

information



NATURAL HERITAGE TRENDS

BREEDING SEABIRDS: 1969-70 TO 1998-2002

The seas around Britain and Ireland are among the richest in the world for breeding seabirds, supporting almost 8 million birds of 25 species. Many of these have a high proportion of their breeding population in Scotland, which supports 60% of the world's Great Skuas¹, about half of the world's Northern Gannets and about one third of the world's Manx Shearwaters (Mitchell *et al.* 2004). Four species have more than 95% of their combined British and Irish population in Scotland, while 14 species have more than half of their population in Scottish breeding colonies (Figure 1). The latter include all four auk species, the Northern Fulmar and Northern Gannet, as well as Great and Arctic Skua. Most of those with less than half of their British population in Scotland are gull or tern species.

There have been three comprehensive seabird censuses in Britain, spanning c. 30 years; in 1969-70, 1985-88 and 1998-2002. For brevity, these are referred to here as the '1970', '1987' and '2000' census, respectively. They provide comparable estimates for 20 seabird species between 1970 and 1987, and for 21 species in Scotland between 1987 and 2000. The most recent census, *Seabird 2000*, included some 3,200 colonies, spanning 40,000 km of the coastline of Britain and Ireland (Mitchell *et al.* 2004). In Scotland, over 3.28 million seabirds were counted, comprising 76% of the UK total and 69% of the British and Irish total. *Seabird 2000* provided the first comprehensive counts of Manx Shearwater, European Storm-petrel and Leach's Storm-petrel, and included inland as well as coastal colonies of Great Cormorant, Black-headed Gull, Mew (Common) Gull, Lesser Black-backed Gull and Common Tern (Mitchell *et al.* 2004). Scottish counts from all three censuses are listed in Annex 1.

National seabird censuses are augmented by annual surveys within a sample of seabird colonies (e.g. Mavor *et al.* 2003), providing an indication of regional trends in population size and breeding success. Although the following figures describe changes in seabird abundance throughout Scotland, it should be noted that trends sometimes vary markedly between Scottish regions, for example, between populations in the North Sea and Irish Sea/Atlantic Ocean.

Trends

Between the 1970 and 2000 censuses, 10 out of 20 species (50%) showed a marked increase in their Scottish breeding population (i.e. by at least 10%), while six species (30%) showed a marked decline (Figure 2). The proportion of species showing gains or losses has changed considerably over the c. 30-year period, however. During the first half of the period (c. 1970-1987), 60% of species showed marked increases, while 20% showed marked

¹ Scientific names are given in Figure 1.

declines. Equivalent figures for the same species during the second half of the period (c. 1987-2000) were 40% and 50%, respectively.

Over the c. 30 year period, the greatest increases shown were those of Great Skua, Arctic Skua and Common Guillemot, all of which more than doubled their Scottish populations. Conversely, populations of two gull and two tern species fell by more than half, the most extreme decline being that of Roseate Tern (-90%), a Biodiversity Action Plan priority species. While Roseate Tern numbers declined in both halves of the c. 30 year period (1970-87 and 1987-2000), some species have seen a substantial reversal in their population trend (Table 1). Of 12 species showing a marked population increase during the first half of the period, six have continued to increase, while five have suffered a marked decline. In percentage terms, the greatest of these reversals was that of Arctic Skua, whose population increased by 226% during 1970-87 but dropped by 37% in 1987-2000. Of four species showing a marked decline during the first half of the period, three have continued to decline. Only one, the Great Cormorant, has reversed this trend (Table 1).

Figure 1. The number of seabirds counted in Scotland during 1998-2002, as a percentage of those counted in Britain and Ireland combined (Mitchell *et al.* 2004). Solid bars: species with at least 50% (grey) or 75% (green) of their British and Irish population occurring in Scotland.

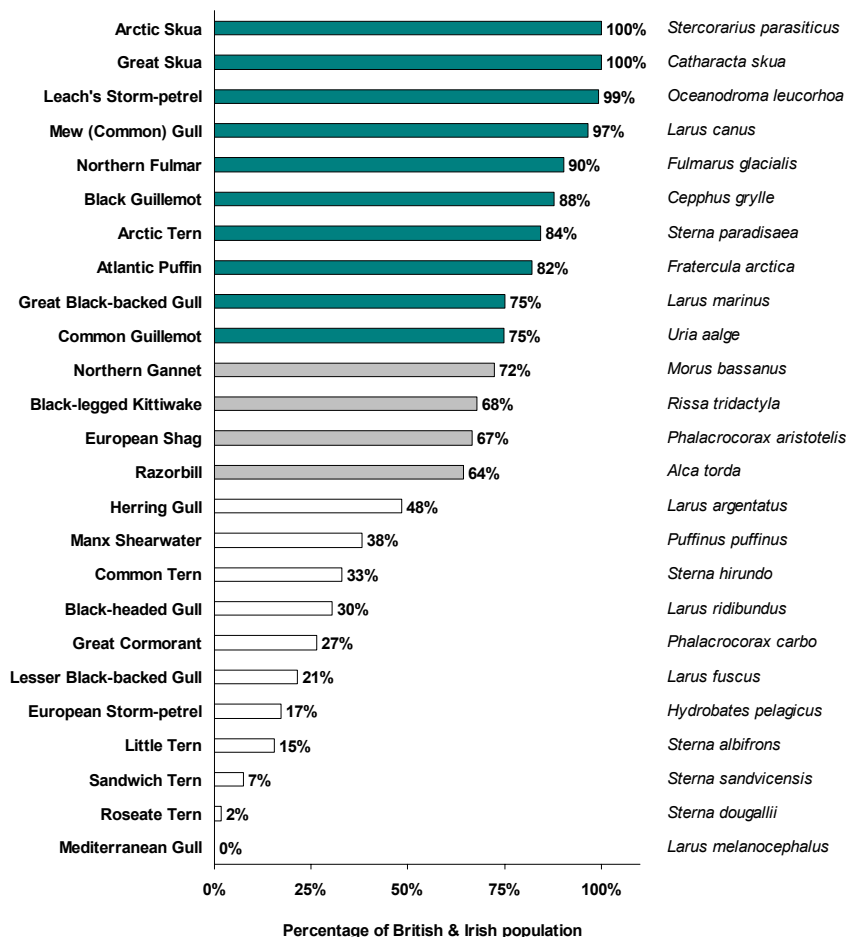
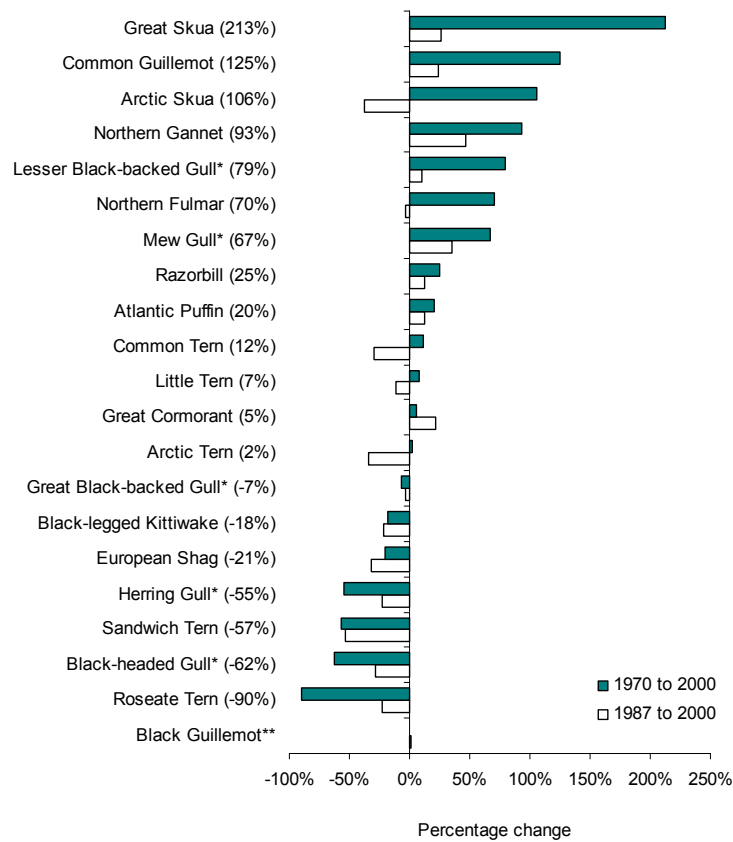


Figure 2. Percentage change in the number of seabirds counted in Scotland during c. 1970-2000 and c. 1987-2000. Figures in brackets show the percentage change during c. 1970-2000.



* Changes based on coastal colonies only.

**A comparable count of Black Guillemot was not undertaken during 1969-70, so no change estimate is available for this species during c. 1970-2000.

Table 1. Consistency of change among 20 species counted in all three censuses. A 'marked' change is one of at least 10%. Figures in brackets show the percentage change between each census, i.e. during c. 1970-87 and c. 1987-2000.

		Subsequent change (c. 1987 to 2000)		
		Marked increase	Little change	Marked decline
Initial change (c. 1970 to 1987)	Marked increase	Northern Gannet (+32, +47) Great Skua (+148, +26) Mew Gull (+24, +35) Lesser Black-backed Gull (+62, +10) Common Guillemot (+82, +24) Razorbill (+11, +13)	Northern Fulmar (+77, -4)	European Shag (+17, -32) Arctic Skua (+226, -37) Common Tern (+58, -29) Arctic Tern (+53, -34) Little tern (+21, -11)
	Little change	Atlantic Puffin (+7, +13)	Great Black-backed Gull (-4, -4)	Black-legged Kittiwake (+4, -21) Sandwich Tern (-7, -53)
	Marked decline	Great Cormorant (-13, +21)		Black-headed Gull (-48, -28) Herring Gull (-42, -23) Roseate Tern (-87, -22)

Causal factors

Population trends are driven by a wide range of pressures, and may differ markedly between colonies of the same species. The main factors influencing population trends in Scotland's seabirds are as follows.

- **Food availability.** This has a major influence on breeding performance, and is in turn affected by commercial fisheries and climatic fluctuations. Two-thirds of seabirds in the North Sea in summer are thought to feed to some extent on fishery waste, and the abundance of commercial fishing discards has been linked to population change in some species. Commercial fisheries, particularly for sandeels, can also have a substantial, negative impact on food availability.
- **Predation.** Rats, feral cats, Ferret *Mustela furo* and American Mink *Mustela vison* can have a severe impact on breeding and adult survival.
- **Drowning.** Nets, particular monofilament drift nets, were considered the main cause of unnatural deaths among auks in the 1980s.
- **Pollution.** Chronic oil pollution from illegal discharges has had a greater impact than occasional accidental spills. Pesticide residues and other toxic chemicals have been implicated in population crashes.
- **Culling.** Now controlled through legislation, egg collection, and the hunting for food, feathers and sport has historically had a major impact on populations

Changes between c. 1970 and c. 2000

Breeding populations of **Great Skua** and **Arctic Skua** in Britain and Ireland are virtually confined to northern Scotland, where each has more than doubled in size since 1970 (Figure 2). But while Great Skua numbers continued to rise during 1987-2000 (by 26%), the Arctic Skua population declined (by 37%) due, in part, to increased predation and competition from Great Skuas. This may have arisen as a result of a reduction in the volume of fishing discards available to Great Skuas, which have increasingly turned to preying on Arctic Skua chicks, and on other seabird species. These include Black-legged Kittiwakes, which Arctic Skuas parasitise (Mitchell *et al.* 2004).

Common Guillemot, by far the most abundant seabird species in Scotland, has shown a sustained rise between the three censuses, increasing by 82% during 1970-87, and by a further 24% during 1987-2000. Two other auk species, **Razorbill** and **Atlantic Puffin**, showed more modest gains during each half of the period, resulting in increases of 25% and 20%, respectively, over 1970-2000. Counts of our least abundant auk species, the **Black Guillemot**, have changed little since a survey conducted in 1982-91 (+1%). Numbers in the Northern Isles, the core of its UK range, increased by 14%, despite heavy mortality caused by the *Braer* oil spill in 1993 (Mitchell *et al.* 2004).

The **Northern Gannet** has shown a strong recovery from historical persecution, population estimates having increased by 32% during 1970-87 and by 47% during 1987-2000, yielding an increase of 93% over the whole period. **Northern Fulmar** numbers have also increased strongly over the 30-year period (+70%), despite a slight decline (-4%) during 1987-2000, particularly in the more densely populated areas in northern Scotland. No trend data are available for three other petrel species (**Manx Shearwater**, **European Storm-petrel** and **Leach's Storm-petrel**), all of which were counted comprehensively for the first time in 1998-2002. Of around 48,000 pairs of Leach's Storm-petrel counted in Britain and Ireland, 94% were found in just four small islands in the St Kilda archipelago (Mitchell *et al.* 2004).

Two gull species, **Lesser Black-backed Gull** and **Mew (Common) Gull**, also showed strong increases within coastal colonies, of 79% and 67%, respectively. The bulk of the Mew Gull's Scottish population breeds inland, however, as does the **Black-headed Gull**, whose coastal population fell by 62% over the 30-year period. National counts of inland colonies of these species, undertaken for the first time during 1998-2002, will provide a more comprehensive baseline for future surveys.

Two other gull species have shown marked declines. The **Herring Gull** population in Scotland declined by over 50% during the 30-year period, partly as a result of a general decline in commercial fishing, coupled with changes in fishing practices, both of which have contributed towards a reduction in the volume of discards produced. **Black-legged Kittiwake** numbers have also shown a net decline during 1970-2000 (-18%), though relatively stable during the first half of this period. Although kittiwakes are still one of our most abundant seabirds, their breeding success in recent years has been poor, as a result of low sandeel availability in the North Sea, particularly around Shetland. In contrast, **Great Black-backed Gull** numbers have shown little change, declining by only 7% over the 30-year period, despite competing to some degree with the increasing Great Skua population (Mitchell *et al.* 2004).

Three tern species have shown modest net changes, but contrasting trends, over the 30-year period. An initial 58% increase in **Common Tern** numbers during 1970-1987 was followed by a 29% decline, yielding a net increase of 12% over the whole period. **Arctic tern** and **Little Tern** numbers showed similar, strong increases initially, of 53% and 21%, followed by declines of 34% and 11%. In 1980 about 85% of the British and Irish population of the Arctic Tern bred in the Northern Isles, but by 1989 their numbers in Orkney and Shetland had fallen by 42% and 55% respectively (Avery *et al.* 1993). In Shetland, these declines coincided with very low breeding success, associated with a lack of sandeel prey. Declines in the Little Tern population have been attributed, in part, to egg and chick losses to foxes *Vulpes vulpes*, Kestrels *Falco tinnunculus* and other predators (Mitchell *et al.* 2004).

The **Sandwich Tern** population in Scotland has shown a more sustained decline; of 57% over the whole period. The causes of this decline are more difficult to discern, but have been linked to persecution on the species' wintering grounds in NW Africa. Persecution is also thought to have contributed to the decline of the **Roseate Tern** which, having decreased by 67% in Britain and Ireland (by 90% in Scotland) during 1970-2000, is Britain's rarest breeding tern. The dramatic decline in the population in Scotland has been attributed to emigration (to Ireland), as well as to persecution in its wintering grounds. While the decline in its Scottish and UK population continued during 1997-2000, its combined British and Irish population has shown some signs of recovery, increasing by 44% (Mitchell *et al.* 2004).

The **Great Cormorant** population declined by 13% during 1970-1987, but has since recovered, increasing by 21%, to give a net increase of 5% over the whole period. In contrast, **European Shag** numbers showed an initial increase (+17%; 1970-1987) followed by a decline (32%; 1987-2000), resulting in a net reduction in numbers (-21%) over the whole period. In Shetland, which held about 20% of the Scottish population in 1985-88, numbers fell by more than 50% between 1986 and 1999. Populations on the East coast of Scotland also showed a dramatic drop in numbers following the winter of 1993/94.

Sources

This profile has been developed using Lloyd *et al.* (1991), information provided by M.A. Ogilvie and K.R. Thompson, and results from *Seabird 2000*, a collaborative project involving the Joint Nature Conservation Committee, the UK Government's conservation agencies, the Royal Society for the Protection of Birds, the Seabird Group, Shetland Oil Terminal Environmental Advisory Group (SOTEAG), BirdWatch Ireland and the National Parks and Wildlife Service (Dept. of Environment, Heritage and Local Government - Republic of Ireland). A summary of the main findings from *Seabird 2000*, used extensively in the preparation of this profile, is available at:

<http://www.jncc.gov.uk/marine/seabirds/seabird2000/default.htm>.

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This note forms part of the Natural Heritage Trends series, documenting the best information available on rates and directions of change (temporal and spatial) in terrestrial, fresh water and marine environments.

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Annex 1. The number of seabirds counted in Scotland during each national census: *Operation Seafarer* (1969-70), *The Seabird Colony Register* (1985-88), and *Seabird 2000* (1998-2002) (from Mitchell *et al.* 2004).

Species		1969-70	1985-88	1998-2002
Northern Fulmar	<i>Fulmarus glacialis</i>	285,067	504,640	485,852
Manx Shearwater	<i>Puffinus puffinus</i>	-	-	126,545
European Storm-petrel	<i>Hydrobates pelagicus</i>	-	-	21,370
Leach's Storm-petrel	<i>Oceanodroma leucorhoa</i>	-	-	48,047
Northern Gannet ⁱ	<i>Morus bassanus</i>	96,860	127,867	187,363
Great Cormorant	<i>Phalacrocorax carbo</i>	3,438	2,986	3,626
European Shag	<i>P. aristotelis</i>	27,077	31,560	21,487
Arctic Skua	<i>Stercorarius parasiticus</i>	1,039	3,388	2,136
Great Skua	<i>Catharacta skua</i>	3,079	7,645	9,634
Black-headed Gull ⁱⁱ	<i>Larus ridibundus</i>	18,226	9,554	43,191 (6,888)
Mew Gull ⁱⁱ	<i>L. canus</i>	12,229	15,134	48,113 (20,467)
Lesser Black-backed Gull ⁱⁱ	<i>L. fuscus</i>	12,031	19,524	25,057 (21,565)
Herring Gull ⁱⁱ	<i>L. argentatus</i>	159,237	92,950	72,130 (71,659)
Great Black-backed Gull ⁱⁱ	<i>L. marinus</i>	15,950	15,315	14,776 (14,773)
Black-legged Kittiwake	<i>Rissa tridactyla</i>	346,097	359,425	282,213
Sandwich Tern	<i>Sterna sandvicensis</i>	2,465	2,286	1,068
Roseate Tern	<i>S. dougallii</i>	134	18	14
Common Tern	<i>S. hirundo</i>	4,285	6,784	4,784
Arctic Tern	<i>S. paradisaea</i>	46,385	71,178	47,306
Little Tern	<i>S. albifrons</i>	308	373	331
Common Guillemot ⁱⁱⁱ	<i>Uria aalge</i>	519,461	943,098	1,167,841
Razorbill ⁱⁱⁱ	<i>Alca torda</i>	111,038	123,586	139,186
Black Guillemot ⁱⁱⁱ	<i>Cepphus grylle</i>	-	37,172	37,505
Atlantic Puffin	<i>Fratercula arctica</i>	410,011	438,101	493,042

ⁱ Not fully surveyed in 1998/2000. Extrapolated estimates for 1999.

ⁱⁱ Figures for these species in 1969-70 and 1985-88 were for coastal colonies only. In 1998-2002, inland as well as coastal colonies were counted, and are included in the totals for that census. For comparison, figures from coastal colonies are also given (in brackets) for the 1998-2002 census.

ⁱⁱⁱ Figures refer to individuals, not pairs.

Source: JNCC