
Review of overwintering swans and geese
in the SEA 6, 7 & 8 areas

CORK ♦ ECOLOGY

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Non-technical Summary

Introduction

A review of the coastal distribution and abundance of swans and geese in the SEA 6, 7 and 8 areas, including migration routes, was carried out by Cork Ecology at the request of the UK Department of Trade and Industry (DTI) as part of the Strategic Environmental Assessment (SEA) process in the U.K.

The SEA 6, 7 & 8 areas include the UK territorial waters south and west of Britain (Figure 1).

Three species of swan (mute, Bewick's and whooper) and five species of goose (pink-footed, white-fronted, greylag, barnacle and brent), which occur regularly in coastal areas of SEA 6, 7 & 8 were considered in this review. Apart from mute swan and greylag geese in north-west Scotland, all species are winter visitors to Britain.

Methodology

Data from Wetland Bird Survey (WeBS) annual reports and relevant bird reports from 1991/92 onwards were reviewed and 5 year means calculated.

Sites that regularly hold more than 1 % of the national population of a species are deemed to be nationally important, and sites with more than 1 % of the biogeographic population are internationally important.

Results

Internationally and nationally significant numbers of swans and geese winter at coastal sites in the SEA 6, 7 & 8 areas. Many of these sites are multi-species SPAs including the Ribble & Alt Estuaries, Severn Estuary, Upper Solway Flats & Marshes, several sites on Islay and Strangford Lough.

SEA 6 - Britain

The Ribble Estuary holds internationally important numbers of whooper swans and pink-footed geese, as well as nationally important numbers of Bewick's swan. Internationally important numbers of whooper swans, pink-footed geese and barnacle geese from Svalbard occur on the Solway Firth, while internationally important numbers of pink-footed geese also occur at Pilling Sands and Morecambe Bay.

Numbers of Icelandic greylag geese occur in internationally important numbers on Bute, along with nationally important numbers of Greenland white-fronted geese. The Inland Sea, Anglesey and Hilbre on the Dee Estuary hold nationally important numbers of pale-bellied brent geese from the Greenland and Canadian breeding population.

SEA 6 - Northern Ireland

Within the Northern Ireland SEA 6 area, six coastal sites hold internationally important numbers of pale-bellied brent geese from the Greenland and Canadian breeding population, with Strangford Lough holding the majority of these birds. In addition, Strangford Lough also holds nationally important numbers of whooper swans and Icelandic greylag geese.

SEA 7

Whooper swans occur in internationally important numbers on South Uist and in nationally important numbers on North Uist and Tiree. Greenland white-fronted geese occur in internationally important numbers at five sites, with Islay supporting the majority of the wintering population. Islay also supports the majority of the wintering population of barnacle geese from Greenland, although internationally important numbers are also recorded at three other sites.

Nine coastal sites within the SEA 7 area hold internationally important numbers of the north-west population of greylag geese, which is a discrete non-migratory population.

SEA 8

Mute swans occur in internationally important concentrations on the Fleet/Way Estuaries, and the Severn Estuary holds internationally important numbers of Bewick's swans, as well as nationally important numbers of European white-fronted geese.

Dark-bellied brent geese from the central Russian Arctic occur in internationally important numbers on the Fleet/Way Estuaries and at Chichester and Langstone Harbours. Nationally important numbers of this population are recorded at six other sites in the SEA 8 area in winter.

Discussion

Whooper swan, pink-footed goose, European white-fronted goose, barnacle goose and brent goose have been highlighted as potentially sensitive species to wind farms.

Four of these species (whooper swan, pink-footed goose, barnacle goose and brent goose) occur within the SEA 6 area in internationally important numbers. Within the SEA 7 area, whooper swan, Greenland white-fronted goose, and barnacle goose occur in internationally important numbers. Within the SEA 8 area, dark bellied brent geese are recorded in internationally important numbers and European white-fronted geese occur in nationally important numbers.

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1. Introduction

A review of the coastal distribution and abundance of swans and geese in the SEA 6, 7 and 8 areas, including migration routes, was carried out by Cork Ecology at the request of the UK Department of Trade and Industry (DTI) as part of the Strategic Environmental Assessment (SEA) process in the U.K.

This follows on from a similar review of swans and geese in the SEA 5 area, which also examined potential impacts of offshore wind farms on swans and geese overwintering in the UK (Barton & Pollock 2004).

1.1 Objectives

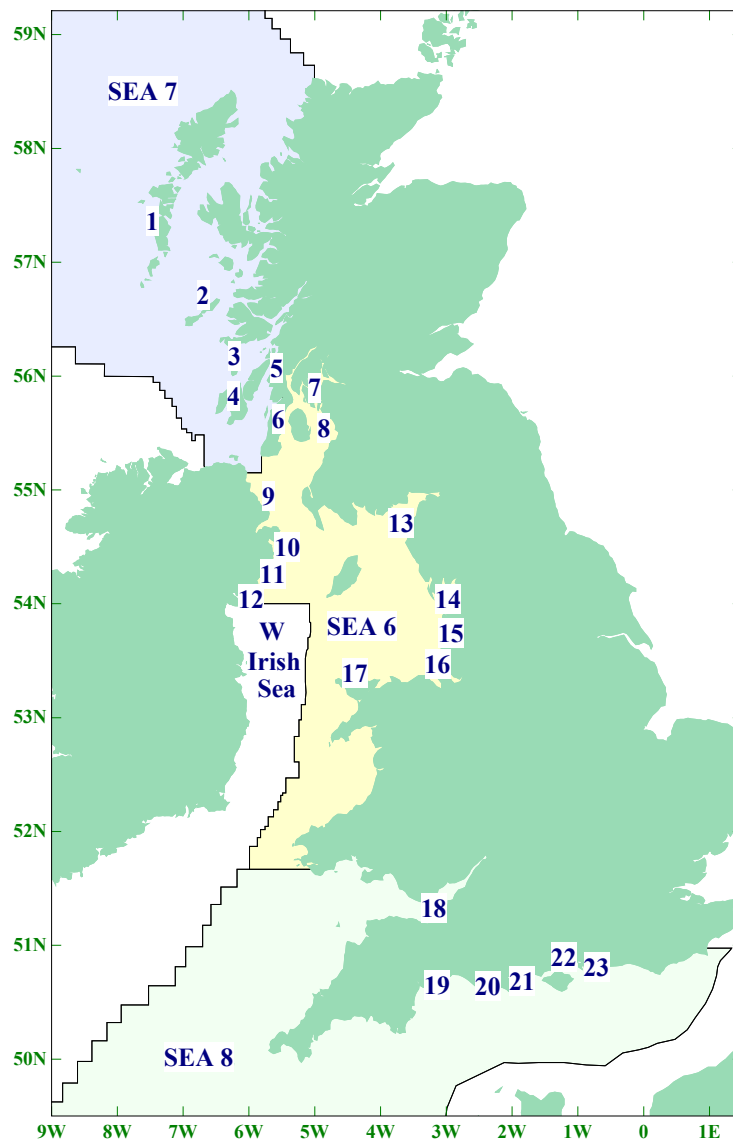
The objectives of this study were:

- To review the existing knowledge of the distribution and abundance of swans and geese in the SEA 6, 7 and 8 areas, including information on migration routes.

1.2 Study area

The SEA 6, 7 & 8 areas include the UK territorial waters south and west of Britain (DTI 2004). Sea 6 covers the eastern Irish Sea and east coast of Northern Ireland. SEA 7 includes the west coast of Scotland, the Western Isles and the north coast of Northern Ireland. The Bristol Channel, south-west approaches and English Channel make up the SEA 8 area. As the emphasis is on coastal species, the offshore waters of SEA 7 & 8 are not considered in this report. The study area is defined in Figure 1.

Figure 1.1 Study area showing SEA 6, 7 & 8 Areas & major sites for swans & geese



Site names

SEA 7 Area		SEA 6 Area		SEA 8 Area	
1	North & South Uist & Benbecula	7	Bute	18	Severn Estuary
2	Coll & Tiree	8	Firth of Clyde	19	Exe Estuary
3	Colonsay & Oronsay	9	Larne Lough	20	Fleet/Way
4	Islay	10	Strangford Lough & Outer Ards	21	Poole Harbour
5	Keills Peninsula	11	Killough Harbour & Dundrum Bay	22	Southampton Water & NW Solent
6	Rhunahaorine & Machrihanish	12	Carlingford Lough	23	Langstone, Chichester, Pagham & Portsmouth Harbours
		13	Solway Firth		
		14	Morecambe Bay & Pilling Sands		
		15	Ribble & Alt Estuaries		
		16	Hilbre & Dee Estuary		
		17	Inland Sea, Anglesey		
				18	Severn Estuary
				19	Exe Estuary
				20	Fleet/Way
				21	Poole Harbour
				22	Southampton Water & NW Solent
				23	Langstone, Chichester, Pagham & Portsmouth Harbours

1.3 Species considered

Three species of swans and five species of geese that occur regularly in coastal areas bordering the SEA 6, 7 and 8 areas were considered (Table 1.1).

Apart from the resident mute swan and the sedentary greylag goose population of north-west Scotland, swans and geese are primarily winter visitors to Britain, arriving in autumn and spending the winter feeding on agricultural land or saltmarshes.

Several of the species that overwinter in Britain may pass through the SEA 6, 7 and 8 areas on migration to and from their breeding grounds in spring and autumn. Many parts of Britain and Ireland are important wintering areas for these species (e.g. Thom 1986).

This review collates existing sources of information, to provide a current picture of the numbers, movements and distribution of swans and geese within the SEA 6, 7 and 8 areas.

Table 1.1 Species of swans and geese included in review

Species	Latin Name
Mute Swan	<i>Cygnus olor</i>
Bewick's Swan	<i>Cygnus columbianus</i>
Whooper Swan	<i>Cygnus cygnus</i>
Pink-footed Goose	<i>Anser brachyrhynchus</i>
White-fronted Goose	<i>Anser albifrons</i>
Greylag Goose	<i>Anser anser</i>
Barnacle Goose	<i>Branta canadensis</i>
Brent Goose	<i>Branta bernicla</i>

2. Methods

2.1 Data sources

Data were included from the following sources:

WeBS

The Wetland Bird Survey (WeBS) is a joint scheme of the British Trust for Ornithology (BTO), The Wildfowl & Wetlands Trust (WWT), Royal Society for the Protection of Birds (RSPB) and JNCC.

The WeBS scheme monitors non-breeding waterbirds in the UK, using monthly land-based counts undertaken by volunteers to annually identify population sizes, determine trends in numbers and to identify important sites for waterbirds. WeBS counts are conducted monthly on pre-determined dates to avoid double-counting. While some sites are counted throughout the year, the winter months are prioritised. Full details of the count method are outlined in Gilbert *et al* (1998).

Counts and figures were extracted from WeBS annual reports from 1991/92 to 2000/01 (Cranswick *et al* 1992, Cranswick *et al* 1995, Waters *et al* 1996, Cranswick *et al* 1997, Cranswick *et al* 1999, Pollit *et al* 2000, Musgrove *et al* 2001 & Pollit *et al* 2003).

Bird Reports

Several bird reports were reviewed for relevant counts and records for the SEA 6, 7 and 8 areas:

SEA 6:

- Eastern Glamorgan Bird Report 2001-2003 (Thomas & Wilson 2002, 2003 & 2004)
- Birds & Wildlife in Cumbria 2001-2003 (Robinson *et al* 2002, 2003, Robinson & 2004)
- Lancashire Bird Report 1999-2003 (Dunstan *et al* 2000, White *et al* 2001, 2002, 2003 & 2004)
- Cheshire & Wirral Bird Report 2000-2002 (Schofield *et al* 2001 & 2002, Feltham *et al* 2003)
- Cambrian Bird Report 2000-2003 (Pritchard *et al* 2001, 2002, 2003 & 2004)
- Northern Ireland Bird Report 1999-2001 (Gordon *et al* 2001, 2002, Stewart 2003)

SEA 7:

- Scottish Bird Report 1998–2001 (SOC 2003, Murray 2004)
- Highland Bird Report 2002 (McNee 2003)
- Ayrshire Bird Report 2000-2002 (Waite 2001, 2002 & 2003)

SEA 8:

- Sussex Bird Report 2000-2002 (James *et al* 2001 & 2003)
- Avon Bird Report 2000-2002 (Davis *et al* 2001, 2002 & 2003)
- Hampshire Bird Report 1999-2003 (Casalis de Pury 2001, Eyre & Wynn 2002, Wynn & Wall 2003, Cox *et al* 2003 & 2004)
- Devon Bird Report 1999-2002 (Farrell *et al* 2001, 2002 & 2003)
- Birds in Cornwall 2000-2003 (Wilson 2001, 2002, 2003, 2004)

Other sources

Information on general ecology and population trends were obtained from Prater (1981), Lack (1986), Thom (1986) and Wernham *et al* (2002).

Reference was also made to a series of reports covering specific areas of the south coast of Britain for SEA 8 (Aspinall & Tasker 1990, Aspinall & Tasker 1992, and White & Webb 1995).

UK Conservation measures

Information on current UK SPA designations is included in the individual species accounts and is based on sites selected for the UK's terrestrial SPA network, which includes sites that extend partly into marine or intertidal areas, for example, estuaries but not the wholly offshore environment (Stroud *et al* 2001).

2.2 Data analysis

Relevant data from all sources were added to an Excel spreadsheet. The WeBS season for wildfowl species runs from June to May and has been adopted in this review.

Maximum monthly counts from relevant bird reports and other sources e.g. WeBS annual reports were compared. For each species, the maximum count for each site was calculated for each season.

Five year means were calculated from the maximum seasonal counts, for the principal sites for each species, where available. Incomplete counts were generally not used to calculate 5 year means.

Sites that regularly hold more than 1 % of the national population of a species are deemed to be nationally important, and sites with more than 1 % of the biogeographic population are internationally important.

In Northern Ireland, nationally important thresholds are based on the all-Ireland population rather than the British population. This is highlighted in the following tables, and should be borne in mind when reading the species accounts for Northern Ireland sites.

3. Species Accounts

The following species accounts give a brief outline of population and distribution within the SEA 6, 7 and 8 areas for the eight species considered in this review, along with a description of habitat use, population trends and current UK conservation measures.

3.1 Mute Swan

Introduction

Although more commonly found on fresh water, mute swans do also occur in estuaries, primarily in winter. Birds breeding in Britain are very sedentary although some movement from the continent to south-eastern Britain does occur in cold winters when there may also be localised movements to coastal waters (Wernham *et al* 2002). In July, non-breeding birds gather on lochs and tidal waters to moult, often in areas where there are organic waste discharges or distilleries (Thom 1986).

The population of mute swans in Britain has been estimated at 37,500 individuals (Kershaw & Cranswick 2003).

Distribution within SEA 6 Area

Within the SEA 6 area, large numbers of mute swans occurred at the Ribble Estuary and in Morecambe Bay, although counts did not exceed the nationally important threshold at either site (> 375 birds – Kershaw & Cranswick 2003) (Table 3.1). Numbers showed a peak between December and February.

Within Northern Ireland, Strangford Lough regularly held concentrations of mute swans, although numbers only occasionally exceeded the all-Ireland threshold of importance (>210 birds - Crowe in press).

Table 3.1 Recent peak counts at main coastal sites for mute swans in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Fleet/Way	8	1,313	1,141	1,177	1,150	-	-	1,193	1,175
Loch Bee, S Uist	7	-	-	422	468	216	-	369	-
Ribble Estuary	6	-	-	-	-	301	-	301	-
Morecambe Bay	6	237	269	333	314	-	-	287	262
Severn Estuary	8	302	299	248	337	-	-	285	-
Strangford Lough	6 NI	96	111	225	174	-	-	138	135

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Distribution within SEA 7 Area

Numbers of mute swans at Loch Bee on South Uist occasionally exceeded the nationally important threshold, with numbers peaking between May and October (Table 3.1). This site has previously been noted as an important site for non-breeding moulting birds over the summer months (Thom 1986, Wernham *et al* 2002).

Distribution within SEA 8 Area

Within the SEA 8 area, the Fleet/Way estuaries in Dorset held internationally important numbers of mute swans (> 380 birds – Delaney & Scott 2002) (Table 3.1). This site is listed as the most important site in Britain for this species, with numbers peaking between October and December (Pollit *et al* 2003).

Large concentrations of mute swans were also recorded regularly in the Severn Estuary, although numbers are not nationally important.

Migration

Most movement by mute swans in Britain is localised with juvenile birds dispersing short distances from their nest areas (< 30km). Most movement occurs in early winter.

Non-breeding mute swans may also move to traditional moulting sites, from mid-May until mid-June, with the return movement mostly in September. Breeding birds moult on their territories, while raising their young.

Studies in England and Scotland have shown that mute swans avoid movements over high ground, with the majority of flights following valleys or low-lying areas (Wernham *et al* 2002).

UK Conservation measures

No terrestrial SPAs were selected for mute swans in the recent review of terrestrial SPAs in the UK (Stroud *et al* 2001).

3.2 Bewick's Swan

Introduction

Bewick's swans breed in Russian Arctic tundra and winter in lowland areas of northern Europe including Denmark, the Low Countries, France, Britain and Ireland (Stroud *et al* 2001). An estimated 8,070 birds winter in Britain each year, mainly in England (Kershaw & Cranswick 2003).

Distribution within SEA 6 Area

Numbers of Bewick's swans at the Ribble Estuary regularly exceeded the nationally important threshold (>81 birds - Kershaw & Cranswick 2003) and occasionally reached international importance (> 290 birds – Delaney & Scott 2002) (Table 3.2). Peak counts occurred between November and March. Numbers were lower at the Dee Estuary but counts reached national importance occasionally, peaking between December and February.

Table 3.2. Recent peak counts at main coastal sites for Bewick's swans in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Severn Estuary	8	393	287	216	272	-	-	345	317
Ribble Estuary	6	-	117 ²	105 ²	322 ²	296 ²	208 ²	210	-
Dee Estuary	6	79	48	63 ⁴	119 ⁴	71 ⁴	66 ⁴	73	86

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Distribution within SEA 8 Area

Peak counts at the Severn Estuary exceeded internationally important thresholds, with highest numbers recorded in January and February (Table 3.2).

Migration

Bewick's swans tend to follow a relatively narrow migration route to and from their breeding grounds, reaching southern Britain, the Netherlands and Germany from Russia via the coast of the Baltic Sea (Wernham *et al* 2002). Flight speeds of the nominate north American race *C. c. columbianus* have been measured at between 48 – 59km/h and 60 – 90 km/h in separate studies (Petrie & Wilcox 2003).

UK Conservation measures

A total of 15 terrestrial sites have been selected as SPAs for Bewick's swans in the UK. Two of these sites (Martin Mere, Ribble & Alt Estuaries) are on or close to the coast in the SEA 6 area, and hold an estimated 9.4% of the national wintering population (Stroud *et al* 2001).

Five sites (Arun Valley, Avon Valley, Dungeness to Pett Levels, Severn Estuary and Somerset Levels & Moors) are on or close to the coast in the SEA 8 area, and hold an estimated 12.6 % of the national wintering population (Stroud *et al* 2001).

3.3 Whooper Swan

Introduction

Whooper swans breed in northern parts of Eurasia, from Iceland and Scandinavia to eastern Siberia, with almost all birds wintering in Britain arriving from Iceland (Pennington *et al* 2004). An estimated 5,720 whooper swans winter in Britain, with the majority of birds in Scotland (Kershaw & Cranswick 2003). Birds typically arrive in mid-October and stay until mid-April (Lack 1986).

Distribution within SEA 6 Area

Within the SEA 6 area, internationally important concentrations regularly occurred in the Solway Estuary, and the Ribble Estuary (> 210 birds – Delaney & Scott 2002) (Table 3.3). Peak numbers occurred between October and March.

Strangford Lough in Northern Ireland held numbers in excess of the all-Ireland importance threshold (>130 birds - Crowe in press), with peak numbers occurring in December. Numbers at Wigtown Bay and the Clyde Estuary were above the British nationally important threshold (>57 birds - Kershaw & Cranswick 2003), although only one count was available for the latter site. Peak numbers at Wigtown Bay occurred between January and March.

Table 3.3 Recent peak counts at main coastal sites for whooper swans in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Solway Estuary	6	221	188	223	466	-	-	290	192
Ribble Estuary	6	-	41	66	650	270	227	251	-
South Uist	7	181	246	211	266	-	-	226	-
Loch Gruinart, Islay	7	-	-	-	-	165	-	165	-
Strangford Lough	6 NI	100	79	177	201	212	-	154	42
Tiree	7	100	129	127	116	108	-	116	-
Wigtown Bay	6	75	102	134	134	-	-	101	86
Clyde Estuary	6	-	-	59	-	-	-	59	-

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Distribution within SEA 7 Area

Counts of whooper swans from South Uist were above the international threshold with highest numbers generally being recorded in January (Table 3.3). Numbers on Tiree exceeded the British national importance threshold and were highest between October and December.

Migration

Satellite tracking studies have shown that Icelandic whooper swans fly direct from Iceland to Britain and Ireland in autumn, returning in spring. No satellite-tracked birds flew via the Faeroe Islands. Landfall points in Britain and Ireland included Donegal Bay, the Western Isles and Skye (Wernham *et al* 2002).

Ringling studies have also shown that some whooper swans from the Fennoscandian and north-west Russian population also occur in Britain and Ireland in winter, mainly in south-east England, although numbers may be influenced by weather conditions. There is also considerable movement of whooper swans between Britain and Ireland within a winter season (Wernham *et al* 2002).

UK Conservation measures

A total of 20 terrestrial sites have been selected as SPAs for whooper swans in the non-breeding season in the UK. Of these, three sites are located in counties bordering the SEA 6 area, although only 2 of these (Ribble & Alt Estuaries and Upper Solway flats and marshes) are coastal sites. These two sites are estimated to support 4.9% of the national wintering population (Stroud *et al* 2001).

One site (Rinns of Islay) lies on the coast within the SEA 7 area and is estimated to support 2.5% of the national wintering population (Stroud *et al* 2001).

3.4 Pink-footed goose

Introduction

More than 75% of the world population of pink-footed goose winters in Britain, arriving in autumn from their breeding grounds in Iceland and eastern Greenland (Lack 1986). A separate population breeds in Svalbard, and these birds winter predominantly in the Netherlands, Denmark and Belgium (Prater 1981). Numbers wintering in Britain are estimated to be around 241,000 birds, with up to three quarters of these in Scotland (Kershaw & Cranswick 2003, Lack 1986).

Distribution within SEA 6 Area

Four Lancashire coastal sites bordering the SEA 6 area held internationally significant numbers of pink-footed geese in winter (> 2,400 birds – Delaney & Scott 2002) (Table 3.4). Roosts at Pilling Sands easily exceeded this threshold and showed a peak in January and February. Numbers in the Solway Estuary were highest in October, and between January and March, although the most recent 5-year mean peak count was considerably lower than the previous 5 year period. Numbers at the Ribble Estuary peaked between September and January, while highest numbers at Morecambe Bay were recorded in October, January and March. A recent count of 15,853 pink-footed geese was made at the Ribble Estuary in October 2003 (White 2004).

Other inland sites in Lancashire also held important numbers of birds, with a record county total of 46,925 birds on 21st January 2001, which included 23,000 at Pilling Sands (White 2002).

Table 3.4 Recent peak counts at main coastal sites for pink-footed goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Pilling Sands	6	-	11,000	8,000	23,000	6,000	10,000	11,600	-
Solway Estuary	6	17,971	3,710	6,434	14,612	5,005	11,500	8,252	19,550
Ribble Estuary	6	-	3,152	7,390	6,550	9,350	6,462	6,581	-
Morecambe Bay	6	3,000	189	2,235	7,143	-	-	4,248	4,056

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Migration

Pink-footed geese breeding in east Greenland move to Iceland in late August to join the breeding/moulting population there before arriving in Britain in mid to late September. The main areas of arrival are north-east & east Scotland. Peak numbers arrive in mid-October. Birds tend to move southwards in late autumn and early winter to Lancashire and Norfolk, before moving north again in February (Wernham *et al* 2002).

UK Conservation measures

A total of 24 terrestrial sites have been selected as SPAs for the Iceland/Greenland population of pink-footed goose in the non-breeding season in the UK. Of these, five sites are located in counties bordering the SEA 6 area although only three of these (Ribble & Alt Estuaries, Morecambe Bay and Upper Solway flats and marshes) are coastal sites. These three sites are estimated to support 22.0% of the national wintering population (Stroud *et al* 2001).

3.5 White-fronted goose

Introduction

Greenland white-fronted geese (*A. a. flavirostris*) breed in Greenland and winter in Ireland, the west coast of Scotland, Islay and the Inner Hebrides. The nominate subspecies or European white-fronted goose (*A. a. albifrons*) breeds in northern Russia and Siberia and winters in north-west Europe, including southern Britain (Prater 1981, Pennington *et al* 2004). An estimated 20,900 birds of the Greenland race and 5,790 birds of the nominate race of white-fronted geese winter in Britain each year (Kershaw & Cranswick 2003).

Distribution within SEA 6 Area

Within the SEA 6 area, numbers of Greenland white-fronted geese exceeded the British nationally important threshold on Bute, with peak numbers recorded between March and April (>209 birds - Kershaw & Cranswick 2003) (Table 3.5).

Table 3.5 Recent peak counts at main coastal sites for Greenland white-fronted goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Islay	7	13,414	13,560	14,474	13,281	-	-	13,539	11,824
Rhunaorine	7	1,193	1,532	1,585	1,551	-	-	1,427	1,199
Tiree	7	1,464	1,444	1,347	1,221	-	-	1,386	783
Machrihanish	7	931	1,579	1,322	1,386	-	-	1,369	1,124
Coll	7	1,052	1,122	1,014	721	-	-	991	789
Keills Peninsula & Isle of Danna	7	441	425	290	443	-	-	386	336
Bute	6	223	219	192	200	-	-	212	206

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Distribution within SEA 7 Area

Six coastal sites in the SEA 7 area held internationally important numbers of Greenland white-fronted geese in winter (> 300 birds – Delaney & Scott 2002) (Table 3.5). Islay was the most important site, with more than 50% of the British winter population occurring there (Pollit *et al* 2003). Numbers tended to peak in November and December. Rhunahaorine, Tíree, Machrihanish and Coll all held around 1,000 birds with peak counts usually recorded in October and November or in March. Numbers on the Keills Peninsula peaked between December and March.

Distribution within SEA 8 Area

Within the SEA 8 area, nationally important numbers of European white-fronted geese occurred on the Severn Estuary, with peak numbers recorded in January and February (>58 birds - Kershaw & Cranswick 2003) (Table 3.6). Numbers were well below the internationally important threshold of 10,000 birds (Delaney & Scott 2002). Numbers have shown a decrease in recent years with the most recent 5-year mean peak count lower than the previous 5 year period. It is thought that the decreasing numbers are a result of a shift in wintering distribution, with greater numbers of birds wintering in the Netherlands (Pollit *et al* 2003).

Table 3.6 Recent peak counts at main coastal sites for European white-fronted goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Severn Estuary	8	2,501	1,840	1,931	1,330	-	-	2,076	2774

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Migration

Satellite studies have shown that migrating Greenland white-fronted geese leave their breeding areas in Greenland in September, staging in Iceland on the way and arriving at their wintering grounds in October (Fox & Stroud 2002). In spring, returning birds leave the wintering areas in mid-April and fly to Iceland, where they may spend up to a month, before onward migration to Greenland (Wernham *et al* 2002).

European white-fronted geese leave the breeding grounds in the Arctic in September and early October, and appear to travel to the Netherlands and England via central Russia and central Europe, arriving in November. Peak numbers at sites in England tend to occur in late January and early February. Return migration begins in early March with most birds having left England by the second half of the month (Wernham *et al* 2002).

UK Conservation measures

Twelve terrestrial sites have been selected as SPAs for Greenland white-fronted geese in the UK. Of these, three are located in counties bordering the SEA 6 area, although only two of these (Dyfi Estuary and Loch of Inch & Torrs Warren) are coastal sites. These two sites hold an estimated 5.0% of the national wintering population (Stroud *et al* 2001).

A further seven coastal sites border the SEA 7 area (Coll, Eilean na Muice Duibhe/Duich Moss - Islay, Gruinart Flats - Islay, Kintyre Goose Roosts, Laggan - Islay, Rinns of Islay and Tiree Wetlands & Coast) and support an estimated 59.1% of the national wintering population (Stroud *et al* 2001).

Eight terrestrial sites have been selected as SPAs for European white-fronted geese in the UK. Of these, one coastal site (Severn Estuary) borders the SEA 8 area, and holds an estimated 43.7% of the national wintering population (Stroud *et al* 2001).

3.6 Greylag goose

Introduction

In October, almost the entire breeding population of greylag geese from Iceland arrives in Britain, with Orkney being the most important wintering site (Pollit *et al* 2003). There is also a smaller, mostly sedentary breeding population of greylag geese in north-west Scotland, and a feral or naturalised population that breeds throughout Britain.

Greylag geese are less dependant on estuaries than other geese, and tend to feed almost exclusively on farmland, roosting on inland lakes and reservoirs. An estimated 81,900 birds of the Iceland population winter in Britain, along with 9,620 birds in the north-west Scotland population and 28,500 feral birds (Kershaw & Cranswick 2003).

Distribution within SEA 6 Area

Within the SEA 6 area numbers of Icelandic greylag geese on Bute exceeded the internationally important threshold (> 1,000 birds – Delaney & Scott 2002) (Table 3.7). There was no clear pattern of peak occurrence, however, with highest numbers recorded between November and April. Numbers at Strangford Lough exceeded the threshold for all-Ireland importance (>30 birds - Crowe in press), and were highest between November and March. Birds at Strangford Lough were considered to be of the Icelandic population by Stroud *et al* (2001), although counts for this site are listed under the naturalised population by WeBS (Pollit *et al* 2003).

Table 3.7 Recent peak counts at main coastal sites for Icelandic greylag goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Bute	6	1,200	1,055	1,780	1,530	-	-	1,472	2,275
Strangford Lough	6 NI	379	489	367	166	242	-	329	420

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Numbers of greylag geese at Traeth Lafan and Morecambe Bay are considered by WeBS to be of the naturalised population with no national thresholds set for these populations (Pollit *et al* 2003) (Table 3.8). Numbers at Traeth Lafan showed a peak in September and Morecambe Bay counts peaked in February and November.

Table 3.8 Recent peak counts at main coastal sites for naturalised greylag goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Traeth Lafan	6	-	-	-	903	1,010	1,037	983	-
Morecambe Bay	6	401	351	411	327	-	-	372	313

1 Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

2 Mean of previous 5 years, where available

Distribution within SEA 7 Area

Nine coastal sites within the SEA 7 area held internationally important numbers of the north-west population of greylag goose (> 90 birds – Delaney & Scott 2002) (Table 3.9). In recent years co-ordinated counts have taken place in February and August (SOC 2003). The main strongholds were Tiree and North and South Uist, with lower numbers elsewhere.

Table 3.9 Recent peak counts at main coastal sites for NW Scotland greylag goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Tiree	7	2,417	3,137	3,109	3,535	-	-	2,939	1,256
North Uist	7	1,670	1,318	1,808	2,877	-	-	1,861	1,350
South Uist	7	1,046	1,336	1,362	1,862	-	-	1,375	856
Coll	7	953	912	587	679	-	-	829	750
Benbecula	7	595	567	374	431	-	-	481	184
Machrihanish	7	74	442	434	0	-	-	272	-
Rhunahaorine	7	143	165	269	141	-	-	194	-
Colonsay & Oronsay	7	226	208	174	137	-	-	184	-
Islay	7	20	32	79	206	-	-	93	-

1 Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

2 Mean of previous 5 years, where available

Migration

Icelandic greylag geese arrive in Scotland between late September and early November, and return from mid-March to late April (Thom 1986). There is considerable within-winter movement, with birds moving predominantly southwards, but also northward. This movement may be in response to changes in food supply, disturbance and periods of snowy weather (Wernham *et al* 2002).

Ringling studies have shown that greylag geese breeding in Britain are fairly sedentary, with birds moving only short distances from breeding and wintering areas (Wernham *et al* 2002).

UK Conservation measures

A total of 22 terrestrial sites have been selected as SPAs for the Icelandic population of greylag goose in the non-breeding season in the UK. Of these, four sites are located in counties bordering the SEA 6 area although only one of these (Strangford Lough) is a coastal site, holding an estimated 11.0% of the all-Ireland population (Stroud *et al* 2001).

No sites were selected for the north-west Scotland population as this is a discrete non-migratory population (Stroud *et al* 2001).

3.7 Barnacle goose

Introduction

Two separate populations of barnacle goose winter in Britain. Birds breeding in Svalbard winter on the Solway Firth, staging in spring in Helgoland and Norway, while breeding birds from Greenland winter on the west coast of Scotland and Ireland, and stop off in Iceland on spring and autumn passage (Pennington *et al* 2004, Wernham *et al* 2002).

An estimated 45,000 birds of the Greenland population and 22,000 birds of the Svalbard population of barnacle geese winter in Britain each year (Kershaw & Cranswick 2003).

Distribution within SEA 6 Area

Within the SEA 6 area, numbers of barnacle geese from Svalbard regularly exceeded the internationally important threshold in the Solway Firth (> 230 birds – Delaney & Scott 2002) (Table 3.10). There was no clear pattern of peak occurrence, however, with highest numbers recorded between November and April.

Table 3.10 Recent peak counts at main coastal sites for Svalbard barnacle goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Solway Estuary	6	23,754	26,040	25,750	23,783	23,545 ⁵	28,264 ⁵	25,476	19,433

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Distribution within SEA 7 Area

Counts from four coastal sites within the SEA 7 area regularly exceeded the internationally important threshold for barnacle geese from Greenland (>540 birds – Delaney & Scott 2002) (Table 3.11). Although Islay was the most important site by a considerable margin, there was no clear pattern of peak occurrence, with highest numbers recorded between November and March. North Uist and Tiree both held around 1,400 birds, with highest numbers occurring between February and April. Numbers around the Keills Peninsula were lower but still regularly exceeded the British nationally important threshold, peaking in November and March (>450 birds - Kershaw & Cranswick 2003) (Table 3.11). Numbers in previous years from the Sound of Harris exceeded 1,000 birds but no counts were available from recent years (Appendix A).

Table 3.11 Recent peak counts at main coastal sites for Greenland barnacle goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Islay	7	32,812	35,172	35,429	35,472	34,829	-	34,743	29,795
North Uist	7	1,414	1,648	1,491	1,957	-	-	1,422	543
Tiree	7	1,158	1,572	1,123	1,442	1,782	-	1,415	1,151
Coll	7	715	931	667	380	600	-	659	1,278
Keills Peninsula & Isle of Danna	7	469	720	610	280	-	-	484	328
Colonsay & Oronsay	7	436	463	600	244	120	-	373	443
Sound of Harris	7	-	-	-	-	-	-	-	1,507

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

The 5-year mean peaks from Colonsay and Oronsay were below the British nationally important threshold, although numbers exceeded this threshold in some winters e.g. 600 birds in the 99-00 season (>450 birds - Kershaw & Cranswick 2003) (Table 3.11).

Migration

Barnacle geese from Svalbard reach Britain across a broad front, from Shetland to Yorkshire. Most birds arrive on the main wintering area of the Solway Firth between mid-September and mid-October. The geese generally remain within the Solway area throughout the winter although there may be localised movements within the region. Most birds depart for Svalbard between mid-April and mid-May (Wernham *et al* 2002).

Birds from the Greenland breeding population leave for staging areas in Iceland in late August and September, and most have arrived at their wintering grounds in Islay and other sites by November. Returning birds leave in mid-April and again stage in Iceland for three to four weeks before arriving back in Greenland in late May (Wernham *et al* 2002).

Migration patterns for barnacle geese have been found to involve flights with short stops during autumn migration from Svalbard to Scotland (Green *et al* 2002).

UK Conservation measures

A total of 11 terrestrial sites have been selected as SPAs for the Greenland population of barnacle goose in the non-breeding season in the UK. Of these, nine coastal sites border the SEA 7 area (Bridgend Flats, Gruinart Flats, Laggan – all on Islay, Coll, Monach Isles, North Uist Machair & Islands, Shiant Isles, Tiree Wetlands & Coast and the Treshnish Isles). These sites support an estimated 58.0% of the UK wintering population of Greenland barnacle geese.

Two terrestrial sites have been selected as SPAs for the Svalbard population of barnacle goose in the non-breeding season in the UK. One coastal site (Upper Solway Flats & Marshes) is within the SEA 6 area, and is estimated to support c.100% of the UK wintering population of Svalbard barnacle geese (Stroud *et al* 2001). The Loch of Strathbeg in the SEA 5 area has SPA status as it is a major stop-over for birds on their way to the Solway.

3.8 Brent goose

Introduction

Two subspecies of brent goose winter in Britain. Pale-bellied brent geese *B. b. brota* breed on Svalbard and Franz Josef Land and winter in Denmark and Northumberland. A second population of pale-bellied brent goose breeds in north-east Canada and north-west Greenland and winter in Ireland, although small numbers do occur in Britain. Dark-bellied brent geese *B. b. bernicla* breed in Siberia and winter in western Europe. Most birds wintering in Britain occur in south-east England (Pennington *et al* 2004).

An estimated 2,900 pale-bellied brent geese of the Svalbard population and 98,100 dark-bellied brent geese winter in Britain each year (Kershaw & Cranswick 2003). An estimated 20,000 pale-bellied brent geese from north-east Canada and north-west Greenland winter in Ireland (Crowe in press).

Distribution within SEA 6 Area

Within the SEA 6 area, counts of pale-bellied brent geese exceeded the internationally important threshold at seven coastal sites in Northern Ireland, with peak numbers occurring at Strangford Lough in October and November (>200 birds – Delaney & Scott 2002) (Table 3.12). Numbers at Killough Harbour showed a peak in March and April, while at Carlingford Lough highest counts were recorded between December and April. Only one count was available for Dundrum Bay, in April, and numbers at Larne Lough were highest in December and January. At Outer Ards, peak counts occurred between January and March.

Table 3.12 Recent peak counts at main coastal sites for pale-bellied brent goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Strangford Lough	6 NI	11,184	13,196	13,376	16,162	19,583	-	14,700	10,526
Killough Harbour	6 NI	-	557	520	575	-	-	477	356
Carlingford Lough	6 NI	317	642	437	498	-	-	427	319
Dundrum Bay	6 NI	-	319	-	-	-	-	319	-
Larne Lough	6 NI	232	218	253	266	-	-	229	227
Outer Ards	6 NI	54	221	215	-	-	-	202	214
Inland Sea, Anglesey	6	17	23	51	95	-	-	50	34
Loch Gruinart, Islay	7	0	107	46	60	-	-	46	-
Hilbre	6	-	-	-	39	34	28	34	-
South Ford	7	-	-	-	30	-	-	30	-

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Numbers of pale-bellied brent geese from the Greenland and Canadian breeding population also occur in small numbers at a few sites in Britain. Within the SEA 6 area, the Inland Sea on Anglesey and Hilbre, at the mouth of the Dee Estuary regularly held nationally important numbers of this population (>30 birds - Kershaw & Cranswick 2003) (Table 3.12). Numbers at both sites peaked between December and February.

Distribution within SEA 7 Area

Loch Gruinart on Islay regularly held nationally important numbers of pale-bellied brent geese from the Greenland and Canadian breeding population on autumn migration (>30 birds - Kershaw & Cranswick 2003) (Table 3.12). A second site, South Ford on South Uist, also held nationally important numbers in September 2000 (Pollit *et al* 2003). No other counts were available for this site.

Distribution within SEA 8 Area

Previous reports highlighted Langstone and Chichester Harbours as the two principal sites for dark-bellied brent geese. Numbers at these two sites were internationally important, along with counts from Portsmouth Harbour, Southampton Water and the north-west Solent (Aspinall & Tasker 1992). The Fleet was also highlighted as an internationally important site for this species (White & Webb 1995).

Within the SEA 8 area, recent counts of dark-bellied brent geese exceeded the internationally important threshold at three coastal sites (>2,200 birds – Delaney & Scott 2002) (Table 3.13). Numbers at Chichester Harbour tended to peak in January, at Langstone Harbour peak numbers occurred between December and March, and highest numbers at Fleet/Way occurred in October and November.

Figures are taken from WeBS counts and bird reports.

Table 3.13 Recent peak counts at main coastal sites for dark-bellied brent goose in SEA 6, 7 & 8 areas

Site	SEA Area	97-98	98-99	99-00	00-01	01-02	02-03	Mean ¹	Mean ²
Chichester Harbour	8	8,427	8,142	9,267	7,480	7,470	7,358	7,943	10,081
Langstone Harbour	8	6,344	6,230	6,928	5,080	5,019	3,000	5,251	6,534
Fleet/Way	8	3,048	2,290	1,404	1,813	-	-	2,417	3,182
Portsmouth Harbour	8	2,505	2,169	2,661	2,224	1,682	2,185	2,184	2,786
NW Solent	8	-	2,659	2,114	1,616	-	-	2,167	3,108
Pagham Harbour	8	1,071	1,260	2,438	2,520	3,180	1108	2,101	2,443
Southampton Water	8	2,160	1,533	2,480	1,742	-	-	1,947	2,419
Exe Estuary	8	1,768	1,647	1,806	1,400	2,000	1,619	1,694	1,858
Poole Harbour	8	1,449	1,237	1,354	1,708	-	-	1,478	1,493

¹ Mean of most recent 5 years, where available. A more detailed breakdown of data and data sources is shown in Appendix A

² Mean of previous 5 years, where available

Numbers at six other coastal sites in the SEA 8 area exceeded the British nationally important threshold (>981 birds - Kershaw & Cranswick 2003) (Table 3.13).

Migration

Canadian pale-bellied brent geese winter almost exclusively in Ireland. There is no evidence of weather-related movements of Canadian pale-bellied brent geese but both dark-bellied and pale-bellied birds from Svalbard may be pushed south and west from their normal wintering areas by extreme cold weather (Wernham *et al* 2002).

Dark-bellied brent geese leave their breeding grounds in Siberia and reach Denmark, the Netherlands and Germany in large numbers by late September. Numbers in south-east Britain peak in November when a similar number of birds are present in France. Return migration begins in March and early April, when birds leave the wintering areas in Britain and France and gather in the Wadden Sea (Denmark, the Netherlands and Germany) until late May. Migration is both nocturnal and diurnal and birds tend to migrate over the sea, following the coastline (Wernham *et al* 2002).

Satellite-tagging studies on dark-bellied brent geese migrating between the Wadden Sea and their breeding grounds have shown that birds show a preference to migrate when tailwinds occur. Birds tend to alternate between periods of flight and short stops, resulting in an overall travelling speed of 32 km/h or 763 km/day. Light-bellied brent geese have also been recorded using short stops en route, resulting in overall migration speeds of 32 – 38 km/h on flights between Denmark and Svalbard or Greenland. (Green *et al* 2002).

UK Conservation measures

Lindisfarne is the only terrestrial site that has been selected as an SPA for the Svalbard population of pale-bellied brent goose in the non-breeding season in the UK.

Six terrestrial sites, all in Northern Ireland, have been selected as SPAs for the Canadian population of pale-bellied brent goose in the non-breeding season in the UK. Five of these sites (Carlingford Lough, Killough Harbour, Larne Lough, Outer Ards and Strangford Lough) are coastal sites bordering the SEA 6 area. These five sites have been estimated to hold 58.3% of the all-Ireland wintering population (Stroud *et al* 2001). The remaining site, Lough Foyle, lies outside the SEA 6 area.

Thirteen terrestrial sites, all in England, have been selected as SPAs for dark-bellied brent goose in the non-breeding season in the UK. Six of these sites (Chesil Beach & The Fleet, Chichester & Langstone Harbours, Exe Estuary, Poole Harbour, Portsmouth Harbour and Solent & Southampton Water) are coastal sites bordering the SEA 8 area. These six sites have been estimated to hold 33.0% of the UK wintering population (Stroud *et al* 2001).

4. Regional summary

Several coastal sites bordering the SEA 6, 7 and 8 areas hold internationally and nationally significant numbers of swans and geese in winter and have been designated as SPAs (Stroud *et al* 2001).

SEA 6

Whooper swans, pink-footed geese, greylag geese, barnacle goose and brent geese occur in internationally important numbers at coastal sites within the SEA 6 area. Bewick's swans and white-fronted geese occur in nationally important numbers (Tables 4.1 & 4.2).

Britain

The Ribble Estuary holds internationally important numbers of whooper swans and pink-footed geese, as well as nationally important numbers of Bewick's swan. Internationally important numbers of whooper swans, pink-footed geese and barnacle geese from Svalbard occur on the Solway Firth, while internationally important numbers of pink-footed geese also occur at Pilling Sands and Morecambe Bay.

Numbers of Icelandic greylag geese occur in internationally important numbers on Bute, along with nationally important numbers of Greenland white-fronted geese. The Inland Sea, Anglesey and Hilbre on the Dee Estuary hold nationally important numbers of pale-bellied brent geese from the Greenland and Canadian breeding population.

Northern Ireland

Within the Northern Ireland SEA 6 area, six coastal sites hold internationally important numbers of pale-bellied brent geese from the Greenland and Canadian breeding population, with Strangford Lough holding the majority of these birds. In addition, Strangford Lough also holds nationally important numbers of whooper swans and Icelandic greylag geese.

SEA 7

Whooper swans, white-fronted geese, greylag geese and barnacle goose occur in internationally important numbers at coastal sites within the SEA 7 area (Table 4.3).

Whooper swans occur in internationally important numbers on South Uist and in nationally important numbers on North Uist and Tiree. Greenland white-fronted geese occur in internationally important numbers at five sites, with Islay supporting the majority of the wintering population. Islay also supports the majority of the wintering population of barnacle geese from Greenland, although internationally important numbers also are recorded at three other sites

Nine coastal sites within the SEA 7 area held internationally important numbers of the north-west population of greylag geese, which is a discrete non-migratory population.

SEA 8

Mute swans, Bewick's swans and brent geese occur in internationally important numbers at coastal sites within the SEA 8 area. White-fronted geese occur in nationally important numbers (Table 4.4).

Mute swans occur in internationally important concentrations on the Fleet/Way Estuaries, and the Severn Estuary holds internationally important numbers of Bewick's swans as well as nationally important numbers of European white-fronted geese.

Dark-bellied brent geese from the central Russian Arctic occur in internationally important numbers on the Fleet/Way Estuaries and at Chichester and Langstone Harbours. Nationally important numbers of this population are recorded at six other sites in the SEA 8 area in winter.

4.1 Important sites in SEA 6 area - Britain

Table 4.1 Summary of species wintering in internationally or nationally important numbers at coastal sites in the SEA 6 Area

Sites	Mute Swan	Bewick's Swan	Whooper Swan	Pink-footed Goose	White-fronted Goose	Greylag Goose	Barnacle Goose	Brent Goose
National threshold ¹	375	81	57	2,400	G – 209 E - 58	I – 819 Sc - 96	G – 450 Sv - 220	Db - 981 Pb - 30
International threshold ²	380	290	210	2,400	G – 300 E – 10,000	I - 1,000 Sc - 90	G – 540 Sv - 230	Db – 2,200 Pb - 200
Ribble Estuary								
Solway Firth							Sv	
Wigtown Bay								
Clyde Estuary								
Pilling Sands								
Morecambe Bay								
Bute					G	I		
Inland Sea								Pb
Hilbre								Pb

1 Kershaw & Cranswick 2003

2 Delaney & Scott 2002



Nationally important

Internationally important



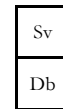
G Greenland breeding pop

E European breeding pop



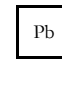
I Icelandic breeding pop

Sc NW Scotland breeding pop



Sv Svalbard breeding pop

Db Dark bellied brent geese



Pb Pale bellied brent geese

4.2 Important sites in SEA 6 area – N Ireland

Table 4.2 Summary of species wintering in internationally or nationally important numbers at coastal sites in the SEA 6 Area

Sites	Mute Swan	Bewick's Swan	Whooper Swan	Pink-footed Goose	White-fronted Goose	Greylag Goose	Barnacle Goose	Brent Goose
National threshold ¹	210	20	130	-	G – 140	I – 40	G – 90	Pb – 200
International threshold ²	210	290	210	2,400	G - 300	I – 1,000	G - 540	Pb - 200
Strangford Lough						I		Pb
Killough Hbr								Pb
Carlingford Lough								Pb
Dundrum Bay								Pb
Larne Lough								Pb
Outer Ards								Pb

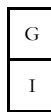
1 Crowe in press

2 Delaney & Scott 2002



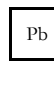
Nationally important

Internationally important



G Greenland breeding pop

I Icelandic breeding pop



Pb Pale bellied brent geese

4.3 Important sites in SEA 7 area

Table 4.3 Summary of species wintering in internationally or nationally important numbers at coastal sites in the SEA 7 Area

Sites	Mute Swan	Bewick's Swan	Whooper Swan	Pink-footed Goose	White-fronted Goose	Greylag Goose	Barnacle Goose	Brent Goose
National threshold ¹	375	81	57	2,400	G – 209 E - 58	I – 819 Sc - 96	G – 450 Sv - 220	Db - 981 Pb - 30
International threshold ²	380	290	210	2,400	G – 300 E – 10,000	I - 1,000 Sc - 90	G – 540 Sv - 230	Db – 2,200 Pb - 200
South Uist						Sc		
North Uist						Sc	G	
Tiree						Sc	G	
Islay					G	Sc	G	
Rhunaorine					G	Sc		
Machrihanish					G	Sc		
Coll					G	Sc	G	
Keills Peninsula					G		G	
Benbecula						Sc		
Colonsay & Oronsay						Sc		

1 Kershaw & Cranswick 2003

2 Delaney & Scott 2002



Nationally important

Internationally important



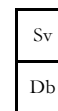
G Greenland breeding pop

E European breeding pop



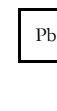
I Icelandic breeding pop

Sc NW Scotland breeding pop



Sv Svalbard breeding pop

Db Dark bellied brent geese



Pb Pale bellied brent geese

4.4 Important sites in SEA 8 area

Table 4.4 Summary of species wintering in internationally or nationally important numbers at coastal sites in the SEA 8 Area

Sites	Mute Swan	Bewick's Swan	Whooper Swan	Pink-footed Goose	White-fronted Goose	Greylag Goose	Barnacle Goose	Brent Goose
National threshold ¹	375	81	57	2,400	G – 209 E - 58	I – 819 Sc - 96	G – 450 Sv - 220	Db - 981 Pb - 30
International threshold ²	380	290	210	2,400	G – 300 E – 10,000	I - 1,000 Sc - 90	G – 540 Sv - 230	Db – 2,200 Pb - 200
Fleet/Way								Db
Severn Estuary					E			
Chichester Harbour								Db
Langstone Harbour								Db
Portsmouth Harbour								Db
NW Solent								Db
Pagham Harbour								Db
Southampton Water								Db
Exe Estuary								Db
Poole Harbour								Db

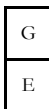
1 Kershaw & Cranswick 2003

2 Delaney & Scott 2002



Nationally important

Internationally important



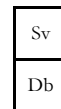
G Greenland breeding pop

E European breeding pop



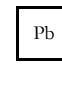
I Icelandic breeding pop

Sc NW Scotland breeding pop



Sv Svalbard breeding pop

Db Dark bellied brent geese



Pb Pale bellied brent geese

5. Discussion

Potential impacts of offshore wind farms on swans and geese overwintering in the UK were considered in a review carried out for the SEA 5 area (Barton & Pollock 2004). Whooper swan, pink-footed goose, European white-fronted goose, barnacle goose and brent goose have been highlighted as potentially sensitive species to wind farms (Langstone and Pullan 2002).

Four of these species (whooper swan, pink-footed goose, barnacle goose and brent goose) occur within the SEA 6 area in internationally important numbers, with Greenland white-fronted geese occurring in nationally important numbers. In addition, Icelandic greylag goose occur in internationally important numbers, and Bewick's swans occur in nationally important numbers.

Within the SEA 7 area, whooper swan, Greenland white-fronted goose, and barnacle goose occur in internationally important numbers. In addition, internationally important numbers of north-west Scotland population of greylag geese occur at several sites.

Within the SEA 8 area, dark bellied brent geese are recorded in internationally important numbers and European white-fronted geese occur in nationally important numbers. In addition, both mute and Bewick's swans occur in internationally important numbers.

Several coastal sites bordering the SEA 6, 7 and 8 areas have been designated as SPAs for swans and geese on passage and in winter, including and the Ribble & Alt Estuaries, Severn Estuary, Upper Solway Flats & Marshes, several sites on Islay and Strangford Lough (Stroud *et al* 2001).

Offshore wind farm developments should not be considered where potential adverse effects on designated sites for nature conservation may occur. Although data for offshore wind farms is minimal, the precautionary principle should apply and these species are likely to be focal species for environmental assessment.

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APPENDIX A
SPECIES COUNTS 1991 – 2003

Swan & geese review for SEA 6, 7 & 8

Mute Swan

Site	SEA Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Fleet/Way	8	1,173	1,126	1,196	1,227	1,151	1,185	1,313	1,141	1,177	1,150	-	-	1,193	1,175
Loch Bee, S Uist	7	-	-	-	-	-	-	-	-	422 ¹	468 ¹	216 ¹	-	369	-
Ribble Estuary	6	-	-	-	-	-	-	-	-	-	-	301	-	301	-
Morecambe Bay	6	248	199	250	330	285	281	237	269	333	314	-	-	287	262
Severn Estuary	8	-	-	-	-	-	239	302	299	248	337	-	-	285	-
Strangford Lough	6 NI	114	118	213	133	98	83	96	111	225	174	-	-	138	135

Bewick's Swan

Site	SEA Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Severn Estuary	8	322	329	313	253	370	555	393	287	216	272	-	-	345	317
Ribble Estuary	6	-	-	-	-	-	-	-	117 ²	105 ²	322 ²	296 ²	208 ²	210	-
Dee Estuary	6	-	-	-	-	72	107	79	48	63 ⁴	119 ⁴	71 ⁴	66 ⁴	73	86

Data Sources

Counts with no source shown are from relevant WeBS annual reports	5	Birds and Wildlife in Cumbria
1 Scottish Bird Report	6	Cambrian Bird Report
2 Lancashire Bird Report	7	Hampshire Bird Report
3 Northern Ireland Bird Report	8	Sussex Bird Report
4 Cheshire & Wirral Bird Report	9	Dorset Bird Report

Swan & geese review for SEA 6, 7 & 8

Whooper Swan

Site	SEA Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Solway Estuary	6	190	200	175	176	220	350	221	188	223	466	-	-	290	192
Ribble Estuary	6	-	-	-	-	-	-	-	41 ²	66 ²	650 ²	270 ²	227 ²	251	-
South Uist	7	-	-	-	-	-	-	181 ¹	246 ¹	211 ¹	266 ¹	-	-	226	-
Loch Gruinart, Islay	7	-	-	-	-	-	-	-	-	-	-	165 ¹	-	165	-
Strangford Lough	6 NI	-	-	-	-	-	42	100	79	177	201	212 ³	-	154	42
Tiree	7	-	-	-	-	-	-	100 ¹	129 ¹	127 ¹	116 ¹	108 ¹	-	116	-
Wigtown Bay	6	80	105	75	98	72	59	75	102	134	134	-	-	101	86
Clyde Estuary	6	-	-	-	-	-	-	-	-	59	-	-	-	59	-

Pink-footed Goose

Site	SEA Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Pilling Sands	6	-	-	-	-	-	-	-	11,000 ²	8,000 ²	23,000 ²	6,000 ²	10,000 ²	11,600	-
Solway Estuary	6	9,330	12,567	17,470	20,202	22,523	19,586	17,971	3,710	6,434	14,612 ⁵	5,005 ⁵	11,500 ⁵	8,252	19,550
Ribble Estuary	6	-	-	-	-	-	-	-	3,152 ²	7,390 ²	6,550 ²	9,350 ²	6,462 ²	6,581	-
Morecambe Bay	6	9,000	3,009	2,229	540	5,503	8,671	3,000	189	2,235	7,143	-	-	4,248	4,056

Swan & geese review for SEA 6, 7 & 8

Greenland white-fronted Goose

Site	SEA Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Islay	7	10,003	10,905	11,368	12,350	14,495	12,964	13,414	13,560	14,474	13,281	-	-	13,539	11,824
Rhunahaorine	7	1,499	726	1,050	1,361	1,360	1,272	1,193	1,532	1,585	1,551	-	-	1,427	1,199
Tiree	7	1,101	418	499	512	1,387	1,455	1,464	1,444	1,347	1,221	-	-	1,386	783
Machrihanish	7	1,023	1,110	1,103	1,044	1,339	1,629	931	1,579	1,322	1,386	-	-	1,369	1,124
Coll	7	621	438	896	1,026	962	1,047	1,052	1,122	1,014	721	-	-	991	789
Keills Peninsula & Isle of Danna	7	287	288	308	381	414	333	441	425	290	443	-	-	386	336
Bute	6	250	130	213	226	210	224	223	219	192	200	-	-	212	206

European white-fronted Goose

Site	SEA Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Severn Estuary	8	5,100	1,401	3,000	2,200	2,170	2,780	2,501	1,840	1,931	1,330	-	-	2,076	2774

Swan & geese review for SEA 6, 7 & 8

Greylag Goose

Site	SEA Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Icelandic breeding population															
Bute	6	1,725	1,500	1,500	2,370	4,280	1,797	1,200	1,055	1,780	1,530	-	-	1,472	2,275
North-west Scotland breeding population															
Tiree	7	1,258	837	1,206	1,526	1,451	2,475	2,417	3,137	3,109	3,535	-	-	2,939	1,256
North Uist	7	1,231	1,273	1,556	1,346	1,345	1,630	1,670	1,318	1,808	2,877	-	-	1,861	1,350
South Uist	7	643	847	880	752	1,157	1,270	1,046	1,336	1,362	1,862	-	-	1,375	856
Coll	7	-	-	-	792	707	1,016	953	912	587	679	-	-	829	750
Benbecula	7	227	135	136	156	264	440	595	567	374	431	-	-	481	184
Machrihanish	7	-	-	-	-	-	410	74	442	434	0	-	-	272	-
Rhunahaorine	7	-	-	-	-	-	252	143	165	269	141	-	-	194	-
Colonsay & Oronsay	7	-	-	-	-	-	175	226	208	174	137	-	-	184	-
Islay	7	-	-	-	-	-	129	20	32	79	206	-	-	93	-
Naturalised breeding population															
Traeth Lafan	6	-	-	-	-	-	-	-	-	-	903	1,010 ⁶	1,037 ⁶	983	-
Morecambe Bay	6	-	-	311	342	287	370	401	351	411	327	-	-	372	313
Strangford Lough	6 NI	348	522	461	591	173	351	379	489	367	166	242 ³	-	329	420

Swan & geese review for SEA 6, 7 & 8

Barnacle Goose

Site	Sea Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Greenland breeding population															
Islay	7	25,947	26,776	27,791	28,298	31,099	35,013	32,812	35,172	35,429	35,472 ¹	34,829 ¹	-	34,743	29,795
North Uist	7	-	-	-	543	-	600	1,414	1,648	1,491	1,957	-	-	1,422	543
Tiree	7	1,535	984	684	1,145	1,465	1,479	1,158	1,572	1,123	1,442	1,782 ¹	-	1,415	1,151
Coll	7	670	3,093	764	991	682	861	715	931	667	380	600 ¹	-	659	1,278
Keills Peninsula & Isle of Danna	7	400	270	450	400	120	341	469	720	610	280	-	-	484	328
Colonsay & Oronsay	7	600	475	500	500	309	429	436	463	600	244	120 ¹	-	373	443
Sound of Harris	7	-	-	-	1,664	-	1,351	-	-	-	-	-	-	-	1,507
Svalbard breeding population															
Solway Estuary	6	12,700	12,200	13,700	17,900	17,450	24,360	23,754	26,040	25,750	23,783	23,545 ⁵	28,264 ⁵	25,476	19,433

Swan & geese review for SEA 6, 7 & 8

Brent Goose

Site	Sea Area	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	Recent 5yr Mean	Previous 5yr Mean
Dark-bellied brent goose															
Chichester Hbr	8	11,582	11,099	12,647	9,567	10,769	8,997	8,427	8,142	9,267	7,480 ⁷	7,470 ⁷	7,358 ⁷	7,943	10,081
Langstone Harbour	8	7,860	7,056	7,776	6,814	6,215	5,520	6,344	6,230	6,928	5,080	5,019 ⁷	3,000 ⁷	5,251	6,534
Fleet/Way	8	4,355	1,982	3,983	2,962	2,630	3,529	3,048	2,290	1,404	1,813	-	-	2,417	3,182
Portsmouth Hbr	8	3,580	2,883	3,583	2,284	2,773	2,785	2,505	2,169	2,661	2,224 ⁷	1,682 ⁷	2,185 ⁷	2,184	2,786
NW Solent	8	4,868	3,334	2,650	2,046	2,643	2,279	-	2,659	2,114	1,616	-	-	2,167	3,108
Pagham Harbour	8	3,669	2,969	2,638	2,611	3,016	2,879	1,071	1,260	2,438	2,520	3,180 ⁸	1108 ⁸	2,101	2,443
Southampton Water	8	2,752	2,314	2,420	1,600	3,007	1,821	2,160	1,533	2,480	1,742	-	-	1,947	2,419
Exe Estuary	8	2,020	1,815	2,049	2,056	1,587	1,832	1,768	1,647	1,806	1,400 ⁹	2,000 ⁹	1,619 ⁹	1,694	1,858
Poole Harbour	8	1,711	1,278	1,486	1,529	1,460	1,644	1,449	1,237	1,354	1,708	-	-	1,478	1,493
Pale-bellied brent goose															
Strangford Lough	6 NI	10,539	8,367	12,795	8,519	11,337	11,614	11,184	13,196	13,376	16,162	19,583 ³	-	14,700	10,526
Killough Harbour	6 NI	-	-	-	356	356	254	-	557	520 ³	575 ³	-	-	477	356
Carlingford Lough	6 NI	267	243	596	301	189	242	317	642	437	498	-	-	427	319
Dundrum Bay	6 NI	-	-	-	-	-	-	-	319 ³	-	-	-	-	319	-
Larne Lough	6 NI	227	201	290	206	209	177	232	218	253	266	-	-	229	227
Outer Ards	6 NI	238	132	230	256	196	326	54	221	215	-	-	-	202	214
Inland Sea	6	-	-	23	32	46	63	17	23	51	95	-	-	50	34
Loch Gruinart	7	-	-	-	-	-	16	0	107	46	60	-	-	46	-
Hilbre	6	-	-	-	-	-	-	-	-	-	39 ⁴	34 ⁴	28 ⁴	34	-
South Ford	7	-	-	-	-	-	-	-	-	-	30	-	-	30	-