

Seabird Populations of Britain and Ireland

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EXECUTIVE SUMMARY

INTRODUCTION

Seabird Populations of Britain and Ireland summarises the results of *Seabird 2000* – a census of all seabirds breeding in Britain and Ireland during 1998-2002. *Seabird 2000* was launched on 12 April 1999 by Elliot Morley MP and fieldwork was completed in 2002. Over 1000 surveyors took part and censused 3,200 colonies along 40,000 km of coastline and at 900 inland sites. The project is a partnership between JNCC, the Government's conservation agencies, RSPB, the Seabird Group, Shetland Oil Terminal Environmental Advisory Group (SOTEAG), BirdWatch Ireland and National Parks and Wildlife Service (Dept. of Environment, Heritage and Local Government - Republic of Ireland).

Seabird 2000 followed on from two previous censuses: *Operation Seafarer* in 1969-70 and *The Seabird Colony Register* in 1985-88, thus allowing population trends over 15-30 years to be assessed. In contrast to the previous two censuses, *Seabird 2000* surveyed inland colonies of seabirds, namely Black-headed Gulls, Common Gulls, Lesser Black-backed Gulls, Great Cormorants and Common Terns.

In the book, species experts address the main factors causing change in the population of each species, highlighting any major threats and topics requiring further study.

Seabird Populations of Britain and Ireland is a major contribution to the implementation of the Birds Directive (EC Council Directive on the Conservation of Wild Birds – 79/409/EEC) in the UK and the Republic of Ireland, with over 40% of Special Protection Areas (SPAs) listed because of seabird interest. The book provides an accurate baseline on which to compare future monitoring. For the first time, accurate baseline estimates were obtained for populations of nocturnal species (i.e. petrels and shearwaters) breeding on the remotest of the British Isles.

INTERNATIONAL CONTEXT

Britain and Ireland's seabird populations are an important component of global biodiversity and the British Isles are one of the richest areas in the world for seabirds. Just under 8 million seabirds from 25 species breed in Britain and Ireland, including 90% of the world's Manx Shearwaters, 68% of Northern Gannets and 60% of Great Skuas. This compares strongly with other major seabird centres: Caribbean (1.3 million breeding seabirds from 22 species), Falkland Islands (over 4 million, 22 species), Barents Sea (13 million, 25 species), New Zealand (20 million, 55 species) and Alaska (20 million, 24 species).

That Britain and Ireland host such important seabird populations is due to many reasons, including: 1) an extensive coastline offering a wide spectrum of nesting habitats ranging from high cliffs and offshore islands to dunes and shingle beaches; 2) a rich and diverse marine environment served by deep water and surface currents, which encourage high primary

productivity and associated growth of zooplankton and fish, both major food sources for seabirds; 3) a ready food supply for seabirds at sea in the form of fisheries waste and discards; 4) minimal human exploitation of seabirds and their eggs.

CURRENT STATUS & TRENDS

Numbers of seabirds breeding in Britain and Ireland have risen steadily over the last 30 years from around 5 million in 1969-70, to over 6 million in 1985-88, to almost 8 Million in 1998-2002.

25 species of seabird currently breed in Britain and Ireland, the coastal populations of 13 species have increased in size by more than 10%, three have decreased by more than 10% and five have changed by less than 10% (trends for four species were impossible to assess due to incomplete previous surveys).

The most abundant seabird in Britain and Ireland is the **Common Guillemot**, of which there are 1.6 million, more than double the number in 1969-70. There are around 1.2 million **Atlantic Puffins** breeding in Britain and Ireland, and some colonies on islands along the North Sea coast of Britain have increased substantially in size over the last 15 years. Numbers of **Northern Fulmars** breeding in Britain and Ireland increased throughout most of the 20th century, and there are now 1.1 million breeding birds, 74% more than in 1969-70. However, the total population of Northern Fulmars in Britain and Ireland has changed little since 1985-88 and while numbers continue to increase in some areas, numbers within the densest areas (i.e. in northern Scotland) have declined slightly. **Black-legged Kittiwakes** remain one of the most abundant seabirds in the British Isles, totalling 800,000 breeding birds, but this represents a decline of 23% since 1985-88. This decline is due mainly to successive years of poor breeding success related to low availability of their main food sandeels in the North Sea, particularly around Shetland where the number of breeding Kittiwakes has declined by 69% in the last 15 years.

A major achievement of Seabird 2000 was to survey the nocturnal **European and Leach's Storm-petrels** that nest under ground on the remotest of the British Isles, which due to inherent logistical problems had never been accurately counted before. The nests of both species are hidden away in earth burrows or in rock crevices, under boulders or in stone walls and are therefore extremely difficult to find. Seabird 2000 used a technique called 'tape playback', which relies on the fact that petrels hidden away in burrows will call back to taped recordings of their calls. By counting the number of responses to the taped calls, surveyors could estimate the number of breeding pairs within each colony, without actually having to see any birds. A total of 180 remote and mostly uninhabited islands around the British Isles were visited by Seabird 2000 surveyors.

European Storm-petrels were found breeding on 125 islands, in colonies varying in size from 1-2 pairs to several thousand pairs, the largest being 27,000 pairs on an island in Co. Kerry. The total population in Britain and Ireland was estimated at 125,000 pairs, which represents 3-11% of the world population, although uncertainty about how many exist in their other main strongholds in Iceland and the Faeroe Islands makes it difficult to assess the global importance of the British and Irish populations.

Leach's Storm-petrels were confined to colonies on several islands situated along the Atlantic Frontier of Scotland and on one island in Co. Mayo. All colonies were situated close to the edge of the continental shelf, adjacent to deep oceanic water where Leach's Storm-petrels congregate to feed on plankton brought to the ocean's surface by deep water upwellings. Around 48,000 pairs of Leach's Storm-petrels were found breeding in the British Isles, of which 94% were on just four small islands in the St Kilda archipelago situated 80km west of the Outer Hebrides. The

population in Britain and Ireland represents less than 1% of the world population of Leach's Storm-petrels, which are more numerous in the western Atlantic and in the Pacific, but their relative scarcity in Europe means that they receive special protection under the Birds Directive. But on St Kilda they appear to be under serious threat from predation by **Great Skuas**.

The first comprehensive survey of **Manx Shearwaters** was conducted in Britain and Ireland during Seabird 2000. Population estimates were derived from tape playback surveys and counts of apparently occupied burrows. A total of 40 colonies were surveyed and up to 14 more were thought to be present in Scotland and Ireland but the numbers involved were not thought to be substantial. Of the 332,000 pairs breeding in Britain, 82% were on Rum in NW Scotland and on three adjacent islands off SW Wales. In Ireland, the majority of breeding Manx Shearwaters were in colonies on islands in Co. Kerry, the largest colony of 10,000 pairs was on Inshtooskert.

Only 14 of the 21 **Northern Gannet** colonies in Britain and Ireland were surveyed during Seabird 2000. It was decided to transfer resources to other work (e.g. storm-petrel surveys) since all gannet colonies were surveyed in 1994/95 and a repeat survey is planned for 2004. Colony-specific trends were used to estimate the current size of those colonies not surveyed during Seabird 2000. The total population was estimated at 259,311 pairs.

There has been a 15% increase in the number of **Great Cormorants** nesting in Britain and Ireland since 1985-88, mostly due to an influx of birds from mainland Europe to inland waters in England. In 1985, there was just one inland colony in England numbering 151 pairs, but by 2000, this colony had increased to 370 pairs and there was a total of over 1,300 pairs breeding at 29 inland sites in England. Most of these inland nesters are of the European race *sinsensis*, which characteristically nest in trees; but DNA analysis revealed that some inland nesters are of the British race *carbo*, which more usually nest on small coastal islands and stacks. In contrast to the expanding inland population, the endemic coastal populations have shown substantial declines in parts of north and east Scotland and have remained stable in Ireland. Cormorants inevitably come into conflict with anglers and unfortunately illegal killing cannot be ruled out as a cause of some of the declines.

Numbers of **Arctic Skuas** breeding in Scotland have declined by 37% since 1985-88, while at the same time, numbers of **Great Skuas** have increased by 26% and a pair bred in Ireland for the first time. These contrasting trends are not unconnected: Great Skuas have had a direct negative impact on Arctic Skua numbers by depredate their chicks and by taking over their territories, often killing adult Arctic Skuas in the process. Arctic Skuas feed their chicks on sandeels that they steal from host-species such as Black-legged Kittiwakes and Atlantic Puffins and in Shetland, a reduction in sandeel stocks around Shetland has resulted in low productivity of Arctic Skuas and their hosts. Declines in the size of their host populations as a result of poor productivity and partly due to predation from Great Skua, have further reduced the food available to Arctic Skuas. Great Skuas feed predominantly on fish discarded from trawlers, but as the quantity of fish discarded declined in recent years due to diminishing fish stocks and to measures taken to conserve them, Great Skuas are turning to alternative prey such as other seabird species.

Great Skuas are thought to compete with **Great Black-backed Gulls**, but there is no evidence to suggest that the increase in Great Skua numbers in Northern Scotland is having any widespread detrimental effect on Great Black-back numbers. Indeed, the total number of Great Black-backed gulls breeding in Britain has changed little over the last 30 years; although numbers in Ireland have decreased by 28% since 1985-88. There has been little study of this species in the British Isles so that factors underlying any changes are poorly understood.

During the 1980s and 1990s the number of gulls nesting on rooftops in British towns and cities increased sharply. In 1998-2002, 20,000 pairs of **Herring Gulls** nested on rooftops in Britain, more than double the number during the last survey of urban gulls in 1994. There were also

11,000 pairs of roof-nesting **Lesser Black-backed Gulls** in 1998-2002, which is four times the number in 1994. Rooftops provide safe, predator-free nest sites that are often situated right next to an abundant food source provided by domestic and commercial waste. However, the number of Herring and Lesser Black-backed Gulls nesting on rooftops is a small proportion of the total population that nest mainly on coastal cliff tops, offshore islands and inland, by lakes and on moorland. At these natural sites Herring Gulls are faring much worse than their urban conspecifics – the total population of Herring Gulls breeding in Britain has declined by 50% since 1969-70. Over the last 30 years there has been a general decline in commercial fishing around the British Isles and, combined with changes in fishing practices (i.e. reduced mesh sizes resulting in fewer discards and retention of offal for conversion to fish meal), has led to a reduction in food available to Herring Gulls and other seabirds that scavenge behind trawlers.

In Ireland the decline in **Herring Gull** numbers has been even more dramatic and has occurred mainly in the last 15 years when numbers throughout Ireland declined by 90%. Avian Botulism is thought to be major cause of this decline.

In contrast, numbers of **Lesser Black-backed Gulls** breeding in Britain and Ireland have increased over the last 30 years by 77%. 22% of Lesser Black-backs breed at inland sites, the majority, of which, nest on a Lancashire moor, where numbers have increased from about 8,000 pairs in 1985-88 to around 19,000 pairs in 1998-2002.

Common Gulls in the British Isles nest predominantly in Scotland (97%) and inland (57% of pairs breeding in Britain and Ireland during Seabird 2000), but previous censuses have been confined to coastal colonies. Numbers of coastal-nesting Common Gulls have increased by 65% and 39% since 1969-70 and 1985-88 respectively. However, the distribution of Common gulls nesting throughout Britain and Ireland appears to have constricted over the last 30 years, with the number of OS 10-km squares occupied by breeding Common Gulls having declined by 44% and 32% since the Atlas surveys in 1968-72 and 1988-91 respectively. Formerly the world's largest colony of Common Gulls, a colony in the Grampian Hills that held 24,500 pairs in 1989 became extinct in the late 1990s, but a nearby colony of almost 18,000 pairs changed little in size during the same period.

Black-headed Gulls also nest inland (44% of pairs breeding in Britain and Ireland during Seabird 2000), but are much more widely distributed than Common Gulls. Since 1985-88, Black-headed Gulls have shown contrasting fortunes on different sides of the Irish Sea, with a 6% increase in numbers breeding in Britain, but a 70% decline in Ireland. Declines in numbers breeding inland in England and Wales were offset by an increase in the total number breeding in Scotland. But throughout Britain, their breeding range appears to have constricted markedly over the last the 30 years and the number of OS 10-km squares occupied by breeding Black-headed Gulls has declined by 60% and 50% since the Atlas surveys in 1968-72 and 1988-91 respectively. In Ireland the decline in numbers has been greatest inland and the breeding distribution has constricted by 95% and 77% since the Atlas surveys in 1968-72 and 1988-91 respectively. The decline in Ireland has been attributed to predation by American Mink.

During the last 50 years **Mediterranean Gulls** have been expanding their breeding range from their stronghold in eastern Europe and around the Black Sea, and in 1968 a pair bred in southern England. Up until the late 1980s only a handful of breeding attempts were made by Mediterranean Gulls in Britain, but from then on, numbers breeding each year began to rise sharply and by 1999-2002, there were 108 pairs in Britain, mostly confined to southeast England and a further 5 pairs in Ireland.

Since 1985-88 the numbers of three of the five tern species breeding in Britain and Ireland have declined: **Sandwich Tern** (-11%), **Arctic Tern** (-29%) and **Little Tern** (-25%). The causes of the declines of both Arctic and Little Tern populations are thought to be due to successive years

of poor productivity resulting from different reasons: to a reduced availability of sandeels around Shetland - the main breeding stronghold of Arctic Terns; and to the loss of Little Tern chicks and eggs to predators such as foxes and Kestrels. The causes of the decline in numbers Sandwich Terns are less clear, though persecution on their wintering grounds in northwest Africa may have had an impact. This is also thought to have contributed to a two-thirds reduction in the number of **Roseate Terns** breeding in Britain and Ireland since 1969-70. Now the rarest breeding tern in the British Isles at just 790 pairs, Roseate Terns have increased in numbers slightly over the last 15 years, probably due to the efforts of conservationists on a tiny island near Dublin, where nest boxes have been provided on specially built terraces, which have attracted birds from colonies across the Irish Sea in Britain, where the Roseate Tern is now the rarest breeding seabird at just 52 pairs. **Common Tern** numbers in Britain and Ireland have remained stable over the last 30 years but localised impacts from mammalian predators (e.g. Mink, foxes) and from competition with large gulls (i.e. *Larus spp.*) have resulted in regional variation in population trends. Common Terns have a greater tendency than other tern species to nest inland. The number of inland OS 10-km squares occupied by breeding Common Terns in Britain has declined by 51% since the New Atlas survey in 1988-91.

Black Guillemots were surveyed by counting pre-breeding aggregations of adults close inshore during the first hours of daylight (05.00 – 09.00 BST) during April and early May, prior to laying. The UK total of 39,000 adults was very similar to that from a previous pre-breeding survey of Black Guillemots conducted in 1982-91. Numbers of Black Guillemots in the Northern Isles, the core of the UK range, had increased by 14% despite considerable numbers of adults being killed in Shetland during the *Braer* oil spill in 1993. Elsewhere, population trends varied locally, with colonies on offshore islands, on the whole, having increased in size, whereas those on inshore islands and along parts of NW mainland Scotland had reduced in size or disappeared. The concurrent spread of American Mink into NW Scotland is a possible cause of these declines, since their presence would reduce the amount of safe nesting habitat available to Black Guillemots. The Seabird 2000 pre-breeding survey was the first such survey to be conducted in the Republic of Ireland and recorded a total of 3,367 adults.

CAUSES OF CHANGE

Seabirds are long-lived, delay breeding until they are several years old, display high rates of annual survival of adults but low rates of post-fledging survival. Breeding population size is most affected by factors that influence adult survival rather than breeding success and post-fledgling survival, unless such effects are sustained over several years. Factors causing reduced adult survival include senescence, disease, reduced food availability, predation, hunting/culling and stochastic events such as oil spills and severe storms.

Seabird populations in Britain and Ireland have increased in size over the last century as a direct result of increased protection from hunting and persecution at British and Irish colonies and non-breeding areas overseas.

During the last 15 years two large spills occurred close to the British coast, resulting from oil tanker accidents: the *Braer* (Shetland, January 1993) and *Sea Empress* (Pembrokeshire, February 1996). Thousands of seabirds died but the impact of both spills was far less than if they had occurred during the breeding season, since most species tend to disperse away from the colonies during the non-breeding season. However, two spills recently occurred in the Bay of Biscay within the non-breeding areas of auks from colonies in Britain and Ireland - the *Erika* (Brittany, France, December 1999) and the *Prestige* (Galicia, Spain, November 2002). Both spills killed large numbers of auks, but the majority were immature birds, so that the impact on breeding populations was much less than if the same number of adults were killed. However, the true

impact of this mortality on the breeding colonies in Britain and Ireland will only be evident several years later when these young birds recruit into the breeding population. The very fact that large numbers of seabirds aggregate together to breed makes them very vulnerable to even localised spills should they occur during the breeding season.

Food availability tends to have a much more dramatic effect on breeding success than it does on adult survival. Between 1985 and 1990, the sandeel stock around Shetland collapsed, leading to successive years of breeding failures of Arctic Terns, Arctic Skuas, Great Skuas, Black-legged Kittiwakes and Atlantic Puffins. Since then, sandeel availability and breeding success has fluctuated. As a result of successive years of poor breeding success and subsequently low recruitment, the breeding populations of Arctic Skuas and Black-legged Kittiwakes in Shetland have declined by 42% and 69% respectively since 1985-88, and numbers of Arctic Terns breeding throughout Orkney and Shetland (considered to be one large metapopulation) declined by 41% between 1980 and 2000. Arctic Terns (and all other tern species) and Black-legged kittiwakes feed on fish just below the surface, whereas other piscivorous species can reach food much deeper below the surface by pursuit diving (auks, European Shags and Great Cormorants) or by plunge-diving (Northern Gannets) and so tend to have a greater ability to obtain enough food to raise chicks even when fish stocks are low. However, diving species are by no means immune to the effects of food shortages. For instance, on the Isle of May the breeding success of **European Shags** has been positively correlated with the size of the local sandeel stock and in years of poor sandeel availability up to 60% of the breeding population of shags on the island have deferred breeding. While the British populations of sub-surface feeders have tended to fair better than surface feeders over the last 15-30 years, the European Shag population Britain and Ireland has declined by 25% since 1985-88.

The extent to which fishing has affected the availability of small prey fish like sandeels and in turn, their reliant seabird populations is poorly understood. The collapse of the sandeel stock around Shetland in the mid-1980s was believed to be a result of changes in oceanography rather than any effect of fishing. Most of the sandeel fishing in the North Sea occurs beyond the foraging range of seabirds in UK colonies, apart from around Shetland and over the Wee Bankie, within range of the large seabird colony on the Isle of May. A precautionary ban was imposed on the Shetland fishery in 1990-95 and subsequent catches have been limited to low levels; and a ban has been imposed in the eastern North Sea since 2000, with reopening dependant on Kittiwake breeding success, which has shown some signs of improvement since the ban, whilst that of Common Guillemots and Razorbills in the same area has declined. Clearly further work is required to decipher the complicated relationships between fisheries and seabird populations in order to determine the true impact of future changes in fisheries management.

Commercial fisheries do not always compete with seabirds over fish, and indeed fishing trawlers are an important source of food for some species. As a result of depleted stocks of sandeels around Shetland, Great Skuas became more reliant on scavenging discards from fishing trawlers and their aggressive nature meant that they were able to out-compete other species. Great Black-backed Gulls, Herring Gulls, Northern Fulmars and Northern Gannets also rely on food provided by the fishing industry. However, over the last 30 years there has been a general decline in commercial fishing around the British Isles and, combined with changes in fishing practices (i.e. reduced mesh sizes resulting in fewer discards and retention of offal for conversion to fish meal), has led to a reduction in food available to seabirds, which has been suggested as the cause of a concurrent decline in numbers of Herring Gulls breeding in Britain. The amount of food provided by fishing is set to decline even further in the future following the recent collapse of white fish stocks in the North Sea and is likely to impact on other species that rely on scavenging.

Island refuges of many seabird species are under threat from introduced mammalian predators such as rats, cats and mink. Seabirds nest colonially in dense aggregations that represent abundant food sources for such predators. They avoid predation by nesting in sites such as cliffs, offshore

islands, spits or remote beaches where predators are scarce or absent. The number of predator-free nest sites can limit population size and the colonization or introduction of predators to such sites has resulted in the extirpation of some seabird species. For instance, rat predation has been associated with population declines and extirpation of Manx Shearwaters on Canna and Calf of Man, and of Puffins on Ailsa Craig and Puffin Island, Gwynedd. Furthermore, the distribution of European and Leach's Storm Petrels is confined to islands without rats. Rat eradication projects have been implemented on some islands has resulted in the recolonisation by some seabird species.

American Mink were introduced to Britain and Ireland when they escaped from fur farms and now occupy Lewis, Harris and mainland Scotland as far north as the Great Glen and beyond. Mink are adept swimmers and can easily cross several kilometers of sea to access inshore islands and can decimate the resident colonies of terns, gulls and Black Guillemots. Mink predation has resulted in the decline in population sizes of some species in west Scotland and on inland lochs in Ireland. Mink control has been implemented at key colonies along the west coast of Scotland and these are effective in increasing seabird productivity and preventing extirpation. A five-year project to eradicate mink from the Uists and reduce numbers in Harris is currently being implemented in the Western Isles.

Climate change is likely to impact on seabird populations. The breeding success of some seabird populations in the UK has already been linked to climatic fluctuations in the North Atlantic, such as the North Atlantic Oscillation (NAO). Projected consequences of global warming in UK waters, such as sea level rises, increased storminess and rises in sea/air temperatures are likely to have a direct impact on seabird populations. For instance, rising sea levels may reduce the amount of breeding habitat available for shoreline nesting species such as terns; winter storms can cause large-scale 'wrecks' of seabirds and summer storms can wash whole colonies from cliffs.