	95-96	96-97	97-98	98-99	99-00	Mon	Mean	
Medway Estuary	361	290	203	722	365	Feb	388	
Thrapston Gravel Pits	305	417	520	370	276	Dec	378	
Llyn Alaw	335	445	312	376	384	Sep	370	
Wynyard Lake	241	224	710	376	280	Sep	366	
Morecambe Bay	287	370	401	351	411	Feb	364	
Baston/Langtoft Gravel Pits	270	349	320	450	380	Jan	354	
Willen Lake	186	569	280	392	295	Jul	344	
Emberton Gravel Pits	99	315	602	420	280	Feb	343	
Dee Flood Meadows	220	230	430	521	310	Oct	342	
Bardney Pits	250	290	350	450	350	Jan	338	▲
Buckden & Stirtloe Gravel Pits	16	506	149	649	330	Dec	330	
Linford Gravel Pits	365	409	301	232	323	Dec	326	▲
Hamford Water	576	358	168	284	182	Sep	314	
Beaulieu Estuary	289	345	239	270	381	Feb	305	▲
St Benet's Levels	336	268	268	118	528	Sep	304	▲
Sites with mean peak counts of 50 or more birds in Northern Ireland †								
Lough Foyle	43	88	383	157	1,282	Mar	391	
Strangford Lough	173	351	379	489	367	Feb	352	
Loughs Neagh & Beg	347	448	510	296	71	Jan	334	
Belfast Lough	77	86	86	122	112	Jan	97	
Temple Water	158	15	-	-	-		88	

Important sites not counted in last five years
R. Wensum: Fakenham to Great Ryburgh

Other sites surpassing table qualifying levels in 1999-2000

Didlington Lakes	530	Jan	Rutland Water	340	Jan
Hay-a-Park Gravel Pits	501	Sep	Middle Yare Marshes	340	Sep
Hickling Broad	460	Dec	R. Avon: R'wood to Christchurch	339	Dec
Grimsthorpe Lake	365	Dec	Cranwich Gravel Pits	328	Aug
Benacre Broad	344	Sep	Fletton Brick Pits	310	Nov

† *as site designation does not occur and the 1% criterion is not applied, qualifying levels of 300 and 50 have been chosen to select sites in Great Britain and Northern Ireland, respectively, for presentation in this report*

BAR-HEADED GOOSE

Anser indicus

Escape
Native range: Southern Asia

For the second year running, numbers recorded by WeBS increased and gave a summed maximum of 97 birds. However, the number of sites where birds were recorded was slightly down on the previous year, from 54 to 46. Nineteen of these held more than one bird and counts of six or more were as follows: 11 at Draycote Water, nine at Queen's Park, Derbyshire, eight at Spade Oak Gravel Pit, seven at Edington Lake and six at Stodmarsh NNR & Collards Lagoon.

SNOW GOOSE

Anser caerulescens

Escape and vagrant
Native range: North America

GB max: 59 Jan
NI max: 1 Jan

Numbers rose in 1999-2000 after the considerable decrease in the previous year. Summed site maxima for the 44 sites at which the species was found was 129 birds, compared with 110 in 1998-99. Sites that held ten or more birds were as follows: 21 at Eversley Cross & Yateley Gravel Pits, 19 at Stratfield Saye and 12 at Blenheim Park Lake. A further sixteen sites held more than two birds. A single at Belfast Lough in January is noteworthy as this species in rarely recorded in Northern Ireland by WeBS.

ROSS'S GOOSE

Anser rossii

Escape
Native range: North America

Singles were at Croxall Pits, Drakelow Gravel Pit and Irvine/Garnock Estuary during 1999-2000.

EMPEROR GOOSE

Anser canagicus

Escape
Native range: Alaska and NE Siberia

Both the summed maxima and the number of sites where this species was recorded increased for the fifth consecutive year. In addition to singles at eight sites, three were at Ramsbury Lake and two were at Morecambe Bay .

CANADA GOOSE

Branta canadensis

Naturalised introduction†
Native range: North America

GB max: 49,990 Nov
NI max: 610 Jan

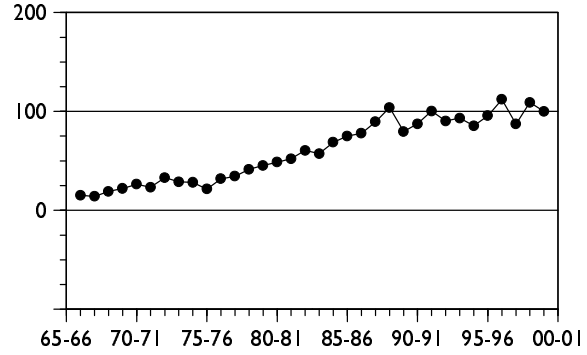

Figure 23. Annual indices for Canada Goose in GB

Not for the first time, the index value and peak national total provide a contrasting understanding of the British Canada Goose population. The index shows a decline since the previous year and a long-term trend of stability for the past 13 years. However, the peak national total has increased by 17.5% since 1998-99. This underlines the inadequacies of the index technique since sites where much of the expansion is occurring are not included in the current index calculations due to an insufficient run of data.

The key sites remained Rutland Water and the Arun Valley, despite decreases from the previous year. Several other key sites have also shown declines over the past 3-5 years, including Fairburn Ings, Walthamstow Reservoirs and the Lower Derwent Valley. In contrast, the Dee Estuary (Eng/Wal) has shown a fairly consistent increase over the past five years, as have Blithfield and Abberton Reservoirs and Harewood Lake. Other large counts during 1999-2000 were recorded at the Dyfi Estuary, Bewl Water and the Middle Tame Valley Gravel Pits.

Few declines are evident over the current five year period, those at Holme Pierrepont Gravel Pits and Chew Valley Lake being the most striking.

In Northern Ireland, the peak total rose even though numbers at the top three sites showed no pattern of increase, suggesting that expansion away from the key sites is also occurring there.

	95-96	96-97	97-98	98-99	99-00	Mon	Mean
Sites with mean peak counts of 600 or more birds in Great Britain †							
Rutland Water	1,282	1,266	1,395	1,374	1,255	Jan	1,314
Arun Valley	868	796	1,490	1,298	967	Oct	1,084
Dyfi Estuary	681	682	1,020	899	1,676	Jan	992
Dee Estuary (Eng/Wal)	645	877	875	1,150	1,347	Oct	979
Fairburn Ings	[3] 1,036	[3] 1,091	1,340	711	630	Aug	962
Walthamstow Reservoirs	1,062	1,030	816	784	(500)	Jun/Jul	923
Lower Derwent Valley	831	841	1,170	980	627	Jan	890
Blithfield Reservoir	342	916	850	1,120	1,140	Sep	874
Bewl Water	[3] 982	[3] (1,000)	548	592	1,200	Aug	864
Middle Tame Valley Gravel Pits	769	[3] 539	(750)	(630)	1,173	Aug	827
Stour Estuary	1,261	492	608	795	785	Dec	788
Southampton Water	585	693	1,067	745	675	Nov	753

	95-96	96-97	97-98	98-99	99-00	Mon	Mean	
Chew Valley Lake	855	740	780	631	660	Jul	733	
King's Bromley Gravel Pits	627	726	641	804	814	Jul	722	
Abberton Reservoir	550	433	608	989	928	Aug	702	▲
Kedleston Park Lake	(900)	360	650	650	800	Nov	672	
Holme Pierrepont Gravel Pits	648	1,001	715	446	498	Jan	662	
Tundry Pond	-	255	840	730	815	Sep	660	
Harewood Lake	417	620	560	670	943	Nov	642	▲
Port Meadow	(320)	700	500	710	[31] 490	Jan	600	
Sites with mean peak counts of 50 or more birds in Northern Ireland †								
Upper Lough Erne	194	451	170	96	222	Jan	227	
Drumgay Lough	265	236	172	260	110	Jan	209	
Strangford Lough	185	257	[37] 204	161	153	Oct	192	

Sites not counted in last five years
Woodford River

Other sites surpassing table qualifying levels in 1999-2000

Cleddau Estuary	1,108	Oct
Colliford Reservoir	759	Jun
Ellesmere Lakes	737	Sep
Watermead Gravel Pits	664	Nov

† *as site designation does not occur and the 1% criterion is not applied, qualifying levels of 600 and 50 have been chosen to select sites in Great Britain and Northern Ireland, respectively, for presentation in this report*

BARNACLE GOOSE

Branta leucopsis

GREENLAND POPULATION

International threshold: 320
Great Britain threshold: 270
All-Ireland threshold: 75

GB max: 37,776 Nov
NI max: 0

% young: 8.1 brood size: 1.9

Numbers on Islay increased slightly again, reaching another new peak count and maintaining the steady increase there. Elsewhere, there were decreases at a number of sites, namely Tiree, North Uist and Coll, although at the first site numbers were still above average. Counts were not available from South Walls.

Breeding success in 1999 among birds on Islay was lower than the average for the last ten years of 10.6% young and mean brood size of 2.0 (M.A. Ogilvie *in litt.*). Hunting mortality in Iceland accounted for 1,362 birds, considerably lower than the mean for the past five years (1,952).

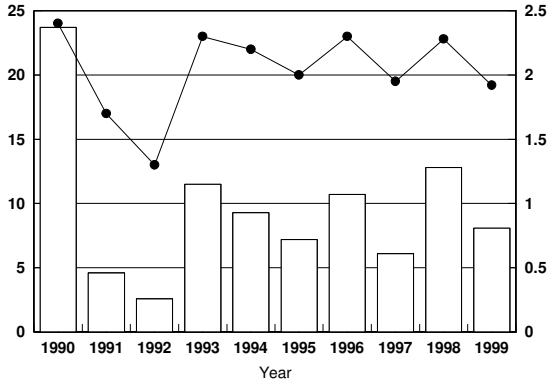

Figure 24. Productivity in Greenland Barnacle Geese, 1990-99; proportion of young (bars, left hand axis) and mean brood size (line, right hand axis) from age assessments on Islay.

	95-96	96-97	97-98	98-99	99-00	Mon	Mean
Sites of international importance in the UK							
Islay	[27] 31,099	[27] 35,013	[27] 32,812	[26] 35,172	[26] 35,429	Nov	33,905
Tiree	[3] 1,465	[3] 1,479	[3] 1,158	[2] 1,572	[28] 1,123	Mar	1,359
Sound of Harris	-	[8] 1,351	-	-	-		1,351
North Uist	-	[8] 600	1,414	[21] 1,648	[21] 1,491	Feb	1,288
South Walls	[18] 1,138	[18] 1,170	[18] 1,180	[17] 1,140	-		1,157
North Sutherland	-	[8] 792	-	-	-		792
Coll	[3] 682	[3] 861	[3] 715	[3] 931	[28] 667	Mar	771
Monach Isles	-	[8] 760	-	-	-		760
Keills Peninsula & Isle of Danna	[3] 120	[3] 341	[3] 469	[28] 720	[28] 610	Mar	452
Colonsay/Oronsay	[3] 309	[3] 429	[3] 436	[28] 463	[28] 600	Mar	447

SVALBARD POPULATION

International threshold: 120
Great Britain threshold: 120

GB max: 25,858 **% young: 10.9** **brood size: 1.6**

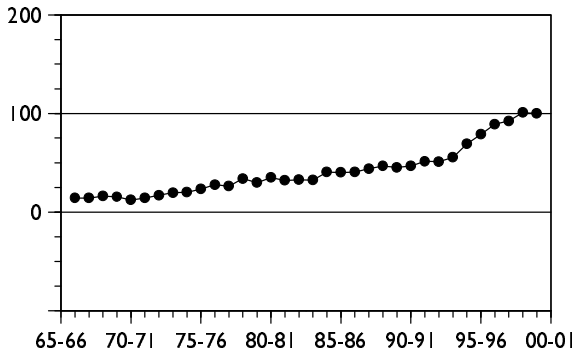

Figure 25. Annual indices for Svalbard Barnacle Geese in GB

The peak national total showed a slight decrease from 1998-99, though it remains too early to suggest that population growth may have levelled off. The decline arose due to low productivity in 1999, with just 10.9% young in autumn flocks recorded mean brood size among successful pairs of 1.6 goslings.

The arrival of birds on the Solway was later than normal overall, although the first birds, a flock of 80, were recorded on the same day as the previous year (20 September). By 2 October there were 2,650, but four days later there were 15,400. Many of these are thought to have arrived by an indirect route as thousands, probably forced south by strong winds, were observed flying north past South Tyneside on 4th and 5 October. The departure from the Solway was completed in late April, with 3,300 there on 25 April, falling to 470 on 29 April and none the following day (although a few were seen in early May).

At Loch of Strathbeg, the arrival was considerably later than the previous year, with no more than 60 birds present until 8 October (Phillips *et al*. 2000), when the autumn peak of 217 was reached, far fewer than that of the previous autumn. However, the peak midwinter count was higher, with 513 counted in December. As usual, this site was little used during the northerly spring passage, with only 126 present on 1 May.

Current research continues in a number of areas. During winter 1999-2000, 20 birds on the Solway were fitted with radio transmitters: 10 at WWT Caerlaverock and 10 at RSPB Mersehead. Detailed information on the day-to-day movements of these individuals was collected and some interesting patterns on the use they made of the Solway area were apparent, although the final results of this study are not yet available. In total, 249 Barnacle Geese, or c. 1% of the Svalbard population, were caught and ringed during winter 1999-2000.

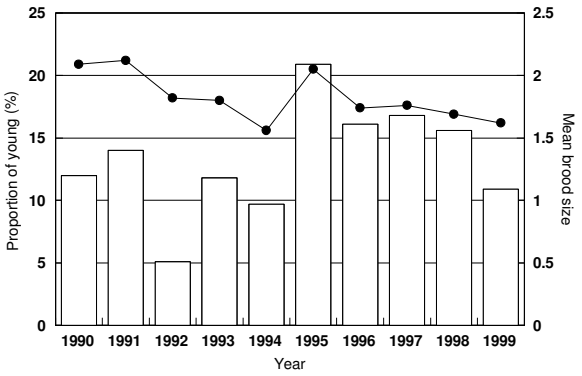

Figure 26. Productivity in Svalbard Geese, 1990-99: proportion of young (bars) and mean brood size (dots) from age assessments on the Solway.

	95-96	96-97	97-98	98-99	99-00	Mon	Mean
Sites of international importance in the UK							
Solway Estuary	[32] 17,450	[32] 24,360	[32] 23,754	[32] 26,040	[32] 25,750	Nov	23,471
Loch of Strathbeg	533	165	353	6,200	[24] 513	Dec	1,553
Sites no longer meeting table qualifying levels							
Inner Moray Firth							

NATURALISED POPULATION **Naturalised establishment†**

GB max: 858 Dec
NI max: 136 Oct/Jan

The top two sites remained Eversley Cross & Yateley Gravel Pits and Hornsea Mere, with an especially large count at the latter.

Elsewhere, the size of the naturalised flock on the Duddon Estuary remained similar to last year's high. The decline at Stratfield Saye is likely to be at least partly explained by the increase at nearby Eversley Cross. In Northern Ireland, numbers at the only site listed, Strangford Lough, remained stable.

As with some other naturalised populations, there is always some uncertainty about the true origins of some of these birds. It is possible that some birds in East Anglia could be from the Russian/Baltic population that winters predominantly in the Netherlands, but this can only be determined with any certainty by the observation of marked individuals.

	95-96	96-97	97-98	98-99	99-00	Mon	Mean	
Sites with mean peak counts of 50 or more birds in Great Britain †								
Eversley Cross & Yateley GP	218	311	184	220	187	Feb	224	
Hornsea Mere	-	-	0	314	326	Dec	213	
Stratfield Saye	34	141	142	1	28	Dec	69	
Severn Estuary	96	46	33	83	59	Sep-Dec	63	
Duddon Estuary	4	0	1	152	155	Sep	62	▲
Middle Yare Marshes	16	56	56	70	80	Nov	56	▲
Sites with mean peak counts of 50 or more birds in Northern Ireland †								
Strangford Lough	89	129	148	122	136	Oct/Jan	125	

Sites surpassing table qualifying levels in 1999-2000

Benacre Broad	56	Sep
Medway Estuary	63	Feb

† *as site designation does not occur and the 1% criterion is not applied, a qualifying level of 50 has been chosen to select sites for presentation in this report*

DARK-BELLIED BRENT GOOSE

Branta bernicla bernicla

International threshold: 3,000
Great Britain threshold: 1,000
All-Ireland threshold: +

GB max: 90,919 Nov
NI max: 9 Oct

% young: 23.5 brood size: 2.44

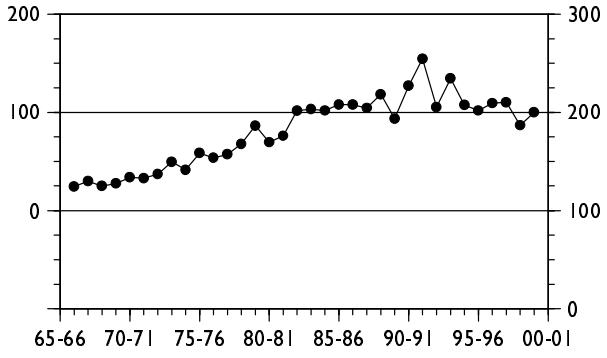

Figure 27. Annual indices for Dark-bellied Brent Goose in GB

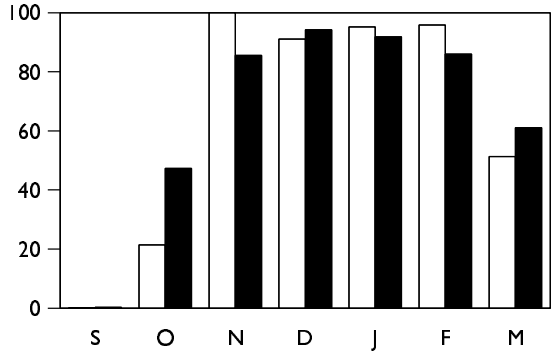

Figure 28. Monthly indices for Dark-bellied Brent Goose in GB (white bars 1999-2000; black bars 1994-95 to 1998-99)

After last year's slump in the peak national count, the number of Dark-bellied Brent Geese recovered somewhat during 1999-2000, although the total remained lower than in any year between 1990-91 and 1997-98. Productivity during 1999 was high, with 23.5% young in wintering flocks and a mean brood size 2.44 goslings per successful pair (Hearn 2000b). This was the most successful breeding season since 1991 and the first time that productivity has exceeded the

estimated annual rate of 15% mortality (Summers & Underhill 1991) since 1993.

The nine sites of international importance in the UK remained unchanged from 1998-99, with the Wash supporting almost one third of the population. Counts on the Thames Estuary were well down on the previous four years and numbers at Hamford Water remained low. The sites of national importance were joined by the Burry Inlet, but otherwise remained unchanged. Numbers of geese were lower than average at nine of these sites and higher at seven. There were no counts available from the Exe Estuary.

The arrival into the UK occurred later than average, with around 20% of the peak national count present during October. However, by November, all birds had reached the UK. This is in accordance with established phenological patterns, with later arrival in years of successful breeding and early arrival in years of breeding failure (Ebbinge et al. 1999). For the remainder of 1999-2000, numbers were very typical for the time of year.

Research in the Dutch spring staging areas has shown how Brent Geese are excluded from saltmarshes by succession (van der Wal *et al*. 2000). On the island of Schiermonnikoog the number of Brent Geese has remained stable for the past 20 years, despite an increase in both the total population size and the extent of the saltmarsh habitats there. The distribution of the geese over this period showed that they selected younger areas of saltmarsh where their preferred forage species were found. In older saltmarshes, geese face a greater proportion of non-preferred forage species and spend less time foraging. These results emphasise the importance to Brent Geese of areas where new saltmarshes can develop. The tendency in eastern England, however, is to saltmarsh loss (though rising sea levels and sinking land levels) and this highlights the need to enable saltmarsh (re)creation through a policy of managed coastal retreat in relevant areas. This was further highlighted by Pettifor *et al*. (2000) who have shown, by developing an individual-based behavioural model for this population, that it is vulnerable to losses of wintering and spring-staging habitats. Studies of the forage preferences of Brent Geese feeding on agricultural land have recently suggested that the geese prefer white clover to three common grass species. These results have been used to develop a better scientific basis for the creation and management of grassland alternative feeding areas to help reduce damage levels due to goose grazing (McKay *et al*. 2001).

A draft International Action Plan for this population of Brent Geese was discussed by the first Meeting of Parties to the African-Eurasian Migratory Waterbird Agreement in November 1999. This plan builds upon and seeks to implement (at government level) the Flyway Management Plan developed several years ago (van Nutgeren 1997). It is to be hoped that the Action Plan, which focuses relevant conservation issues operating at a range of scales, will shortly be implemented.

	95-96	96-97	97-98	98-99	99-00	Mon	Mean
Sites of international importance in the UK							
Wash	21,023	23,001	23,797	17,736	28,811	Nov	22,874
Thames Estuary	10,714	15,393	17,014	14,100	7,346	Feb	12,913
North Norfolk Coast	8,110	8,793	14,088	[24] 10,100	[24] 12,969	Jan	10,812
Chichester Harbour	10,769	8,997	8,427	8,142	9,267	Jan	9,120
Blackwater Estuary	8,525	10,641	10,290	5,160	9,838	Feb	8,891
Hamford Water	14,466	9,286	4,194	2,320	3,879	Nov	6,829
Langstone Harbour	6,215	5,520	6,344	[37] 6,230	6,928	Feb	6,247
Crouch-Roach Estuary	3,820	5,292	5,644	2,452	5,488	Jan	4,539
Colne Estuary	3,529	3,493	4,263	(2,685)	(3,614)	Jan	3,762
Sites of national importance in Great Britain							
Fleet/Wey	2,630	3,529	3,048	2,290	1,404	Nov	2,580
Portsmouth Harbour	2,773	2,785	[37] 2,505	2,169	2,661	Feb	2,579
North West Solent	2,643	2,279	(2,810)	2,659	2,114	Jan	2,501
Medway Estuary	2,733	2,526	2,725	2,580	1,845	Feb	2,482
Deben Estuary	2,536	3,306	2,094	1,268	2,139	Jan	2,269
Southampton Water	3,007	1,821	2,160	[37] 1,533	[37] 2,480	Feb	2,200
Humber Estuary	2,078	(2,366)	1,532	2,540	2,404	Jan	2,184
Dengie Flats	2,440	2,000	2,290	2,600	1,550	Nov	2,176
Swale Estuary	1,903	3,141	1,803	2,215	1,800	Nov	2,172
Pagham Harbour	3,016	2,879	1,071	1,260	[37] 2,438	Nov	2,133

	95-96	96-97	97-98	98-99	99-00	Mon	Mean	
Stour Estuary	1,801	1,757	2,173	2,367	1,769	Dec	1,973	
Beaulieu Estuary	1,360	2,480	2,283	1,682	1,458	Jan	1,853	
Exe Estuary	1,587	1,832	1,768	1,647	-		1,709	
Newtown Estuary	(1,475)	1,676	1,472	1,180	(1,727)	Jan	1,514	
Poole Harbour	1,460	1,644	1,449	1,297	1,354	Dec	1,441	
Orwell Estuary	1,290	[37] 1,000	[37] 878	[37] 1,129	[37] 1,799	Jan	1,219	
Burry Inlet	928	1,014	1,165	1,043	1,195	Jan	1,069	▲

Other sites surpassing table qualifying levels in 1999-2000

Thanet Coast	1,420	Jan

BLACK BRANT

Branta bernicla nigricans

Vagrant

Native range: North America and east Asia

Singles were seen at Lough Foyle in October, Chichester Harbour in October, then presumably the same at Langstone Harbour in December and January, and at Dengie Flats in December and the Crouch-Roach Estuary in December and March.

LIGHT-BELLIED BRENT GOOSE

Branta bernicla hrota

CANADIAN POPULATION

International threshold: 200

Great Britain threshold: +†*

All-Ireland threshold: 200

* 50 is normally used as a minimum threshold

GB max: 85 Feb

NI max: 15,356 Nov

% young: 15 brood size: 2.6

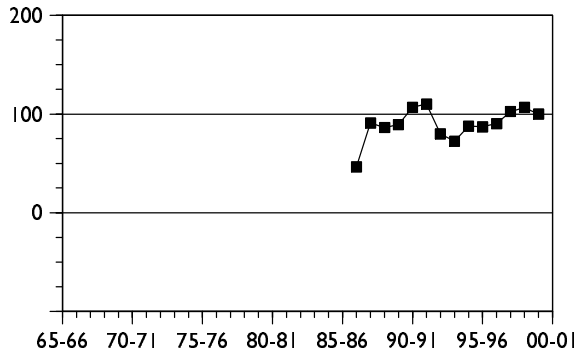

Figure 29. Annual indices for Light-bellied Brent Goose in NI

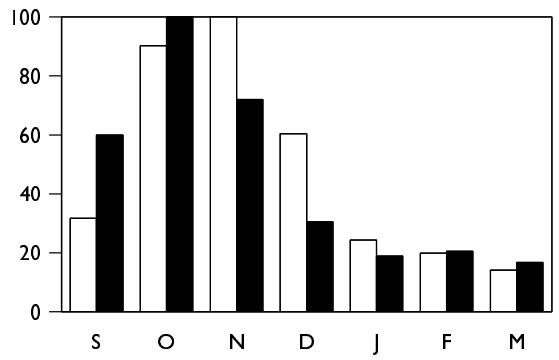

Figure 30. Monthly indices for Light-bellied Brent Goose in NI (white bars 1999-2000; black bars 1994-95 to 1998-99)

The fourth annual all-Ireland census recorded a peak of 19,183 geese during October 1999, 83% of which were at Strangford Lough and 10% at Lough Foyle. Productivity improved for the second consecutive year, explaining the recent increase in the numbers of birds present in Ireland.

Strangford Lough and Lough Foyle continue to hold the largest concentrations in Northern Ireland during the early autumn, acting as landfall sites. Vast swards of *Zostera* attract geese to these estuaries at this time (Ó Briain & Healy 1991). Monthly indices demonstrate that numbers peaked in the province during October and November 1999 and then fell as the winter progressed. In late winter, the majority of Light-bellied Brent Geese redistribute throughout the rest of Ireland, the Channel Islands and northern France (Colhoun 2001). Interestingly, increasing numbers of birds are recorded at resorts in the southwest of England, often in mixed flocks with Dark-bellied Brent Geese.