

information



NATURAL HERITAGE TRENDS

WINTERING WILDFOWL – TO 2000/01

Scotland supports internationally important populations of wintering ducks, swans and geese. Many breed north of the Arctic Circle during the summer months and fly south in the autumn. Attracted to Scotland by relatively mild winter weather and extensive wetlands, over half a million wildfowl were counted at Scottish sites in the winter of 2000/01.

Most of Scotland's wintering swan and duck populations represent less than 5% of their respective European populations, exceptions in 2000/01 being that of the Pintailⁱ (c. 5% of the NW European population), Teal and Wigeon (c. 6%), and Whooper Swan (c. 15%). In contrast, the six main goose populations regularly wintering in Scotland each account for more than 50% of their respective international populations (Table 1).

This note describes trends in the number of wintering waders counted in Scotland over a period of 25 years, up to 2000/01.

Trends

Annual count data, derived mainly from the Wetland Bird Survey (WeBS), are thought to provide a reasonably accurate indication of trends in 18 native wildfowl species. Indices of abundance, which take account of missing data for some years, have been calculated for all duck and swan species for the period 1974/75 to 2000/01. These indices are used to generate 'alert limits' for each species; limits beyond which a change in abundance is considered to be of serious concern (Atkinson *et al.* 2000). They are intended to focus attention on species showing declines exceeding 25% ('Medium Alert') or 50% ('High Alert') over the period specified. No index data were available for the four main goose species wintering in Scotland, however. Instead, changes in their populations were estimated from differences in the mean peak counts calculated for two five-year periodsⁱⁱ.

Of the 14 species for which alert limits were calculated in Scotland, high alerts were raised for two species and medium alerts were raised for five species, up to 2000/01. The time periods to which they apply (in years) are shown below in brackets.

High alerts:	Whooper Swan (10 years)	Pochard (10, 25)	
Medium alerts:	Pintail (5, 25 years)	Pochard (5)	Goldeneye (25)
	Red-breasted Merganser (5 years)	Goosander (10, 25)	

ⁱ Scientific names are given in Figure 1.

ⁱⁱ The first five-year period was 1974/75 to 1978/79. The second period varied between species, depending on data availability, as follows: Greylag Goose (Iceland) and Pink-footed Goose: 1994/95 to 1998/99; Greenland White-fronted Goose and Barnacle Goose (Greenland population): 1998/99 to 2002/03; Barnacle Goose (Svalbard population): 1996/97 to 2000/01.

Ten of the 18 wildfowl species increased in abundance by at least 10%, while seven species declined by at least 10% (Figure 1). None of the four main wintering goose species has shown a net decline over the most recent 25-year period for which data are available.

Swans

During the 1970s and 1980s, counts of **Mute Swans** in Scotland rose slightly, peaking in 1990 (Figure 2). The population index for this species increased by 66% over the 25 years up to 2000/01.

Although **Whooper Swan** numbers showed a more marked increase up to 1990 (Figure 2), the species has since declined substantially, such that, by 2000/01, its population index had dropped by 60% over the previous 10 years, and by 22% over the previous 25 years. In contrast, counts of Whooper Swans in England continued to rise during the 1990s, suggesting that at least part of the Scottish decline may have been due to a redistribution of the wintering population. Mild winter weather may also have caused the species to disperse more widely, away from WeBS count sites.

Geese

The number of geese wintering in Scotland has increased substantially since counts began in the 1960s, and particularly since the early 1980s (Figure 3). In most cases, increases have been attributed to the introduction of protective legislation in Britain and to improved feeding conditions, either in Scotland or on the breeding grounds. Unless otherwise stated, population change figures have been calculated by comparing mean peak counts during 1974/75-1978/79, with the most recent five-year period for which data are available.

About 65-70% of **Greenland White-fronted Geese** wintering in Scotland do so on Islay, where the population increased by over 250% up to 1998/99-2002/03 (Figure 3). These increases follow the imposition of stricter hunting controls under the 1981 Wildlife & Countryside Act, and the introduction of more favourable agricultural practices.

The **Pink-footed Goose** population increased by about 200% up to 1994/95-98/99. Although recent counts have remained high, an increasing number of birds appear to be moving through Scotland to winter in East Anglia.

The smallest increase recorded was that of the Iceland population of the **Greylag Goose**. Having peaked in 1990, the population has since declined, such that it was only 24% higher in 1994/95-98/99 than in 1974/75-1978/79 (Figure 3). The recent decline has been attributed to increased hunting pressure in Iceland. The Scottish population of the Greylag Goose has also increased, numbers on the Uists having almost doubled between 1986 and 1997. The genetic integrity of this form is now threatened by the expansion of the feral population.

The **Svalbard** population of the **Barnacle Goose** increased by 260% between 1974/75-1978/79 and 1996/97-2000/01. Since the 1950s, when counts began, its population has shown a greater than ten-fold increase.

Between 1974/75-1978/79 and 1998/99-2002/03, the **Greenland** population of the **Barnacle Goose** wintering on Islay increased by 68%. This finding is broadly consistent with trends in the Scottish population as a whole, for which fewer count data are available.

Scotland hosts a small wintering population of the **Bean Goose** *Anser fabalis*, the bulk of which occur at one site in Stirling. The population at this site averaged 129 birds during 1992-1996, increasing to 183 birds in 2000/01.

Ducks

Several duck species are particularly responsive to weather conditions, severe winter weather on the continent triggering an influx of European birds. Trends evident in Scotland may therefore reflect a redistribution of regional populations, as well as a change in local populations.

The greatest increase shown was that of the **Gadwall**, whose population almost trebled over the 25-year period (Figures 1 & 4). Scottish counts of this species are still low, however, peaking at 364 birds in 2000/01. **Teal** and **Wigeon** counts have both shown substantial long-term increases, the former having more than doubled over the 25-year period. Peak counts during 2000/01 exceeded 24,400 and 72,600, respectively. A fourth dabbling duck, the **Shoveler**, has also shown a net gain over the 25-year period, counts having increased by 30%, to 965 birds in 2000/01.

Although the **Shelduck** counts have increased by just 4% over the 25-year period, its population appears to have declined in the short term; by 19% over the ten-year period.

Species showing more consistent trends include the **Mallard**, whose population has fallen by about 22%; part of a long-term decline seen throughout Britain. Despite this, the number of Mallard detected during the Breeding Bird Survey (1994-2002) has increased by 50% in Scotland, and by 39% in Britain as a whole (Raven *et al.* 2003).

A long-term decline in Scottish **Tufted Duck** numbers (-24% in 25 years) contrasts with counts for Britain as a whole, which have shown a steady rise, reaching a record high in January 2001. In contrast, populations of the two sawbill ducks, **Red-breasted Merganser** and **Goosander**, have fluctuated dramatically. Although counts of Red-breasted Merganser increased by 61% over the 25-year period, they declined by 35% over the last five years, raising a medium alert for this species. In contrast, the number of Goosander counted fell by 35% over the full 25-year period, raising a medium alert for this species. Recent counts have tended to peak at 500-1,000 birds, following a high of more than 2,000 birds in 1987/88.

Medium alerts have also been raised for the **Pintail** (-32%) and **Goldeneye** (-40%) over the 25-year period. Although counts of Pintail reached record numbers during the mid-1990s, they were followed by a steep decline (-39%) during the more recent five-year period (Figure 4). These short-term fluctuations may fall within the range expected of a healthy population, or perhaps indicate large-scale shifts in the species' distribution. From a high of c. 10,000 birds in 1974/75, Goldeneye numbers fell to about 3,500-5,500 during the late-1970s and early 1980s. A more recent down-turn has been linked to water quality improvements in the Firth of Forth.

The greatest decline shown was that of the **Pochard**, whose numbers have dropped by 82% over the 25-year period; from c. 15,000 birds in 1974/75, to fewer than 3,000 in 2000/01. A similar trend has been shown in Britain as a whole.

Sources

This profile was developed using data collected by the Wetland Bird Survey, a partnership scheme of the British Trust for Ornithology, the Wildfowl and Wetlands Trust (WWT), the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee (Atkinson *et al.* 2000, Pollitt *et al.* 2003). Data from WWT goose monitoring schemes have also been used. Additional data on goose populations on Islay were provided by M.A. Ogilvie and extracted from SNH files. International population estimates were obtained from Madsen *et al.* (1999) and Rose & Scott (1997). Likely causes of goose population trends are based on Pettifor *et al.* (1997), Fox *et al.* (1989), Owen & Black (1999) and Pettifor *et al.* (1999a,b). Trends in seaduck populations are based on Kirby *et al.* 1993.

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References

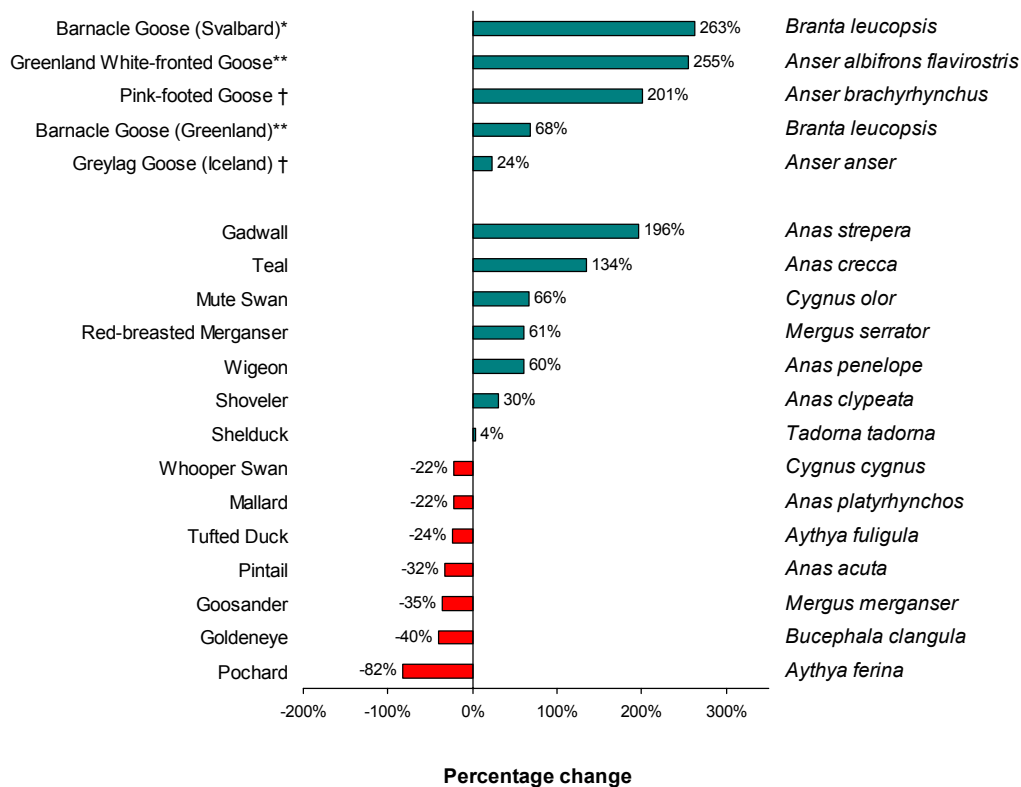
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Table 1 Peak counts of each goose population or race wintering in Scotland during 2000/01, expressed as a percentage of their respective international populations.

Species population	Peak Scottish count	Percentage of peak UK count	
Pink-footed Goose: Iceland & Greenland	223,903	100%	A high proportion now continue south, wintering in England.
Greenland White-fronted goose	21,030	70%	Winters mainly on Islay; the remainder in Ireland
Greylag Goose: Iceland	75,995	76%	Dispersed throughout much of the lowlands
Greylag Goose: Scotland	8,366	100%	Resident native population in N&W Scotland. A more complete count in 1997/98 yielded 9,800.
Barnacle Goose: Greenland	39,757	100%	A high proportion winters on Islay
Barnacle Goose: Svalbard	13,756	100%	The majority of the population winters on the Solway Firth.

¹ International population estimates have been drawn from Rose & Scott (1997) and Madsen *et al.* (1999). Such estimates tend to involve a higher degree of uncertainty than national estimates and are updated less frequently. The percentages shown here should therefore be treated as a guide only.

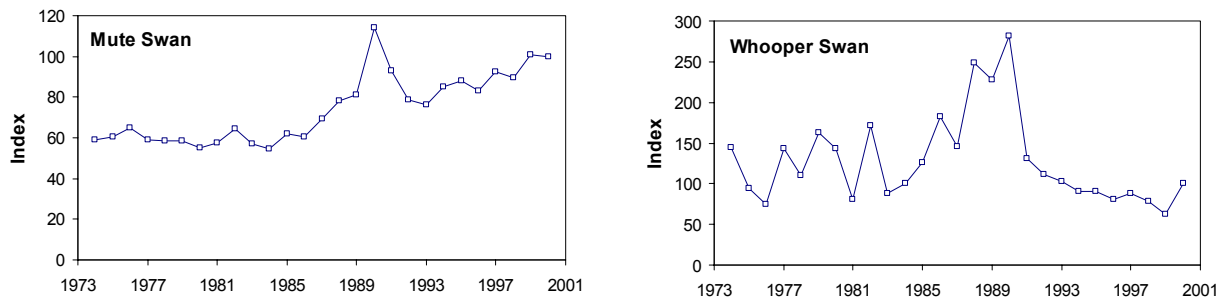
Figure 1 The percentage change in winter counts. For duck and swan species, change estimates were calculated from annual indices for the period 1974/75 to 2000/01. For goose taxa, differences were derived from mean counts calculated over two five-year periods: 1974/75-1978/79 and the most recent five-year period for which data were available (as indicated).



* 1996/97 to 2000/01. ** 1998/99 to 2002/03. Figures are for Islay only. † 1994/95 to 1998/99.

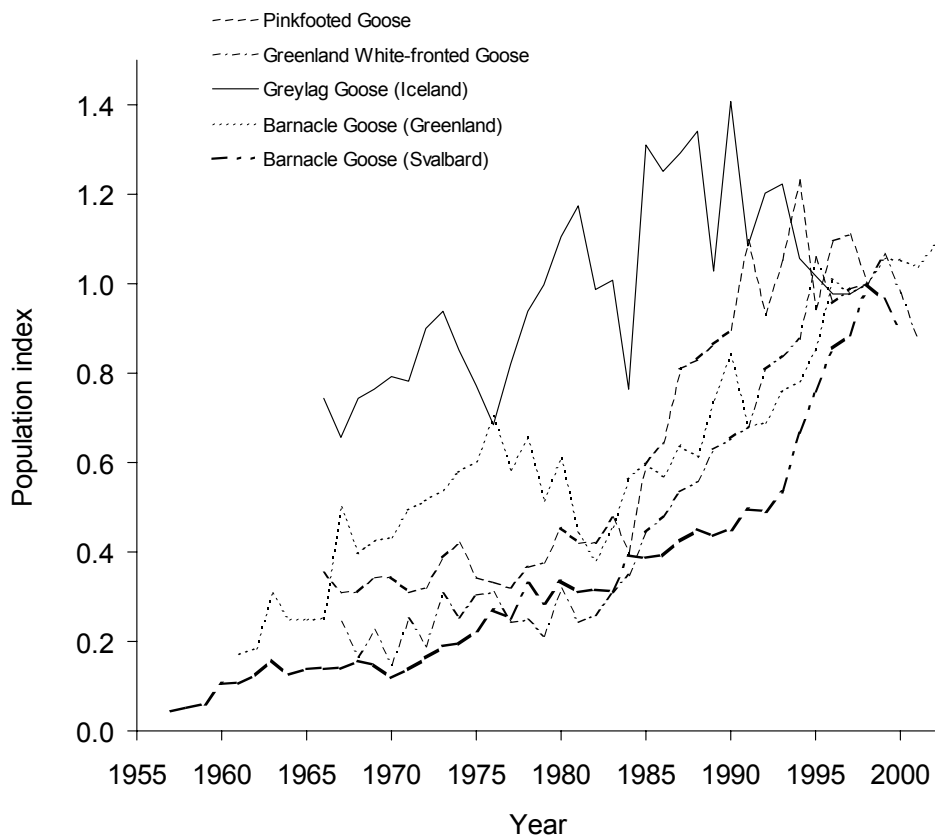
Source: BTO, WWT.

Figure 2 Trends in an index of the number of Mute Swans and Whooper Swans counted on WeBS sites in Scotland, during 1974/75 to 2000/01. Indices have been scaled to a value of 100 in 2000/01.



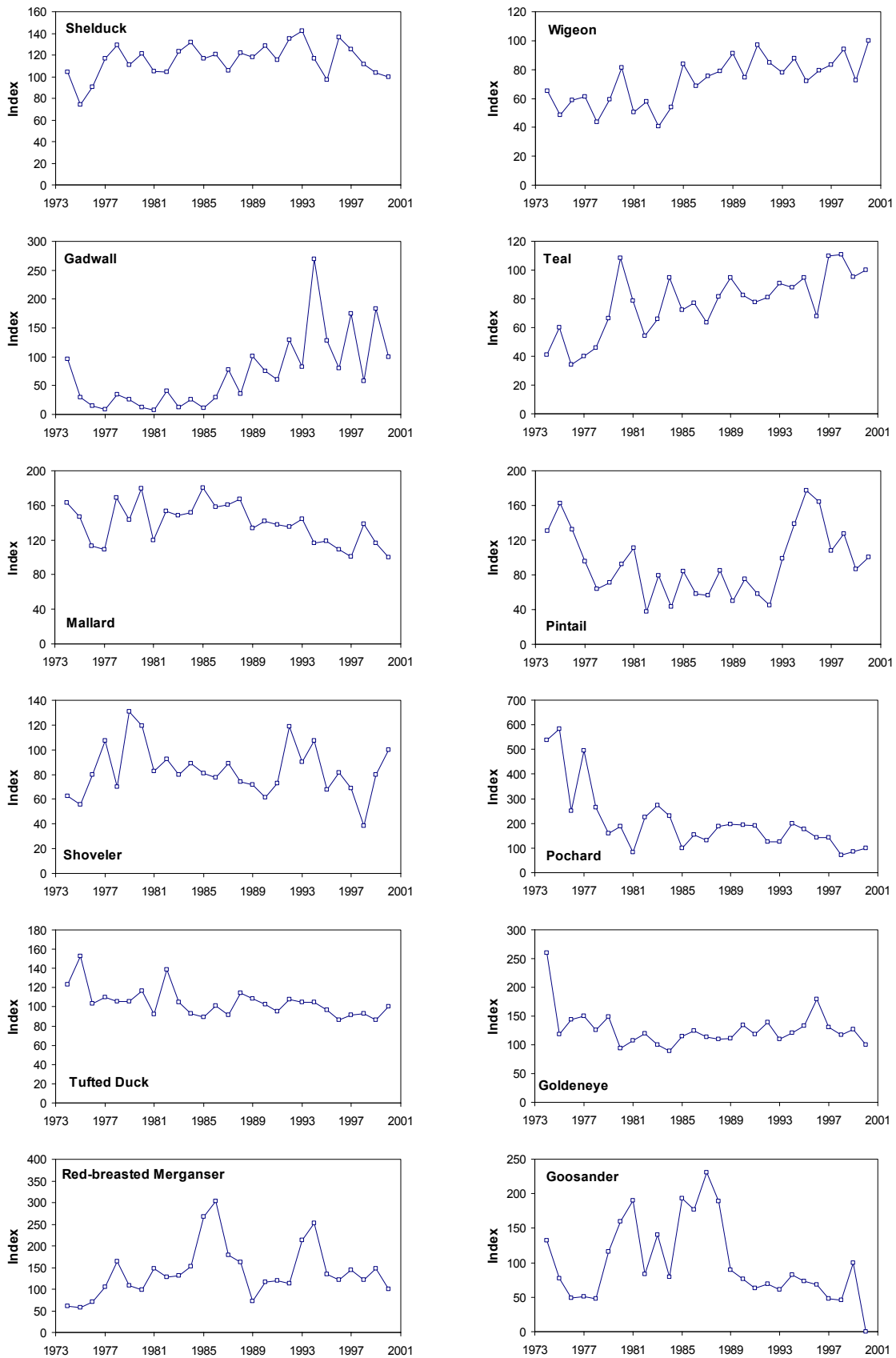
Source: BTO

Figure 3 Trends in the number of wintering geese counted in Scotland, scaled to a value of 100 in 1998/99. Counts of Greenland White-fronted Goose and Barnacle Goose (Greenland population) are for Islay only.



Source: WWT, SNH

Figure 4 Trends in an index of the number of ducks counted on WeBS sites in Scotland, during 1974/75 to 2000/01. Indices have been scaled to a value of 100 in 2000/01.



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