquiry to the present value of 430,000 (Moser 1987). Almost 95% of this total was found in estuarine habitats, making this species potentially very vulnerable to environmental changes on estuaries. Dunlins feed for a very high proportion of each tidal cycle, requiring upper tidal feeding areas to meet their daily food requirements. Loss of upper intertidal flats to developments, such as that proposed for the expansion of Felixstowe Docks, therefore potentially have a severe impact on this species. The decline of wintering Dunlins on Britain's estuaries has not occurred equally on all sites. Indeed a high proportion of the decline can be attributed to changes at three sites only: Lindisfarne, the Ribble and the Dee estuaries. The peak winter count on Lindisfarne showed a slight recovery in 1985-86 to 12,050 birds; the Ribble winter peak of 6,735 was another record low for this site, a fall of 89% from the highest count of 61,100 in 1976-77; the Dee also recorded a new low of 8,800 birds in 1985-86, a fall of 81% from the record high of 46,826 in 1975-76. Studies are under way to identify the cause of these serious declines.

Table 36. DUNLIN: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Severn	52,605	27,670	53,330	(35,016)	34,193 (Jan)	41,950
Morecambe Bay	x	28,223	31,134	50,211	35,057 (Dec)	36,156
Wash	27,572	29,082	27,044	20,101	41,105 (Dec)	28,981
Mersey	25,400	30,100	28,000	34,700	25,000 (Dec)	28,640
Langstone Hbr.	28,000	29,000	27,150	30,250	27,700 (Dec)	28,420
Chichester Hbr.	23,803	27,751	28,293	(27,028)	26,997 (Jan)	26,711
Humber	32,203	(22,736)	20,843	21,635	32,026 (Dec)	26,677
Stour	13,401	16,478	16,205	20,854	13,255 (Jan)	16,039
Blackwater	21,558	10,655	8,350	21,800	16,700 (Jan)	15,813
Dee	16,380	21,135	21,950	9,920	8,800 (Dec)	15,637

#### Ruff *Philomachus pugnax*

The first records of Ruff wintering in Britain were from Cambridgeshire in 1934-35, since when numbers have increased steadily to an average of 357 in 1960-65 and over 1,200 in 1966-71 (Prater 1981). A significant proportion of these wintered on estuaries, the average January count in 1969-75 being 290 (Prater 1981). The most recent estimate gives a maximum wintering population of 1,400 for the whole of Britain and Ireland (Lack 1986).

Ruffs are on the northern edge of their wintering range in Britain and the numbers present fluctuate widely from year to year. In 1985-86 a relatively small midwinter peak count of 140 birds was recorded for the BOEE. These birds were distributed mainly in the south and east, as has been the tendency over the years of the Enquiry. The Winter Atlas also shows coastal concentrations in SE England and inland concentrations in the E Midlands and at traditional sites such as the Ouse Washes and Martin Mere (Lack 1986). During 1985-86 only 5 estuarine sites produced peak midwinter counts of over 10 birds: Pagham Harbour (59 in

December), NW Solent (22 in December), Southampton Water (20 in February), Humber (19 in December) and the Tees (13 in December). The numbers at Pagham Harbour are nationally important, reinforcing its reputation as the main estuarine site for Ruffs in Britain.

#### Snipe *Gallinago gallinago*

Between 1,000-4,000 Snipe are normally counted on the UK estuaries in midwinter, although this number fluctuates in response to weather conditions. The peak midwinter count in 1985-86 was 3,000 with only 2 sites recording midwinter counts of over 300 individuals: Cleddau (363 in December) and Pevensy (300 in December). As usual, the sites producing high numbers of wintering Snipe were mainly in southern Britain.

The 1984-85 Winter Shorebird Count located 1,753 Snipe (Moser & Summers 1987). The majority of these (96%) were recorded in Scotland. A large concentration in Orkney and Shetland alone accounted for 68% of all wintering Snipe on non-estuarine shores the UK. The Winter Atlas also recorded large numbers of Snipe in Orkney and Shetland (Lack 1986). Cramp & Simmons (1983) describes the migration of Snipe as south-westerly in autumn and north-easterly in spring. The Snipe in Scotland are likely to be a mixture of Icelandic and Fennoscandinavian birds (Cramp & Simmons 1983); these may ultimately move into Ireland at the onset of severe weather conditions. The Snipe inhabiting the south coast estuaries are perhaps mainly British breeding birds.

#### Jack Snipe *Limnocryptes minimus*

Jack Snipe are relatively uncommon on estuaries, the BOEE normally recording a peak midwinter count of 20-50 birds. In 1985-86 only 7 sites recorded counts of more than 3 birds: Severn (20 in January), Bridgwater Bay (8 in February), Inner Clyde (8 in January), Christchurch Harbour (4 in December), Southampton Water (4 in January), Cleddau (4 in December), Burry Inlet (4 in January). The Winter Atlas shows Jack Snipe to occur at many scattered sites but this is not a complete record, since the species is under-recorded (Lack 1986).

#### Black-tailed Godwit *Limosa limosa*

Black-tailed Godwits wintering in the UK are of Icelandic origin belonging to the distinct sub-species *L.l.islandica* (Cramp & Simmons 1983). In winter they occur exclusively within estuaries, being the only common wader absent from non-estuarine shores during the 1984-85 Winter Shorebird Count. This, along with excellent coverage of the traditional Black-tailed Godwit estuarine sites, means that BOEE counts give good estimates of the number of birds wintering in Britain and N Ireland.

Black-tailed Godwits use relatively few estuaries in the UK. Indeed approximately 90% of the wintering population in 1985-86 occurred on just 10 estuaries (Table 37). The first 8 of these held internationally important numbers of Black-tailed Godwits. Such concentrations make this species particularly vulnerable to damaging developments at these sites. Record counts were recorded for the Ribble (2,110 in December) and on the Stour (1,660 in February), greatly exceeding all previous counts at these sites. These two sites together held 43% of all wintering Black-tailed Godwits, although the peak

numbers at these sites occurred on different dates. Numbers on the Ribble have apparently increased over recent years whilst those on the nearby Dee may well be decreasing.

A national decline in the numbers of wintering Black-tailed Godwits occurred between 1972-73 and 1976-77, with a steady increase in numbers thereafter (Prater 1981). More recently, the numbers have stabilised and a revised estimate of the wintering population, based on updated estuary counts (Moser 1987), shows a decline of only 4% on the previous estimate of 5,000 birds given by Prater (1981). In 1985-86, the December (6,100) and February (5,800) are the highest ever recorded during the time of the Enquiry; the January count (4,800) is also close to the highest January record of 4,900 in 1983.

Table 37. BLACK-TAILED GODWIT: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Ribble	868	516	350	1,280	2,110 (Dec)	1,025
Stour	426	1,050	957	945	1,660 (Feb)	1,008
Dee	1,290	500	1,285	371	430 (Feb)	775
Langstone Hbr.	343	440	583	1,037	906 (Jan)	662
Exe	368	800	494	533	575 (Dec)	554
Poole Hbr.	460	550	x	315	645 (Dec)	493
Chichester Hbr.	391	859	550	395	190 (Feb)	483
Hamford Water	280	556	500	86	580 (Dec)	400
Southampton Water	208	515	236	319	407 (Jan)	337
Colne, Essex	0	0	190	220	300 (Feb)	142

#### Bar-tailed Godwit Limosa lapponica

Bar-tailed Godwits are one of our most typically estuarine waders, with over 90% of the British population wintering on estuaries (Moser 1987). The revised British wintering population estimates which result from the Winter Shorebird Count and updated totals from the BOEE, suggest a wintering total of 61,000 birds, a 36% increase from the previous estimate of 45,000 birds (Prater 1981). This results both from a general increase in numbers of wintering birds that has occurred since the start of the BOEE and because the recent spate of severe winters have induced short-term cold weather movements onto the east coast of Britain, presumably from the Wadden Sea. There was no detectable immigration of Bar-tailed Godwits in 1985-86 into the usual severe weather influx sites, such as Foulness.

The UK's estuarine wintering Bar-tailed Godwits are concentrated into only a few sites. Indeed, approximately 90% of the UK population is found on only 20 estuaries. The Dee which, during the 1970s, was one of the most important wintering sites in Britain for Bar-tailed Godwits, has now been almost entirely abandoned. Analyses of BOEE counts (Mitchell & Moser in prep.) show a decline of 99% from a record count of 11,149 in 1976-77 to a peak of only 25 birds in 1984-85. The 1985-86 peak was 79 birds. The decline on the Dee has been matched by an increase on the Alt estuary, suggesting a switch of roosting sites. This may be a result of human disturbance on the Dee roosts, particularly at West Kirby. Furness (1973) concluded that, of the eight wader species he examined,

Bar-tailed Godwits were the most susceptible to disturbance on their roosts. Further studies are required of the implications of disturbance for roosting waders.

The number of Bar-tailed Godwits wintering in the UK in 1985-86 was considerably lower than in 1984-85, reflecting the lack of any cold weather influx. The top ten sites for this species are listed in Table 38.

Table 38. BAR-TAILED GODWIT: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Ribble	15,885	10,875	6,138	5,800	13,880 (Feb)	10,516
Foulness	14,131	4,655	2,986	16,187	3,272 (Jan)	8,246
Wash	8,359	8,131	5,976	7,846	8,204 (Jan)	7,703
Alt	6,540	6,000	8,620	4,503	4,956 (Jan)	6,124
Moray Basin	x	(3,470)	(3,265)	5,490	5,569 (Jan)	5,530
Lindisfarne	2,600	4,520	3,600	4,765	9,600 (Feb)	5,017
Morecambe Bay	x	4,268	5,752	(2,722)	4,105 (Feb)	4,708
Solway	7,022	3,088	2,846	3,939	3,160 (Jan)	4,011
Forth	3,840	2,764	3,194	3,396	(4,509) (Dec)	3,299
Lough Foyle	1,831	2,915	3,160	3,300	3,842 (Feb)	3,010

#### Curlew Numenius arquata

The December 1985 BOEE count of 71,000 Curlew represents the highest midwinter peak since the start of the Enquiry, although the numbers present dropped to more normal levels later in the winter. The January index, calculated for those sites counted in both 1985 and 1986, shows a large increase of over 21% in the wintering Curlew population. Table 39 shows the main concentrations of Curlews in midwinter. Morecambe Bay, the Solway and the Wash hold internationally important numbers, the first-named being by far the most important site for this species. Particularly high autumn counts were recorded on the Wash in September (5,479) and on Morecambe Bay in September (10,571) and October (11,291).

The 1984-85 Winter Shorebird Count recorded 48,609 Curlews, taking only second place in order of abundance to Oystercatcher (Moser & Summers 1987). Over 75% of these were located in Scotland, with very large concentrations in Orkney (17,729), Strathclyde (9,000+), Highland (3,000+) and on the Uists (1,000+). A further 12%, 7% and 5% of the total were found in England, Wales and N Ireland respectively.

The Winter Atlas shows an essentially coastal distribution for Curlews wintering in Britain, although some inland areas (eg. Cheshire and Shropshire) held concentrations of up to 1,000 birds. However, the distribution in Ireland was far from coastal, with large numbers of Curlews wintering throughout the country, especially in the west (Lack 1986).

Prater (1981) suggested that 90,000 Curlews winter on the estuaries of Britain and Ireland, with perhaps up to 125,000 on all habitats. A revised estimate, based on the results of the Winter Shorebird Count and updated BOEE data, suggested a wintering population of 91,000 on Britain's coastline alone;

approximately 53% were on estuaries (Moser 1987). The Winter Atlas counts suggest that perhaps 50,000 birds winter inland in Ireland, and 5,000-7,000 inland in Britain. Thus a minimum of 146,000 Curlews winter in Britain and Ireland. This represents approximately 37% of those wintering on the East Atlantic flyway, and shows the exceptional importance of Britain and Ireland to Curlews in winter.

Table 39. CURLEW: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86	(Month)	Average
Morecambe Bay	x	4,422	6,401	10,514	7,715	(Feb)	7,263
Solway	3,543	4,000	3,030	4,533	5,173	(Dec)	4,056
Wash	2,871	2,723	4,817	(1,405)	5,149	(Dec)	3,890
Lough Foyle	1,632	4,000	1,610	2,800	4,323	(Dec)	2,873
Dee	2,545	2,015	2,600	2,435	4,680	(Dec)	2,855
Moray Basin	x	1,666	1,852	2,691	3,013	(Feb)	2,306
Humber	(1,216)	(1,282)	1,499	2,065	3,095	(Dec)	2,220
Severn	1,087	1,813	1,931	3,126	2,777	(Jan)	2,147
Foulness	2,858	1,919	1,768	1,890	2,074	(Feb)	2,102
Duddon	1,715	1,731	2,358	1,634	1,971	(Feb)	1,882

#### Spotted Redshank Tringa erythropus

BOEE peak midwinter counts normally reveal 40-80 Spotted Redshanks on the UK estuaries. The 1985-86 winter produced 48 individuals in December, 36 in January and 38 in February, these birds showing the usual south-westerly distribution. Only 3 sites held more than 10 individuals during the 1985-86 winter: the Dee (17 in January), the Lynher, Cornwall (14 in December) and the Ribble (13 in February). The Medway which was incompletely counted recorded only a single bird during the December-February period, although this site usually produces the highest count in most winters. The highest autumn passage count of Spotted Redshanks during 1985-86 was 100 individuals on the Wash in September.

The Winter Atlas suggests there to be between 80 and 200 Spotted Redshanks wintering in Britain and Ireland, with probably fewer than 500 on the Atlantic coast of Europe as a whole (Lack 1986). The Atlas records a paucity of records from NW England; in 1985-86 two of the highest counts were those from the Dee and Ribble.

#### Redshank Tringa totanus

The January Redshank totals for sites counted in both 1985 and 1986 showed a small increase of 5.7%, keeping the January population index at the low levels which have occurred throughout the 1980s. A revision of the population estimates for Redshank wintering in Britain gave a national total of 75,000 birds (Moser 1987), a reduction of 25% on the previous estimate (Prater 1981). Although Redshanks are usually considered as typically estuarine waders, the 1984-85 Winter Shorebird Count revealed that more than 20,000 Redshanks (ie. one-quarter of the British total) winter on non-estuarine coasts, particularly the flat rocky shores of E Scotland, Orkney and Shetland.

Redshanks are particularly vulnerable to cold weather mortality, perhaps because they are unable to accumulate sufficient body reserves to withstand long periods of cold weather (Davidson 1981), and several large mortalities have been recorded. The 1985-86 cold spell in February was unusually late following a very mild start to the winter. The number of dead, ringed Redshank reported to the BTO up to the end of February was not unusual (Marchant 1986). However, mortality may well have been severe, as the number of recoveries to the end of May 1986 (93) was higher than the number over the same period following the severe weather of January 1985 (71). The mortality was most evident in SE England where the most severe conditions occurred. Clark & Davidson (1986) reported over 300 Redshanks dead on the Wash and Stour estuaries alone.

Despite little change in the January population index, a number of sites reported increased or even record numbers of Redshank in 1985-86. Table 40 lists all estuaries holding internationally important concentrations. The December count of 6,268 on the Moray Basin was the highest midwinter count in the UK and a record winter count for this site. An even larger count of 7,629 in October shows the important role of the Moray Basin as an autumn passage site for Redshanks. The count of 4,041 Redshanks in February on Lindisfarne was also a record, as was the December total of 2,399 on the Deben in Suffolk. The winter peak on the Clyde (2,732) fell back slightly from the 1984-85 peak (3,169), keeping the populations at the low levels which have been present throughout the 1980s. In a detailed examination of wader population trends on the Clyde, Furness *et al* (1986) concluded that the spectacular decline of Redshanks was probably attributable to reduced levels of organic pollution which may have either reduced the densities of the main prey of Redshanks, or allowed fish to enter the estuary and compete with waders for food.

Table 40. REDSHANK: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Morecambe Bay	x	2,454	5,254	(5,001)	5,930 (Feb)	4,546
Moray Basin	x	2,054	2,270	4,111	6,268 (Dec)	3,676
Wash	2,446	2,893	2,603	(1,643)	5,566 (Dec)	3,377
Humber	(1,776)	(1,885)	2,682	2,896	3,588 (Dec)	3,055
Dee	2,880	3,185	2,672	2,074	3,435 (Jan)	2,849
Clyde (Inn.Firth)	2,609	2,574	1,732	3,169	2,732 (Dec)	2,563
Lindisfarne	1,500	2,845	2,380	2,010	4,041 (Feb)	2,555
Stour	2,748	2,039	2,062	3,221	2,033 (Jan)	2,421
Forth	1,517	2,919	2,492	(1,925)	2,480 (Feb)	2,352
Orwell	(508)	2,475	3,105	2,625	868 (Feb)	2,268
Strangford Lough	1,902	2,092	2,292	2,573	2,366 (Jan)	2,245
Chichester Hbr.	1,645	2,516	2,230	1,893	1,808 (Dec)	2,018

#### Greenshank *Tringa nebularia*

Only 130 Greenshanks were found during the 1984-85 Winter Shorebird Count on the non-estuarine shores of the UK. These were distributed as follows: 12 in England (all in Devon and Cornwall), 95 in Scotland (almost all on the west coast), 18 in Wales and 5 in N Ireland. In addition the estuary counts usually

record a winter peak of 200-300 birds, suggesting a total wintering population of 350-450 individuals in the UK. This compares with a recent estimate for the UK breeding population of 800-900 pairs (Nethersole-Thompson & Nethersole-Thompson 1979) and for the British and Irish wintering population of 600 birds (Prater 1981). However, the Winter Atlas suggests a total wintering population of 1,000-1,500 birds, substantially more than previous estimates (Lack 1986).

It is not known whether the British and Irish wintering birds comprise the Scottish breeding population, although the timing of spring migration by this population maybe a strong indication that this is the case (Lack 1986). If this is so, then our wintering population is extremely important because it represents the bulk of the Scottish breeding population, the most westerly in Europe.

The highest counts of Greenshanks on the UK estuaries in the winter of 1985-86 showed the usual westerly distribution. The following sites recorded peaks of more than ten individuals: Lough Foyle (34 in December), Inner Clyde (25 in December), Taw/Torridge (21 in December), Larne Lough (16 in January), Kingsbridge (15 in February), Exe (15 in December), Lavan Sands (15 in December), Cleddau (15 in February), Carlingford Lough (15 in January), Strangford Lough (15 in February), Poole Harbour (13 in December), Dundrum Bay (12 in January), Avon, Devon (10 in December).

#### Green Sandpiper Tringa ochropus

Green Sandpipers were recorded at just 18 sites in midwinter during 1985-86. Only 6 of these recorded more than one bird: North Kent Marshes (3 in February), Tavy (2 in February), Avon (2 in January), Alde (2 in December), Inner Clyde (2 in December), Cleddau (2 in December to February).

The Winter Atlas shows most records in SE England and tentatively suggests a wintering population of 500-1,000 birds. The majority of records were inland (Lack 1986).

#### Common Sandpiper Actitis hypoleucos

Only 5 sites recorded more than 2 individuals in midwinter 1985-86: Taw/Torridge (6 in January), Avon (3 in December-February), Teifi (3 in December), Kingsbridge (2 in December), Southampton Water (2 in January). Seven other sites produced midwinter records. The highest counts of the autumn were on the Severn (67) and Morecambe Bay (33), both in August.

Prater (1981) suggested a wintering population of about 50 Common Sandpipers on estuaries, with about 65% of these in SW England, and by including inland sites, considered the total wintering population of Britain and Ireland to be less than 100 individuals. The results of the Winter Atlas suggest this to be an accurate population assessment and show that approximately 50% of the entire population of Britain and Ireland winters in SW England (Lack 1986).



# Turnstone *Arenaria interpres*

The December count of over 18,000 Turnstones for the UK was a new BOEE record, exceeding the previous record (January 1977) by over 4,000 birds. The January and February 1986 counts also exceeded the previous record. This increase can be explained by two factors: firstly by the inclusion of counts from the Outer Ards peninsula, N Ireland, where a peak of 1,903 Turnstones was recorded in December. This open coastal shoreline between Belfast and Strangford Loughs was 'discovered' as a very important wader habitat during the 1984-85 Winter Shorebird Count. More intensive studies have since confirmed the abundance of waders there (Austin & Leach 1986). The second factor leading to the very high counts in 1985-86 was the relatively high numbers of birds wintering in the UK. The January totals for sites counted in both 1985 and 1986 were up by 35%, suggesting an excellent breeding season for this species in 1985. This increase takes the January index to a record peak value of 192.

Turnstone was the third most abundant species on non-estuarine coasts (after Oystercatcher and Curlew) during the 1984-85 Winter Shorebird Count, with more than three-quarters of the population wintering in Britain being found outside the estuaries (Moser 1987). The results of this survey have increased our estimates of the size of the Turnstone population wintering in Britain by 80%, from 25,000 to 45,000. This represents more than three times the number wintering in the whole of the rest of western Europe (NOME 1984), although the present population estimates for Ireland may also be far too low. Metcalfe & Furness (1985) have recently reported results of a three year study of Turnstones on the rocky shores of the Firth of Clyde, Scotland. Observations of colour-ringed Turnstones revealed that most individuals were resident in the study area from autumn to April/May each year. The annual mortality rates of adults were estimated to be less than 15% and the population was extremely stable.

The principal sites for Turnstones wintering in the UK are listed in Table 41.

Table 41. TURNSTONE: MAXIMA AT MAIN RESORTS.

	1981-82	82-83	83-84	84-85	85-86 (Month)	Average
Outer Ards	x	x	x	987	1,903 (Dec)	1,445
Forth	(1,034)	1,195	(888)	(667)	(829) (Jan)	(1,195)
Morecambe Bay	x	770	934	(755)	1,703 (Dec)	1,136
Wash	824	496	973	(911)	764 (Jan)	764
Guernsey	484	350	665	717	508 (Feb)	545
Burry Inlet	270	215	710	470	745 (Dec)	482
Outer S Solway	x	x	387	454	521 (Dec)	454
Pagham	448	166	376	545	348 (Jan)	377
Humber	243	(359)	366	487	372 (Dec)	367
Stour	366	469	430	290	277 (Jan)	366
Southampton Water	437	345	275	333	387 (Dec)	355

## PRINCIPAL SITES

The most important sites for waders wintering in the UK are shown in Table 42 in the order of the winter peak counts for 1985-86. The winter peak is calculated by listing the highest counts for each species from December to February, irrespective of the month they were made, then totalling these counts. This procedure makes allowance for any poor counts that may have been made in particular months, and gives due importance to peaks of wintering numbers occurring early or late in the midwinter period. If only one or two counts were made during these three months, the peak may be an underestimate. Only those sites with a winter peak of more than 10,000 waders are listed; those regularly holding more than 20,000 waders are considered of international importance (Smart 1976; Atkinson-Willes *et al* 1982). Also shown are the all-year peaks for the same sites, calculated by adding the monthly maxima recorded for each species for the whole July to June period.

This analysis clearly shows the tremendous conservation importance of the top wintering wader sites, with almost 60% of the coastal waders wintering in the UK occurring on the top ten estuaries. The main changes at the top in 1985-86 are substantial increases on the Dee (mainly Oystercatcher and Grey Plover), Ribble and Wash. The Wash held considerably more waders than Morecambe Bay, the second in the list, largely as a result of the record numbers of Knot.

Table 42. PEAK COUNTS OF WADERS 1985-86. (Numbers of months in which counts were made in brackets).

	Winter	All-year
Wash	214,633 (2)	224,574 (5)
Morecambe Bay	145,348 (3)	155,591 (11)
Humber	83,460 (3)	92,610 (9)
Dee	77,267 (3)	98,866 (12)
Ribble	72,731 (3)	100,582 (12)
Strangford Lough	58,692 (3)	61,249 (7)
Alt	53,267 (3)	55,319 (12)
<del>Solway</del>	49,565 (3)	66,086 (11)
Severn	48,333 (3)	50,901 (12)
Foulness	46,456 (3)	50,992 (8)
Chichester Harbour	41,807 (3)	44,620 (7)
Moray Basin	39,640 (3)	42,618 (4)
Langstone Harbour	38,398 (3)	40,411 (12)
Swale	36,479 (3)	37,592 (7)
Burry Inlet	35,133 (3)	36,240 (12)
Lindisfarne	35,111 (3)	42,179 (1)
Forth	32,451 (3)	34,425 (10)
Mersey	30,053 (2)	33,649 (11)
Lough Foyle	24,056 (3)	24,761 (7)
Blackwater	22,953 (3)	26,765 (8)
Stour	20,692 (3)	23,295 (6)
Leigh/Canvey	19,462 (3)	23,991 (8)
Duddon	19,299 (3)	20,485 (10)
<del>Outer S. Solway</del>	17,911 (3)	22,389 (12)
Orwell	17,269 (3)	18,443 (9)
Southampton Water	16,398 (3)	17,442 (12)
N Norfolk Coast	15,930 (3)	17,816 (7)
Montrose Basin	15,847 (2)	17,425 (8)
Taw/Torridge	14,538 (3)	15,194 (10)
Teesmouth	14,065 (3)	17,095 (12)
Poole Harbour	13,998 (3)	14,263 (7)
Cleddau	13,296 (3)	14,039 (9)
Lavan Sands	13,247 (3)	13,915 (6)
Medway	12,933 (3)	14,747 (9)
Tay	12,484 (3)	12,980 (7)
Exe	12,217 (3)	14,049 (11)
Clyde (Inner Firth)	11,814 (3)	13,180 (7)
Outer Ards	11,543 (3)	11,732 (5)
Eden	11,298 (3)	12,845 (12)
Dengie Flats	10,798 (3)	10,805 (6)
N Kent Marshes	10,689 (3)	12,358 (12)
Belfast Lough	10,046 (3)	12,049 (8)

# 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, except for species confined to those estuaries which are always well covered (e.g. Black-tailed Godwit). 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 p.8), except that 1973 is used as the arbitrary "anchor" year.

The indices for the period 1971-1986 are shown in Table 43. 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 Oystercatcher, Ringed Plover, Grey Plover and Turnstone reached record heights in January 1986, while the low levels of Redshank and Dunlin in recent years showed little change.

Table 43. JANUARY INDICES FOR WADER POPULATIONS IN THE UNITED KINGDOM, 1971-86.

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

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## A P P E N D I X

### INTERNATIONAL AND NATIONAL IMPORTANCE

Among other criteria, 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). Any site regularly holding a total of 10,000 wildfowl or 20,000 waders also qualifies. 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 44 gives the qualifying levels among wildfowl and waders for both these categories of importance. The Nationally Important levels for a number of species, especially geese and waders, have been revised in the light of new data. Please note that this category applies to Great Britain only; equivalent figures have not been assessed for Ireland.

Forty countries are now Contracting Parties to the Ramsar Convention on Wetlands of International Importance; they have designated a total of 344 sites, covering nearly 20,000,000 ha. The United Kingdom has designated a further six sites since November 1985 - the Alt Estuary, Leighton Moss, Martin Mere, Rockcliffe Marsh, Loch Eye and the Loch of Skene - bringing the total to 30 out of the 152 sites in Britain so far identified by the Nature Conservancy Council as fulfilling the criteria. In addition, Loughs Neagh and Beg in Northern Ireland constitute one of the original sites designated by the U.K. government on ratification in 1976, but no further areas in the Province have been added.

Twelve of the U.K. Ramsar sites (including the six new ones listed above) have also been declared Special Protection Areas under the EEC Directive on the Conservation of Wild Birds. A further ten localities are designated as SPAs only. A total of 207 sites have so far been identified by the NCC as qualifying for designation as SPAs (including 122 which are also eligible as Ramsar sites).

Table 44. 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)	1,000 - passage - 4,000 <sup>total</sup>
Golden Plover	2,000	10,000
Grey Plover	210	800
Lapwing	10,000	20,000**
Knot	2,200	3,500
Sanderling: Passage	300	500
Winter	140	150
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	50 (Passage)	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 10,000 wildfowl or 20,000 waders qualifies as internationally important by virtue of the absolute numbers.

Sources for criteria for International Importance: Scott (1980); Rüger et al. (1986).

