

THE UK AND IRELAND SEABIRD MONITORING PROGRAMME – A HISTORY AND INTRODUCTION

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The intimate relationship of Britain and Ireland to their surrounding seas has meant that seabirds have long been a part of the culture of these islands. In historical times (and to a very limited extent in modern times) this relationship was one of exploitation by humans of seabirds as a source of food or feathers. As the necessity to use seabirds for these purposes declined in the 19th century, so the appreciation of their intrinsic value rose. Fears of over-exploitation, particularly as a source for feathers, coupled with evidence of decline at the massive colony of seabirds on Flamborough Head in north-east England, led both to the foundation of the organisation that is now the Royal Society for the Protection of Birds (RSPB) and to some of the first bird conservation legislation. The evidence of decline was based on diminishing harvest returns, and this might be argued as being the first evidence of seabird monitoring in the UK.

Some seabirds are comparatively easy to count at their colonies, and these started to attract the attention of biologists in the early part of the 20th century. Gurney (1913) published on the Northern Gannet *Morus bassanus* population, while Fisher (1952) compiled a massive work on the spread of the Northern Fulmar *Fulmarus glacialis*. Following these leads, Coulson (1963) organised a count of Kittiwake *Rissa tridactyla* colonies in 1959. Such population censuses were widened to include all seabirds in Operation Seafarer in 1969-70 (Cramp *et al.* 1974).

More frequent counts of seabird colonies, or studies of parameters other than population size began in the 1950s. Among the first of these studies was one started on Eynhallow, Orkney by George Dunnet and Robert Carrick of Aberdeen University, and continued by George Dunnet and co-workers (see Dunnet 1991, 1992). This study focussed on various aspects of population ecology including frequency of breeding, breeding success, age of first breeding and longevity. One striking feature of the study is the relative ease with which much of the data could be collected in one or two short trips to the island each year. The power of the data lies in its long-term nature, which reveals trends that are not detectable from short-term studies.

Following Operation Seafarer, it became obvious that Britain and Ireland had some internationally important seabird populations, and it was important to ensure that these populations were healthy. Thus in the early 1970s, a number of schemes to monitor numbers of some species at some colonies commenced. In Shetland, the Institute of Terrestrial Ecology (ITE) established a scheme that was subsequently adopted by Aberdeen University and in Orkney, the then Nature Conservancy Council (NCC) also initiated seabird monitoring. The RSPB established schemes to monitor numbers on some of their reserves and in other important colonies including some on the west coast of Ireland (see Stowe 1982a, b for a review). Most of these schemes produced annual reports and occasional synthesis papers (e.g. Harris & Murray 1981; Heubeck *et al.* 1986).

In the early 1980s, it became clear that a new baseline survey of seabird numbers was required. There was widespread evidence that seabird populations had changed, and in many areas no monitoring programme had been established. In those areas where monitoring had been carried out, there was a need to check that the results were representative of actual population change. Thus the Seabird Colony Register counts of the mid-1980s were initiated. At the same time it was realised that seabird monitoring in Britain and Ireland was not very well co-ordinated and could be better focussed. Thus the NCC, in partnership with other organisations launched a review of seabird monitoring.

An early question that was asked in this review was "Why monitor seabirds?" Four main reasons to monitor emerged:

- a) Intrinsic value of seabirds. Seabirds are now a valued feature of British and Irish coastlines. Members of the public are very concerned about their health as is demonstrated at every major oil spill or mortality incident. Answers are needed to questions on the current status and health of seabird populations; responses using data from counts made several years previously are not usually adequate;
- b) International significance and obligation. Several international conservation measures require that the UK and the Republic of Ireland report on the state of their seabird populations. Most notable among these are the EC Birds Directive (79/EEC/409) and the Ramsar convention;
- c) Impact of potential and real threats to seabirds. There is a need to understand the effects of threats; these might include oil pollution incidents, the arrival of mammalian predators on islands and the impact of local changes in fisheries; and
- d) Indicator of the state of the wider marine environment. Seabirds are one of the more visible components of our marine fauna. As direct monitoring of the state of our seas is difficult some parameters of seabird populations might act as sensitive and easily observed indicators of wider environmental conditions.

A scheme to provide some answers to these questions was required. Such a scheme would draw on current schemes, and in order to be sustainable into the future, should be relatively inexpensive. Expensive and elaborate schemes, being much more susceptible to budget cuts and to changing conservation fashions, should be avoided, and any programme of work that aimed to understand long-lived animals such as seabirds also needed to be long-term.

In order to bring together existing seabird schemes and make recommendations for the future, the ITE (Mike Harris) was commissioned to review the objectives and methods of current schemes. Broad recommendations of the review included:

- a) a switch to a monitoring scheme working at two levels: a set of four or five "key sites" spread geographically around Britain, complemented by a wider voluntary scheme at as many other colonies as possible. The key sites were Skomer (west Wales), the Isle of May (east Scotland), Fair Isle (Northern Isles) and Canna/Rum/St. Kilda (west Scotland). Owing to their tendency to change breeding locations between years, term monitoring would aim to cover as many colonies as possible each year;
- b) a change in emphasis to monitoring breeding performance rather than numbers. Breeding performance is relatively easy to monitor in several species and is more likely to be responsive to immediate changes in the environment than are numbers of birds. This is due to the buffered nature of seabird populations, with long periods of immaturity and the capacity to refrain from breeding in some years;
- c) standardisation of methods, both of counting and of selection of plots (in order to achieve a more representative sample within colonies). The initial methods suggested by the ITE report were eventually revised and enlarged upon to eventually comprise a manual of standard monitoring methods (Walsh *et al.* 1995b); and
- d) greater co-ordination of activities. A post should be created (and subsequently was by the Joint Nature Conservation Committee, JNCC) to co-ordinate activities and produce an annual seabird monitoring report. This report should include in a standard format the monitoring work organised by RSPB, JNCC and the Shetland Oil Terminal Environmental Advisory Group.

The most visible output from the now well-established Seabird Monitoring Programme (SMP) has been the annual report (Walsh *et al.*, 1990, 1991, 1992, 1993, 1994, 1995a; Thompson *et al.* 1996, 1997, 1998, 1999; Upton *et al.* 2000). The current volume of papers illustrates some of the other products of the work. However, it is reasonable to ask whether we are now in a better position to answer the questions posed earlier. Information requests about seabird populations at colonies are received by the JNCC at a rate of about one per week. We could not have answered these as confidently without the SMP. We have been able to answer questions on the effects of major oil spills (most

notably the *Sea Empress* spill, and more recently that from the *Erika* off Brittany), and trends of seabird populations in areas affected by spills have been compared before and after the event. In an international context, we have been able to meet our reporting obligations, sometimes with acclamation from other nations. Finally, we have been able to identify adverse trends in seabird population parameters, and in some cases attempt to ensure, by managing human activities in the relevant areas, that such trends are not exacerbated. One such case has been off the east coast of Scotland where there have been a series of years of poor Kittiwake breeding success. The possibility that this was caused by reduced availability the birds' main food, sandeels *Ammodytes* spp., consequently prompted the closure by the European Union of the sandeel fishery near these colonies. Such management would not have been possible without the information generated by the SMP.

One of the more unexpected indicators of success is that the scheme (in particular the monitoring methods manual and the annual reports) is being copied elsewhere in the world. Examples include Alaska (Byrd *et al.* 1998), California, Seychelles and possibly in future the Gulf of Mexico.

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The SMP owes a vast debt of gratitude to all of the volunteer counters who undertake the work at colonies across Britain and Ireland. All contributors are individually acknowledged in the annual reports. Paul Walsh and Kate Thompson have co-ordinated the programme for JNCC, Mark Avery, Jane Sears, Emma Brindley and Georgina Pickerell for the RSPB, and Martin Heubeck and his team have performed wonders in Shetland.

SAMENVATTING

HET BRITSE EN IERSE ZEEVOGEL MONITORINGPROGRAMMA: EEN INLEIDING MET EEN OVERZICHT VAN DE RECENTE HISTORIE

*Vanwege de relatieve eenvoud waarmee sommige zeevogels in kolonies zijn te tellen trokken ze de aandacht van biologen in het begin van de 20^e eeuw. Gurney (1913) publiceerde over de aantallen broedende Jan-van-genten *Morus bassanus* op de Britse Eilanden en Fisher (1952) stelde een uitgebreid overzicht samen van de zich rap uitbreidende populatie Noordse Stormvogels *Fulmarus glacialis* in het Noordoost-Atlantische gebied. In navolging daarop organiseerde Coulson (1963) een telling van alle kolonies Drieteenmeeuwen *Rissa tridactyla*. Het duurde vervolgens tot het einde van de jaren zestig (1969-70) voordat poging tot een integrale telling van alle zeevogelkolonies werd ondernomen (Operation Seafarer; Cramp *et al.* 1974). In de jaren vijftig werden ook de eerste programma's opgezet om naast het aantal broedvogels ook andere belangrijke variabelen te meten, zoals legselgrootte en broedsucces, jaarlijkse overleving, plaatstrouw en activiteit (bijvoorbeeld*

Dunnet 1991, 1992). *Begin jaren tachtig groeide de overtuiging dat de Britse zeevogelpopulatie dringend aan een nieuwe inventarisatie toe was. Dit resulteerde in de oprichting van het Seabird Colony Register, waarbij delen van de populatie zodanig beschreven werden dat overgegaan kon worden tot een meer permanente monitoring en waarbij zg. study plots werden ingesteld. De meest tastbare resultaten van het nieuwe zeevogelmonitorsysteem zijn de jaarverslagen (Walsh et al., 1990, 1991, 1992, 1993, 1994, 1995a; Thompson et al. 1996, 1997, 1998, 1999; Upton et al. 2000), alsmede een aantal publicaties in de nu voorliggende bundel artikelen. Vergelijkbare programma's zijn inmiddels opgezet in Alaska, California, de Seychellen en misschien in de toekomst in de Golf van Mexico.*

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