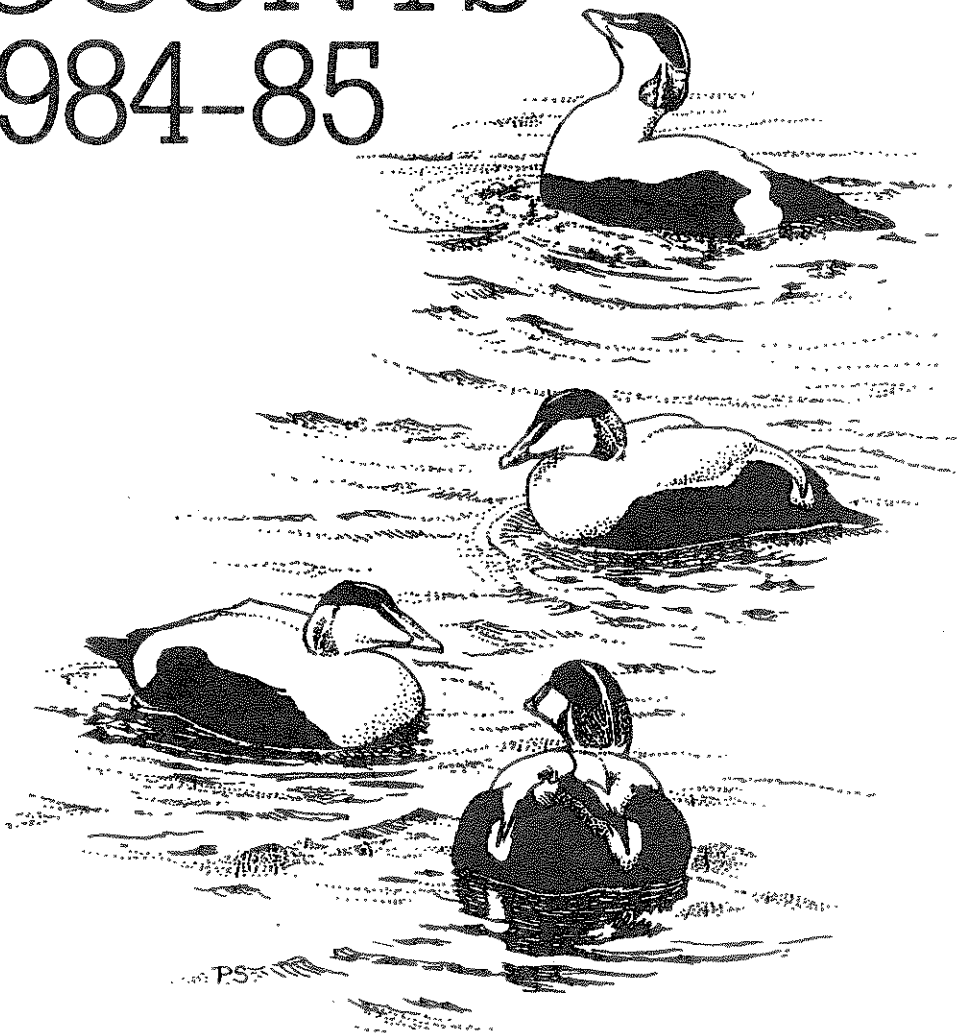


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WILDFOWL AND WADER COUNTS 1984-85



Wildfowl and Wader Counts 1984 - 1985

The Results of the National Wildfowl Counts and Birds of Estuaries Enquiry

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As ever, our greatest debt of gratitude is to the many hundreds of volunteer observers who carried out the counts on which this report is based.

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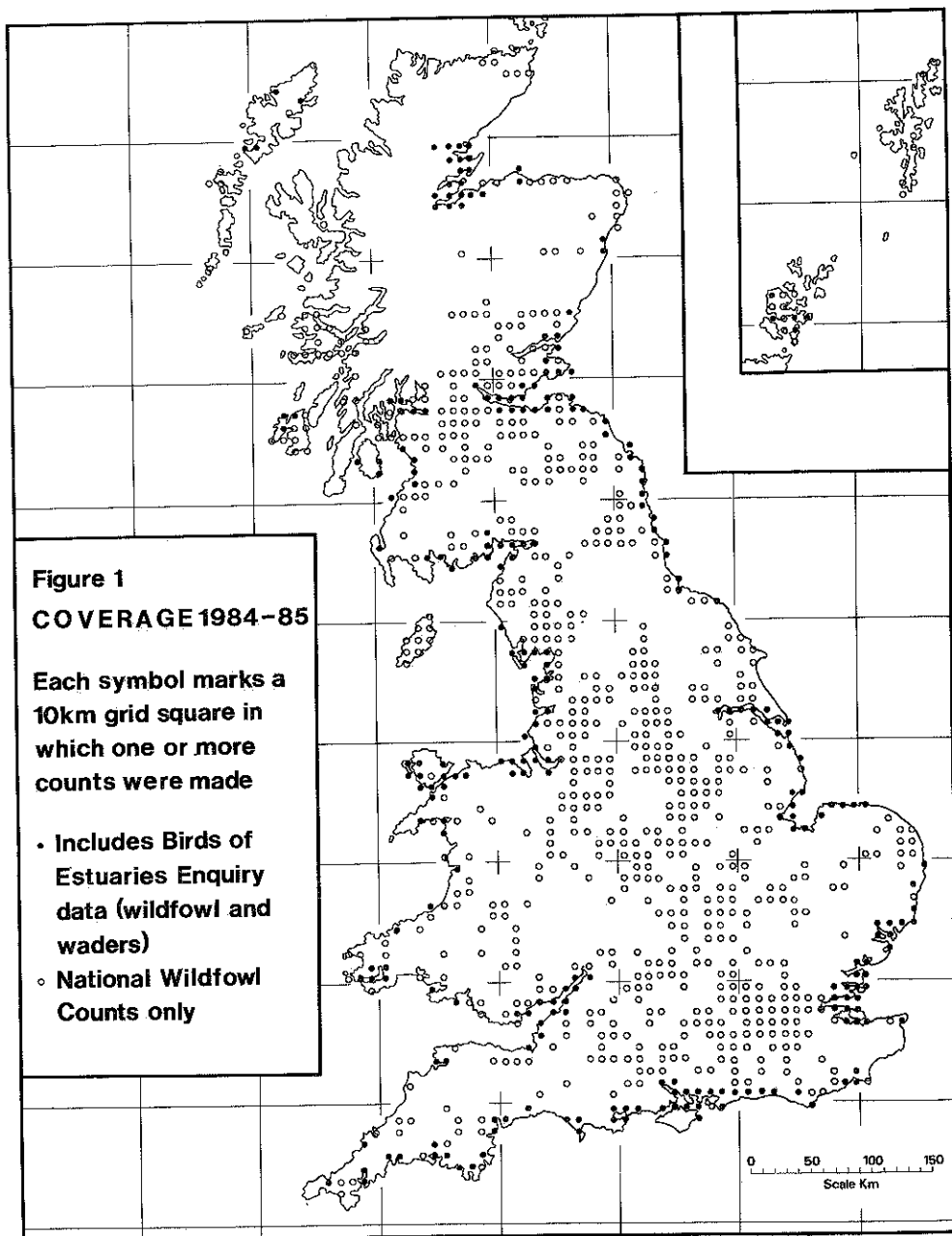
Weather

The autumn was very wet, but water levels took a long time to return to normal after the dry summer of 1984. Conditions were particularly bad in parts of Scotland in November, with heavy rain, low cloud and poor visibility. Temperatures were generally mild until late December, when cold northerlies began. In the first week of January most of north-west Europe was gripped by frozen conditions, which reached south-east England on 6th January and the whole of Britain by 12th, and persisted for a further week. Most inland waters, and some foreshore, were frozen by the time of the January count. Late January and early February were mild, but cold weather returned on 8th February. Freezing easterlies persisted until about the 20th, disrupting both the count and the birds themselves for the second month running. A mild spell followed, but cold northerlies returned in time for the March count, causing some waters to be frozen once more.

A wildfowling ban was in force, under the provisions of the 1981 Wildlife and Countryside Act, from 16th to 29th January in England and Wales and from 18th to 30th January in Scotland.

Figure 1

The extent of count coverage in Britain in 1984-85 is shown in Figure 1 (overleaf). In Northern Ireland, counts were made at the following sites: Lough Foyle, the Bann Estuary, Larne Lough, Belfast Lough, Strangford Lough, Dundrum Bay and Carlingford Lough.



W I L D F O W L

1984-85 was the 38th season of the Wildfowl Trust's National Wildfowl Counts, which 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 1984-85 were: September 16th, October 14th, November 18th, December 16th, January 13th, February 17th and March 17th. Coastal areas were counted on different dates where necessary to coincide with appropriate tidal conditions. The British Trust for Ornithology kindly supplied data from the Birds of Estuaries Enquiry for some areas not covered in the wildfowl counts. On the November and March count dates the Wildfowl Trust's annual Pink-footed and Greylag Goose Censuses were also undertaken, for the 26th year, involving special counts of roosts and feeding areas.

The record level of coverage of the previous season was maintained in 1984-85, with 1,750 sites counted in England, Scotland and Wales, 953 of them in all seven months. Despite the adverse weather 1,403 places were visited in January and 1,178 in February.

Data from Northern Ireland have been included in Table 2 and the species accounts. A preliminary report on the Wildfowl Trust's Late Summer Wildfowl Survey, which ran from July 15th-August 31st 1985, appears on pages 30-31.

Conservation

The National Wildfowl Count data are in constant demand by the Nature Conservancy Council, RSPB and other organisations to provide background information for the establishment of reserves and SSSIs and for the defence of sites under specific threat. Wildfowl count data were used in the attempt to prevent potentially adverse developments in the following areas over the last twelve months: Pagham Lagoon, W. Sussex; the Southend foreshore, Essex; King George V Reservoir, Gt. London; the Orwell Estuary, Suffolk; Alton Water, Suffolk; Grafham Water, Cambs; Rutland Water, Leics; the Lower Derwent Ings, Humberside/N. Yorkshire; Liverpool Bay; Pennington Reservoir, Gt. Manchester; and the Loch of Strathbeg, Grampian. The final outcome of all these cases is still awaited.

Total counts

Table 1 shows the total count of each species (except for certain seaducks) month by month in England, Scotland and Wales in 1984-85, together with the average maxima for the previous five seasons. For the geese which are covered by special yearly or twice yearly censuses (Pink-footed, Greenland White-fronted, Greylag and Barnacle) only the results of these are given.

Principal sites

In addition to the individual species criteria (see Appendix), anywhere holding over 10,000 swans, geese and ducks is regarded as Internationally Important (Smart 1976; Spagnesi 1982). Table 2 lists those sites in Britain and Northern Ireland where the total number of swans, geese and ducks exceeded 10,000 in at least one month of 1984-85. (Anywhere holding fewer than 5,000 ducks is omitted.)

Table 1. Total count of wildfowl in Great Britain, 1984-85

	Monthly totals (no. of sites)						Figures over 100 rounded to nearest 10				Average Max 1979-80 to 1983-84
	Sep(1077)	Oct(1116)	Nov(1166)	Dec(1148)	Jan(1403)	Feb(1171)	Mar(1171)	Mar(1171)	Mar(1171)	Mar(1171)	
Great Crested Grebe	6,830	6,560	6,140	5,080	4,810	4,510	5,260	5,620*			
Mute Swan	7,080	7,650	7,980	7,530	6,910	5,340	5,630	7,670			
Bewick's Swan	2	28	3,110	5,620	6,170	7,510	2,090	4,870			
Whooper Swan	12	850	2,120	2,180	1,900	1,950	1,510	2,653			
Bean Goose	0	81	32	170	340	420	9	230			
Pink-footed Goose+			86,000				97,000	91,000			
European White-fronted Goose	200	180	490	2,520	6,690	6,750	770	5,760			
Greenland White-fronted Goose			9,490				8,875	7,750*			
Greylag Goose+			64,000				71,000	85,800			
Canada Goose	26,600	25,040	22,140	24,300	24,620	22,540	13,240	19,450			
Barnacle Goose: Islay+			18,900					17,000			
Solway+		10,500						8,390			
Dark-bellied Brent Goose	3,220	31,140	67,040	58,020	89,000	82,330	53,530	73,230			
Light-bellied Brent Goose	10	140	1,000	700	3,030	2,120	5	1,080			
Shelduck	13,570	16,170	45,690	38,660	57,940	61,830	59,780	69,330			
Wigeon	52,440	81,010	157,610	173,020	319,970	170,270	64,350	182,840			
Gadwall	2,600	3,280	4,340	4,450	3,310	2,430	2,000	3,550			
Teal	47,660	61,150	89,710	81,970	64,470	47,080	32,200	94,270			
Mallard	135,130	140,950	156,200	147,370	159,340	122,880	57,470	167,810			
Pintail	6,030	23,580	30,810	31,090	19,280	17,510	4,990	22,680			
Shoveler	6,320	7,860	7,310	5,670	4,190	3,500	3,500	7,270			
Pochard	12,510	18,760	31,970	33,920	36,050	28,550	13,400	35,020			
Tufted Duck	38,660	36,760	41,170	40,820	43,120	37,470	31,690	44,330			
Scaup	1,160	1,400	2,020	1,000	2,520	2,700	2,700	3,900			
Goldeneye	280	1,150	6,460	7,040	11,120	9,930	9,250	8,830			
Snow	0	2	8	23	160	390	48	60			
Red-breasted Merganser	2,170	4,300	2,220	3,380	2,480	2,170	1,940	2,770			
Goosander	280	640	990	1,310	1,920	2,420	2,020	2,910			
Ruddy Duck	1,300	1,640	1,800	1,710	1,760	1,550	1,510	1,520			
Coot	74,860	77,600	81,970	76,000	80,740	65,090	40,560	76,290*			

*1982-83 and 1983-84 maxima only + Special census totals only given - see text

Table 2. Sites with a maximum count of 10,000 or more wildfowl

	Highest total count 1984-85 (Month)	1983-84 (Brackets=incomplete)
Inner Solway Firth	42,463 (Jan)	39,905
The Wash	38,815 (Jan)	41,558
Ribble Estuary	38,774 (Dec)	23,355
Mersey Estuary: Ince/Stanlow	36,314 (Dec)	28,249
Ouse Washes	35,328 (Feb)	43,217
Hamford Water	31,427 (Jan)	17,013
Lough Foyle	29,957 (Nov)	31,827
The Swale	29,856 (Jan)	15,962
Foulness/Leigh/Canvey Island	26,112 (Oct)	26,680
Loch of Strathbeg	24,985 (Oct)	13,483
Strangford Lough	22,290 (Nov)	19,206
Morecambe Bay	22,084 (Nov)	(4,381)
Blackwater Estuary	20,502 (Feb)	9,105
Dee Estuary	20,332 (Nov)	22,285
Abberton Reservoir	17,391 (Feb)	16,536
Loch Leven	17,254 (Oct)	17,634
Montrose Basin	16,876 (Nov)	15,782
Crouch/Roach Estuary	16,238 (Jan)	7,646
The Humber	14,238 (Jan)	17,315
Chichester Harbour	14,114 (Feb)	16,309
Rutland Water	13,925 (Dec)	13,821
New Grounds, Slimbridge	13,702 (Dec)	13,374
South Thames Marshes	12,892 (Jan)	3,946
Lower Derwent Ings	12,632 (Feb)	12,758
Lindisfarne	12,372 (Oct)	37,674
Cromarty Firth	12,116 (Nov)	16,151
Firth of Forth	11,858 (Feb)	10,292
Burry Inlet	11,310 (Jan)	8,208

Indices

Table 3 shows the trends in numbers of individual species in Britain over the last 20 years. These are given as 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 "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), two 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. For interpretation of the indices see the individual species accounts.

Table 3. Indices of abundance of wildfowl in Britain, 1965-66 to 1984-85, based on 1970-71 = 100 (figures for 1965-66 to 82-83 from Owen et al in press)

	1965-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
Mute Swan	104	98	95	93	91	100	101	113	106	97	95	98	88	87	99	110	122	120	122	116
Bewick's S.	107	113	105	104	99	100	90	93	91	77	87	80	80	87	93	92	89	105	79	81
Whooper S.	32	57	53	52	54	100	46	58	88	68	93	152	147	210	164	206	201	165	218	262
	75	94	58	51	111	100	103	95	87	126	104	172	111	221	173	139	182	142	122	122
	185	222	117	91	114	100	95	124	118	155	130	105	112	106	118	120	91	139	112	105
E. Whitefront	62	36	79	114	136	100	43	76	46	15	32	43	29	60	31	47	36	43	34	47
Canada Goose	66	64	67	72	90	100	115	139	140	142	135	159	178	170	233	231	234	282	282	349
D.b. Brent	84	83	81	89	88	100	108	142	174	145	261	260	228	342	432	370	420	489	488	506
Shelduck	106	68	104	126	97	100	95	87	146	110	146	146	148	161	166	224	172	222	231	178
	94	98	96	98	146	100	101	109	105	96	125	112	111	173	139	145	173	121	108	117
Wigeon	105	120	110	111	114	100	144	148	167	130	145	152	145	150	153	174	173	208	207	170
	86	85	94	92	99	100	79	84	87	69	67	94	65	107	92	93	109	67	62	146
Gadwall	36	49	38	70	55	100	125	181	162	163	116	71	151	173	237	207	224	264	308	307
	22	28	28	42	46	100	68	74	45	63	87	85	122	103	186	223	175	260	222	268
Teal	79	79	67	86	101	100	102	115	136	121	142	147	129	154	177	204	207	202	200	155
Mallard	70	82	91	76	95	100	87	82	98	91	84	82	82	79	82	84	84	104	96	94
	109	102	94	94	92	100	85	82	86	84	88	81	76	102	121	108	96	103	90	95
Pintail	69	80	83	80	77	100	94	166	194	162	165	198	96	156	177	124	164	212	186	145
Shoveler	82	105	93	124	85	100	139	153	171	163	177	192	204	203	188	176	206	210	210	210
	34	60	61	87	72	100	124	93	134	114	137	146	152	121	141	139	101	153	149	93
Pochard	105	124	100	105	93	100	112	130	138	140	153	110	143	101	103	124	82	102	102	96
Tufted Duck	53	60	57	62	88	100	101	109	124	116	115	106	118	128	139	128	149	122	128	129
	80	77	79	85	91	100	106	119	121	117	125	92	100	94	112	129	85	108	103	100
Scap	81	108	151	109	102	100	105	151	130	84	58	23	32	31	19	16	18	7	4	8
Goldeneye	101	75	87	89	106	100	134	145	127	122	121	92	124	106	104	108	92	90	88	113
Smew	399	223	269	159	158	100	119	66	70	41	44	39	39	215	59	39	72	27	35	128
R.b. Merganser	50	60	62	244	89	100	136	80	124	135	157	162	197	223	487	228	230	201	183	340
Goosander	65	112	88	87	134	100	132	106	192	154	174	156	165	245	278	188	179	158	188	220
Ruddy Duck						100	165	259	293	217	554	1104	596	1108					1363	1077

NB: The Ruddy Duck indices are for 1974-75 to 84-85 only, based on 1974-75 = 100; see p.29

THE EFFECTS OF THE COLD WEATHER OF JANUARY AND FEBRUARY 1985 ON
THE NUMBERS AND DISTRIBUTION OF WILDFOWL IN BRITAIN

1984-85 was the third hard winter in seven years, following those of 1978-79 and 1981-82. As already noted, extremely cold conditions began in north-west Europe at the start of January. Even in a mild winter a significant movement of wildfowl from the Continent into Britain normally takes place at this time, but reports from around the country in the first half of January showed that remarkably little immigration was occurring. Overseas contacts of the International Waterfowl Research Bureau confirmed that most wildfowl were staying put, apparently trying to conserve their energy and "sit out" the frozen conditions. Subsequent analyses have indicated that the usual winter arrival in Britain had already largely occurred, the mid-December numbers for most species being high. As Table 4 shows, little further increase occurred before mid-January except in a few cases, namely Brent Goose (both Dark and Light-bellied), Wigeon, Goldeneye and Smew. Wigeon and Smew have figured strongly - and rapidly - in previous hard weather influxes; in this instance, by mid-January the numbers of Wigeon in Britain were at their highest ever level by far. As in 1981-82 (Salmon 1982), despite a breeding failure in the intervening summer the numbers of Dark-bellied Brent Geese in Britain were at virtually the same level as in the previous winter. This is the first time, however, that Goldeneyes have been involved in such movements, indeed the January indices for 1978-79 and 1981-82 were low (see Table 3).

Table 4. The numbers of wildfowl counted in Britain in each month of 1984-85 (and 1983-84) expressed as a percentage of the total for the peak month, based on sites covered in all seven months

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Great Crested Grebe	100(100)	97 (81)	86 (92)	70 (74)	62 (70)	63 (77)	72 (91)
Mute Swan	100(100)	97 (82)	94 (86)	86 (80)	82 (69)	66 (63)	65 (62)
Bewick's Swan	0 (0)	0 (0)	42 (48)	77 (81)	83 (93)	100(100)	26 (29)
Whooper Swan	1 (1)	37 (56)	91(100)	100 (76)	91 (64)	89 (52)	72 (63)
European Whitefront	0 (0)	3 (0)	7 (17)	36 (62)	90 (71)	100(100)	12 (65)
Canada Goose	100(100)	92 (74)	84 (98)	85 (80)	88 (77)	82 (67)	49 (50)
Dark-bellied Brent G.	2 (0)	52 (37)	81(100)	83 (62)	100 (82)	100 (77)	64 (54)
Light-bellied Brent G.	0 (0)	5 (17)	33 (21)	23 (83)	100(100)	70 (75)	24 (0)
Shelduck	19 (26)	34 (49)	66 (80)	72 (92)	83 (82)	92(100)	100 (78)
Wigeon	14 (16)	23 (76)	46(100)	55 (75)	100 (72)	55 (66)	22 (37)
Gadwall	60 (85)	76 (72)	100(100)	97 (97)	72 (82)	51(100)	41 (78)
Teal	54 (38)	72 (59)	100 (73)	92(100)	67 (78)	50 (56)	36 (28)
Mallard	89 (93)	93 (85)	100 (92)	96(100)	90 (81)	78 (66)	37 (30)
Pintail	20 (22)	80 (75)	100 (67)	100(100)	59(100)	39 (54)	11 (18)
Shoveler	81 (96)	100 (86)	86(100)	67 (84)	45 (73)	39 (76)	42 (55)
Pochard	37 (37)	56 (66)	96 (94)	100(100)	96 (91)	91 (88)	44 (49)
Tufted Duck	97 (93)	92 (81)	100 (99)	96(100)	87 (90)	86 (86)	74 (71)
Eider	100 (99)	95 (98)	88 (94)	62(100)	59 (80)	76 (71)	74 (82)
Goldeneye	3 (2)	13 (11)	67 (85)	76 (96)	100 (81)	100 (97)	100(100)
Smew	0 (0)	0 (5)	3 (5)	8 (89)	48(100)	100 (77)	15 (32)
Red-breasted Merganser	67 (60)	87 (71)	100 (98)	100 (72)	97 (54)	73 (59)	80(100)
Goosander	11 (12)	28 (15)	39 (34)	61 (69)	69 (65)	100(100)	87 (72)
Ruddy Duck	74 (43)	86 (54)	100 (86)	99 (96)	99(100)	86 (95)	83 (69)
Coot	92 (95)	96(100)	100 (97)	90 (97)	86 (86)	77 (71)	47 (47)

Reports from around the country showed that a significant influx of other species did at last occur from about 11th January onwards - just as conditions were improving. Further waves of Wigeon and Smew arrived, along with unusually large numbers of Bewick's Swans, Goosanders and, to a lesser extent, Bean Geese, European Whitefronts, Shelduck, Pintail and Scaup. Further, lesser influxes took place when the weather deteriorated again in early February, though the Wigeon apparently chose to move on further south. By mid-March most species were back down to their normal level, but unusually large numbers of Goldeneye, Smew and Goosander remained, while Shelduck were at their highest level of the season.

Two species - apart from those which normally peak in autumn - left Britain in significant numbers in January: Teal, which confirmed the reaction to cold weather noted by Ogilvie (1981), and Pintail. The influx of Pintail to the south-east in January and February failed to compensate for a reduction in north-west England. The winter level of Shoveler was also much lower than usual, due presumably to a paucity of immigrants to follow the autumn passage.

Not long after the cold weather set in in January much of the foreshore froze, particularly on the east coast. Very high tides soon helped to clear the ice, however, and as in most hard winters several species moved in significant numbers onto salt water - see Table 5. Note that while the exodus of Teal was in progress a slight movement to the coast was also occurring. A remarkable proportion of the Smew were on the coast, which is hardly used in this country in normal winters. Gadwall and Ruddy Ducks, on the other hand, did not repeat the small movement onto estuaries recorded in 1981-82, while the proportion of Great Crested Grebes on salt water apparently fell in February. This may, however, have been due to birds resorting to unrecorded parts of the coast.

Table 5. The percentages of selected species of wildfowl occurring on the coast (including estuaries) in each month of 1984-85, based on sites covered in all seven months. (=total count below 10).

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Great Crested Grebe	7	9	18	14	14	11	4
Mute Swan	19	21	25	26	24	21	24
Bewick's Swan	-	-	9	8	11	12	10
Canada Goose	6	7	9	8	9	7	10
Wigeon	66	65	62	54	65	42	34
Gadwall	4	8	14	12	14	15	13
Teal	35	48	55	50	57	54	51
Mallard	19	24	26	24	26	23	27
Pintail	85	95	98	97	98	91	73
Shoveler	6	13	18	27	22	20	22
Pochard	1	2	5	6	10	8	8
Tufted Duck	1	2	3	4	10	7	4
Goldeneye	21	31	34	38	61	58	34
Smew	-	-	-	19	43	26	11
Coot	2	2	2	2	6	7	5

Regional shifts in distribution during the winter are harder to assimilate. A clear movement of Pink-footed Geese onto the Solway Firth took place, however, 27,000 being found there in January, a level not normally attained until March or April if at all. The complex movements of Pintail described earlier, and in the Species Account below, could well have included a southward shift within

the country. Shelduck, too, decreased in the north-west but increased in the south and east, while Pochard apparently moved into the south-west from most regions in January. Ruddy Ducks, whose increase and spread in this country owes greatly to their opportunism, left much of their Midlands stronghold in January and February for surrounding regions.

Despite the less severe conditions in northern England and Scotland the usual decline in dabbling ducks occurred in that region in January and February. The influxes of wildfowl were concentrated mainly in the south, and there is no evidence of any northward movements within Britain.

Just as the weather patterns and movements of wildfowl in 1978-79 and 1981-82 were very different, so 1984-85 was dissimilar again in both respects. In 1978-79 cold conditions prevailed in north-west Europe from late December to mid-March, interspersed with frequent short mild spells. Several abnormally large influxes of wildfowl to Britain occurred, the first soon after the onset of severe weather (Chandler 1981). In 1981-82 there were two distinct cold periods, from about 8th-28th December and 7th-16th January. Thereafter the winter was unusually mild. Conditions on the Continent were relatively less severe, and the influxes of wildfowl to Britain were only on a small scale (Salmon 1982). Chandler (1981) concluded that the timing, size and source of hard weather influxes of waterbirds to Britain depend on a variety of factors, such as breeding success, the severity of the weather earlier in the season and feeding conditions. When the cold weather of 1984-85 began on the Continent most wildfowl must have completed their migration thus far, yet they were highly reluctant to move further. Significant areas of broken snow and unfrozen water remained in the Low Countries and around the Baltic until well into January, and good feeding earlier in the season perhaps brought the birds into better than average condition for mid-winter.

For further information on particular species, see the individual accounts which follow.

SPECIES ACCOUNTS

NB: in the tables in both the wildfowl and wader sections a cross indicates no data and brackets around a count mean that the figure has been excluded when calculating the average, because of incomplete coverage. The averages in the final column are for the seasonal maxima 1980-81 to 1984-85. The "month" column shows the month in which the peak occurred in 1984-85.

Frequent reference is made in the wildfowl accounts to indices of abundance; these are given in Table 3.

Great Crested Grebe Podiceps cristatus

Despite the apparent decrease between October/November and January indicated by the count totals, there is no evidence that birds leave Britain even in the severest winters. In 1984-85 a few estuaries held large numbers for a short period during January's hard weather, notably Morecambe Bay (133) and the Orwell Estuary (100). Four further sites not qualifying for Table 6 carried over 100 at some time during the season: Queen Elizabeth II Reservoir, Surrey (144, January); Stewartby Lake, Bedfordshire (141, January); the Medway Estuary (136, November) and the Wash (103, September).

Table 6. Great Crested Grebe: maxima at main resorts

	1982-83	83-84	84-85 (Month)	Average
Rutland Water, Leics	191	771	966 (Oct)	643
Grafham Water, Cambs	225	350	950 (Feb)	508
Chew Valley Lake, Avon	445	510	465 (Oct)	478
Queen Mary Reservoir, Surrey	255	340	348 (Jan)	314
Eyebrook Reservoir, Leics	154	x	353 (Nov)	254
Firth of Forth	170	263	326 (Nov)	253
Pitsford Reservoir, Northants	223	176	139 (Sep)	179
Cotswold Water Pk. West, Glos	164	162	187 (Sep)	171
Loch Leven, Tayside	240	127	99 (Nov)	155
Lough Foyle, Co.Londonderry	146	85	201 (Nov)	144
Attenborough GPs, Notts	101	118	151 (Sep)	123
Blithfield Reservoir, Staffs	76	105	162 (Jan)	114
King George V Reservoir, Gt.London	90	115	130 (Feb)	112
Abberton Reservoir, Essex	185	87	57 (Dec)	110
Hillfield Park Reservoir, Herts	93	147	82 (Oct)	107
Wraysbury GPs, Berkshire	81	135	103 (Sep)	106

SWANS

Mute Swan Cygnus olor

Reports of more than 200 came from only six sites: Chesil Fleet, Dorset (681, December); the Ouse Washes, Cambs/Norfolk (570, December); Christchurch Harbour, Dorset (345, August); R.Welland, Spalding-Borough Fen, Lincs (316, November); the Loch of Strathbeg, Grampian (242, September) and Strangford Lough, Co. Down (242, November).

The suggestion of a decrease during the winter given in Table 4 is misleading: the birds are merely dispersing gradually from their postbreeding concentrations.

The flock on the river above Spalding declined remarkably between the November and December counts - from 316 to 32. The most recorded thereafter was 60. The reason for the disappearance of so many birds is unknown, although they may simply have been responding to a failure of the food supply. At the Ouse Washes, 20km south-east, the usual winter increase occurred, from 242 in November to 570 in December.

The analysis of the BTO's 1983 spring census is now complete, and shows that there were 18,900 in Britain, an increase of 7% on the 1978 figure, but a drop of 8% compared with 1955-56 (Ogilvie, in press). The wildfowl count indices for both September and January show very little change since the mid-1960s. It should be remembered, however, that most wildfowl with large resident populations, e.g. Tufted Ducks and Canada Geese, have increased substantially over the same period.

Bewick's Swan Cygnus columbianus bewickii

The total February count of 7,500, following the influx of late January, was by far the highest ever, representing nearly half the 16,000-16,500 estimated to have been in north-west Europe the previous winter (Beekman, Dirksen & Slagboom 1985). The count of over 5,000 on the Ouse Washes in February followed totals of 4,549 in December and 4,389 in January. In addition to the sites in Table 7 the following four held over 100 in February: the Wash (229), Martham Broad, Norfolk (163), Horsey Mere, Norfolk (160) and Pulborough Levels, W. Sussex (108).

The January index shows a steady increase throughout the last 20 years, interspersed with exceptionally high numbers during the cold continental weather of 1969-70, 1978-79 and 1984-85 (but not 1981-82). The Ouse Washes reached 1,000 for the first time in 1970-71, 2,000 in 1978-79 and 3,000 in 1983-84.

Table 7. Bewick's Swan: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Ouse Washes	2,995	2,842	2,792	3,364	5,227 (Feb)	3,444
Lough Neagh/Beg	493	(25)	(50)	x	x	493
Slimbridge, Glos	412	576	285	281	421 (Feb)	395
Nene Washes, Cambs	200	222	600	396	211 (Mar)	326
Martin Mere/Ribble Est.	179	267	220	374	330 (Feb)	274
Hampshire Avon	152	183	173	171	219 (Jan)	180
Walmore Common, Glos	124	380	110	94	167 (Dec)	175
Walland Marsh, Kent	53	182	143	173	x	138
Breydon Water, Norfolk	134	106	136	122	178 (Feb)	135
Lower Derwent Ings	214	24	60	126	140 (Feb)	113

Whooper Swan Cygnus cygnus

A count of 1,162 Whooper Swans at Lough Foyle in November was one of the largest ever made in Britain and Ireland. Elsewhere, however, the numbers were rather low. At the Loch of Strathbeg the peak of 234 in October was the smallest for 21 years. There were 230 on the Ouse Washes in March and 211 in Wigtown Bay, Galloway, in January.

The November trend shows considerable fluctuation, due in part no doubt to the timing of the main arrival from Iceland, but there is an overall pattern of increase. The January indices are more uniform. The true level of the current population should be ascertained by the Wildfowl Trust's January 1986 census of Whooper Swans in Britain and Ireland.

GEESE, by M.A. Ogilvie

Bean Goose Anser fabalis

In February 1985, the flock in the Yare Valley, Norfolk, reached a new post-war peak of 372. This compares with the previous highest of 329 in 1981-82 which also coincided with cold spells of weather on the Continent. The hard weather was also undoubtedly responsible for the occurrence of two small flocks, each of 13, at Thorpe Hall Lake, Humberside, and Theale Gravel Pits, Berkshire, in January, and the 16 seen at Holywell Pond, Northumberland, in February.

Elsewhere, the usual autumn flock appeared at Carron Valley Reservoir, Stirling, numbering 81 in October and early November. The lack of subsequent records, as in past years, is not conclusive proof that the birds were not still somewhere in the vicinity in what is a difficult area to search.

Pink-footed Goose Anser brachyrhynchus

The November 1984 census was seriously disrupted by bad weather, and the total found has been adjusted upwards on the basis of the breeding success (20.2% young birds) and the results obtained in the census of March 1985. The estimated total of 110,000 is a new record for the population. Table 8 shows the numbers found at the main resorts in the last five November censuses, a

time of year when there are significant concentrations of birds in eastern and south-eastern Scotland, and in Lancashire. The usual southwards redistribution through the winter was accelerated by the cold weather, and there were over 27,000 in the inner Solway Firth in January, and over 12,000 in Wigtown Bay in March. Numbers in Norfolk continued to increase, following the pattern of recent years, and there were over 9,000 in the area of the east Wash and the North Norfolk coast in late November.

Table 8. Pink-footed Goose: mid-November census results at main resorts

	1980-81	81-82	82-83	83-84	84-85	Average
South Lanes Mosses	8,821	17,886	18,408	16,283	14,922	15,264
Dupplin Loch, Perth	19,550	5,000	5,012	5,570	6,960	8,418
Meikle L/Ythan Estuary, Grampian	4,350	7,300	6,500	10,700	7,400	7,250
Westwater Res., Borders	7,000	12,390	9,240	3,600	2,700	6,986
Aberlady Bay, Lothians	11,930	4,510	5,165	3,420	4,580	5,921
Loch Leven	8,750	6,500	5,800	5,400	4,130	5,916
Montrose Basin, Angus	1,100	20	6,130	9,500	9,425	5,235
Loch of Strathbeg	2,200	5,900	6,200	2,850	8,850	5,200
Gladhouse Res., Lothians	5,150	3,500	1,050	11,900	65	4,337
Cameron Res., Fife	3,500	6,150	270	8,000	2,500	4,084
Carsebreck, Perth	5,680	3,380	4,920	2,840	500	3,464
Inner Solway	3,380	2,205	1,860	2,617	4,616	2,935
Hule Moss, Borders	3,672	1,000	1,315	2,650	3,000	2,327
GB TOTAL	95,000	90,000	89,000	101,000	110,000*	97,000

*estimated - census incomplete because of bad weather

European White-fronted Goose Anser albifrons albifrons

The cold weather produced the usual influx to give a peak count close to that of 1981-82, the last hard winter. However, the increase of little more than 1,000 over the mild winter level is negligible in the context of the 200,000 Whitefronts now wintering in the Netherlands. Their main hard weather movement is clearly south into France and not west into Britain. The 26% young birds found in the winter flocks is rather below average breeding success.

The January indices show a peak period around 1970, coinciding with a run of very good breeding seasons and moderately hard winters. Since then there has been a decline to a level below that of the mid-1960s, scarcely broken in cold seasons except that of 1978-79.

Table 9. European White-fronted Goose: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Slimbridge	3,000	4,508	3,040	3,400	4,200 (Feb)	3,629
Swale, Kent	1,700	1,500	1,493	876	1,300 (Feb)	1,373
Hampshire Avon	59	1,500	292	385	530 (Jan)	553
Dryslwyn, Dyfed	406	720	320	305	290 (Feb)	408
S.Thames Marshes	220	635	331	464	360 (Mar)	402
Holkham, Norfolk	145	170	270	295	240 (Feb)	224
GB TOTAL	5,700	6,910	5,700	5,500	6,750 (Feb)	6,112

Greenland White-fronted Goose *Anser albifrons flavirostris*

The mid-November and mid-March censuses found 9,490 and 8,826 respectively in Britain (Stroud 1985). These are substantially up on the equivalent figures for the previous winter (8,188 and 7,926). Note that the March 1984 count has been adjusted upwards from the figure published in last year's report, following the receipt of further information. The increase in 1984-85 almost certainly reflects reduced mortality following the protection given this race in Scotland by the 1981 Wildlife and Countryside Act. Certainly the breeding success among the Scottish birds, with 12.1% young in the autumn flocks, was not large enough to have produced such an increase. The drop between the November and March counts may be due to birds moving to Ireland during the winter.

In Ireland, where there has been a three year shooting moratorium, the numbers have also increased. The autumn and spring totals were, respectively, 7,526 and 9,598 in 1983-84, and 9,320 and 10,945 in 1984-85 (Wilson & Norris 1985). The increases between autumn and spring provide further evidence of movement from Scotland to Ireland.

The November 1984 numbers on the main British haunt of Islay were at a near-record level of 5,256. They had fallen to 4,462 by December, certainly suggesting onward movement to Ireland, but were up slightly again by March to 4,800. There were over 1,250 birds at two sites on the Mull of Kintyre in November, while other main centres in that month included Tiree (620 split between several sites); Stranraer, Wigtown (420); lochs in Caithness (290) and Loch Ken, Kirkcudbright (285). In March there were a record 210 at Endrick Mouth NNR, Dunbarton.

At Wexford Slobs, the main Irish haunt, the numbers increased from 6,097 in November to 7,918 in mid-December, with 7,590 remaining in early April (Wilson & Norris 1985).

Greylag Goose *Anser anser*

The mid-November census, carried out at the same time as the Pinkfoot count, was similarly affected by strong winds and heavy rain, and the total of 95,000 is also an estimate. The breeding success of 15.8% was no more than moderate. Table 10 shows the mid-November counts for the main resorts used by this species. The massive concentration at Loch Eye in November 1981 was due to the geese finding a single large corn field which was left unharvested and then flattened by gales. This part of northern Scotland is still an important arrival point for the geese, though, and there were 13,000 present there in

October 1984.

Greylags do not normally gather in such large flocks as Pinkfeet, and also disperse more widely as the winter progresses. The only March counts of over 3,000 were at the Loch of Strathbeg (8,350), the Loch of Skene (5,060), and Castle Loch, Lochmaben, Dumfries (3,100).

Table 10. Greylag Goose: mid-November census results at main resorts

	1980-81	81-82	82-83	83-84	84-85	Average
Loch Eye, Highland	8,300	20,800	3,500	3,130	4,970	8,140
Lochs Davan, Kinord & R.De	4,500	3,980	9,500	6,000	7,000	6,196
Blairgowrie L, Perth	6,677	4,140	6,176	5,212	2,351	4,911
Loch of Strathbeg	4,000	4,750	9,600	3,600	1,750	4,740
Drummond Pd, Perth	4,000	3,440	3,950	4,500	4,810	4,140
L of Skene, Grampian	4,700	5,700	4,500	1,700	1,580	3,636
Haddo Ho L, Grampian	X	X	1,900	4,600	4,200	3,569
Carsebreck	5,050	4,050	2,180	4,310	1,410	3,400
Lintrathen & Kinnordy, Angus	5,500	1,070	800	6,200	340	2,782
Loch Leven	5,615	3,000	2,500	2,200	180	2,699
Hoselaw L, Borders	2,690	1,700	4,100	3,600	1,250	2,668
Stranraer Lochs	1,400	1,800	2,600	3,100	2,400	2,260
Lindisfarne	1,430	2,620	2,700	2,300	1,725	2,155
GB TOTAL	90,000	96,000	80,000	82,000	95,000*	88,600

*estimated - census incomplete because of bad weather

Canada Goose Branta canadensis

The normal propensity for this species to gather into its largest groupings in the autumn is well shown in Tables 4 and 11. This coincides with the time of greatest food abundance, on stubble fields. Stratfield Saye, Hampshire and Bewl Bridge Reservoir, Kent/East Sussex, held the highest numbers at this time for the second year running, though Shavington Park, Shropshire, ran the latter site very close.

The Canada Goose population in Britain continues to grow apace and is now certainly over 30,000 and probably nearer to 35,000, possibly more. Although the species is continuing to spread to new areas, the counts show a steady increase at all the main sites, as measured by the average of the peak counts shown in the bottom row of Table 11.

Table 11. Canada Goose: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Stratfield Saye, Hants	1,500	1,460	1,800	2,450	1,900 (Sep)	1,822
Shavington Park, Staffs	800	1,600	X	X	1,150 (Sep)	1,183
Kedleston Park, Derbys	1,040	1,050	1,800	800	650 (Sep)	1,068
Bewl Bridge, Kent/E.Sussex	505	552	900	1,028	1,158 (Sep)	829
Ellesmere, Salop	481	854	923	513	924 (Sep)	739
Welbeck, Notts	486	384	367	680	975 (Nov)	578
Aqualate Mere, Staffs	566	592	556	483	618 (Oct)	563
Drakelow G.P., Derbys	595	430	600	370	650 (Jan)	529
Dorchester G.P., Oxon	699	654	630	430	232 (Sep)	529
Clumber Park, Notts	614	532	208	120	536 (Oct)	402
Amberley Wildbrooks, W.Sussex	70	117	284	437	1,037 (Nov)	396
Abberton Reservoir	74	170	132	572	543 (Sep)	298
Average	613	647	707	654	820	

Barnacle Goose Branta leucopsis

The Greenland population was not censused in its entirety, an expensive undertaking requiring an aerial survey of the Hebrides and western Ireland. However, observations on the main haunt of Islay show that the breeding season was only moderately good (13.4% young), while the early November count of 19,000 compared with just over 16,000 the previous year. There was a late November peak of 21,000 before numbers fell rapidly to a level of 17,000 through the winter. Few other flocks of this population are covered by the Wildfowl Count network, but there were 484 on Tiree and 450 at Loch Sween, Argyll, in February.

The Svalbard population, wintering on the Solway Firth, reached a new record level of 10,500 following their best breeding season for six years (26.2% young). What were undoubtedly birds heading to the Solway were seen in October in the Firth of Forth (600) and at the Loch of Strathbeg (244).

Dark-bellied Brent Goose Branta bernicla bernicla

For the second year running, this population had a breeding failure, and the overall population in north-west Europe fell from 188,000 last year to no more than 150,000. There were nevertheless high counts from several British haunts (see Table 12) brought about by hard weather movements from the Continent. The peak count in Britain was 89,000, in January.

Table 12. Dark-bellied Brent Goose: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Foulness/Leigh Marsh, Essex	17,758	19,961	18,208	21,025	23,810 (Oct)	20,152
The Wash	16,997	(6,982)	24,297	17,039	14,219 (Jan)	18,188
Blackwater Est., Essex	9,167	9,003	11,500	(5,690)	13,410 (Feb)	10,700
Chichester Harbour, W.Sussex	7,088	8,632	10,547	11,849	8,859 (Feb)	9,395
Hamford Water, Essex	4,500	4,000	8,000	10,000	9,500 (Jan)	7,200
Langstone Harbour, Hants	7,400	6,185	7,536	7,380	7,000 (Dec)	7,100
Crouch/Roach Est., Essex	3,120	3,550	5,059	3,960	8,990 (Jan)	4,935
Blakeney Harbour, Norfolk	X	X	3,200	5,000	4,000 (Nov)	4,066
Overy Marshes, Norfolk	X	X	4,000	4,250	2,435 (Feb)	3,428
Scolt Head, Norfolk	2,000	2,000	4,000	4,250	4,000 (Mar)	3,250
Pagham Harbour, W.Sussex	1,500	1,863	3,093	2,477	4,219 (Jan)	2,630
Portsmouth Harbour, Hants	1,476	3,316	855	2,236	1,855 (Nov)	1,947
GB TOTAL	66,500	60,000	92,600	87,000	89,000 (Jan)	79,000
WORLD TOTAL	150,000	113,000	202,500	188,000	150,000 (Jan)	161,000

Light-bellied Brent Goose Branta bernicla hrota

The 3,000 birds counted at Lindisfarne NNR, Northumberland, in January, when hard weather froze its other main haunts in north Denmark, probably amounted to the bulk of the Svalbard population of this race. The birds had bred quite well (c.20% young) and so the population may have recovered to close to the figure of 3,400 estimated for 1982-83, following the poor breeding season in 1983 when there were only 5.5% young.

The north Greenland/Canada population had an even better breeding season, with about 25% young birds, and there were no less than 14,900 present in Strangford Lough in October. A November census organised by the Irish Brent Study Group produced a total for the whole of Ireland of 18,255, the highest figure ever attained (M.O'Briain).

DUCKS

Shelduck Tadorna tadorna

Despite the regular mid-winter increase noted in the 1981-82 report, only a small influx occurred in 1984-85. Table 4 shows that the numbers in Britain were actually at their highest in March, suggesting that some of the British stock spent the winter at or near their continental moulting area.

The January indices show peaks in hard winters (1984-85 excepted), but otherwise a continuous slow increase. Those for December do not show hard weather influxes - even when, as in 1981-82, there was a cold spell in early December - and the fluctuations are probably caused by occasional slowness in the return from the German moulting grounds, as well as being exaggerated by the smaller sample involved. The underlying trend of stable numbers in the late 1960s and early 70s and a subsequent increase may well reflect the progress of the native breeding population.

Table 13. Shelduck: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
The Wash	19,010	17,233	16,948	13,700	12,011 (Feb)	16,334
Mersey Estuary:						
Ince/Stanlow, Cheshire	11,800	12,170	7,110	6,800	7,605 (Mar)	9,097
Dee Estuary	7,315	3,740	4,975	5,745	6,540 (Nov)	5,663
Chichester Harbour	2,754	4,552	2,255	2,571	3,126 (Feb)	3,052
The Humber	776	2,408	1,568	6,495	3,874 (Nov)	3,022
Hamford Water, Essex	1,200	5,500	863	3,050	2,360 (Feb)	2,595
Blackwater Est., Essex	1,668	3,518	2,129	1,835	2,580 (Feb)	2,346
Ribble Estuary, Lancs	2,218	2,119	2,077	2,660	2,243 (Mar)	2,263
Medway Estuary, Kent	3,096	2,504	1,530	2,766	1,275 (Jan)	2,234
Morecambe Bay	887	3,230	1,948	665	4,236 (Nov)	2,193
Orwell Est., Suffolk	(403)	(550)	2,610	2,277	1,500 (Jan)	2,129
Teessmouth, Cleveland	1,876	2,289	1,300	1,670	2,580 (Nov)	1,943
Stour Estuary,						
Essex/Suffolk	2,053	1,866	2,011	1,965	1,768 (Mar)	1,933
Poole Harbour, Dorset	1,905	1,900	1,329	1,136	2,891 (Jan)	1,832
Eden Estuary, Fife	1,60	1,974	1,201	1,670	1,510 (Feb)	1,592
Langstone Hbr., Hants	1,237	2,432	906	1,385	1,760 (Feb)	1,544

Mandarin Aix galericulata

Although firmly established in the Berkshire/Surrey heathland, with isolated populations elsewhere, only a small number of Mandarins are found in the wildfowl counts. A total of 288 were counted in 1984-85, for instance, whereas there are now probably well over a thousand at large in Britain. This under-recording is due to the proportion found along uncounted stretches of river, and also to the species' secretive habits, even in winter. The main centre, Windsor Great Park, is well covered, however, and 125 were counted in the area in December 1984. There were 85 on a lake near Godalming in November and 56 on the River Tay in Perth in December. The last two flocks comprise birds emanating from nearby waterfowl collections. All other records of two or more came from south-east England.

Wigeon Anas penelope

The autumn numbers were at their normal level in most areas, with November counts of 26,310 at Lough Foyle, 18,277 on the Ouse Washes, 14,543 on the Ribble Estuary and 9,705 on the Cromarty Firth. At Lindisfarne, however, there were only 10,000, compared with a usual October/November peak of 30-40,000.

Following the massive influx of early January the numbers in Britain were by far the highest on record. On 20th there were 20,000 at Hamford Water, 19,500 at Elmley (on the Swale), 17,600 on the Ribble Estuary and 11,000 at Foulness. Six days later 30-40,000 were estimated at Abberton Reservoir. These birds soon moved on, presumably further south, and, despite the second cold spell, the overall level in February was back down to that of December. A second wave occurred at Abberton, however, with 11,830 in mid-February. On the Ouse Washes the counts remained at 23-24,000 from December to February.

The January indices show the exceptional numbers present in Britain in most cold winters. The October index, drawing mainly from the heavy passage in Scotland and northern England at that time, shows a general trend of increase, though with a particularly good period in the early 1970s.

Gadwall Anas strepera

The October and January indices show a remarkably similar trend, and it appears that both the native feral population and the numbers of passage and winter visitors have increased substantially over the past 20 years. Analyses currently being undertaken by the International Waterfowl Research Bureau at Slimbridge show that the January numbers in north-west Europe as a whole have risen similarly since 1967 (the first year of the International Census).

Table 14. Gadwall: maxima at main resorts

	1980-81	81-82	83-83	83-84	84-85 (Month)	Average
Rutland Water	141	380	493	947	1,109 (Dec)	614
Cunton Park, Norfolk	503	630	427	200	144 (Oct)	381
Slimbridge	250	440	250	210	237 (Dec)	277
Abberton Reservoir	99	194	280	332	325 (Dec)	246
Narford Lake, Norfolk	x	200	274	x	x	237
Ouse Washes	89	266	205	213	284 (Mar)	211
Stanford PTA Meres, Norfolk	250	290	47	358	77 (Nov)	204
Loch Leven	208	175	169	220	210 (Sep)	196
Martin Mere, Lancs	200	200	200	200	154 (Nov)	191
Hickling Broad, Norfolk	96	228	196	254	146 (Nov)	184
Lt. Paxton CPs, Cambs	300	232	65	x	120 (Nov)	179
Hornsea Mere, Humberside	155	117	228	222	105 (Nov)	165

Teal Anas crecca

After a record count total for November the small drop in December is surprising. The marked decline in January in relation to the numbers both in December and in previous seasons, however, is to be expected in a hard winter.

The numbers on the Mersey Estuary were the lowest for seven years, with a maximum of 8,580 in November, compared with 35,000 in 1981-82. Such "peaks and

troughs" have, however, been a feature at this site since it attained its present level of importance in the 1960s. Furthermore, as noted in the 1983-84 report, conditions on the neighbouring Dee Estuary have improved in recent years, as they have on the Ribble Estuary, 20km north, with the creation of the National Nature Reserve. In November the Dee held 3,865 Teal, the Ribble 4,800 and Martin Mere 1,400, making a total of 17,200 at all four sites.

Martin Mere held 3,000 in September, a level attained by four other localities in the autumn or early winter: Chew Valley Lake, Avon (5,600, December); Teesmouth (4,400, November); the Burry Inlet, W. Glamorgan (3,655, December) and Hamford Water (3,500, November). A full survey of the Milford Haven/Cleddau Estuary complex, Dyfed, in January revealed 2,867 Teal.

There was an influx of Teal into Britain in the early 1960s, thought to have been caused by the drainage of one of the IJsselmeer polders (Eygenraam 1964). This was followed by a decline then a sustained increase from the late 1960s to the early 1980s. The International Waterfowl Research Bureau's analyses show that the January indices for north-west Europe as a whole since 1967 have followed a similar trend.

Mallard Anas platyrhynchos

Although, most unusually, a movement of Mallard south and south-west was reported from the Netherlands in January, no discernible influx into Britain resulted. Both the autumn and winter numbers were at their usual recent level, which is slightly above that of the 1970s. No major change has occurred in either September or January during the last 20 years.

Table 15. Mallard: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
The Humber	6,430	4,190	6,001	5,687	4,838 (Feb)	5,429
Ouse Washes	2,884	6,262	5,547	6,377	3,781 (Nov)	4,970
The Wash	5,484	4,977	4,745	2,360	2,502 (Jan)	4,014
Dee Estuary	2,235	2,830	3,750	5,045	4,480 (Dec)	3,668
Lower Derwent Ings	4,436	8,142	1,559	1,700	2,500 (Feb)	3,667
Abberton Reservoir	2,950	2,500	5,900	4,525	1,450 (Sep)	3,465
Martin Mere	2,000	3,000	3,000	3,000	3,200 (Feb)	3,440
Elmley	1,521	2,300	3,744	4,547	1,877 (Oct)	2,798
Lough Foyle	2,270	3,100	2,387	3,024	3,006 (Sep)	2,757
Firth of Forth	3,296	2,091	(1,185)	(867)	(1,352) (Feb)	2,694
Loch Leven	2,337	3,686	2,200	1,220	3,288 (Sep)	2,546
Lough Neagh/Beg	2,539	(242)	(203)	x	x	2,539
Loch of Strathbeg	2,800	1,750	1,850	2,100	3,800 (Nov)	2,460
Rutland Water	1,857	2,544	2,162	2,240	2,781 (Sep)	2,317
Stour Estuary	1,977	3,000	2,270	2,485	1,683 (Dec)	2,283
Slimbridge	2,500	2,400	1,500	2,300	2,000 (Nov)	2,140
Livermere, Suffolk	x	x	x	x	2,000 (Sep)	2,000

Pintail Anas acuta

The combined totals on the Mersey and Dee estuaries from October to December were, respectively: 19,720, 21,000 and 21,470 (70-80% of the British count). In January 6,000 remained on the Dee but only 2,700 on the Mersey. An increase

in southern England and South Wales, probably caused in part by immigration from the Continent, was insufficient to offset the reduction further north, and the overall decline noted in Tables 1 and 4 resulted. On the Wash the usual February gathering reached its highest ever level.

After remaining fairly stable in the 1960s the British mid-winter population increased dramatically in the early 1970s and has largely maintained its new level.

Table 16. Pintail: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Mersey Est:Ince/Stanlow	18,450	11,440	13,750	8,000	16,000 (Nov)	13,528
Dee Estuary	5,510	5,395	7,360	11,265	6,280 (Dec)	7,162
Morecambe Bay	(75)	(138)	(804)	(253)	2,869 (Dec)	2,869
Martin Mere	4,000	2,000	3,700	2,300	720 (Sep)	2,544
The Wash	1,672	2,943	1,822	1,249	4,397 (Feb)	2,417
Burry Inlet	510	2,426	2,535	1,332	2,290 (Jan)	1,819
Ouse Washes	932	978	1,123	769	802 (Mar)	921
Ribble Estuary	411	1,273	689	760	564 (Dec)	739
Hamford Water	450	1,450	220	420	955 (Nov)	699

Shoveler Anas clypeata

According to the October/November indices, the autumn increase noted in the 1982-83 report may now have levelled off. The January 1985 numbers were low, suggesting a lack of winter immigrants. This impression is confirmed by the small percentages for January and February in Table 4.

Table 17. Shoveler: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Loch Leven	431	696	60	610	595 (Oct)	478
Rutland Water	316	317	443	616	612 (Sep)	461
Ouse Washes	411	296	685	397	403 (Mar)	438
Queen Mother Res., Berks	x	x	x	x	422 (Jan)	422
Woolston Eyes, Cheshire	259	516	453	362	427 (Sep)	403
Abberton Reservoir	281	485	612	303	313 (Dec)	399
King George VI Res., Surrey	488	299	539	391	219 (Nov)	387
Elmley	274	398	386	401	423 (Oct)	376
Staines Reservoir, Surrey	20	99	638	284	564 (Sep)	321
Chew Valley Lake	359	185	375	350	145 (Oct)*	283
Belvide Reservoir, Staffs	127	510	310	251	113 (Nov)	262
Cliffe Pits & Marshes, Kent	193	280	265	234	283 (Dec)	251
Aqualate Mere, Staffs	380	150	122	475	95 (Sep)	244
Hampton/Kempton Res., Gt. London	284	339	150	258	146 (Dec)	235
Roach Estuary, Essex	130	300	300	167	x	224
Dungeness, Kent	269	177	140	310	204 (Dec)	220
Walthamstow Res., Gt. London	165	245	335	146	167 (Nov)	212

* 275 in August 1984

Pochard *Aythya ferina*

In 1984-85, unlike 1981-82, there was apparently no "exodus" from the country in the cold weather, but a significant movement to the coast and larger reservoirs. The largest count on the coast was of 750 on the Rhymney Estuary, near Cardiff, in January.

It might be thought that the trend of increase in the January indices during the 1960s and early 1970s, and the subsequent decline, were dependent on the "rise and fall" of the flock at Duddingston Loch, Edinburgh, over the same period. However, if that site is omitted from the sample the indices show an almost identical pattern.

Table 18. Pochard: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85	(Month)	Average
Loughs Neagh/Beg	16,843	(2,480)	(2,535)	x	x		16,843
Loch of Harray, Orkney	1,747	1,491	4,500	4,300	1,401	(Oct)	2,688
Ouse Washes	1,203	1,310	1,607	1,901	2,355	(Feb)	1,675
Kingsbury Water Pk/ Coton Pools, Warwick.	1,243	1,226	2,300	1,184	1,700	(Jan)	1,530
Cotswold W. Pk. East, Glos	1,683	1,450	1,687	1,897	886	(Nov)	1,521
Loch of Boardhouse, Orkney	641	1,061	1,105	1,505	2,358	(Nov)	1,334
Cotswold W. Pk. West, Glos	1,192	1,438	762	1,497	1,475	(Dec)	1,273
Lower Derwent Ings	1,125	50	23	2,250	1,678	(Feb)	1,025
Loch Leven	310	760	1,160	1,648	326	(Dec)	841
Slimbridge	450	980	1,020	840	900	(Feb)	838
Rostherne Mere, Cheshire	950	650	651	480	1,273	(Feb)	801
Abberton Reservoir	820	260	500	930	920	(Nov)	686
Chesil Fleet	450	1,442	700	432	360	(Jan)	677
Blagdon Lake, Avon	335	440	450	75	2,000	(Dec)	660
Staines Reservoir	510	1,100	224	731	661	(Dec)	645
Cheddar Reservoir, Somerset	429	520	800	830	490	(Nov)	614
Woolston Eyes	305	157	765	1,420	359	(Dec)	601

Tufted Duck *Aythya fuligula*

Not surprisingly, this species behaved similarly to the Pochard during the cold weather, staying in this country but moving onto reservoirs and the coast. The Rhymney Estuary held 1,250 Tufted Ducks in January as well as the 750 Pochard already noted. In addition to the sites in Table 17, Hanningfield Reservoir, Essex, carried 1,010 in September and South Muskham/North Newark Gravel Pits, Notts, 1,000 in February.

The September and January indices show a largely similar trend of increase, with a recent levelling off, supporting the view that much of our breeding stock remains in Britain for the winter (Cramp & Simmons 1977).

Table 19. Tufted Duck: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Loughs Neagh/Beg	8,038	(1,853)	(1,208)	x	x	8,038
Loch Leven	4,273	4,560	3,455	4,830	1,463 (Sep)	3,716
Rutland Water	1,523	1,804	2,380	2,461	3,379 (Sep)	2,309
Loch of Harray	1,289	1,322	2,279	1,483	1,267 (Oct)	1,874
Abberton Reservoir	1,260	2,670	1,560	1,340	2,510 (Feb)	1,868
Wraysbury Gravel Pits	1,528	1,343	1,512	1,267	(741)	1,413
Loch of Strathbeg	1,160	1,350	1,950	1,150	1,100 (Sep)	1,342
Kingsbury Water Pk/ Coton Pools	1,055	1,605	1,514	1,055	1,417 (Oct)	1,329
Queen Mother Reservoir	x	x	x	x	1,036 (Jan)	1,036
Walthamstow Reservoirs, Gt. London	994	1,037	820	737	1,031 (Feb)	924
Wraysbury Reservoir	1,358	893	(30)	210	(193)	820
Firth of Forth	425	1,854	571	379	503 (Jan)	746
Loch of Stenness, Orkney	1,200	1,218	75	428	729 (Feb)	730
Pitsford Reservoir	530	985	721	568	770 (Nov)	715
Tophill Low Res., Humberside	786	766	486	695	660 (Feb)	677
Shustoke Reservoir, Warks	307	930	279	165	1,600 (Jan)	656
King George V Reservoir, Gt. London	2,000	350	300	247	350 (Jan)	649
Grafham Water, Cambs	1,010	765	190	790	262 (Jan)	603

Scaup *Aythya marila*

The indices for recent years are at a low level because 1970-71, the "anchor" season, was in the period of very large numbers around Edinburgh. The slight recovery in 1984-85 is therefore more significant than it might appear, and, judging by a uniform increase at most sites, may well have been caused by a good breeding season in Iceland in 1984.

There were no counts at Largo Bay, Fife, which normally holds 1-3,000, so the total count in Table 1 must be substantially below the true figure. There was a small influx after the hard weather, as shown by the presence of 144 at Lade Pit, Dungeness, Kent in late February and March. More normal resorts at which more than 100 were recorded were as follows: the inner Solway Firth (1,709, March); Loch Indaal, Islay (1,189, November); Edderton Bay, Cromarty Firth (485, February); St. Andrews Bay, Fife (390, February); the inner Firth of Clyde (166, February) and Loch Ryan, Wigtown (160, January).

Eider *Somateria mollissima*

No records were received from the mouth of the Firth of Tay, or from the major centres around Orkney and Shetland. The largest report was therefore from the moulting site at Murcar, near Aberdeen, where 9,000 were found in August 1984. Later in the season 1,000 or more were counted at Walney Island and the adjacent Furness coast (6,122, November); the Firth of Forth (3,659, September); the inner Firth of Clyde (3,501, October); Lindisfarne (3,000, November); Montrose Basin, Angus (1,679, October); the Ythan Estuary, Aberdeen (1,316, September) and the Firth of Tay between Dundee and Broughty Ferry (1,000, January). The Britoil/RSPB surveys of the Moray Firth area found over 1,000 around Loch Fleet in the autumn and early winter. In February many moved a short way south to the coast between the Dornoch and Cromarty Firths,

probably in response to the severe weather.

A greater than usual immigration from the Continent to southern England from January onwards was indicated by counts in the latter part of the season of 483 in the Blackwater Estuary, 410 along the North Kent coast, 402 in the Wash and 120 off Colne Point, Essex. 1,754 Eiders were counted around the south coast between the Burry Inlet and the Humber in March. Table 4 confirms this late season increase, though as usual the highest overall numbers were counted in the autumn, when the birds are most concentrated.

Long-tailed Duck Clangula hyemalis

The Britoil/RSPB surveys of the Moray Firth produced an estimate of approximately 15,000 wintering in the area. This is a similar number to other recent seasons and represents 3% of the estimated north-west European population (Atkinson-Willes 1978). The lesser resorts held rather fewer than usual, with 178 in Water Sound, Orkney in February; 153 in Broad Bay, Lewis (April); 146 at the Loch of Stenness, Orkney (December) and 128 off Tentsmuir, Fife (January).

Common Scoter Melanitta nigra and Velvet Scoter Melanitta fusca

A peak of 4,500 scoters was present in the Moray Firth in February. When it was possible to distinguish between the species, the largest winter totals were 3,100 Common and 1,150 Velvet, both in December. These figures represent a considerable decline compared to the period 1981-82 to 83-84, but are similar to those of 1979-80 and 80-81. In April 1984 there were 1,850 Velvet Scoters around the Moray Firth and in July 1984 1,000 moulting Common Scoters in the outer Dornoch Firth (Britoil/RSPB).

Elsewhere, the highest counts of Common Scoters were at St. Andrews Bay (2,300, February); Lindisfarne (610, February); the Firth of Forth (588, March); the Wash (555, January); Luskentyre, Harris (372, February); Crickieth, Gwynedd (204, January); the Menai Straits (195, February) and the Humber (144, January). There were two reports of 50 or more Velvet Scoters: 420 at St. Andrews Bay in December and 205 in the Firth of Forth in March.

Goldeneye Bucephala clangula

The December numbers were low, but even allowing for this, the January influx was on a very big scale, bringing that month's index to its highest level for seven years. There was also a greater than usual mid-winter movement from enclosed waters to the coast (see Table 5). Exceptional numbers were found at the following localities in addition to those in Table 20: Colne Estuary, Essex (390, January; 387, February); Hamford Water (250, February) and Goxhill, on the Humber (205, February).

The January indices show a clear peak in 1972-73. This coincides with the period of greatest abundance on the south shore of the Firth of Forth. An analysis of the trends for Britain excluding that area showed that there was still a sustained increase between the mid 1960s and early 70s, but the peak and subsequent decline were much less pronounced.

Table 20. Goldeneye: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Lough Neagh/Beg	3,294	(323)	(826)	x	x	3,294
Firth of Forth	2,578	1,278	1,549	2,017	(881)	1,886
Abberton Reservoir	590	610	503	431	575 (Mar)	542
Blackwater Estuary	280	799	226	269	639 (Feb)	443
Firth of Clyde	x	535	405	418	359 (Feb)	429
Cromarty Firth	442	271	233	511	352 (Feb)*	362
Ness Mouth	518	164	249	207	588 (Mar)	345
Strangford Lough	212	195	312	400	429 (Dec)	310
Windermere	276	239	273	x	287 (Jan)	269
The Wash	231	359	138	184	352 (Feb)	253
Loch of Auchlossan, Grampian	x	x	x	x	250 (Dec)	250
Loch of Strathbeg	200	160	360	265	195 (Dec)	236
Turnberry Bay, Ayrshire	380	250	180	220	149 (Jan)	236
Morecambe Bay	231	288	74	261	315 (Feb)	233
Loch Leven	164	281	350	267	100 (Nov)	232
Loch of Stenness	296	276	182	191	199 (Mar)	229
Nigg Bay, Aberdeen	97	152	196	279	370 (Jan)	219
Rutland Water	143	177	219	252	303 (Feb)	219
Ayr-Prestwick	(87)	186	176	153	354 (Jan)	217
Teesmouth	234	440	113	106	144 (Jan)	207

* Britoil/RSPB

Smew Mergus albellus

The January numbers were much higher than usual, but an even bigger influx occurred in late January/early February. The north Midlands and north-east England received a remarkably large proportion of this influx, with 72 in the Scarborough/Filey area, North Yorkshire, 17 on the Humber Wildfowl Refuge and 12 on the River Trent near Gunthorpe, Notts. Records of ten or more also came from the Taw/Torridge Estuary, N. Devon (19), Shepperton Gravel Pits, Surrey and Wraybury Reservoir, Surrey/Berks (17), Breydon Water, Norfolk and the River Avon at Tewkesbury, Glos (14), the Ouse Washes and Christchurch Harbour (11) and Burghfield Gravel Pits, near Reading (10). Apart from Shepperton and Wraybury, none of these is a regular haunt of Smew. By March the great majority had gone.

The January/February indices clearly show the decline which occurred in Britain in the 1960s and early 1970s, and the cold weather influxes of 1978-79, 1984-85 and, on a smaller scale, 1981-82.

Red-breasted Merganser Mergus serrator

In October, in addition to the outer Dornoch Firth birds shown in Table 21 the Britoil/RSPB survey found 1,800 Mergansers in the area of the Riff Bank in the inner Moray Firth.

The January index was the second highest on record. The underlying trend is of steady increase, broken by occasional "bumper" years, not necessarily coinciding with hard winters.

Table 21. Red-breasted Merganser: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85	(Month)	Average
Beaully Firth, Highland	700	1,744	1,200	720	485	(Dec)	970
Tentsmuir	1,000	205	865	649	465	(Oct)	637
Firth of Forth	671	653	862	395	454	(Oct)	607
Cromarty Firth	291	300	130	594	401	(Jan)	343
Outer Dornoch Firth	0	600	500	0	455	(Oct)*	275
Strangford Lough	388	147	161	293	381	(Oct)	274
Poole Harbour	157	397	280	241	270	(Dec)	269
Dundrum Bay, Co. Down	x	296	150	420	203	(Mar)	267
Langstone Harbour	155	185	194	113	128	(Mar)	155
Loch Ryan	191	156	126	42	246	(Nov)	152
Morecambe Bay	73	133	34	95	309	(Dec)	139
Chesil Fleet	159	213	80	126	95	(Dec)	135
Inland Sea, Anglesey	x	65	140	x	x		105

* Britoil/RSPB

Goosander Mergus merganser

Although the numbers in the country were already quite high, there was a major influx between the January and February counts - particularly into southern and eastern areas. Records of over 50 Goosanders in February or March came from nine sites in addition to those in Table 22, including 93 at Pitsford Reservoir, Northants.

A moulting flock of 138 was found in Longman Bay, near Inverness, in August.

As with Merganser, the indices show an underlying trend of increase between the mid 1960s and late 1970s. The apparent hard weather influx of 1978-79 seems merely to have been a continuation of this trend. In the early 1980s, however, an abrupt decrease occurred, and it remains to be seen whether the recent recovery is merely temporary.

Table 22. Goosander: maxima at main resorts

	1980-81	81-82	82-83	83-84	84-85	(Month)	Average
Beaulay Firth	1,550	1,620	2,400	2,150	1,280	(Dec)	1,800
Loch of Skene	74	143	80	101	197	(Feb)	119
R. Tweed/Norham/Kelso	x	76	x	105	152	(Feb)	111
Dingwall Bay, Cromarty Firth	8	2	5	358	136	(Jan)	102
Eccup Reservoir, W. Yorks	112	132	75	50	134	(Feb)	101
Castle Loch, Lochmaben, Dumfries	125	115	36	61	138	(Feb)	95
Besthorpe/Girton GPs, Fleet, Notts	48	23	62	95	160	(Jan)	78
Queen Mary Res., Surrey	47	146	66	29	98	(Jan)	77
Blithfield Res., Staffs	39	82	76	79	105	(Mar)	76
Thrapston GPs, Northants	80	99	63	72	63	(Mar)	75
Rutland Water	51	34	48	119	69	(Dec)	64
Chew Valley Lake	52	49	59	55	96	(Feb)	62
Loch Leven	25	64	40	30	148	(Oct)	61

Ruddy Duck *Oxyura jamaicensis*

In December and early January of 1984-85 the usual winter reduction over much of the Midlands took place, balanced by increases in Somerset/Avon and Anglesey. By the February count, however, further movements out of the principal Midland centres had occurred, into Derbyshire, Somerset/Avon and south-east England, and back into Cheshire. By March the numbers in Staffordshire and the east Midlands had increased again, but were still comparatively low.

The highest individual counts were at the following places: Blithfield Reservoir, Staffs (680, January); Chew Valley Lake, Avon (611, January); Blagdon Lake, Avon (320, January); Eyebrook Reservoir, Leics (318, January); Belvide Reservoir, Staffs (248, October); Rutland Water, Leics (229, December); Stanford Reservoir, Leics (160, December); Woolston Eyes, Cheshire (138, November); Cheddar Reservoir, Somerset (113, February) and Rostherne Mere, Cheshire (106, February). Unusual localities which held sizeable numbers in 1984-85 included Foremark Reservoir, Derbyshire (57, February); Pitsford Reservoir, Northants (55, March) and the Loch of Strathbeg, Grampian - the only place in Scotland where more than one was recorded (19, September).

Because the numbers in Britain in the 1960s and early 1970s were so small (lower than 50), that period has been omitted from the indices in Table 3, which instead start from 1974-75 = 100.

Coot *Fulica atra*

As in 1983-84, the peak count in November was followed by a gradual decline. Abberton Reservoir again held up to 10,000 in autumn but many fewer thereafter.

Table 23 shows the monthly counts at the major sites and the seasonal maxima for 1982-83 and 83-84. In addition to the places listed, Chew Valley Lake held 1,625 in July 1984; Brogborough Clay Pits, Bedfordshire 1,600 in January 1985; Meadow Lane Gravel Pits, Cambs, 1,204 in January; Sutton/Lound Gravel Pits,

Notts 1,093 (February); Tring Reservoirs, Herts 1,086 (October); Fairburn Ings, N.Yorks 1,067 (October); Aqualate Mere 1,020 (November); Rye Harbour Pits, E.Sussex 1,004 (January) and the Orwell Estuary 1,003 (November).

Table 23. Coot: numbers at main resorts

	Maxima 1982-83	1983-84	1984-85								Av. max. 1982-83 to 84-85
			Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Abberton Res.	8,600	10,055	10,000	8,700	6,000	2,730	400	1,825	890	9,552	
Rutland Water	3,633	5,401	3,624	3,188	5,276	7,453	5,232	2,267	1,005	5,496	
Cotswold W. Pk. West	3,322	3,375	2,761	2,883	3,677	3,386	2,115	2,050	1,099	3,458	
Hanningfield Res., Essex	x	x	2,557	2,411	1,930	1,550	885	366	363	2,557	
Ouse Washes	3,375	2,134	133	104	229	504	1,757	1,576	1,470	2,422	
Cheddar Res.	2,450	2,450	1,350	2,100	1,900	750	1,360	1,100	166	2,333	
Chesil Fleet	x	x	250	1,150	1,500	1,870	2,281	1,583	630	2,281	
Loch Leven	2,564	1,905	1,361	352	141	81	0	0	92	1,943	
Cotswold W. Pk. East	1,674	2,416	808	1,214	1,716	1,657	1,367	1,605	597	1,935	
Hornsea Mere	2,300	1,350	1,000	2,000	1,400	390	300	300	300	1,883	
Pitsford Res.	1,789	1,420	1,047	961	1,136	885	692	277	289	1,448	
Windermere	929	x	x	x	x	x	1,663	x	x	1,296	
L of Strathbeg	x	880	850	900	1,290	110	71	53	48	1,085	
Bewl Bridge Res., Kent/Sussex	1,158	1,358	274	310	323	310	610	500	307	1,042	

LATE SUMMER WILDFOWL SURVEY - A PRELIMINARY REPORT

In 1985, for the first time since the 1950s (when the regular counts included the summer months), wildfowl counts were undertaken throughout the country during the moulting period. Observers were asked to visit their sites at least once between July 15th and August 31st.

The response was tremendous, considering the poor weather - with heavy rain and poor visibility in many areas for most of the survey period - and the difficulties involved in counting at that time of year. Records were received from over a thousand localities, many of which were covered more than once. Much information was also collected on sex ratios and breeding. The very wet summer and consequent high water levels meant that breeding success had been generally low and that moulting birds were able to hide away in marginal areas of lakes and ponds to a greater extent than usual. Many counters felt that significant numbers of birds had been missed as a result.

Table 24 summarises the results for the principal species involved, showing the number of sites which exceeded a given qualifying level and the largest concentrations recorded. A fuller report will be produced when the computer analyses have been completed.

Table 24. The largest concentrations of each species recorded during the Late Summer Survey, July/August 1985

	Qualifying number	No. of sites (n = 1002)	Largest concentration
Great Crested Grebe	50	10	579 Rutland Water
Mute Swan	50	27	520 Chesil Fleet
Canada Goose	100	63	1,750 Stratfield Saye
Shelduck	100	7	1,983 East Wash
Mandarin	10	4	19 Stratfield Saye
Wigeon	50	2	68 L. of Lintrathen
Teal	50	21	465 Minsmere
Gadwall	50	6	396 Rutland Water
Mallard	100	187	1,949 Rutland Water
Shoveler	50	9	425 L. Leven
Garganey	1	14	6 Abberton Reservoir
Pochard	100	10	2,024 Abberton Reservoir
Tufted Duck	100	67	3,000 Rutland Water
Eider	50	16	5,300 Balmedie to Ythan Estuary
Common Scoter	50	5	1,450 Balmedie to Ythan Estuary
Ruddy Duck	20	3	46 Stanford Reservoir
Coot	100	80	3,000 Abberton Reservoir
Red-breasted Merganser	50	3	265 Menai Straits

N O T I C E

Dyed Ducks

Once again, the Environmental Advisory Unit at Liverpool University, with the help of the Merseyside Ringing Group, are hoping to ring ducks around the Mersey Estuary this winter and mark them with yellow dye on the rump and undertail coverts. The aim is to learn about the movements of ducks between the Mersey and other wetlands in the vicinity. If you see any ducks (probably Wigeon, Teal, Mallard and Pintail) marked in this way, please notify Dr. David Parker or Mr David Cross, Environmental Advisory Unit, Department of Botany, University of Liverpool, P. O. Box 147, Liverpool, L69 3BX (Tel: office hours 051-709-6022 Ext. 2368/2085; evenings/weekends 051-648-3437 (Dr. Parker) or 051-625-8507 (Mr. Cross)).

W A D E R S

The Birds of Estuaries Enquiry 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. 1984-85 was the fifteenth consecutive season of coordinated counts. This section of the report concerns counts of waders made during the mid-winter months (December, January and February), although year-round data were collected at many sites. 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 from both the BoEE and National Wildfowl Counts are analysed by the Wildfowl Trust, and are presented in the first section of this report.

Coverage in 1984-85

The counts in 1984-85 continued at the very high levels achieved in 1983-84. Counts were restarted on the Dyfi after a long gap and full counts were also received from Poole Harbour. As a result of considerable efforts by the local organisers, great improvements in coverage were made on estuaries in Cornwall, the North Kent Marshes, the North Norfolk coast and the Moray Basin. The only major localities for which no counts were submitted in 1984-85 were the north shore of the Forth, the south shore of the Tay, the Ythan and the Gwendraeth/Tywi. Counting will resume on these sites in 1985-86. The full distribution of sites which were counted in 1984-85 is shown in Figure 1 (p.4).

Developments in the Enquiry

A further three years of financial support for a full-time Estuaries Officer, up to June 1988, have been pledged for the Enquiry by the BTO and RSPB, supplementing the part-time post supported by NCC funding. During the last three years the BoEE has undergone considerable expansion in terms of coverage, computerisation and the development of associated projects. Perhaps the most significant advance has been the successful completion of the BTO/Wader Study Group Winter Shorebird Count. The aim of the survey was to census waders on open coastal habitats not presently covered by the BoEE. This was achieved with extremely high levels of coverage of the 11,000km of open coast around Britain and Northern Ireland. Consequently, more precise estimates can now be made on the size of our wintering wader populations. The survey has also provided much information on the ornithological value of previously unknown sites and on the habitat preferences of individual species.

The second season of the West Coast Spring Passage project was completed in April and May 1985, in conjunction with the international survey being carried out by the Wader Study Group. Good coverage was again achieved and has revealed the outstanding importance of the estuaries of north-west England as staging posts for migrating waders. Much information was also gathered on the network of sites being used by the migrating waders, through intensive ringing and colour-marking. Several birds marked in West Africa and western France were observed on the British estuaries, while more than 15 birds which had been marked in Britain were subsequently sighted on passage through Iceland.

Threats to estuary birds and use of BoEE data

The number of requests for the use of BoEE data for conservation purposes has risen dramatically. During the first 8 months of 1985, 21 such requests were received, compared with 12 in the whole of 1984 and 13 in 1983. These statistics exclude the frequent usage of the information provided in the Annual Reports and Estuary Birds of Britain and Ireland (Prater 1981). The most regular users of BoEE data are the Nature Conservancy Council and Royal Society for the Protection of Birds, who are both co-sponsors of the Enquiry. Other users are the county conservation trusts and various university departments.

During 1984-85, information collected for the BoEE was used as evidence in relation to a variety of potential threats to British estuaries and their birds. The proposal to develop a part of the Orwell Estuary for an extension of Felixstowe docks still remains in the balance. An intensive survey by the local BoEE teams and ringers from Landguard Bird Observatory, under guidance from the BTO, RSPB and Suffolk Trust for Nature Conservation, was undertaken during the 1984-85 winter. The results revealed the threatened area to be a preferred feeding and roosting zone for nationally and internationally important populations of several species of waders and wildfowl.

With the future of the Orwell mudflats still uncertain, a further threat has arisen to a large area of mudflats at Southend, where a proposal to develop a 'leisure island' would, if undertaken, lead to the loss of more than 600 acres of mudflats. This section of the Essex coast lies between the huge roosts of Leigh/Canvey Island and Foulness and is part of a very important wintering area for waders. The potential impact of the proposal on wintering birds will be investigated during the coming winter.

A proposal from wildfowlers to reinstate Redshank and Curlew onto the list of legal quarry species was rejected by William Waldegrave (then Under-secretary of State for the Department of the Environment). The BoEE provided important evidence for the rejection of this proposal since the January 1984 indices of population levels for both Redshank and Curlew were the lowest recorded since the start of the Enquiry. Although Curlew populations have remained relatively stable since the start of the Enquiry, Redshank have been in slow decline since 1973.

The severe weather of the 1984-85 winter, combined with the good count coverage, has produced valuable information on the extent of cold-weather movements in the British wintering wader populations. This supplements a detailed analysis of the BTO ringing recovery data which is currently in progress (S. Baillie in prep.) to examine in detail the nature of these movements. The most noticeable features in 1984-85 were the very low national totals of Lapwing and Golden Plover in January and February following the relatively high counts of December; this suggested a large exodus from Britain, for these species. A massive influx of Bar-tailed Godwits was also recorded onto the east coast of Britain, presumably involving birds from the Wadden Sea; more than 16,000 birds were recorded at Foulness alone. The Wader Study Group project on the Effects of Severe Weather on Waders reported substantially higher levels of mortality than are typical of mild winters (Davidson & Clark 1985). This mortality was highest in February, particularly in eastern and southern England, where the most severe weather occurred.

British Population Totals

Table 24 shows the national totals of each wader species counted in the priority mid-winter months of 1984-85. Almost 1.2 million waders were recorded in December despite the absence of data from the Wash, which normally holds ca. 100,000 birds in December. Totals fell in January and February, largely as a result of an enormous drop in numbers of Lapwing, Golden Plover and Redshank.

Table 24. Total numbers of waders recorded on the estuaries of Britain and N. Ireland during midwinter 1984-85. (Figures of over 100 have been rounded up to the nearest ten; over 1,000 to the nearest hundred).

	December	January	February
Oystercatcher	200,700	209,800	195,300
Lapwing	200,000	33,100	38,900
Ringed Plover	10,400	7,000	5,900
Grey Plover	21,200	18,800	20,500
Golden Plover	59,500	12,800	11,400
Turnstone	12,100	12,700	10,400
Common Snipe	5,500	3,500	1,800
Jack Snipe	38	54	30
Curlew	65,600	40,400	47,700
Whimbrel	0	2	2
Black-tailed Godwit	5,100	3,900	4,200
Bar-tailed Godwit	30,200	63,800	46,200
Green Sandpiper	22	15	14
Common Sandpiper	21	17	6
Redshank	66,000	54,100	44,500
Spotted Redshank	96	58	60
Greenshank	230	260	230
Knot	138,600	193,500	194,000
Dunlin	371,600	346,000	308,800
Sanderling	5,100	4,600	2,600
Ruff	63	66	180
Avocet	250	490*	280
Curlew Sandpiper	1	0	0
Little Stint	8	3	2
Grey Phalarope	1	1	0
Purple Sandpiper	870	1,100	730
Woodcock	1	30	6
Spotted Sandpiper	1	0	0

* Includes a double count for the birds at Havergate Island and Butley Creek, Suffolk.

SPECIES ACCOUNTS

The tables presented in this section rank the principal sites in Britain and N. Ireland on the basis of the average mid-winter maxima for the last five seasons. In addition to the species described in the text, the following were also observed on official count days during the mid-winter months: Whimbrel (2 each in January and February), Curlew Sandpiper (1 in December), Little Stint (peak of eight in December), Grey Phalarope (1 each in December and January) and Spotted Sandpiper (1 in December). A peak count of 30 Woodcock was recorded in January when individuals were reported on many estuaries as a result of the severe weather.

Oystercatcher Haematopus ostralegus

The estuaries of NW England support more than one-third of the 300,000 Oystercatchers which are estimated to winter in Britain. Numbers on individual sites in this region have, in the past, fluctuated dramatically in response to year to year variations in the density of cockles - one of their preferred prey items. No exceptional numbers were recorded during the 1984-85 winter; numbers on the Dee continue to drop back to their levels of the mid 1970s, following exceptionally high counts in 1980-81 and 1981-82. The eight sites which achieved the level required for international importance for this species are listed in Table 25.

There was a slight increase in the January index for Oystercatcher, whose values remain well above the lower levels recorded in the early 1970s (Table 37).

Recent studies in the Netherlands (Swennen 1985) have revealed that wintering Oystercatchers are very faithful to particular roost-sites both within and between winters. Individual roosts differ markedly in the quality of birds which they hold: large roosts tend to have higher proportions of adult birds, higher proportions of females and lower proportions of birds with anatomical defects when compared with birds from the smaller roosts. During spells of severe weather, relatively more birds are found dead at the smaller roosts. These differences are probably related to variations in the quality of feeding areas associated with each roost.

Table 25. Oystercatcher: maxima at main resorts.

	1980-81	1981-82	1982-83	1983-84	1984-85 (Month)	Average
Morecambe Bay	46,250	x	29,754	45,220	(47,219 (Dec)	40,408
Dee	41,400	42,505	28,430	30,360	19,600 (Jan)	32,459
Solway Firth	22,165	31,604	21,328	21,312	23,595 (Dec)	24,001
Wash	22,853	19,223	23,803	23,009	(21,281) (Jan)	22,222
Burry Inlet	14,930	14,300	16,170	13,105	16,550 (Feb)	15,011
Outer S. Solway	x	x	x	7,602	10,203 (Jan)	8,903
Foulness	12,901	7,890	7,974	5,365	10,342 (Feb)	8,894
Duddon, Cumbria	7,728	12,680	10,655	5,725	4,488 (Feb)	8,255

Avocet Recurvirostra avosetta

Wintering Avocets were recorded on a total of thirteen sites. The highest counts were at Havergate Island and Butley Creek, Suffolk, with 158 in January. This was almost matched by a new winter record of 141 on the Exe, Devon, in February. Other sites which recorded more than 10 individuals were the North Kent Marshes (27 in December), Hamford Water (16 in December) and Poole Harbour (12 in December). No counts were received for the flock which winters on the upper Tamar, Devon.

The pattern of counts on the Exe in the last five years is shown in Table 26. This demonstrates the recent and rapid development of this site as a wintering ground for Avocets. The first birds consistently arrive in November and reach a peak count usually in February; the departure back to the breeding sites is well underway in March and by April all the birds have gone.

Table 26. Avocet: Recent counts on the Exe Estuary.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1980-81	0	0	25	37	30	49	16	0
1981-82	0	0	38	50	32	70	28	0
1982-83	0	0	19	58	73	92	1	1
1983-84	0	7	75	90	84	113	21	0
1984-85	1	0	42	95	136	141	7	0

Ringed Plover Charadrius hiaticula

The BTO/WSG Winter Shorebird Count has revealed surprisingly high numbers of Ringed Plovers on our open coasts, particularly in Scotland and N. Ireland. The greatest concentrations by far were on the Outer Hebrides and Tiree, which may together hold more than 5,000 birds.

The January population index from the estuary counts was very slightly down on 1984, although overall there seems to have been little change in population levels over the course of the Enquiry (Table 37). Preliminary results from the 1984 BTO survey of breeding Ringed Plovers suggest that the population has increased since the last survey took place, with more birds apparently now breeding inland. The top estuaries for wintering Ringed Plovers in Britain and N. Ireland are listed in Table 27.

Spring passage studies during 1984 and 1985 on the west coast of Britain and N. Ireland have added much information on the migration patterns of this species. Resident birds are outnumbered in April and May by the vast flocks of migrants which pass through Britain en route for their more northerly breeding areas. With the exception of Lough Foyle, there is little evidence of significant passage through sites in Ireland. The most important staging areas appear to be the Solway Firth, Morecambe Bay, the Ribble and the Dee. The highest count in 1985 was of 4,000 birds on the Ribble in mid-May.

Table 27. Ringed Plover: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Medway	519	268	515	569	852 (Dec)	545
Orwell	(12)	370	482	513	520 (Dec)	471
Forth	429	356	320	(251)	(181) (Jan)	368
Langstone Harbour	306	547	300	254	391 (Dec)	360
Southampton Water	404	277	271	323	323 (Dec)	320
Chichester Harbour	298	215	364	388	(572) (Dec)	316
Humber	(101)	241	(209)	305	(309) (Dec)	273
Swale	267	333	308	(167)	124 (Dec)	258

Golden Plover *Pluvialis apricaria*

The winter counts followed a pattern very similar to that of Lapwing. A record high count of 60,000 birds was made in December, followed by unusually low counts in January (12,703) and February (11,321). Thus, there was a large departure from estuarine habitats with the onset of the severe weather in January. Flocks also departed from many inland sites at this time (R.J. Fuller pers. comm.), suggesting a large exodus from Britain. The total counts on estuaries in N. Ireland for December and January were 16,300 and 1,200 birds respectively, suggesting a departure from this area also. The birds which departed from Britain most probably moved further south to France and Iberia, as has recently been reported in an analysis of BTO ringing data (Baillie in prep.).

The highest counts in 1984-85 were at Strangford Lough (13,510 in December), the Humber (7,414 in December) and on the Taw/Iorridge, Devon (3,350 in December). The count at Strangford was both a record for this site and a record for any site in the United Kingdom since the start of the Enquiry.

Grey Plover *Pluvialis squatarola*

The rapid growth of the overwintering population of Grey Plovers in Britain during the 1970s has not so far continued into the 1980s, although the population remains at a much higher level than at the start of the Enquiry (Table 37). The January 1985 index was very slightly up on the previous year. Eleven sites in Britain held wintering numbers of international importance for this species (Table 28). The Humber and Medway are, for the first time, included in this list, probably reflecting improved levels of coverage at both sites. There was some evidence from counts on east coast estuaries of an influx of birds from the Continent during the severe weather of January and February. This was supported by the results of intensive ringing studies at Teesmouth (Davidson & Clark 1985).

Studies of Grey Plovers on the Firth of Forth (Symonds et al. 1984) and elsewhere have suggested that wintering birds are very site-faithful, showing little evidence of inter- or intra-estuarine movements. More intensive studies at Teesmouth (Townshend 1985) have added further information: in addition to being very site-faithful, individuals were also highly consistent in their dates of arrival and departure, at and from the estuary, and were consistent between years in whether they held feeding territories or fed in flocks - the decision being made in their first autumn when they have to compete for space on the estuary, particularly with adults. Larger juveniles were more likely to acquire territories and were more likely to remain on the estuary during the

winter than smaller ones. There was some evidence from ringing recoveries that juveniles which were displaced from the estuary moved further south to winter, perhaps as far as France.

Table 28. Grey Plover: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Wash	8,264	1,616	2,807	2,694	3,966 (Feb)	3,869
Dengie, Essex	4,000	1,380	400	1,180	(1,700) (Jan)	1,740
Swale	2,247	682	1,126	737	2,971 (Dec)	1,553
Chichester Harbour	1,022	1,666	1,971	1,541	(2,005) (Dec)	1,550
Foulness	880	2,213	683	749	2,264 (Feb)	1,358
Dee	1,700	720	1,490	846	820 (Dec)	1,115
Ribble	743	903	1,040	1,338	1,224 (Dec)	1,050
Medway	925	(213)	276	798	1,813 (Dec)	953
Hamford Water	1,042	1,000	835	1,430	447 (Jan)	951
Stour	590	1,084	1,125	798	783 (Jan)	876
Humber	x	x	x	577	1,031 (Feb)	804

Lapwing Vanellus vanellus

Lapwing showed perhaps the most interesting pattern of counts of all the waders in the 1984-85 winter. The December total of almost 200,000 was easily a record for the Enquiry, yet this was followed by a January count of little over 30,000. The difference reflects the enormous response of this species to the cold weather. Many inland sites in Britain reported a complete disappearance of Lapwing from their normal winter haunts during the most severe spells (R.J. Fuller pers. comm.) and it is clear from the BoEE counts that birds also left coastal habitats (including sites in south-west England). Ringing recoveries reported to the BTO from this period showed a dramatic increase in France and Iberia (and to a lesser extent Ireland) and it thus appears that this was a major cold weather exodus from Britain.

Almost all sites recorded their peak winter counts of Lapwing in December. Three sites recorded counts exceeding 10,000 birds. These were Strangford Lough (15,729), Morecambe Bay (13,077) and the Humber (10,418).

Knot *Calidris canutus*

All British sites which have supported an average winter population of more than 10,000 Knot over the last five seasons are listed in Table 29. The Wash, which remains by far the most important site for Knot, supported almost 40% of the total counted in Britain in February. The December count of over 40,000 on the Alt was a record, reflecting the increased usage of this estuary by Knot. Large flocks were observed flying out of the Dee at high-water on several counts, and these may have contributed to the high numbers on the Alt. Strangford Lough recorded its highest count since 1971, with a January total of almost 19,000 birds.

The BTO/WSG Winter Shorebird Count found very few Knot on open coastal habitats; the BoEE counts therefore give relatively complete coverage of the winter population of this species. The numbers of Knot which winter in Britain have declined markedly during the course of the Enquiry and may have been even higher before counts started in 1969. The average highest national mid-winter count for the period 1970-1975 was 290,390 birds, compared with 197,060 for the period 1980-1985.

Table 29. Knot: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Wash	82,400	54,139	108,739	53,495	77,050 (Feb)	75,165
Alt, Merseyside	34,100	6,200	18,000	28,502	40,303 (Dec)	25,421
Humber	17,905	34,734	14,829	25,790	(17,968) (Feb)	23,315
Morecambe Bay	40,500	x	28,087	24,555	(17,968) (Feb)	23,286
Dee	21,450	25,315	28,390	17,960	19,500 (Jan)	22,523
Foulness	7,219	33,380	8,727	11,941	19,441 (Jan)	16,142
Ribble	11,300	16,262	11,078	12,381	9,479 (Dec)	12,100
Strangford	7,808	7,809	6,210	9,424	18,977 (Jan)	10,046

Sanderling *Calidris alba*

Despite the very extensive coverage of the open coasts of Britain and N. Ireland for the BTO/WSG Winter Shorebird Count, no new large concentrations of Sanderling were discovered. By far the greatest concentration in Britain is still found on the Ribble and Alt Estuaries. The highest winter count here was of almost 2,000 birds in December. Similar numbers were recorded on the open coasts of the Uists, although the birds are much more dispersed. The top ten estuaries for wintering Sanderling are shown in Table 30. The January count was 14% down in 1985 on sites counted in the same month of 1984; the index shows no evidence of any long-term change in the abundance of this species (Table 37).

Studies of the spring passage of Sanderling through Britain gathered some very useful information in 1985. Colour marking of some of the presumed "wintering" birds in late April and early May showed that the majority of these birds have departed by mid-May. A large passage then occurred of birds probably bound for Greenland; a peak count of 6,371 was recorded and the birds stayed well into the first week of June.

Table 30. Sanderling: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Ribble	1,739	1,790	1,045	1,644	1,431 (Dec)	1,530
Alt	809	356	547	537	555 (Dec)	561
Humber	(288)	(102)	(78)	641	334 (Feb)	488
Wash	1,022	212	182	166	(85) (Jan)	396
Blackpill, W. Glam	275	365	310	191	398 (Dec)	308
Chichester Harbour	321	109	376	330	450 (Dec)	317
Buddon	264	169	195	226	606 (Dec)	292
Tay	152	300	475	(50)	232 (Jan)	290
Dee	135	135	435	56	427 (Jan)	238
Teesmouth	365	214	245	210	122 (Feb)	231

Purple Sandpiper Calidris maritima

The BT0/WSG Winter Shorebird Count will provide important new information on the size of the populations of this species wintering on the open coasts of Britain. Although full analyses of the data are not yet complete, it is striking that no new large concentrations were found, beyond those already described. Many open coastal sites are now included in the BoEE counts and efforts will be made to include further sites to add to those available for population monitoring purposes.

Counts exceeding 100 birds during a winter month were only recorded at four sites. These were Ayre-Deerness, Orkney (154, January), Budle-Seahouses, Northumberland (140, December), the Moray Basin (120, January) and Seahouses-Beadnell, Northumberland (111, February).

Dunlin Calidris alpina

The Dunlin is the most abundant wader which winters on the British coastline, with an estimated population in excess of half a million birds. A very high proportion of these are confined to mudflats, and the top ten estuaries for this species in Britain (Table 31) support over half of the wintering population; the first seven of these sites exceed the criterion necessary for international importance. The numbers of Dunlin on several estuaries have recently undergone considerable decline. The Dee, which regularly held a winter peak of more than 40,000 birds in the 1970s, recorded its lowest ever numbers in 1984-85, with a peak count of less than 10,000 birds. Similarly, Lindisfarne, which has recorded as many as 30,000 Dunlin in the past, recorded a peak of only 3,400 in 1984-85. Despite these dramatic falls the January index was very slightly up on last year, although populations remain at a low level (Table 37).

Recent studies on the Dutch Wadden Sea (van der Have *et al.* 1985) have revealed age-related differences in the distribution of Dunlin within this area. Feeding areas with very high densities of Dunlin have much lower proportions of juveniles than do feeding areas with lower densities. This suggests that the juveniles may be competitively excluded from the best areas by the adults.

Table 31. Dunlin: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Severn	36,450	52,605	27,670	53,330	(35,016) (Jan)	42,514
Morecambe Bay	58,500	x	28,223	31,134	50,211 (Feb)	42,017
Mersey	30,500	25,400	30,100	28,000	34,700 (Jan)	29,740
Langstone Harbour	25,050	28,000	29,000	27,150	30,250 (Dec)	27,890
Wash	30,193	27,572	29,082	27,044	20,101 (Feb)	26,798
Chichester Harbour	21,036	23,803	27,751	28,293	(27,028) (Dec)	25,221
Humber	(12,493)	32,203	(22,736)	20,843	21,635 (Jan)	24,894
Dee	23,470	16,380	21,135	21,950	9,920 (Dec)	18,571
Medway	16,495	(4,202)	13,186	20,780	18,366 (Dec)	17,207
Lindisfarne	31,000	15,000	23,000	12,130	3,400 (Feb)	16,906

Ruff *Philomachus pugnax*

The pattern of counts of Ruff on coastal sites showed a seasonal drop in the national totals from 272 in November to 63 in December and 66 in January, before rising again to 174 in February; almost 90% of these birds were counted in southern England. The forthcoming BTO/IWC Winter Atlas shows that small numbers of Ruff winter inland at many sites, particularly in the Midlands. The distribution of these birds must be strongly influenced by the freezing of freshwater habitats, which may account for the irregular pattern of numbers at coastal sites.

The highest winter counts at coastal sites in 1984-85 (all in February) were 48 at Christchurch Harbour, 21 on the Beaulieu River, Hants, 16 on the Exe and 15 at Pagham Harbour.

Snipe *Gallinago gallinago*

The count of almost 5,500 Common Snipe on the British estuaries in December was easily a record for the Estuaries Enquiry. Winter numbers then showed the usual decline through January and February with, surprisingly, no evidence of any major severe weather effects on numbers (cf. Lapwing and Golden Plover). The highest counts were in the south and west, with the top five sites as follows: Pevensey (E. Sussex) 1,500, Severn 459, Christchurch Harbour 406, Dee 352 and Rye Harbour 231.

Jack Snipe *Lymnocyptes minimus*

There was no evidence for any severe weather effects on the population levels of Jack Snipe, with similar numbers being recorded in all three mid-winter months. The two highest counts were in January, with 11 individuals on the Clyde Estuary and 5 on the Burry Inlet.

Black-tailed Godwit *Limosa limosa*

Black-tailed Godwits are restricted almost entirely to estuaries during the winter months and are not found on open coastal habitats. Estuary counts therefore give a good indication of the number of birds wintering in Britain and N. Ireland. The average peak mid-winter count in Britain since the start of the Enquiry has been just over 4,400 birds, with no evidence of long-term

change in population levels. The largest concentration on the U.K. estuaries occurs in Hampshire and Sussex, where the peak winter count in 1984-85 occurred in December, with a total count of 2,010 birds; more than half of these were on Langstone Harbour. Three sites outside this area had peak counts exceeding 500 birds: Ribble 1,280 in December; Stour 945 in January; Exe 533 in January.

Bar-tailed Godwit Limosa lapponica

The ten most important wintering sites for Bar-tailed Godwits in Britain and N. Ireland are listed in Table 32; only the first four support numbers of international importance.

The highest count in 1984-85 was of more than 16,000 birds at Foulness in January. This represents both a record count for this site and the largest wintering concentration of Bar-tailed Godwits ever recorded in Britain. This unique count corresponded with the first spell of severe weather in Britain and on the Continent. The numbers of birds involved clearly indicates a major cold weather influx from the Continent, particularly since numbers were also up at sites adjacent to Foulness. The extent of cold weather movements by waders is currently being examined from the BTO ringing data: however, very few Bar-tailed Godwits have been ringed and visual records such as these provide valuable evidence of the importance of the British estuaries as refuges for birds from the Continent during severe weather.

One result of the dramatic influx of Bar-tailed Godwits onto the east coast in January was to push the index to a very high level, which has only been exceeded by that which occurred during the January 1982 influx.

Table 32. Bar-tailed Godwit: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Ribble	7,098	15,885	10,875	6,138	5,800 (Dec)	9,159
Foulness	4,093	14,131	4,655	2,986	16,187 (Jan)	8,410
Wash	10,936	8,359	8,131	5,976	7,846 (Feb)	8,250
Alt	4,510	6,540	6,000	8,620	4,503 (Jan)	6,035
Solway Firth	5,494	7,022	3,088	2,846	3,939 (Dec)	4,478
Morecambe Bay	6,200	x	4,268	5,752	(2,722) (Feb)	4,055
Lindisfarne	4,730	2,600	4,520	3,600	4,765 (Feb)	4,043
Forth	2,303	3,840	2,764	3,194	3,396 (Jan)	3,099
Lough Foyle	2,220	1,831	2,915	3,160	3,300 (Feb)	2,685
Dee	1,105	3,480	130	208	25 (Jan)	980

Curlew Numenius arquata

There was a substantial fall in the January index of Curlew wintering in Britain and N. Ireland (Table 37). The numbers recorded on estuaries which were counted in both January 1984 and 1985 fell by 21%, bringing the index to a new all-time low. This may partially have been the result of a cold weather exodus, since the December count total suggests a more normal population level.

The top ten estuaries for wintering Curlew are listed in Table 33; only the first three support numbers of international importance.

Table 33. Curlew: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Morecambe Bay	7,850	x	4,422	6,401	10,514 (Dec)	7,297
Wash	4,562	2,871	2,723	4,817	(1,405) (Jan)	3,743
Solway Firth	2,076	3,543	4,000	3,03	4,533 (Dec)	3,437
Dee	2,490	2,545	2,015	2,600	2,435 (Feb)	2,417
Lough Foyle	1,729	1,632	4,000	1,610	2,800 (Feb)	2,354
Severn	2,408	1,087	1,813	1,931	3,126 (Dec)	2,073
Foulness	1,297	2,858	1,919	1,768	1,890 (Jan)	1,946
Humber	x	(1,216)	(1,282)	1,499	2,065 (Feb)	1,782
Outer S.Solway	x	x	x	1,302	2,130 (Dec)	1,716
Moray Basin	x	x	1,666	1,852	1,549 (Jan)	1,689

Spotted Redshank *Tringa erythropus*

Three sites reported winter peaks of more than ten birds; these were the Medway (32 in December), the Beaulieu River, Hants (17 in January) and the Lynher, Cornwall (11 in January). The two highest counts during the autumn passage were 91 on the Swale and 67 on the Wash; both counts were made in September.

Redshank *Tringa totanus*

The numbers of dead, ringed Redshanks which were reported to the BTO in January and February 1985 were well up on the normal for mild winters, suggesting increased mortality as a result of the severe weather. The very sharp drop in the January population index which was noted in 1984 was not repeated in 1985; although the index rose slightly, the populations still remain at a very low level (Table 37).

The count of 3,169 in December on the Clyde is almost twice as high as the peak count of 1984-85 from the same site. It appears, however, that these were late passage birds, since the January and February counts were of 1,866 and 1,585 birds, respectively. Thus there is no sign of any recovery of the population at this site. Wintering numbers on the adjacent Solway Firth were once again low.

There are eleven sites in Britain and N. Ireland which support wintering numbers of international importance; these are listed in Table 34.

Table 34. Redshank: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Morecambe Bay	8,850	x	2,454	5,254	(5,001) (Dec)	5,519
Wash	5,610	2,446	2,893	2,603	(1,643) (Jan)	3,388
Dee	4,495	2,880	3,185	2,672	2,074 (Dec)	3,061
Humber	(1,231)	(1,776)	(1,885)	2,682	2,896 (Dec)	2,789
Orwell	(140)	(508)	2,475	3,105	2,625 (Jan)	2,735
Clyde (inner Firth)	3,444	2,609	2,574	1,732	3,169 (Dec)	2,706
Stour	2,236	2,748	2,039	2,062	3,221 (Dec)	2,461
Lindisfarne	3,000	1,500	2,845	2,380	2,010 (Feb)	2,347
Moray Basin	x	x	2,054	2,270	2,295 (Jan)	2,206
Forth	1,451	1,517	2,919	2,492	(1,925) (Jan)	2,095
Strangford	1,360	1,902	2,092	2,292	2,573 (Jan)	2,044

Greenshank *Tringa nebularia*

High numbers of Greenshank were reported on autumn passage in the estuaries of south and south-east England. The peak counts were 171 at Langstone Harbour (August), 143 on the Medway (September) and 124 at Chichester Harbour (September).

In winter, Greenshanks are found mainly on the milder south and western coasts of Britain and Ireland. The highest winter count was of 51 birds on the Cleddau in February; this was a record for this site, presumably reflecting a cold weather influx. Other notable winter records were 23 on the Kingsbridge (Devon), 19 each on the Medway and Clyde and 11 on the Taw/Torridge. Sites in N. Ireland recorded rather lower numbers than last winter, with 26 on Lough Foyle (January), 17 on Larne Lough (January), 16 each on Dundrum Bay and Strangford Lough and 11 on Carlingford Lough.

Green Sandpiper *Tringa ochropus*

Overwintering Green Sandpipers were recorded at 21 sites in 1984-85. The highest counts were six on the Medway (January), five on the North Kent Marshes (December) and four at Portsmouth Harbour (December); most other records were from southern England.

Common Sandpiper *Actitis hypoleucos*

Wintering Common Sandpipers were recorded at 15 sites, mainly in south and south-west England. The highest count was of eight individuals on the Taw/Torridge, followed by two birds each on the Severn, Lynher, Teign, Exe and Cleddau. The highest counts on autumn passage were 63 on the Severn and 42 on the Taw/Torridge, both in August.

Turnstone *Arenaria interpres*

Although analyses of the results of the 1984-85 BTO/WSG Winter Shorebird Count are not yet complete, it is clear that some very important concentrations of this species occur on open coastal habitats; previously unknown large concentrations were found along the coastline of Co. Down and on the island of Tiree (Strathclyde) and the Scilly Isles (Cornwall). A recent study on the

Firth of Forth (Symonds *et al.* 1984) showed Turnstone to be highly site-faithful during the winter. There was little or no evidence of movements of this species within or between estuaries.

More than 12,000 Turnstone were recorded in the BoEE counts in both December 1984 and January 1985, reflecting the large number of open coastal sites which are now included in the Enquiry. Coverage of good numbers of these sites is required to give an adequate sample for population monitoring purposes. The January Turnstone counts were 9% up on 1984 at sites counted in both years. The index has shown little change in population levels since the start of the Enquiry (Table 37). The top ten sites for wintering Turnstone in Britain and N. Ireland are listed in Table 35.

Table 35. Turnstone: maxima at main resorts.

	1980-81	81-82	82-83	83-84	84-85 (Month)	Average
Forth	1,614	(1,034)	1,195	(888)	(667) (Jan)	1,405
Morecambe Bay	1,740	x	770	934	(755) (Jan)	1,148
Wash	1,159	824	496	973	(911) (Jan)	863
Guernsey	518	484	350	665	717 (Dec)	547
Outer S.Solway	x	x	x	387	454 (Feb)	421
Stour	427	366	469	430	290 (Jan)	396
Burry Inlet	275	270	215	710	470 (Dec)	388
Humber	(78)	243	(359)	366	487 (Feb)	365
Pagham	214	448	166	376	545 (Dec)	350
Southampton Water	308	437	345	275	333 (Dec)	340

Principal sites

The most important sites for waders wintering in the U.K. are shown in Table 36 (overleaf) in the order of the winter peak counts for 1984-85. 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 mid-winter 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 with more than 20,000 waders regularly are considered of international importance (Smart 1976; Spagnesi 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 indicates the tremendous conservation importance of the top ten sites in Britain and N. Ireland for wintering waders; these sites alone hold more than half of the 1.5 million coastal waders which winter in the U.K. The main changes at the top in 1984-85 are the fall of the Dee from third to sixth place, as a result of the very low counts of Dunlin which were recorded. Conversely, Strangford Lough climbed from fifteenth in 1983-84 to fifth in 1984-85, following very high counts of both Lapwing and Golden Plover.

Table 36. Peak counts of waders, 1984-85. (Number of counts in brackets).

	Winter	All-year
Morecambe Bay	148,645 (3)	177,025 (11)
Wash	135,176 (2)	173,389 (5)
Humber	77,433 (3)	78,422 (7)
Solway	63,686 (3)	86,506 (11)
Strangford Lough	63,110 (3)	63,959 (7)
Dee	62,678 (3)	79,314 (12)
Foulness	62,391 (3)	65,423 (8)
Ribble	54,994 (3)	138,927 (12)
Severn	51,275 (3)	54,094 (12)
Alt	49,744 (3)	51,164 (9)
Mersey	47,380 (3)	51,182 (12)
Chichester Hbr.	39,355 (3)	42,484 (7)
Swale	39,252 (3)	40,621 (7)
Langstone Hbr.	38,640 (3)	40,405 (9)
Forth	33,410 (3)	37,249 (7)
Burry Inlet	30,998 (3)	33,070 (12)
Stour (Essex/Suffolk)	29,518 (3)	31,876 (7)
Medway	27,990 (3)	29,355 (7)
Blackwater	27,605 (3)	29,527 (8)
Orwell	22,804 (3)	23,932 (6)
Moray Basin	20,722 (1)	20,722 (1)
Lindisfarne	18,706 (3)	28,429 (11)
S. Solway (Outer)	16,536 (3)	17,811 (12)
Taw/Torridge	16,245 (3)	20,239 (10)
Exe	15,915 (3)	16,838 (11)
Tees	15,754 (3)	18,707 (12)
Eden	15,461 (3)	17,066 (12)
Duddon	14,909 (3)	16,598 (11)
Lavan Sands	14,875 (3)	15,357 (7)
Lough Foyle	14,783 (3)	17,000 (7)
N. Kent Marshes	13,655 (3)	14,288 (10)
N. Norfolk Marshes	13,353 (3)	15,408 (9)
Colne	13,230 (3)	13,463 (8)
Cleddau	12,906 (3)	13,358 (9)
Leigh/Canvey	12,746 (3)	14,932 (8)
Clyde	11,590 (3)	12,932 (9)
Pevensey	11,004 (3)	20,507 (7)
Pagham Hbr.	10,499 (3)	10,929 (8)
Adur	10,269 (3)	10,323 (7)

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, unless the species is largely 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.6), except that 1973 is used as the arbitrary "anchor" year.

The indices for the period 1971-1985 are shown in Table 37. Species which occur in small total numbers only or are present on only a few sites 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 Grey Plover and Oystercatcher remained very high in January 1985, while the low levels of Redshank and Dunlin in recent years showed little change.

Table 37. January indices for wader populations in the United Kingdom, 1971-85.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Oystercatcher	109	121	100	123	126	152	160	147	156	177	186	180	161	159	179
Ringed Plover	84	108	100	125	117	143	116	134	124	128	151	125	161	138	128
Grey Plover	90	86	100	140	160	161	189	99	145	191	171	148	180	179	186
Knot	110	155	100	121	74	83	86	61	112	80	100	83	70	87	77
Sanderling	72	178	100	101	196	199	109	51	96	143	102	120	120	105	90
Dunlin	72	97	100	125	112	113	105	80	84	82	79	75	73	63	64
Bar-tailed Godwit	91	87	100	119	107	108	115	103	150	207	143	234	198	128	218
Curlew	88	130	100	135	143	136	96	85	87	111	113	100	112	79	62
Redshank	74	110	100	103	111	125	97	78	92	92	91	75	78	68	74
Turnstone	97	141	100	130	124	145	150	140	143	139	127	126	122	131	142

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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 supports 1% of the individuals in a population of one species or subspecies of waterfowl (Smart 1976; Spagnesi 1982). A wetland in Britain is considered Nationally Important if it REGULARLY holds at least 1% of the estimated wintering population of one species or subspecies of waterfowl (Prater 1981; Salmon 1981). Table 38 (overleaf) gives the qualifying levels among wildfowl and waders for both categories of importance.

The Republic of Ireland ratified the Ramsar Convention on Wetlands of International Importance in November 1984. There are now 38 Contracting Parties, which have designated a total of 321 sites, covering nearly 20,000,000 ha. The United Kingdom designated a further six areas in July 1985: Chesil Beach and the Fleet, the Dee Estuary, the Derwent Ings, Holburn Moss (Northumberland), Irthinghead Mires (Cumbria/Northumberland) and the Swale. This brings the total number of sites designated in the UK to 25, covering 87,684 ha. A leaflet describing the Ramsar Convention and its workings is now available from the International Waterfowl Research Bureau at Slimbridge.

Table 38. Qualifying levels for National and International Importance

	National (G.B.)	International
Mute Swan	180	1,200
Bewick's Swan	50	120
Whooper Swan	50*	100
Bean Goose	-	700
Pink-footed Goose: Iceland/Greenland pop.	900	900
European White-fronted Goose	60	2,000
Greenland White-fronted Goose	60	150
Greylag Goose: Iceland pop.	900	900
Barnacle Goose: Greenland pop.	200	300
Svalbard pop.	80	100*
Dark-bellied Brent Goose	600	1,300
Light-bellied Brent Goose		
Canada/Greenland pop.	-	150
Svalbard pop.	50*	100*
Shelduck	750	1,250
Wigeon	2,000	5,000
Gadwall	50*	550
Teal	1,000	2,000
Mallard	4,000	10,000+
Pintail	250	750
Shoveler	90	1,000
Pochard	500	2,500
Tufted Duck	600	5,000
Scaup	50*	1,500
Eider	500	10,000+
Long-tailed Duck	200	5,000
Common Scoter	350	10,000+
Velvet Scoter	50*	2,000
Goldeneye	150	2,000
Smew	-	200
Red-breasted Merganser	100	400
Goosander	50	750
Oystercatcher	3,000	7,500
Avocet	-	260
Ringed Plover	120 (Passage:300)	1,000
Golden Plover	2,000	10,000
Grey Plover	100	800
Lapwing	5,000	20,000+
Knot	2,500	3,500
Sanderling: Passage	300	500
Winter	100	150
Purple Sandpiper	180	?
Dunlin	5,500 (Pass:2,000)	20,000+
Ruff	-	10,000
Snipe	?	10,000
Black-tailed Godwit	50	400
Bar-tailed Godwit	450	5,500
Whimbrel	100	500
Curlew	1,000	3,000
Spotted Redshank	50	500
Redshank	1,000 (Pass:1,200)	2,000
Greenshank	50	500
Turnstone	250	500

* minimum permissible: represents over 1%

+ maximum permissible: represents under 1%

- British population too small for meaningful figure to be obtained