

Northern Ireland Seabird Report 2015





Northern Ireland Seabird Report 2015

NI Seabird Steering Group

Dave Allen (Allen & Mellon Environmental)
Kendrew Colhoun (RSPB)
Kerry Leonard (BTO)
Neil McCulloch (NIEA)
Andrew Upton (National Trust)
Shane Wolsey (BTO)

Report editors

Kerry Leonard and Shane Wolsey

This report is the published outcome of the work of the Northern Ireland Seabird Network – a network of volunteers, researchers and organisations – coordinated by the BTO Seabird Coordinator, and funded by NIEA.

British Trust for Ornithology
The Nunnery
Thetford
Norfolk
IP24 2PU
www.bto.org
info@bto.org
+44 (0) 1842 750050

Registered Charity No.216652 (England & Wales) No.SC039193 (Scotland).
Company Limited by Guarantee No. 357284 (England & Wales)

February 2016 ©British Trust for Ornithology & Northern Ireland Environment Agency

ISBN 978-1-908581-63-1



All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

Contents

Editorial..... 3

Seabird Monitoring Overview 4

Breeding Seabirds in Northern Ireland in 2015 *Kerry Leonard*..... 6

Strangford Lough Nesting Bird Report 2015 *Hugh Thurgate* 32

Lower Lough Erne Islands RSPB Nature Reserve Seabird Report 2015 *Brad Robson* 35

Tern Colony Recovery at Green Island, Carlingford Lough, Northern Ireland *Matthew Tickner & Shane Wolsey*..... 37

The Rathlin West Ligh Seabird Centre *Alison McFaul & Amy Colvin*..... 42

Movements of Herring Gulls Breeding on the Copeland Islands During the Breeding Season *Phil Atkinson et al.* .. 44

Acknowledgements..... 47

Appendix – The Seabird Coordinator Role..... 48



LUKE MCCLEAN

Editorial

This is the third edition of the Northern Ireland Seabird Report, covering 2015. This report is the published outcome of the work of the British Trust for Ornithology (BTO) Seabird Coordinator, appointed in February 2013, and the activities of the evolving Northern Ireland Seabird Network of volunteers, and organisations such as National Trust, Ulster Wildlife and the RSPB that have provided data for 2015 and previous years.

At the core of the Seabird Network in Northern Ireland are our surveyors, some of whom work for government bodies such as NIEA, while others survey on behalf of NGOs such as RSPB, Ulster Wildlife and the National Trust. We are grateful for their co-operation and assistance. Many other surveyors are volunteers who give up their time freely to help, simply because of a love and admiration of these bird species. The amount and quality of work that can be undertaken by volunteers is amazing, and in 2015 we have been fortunate that many enthusiastic and talented people are part of the NI Seabird Network. This Network now numbers more than 60 people, a great achievement when there were only 20 people in Northern Ireland surveying seabirds just three years ago.

The report on breeding seabirds in Northern Ireland during 2015 presented here is similar to 2013 and 2014. We have kept the detail from previous years, even where data have changed little since our last report. It is important that this report represents a summary of current species knowledge, and that reference to other, earlier, reports is not necessary. In this we are taking a similar stance to JNCC and their online SMP report and this is doubtless the best way to present such a report.

As in previous years a number of articles have been submitted for inclusion in the Northern Ireland Seabird Report. These articles provide further detail on the monitoring in Northern Ireland, and highlight some of the exciting seabird research being undertaken. We are very grateful to the authors for giving their time to produce these articles.

We would like to thank everyone who has contributed to this report and to encourage more people to join the Seabird Network and contribute to future reports. Naturally a summary such as this does not reference all data collected but it is all of real value in understanding our local seabirds. A report such as this is only as robust as the data, as we are aware, so if you have seabird population data, either recent or historic, then please share it with us, and JNCC, for the benefit of seabirds in Northern Ireland.

Shane Wolsey
BTO NI Officer

February 2016

Kerry Leonard
BTO NI Seabird Coordinator



Seabird Monitoring Overview

Seabird colony censuses in the UK and Ireland

There have been three full national seabird censuses covering the UK and Ireland. The first, Operation Seafarer, was conducted by the then recently formed Seabird Group. More than 1,000 surveyors took part. The results were summarised in Cramp *et al.* (1974) *The Seabirds of Britain and Ireland*. Operation Seafarer was a major achievement and provided the first comprehensive and detailed account of the abundance and distribution of seabirds in the UK and Ireland. However, Operation Seafarer also highlighted major problems in accurately counting some species, namely Storm Petrels *Hydrobates pelagicus* and Leach's Storm Petrels *Oceanodroma leucorhoa*, Manx Shearwaters *Puffinus puffinus*, Razorbills *Alca torda*, Common Guillemots *Uria aalga*, Black Guillemots *Cepphus grylle* and Atlantic Puffins *Fratercula arctica*.

In 1984 the Seabird Group and the Nature Conservancy Council established the Seabird Colony Register, a database that would serve as a single source of information on breeding seabirds in the UK and Ireland. The second census (also known as the Seabird Colony Register) was instigated as part of the establishment of the Seabird Colony Register. Most fieldwork was carried out during 1985–88. The results were published in Lloyd *et al.* (1991) *The Status of Seabirds in Britain and Ireland*. The Seabird Colony Register provided the first assessment of nationwide trends since Operation Seafarer.

Recently developed survey techniques provided more reliable baseline estimates for Common Guillemot, Razorbill and Black Guillemot and served as the foundation for future monitoring of seabird populations. Crucially it also allowed the national importance of individual colonies to be compared, and for sites to be designated as Special Protection Areas. A legacy of the Seabird Colony Register was the establishment of the Seabird Monitoring Programme (see below).

The third national census was Seabird 2000, the most ambitious survey to date. Fieldwork was carried out from 1998 to 2002. Seabird 2000 provided population estimates for the 25 species of seabird which regularly breed in the UK and Ireland. Coverage was as comprehensive and complete as possible. The updated estimates allow the identification of new, and monitoring of existing, protected sites, and provided updated national trends. Crucially Seabird 2000 used recently developed playback techniques to, for the first time, provide reliable baseline estimates for petrel and shearwater populations. The results were published in Mitchell *et al.* (2004) *Seabird Populations of Britain and Ireland*.

It is planned to have the fourth national census between 2016 and 2020, subject to funding. The continued support of the seabird surveying network in Northern Ireland who have contributed to this report will be vital.

The National Seabird Monitoring Programme

Since 1986 the majority of annual seabird surveillance in the UK has been undertaken as part of the Seabird Monitoring Programme¹ (SMP) coordinated by the Joint Nature Conservation Committee (JNCC). The programme is a partnership of stakeholder organisations throughout the UK, including amongst others, the BTO, RSPB, The Seabird Group and the statutory country agencies. In order to examine trends at individual colonies, at country level and across the whole UK, it is essential that individual sites can be monitored consistently for many years. Data are gathered in a consistent manner using standard published methods (Walsh *et al.* 1995), and entered into a central database (<http://jncc.defra.gov.uk/smp/>). The SMP gathers data relating to:

1. breeding abundance index – the number of breeding pairs or individuals, which is a medium to long term measure of how populations are faring; and
2. breeding success/productivity – the number of chicks fledged per breeding pair and is regarded as short term or more immediate measure of the population

The SMP generates annual population indices which are expressed as a percentage of the population recorded at sites in 1986 when standardised monitoring began (JNCC 2015). Where possible trends are given at the scale of the UK or country level, but where coverage is only possible at individual sites, the indices are shown with respects to the site level. The SMP is a vital programme for monitoring seabird populations between the full national censuses.

Why Monitor Seabirds?

The SMP enables its partners to monitor the health of the marine environment and inform seabird conservation issues. Monitoring seabirds is important for a number of reasons:

- seabirds are an important component of marine biodiversity in the UK with approximately seven million individuals breeding;
- seabirds are top predators and a useful indicator of the state of marine ecosystems;
- human activities impact upon seabirds, both positively and negatively and these effects should be monitored;
- the UK is internationally important for seabirds;

¹<http://jncc.defra.gov.uk/page-1550>

- seabirds are protected by European law and the UK has obligations to monitor and protect populations; and
- monitoring provides data which underpin targeted conservation policy development and action.

The Northern Ireland Seabird Co-ordinator Role

In 2013 a three year post, the 'Northern Ireland Seabird Coordinator', funded by the Northern Ireland Environment Agency (NIEA), was created by the BTO. The main aim of the Seabird Coordinator is to facilitate an increase in annual seabird monitoring across Northern Ireland. The Coordinator works closely with JNCC and has created a definitive register of Northern Ireland sites, compiled an annual report on the state of seabird populations (this report), and coordinated monitoring and research in Northern Ireland. At the outset a Seabird Steering Group was formed to advise on the development of the Northern Ireland Strategy for Seabird Monitoring (a five-year plan ending 2018), and to advise on the evolution of a Northern Ireland wide group of volunteers and the programme of activities that the Seabird Coordinator is undertaking. A network of seabird surveyors and researchers in Northern Ireland has been created through the work of the Coordinator (the NI Seabird Network). More detailed information relating to the aims of the Seabird Coordinator is available in the Appendix. The Northern Ireland Strategy for Seabird Monitoring

The Northern Ireland Strategy for Seabird Monitoring

Current annual breeding population and productivity monitoring in Northern Ireland has concentrated on a small number of important sites, and has been carried out by local and national NGOs. The strategy provides the context and sets minimum requirements for the annual monitoring of breeding seabirds in Northern Ireland to facilitate effective management of this natural resource.

The strategy focuses on the monitoring of populations and productivity in Northern Ireland while also facilitating further detailed studies of those populations. The main objectives are:

- to identify priorities for seabird monitoring in Northern Ireland;
- to identify priorities for seabird research in Northern Ireland;
- to gather data which will assist NIEA and conservation NGOs in managing protected seabird species and habitats;
- to increase the number of seabird breeding sites monitored annually; and
- to increase the number of people involved in seabird monitoring in Northern Ireland.

The Northern Ireland Site Register

During 2013 a full register of all known, possible or potential seabird nesting sites, which is consistent with the SMP site register, was created. In reality this means that every part of the Northern Ireland coastline now has a recording section. All known inland sites are also listed. Due to legacy issues from historical record keeping, and the way data are held in the JNCC database, Black Guillemots have their own site register.

Breeding Seabirds in Northern Ireland in 2015

Kerry Leonard
BTO NI Seabird Co-ordinator

The following species accounts summarise the known status of each breeding seabird species in Northern Ireland. Those species accounts which follow also provide a summary of population trends at the main breeding sites, where data exists. These data were collected by a large number of volunteers and site wardens across Northern Ireland and a list of those contributors is given at the end of this report. Many other people have contributed records from the 1960s onwards, when concerted monitoring began for some species, and without that recording we would not be able to generate these population graphs and tables.

Table 1 Seabird species breeding in Northern Ireland

Species	NI **** Priority	BoCCI Status*	UK BOCC**
Northern Fulmar	N	GREEN	AMBER
Manx Shearwater	N	AMBER	AMBER
European Storm Petrel***	N	AMBER	AMBER
Great Cormorant	N	AMBER	GREEN
European Shag	N	AMBER	RED
Great Skua	N	AMBER	AMBER
Black-legged Kittiwake	N	AMBER	RED
Black-headed Gull	Y	RED	AMBER
Mediterranean Gull	N	AMBER	AMBER
Common Gull	N	AMBER	AMBER
Lesser Black-backed Gull	N	AMBER	AMBER
Herring Gull	Y	RED	RED
Great Black-backed Gull	N	AMBER	AMBER
Little Tern***	Y	AMBER	AMBER
Sandwich Tern	N	AMBER	AMBER
Common Tern	N	AMBER	AMBER
Roseate Tern	Y	AMBER	RED
Arctic Tern	N	AMBER	AMBER
Common Guillemot	N	AMBER	AMBER
Razorbill	N	AMBER	AMBER
Black Guillemot	N	AMBER	AMBER
Atlantic Puffin	N	AMBER	AMBER

* Birds of Conservation Concern in Ireland 3 (Colhoun & Cummins 2013)

** UK Birds of Conservation Concern 4 (Eaton *et al.* 2015)

*** Not currently breeding, historical only

**** NI Priority² species are those identified during the preparation of the NI Biodiversity Strategy (2002) and subsequently, using criteria set out by stakeholders.

In Northern Ireland the All Ireland Birds of Conservation Concern list is that used for flagging species conservation issues. Table 1 above has only one 'Green' species in the BoCCI column, compared to four 'Green' species in the same column in the 2013 Northern Ireland Seabird Report (Leonard 2014). A 2013 reassessment of the Birds of Conservation Concern in Ireland moved Great Cormorant, European Shag and Atlantic Puffin from 'Green' to 'Amber' – a higher concern status (Colhoun & Cummins 2013).

There are some notable difference between the All-Ireland list and the recently published UK Birds of Conservation Concern (Eaton *et al.* 2015). In particular, European Shag, Black-legged Kittiwake and Roseate Tern are in the UK Red list, with the first two species being new additions in 2015. The European Shag is stable in Northern Ireland. Populations of Black-legged Kittiwakes have remained stable or declined at a lower rate than the rest of the UK (Leonard 2015a). The Roseate Tern is not red listed in Ireland because the largest European colony is at Rockabill in Dublin (Leonard 2015a).

Species accounts are structured as follows:

Overview – brief summary of the main breeding sites for the species in Northern Ireland.

Breeding numbers – a summary of current knowledge on breeding numbers in Northern Ireland, with historical trends where data are available, and comparison with UK populations and trends. The latest available trends are for 2014 (JNCC 2015).

Breeding success – a summary of current knowledge on breeding success in Northern Ireland, with historical trends where data are available, and comparison with UK populations and trends.

Surveying methods

Seabird surveys in the UK and Ireland are undertaken using a standard set of survey guidelines for each species (Walsh *et al.* 1995). These guidelines specify the timing and count unit to be used when surveying any seabird colony in the UK and Ireland. Tables 2 and 3 briefly outline the survey units used and methods for each species under consideration in Northern Ireland. For further information please refer to Walsh *et al.* (1995).

Table 2 Seabird survey units of abundance

Unit	Abbreviation	Description
Apparently Occupied Nest	AON	An active nest occupied by a bird, pair of birds, or with eggs or chicks present.
Apparently Occupied Site	AOS	An active site occupied by a bird, pair of birds, or with eggs or chicks present. Used for species without obvious nests such as Northern Fulmar.
Apparently Occupied Burrow	AOB	An apparently active and occupied burrow which may have a nest.
Individuals	Ind	Individual birds.

Table 3 Seabird survey methods

Species	Unit	Notes
Northern Fulmar	AOS	Count between 09.00 and 17.30, and 15th May to 5th July. Apparently occupied sites are those ledges suitable for nesting with a bird present.
Manx Shearwater	AOB	Late May to mid-June. Survey using tape playback between 09.00 and 17.00.
Great Cormorant	AON	Count period 15th May to 25th June.
European Shag	AON	Count period 1st May to 25th June.
Great Skua	AOT	Count period late May-June.
Black-legged Kittiwake	AON	Count late May to mid-June. Only count completed nests with at least one adult attending.
All gull species	AON Ind	Count late May to mid-June. Counts of adults on nests, or transects to count nests. Alternatively flush counts of individual adults.
All tern species	AON Ind	Count mid-June. Counts of adults on nests, or transects to count nests. Alternatively flush counts of individual adults.
Common Guillemot	Ind	Count between 08.00 and 16.00, and from 1st – 21st June. Birds on tidal rocks or sea excluded.
Razorbill	Ind	Count between 08.00 and 16.00, and from 1st – 21st June. Birds on tidal rocks or sea excluded.
Black Guillemot	Ind	Count between 05.00 and 09.00, and from 26th March to 15th May.
Atlantic Puffin	Ind	Count period April/May or peak numbers at any stage of season. Evening or early morning visits will produce highest counts. Birds on the sea within 200m are counted.

Northern Fulmar *Fulmarus glacialis*

EC Birds Directive – migratory species

Green listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Northern Fulmars (Fulmars) are one of the commonest seabirds in Britain and adult birds are present in UK waters all year round. Their food comes from a wide variety of sources including zooplankton, fish and fishing discards. An increase in the use of commercial discards has been cited as one of the reasons for a massive increase in breeding range and population size across the North Atlantic in the 20th century (Mitchell *et al.* 2004). Fulmars nest in loose colonies and can utilise relatively small cliff faces, sometimes several miles inland.

In Northern Ireland, Fulmars are a widespread breeding species, with the most important site being at Rathlin Island. Other sites are Downhill, Binevanagh, The Gobbins and Muck Island. Small numbers are scattered the whole way round the coast where suitable cliff habitat occurs.

Breeding numbers

Long-term data are available for The Gobbins, Muck Island and Rathlin Island (Figures 1, 2 & 3) although not on an annual basis. For other sites a comparison can be made between Seabird 2000 counts and 2013–2015 counts (Table 4). The Gobbins held 201 AOS in 2015 and Muck Island 52 AOS. Rathlin Island was not counted over the period of 2013–2015. The UK population increased by approximately 77% and the Northern Ireland population by 58% between the 1969–1970 and 1985–1988 censuses. Across the UK the Fulmar population then decreased by 3% between 1985–1988 and 1998–2002, while the population in Northern Ireland increased by another 69% (JNCC 2015). Since that date numbers in Northern Ireland have generally decreased (Table 4), a trend also seen across the UK for the breeding abundance index (JNCC 2015). If The Gobbins and Muck Island are excluded from Table 4, the decrease at other sites is 84%.

The species has suffered a near terminal decline on the East Antrim Coast with a reduction of 73% in the last 15 years. A large count of 344 birds was obtained at Downhill-Mid in 2014, but only 73 in 2015. The reason for this is unclear but may have been due to a large number of young non-breeding birds visiting ledges in 2014 but not 2015; in the years after 2000, numbers were not as high as during Seabird 2000 (Ian Enlander *pers. comm.*). Regular monitoring of study plots at The Gobbins in 2014/15 showed large variations in numbers of birds attending ledges during the season with presumably pre- and non-breeding individuals involved in these visitations. This yet again highlights the care which must be taken when monitoring seabird populations using just one or two annual counts, and in particular for one off periodic seabird censuses.

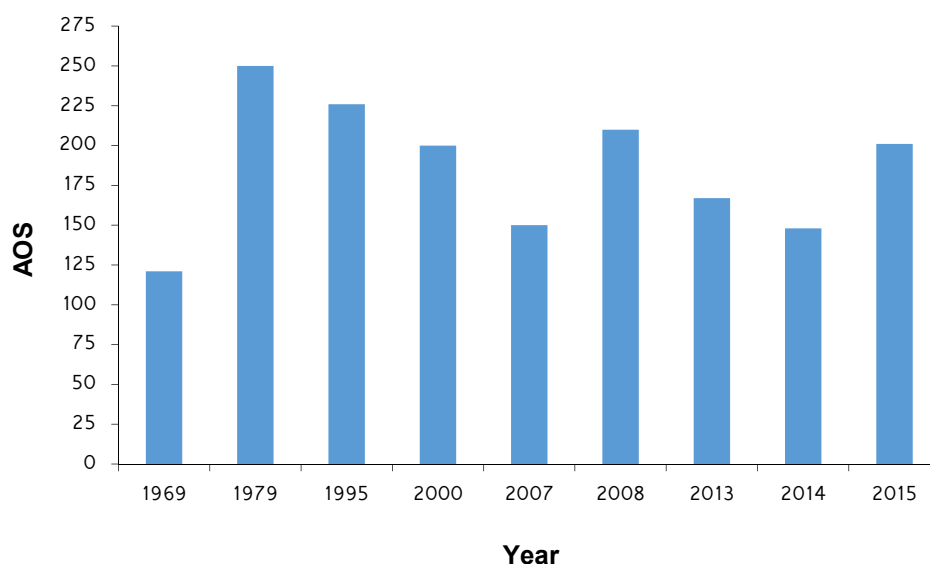


Figure 1 Northern Fulmars at The Gobbins 1969–2015

Table 4 Northern Fulmar numbers at sites surveyed in 2000, 2013 and 2014

Master Site	Site	Seabird 2000 AOS	2013 AOS	2014 AOS	2015 AOS	%Change 2000-2015
Downhill	Downhill East	17	13	9	8	-47
Downhill	Umbr	58	15	5	0	-100
Downhill	Downhill West	296	91	31	18	-94
Downhill	Downhill-Mid	299	NC	344	73	-76
North Antrim Coast	Portrush sites 1-4	57	26	30	16	-72
Whitehead	Whitehead 1	25	3	6	3	-88
Blackhead	Blackhead 1	39	4	3	3	-93
East Antrim Coast	Ballygalley Head	9	4	6	3	-66.6
East Antrim Coast	Sugarloaf Hill	0	0	0	0	0
East Antrim Coast	Whitebay	10	8	7	6	-40
East Antrim Coast	Park Head	25	14	16	13	-48
East Antrim Coast	Galboly	4	3	2	0	-100
East Antrim Coast	Crearlargh	11	7	4	3	-73
East Antrim Coast	Caranure	68	7	2	0	-100
East Antrim Coast	Carrievemurphy	8	0	0	0	-100
East Antrim Coast	Portmuck	0	NC	2	2	+100
The Gobbins	The Gobbins	200	167	148	201	+0.005
Muck Island	Muck Island	52	35	37	52	0
Total for these sites		1,178	397	652	401	-66

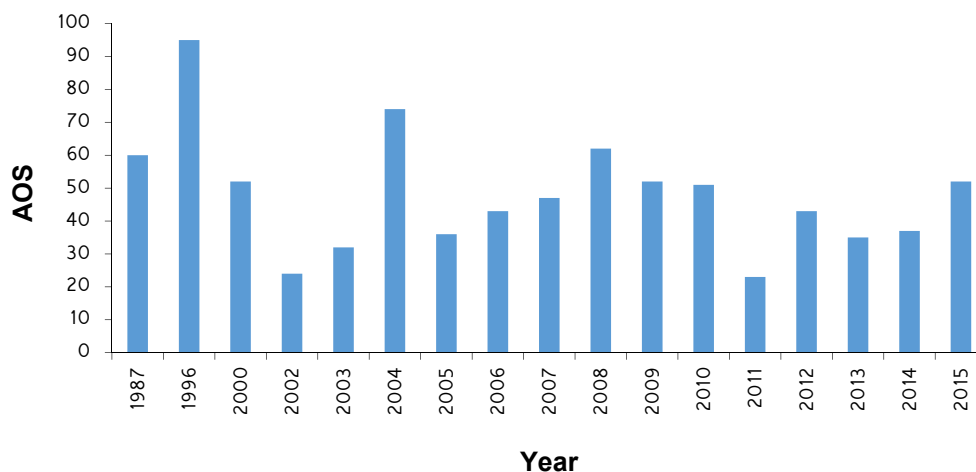


Figure 2 Northern Fulmars at Muck Island 1987-2015

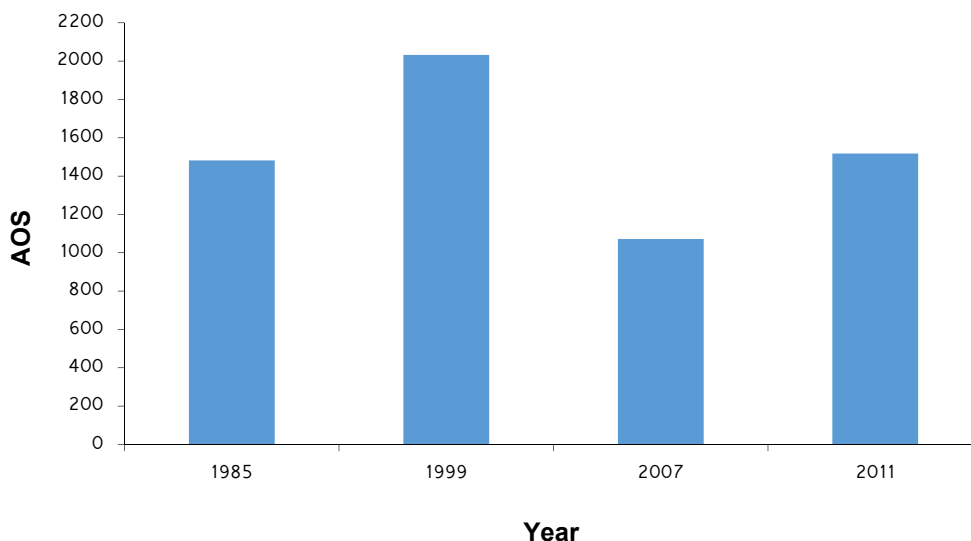


Figure 3 Northern Fulmars on Rathlin 1985-2011

Breeding success

Breeding success data were collected for The Gobbins (0.45 chicks/AOS, the same as 2014), Portmuck (1 chick/AOS) and Muck Island (0.31 chicks/AOS). The Gobbins breeding success is similar to the current UK average, but with Muck Island being below the UK average of 0.39 for the period 1986–2008 (JNCC 2015). The reason for this difference is unknown but it is possible that predation plays a part. Muck Island has a significant rat population that may be impacting Fulmar productivity and the number of breeding pairs. The majority of Fulmars nest along the top of the cliff and their ledges are very accessible from above so could be easily predated.

At the UK level, the annual productivity index has been steadily decreasing since 1986 (JNCC 2015). Analysis of the SMP dataset by Cook and Robinson (2010) found that mean breeding success of Fulmars was 0.39 and had declined at a rate of 0.005 chicks per nest per year between 1986 and 2008. This equates to a decline in breeding success of 11%. Using available life history information (population size, clutch size, age at first breeding and survival rates of different age classes), Cook and Robinson (2010) predicted that the UK Fulmar population would decline by about 12% over 25 years.

Manx Shearwater *Puffinus puffinus*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Manx Shearwaters are a highly pelagic species and spend most of the year at sea. They nest in burrows, only coming ashore under the cover of darkness to avoid avian predators. Manx Shearwaters became extinct from the eponymous colony on the Calf of Man during the 18th century, probably due to Brown Rat *Rattus norvegicus* predation (Mitchell *et al.* 2004). A rat eradication programme took place in 2012 to make the island more suitable for this species and a record number of occupied burrows were recorded in 2014 (Kate Hawkins *pers. comm.*). The largest colony in the world is on the island of Skomer in Wales. Formerly thought to hold around 100,000 AOB at the turn of the century (Smith *et al.* 2001), a new survey in 2011 suggested that the population was approximately 316,000 AOB (Perrins *et al.* 2012). The breeding population of Manx Shearwater was only comprehensively surveyed for the first time during Seabird 2000 (Mitchell *et al.* 2004).

The only confirmed extant colony in Northern Ireland is on the Copeland Islands, where there are birds on old Lighthouse Island and Big Copeland. Rathlin Island formerly held a colony of unknown size (Brook 1990) but the species has not been confirmed breeding for many years (Liam McFaul *pers. comm.*) and surveys for Seabird 2000 did not detect any birds (Mitchell *et al.* 2004). Deane (1954) estimated 150 AOB on Rathlin but the Operation Seafarer figure was 1,000–10,000 AOB (Mitchell *et al.* 2004). The inaccessibility of the cliffs and the cryptic nature of the species make these estimates unreliable. All that is certain is that a huge decline has occurred on the island, probably to extinction.

Breeding numbers

The Copeland Islands were last surveyed in 2007 (Stewart & Leonard 2007). At that time there were approximately 4,850 AOB – 3,444 AOB on Lighthouse Island and 1,406 AOB on Big Copeland. This was approximately a 5.3% increase on the previous survey in 2000. However, the previous (2000) survey result was within confidence limits of the 2007 population estimate and it is likely there was little change between 2000 and 2007. It is estimated that the colony is now 8–10 times larger than it was in the 1950s. The presence of Rabbits *Oryctolagus cuniculus* on Mew for the last 15 years means it might be expected the species breeds on that island now due to the creation of suitable nesting burrows. Surveys have not been carried out over the period 2008–2015 on the Copeland Islands due to the labour intensive and costly monitoring which would be required. For similar reasons there is little information available from which to derive UK or country level population trends since Seabird 2000 (JNCC 2015).

Breeding success

Breeding success was monitored on Lighthouse Island by Copeland Bird Observatory between 2007 and 2013, using study burrows. These consist of natural burrows which are excavated outside the breeding season and a concrete slab placed over the nesting chamber to allow easy access. In the seven years of monitoring, breeding success on Copeland has been within the range of other sites, see Table 5, although extremely wet weather in 2007 resulted in a success rate of just 0.38 chicks per pair. Breeding success data for Manx Shearwaters are only collected at six sites across the whole of the UK and consequently there are no UK or country level productivity indices. (JNCC 2015). On Rum, in Scotland, the average is approximately 0.70 chicks/pair. On Bardsey and Skomer, in Wales, breeding success varies from 0.55 to 0.80 chicks per pair, though success on Bardsey is higher. If a Manx Shearwater chick hatches the chance of successful fledging is high with most losses during incubation (*pers. obs.*).

Table 5 Manx Shearwater productivity at Copeland Bird Observatory

Year	Nests sampled	Chicks hatched per pair	Chicks fledged per pair
2007	71	Not recorded	0.38
2008	67	0.70	0.67
2009	76	0.83	0.82
2010	65	0.88	0.88
2011	60	0.86	0.86
2012	50	0.78	0.76
2013	54	0.82	0.80

European Storm Petrel *Hydrobates pelagicus*

EC Birds Directive – listed in Annex 1 and as a migratory species

Amber listed in the Birds of Conservation Concern Ireland 3 (2014–2019)

Overview

European Storm Petrels are highly pelagic, only returning to land to breed. The breeding population of European Storm Petrel was only comprehensively surveyed for the first time during Seabird 2000 (Mitchell *et al.* 2004). Due to the labour intensive and costly monitoring which would be required, there is little information available from which to derive UK or country level population trends since Seabird 2000 (JNCC 2015). For similar reasons, there is a lack of annual data collected on productivity. The species has no known breeding sites in Northern Ireland. Ussher and Warren (1900) reported that in relation to breeding in Ireland ‘two small islands off the north coast of Antrim are also resorted to’. Deane (1954) reported up to a dozen pairs on Sheep Island, Antrim, but the species is considered unlikely to be still there. It may be present on Rathlin Island but no surveys have been conducted recently. The nearest colony is on Sanda Island, Scotland which is just 37 km to the east. The Skerries, off Portrush, are another potential breeding site. A survey of these locations is long overdue.

Great Cormorant *Phalacrocorax carbo*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Great Cormorants (Cormorant) are a widespread breeding species, often found in dense colonies. In England increasing numbers of Cormorants breed inland, in trees, but this is a trend that has not yet been seen in Northern Ireland. In Northern Ireland, Cormorants have, historically, principally bred at two sites – Sheep Island and Bird Island (Strangford Lough). In 2010 the Sheep Island colony split with some birds moving to The Skerries. Smaller numbers are found at The Gobbins and Burial Island on the outer Ards Peninsula, although the latter site is not monitored annually.

Breeding numbers

Long-term annual data dating back to 1986 are available for Bird Island, Strangford Lough, where numbers increased erratically until 2005, to a peak of 490 AON (Figure 4). Since then numbers have fallen back to 245 AON in 2015, a 21% decline from 2014. The colony at Sheep Island has fluctuated in numbers annually but shows an overall decrease since 1985 (380 AON) to just 66 AON in 2015. The colony at The Skerries, which held 64 AON in 2015, has been monitored since numbers started to increase (Ian Enlander *pers. comm.*). The colony there has increased as Sheep Island has decreased, so much so that in 2015 Sheep Island was larger by only two AON. It seems probable that the original population is now spread between the two sites (Figure 6), and interchange with the colony at Inishowen (Co. Donegal) is possible. The combined population at these two sites has decreased by 66% since 1999. Periodic counts of the numbers at The Gobbins cliffs dating back to 1969 (Figure 5) have shown big changes in numbers in recent years, dropping as low as two AON in 2007, returning to 33 AON in 2008, but have fallen again to nine AON in 2015.

The UK breeding abundance index for Cormorants for 1986–2014 indicates that the population increased and stayed high until 2005 but has now rapidly returned to 1986 levels (JNCC 2015). The data for The Skerries and Sheep Island indicate that that population is decreasing further. Strangford Lough is still above 1986 levels but decreasing. The Northern Ireland trend broadly reflects that for the whole of the UK and Ireland.

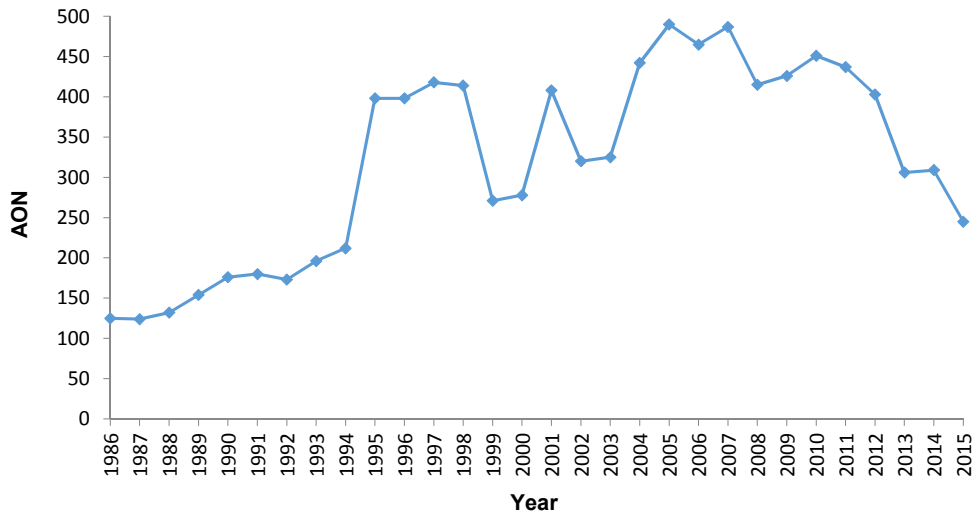


Figure 4 Cormorants at Bird Island, Strangford Lough 1986–2015

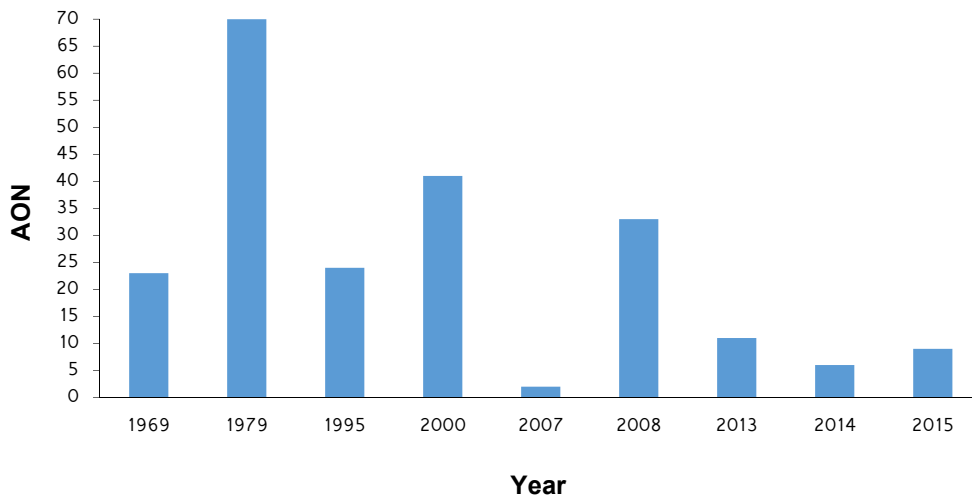


Figure 5 Cormorants at The Gobbins 1969–2015

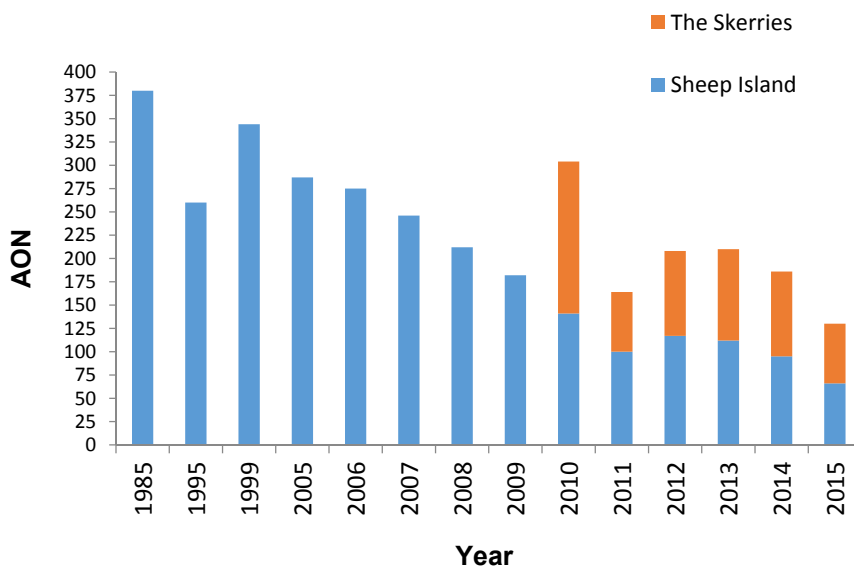


Figure 6 Cormorants at Sheep Island and The Skerries* 1985–2015

*The Skerries was not surveyed before 2010 as it is believed no Cormorants were present

Breeding success

Productivity data were collected at The Gobbins, where two chicks were raised per AON. UK productivity has declined from circa 2.5 chicks/AON in 1992 to under 2.0 chicks/AON in recent years (JNCC 2015) so the productivity at The Gobbins remains good. Surveys are also carried out of Cormorant nests on Sheep Island and The Skerries, although only one visit was carried out in mid-June so final breeding success is unknown. However, assuming most chicks counted survived the breeding success for these two colonies would have been approximately 1.5–2.0 chicks per AON.

European Shag *Phalacrocorax aristotelis*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The European Shag (Shag) is endemic to the northeast Atlantic and the Mediterranean. It is a marine inshore species that is almost never observed out of sight of land (Mitchell *et al.* 2004). The species nests on offshore islands or on cliffs and colonies range in size from a few to several thousand pairs. Over a third of the world population breed in the UK and Ireland (JNCC 2015). In Northern Ireland the Shag is a widespread breeding species, with the largest colonies being at The Maidens, offshore from Larne, and Rathlin Island, with other breeding pairs scattered widely around the coast in smaller groups.

Breeding numbers

The long-term trend for Rathlin is slightly downwards with a new survey in 2015 recording 42 AON (Figure 7). At The Maidens there has probably been a slight decrease since 2000, although a proper survey is needed. Numbers at Muck Island and The Gobbins have fluctuated upwards over the long-term. In 2013 they were at their highest ever levels but dropped slightly at both sites in 2014 before recovering in 2015 (Figures 9 & 10). Shag stopped breeding in Strangford Lough in 2007 (Figure 8).

The species has been recorded at several new locations since 2013: in 2015 Maggie's Leap to Newcastle held seven AON and Portrush held two AON. In 2015 three AON were found at Castlerock.

For the UK the breeding abundance index shows a 50% decline between 1986 and 2014, though this decline has been predominantly in Scotland with populations in England and Wales showing little change (JNCC 2015). Annual return rates of adults are usually in the order of 80–90% (JNCC 2015) but Shags are vulnerable to one-off extreme events and the return rate may drop to below 15% as a result of their impact (Frederiksen *et al.* 2008).

Breeding success

At The Gobbins, in 2015, 2.7 chicks/AON were produced and 2.3 chicks/AON at Muck Island. Productivity at these sites is well above the current UK average of approximately 1.5 chicks/AON (JNCC 2015). Longer term, in the UK from 1986–2014 productivity has varied between 1.0 and 1.6 chicks/nest, with an average of 1.21 (Cook and Robinson 2010). Population Viability Analysis calculations by Cook and Robinson suggests that if all demographic parameters remain the same (survival, clutch size, *etc.*) the UK population will decline by 9% over the next 25 years.

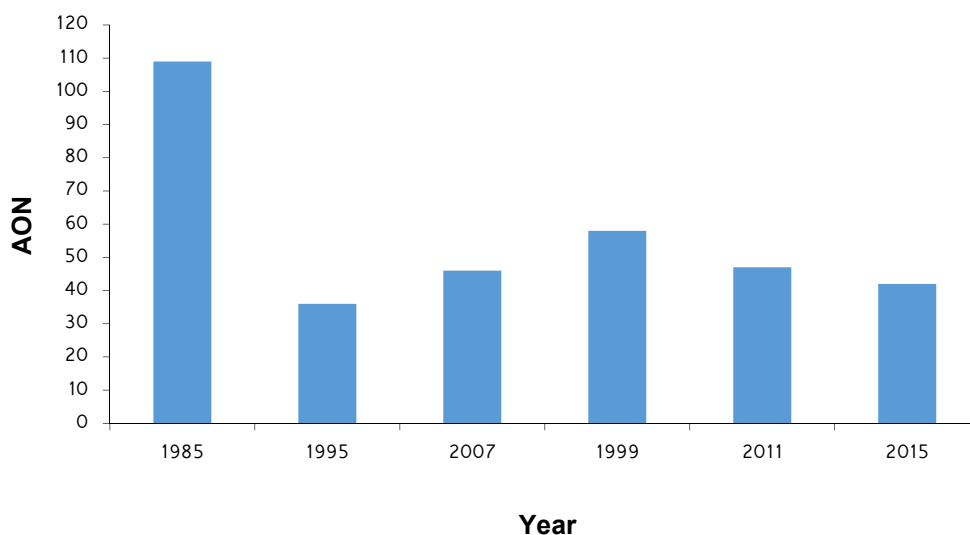


Figure 7 European Shag population at Rathlin 1985–2015

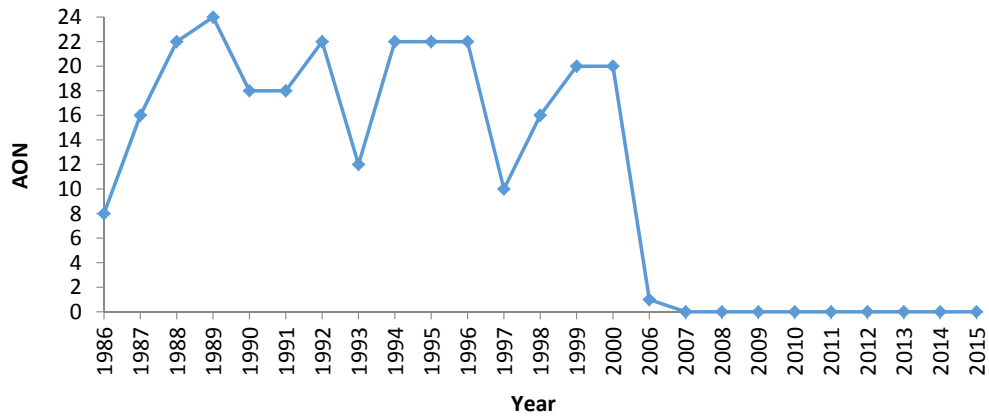


Figure 8 European Shag population at Strangford Lough 1986–2015

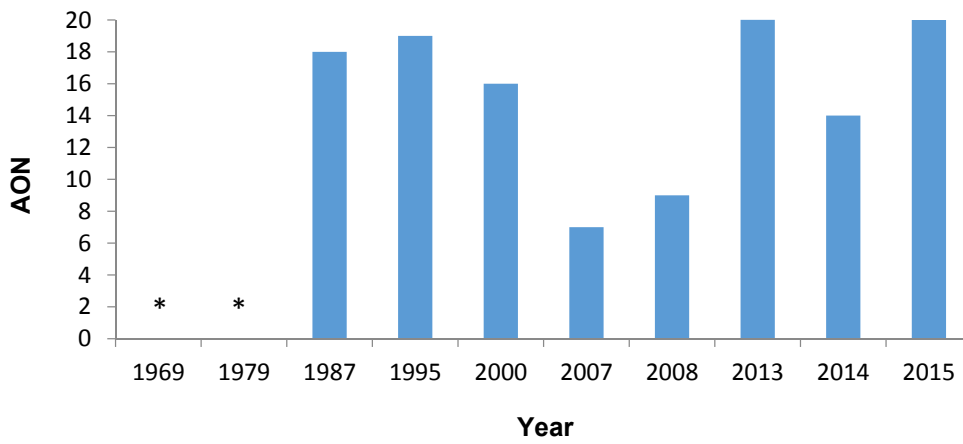


Figure 9 European Shag population at The Gobbins 1969–2015 (*count of zero)

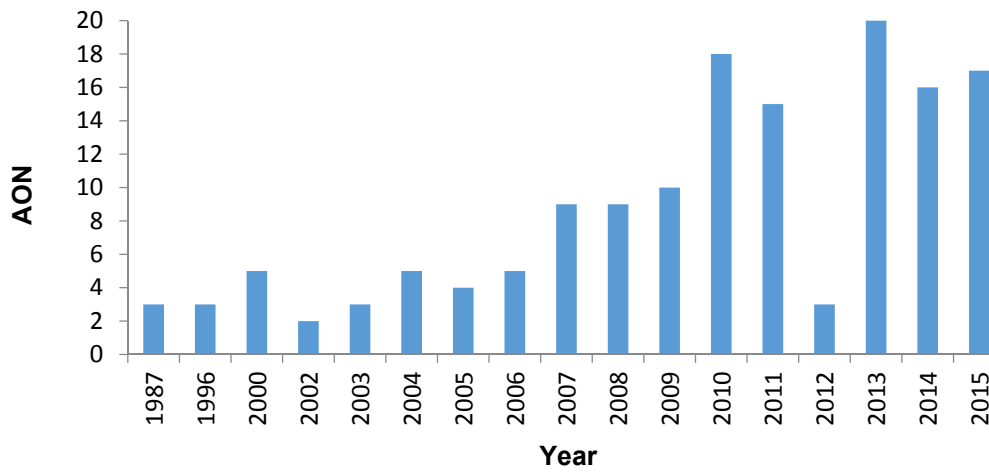


Figure 10 European Shag population at Muck Island 1987–2015

Great Skua *Stercorarius skua*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Breeding first occurred in Northern Ireland in 2010. During the Seabird 2000 surveys the UK held 60% of the Great Skua world population (Mitchell *et al.* 2004). Orkney and Shetland are the core breeding area but the species has now spread through the Western Isles (JNCC 2015). On Orkney the population increased 23% from 2000 to 2010 (Meek *et al.* 2010) and on Fair Isle the number of pairs from 1986–2008 increased from 84 to 294 (JNCC 2015).

In the Republic of Ireland the first breeding occurred in the late 1990s in Co. Mayo (Mitchell *et al.* 2004) and there are now thought to be approximately 15 pairs, although no complete survey has been undertaken (Steve Newton *pers. comm.*). The UK population is healthy and the recent breeding attempts on Rathlin could be considered overdue. Great Skuas have been shown to be serious predators of Leach's Petrels *Oceanodroma leucorhoa* on St. Kilda. This is a potential cause for concern in relation to Storm Petrel populations on islands off the west coast of Ireland (Phillips *et al.* 1999, Votier *et al.* 2006).

Breeding Numbers

Breeding attempts have been made by a single pair of birds on Rathlin since 2010 with successful attempts in four of those years (2011, 2013, 2014, and 2015). In 2015 the pair fledged one chick successfully. Annual sampling of breeding abundance is insufficient to generate reliable population trends for the UK, country level or at individual sites.

Black-legged Kittiwake *Rissa tridactyla*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The Black-legged Kittiwake (Kittiwake) is an oceanic gull which is the most numerous gull species in the world, with the largest UK colonies in Scotland (Mitchell *et al.* 2004).

The largest colony, by far, in Northern Ireland is on Rathlin Island, the second largest colony at The Gobbins being only 10% the size of Rathlin. Other small colonies are dotted around the coast at Muck Island, Maggie's Leap, Castlerock, Carrick-a-rede, Dunluce and The Skerries. Colonies at Gun's Island and Strangford Lough have become extinct in the last 15 years.

Breeding numbers

At Rathlin Island the numbers grew from 6,822 AON in 1985 to 9,917 AON in 1999, but in the latest survey (2011) had dropped back to 7,922 AON, a decrease of 20% (Allen *et al.* 2011). There are good historical datasets for The Gobbins (Figure 11), Muck Island (Figure 12) and Strangford Lough. In 2015 The Gobbins held 835 AON, the highest since 2007. Muck Island held 225 AON. The Portrush cliffs held 199 AON, a recovery from 2014. Castlerock was counted for the first time since 2000 and held 92 AON, a 74% decrease since that survey. At Strangford Lough a peak of 466 nests was reached in 1996 before it disappeared as a breeding species at the site.

Populations at individual colonies are fluctuating, presumably in response to local feeding conditions. There is no clear pattern with colonies on both the north coast and Co. Down coast fairing badly (*e.g.* Castlerock and Strangford), but other colonies remaining largely static (*e.g.* The Gobbins and Muck Island).

The UK population showed a 20% increase between Operation Seafarer and the Seabird Colony Register. By the time of Seabird 2000 the UK population had declined by 40%, and this decline has continued (see below). The breeding abundance index for the UK showed a decline of 72% between 1986 and 2013 but there was a small increase observed in 2014 (JNCC 2015). During this period the adult return rate at the Isle of May has declined from over 90% to under 70% so the survival of adults may be a key issue for Kittiwake conservation (JNCC 2015). Relative to the overall UK and Ireland trend since 1986, and its historical status, the Northern Ireland population is still reasonably healthy.

Breeding success

At The Gobbins overall productivity was 1.03 chicks/AON. At Muck Island it was 0.88 chicks/AON. This represented a big increase at The Gobbins but a slight decrease at Muck Island compared to 2014. Overall it was a good breeding season at these sites.

Productivity at Maggie’s Leap (0.7 chicks/AON) was lower than in 2014. Productivity at the North Coast colonies was very high. A new productivity plot surveyed at Portrush had 1.36 chicks/AON, at Rathlin it was 1.41 chicks/AON.

The current trend across the UK is for productivity to be rarely over 0.6 and regularly under 0.4 chicks fledged per AON for many colonies (JNCC 2015, Miles 2013).

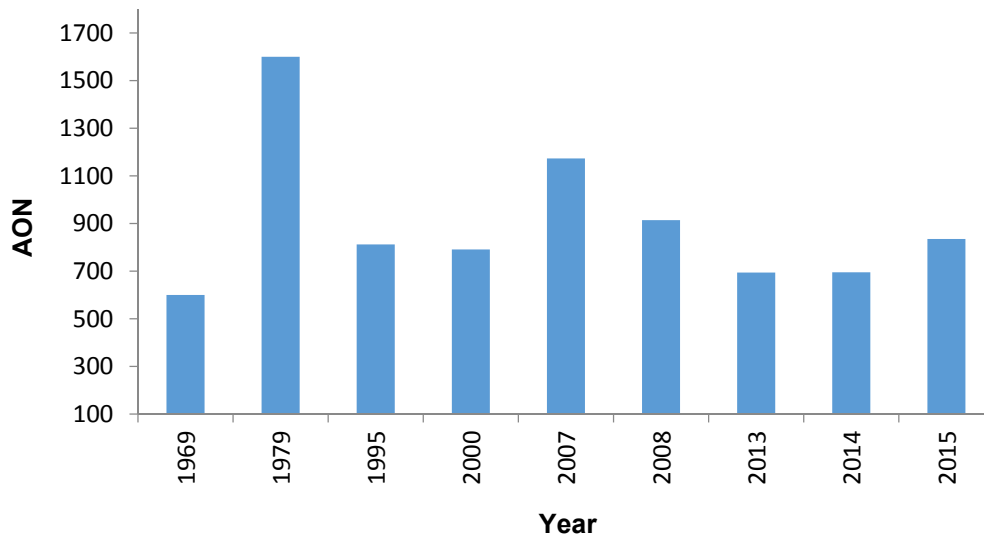


Figure 11 Black-legged Kittiwake at The Gobbins 1969–2015

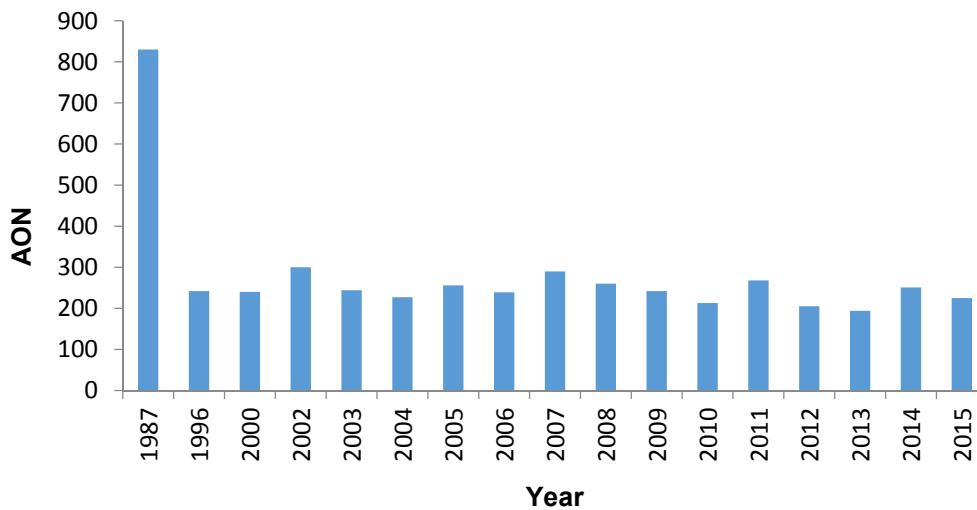


Figure 12 Black-legged Kittiwake at Muck Island 1987–2015

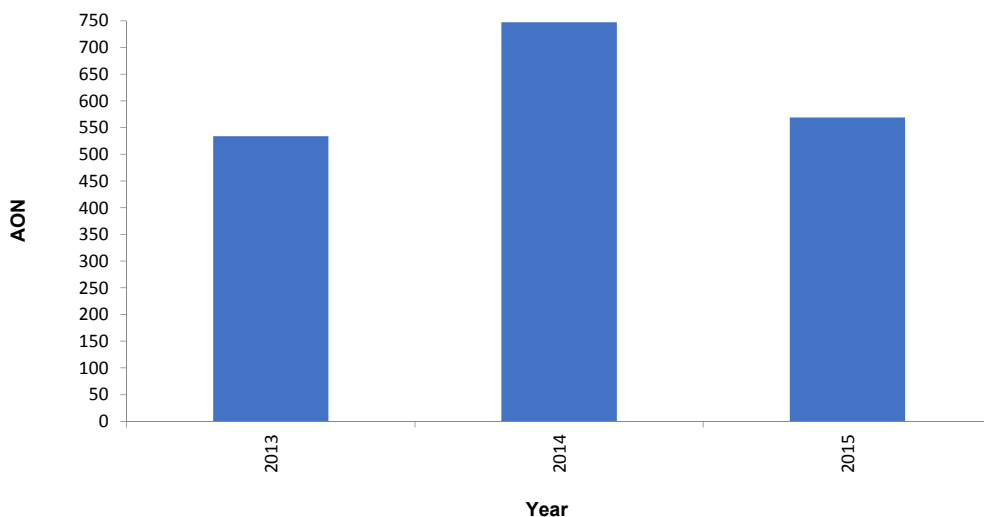


Figure 13 Black-legged Kittiwake at Maggie’s Leap/Bloody Bridge 2013–2015

Black-headed Gull *Chroicocephalus ridibundus*

EC Birds Directive – migratory species

Red listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Northern Ireland Priority species (Northern Ireland Biodiversity Strategy 2002)

Overview

The Black-headed Gull is a common breeding species in the UK, with 5.6% of the world population recorded during Seabird 2000. It is unclear how the population may compare to previous decades because previous UK and Ireland surveys were incomplete, with many inland colonies remaining uncounted. Therefore, although the population went up at Seabird 2000 due to more comprehensive surveying (JNCC 2015), there may in reality have been a massive decrease. In Northern Ireland, it is a widespread breeding species in relatively few large colonies, with major concentrations at Strangford Lough, Belfast Lough, Larne Lough, Copeland Islands, Lough Neagh and Lough Erne.

Breeding numbers

Breeding numbers at the main sites have fluctuated massively over the last 25 years, even in consecutive years. At Strangford Lough the 2015 count (1,265 AON) was only a slight recovery from 2014, which had represented the lowest since 1986 when annual monitoring began. The numbers at Larne Lough grew from just 109 AON in 1987 to over 2,000 AON in 2008, but quickly receded. No detailed data was available for Belfast Lough in 2015. Figure 14 shows the total population for Cockle Island, Larne Lough, Strangford Lough and the Copeland Islands, 1986–2015, in years where data were available for all four sites. The total population for these major eastern colonies is at their lowest ebb over the last 30 years. There are no recent data for Lough Neagh populations except Portmore Lough, where 95 AON were present in 2015.

Breeding success

The only productivity data reported were from Portmore Lough where 1.52 chicks/AON fledged, and Carlingford Lough where a single pair raised one chick. Despite being on the 2013 BoCCI list, very little productivity data have ever been collected in Northern Ireland.

In the UK as a whole, productivity fluctuates from 0–1.2 chicks per AON. This pattern of ‘boom or bust’ is seen frequently in local colonies (*pers. obs.*), with extreme weather, predation and food shortages appearing to be the main reasons for breeding failure. The potential impact of predators such as American Mink *Mustela vison* (Craik 1997) on inland colonies in Northern Ireland are largely unstudied. Collecting productivity data is a high priority.

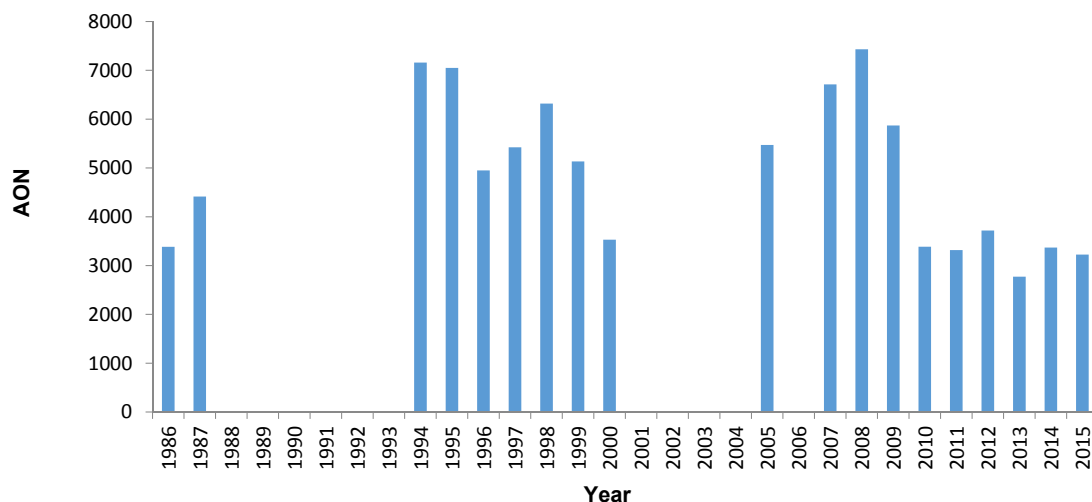


Figure 14 Total population of Black-headed Gulls at Cockle Island, Larne Lough, Strangford Lough and the Copeland Islands 1986–2015

Mediterranean Gull *Ichthyaetus melanocephalus*

EC Birds Directive – Annex 1 and migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The Mediterranean Gull is the most recent addition to the breeding seabird fauna of the UK and Ireland. From just one pair in the 1985–1988 census there were over 100 AON during Seabird 2000 and there are now well over 1,000 AON across the UK. Breeding was first proved in Northern Ireland in 1995.

Breeding numbers

After first breeding in 1995, there have typically been 1–3 AON annually at three sites in Northern Ireland. This has now increased to 5–7 AON annually, mostly at Strangford and Larne Loughs, though there has been one AON on Lower Lough Erne in recent years. In 2015 five AON were at Larne Lough and one AON at Strangford Lough. A single male was again present on Lower Lough Erne and attempted to mate with a Common Gull. There was no evidence of successful breeding and the bird was last seen in early July.

Breeding success

The Larne birds raised a minimum of 1.4 chicks/AON.

Common (Mew) Gull *Larus canus*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Scotland held 98% of breeding Common Gulls in the UK during Seabird 2000 (Mitchell *et al.* 2004), so the rest of the UK is relatively insignificant for this species. In Northern Ireland the species breeds in small numbers around the coast but by far the largest concentrations are on the Copeland Islands and at Strangford Lough. This species has undoubtedly increased since Seabird 2000.

Breeding numbers

Historically the Common Gull was a scarce breeding species in Northern Ireland which belied its name but from the mid-1990s a steady increase occurred, which then accelerated after 2000. The Copeland Islands have not been completely surveyed since 2012 when there were 452 AON, down from a peak of 830 AON in 2009. On Strangford Lough there were 229 AON in 2015, continuing the decline since 2010 (Figure 15). The pattern of population increase, and subsequent decrease, at Strangford and Copeland are remarkably similar.

The species has spread around the coast since Seabird 2000 with small numbers appearing at many locations, although unfortunately not formally monitored. For example, one such new colony was discovered in late July 2013 at Torr Head, Co. Antrim. On the Copeland Islands, although numbers have dropped, birds have spread out from a few large sub-colonies to form new satellite sub-colonies around the shore of all three islands.

The Northern Ireland trend contrasts with the overall UK and Ireland picture where a modest increase appeared to have occurred between 1986 and 1998, but with a subsequent decline in the breeding abundance index (JNCC 2015). Northern Ireland still holds relatively modest numbers of this species with the major UK colonies being located in Scotland.

Breeding success

No productivity data were collected in 2015 at any sites in Northern Ireland. Intermittent data collected on the Copeland Islands have shown productivity varies from 0.3 to 1.5 chicks fledged per nest each year. In Scotland 0.1–0.7 chicks per nest has been recorded (JNCC 2015). American Mink predation has a large impact at some colonies (Craik 1997).

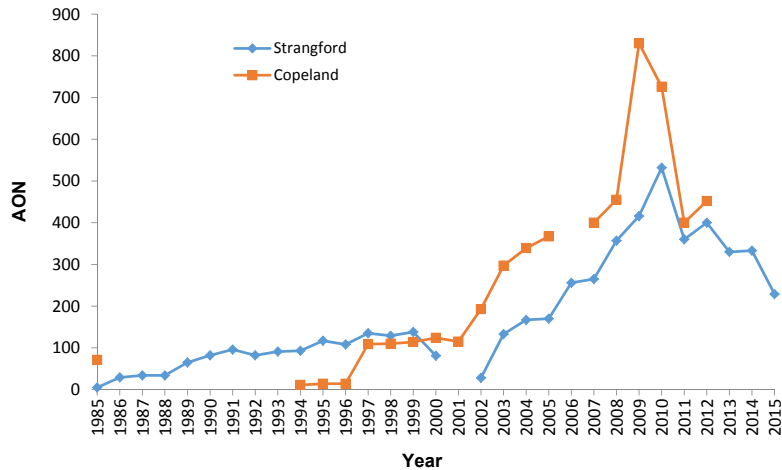


Figure 15 Common Gulls at Strangford Lough and the Copeland Islands 1985–2015

Lesser Black-backed Gull *Larus fuscus*

EC Birds Directive –migratory species
 Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

During Seabird 2000 the UK held 38.4% of the world population. The species breeds across north and west Europe and has increased in numbers throughout its range during much of the 20th century. Lesser Black-backs nest colonially in a wide variety of places including islands and roofs. The Lesser Black-backed Gull is a widespread breeding species in Northern Ireland, mainly in a few large colonies at Strangford Lough, Copeland Islands, Lower Lough Erne and Lough Neagh. There are smaller numbers at Rathlin Island, The Skerries and Muck Island. Roof nesting is widespread in Belfast and there is also a colony in Antrim town. This practice is unrecorded in the rest of Northern Ireland and other records would be welcome.

Breeding numbers

Strangford Lough held 433 AOT, similar to 2014, and Lower Lough Erne 1,211 AOT. In Northern Ireland the Lesser Black-backed Gull has shown a large population increase since Seabird 2000, particularly in the last 7–8 years. This increase is mirrored at the Copeland Islands and Lower Lough Erne. Since Seabird 2000 the combined population for these three sites has increased from 798 AOT to 1,883 AOT by 2012.

There are no up-to-date count data for Lough Neagh and the last survey there was in 2000. As a matter of priority a count of all Lough Neagh colonies is needed to ascertain the complete status of the species in Northern Ireland.

The breeding abundance index for the UK population indicates increases up to 2000 but has since decreased and is now at 1986 levels (JNCC 2015). This is in marked contrast to the Northern Irish population which has continued to increase since 2000.

Breeding success

No productivity data was collected in 2015.

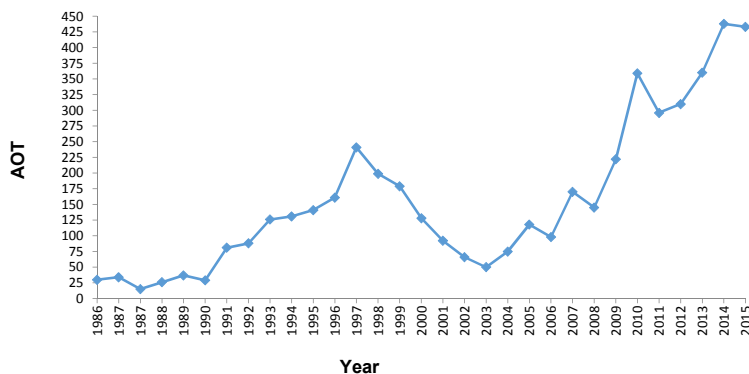


Figure 16 Lesser Black-backed Gulls at Strangford Lough 1986–2015

Herring Gull *Larus argentatus*

EC Birds Directive – migratory species

Red listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Northern Ireland Priority species (Northern Ireland Biodiversity Strategy 2002)

Overview

Common breeding species with concentrations at the Copeland Islands and Strangford Lough. Smaller colonies on Rathlin Island, Burial Island, Muck Island and The Skerries. Herring Gulls suffered a well-publicised catastrophic decline in the late 1980s, probably largely as a result of botulism (Mitchell *et al.* 2004). For example, the population of Rathlin declined from 4,037 AOTs in 1985 to just 19 AOTs in 1999 (Mitchell *et al.* 2004). A similar decline occurred on the Copeland Islands, from approximately 7,000 AON in 1985 to 225 AON in 2004. The figures for Strangford Lough (Figure 17) mirror this trend, with a massive and rapid decline in the mid-1980s, followed by the crash and a low point reached just after the turn of the century. Since 2007 both sites have shown sustained growth in AOTs.

Breeding numbers

There were no surveys of the major breeding colonies in 2015.

Across the UK the breeding abundance index has declined by around 60%, despite a small recovery observed in the 1990s (JNCC 2015), in contrast to Northern Ireland where populations have been modestly increasing. If existing UK demographic parameters (survival, clutch size, *etc.*) remain the same then a 60% decrease in national population is predicted over the next 25 years (Cook and Robinson 2010).

Breeding success

No data on productivity were gathered in 2015 in Northern Ireland.

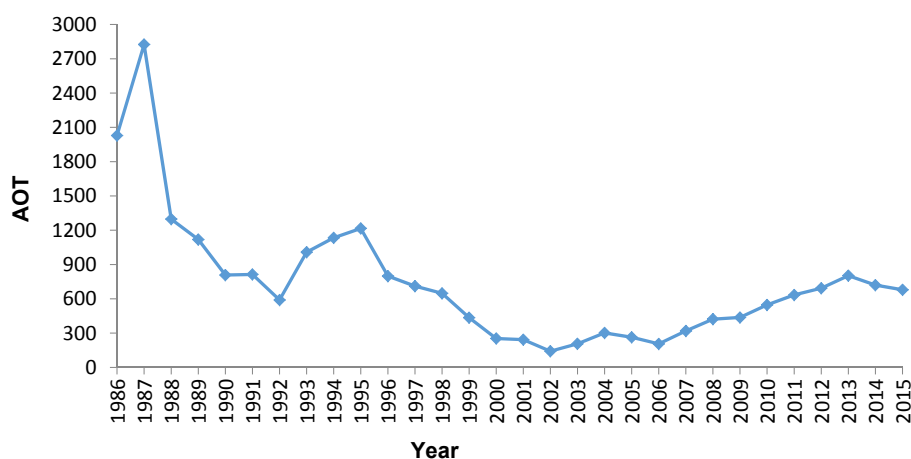


Figure 17 Herring Gulls at Strangford Lough 1986–2015

Great Black-backed Gull *Larus marinus*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The Great Black-backed Gull has an extensive breeding range across the north Atlantic. Historically, Britain and Ireland have hosted most of the world population after Iceland and Norway. Great Black-backed Gulls breed mainly in the Outer and Inner Hebrides and the Northern Isles of Scotland. The 20th century saw widespread expansion of the breeding range and numbers on both sides of the Atlantic, remarkable given that a period of decline rendered the species virtually extinct as a breeder in the UK towards the end of the previous century (Mitchell *et al.* 2004).

The most important site in Northern Ireland is on Great Minnis's Island, Strangford Lough (Figure 18). The second most important colony is probably now at Burial Island, Outer Ards peninsula. Although this colony has not been completely surveyed since 1998 (when no birds were present) a population has again established itself on the island (*pers. obs.*).

Breeding numbers

Strangford Lough held 62 AON in 2015, a decrease on 2013/14. Two AON were at Lower Lough Erne in 2015. Since 1986 the UK breeding abundance index has fluctuated, increasing from the 1980s into the 1990s but then decreasing steadily so that in 2012 the index was at its lowest point since 1986 (JNCC 2015). However, the population has rapidly increased and in 2014 was back to 1986 levels (JNCC 2015).

Breeding success

No productivity data was collected in 2015. Monitoring across the UK has shown that productivity dropped since the early 2000s and this may, in part, be responsible for population declines (JNCC 2015).

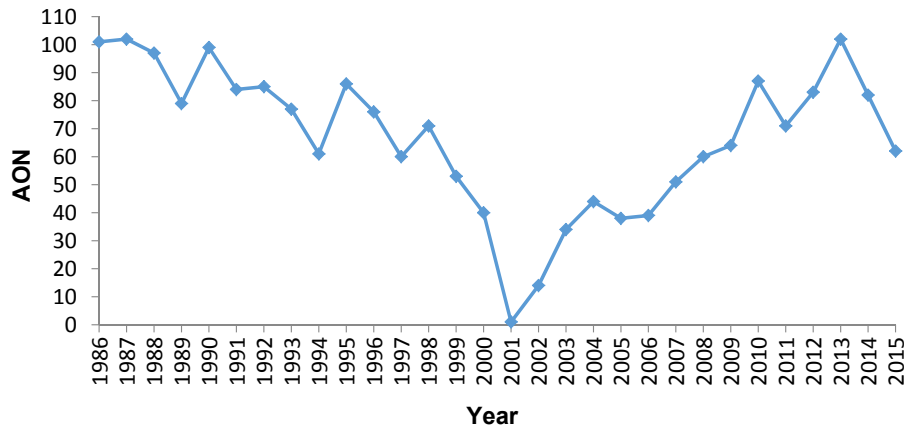


Figure 18 Great Black-backed Gull populations at Strangford Lough 1986-2015

Little Tern *Sternula albifrons*

EC Birds Directive – listed in Annex 1 and as a migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Northern Ireland Priority species (Northern Ireland Biodiversity Strategy 2002)

Overview

This is the smallest species of tern breeding in the UK, nesting exclusively on the coast usually on beaches. They do not forage far from their breeding site (Mitchell *et al.* 2004). On the island of Ireland the main breeding concentrations are on the south and east coast. In Northern Ireland it has always been a rare breeding species and has not been reported nesting since 1996.

Breeding numbers

Two birds were present at a site in Co. Down in 2015 although breeding was not confirmed

Sandwich Tern *Thalasseus sandvicensis*

EC Birds Directive – Annex 1 and migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Sandwich Terns exhibit the most erratic population trends and distribution of any seabird breeding in the UK. The population fluctuates dramatically among years due to large variations in the proportion of mature birds attempting to breed and distribution varies owing to mass movements between colonies. The species is distributed widely around the coast (Mitchell *et al.* 2004).

The UK holds approximately 9% of the world population of Sandwich Terns (JNCC 2015). Census data indicate that the UK population increased by 33% between 1969–1970 and 1985–1988, but that numbers then declined by 15% in the period between 1985–1988 and 1998–2002.

Breeding numbers

At Cockle Island, Groomsport, despite birds being present early in the season, no nests were found during surveys. The 2015 breeding season was catastrophic for all tern species on Cockle Island. At Carlingford Lough numbers continue to increase with 250 AON.

Figure 19 shows the cumulative annual Sandwich Tern population for these four sites each year since 1969. The total was 1,275 AON in 2015, the lowest Northern Ireland population for 20 years.

Sandwich Tern has the most complete monitoring record over the longest period of any seabird species in Northern Ireland. The JNCC abundance index indicates that numbers are now similar to those in 1986 but numbers can fluctuate greatly from year to year (JNCC 2015). There has been a long-term decline in breeding success (JNCC 2015). In Northern Ireland most breed in a few large colonies at Strangford Lough, Larne Lough, Lower Lough Erne and Cockle Island, Groomsport.

Breeding success

Breeding success has been monitored intermittently at Lower Lough Erne since 1990. The success rate has rarely been greater than 0.5 chicks per nest and usually much lower (B. Robson *pers. comm.*). At Carlingford Lough 0.56 chicks/AON fledged. UK productivity has decreased from approximately 0.6 chicks/AON in 2000 to 0.3 chicks/AON in 2014.

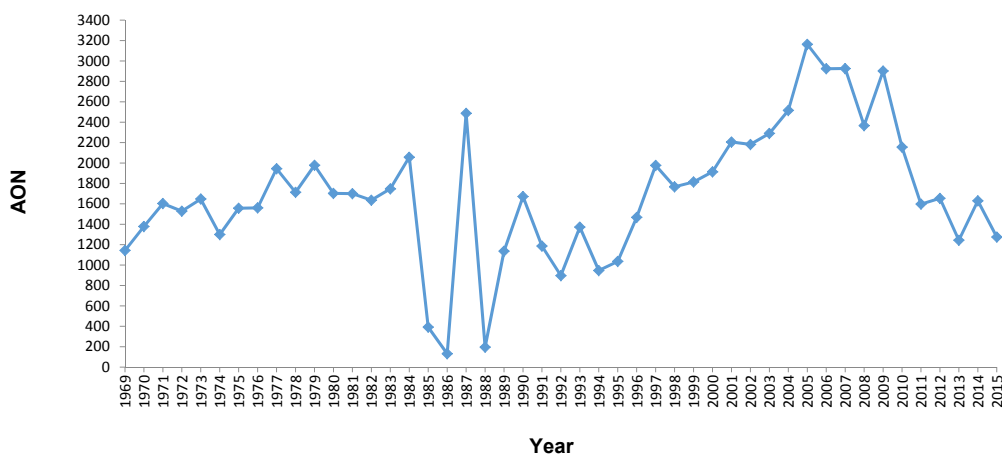


Figure 19 Cumulative Sandwich Tern populations at Cockle Island, Strangford, Carlingford and Larne Lough 1969–2015

Common Tern *Sterna hirundo*

EC Birds Directive – listed in Annex 1 and as a migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Common Terns are not the most abundant UK tern species, but are probably the most familiar because their breeding range extends around much of the coastline and inland to lakes and loughs across most of the country (Mitchell *et al.* 2004). Common Terns are the most widespread breeding tern species in Northern Ireland with coastal and inland populations. Significant numbers breed at several sites on Lough Neagh but these are poorly monitored. The main coastal sites are Strangford Lough, Larne Lough, Belfast Lough and Carlingford Lough.

Breeding numbers

Historical data for the main colonies are incomplete. The cumulative total for the main eastern colonies are shown in Figure 20. In the late 1980s there was a sudden increase to over 1,000 AON and, by the early 21st century there were over 2,000 AON. Since this peak the population has again declined and numbers are now similar to the late 1980s. The current population for the four main east coast colonies is just above the average for the recording period 1980–2015. Wider UK surveys and the breeding abundance index indicate that the UK population as a whole has remained stable (JNCC 2015) over the long-term.

Unfortunately, no recent data have been gathered on Lough Neagh so it is not possible to determine how the population there has changed and a survey of those colonies is urgently needed.

In 2015 30 AON were located at Gravel Ridge Island, Lower Lough Erne. There was a peak count of 84 AON on the nesting raft at Portmore, on 13th June. Belfast Lough RSPB reserve had a peak of 344 AON. Cockle Island, Groomsport had only three AON. The population at Carlingford Lough continued to increase with 220 AON, thanks to remedial management action by the RSPB.

Across the UK the population remained steady from 1986–2006 but since then there has been a decline with the abundance index now 27% below that of 1986 (JNCC 2015). Although the reasons for this are unproven there has been a decrease in breeding success in the last ten years (JNCC 2015).

Breeding success

At Portmore 1.2 chicks/AON fledged. Productivity data for Common Terns in Northern Ireland shows they had an average fledging rate of 0.32 chicks per AON between 1999 and 2011 (JNCC 2015).

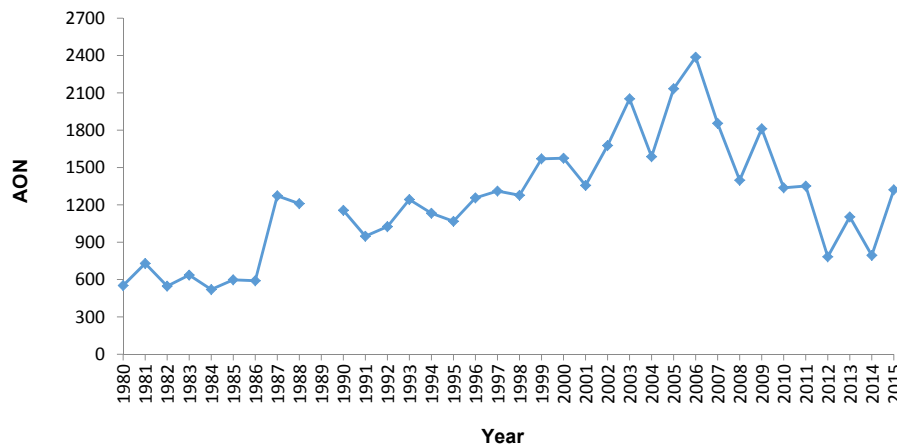


Figure 20 Cumulative Common Tern populations at Cockle Island, Strangford, Carlingford, Copeland Islands, Belfast Lough and Larne Lough 1980–2015

Roseate Tern *Sterna dougallii*

EC Birds Directive – listed in Annex 1 and as a migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Northern Ireland Priority species (Northern Ireland Biodiversity Strategy 2002)

Overview

European populations of the Roseate Tern declined during the 20th century, a decline which was mirrored by population declines in North America (del Hoyo *et al.* 1996). Numbers stabilised in the late 20th century and while some European populations have continued to decline other colonies have increased, with focused conservation measures helping this recovery (Newton and Crowe 2000). The species has suffered a near terminal decline as a breeding species in Northern Ireland (Leonard 2015b).

Breeding numbers

The species is all but extinct in Northern Ireland having suffered a near-terminal decline in the late 1980s (Figure 19). In 2015 there was a single pair at Larne Lough. At least one bird was occasionally present at Green Island, Carlingford Lough. There was a considerable influx of juvenile birds into Northern Ireland during the late summer, presumably all originating from Rockabill in Dublin.

In Scotland the main colony at the Firth of Forth appears to have been extirpated, partly due to a growth in the local Herring Gull population (JNCC 2015). The only colony in England, on Coquet Island, has increased slowly this century but still has a population under 100 AON. It may have benefitted from emigration from other sites. The stronghold for the species within these islands is now in south-east Ireland at Rockabill Island and Lady's Island Lake. Historically Mew Island in the Copeland Group was one of the major sites for Roseate Tern in Ireland (Thompson 1851). However, the species ceased to breed in Northern Ireland around 1880 before apparently re-colonising in the first quarter of the 20th century (Deane 1954) and good numbers were again breeding on Mew by 1941 (Williamson *et al.* 1941).

Breeding success

The pair at Larne Lough fledged one chick.

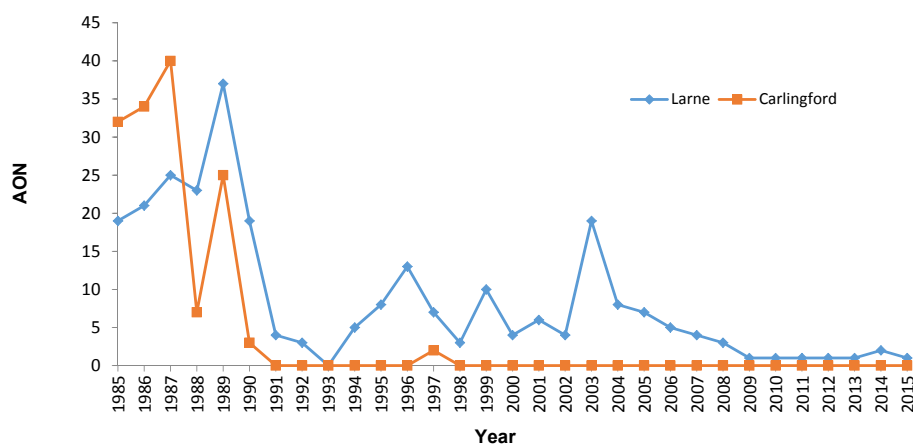


Figure 21 Roseate Tern populations in Northern Ireland 1985–2015

Arctic Tern *Sterna paradisaea*

EC Birds Directive – listed in Annex 1 and as a migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

Arctic Terns are the commonest tern breeding in the UK. The UK population has fluctuated greatly since the 1960s. There was an apparent large increase between 1969 and 1986, though there is uncertainty of the true magnitude of this change due to questions of compatibility of methods between censuses. The majority of the UK population nests in the Northern Isles, with 73% occurring there (Mitchell *et al.* 2004). In Northern Ireland the species is concentrated into just a few colonies including Strangford Lough, Belfast Harbour, Bird Island, Green Island, and Cockle Island with the largest of these currently on the Copeland Islands.

Breeding numbers

Strangford Lough held just 194 AON, Belfast Harbour 83 AON. However, there were 658 AON at Strangford which were not classified between Common and Arctic Tern so the population may have been much larger. No full survey took place on the Copeland Islands. The Cockle Island colony collapsed to 5 AON. Approximately 100 AON were on Bird Island, Portavogie. The colony at Green Island, Carlingford Lough, increased to 85 AON. A single AON at Larne Lough was the first recorded breeding pair there for many years.

In the last 25 years the Copeland Islands and Strangford Lough have held the majority of breeding birds in Northern Ireland. The population at Copeland has fluctuated between 600 and 1,250 AON since 2000. Between 2008 and 2012 the populations of these sites decreased, but on Copeland the population stabilised at approximately 750 AON. At Strangford Lough the decrease was 90%. The reduction in the Strangford Lough population during this period was not accounted for by an increase in other local colonies at the same time. Overall the Northern Ireland population remains healthy (Figure 22). The Arctic Tern UK breeding abundance index based on the SMP sample showed an apparent rapid increase, followed by decrease, during 1986 to 1990. From 1990 the index has fluctuated, mainly above 1986 levels (JNCC 2015). The 2014 index was at the highest level since the 1980s (JNCC 2015).

Breeding success

No productivity data was collected in 2015 in Northern Ireland.

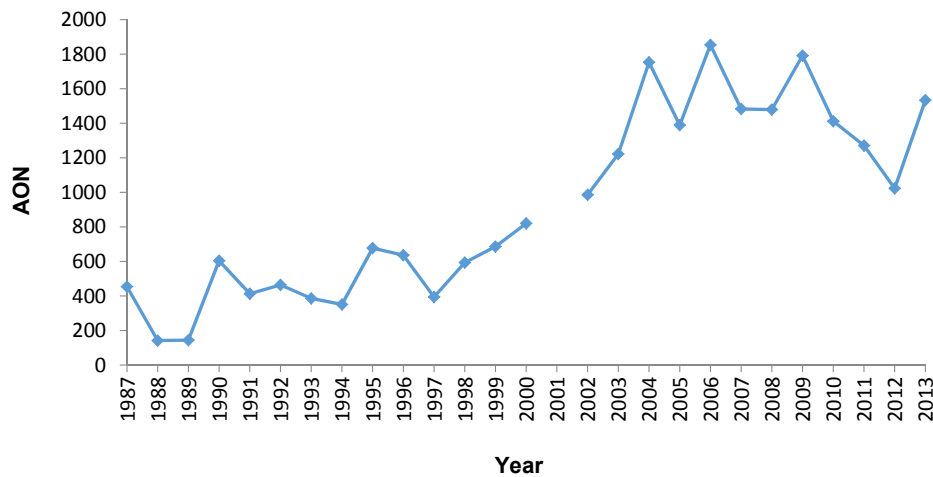


Figure 22 Arctic Tern populations at Copeland, Strangford, Belfast Lough and Cockle Island colonies 1987–2013

Common Guillemot *Uria aalge*

EC Birds Directive – migratory species

Amber listed in Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The Common Guillemot (Guillemot) is one of the most abundant seabirds in the northern hemisphere. There are very large populations in the Atlantic and Pacific Oceans. Guillemots are extremely gregarious and colonies can contain many tens of thousands of individuals (Mitchell *et al.* 2004). The UK and Ireland censuses each showed a large population increase compared to the previous survey, although some of this may have been due to better coverage and survey methods (JNCC 2015). In Northern Ireland the main colony is on Rathlin Island with smaller satellites at The Gobbins, Muck Island and at scattered cliff faces between Ballycastle and Portrush.

Breeding numbers

The last full survey of Rathlin, in 2011, recorded 130,445 individuals (Allen *et al.* 2011). After a 50% decrease between 1999 and 2007 this was a 60% increase which probably makes Rathlin the largest colony in the UK and Ireland.

In 2015, 2,137 individuals were recorded at The Gobbins and 2,070 individuals at Muck Island (Figures 23 and 24). This is a record count for The Gobbins, and close to a record at Muck Island. The populations at these two colonies remain healthy. The breeding abundance index shows that across the UK Guillemots have increased by 50% compared to the 1980s (JNCC 2015). However, the increase at Rathlin is in contrast to Handa, the largest colony during Seabird 2000, where the population there has decreased by over 50% (JNCC 2015). Studies on the Isle of May have shown that Guillemot adults have a 90% annual return rate (JNCC 2015), but this was much lower in 2007–2008, which may give clues to the reasons for the low count on Rathlin in 2007. On Rathlin the RSPB carry out annual comparative counts of study plots to monitor population levels (Table 6).

Breeding success

Guillemot breeding success is difficult to assess. The only data for 2015 is from The Gobbins where an entire area of Guillemot nests was wiped out by two Herring Gulls preying eggs. Hooded and Carrion Crows, and Herring Gulls, are responsible for the predation of many Guillemot eggs at The Gobbins.

Between 2002 and 2007 just 0.3 chicks per pair were fledged at sites monitored in the UK. Levels of productivity have recovered since 2007 to 0.5–0.6 chicks per pair, but are still below that of the 1980s (JNCC 2015).

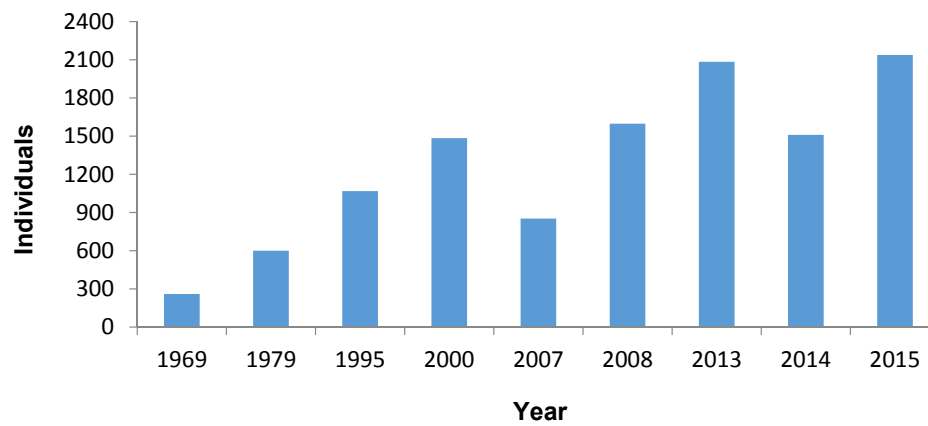


Figure 23 Common Guillemot populations at The Gobbins 1969–2015

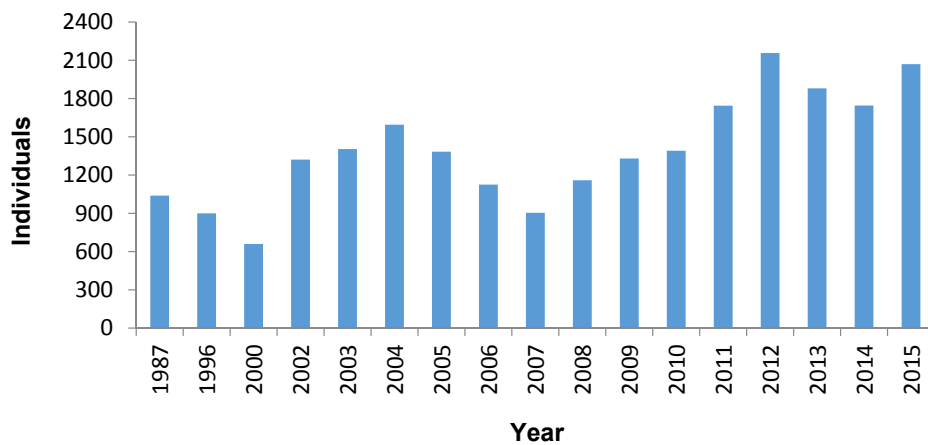


Figure 24 Common Guillemot populations at Muck Island 1987–2015

Table 6 Common Guillemot study plot counts at Rathlin 2011–2015

Year	Study plot count (individuals)
2011	3,295
2012	3,142
2013	2,919
2014	3,065
2015	3,446

Razorbill *Alca torda*

EC Birds Directive – migratory species

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The Razorbill is an auk of the North Atlantic and Arctic Ocean. They breed on both sides of the Atlantic. Razorbills nest on ledges with Common Guillemots but also frequently in clefts, holes and under boulders. This species showed successive increases during the UK and Ireland censuses, though the population at the time of Operation Seafarer may have been underestimated.

In Northern Ireland the main colony is on Rathlin Island with smaller satellites at The Gobbins, Muck Island and at scattered cliff faces between Ballycastle and Portrush.

Breeding numbers

The last full survey of Rathlin, in 2011, recorded 22,975 individuals. This was double the figure recorded in 2007, but only 10% above the 1999 total. Rathlin is, or close to, the largest colony in the UK and Ireland.

The 2014 population at The Gobbins (240 individuals) was one of the lowest ever recorded, close to 2008 levels, and represented a 72% decrease from the record year of 2013 (Figure 25). The 2014 count at Muck Island (402 individuals) represented a 54% decrease from 2013 (Figure 26). In 2015 The Gobbins rebounded to 506 and Muck Island to 671. Daily fluctuations in attendance can be large, particularly where many birds may not breed in a given year.

The UK breeding abundance index has fluctuated over the last 25 years but is still well above 1980s levels (JNCC 2015). On Rathlin the RSPB carry out annual comparative counts of study plots to monitor population levels (Table 7).

Breeding success

Across the UK annual productivity has declined slowly over the last 25 years and is now approximately 0.5 chicks per pair (JNCC 2015). No data are available for Northern Ireland in 2015.

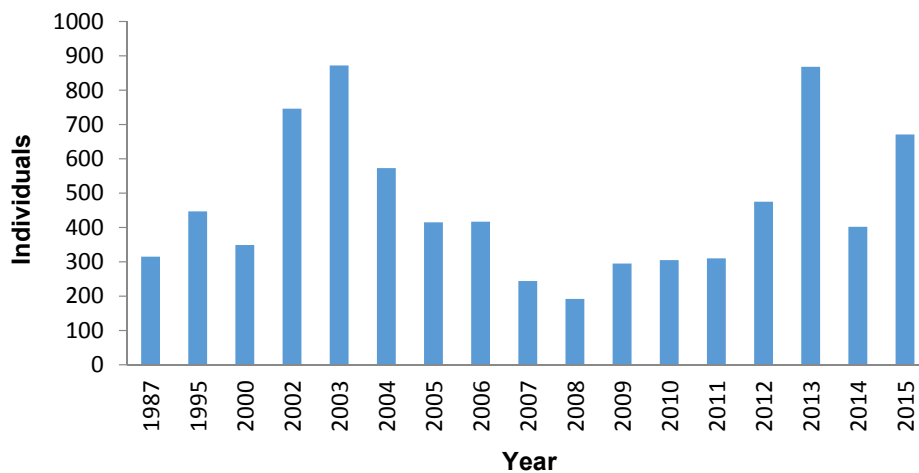


Figure 25 Razorbill populations at Muck Island 1987–2015

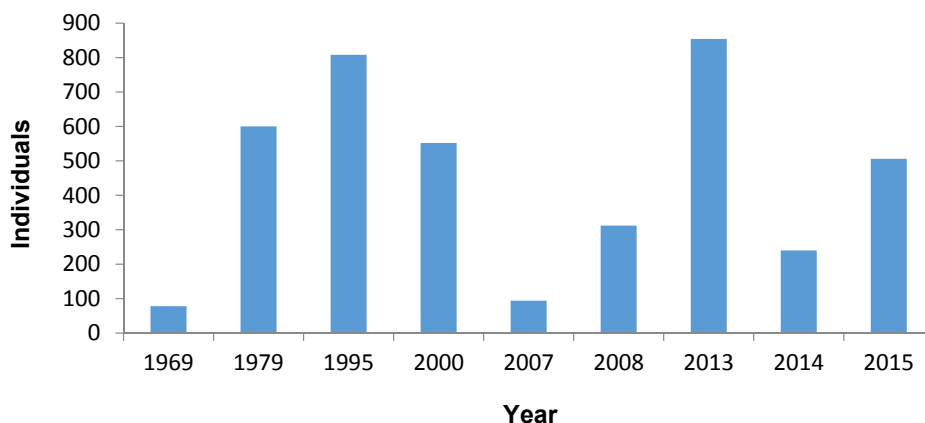


Figure 26 Razorbill populations at The Gobbins 1969–2015

Table 7 Razorbill study plot counts at Rathlin 2011–2015

Year	Study plot count (individuals)
2011	761
2012	700
2013	600
2014	631
2015	716

Black Guillemot *Cephus grylle*

Amber listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The Black Guillemot is a circumpolar species which in the UK has historically been a predominantly Scottish species. Between censuses in 1969–1970 and 1985–1988 there was a range expansion and the species increased dramatically around the coast of Northern Ireland (JNCC 2015). This increase continued through Seabird 2000 to this day. Black Guillemots nest in crevices (natural or man-made) and can be difficult to survey. It is essential the recommended methodology is followed.

Breeding numbers

The sites counted by surveyors in 2015 held approximately 80% of the population at Seabird 2000. There were no major changes in population from the previous two years.

Thirty-nine nests were located and monitored at Bangor Harbour by Julian Greenwood. This study is the second longest in the world after that of George Divoky in Canada. The number of Black Guillemots breeding in the Marina grows year on year (Greenwood 2015). The population should continue to rise as there are still plenty of unused nesting holes available and new boxes were provided in 2013 (J.G. Greenwood *pers. comm.*).

Although the population remains stable there has been a change in distribution within counties Down and Antrim since Seabird 2000. Some areas have seen increases (for example The Copelands and inner Belfast Lough), while others have seen decreases (for example outer Belfast Lough). The Rathlin Island population has also decreased since 2000 (Figure 27). Black Guillemots, like other seabirds, show a high degree of philopatry once they start to breed (Brooke 1990), but juveniles will disperse readily to other colonies (Frederiksen & Peterson 2000). Increased juvenile dispersal away from poorer sites, coupled with poorer adult survival but better survival for Co. Down birds, could be responsible for the observed changes in distribution. However, we simply do not know for sure. Black Guillemots in Northern Ireland feed almost exclusively on the Butterfish *Pholis gunnellus* (*pers. obs.*) and the distribution and abundance of this species must be a key factor influencing Black Guillemot populations and distribution.

Breeding success

In 2015 the Bangor Black Guillemots fledged 1.09 chicks per nest (Julian Greenwood *pers. comm.*).

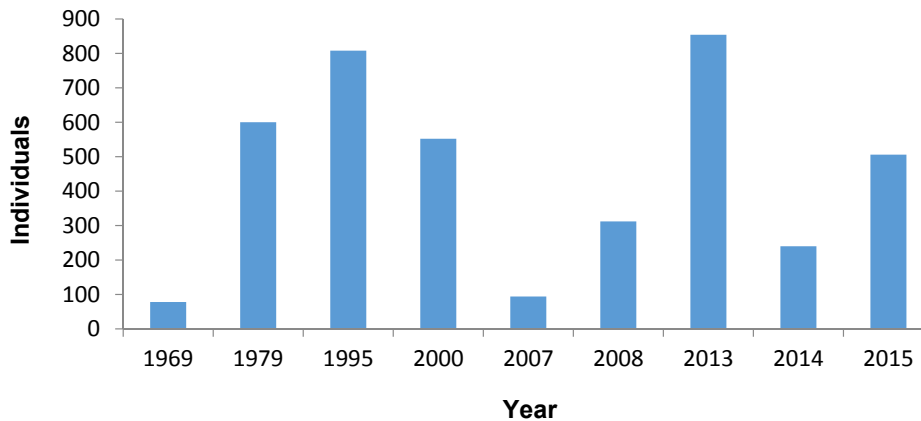


Figure 27 Black Guillemot populations at Rathlin 1969–2015

Atlantic Puffin *Fratercula arctica*

EC Birds Directive – migratory species

Amber listed in Birds of Conservation Concern in Ireland 3 (2014–2019)

Overview

The Atlantic Puffin is the most instantly recognisable of all North Atlantic seabirds. They are a secretive bird on land, nesting in burrows, and we also know relatively little about their pelagic lifestyle. This is however changing with the use of new technology (Harris *et al.* 2010; Guilford *et al.* 2011). Around 10% of the world population breeds in the UK and Ireland, where it is the second most abundant breeding seabird (Mitchell *et al.* 2004).

In Northern Ireland the main colony is on Rathlin, with small numbers at The Gobbins. Some are occasionally seen at Muck Island although breeding has not been confirmed. A conservation project on the Copeland Islands is attempting to create a new colony using decoys and sound lures.

Breeding numbers

In 2015 a peak count of 63 was recorded at the Gobbins, a similar count to 2013 and 2014 (Leonard 2015a).

Birds were present around Lighthouse Island, Copeland Islands, during June and breeding was confirmed in July when birds were observed entering a burrow with food to feed a presumably well grown chick. It is possible there were two AOB but this was not confirmed as the birds and nests were left undisturbed. This is a tremendous achievement and hopefully the start of a viable colony, proof that the use of sound lures and decoys can work for this species without the need for translocations.

The logistical difficulties in monitoring Atlantic Puffin colonies means that few data are collected annually and that a bias toward smaller colonies exist; these are usually counts of individual adult birds in attendance at breeding sites. Counts of individuals can vary quite markedly between years compared to counts of apparently occupied burrows and this makes it impossible to generate a reliable breeding abundance index for the UK population (JNCC 2015).

Breeding success

There are no productivity data available for Northern Ireland. Research in the UK has shown that productivity is highly variable between 0.3 and 0.8 chicks per pair (JNCC 2015), and was at its highest in 2014 since the early 1990s.

References

- Allen, D., Archer, E., Leonard, K. & Mellon, C. (2011) *Rathlin Island Seabird Census 2011*. Report to the Northern Ireland Environment Agency.
- BBC (2012) *Calf of Man rodent-cull to preserve Manx Shearwaters*. <http://www.bbc.co.uk/news/world-europe-isle-of-man-17270261> [Accessed 21/11/2015].
- Brooke, M. (1990) *The Manx Shearwater*. T & AD Poyser.
- Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014-2019. *Irish Birds* **9**: 523–544.
- Cook, A.S.C.P. & Robinson, R.A. (2010) How representative is the current monitoring of breeding seabirds in the UK? *BTO Research Report No. 573*. BTO, Thetford.
- Craik, J.C.A. (1997) Long-term effects of North American Mink *Mustela vison* on seabirds in western Scotland. *Bird Study* **44**: 303–309.
- Cramp, S., Bourne, W.R.P. & Saunders, D. (1974) *The Seabirds of Britain and Ireland*. Collins, London.
- Deane, C.D. (1954) *Handbook of the birds of Northern Ireland*. *Belfast Museum and Art Gallery Bulletin 1*: 121–190.
- del Hoyo, J., Elliott, A. & Sargatal, J. (1996) *Handbook of the Birds of the World, Vol. 3: Hoatzin to Auks*. Lynx Edicions, Barcelona, Spain.
- Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* **108**, 708–746.
- Frederiksen, M., Daunt, F., Harris, M.P. & Wanless, S. (2008) The demographic impact of extreme events: stochastic weather drives survival and population dynamics in a long-lived seabird. *Journal of Animal Ecology* **77**: 1020–1029.
- Frederiksen, M. & Petersen, A. (2000) The importance of natal dispersal in a colonial seabird, the Black Guillemot *Cepphus grylle*. *Ibis* **142**: 48–57.
- Furness, R.W. (1987) *The Skuas*. T. & A.D. Poyser, Calton.
- Greenwood, J.G. (2015) Breeding Sites and Breeding Success in 2014 of Black Guillemots at Bangor Marina, Co. Down. *Northern Ireland Seabird Report 2014*, 42–45. BTO, Thetford.
- Guilford, T.C., Meade, J., Freeman, R., Biro, D., Evans, T., Bonadonna, F., Boyle, D., Roberts, S. & Perrins, C.M. (2008) GPS tracking of the foraging movements of Manx Shearwaters *Puffinus puffinus* breeding on Skomer Island, Wales. *Ibis* **150**: 462–473.
- Guilford, T.C., Meade, J., Willis, J., Phillips, R.A., Boyle, D., Roberts, S., Collett, M., Freeman, R. & Perrins, C.M. (2009) Migration and stopover in a small pelagic seabird, the Manx shearwater *Puffinus puffinus*: insights from machine learning. *Proceedings of the Royal Society Series B* **1660**: 1215–1223.
- Guilford, T., Freeman, R., Boyle, D., Dean, B., Kirk, H., Phillips, R.A. & Perrins, C.M. (2011) A Dispersive Migration in the Atlantic Puffin and its Implications for Migratory Navigation. *PLoS ONE* **6**: e21336.
- Harris, M.P., Daunt, F., Newell, M., Phillips, R.A. & Wanless, S. (2010) Wintering areas of adult Atlantic puffins *Fratercula arctica* from a North Sea colony as revealed by geolocation technology. *Marine Biology* **157**: 827–836.
- JNCC. (2015) *Seabird Population Trends and Causes of Change: 1986–2014 Report* (<http://www.jncc.defra.gov.uk/page-3201>). JNCC. Updated October 2015. [Accessed 20/11/2015].
- Leonard, K. (2014) Breeding Seabirds in Northern Ireland in 2013. *Northern Ireland Seabird Report for 2013*: 6–26. BTO, Thetford.
- Leonard, K. (2015a) Breeding Seabirds in Northern Ireland in 2014. *Northern Ireland Seabird Report for 2014*: 6–27. BTO, Thetford.
- Leonard, K. (2015b) *Seabird Monitoring at The Gobbins in 2015*. Private report to Mid & East Antrim Borough Council.
- Lloyd, C., Tasker, M.L. & Partridge, K. (1991) *The Status of Seabirds in Britain and Ireland*. T & A D Poyser, London.
- Meek, E.R., Bolton, M., Fox, D. & Remp, J. (2011) Breeding skuas in Orkney: a 2010 census indicates density-dependent population change driven by both food supply and predation. *Seabird* **24**: 1–10.
- Miles, W.S. (2013) Fair Isle's Seabirds in 2012. *Seabird Group Newsletter 120*, June 2013. The Seabird Group.
- Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. (2004) *Seabird Populations of Britain and Ireland*. T and A D Poyser, London.
- Newton, S.F. & Crowe, O. (2000) Roseate Terns - The Natural Connection. IWC-BirdWatch Ireland. Monkstown, County Dublin.
- Phillips, R.A., Thompson, D.R. & Hamer, K.C. (1999) The impact of Great Skua predation on seabird populations at St. Kilda: a bioenergetics model. *Journal of Applied Ecology* **36**: 218–232.

- Perrins, C.M., Wood, M.J., Garroway, C.J., Boyle, D., Okaes, N., Revera, R., Collins, P. & Taylor, C. (2012) A whole-island census of the Manx Shearwaters *Puffinus puffinus* breeding on Skomer Island in 2011. *Seabird* **25**: 1–13.
- Smith, S., Thompson, G. & Perrins, C.M. (2001) A census of the Manx Shearwater *Puffinus puffinus* on Skomer, Skokholm and Middleholm, west Wales. *Bird Study* **48**: 330–340.
- Stewart, J.R. & Leonard, K. (2007) *Survey of the Manx Shearwater Breeding Populations on Lighthouse Island and Big Copeland Island in 2007*. Report to Environment and Heritage Service.
- Thompson, W.M. (1851) *The Natural History of Ireland, Volume 3*. Reeve & Benham. London.
- Walsh, P.M., Halley, D.J., Harris, M.P., del Nevo, A., Sim, I.M.W. & Tasker, M.L. (1995) *Seabird monitoring handbook for Britain and Ireland*. Published by JNCC / RSPB / ITE/ Seabird Group, Peterborough.
- Williamson, K., Rankin, D., Rankin, N. & Jones, H.C. (1941) *Survey of Mew and Lighthouse Islands (Copeland group) in 1941*. Private Report.
- Ussher, R.J. & Warren, R. (1900) *The Birds of Ireland. An account of the distribution, migrations and habits of birds as observed in Ireland, with all additions to the Irish list*. Gurney and Jackson. London.
- Votier, S.C., Crane, J.E., Bearhop, S., de León, A., McSorley, C.A., Mínguez, E., Mitchell, P.I., Parsons, M., Phillips, R.A. & Furness, R.W. (2006) Nocturnal foraging by Great Skuas *Stercorarius skua*: implications for conservation of Storm Petrel populations. *Journal of Ornithology* **147**: 405–413.

Strangford Lough Nesting Bird Report 2015

Hugh Thurgate¹

¹The Old Schoolhouse, 184 Portaferry Road, Newtonards, BT22 2AJ, UK

Email: hugh.thurgate@nationaltrust.org.uk

Overview

This report presents summary accounts of selected breeding seabirds and wildfowl on the islands of Strangford Lough in 2015. These birds are monitored annually by the National Trust, monitoring which first started in the 1960s. Not all islands on the Lough are covered, but all with historical evidence of breeding seabirds are visited annually.

Full accounts are not given for all species, only for those where sufficient information is available, or where the results are of particular conservation interest. Some of the wildfowl mentioned could be considered honorary seabirds while monitoring of feral geese is important because these species have the potential to displace other breeding species.

The prevailing weather conditions in the spring and summer have a significant effect on the fortunes of breeding seabirds and a summary of the local weather conditions pertaining to Strangford Lough is discussed here. Poor weather in early spring can negatively impact upon ducks, geese and gulls. Poor weather in late spring and early summer can negatively impact upon gulls and terns.

April 2015

The first few days brought rain showers followed by a spell of dry, fine weather from the 4th to 10th. After a few days of cooler, unsettled conditions there was another spell of fine weather with some warm, sunny days. The last week was unsettled and much colder with some sharp frosts. It was a rather dry and very sunny month with 79% of average rainfall and a sunshine total of 143%, making it the sunniest April since 1929.

May 2015

On 2nd May rain, accompanied by strong south-easterly winds, became persistent and heavy continuing into the morning of the 3rd causing localised flooding. This weather event may have impacted upon Sandwich Tern *Thalasseus sandvicensis* on Swan Island, where eggs in the colony at the south western corner of the island had been washed from the original nest location downhill to collect in clusters at the edge of ranker vegetation. This colony was well above the sea and none of the eggs showed any indication of predation. Most of the month was unsettled and cool, the coldest since May 1996, with heavy rain at times and strong winds on several days. Rainfall was 183% the long-term average and sunshine only 76% of average.

June 2015

The first of the month showed a deep area of low pressure centred to the west of Scotland, with gusts of over 60 mph across parts of Northern Ireland. The start of the month was unseasonably cool, wet and windy but after that there was a week or so of settled weather suitable for seabird monitoring. June was a cool month but most parts of Northern Ireland were drier and sunnier than average with rainfall only 57% of the long-term average and sunshine total 120% of average.

July 2015

Overall, a cool and wet month. The mean temperature was provisionally 1.3 degrees below the long-term average with 144% of average rainfall and 84% of average hours of bright sunshine

Wildfowl

Canada Goose *Branta canadensis* (24 pairs)

Breeding numbers peaked in 2005 after a 20-year spell of steady increases interspersed with periods of stability. Since 2006 the opposite has applied with periods of decline sandwiched between periods of stability. Numbers are now back at the levels they were at in the mid-to-late 1970s.

Barnacle Geese *Branta leucopsis* (115 pairs)

This is now the most abundant breeding feral goose on the Lough, first outnumbering Canada Geese in 2001 and in every year since 2005. It first bred on the Lough in 1974 on Parton Island and numbers have been slowly but steadily increasing since the mid-1980s. Their main colonies remain on Inishanier and Inisharoon, with a more recent colony established on Roe Island since 2010. Unusually, in 2015 several young broods were found at the main colonies which may have indicated better than average hatching success.



Figure 1 Strangford Lough

Greylag Goose *Anser anser* (12 pairs)

This feral breeder had four good years in five from 2010 with a record number of 35 pairs breeding that year. The 2015 total represents a little over a half of the average for the last 10 years.

Shelduck *Tadorna tadorna* (14 pairs)

This is a particularly difficult bird to monitor during the breeding season due to its habit of nesting underground, or at least largely so. On the islands of Strangford Lough Shelduck nest primarily in old Rabbit burrows, though occasionally will nest on the surface of the ground where there is dense undergrowth with canopy cover. Since 2006 counts of adults birds congregating above the main colony on Trasnagh Island, as well as any above ground nests, have been used to estimate the total number of breeding pairs. However, breeding Shelduck are not restricted to the islands and birds nest on the Lough's margins.



Figure 2 Feehary Island, Strangford Lough

Red-breasted Merganser *Mergus serrator* (2 pairs)

As for Shelduck a difficult species to monitor accurately due to its habit of nesting underground but, like Shelduck, some females build their nest above ground. Flushed birds and those showing a behavioural association with a particular island whilst offshore are included in the calculation of total nesting pairs. Favoured locations include Ogilby, Dunneineill, The Chanderies and The Boretree Islands.

Eider Duck *Somateria mollissima* (142 pairs)

There was an appreciable drop in Eider Duck numbers in 2014 after a period of year on year increase since 2002. The count for 2015 was similar to that of the previous year. However, this is not thought to be a real decrease, rather a reflection of two late counts in the last two years at the main colony on East Boretree Island, 6th June in 2014 and 8th June in 2015. The Eiders nest in very dense bramble and the population figure is arrived at by counting actual nests, incubating females and females that are flushed. As the undergrowth has got thicker and impenetrable the proportion of flushed females contributing to the total count has increased.

By the time the counts were undertaken in 2014 and 2015 a significant number of clutches were deemed to have hatched and hence the number of flushed females would have been much lower. Experience at colonies in Northern Ireland has shown that a significant percentage of Eider chicks will have left the nest by the end of May (K. Leonard *pers. comms.*). Eider Duck continue to expand their range within the Lough, with Eiders now nesting on at least 21 islands. This increase has been mirrored across Northern Ireland over the last 35 years (Leonard 2010).

Seabirds

Arctic Tern *Sterna paradisaea* (196 AON)

The population estimate was virtually identical to 2014, nesting on eight different islands with Swan Island and Blackrock (Ringdufferin) holding over 50% of the total. Outside the Lough a notable colony of 130 AON was recorded late in the season on Bird Island, Portavogie. The mixed Arctic and Common Tern colony on Blackrock suffered a significant predation event between visits on 23rd June and 1st July with the total number of clutches dropping from 109 to 10. Many predated eggs were found, some still with wet yolk, with Mink suspected as the cause.

Past strongholds such as Dunneineill Island, Ogilby and The Sheelah's are currently largely unused. In recent years birds on Dunneineill have suffered from Mink predation and Ogilby from rat predation (Shannon & Thurgate 2015). Birds nesting on The Sheelahs are extremely vulnerable to wash-outs with both Sheelah's Island itself and South Sheelah's Island barely above the high tide mark. It is probable that this one-time stronghold for Arctic and Common Tern will soon become a pladdy, covered at every high tide. Some of the islands selected for breeding this year are inhabited by rats *e.g.* Jackdaw Island, or are vulnerable to predatory mammals accessing the island at low tide *e.g.* Pig Island. Without intervention (*i.e.* predator control), the future of Arctic Tern on the Lough is a perilous one.

Common Tern *Sterna hirundo* (402 AON)

An increase on last year, partly a result of fewer birds being classified as 'Commic' Terns in 2015. Of great significance was the discovery of a new colony on Rat Island, which represented 25% of the total number of AON in 2015. It is always unsatisfactory to classify unidentified Common and Arctic Terns as 'Commic' terns but such is the nature of monitoring on islands, on some occasions it is unavoidable. None of the breeding tern colonies on the Lough lend themselves to accurate identification of incubating adults from a boat or from the shore.

The National Trust's comprehensive and systematic recording of nesting seabirds started in 1969 and since that time Rat Island has had virtually no breeding seabirds recorded. Such was its lack of significance that from 2001 it 'fell off the radar' during the annual seabird monitoring programme and had not been visited since. It is not clear from records if it was visited regularly in the last three decades of the twentieth century, when the only species ever recorded nesting there was a solitary pair of Lesser

Black-backed Gull in 1991. There is always a chance that the use of Rat Island may have been overlooked prior to 2015. Rat Island was visited on 9th July and at that time there were no tern chicks present, birds were still incubating. Although 2015 was a late year, with the main hatch of Common and Arctic Terns in the last few days of June, the fact there were no young on Rat Island on the 9th July suggests that the colony there may have been made up of birds relocating from another island.

Sandwich Tern *Thalasseus sandvicensis* (581 AON)

Between Operation Seafarer (1969-1970) and the Seabird Colony Register (SCR) (1985-1988), the UK population of Sandwich Tern increased from 10,500 pairs to 14,800 pairs, peaking in 1988, but declining thereafter until the mid-1990s when the index reached its lowest point (JNCC 2015). There has been a marked decline in productivity since 2000 with predation by Foxes probably the most prevalent factor, abandonment of a colony is often the result of predation. National census data in Northern Ireland shows an increase of 80% between Operation Seafarer and the SCR but a decline of 11% between SCR and Seabird 2000. The Northern Ireland population initially declined after the SCR until the early 1990s before increasing steadily to 2005 when it reached a peak of 3,300, of which close to a third were nesting on Strangford Lough (1,092 AON). The Strangford Lough population continued to increase until 2009, reaching 1,992 AON, which given the decline in NI as a whole from 2005 is likely to have represented at least two-thirds of the NI population that year. The 2015 total of 581 AON on Strangford Lough was the lowest count since 1998.

In the last few years the main colony has been on Dunsy Rock which is separated from Dunsy Island by two small channels of water at low tide. This makes it vulnerable to mammalian predation from Dunsy Island and Islandmore. In 2014 a seabird predation study carried out by the National Trust during the nesting season found evidence of Mink predation on Dunsy Rock (Shannon & Thurgate 2015). In 2015 the Sandwich Terns settled very late on Dunsy Rock. There were just 20 Sandwich Tern clutches counted on 3rd June but 394 a month later. In typical years the majority of Sandwich Terns have young chicks in the first week of June. The other main colony on Swan Island seemed to be well established by late May, with 181 AON on 29th May and at least 39 chicks that could be ringed on a visit to the island on 11th June. Significant egg failure was noted in the western colony on Swan Island on 29th May, with clusters of abandoned eggs found. By 11th June the Swan Island eastern colony had completely disappeared. It is probable that some of the Dunsy Rock clutches found on July 1st may have been re-lays from birds that had originally settled on Swan Island or indeed outside of the Lough. If this was the case the population figure presented of 581 AON is an over-estimate.

Table 1 Pairs of seabirds, wildfowl and waders on the Strangford Lough Islands 2014–15

	2014	2015
Ringed Plover	2	4
Oystercatcher	83	70
Sandwich Tern	819	581
Arctic Tern	196	194
Common Tern	110	402
Commic Tern	111	31
Combined Arctic & Common	417	627
Black-headed Gull	1181	1265
Great Black-backed Gull	82	62
Lesser Black-backed Gull	438	433
Herring Gull	720	679
Common Gull	333	229
Mediterranean Gull	1	1
Mallard	21	12
Gadwall	1	1
Shelduck	20	14
Red-breasted Merganser	0	2
Eider	127	142
Tufted Duck	10	11
Greylag Goose	32	12
Canada Goose	35	24
Barnacle Goose	96	115
Cormorant	309	245
Moorhen	0	0
Water Rail	0	0



Figure 3 Horse Island, Strangford Lough

Whilst 2015 was a particularly poor year for Sandwich Terns in Strangford Lough, its immediate significance can only be judged in the context of All Ireland and UK figures for 2015 and ultimately in future trends for this species. Up until 2014 Strangford Lough consistently held up to 20% of the All Ireland population and 5% of the UK and All Ireland population.

References

- JNCC. (2015) *Seabird Population Trends and Causes of Change: 1986-2014* Report (<http://www.jncc.defra.gov.uk/page-3201>). JNCC. Updated October 2015. [Accessed 20/11/2015].
- Leonard, K. (2010) A survey of breeding Eiders *Somateria mollissima* in Northern Ireland in 2009. *Irish Birds* 9: 11–18.
- Met Office (2015) UK Climate Summary (www.metoffice.gov.uk/climate/uk/summaries/2015). [Accessed 05/12/2015].
- Shannon, T. & Thurgate, H. (2015) Strangford Lough – Seabird Predation Report 2014. *Northern Ireland Seabird Report for 2014*: 28–31. BTO, Thetford.

Lower Lough Erne Islands RSPB Nature Reserve Seabird Report 2015

Brad Robson¹

¹Fermanagh Area Manager, RSPB, Northern Ireland Headquarters, Belvoir Park Forest, Belfast, BT8 7QT, UK
Email: brad.robson@rspb.org.uk

Introduction

The islands of Lower Lough Erne, Co. Fermanagh are home to seven regularly breeding seabird species on 12 islands across the lough. Due to the continual presence of an RSPB warden since 1968 there has been regular monitoring of most species since then, both on and off the RSPB's Lower Lough Erne Islands Nature Reserve, formerly known as Castle Caldwell Forest Nature Reserve. There have been efforts in recent years by the RSPB to encourage breeding terns through the provision of additional purpose-built nesting substrate on Gravel Ridge Island (Figures 1, 2 and 3).

Numbers in parentheses are the Apparently Occupied Nests (AON) previously reported for 2014 (Robson 2015).



Figure 1 Transporting nesting substrate to Gravel Ridge Island



Figure 2 Artificial nesting substrate installed at Gravel Ridge Island



Figure 3 Gravel Ridge Island

Sandwich Tern *Sterna sandvicensis*

The population on Gravel Ridge Island increased to 138 AONs (124), the highest count since 2005 and the third highest recorded for the site. For the first time birds nested on the purpose-built gravel provided for them with 69 pairs nesting on the gravel and 69 pairs amongst the vegetation. Although it was not possible to accurately measure productivity, hatching and fledging success appeared to be good.

Common Tern *Sterna hirundo*

The population increased to 30 AONs (24) on Gravel Ridge Island and all nests were on the area of purpose-built gravel.

Lesser Black-backed Gull *Larus fuscus*

The population continues to rise with 1,211 AONs (904) across nine islands. This is a more accurate count than in 2014 when AONs at two sites had to be counted from a boat.

Herring Gull *Larus argentatus*

Four pairs nested (2), the highest count since 2000 (Mitchell *et al.* 2004).

Great Black-backed Gull *Larus marinus*

Two pairs nested (3).

Common Gull *Larus canus*

The population fell slightly to 163 AONs (183 – note error in number of AONs submitted to 2014 report, which was previously reported as 143) across five sites.

Black-headed Gull *Chroicocephalus ridibundus*

The population increased to 1,026 AONs (1,002) on Gravel Ridge Island (Figure 4), the highest since Seabird 2000 (Mitchell *et al.* 2004).

Mediterranean Gull *Ichthyaeetus melanocephalus*

The male returned to a site on 14th April and attempted to pair with a presumed female Common Gull. There was no evidence of egg laying or young being reared. It was last seen on 9th July.



Figure 4 Gravel Ridge Island

References

- Robson, B. (2015) Lower Lough Erne RSPB Nature Reserve Breeding Seabird Report 2014. *Northern Ireland Seabird Report for 2014*: 32. BTO, Thetford.
- Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. (2004) *Seabird Populations of Britain and Ireland*. T and A D Poyser. London.

Tern Colony Recovery at Green Island, Carlingford Lough, Northern Ireland

Matthew Tickner^{1*} and Shane Wolsey²

¹ c/o RSPB NI, Belvoir Park Forest, Belfast, BT8 7QT, UK

² 25 Ballyholme Esplanade, Bangor, Co Down BT20 5LZ, UK

*Author for correspondence: Matthew Tickner, Email: matthew.tickner@rspb.org.uk

Introduction

Poor numbers of breeding terns and poor breeding productivity were recorded at the RSPB's Green Island reserve, Carlingford Lough, from 2006 onwards. As a result, a programme of close monitoring and management interventions was put into place over the period 2011–2015.

The types of interventions employed are outlined here, as are the subsequent responses of the tern populations. The two major aims of the conservation action were to reduce the predation threats to the colony, and to encourage terns to use safer parts of the island for nesting.

The success of conservation actions is considered demonstrated by an encouraging recovery of tern numbers and breeding productivity.

Background

Carlingford Lough is designated as a Special Protection Area (SPA) under the European Birds Directive, for wintering Light-bellied Brent Goose *Branta bernicla hrota*, breeding Sandwich Tern *Sterna sandvicensis* (internationally important population) and breeding Common Tern *Sterna hirundo* (nationally important population). The terns primarily nest on Green Island within the SPA. Arctic Terns *Sterna paradisaea* also regularly nest on the island, whilst Roseate Terns *Sterna dougallii* have nested historically, although not since 1997.

Green Island lies 600m off the County Down coast, in the mouth of Carlingford Lough which opens to the Irish Sea. It is low-lying, unstable and virtually un-vegetated, though a little *Beta vulgaris*, *Atriplex sp.* and *Matricaria maritima* are present. It is made up of mobile boulders and gravel deposited on bedrock by glacial activity. These deposits are vulnerable to highly dynamic coastal processes. In recent decades the island has reduced in size as those processes have removed material, and has effectively been split into two islands, one extremely low (below a high spring tide level) and small, the other larger rising to around two metres above high water (though still only 0.15 ha) (Figure 1).



Figure 1 Low end of Green Island (in foreground), high end in background

The RSPB has been monitoring tern breeding attempts since 1980. Prior to the intervention described in this paper, which started in 2011, Green Island was home to up to 1,200 pairs of Sandwich Terns (in 1998) and although fluctuating widely, their numbers remained high until 2005. The species ceased breeding in 2008. Common Terns reached a peak of 450–500 pairs between 1999 and 2003, but also ceased breeding in 2008. Relatively small numbers of Arctic Terns used the island, with a peak of 58 pairs in 2004. In the past the island has been home to an important Roseate Tern colony with a maximum of 697 pairs in 1971. However, after this date there was a steady decline, in line with UK and Irish populations generally, with 165 pairs in 1981, 25 in 1989, and finally two pairs in 1997 with none thereafter. All figures taken from Brown (2010).

Monitoring showed that the remaining terns focused on using the low end of the island, with little interest in using the higher end. Compared to the tern populations at the time of designation the decline in tern numbers and apparent poor productivity, followed by colony desertion, suggested serious underlying problems.

Owing to limited monitoring opportunities there was uncertainty about the nature of these problems, but it was thought that predation, poor weather and exposure to high spring tides, one-off storm events or poor food supplies could all have been affecting the tern populations, both in terms of numbers breeding and reproductive success. The ongoing erosion of Green Island is a complicating factor. Whilst the full role of this factor is not understood, it was clear that sufficient nesting space remained available on the island.

In 2011 (Year 1) RSPB commissioned Shane Wolsey to closely monitor tern activity and breeding success on Green Island. At the outset, it was quickly shown that Green Island was a favoured location for breeding Great Black-backed Gulls *Larus marinus* (GB), and in the wider area, 338 GBs were counted in early June of this year within 2.5km of the island. These were thought to be from a population feeding mostly on fish waste associated with Kilkeel, a fishing town located 8 km away. These birds proved to be important predators of tern chicks. Another key observation was to confirm that tern nesting site choice was concentrated on the low part of the island, where washing-out of nests was a real threat.

As a result of these findings and some initial interventions, this first season was followed by monitoring and conservation action on Green Island for the following four years. Over this period a variety of interventions have been employed, always in combination, some of which have been effective and some of which have not.

Actions

Monitoring and conservation actions were undertaken during visits to the island at approximately weekly intervals just before and during the breeding season (April – July) each year. The overall objective of the conservation activity was to increase the number of breeding terns and increase their breeding success (productivity). There were two main aims of interventions. These were (1) to reduce the impact of predation by GBs (and other predators if detected), and (2) to encourage the terns to breed on the high end of the island where they would be less affected by spring tides and adverse weather. As the island is within an Area of Special Scientific Interest, consent for this work was obtained from the Northern Ireland Environment Agency.

Actions specifically aimed at combating predation by GBs were undertaken throughout the breeding season, and were:

- **Nest raking** All GB nests were raked out with the nesting material (usually seaweed) being dispersed, and eggs removed and humanely destroyed. This meant that birds that rebuilt and re-laid could have their nest raked out each week; some persisted in nesting attempts for up to eight weeks.
- **Nest comfort removal** Driftwood and other large items that are washed up on the island form partial shelters beside which GBs locate their nests. These were removed and centrally located in order to reduce the opportunity to nest beside them. Stones and boulders that acted as nest comforts, but which could not be moved, were re-engineered with additional stones to make them less attractive to GBs.
- **Culling 'specialist' tern-predator GBs** This has only been undertaken once in the five-year period. In early July 2014 up to eight resident GBs were seen on a number of occasions to take tern chicks – including almost fledged young. We considered that these resident birds were specialists at preying on terns, and were having a significant impact on tern productivity. After gaining approval from the appropriate authorities, a professional marksman was engaged to shoot these resident gulls. During the first half of July 2014, eight GBs, thought to be the core group of predatory gulls, were shot over two visits.
- **Acoustic deterrent** A small, inexpensive and weathertight system with MP3 player and loudspeaker, powered by a 12V battery, was deployed in 2011–2012. This system played a GB alarm call once every four hours. The aim was that this would disturb and unsettle the resident GBs and make them likely to leave the island.
- **Chick shelters** In the absence of suitable vegetation, lightweight concrete roof apex tiles were deployed as shelters for tern chicks. These allowed the chicks to hide from potential avian predators and from heavy rain. Ten shelters were deployed in year 3 and 20 in year 5. Shelters were deployed very close to tern nests just as the eggs were hatching.
- **Stakes and string** In year 2 the favoured areas for GBs to nest were enclosed within a network of 1m high stakes, with each stake being connected to those around it with bright orange string. The thinking behind this was that the gulls would not be able to fly between the stakes and would find it uncomfortable trying to nest under the network. It was thought that the spacing of stakes and strings would not deter terns from nesting.

Actions aimed at encouraging the terns to move from their favoured nesting locations on the low end of the island onto the high end of the island were undertaken prior to the start of the breeding season:

- **Fine substrate** The high end of the island is made of fist-sized cobbles with the results that eggs can fall between cobbles, and eggs within a clutch can be easily separated from each other. In years 4 and 5, sand, as a finer nesting substrate, was spread in locations that were thought to be the most likely for Common and Arctic Terns to nest (Figure 2). This covered an area of approximately 20 square metres, filling the gaps between cobbles.
- **Seaweed nest material** Experimentally in year 4, and then as a main action in year 5, wet seaweed – wrack washed up along the high-tide line on the island – was spread on the island above the high water mark and over the main part of the high end of the island, to be used as tern nesting substrate (Figure 3). This action followed from realising that Common and Arctic Terns were habitually using washed up seaweed as a base for nesting on the low end of the island, even when the weed had only been washed up at the last high tide.
- **Acoustic attraction** In years 4 and 5 a custom-made solar powered sound attraction system was deployed at the beginning of the breeding season (Figures



Figure 2 Sand being spread on high end of Green Island



Figure 3 High end of Green Island - nest boxes, seaweed, sand patches and solar-powered acoustics



Figure 4 Solar-powered acoustic attractant system

SHANE WOLSEY

SHANE WOLSEY

SHANE WOLSEY

3 and 4). It was located in the centre of the high end of the island, and played, on rotation, calls of Common, Roseate and Sandwich Tern on a constant loop during daylight hours. The aim of this action was to make the terns view the high end of the island as an attractive location where other terns were already in residence.

Finally, as the island has historically been an important location for breeding Roseate Terns, and Europe's largest Roseate colony is just 30 miles away, an aim of the conservation activity was to encourage Roseates to return and breed on Green Island. In addition to Roseate calls being included in the acoustic attraction system described above, a further action was adopted:

- **Roseate nest boxes** 18 Roseate Tern nest boxes were deployed in semi-circular terraces facing into the hollow of the high part of the island. Boxes were of a similar design, and were arranged in a similar fashion, to those used at Rockabill, the aim of this being to encourage Roseate Terns familiar with the latter colony to feel comfortable with the nesting environment on Green Island.

Results

The number of GBs observed on Green Island decreased substantially from Year 1 to Year 5, the maximum observed falling from 97 to six. Another measure of gull numbers, the average number present on monitoring visits (perhaps a better indication of gull usage of the site), was also seen to steadily decline from 29 to four. Not all birds present on the island were attempting to breed there; the figure for territorial pairs, or nesting attempts, declined from eight in 2012 to two in 2015.

Another important change has been that of tern nesting location choice. The smaller tern species in particular regularly chose to nest, prior to interventions, on the low part of the island, probably as this is where the finest substrates were to be found. However, by the 2015 season, virtually all nests were located on the high and safer part of the island (Figure 5).

Over the period of these recorded changes, the recovery in tern populations has been notable. The combined nest count for three species has risen from 86 in 2011 to 555 in 2015.

Sandwich Terns failed to breed at all in 2011 and 2013, although 78 pairs attempted to breed in 2012. Following 76 pairs in 2014, a large increase saw 250 pairs breeding in 2015.

The nests of Common and Arctic Terns are not always readily told apart during brief monitoring visits (that are as short as possible to minimise disturbance). For this reason, nest counts of these species have been combined here. The figure stood at 86 in 2011, but has risen steadily through the period to reach 305 in 2015.

Another key measure of tern breeding performance, and possibly one that hints at future fortunes for the colony at Green Island, is productivity. The regularity of visits to the island has allowed reasonably accurate figures of fledged birds to be collected. Whilst only five and 10 birds were raised to this age in 2011 and 2012 respectively, a steady increase has been seen since, with 60, 170 and 290 fledged terns of three species in the subsequent three years.

Roseate Terns have been attracted back to the newly energised colony, and whilst they have yet to attempt to breed, small numbers of birds have been observed during three out of the five years, although in each instance during only one monitoring visit. Three Roseates were seen on 11th July 2013, two on 30th June 2014 and one on 27th June 2015.

The following graphs show numbers of breeding pairs of tern species from 2009–2015. As mentioned above, distinguishing between common and Arctic Tern clutches can be difficult under time constraints, so figures are combined for these two species:

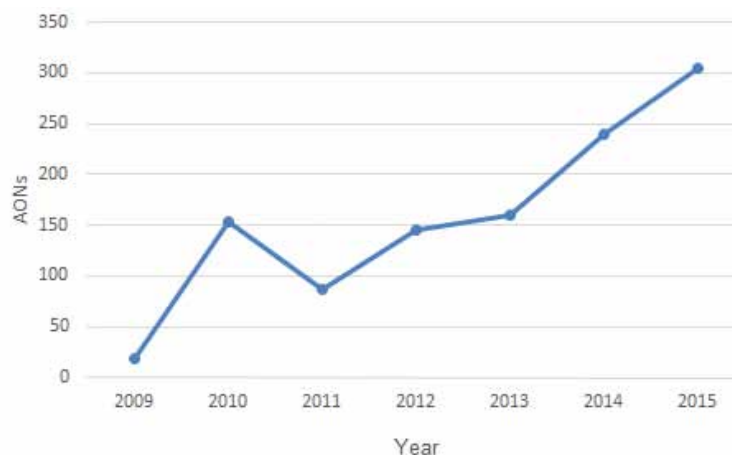


Figure 6 Common and Arctic Terns (combined) at Green Island 2009–2015



Figure 5 Terns nesting on the high end of Green Island

SHANE WOLSEY

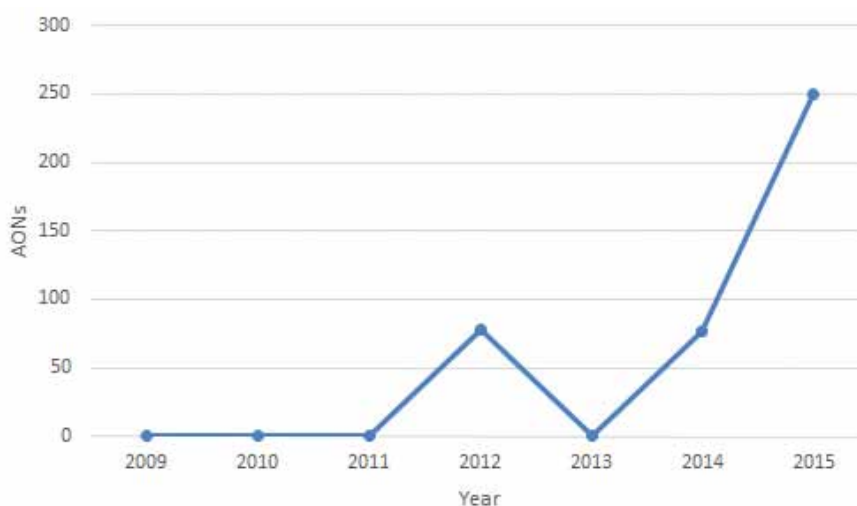


Figure 7 Sandwich Terns at Green Island 2009–2015

The table below summarises some key figures collected through the monitoring effort over the five years under consideration:

Table 1 Green Island summary figures 2011–2015

	2011	2012	2013	2014	2015
Max GB Count	97	85	15	9	6
Ave number of GBs	29.1	20.1	7.4	5	4.2
Number GB Nests	6	8	6	1	2
Peak counts					
Common Tern	160	180	200	200	270
Arctic Tern	165	50	45	60	150
Sandwich Tern	32	80	14	160	550
Peak nest count					
Common/Arctic	86	145	160	240	305
Sandwich	0	78	0	76	250
Fledged terns					
Common	5	10	55	115	100
Arctic	0	0	5	5	50
Sandwich	0	0	0	50	140

Discussion

There has been a dramatic turnaround in fortunes for this important colony over the period we report on here. At the outset, the colony was failing badly and in danger of extinction. Close monitoring of the site through regular visits in 2011 allowed some insights into the problems besetting the seabirds, and interventions thereafter were tailored particularly to address predation by gulls and poor nest location selection by terns.

Different approaches were experimented with, and these were modified or rejected through the course of the seasons on the basis of observations regarding their apparent success or otherwise.

In our effort to reduce predation by GBs, for example, the acoustic deterrent (GB alarm calls) was possibly an attraction to the gulls rather than a deterrent, and the deterrent was alarming to the terns once they started nesting near the system. This was therefore dispensed with after Year 3.

The stakes and string were difficult to put in place on the hard stony substrate. This intervention was intended to deter GBs from nesting, but didn't. They simply walked under the string and nested as normal – the intervention might have worked better if the area covered was more extensive and the network of strings more frequent, but the site did not allow for this.

The provision of tern chick shelters was thought successful, particularly in the absence of vegetation for tern chicks to hide under. To make a significant difference to the survival of chicks it would be necessary to deploy many more shelters than we have so far used.

The raking out of GB nests and the removal of nest 'comforts' was considered successful. It reduced the number of GB nesting attempts, and for some birds, reduced their commitment to the island. Thus there were fewer GBs present throughout the tern nesting period. However, some GBs were so conditioned to nesting on the island, that they simply would not be deterred by these actions.

In 2014 the removal of the resident 'specialist' GBs is believed to have had an immediate and major positive impact on the survival of fledging terns. For the last two weeks of the season it is likely that relatively few tern chicks were predated (compared to what might have been). We believe that it would have been better to undertake the culling two weeks earlier than we did – before the gulls started to have a serious impact on tern chicks. In 2015 we hoped that the new GBs on the island might be less 'specialist' and less committed to the island than those that were removed in 2014. Culling was therefore not undertaken in 2015. By the end of the season we felt that this was a mistake as the new gulls started to predate tern chicks just as effectively. By the time this was evident it was too late to cull the GBs and have a justifiable impact on chick survival. The lesson here is that the decision to cull needs to be taken relatively early in the season, and the actual culling undertaken as the first tern chicks hatch.

Overall productivity for all terns was similar in 2014 and 2015, being estimated at approximately 0.5 young per pair in both years. Whilst this may suggest that GB culling was not effective in 2014, it should be stressed that the intervention did not commence as early in the season as probably was justifiable, and that other factors may also have affected productivity over the two seasons. Whilst, in our opinion, culling had clear benefits for terns in 2014, we aim to carry out further work to better understand these benefits.

Our actions designed to move the terns from nesting on the low end of the island to nesting on the high end proved to be wholly successful. While the sound attraction system and the distribution of fine substrate are thought to have been important components of this, the action which made the greatest difference was the distribution of wet seaweed on the high end. The terns of Green Island are habituated to nesting on seaweed on the low end of the island, and are very happy to lay on weed deposited during the most recent high tide – no matter, it seems, what the next high tide might do. Consequently the distribution of wet weed on the high end of the island provided the material the terns have been used to and encouraged them to nest above the high water mark.

It is thought that a combination of interventions, based on a good understanding of problems at the site, has enabled the colony to recover strongly. It is hoped that this recovery can continue, to return the site to its function as an integral part of Carlingford Lough ASSI and SPA.

In the meantime, thought is being given to the longer-term issue of stabilisation of Green Island and how to ensure that it maintains a key position in the geographical spread of tern colonies in the western Irish Sea, and allowing Roseate Terns to recolonise Northern Ireland.

Acknowledgements

We would like to thank RSPB for funding and volunteers, the Greencastle residents, in particular Sean Cunningham, for their help, support and interest. Thanks also to Kerry Leonard for his help during 2011, and to all the other volunteers who have helped during visits to the island, particularly Ron Price.

We would like to thank The National Trust (Green Island owners), and NIEA, for their support and assistance.

References

Brown R.A. (2010) *The terns of Carlingford Lough: a study into the decline and breeding failures of the Green Island colony*. Private report for the RSPB.

The Rathlin West Light Seabird Centre

Alison McFaul¹ and Amy Colvin^{1*}

¹c/o RSPB, Northern Ireland Headquarters, Belvoir Park Forest, Belfast, BT8 7QT, UK

*Author for Correspondence: Amy Colvin, Email: amy.colvin@rspb.org.uk

Rathlin Island's rocky cliffs and off-shore sea stacks have been home to seabirds for thousands of years. Situated in the North Channel, where the Irish Sea meets the Atlantic Ocean, the island provides rich breeding and feeding habitat for birds which return annually to nest there. Hosting two per cent of the global Razorbill *Alca torda* population (JNCC 2015), over 100,000 Common Guillemots *Uria aalge* and thousands of Black-legged Kittiwakes *Rissa tridactyla*, Rathlin is a top destination for nature-loving tourists. RSPB Northern Ireland welcomes around 15,000 visitors to the West Light Seabird Centre every summer.

The RSPB first declared an interest in protecting the colony in the late 1960s and secured a 50 hectare stretch of the north cliffs. The most recent 'whole island' count took place in 2011 and the breeding successes in 2015 indicated a season of improved productivity and sustainable foraging. It was a bumper breeding season for Kittiwakes in particular. On one plot alone the number of pairs increased from 62 in 2014 to 165. These Kittiwakes also raised a total of 232 chicks, a large increase from a baseline of almost zero three years ago.

Records of Rathlin's birds extend back to the mid 1840s, when the landowning Gage family kept accounts of the birds they saw, many of them shot out of the sky for identification and close observation. These were detailed through meticulous illustrations and watercolour studies and some 92 species were listed. Their early interest was shared by many notable naturalists who were attracted to this area of the Causeway Coast for the then-fashionable discovery and exploration of its geology, landscape, flora and fauna. Throughout the rest of the century other groups and individuals provided intermittent counts and reports on the island's birds, with the focus generally being on the large seabird population.

Since 1990 islander Liam McFaul has been the RSPB NI warden on Rathlin. Liam's family has been farming, fishing and working within on the island for many generations, at least since the 1750s. Alongside his colleagues, Liam has developed habitat management systems and seen the reserve areas expand, both through the purchase of land by RSPB NI and by gaining local landowner support. Two key species - Chough *Pyrrhocorax pyrrhocorax* and Corncrake *Crex crex* - have particularly benefitted from these efforts.

Chough were the most common corvid in the 1920s, but by the 1980s the species was extinct on the island. Since the introduction of specialised control of cliff top grazing, one breeding pair has been present since 2007, raising between two and four chicks annually. Roonivoolin reserve was purchased in 2008 with the specific aim of supporting the species and this special place now attracts thousands of walkers each summer, enjoying the panorama from Scotland's Kintyre to Ireland's Donegal, with lighthouses, loughs and lolloping hares adding to the view!

Corncrakes were a night time annoyance due to their noisy 'crekkings' until they too fell silent by the 1980s. Corncrake habitat around the Church Bay area has been enhanced by RSPB NI and continues to be developed with early nettle cover and prescriptive silage harvesting methods. A calling male was heard as recently as May 2014, giving hope that the work the charity is doing to provide homes for this elusive species is working and they may breed again on Rathlin in the not-too-distant future.



Figure 3 Kittiwake Pair

You will be sure to see Puffins *Fratercula arctica* if you visit the recently refurbished West Light Seabird Centre during the 2016 breeding season. The seabird colony is something of an assault on the senses – the sight, sound (and smell!) is like nothing else. RSPB NI has been operating a viewing facility here since 1990, courtesy of Irish Lights (IL) which allows access to the platform overlooking the Puffin banks at the cliff base. Situated literally at the heart of the colony, the lighthouse is a spectacular feat of engineering, clinging to the cliff face with the lantern gleaming red at its foot and sweeping a beam across the Guillemot breeding ledges at night.

The Seabird Centre is due to re-open in March 2016 following a significant investment by IL, thanks to funding from the European Union's INTERREG IVA cross-border Programme, managed by the Special EU Programmes Body (SEUPB). The refurbishment has seen a new visitor reception area created and, for the first time, access to the lighthouse will be possible.

As a partner organisation with 11 other lighthouses around the Irish coast, RSPB NI is now a member of the Great Lighthouses of Ireland Trail – opening up the site to thousands more visitors and bringing economic benefits to the whole island.



Figure 1 Rathlin West



Figure 2 Rathlin Seabird Centre

References

JNCC. (2015) *Seabird Population Trends and Causes of Change: 1986-2014 Report* (<http://www.jncc.defra.gov.uk/page-3201>). JNCC. Updated October 2015. [Accessed 20/11/2015].

For more information on the facility, or to support the work of the RSPB in giving nature a home on Rathlin, please email Alison.McFaul@rspb.org.uk. Each summer RSPB NI also recruits a team of volunteers to engage with the visitors who travel from all over the world to this special place. For more information on getting involved for two weeks or more, visit rspb.org.uk/volunteering or contact Jane.Shah@rspb.org.uk.



Figure 4 Puffin

Movements of Herring Gulls Breeding on the Copeland Islands During the 2015 Breeding Season

Philip W. Atkinson^{1*}, Nigel A. Clark¹, Richard Holland² & Shane Wolsey¹

¹British Trust for Ornithology, The Nunnery, Thetford IP24 2PU, UK

²Queen's University Belfast, School of Biological Sciences, Medical Biology Centre, 97 Lisburn Road, Belfast BT9 7BL, UK
Current address: School of Biological Sciences, Bangor University, Bangor, Gwynedd LL57 2DG, UK

*Author for correspondence: Phil Atkinson, Email: phil.atkinson@bto.org

Despite being one of the most well-known and widespread coastal species, Herring Gulls *Larus argentatus* are a priority conservation species. Declines have been recorded across the UK since the late 1960s and they are a red list species in the UK (Eaton *et al.* 2015) and Northern Ireland (Colhoun & Cummins 2013). From the late 1960s to the Seabird 2000 survey, Herring Gull numbers declined by 96% (Cramp *et al.* 1974; Mitchell *et al.* 2004) in Northern Ireland, although numbers seem to have recovered somewhat over the past decade.

The causes of the declines are poorly understood but could include diseases such as avian botulism, as well as changes in food availability (Lloyd *et al.* 1991; Mitchell *et al.* 2004). Herring Gulls are extremely adaptable, being an opportunistic and generalist forager. The increased availability of food resources from urban areas, refuse tips and farming operations has meant that Herring Gulls are now increasingly occurring inland, although they are still predominantly a coastal species.

Herring Gulls and other seabirds have been shown to specialise in their foraging strategies and there is evidence that breeding success may be influenced by their individual specialism. For example, variation in diet choice (on refuse, other seabirds or in intertidal areas) of Herring Gulls in North America was strongly related to individual breeding performance (Pierotti & Annett 1991). In this study, intertidal specialists laid eggs earlier, produced larger and heavier clutches, and had higher rates of hatching than generalists and other specialists. However, despite differences in performance related to laying and hatching, there were no significant differences in fledging rates, either between years or among diets. In the Netherlands, however, the foraging strategy adopted by individual pairs did influence fledging success. The less successful pairs travelled to the feeding grounds more frequently (pre-egg and egg stages), and left the territory unguarded for longer periods of time during the egg and chick stages.

As a preliminary study to understand the movements of Herring Gulls in Northern Ireland, we caught 20 Herring Gulls on Big Copeland, one of the Copeland group of islands at the southern entrance to Belfast Lough, and fitted them with Movetech 20g GPS/GSM devices during the egg stage of breeding to look at where birds were foraging during the breeding period.

Methods

Herring Gulls were caught using either a wire mesh cage trap which was placed over the nest or a remotely fired loop trap placed around the nest. After capture, birds were ringed with both a BTO metal ring and a plastic colour ring, measured and 20 individuals were fitted, using a body harness, with a 20g Movetech GPS/GSM device (Figure 1). The GPS tags were set to record a position every hour, and more frequently if the battery levels were high. The data were downloaded via the GSM mobile phone network and stored in the Movebank database (www.movebank.org). These data were imported into ArcMap 10 and the location of each point was classified as being on (i) Big Copeland, (ii) the mainland or (iii) at sea using an OpenStreetMap GIS layer (<http://www.OpenStreetMap.org>).

An additional 20 Herring Gulls were fitted with just the BTO metal rings and the colour rings, to act as a control.

These activities required a number of permits and licences (from Northern Ireland Environment Agency and the Special Marks Technical Panel) which were obtained by BTO. This also required the training of local personnel in the skills associated with the gull catching methods used, and fitting body harnesses.

Results & Discussion

We received data from all 20 GPS-tagged individuals, although limited data were received from two tags. From the first few days of the tags being fitted, it was clear that each individual bird had a very specific area in which it foraged and that very little foraging was taking place in the coastal zone as the majority of tracks were to urban or suburban areas (Figure 2). Birds from the southern and western side of Big Copeland tended to forage to the west



Figure 1 Tagged Herring Gull



Figure 2 Tracks of 18 birds for which >100 fixes were recorded between fitting of the tags in early May 2015 to 31 July 2015. Each colour represents an individual bird (image courtesy of Google Earth)

and concentrated in Bangor, but also fed in Belfast docks and Dundonald. Three birds made occasional trips across Belfast Lough to Carrickfergus (two birds) and Larne (one bird). Birds from the eastern side of the island tended to forage further to the east and south and used areas such as Donaghadee, Millisle and one bird ranged as far south as the fishing port of Portavogie. This last bird was one of the few that spent much of its time in the marine environment and perhaps was following fishing boats. It took one longer journey on 26 June across the Irish Sea and rested on rocks next to Peel Castle on the Isle of Man. It then returned to its more usual foraging pattern of spending time in a bay approximately halfway between Millisle and Ballywalter.

The majority of birds spent their time in suburban and urban areas. Industrial areas, such as the Balloo Industrial Estate in Bangor were favoured and the birds spent a lot of their time sitting on buildings in the industrial estate. For example, of the 18 birds for which we received >100 locations, 12 individuals spent time sitting on the roof of Eddie Irvine's indoor racing track and several birds were located as sitting on rooftops near potential food sources such as the Kentucky Fried Chicken restaurant on Balloo Link. Access to freshwater was also important. For example, seven of the 18 birds used Conlig Reservoir, on the outskirts of Bangor, presumably to drink and bathe in.

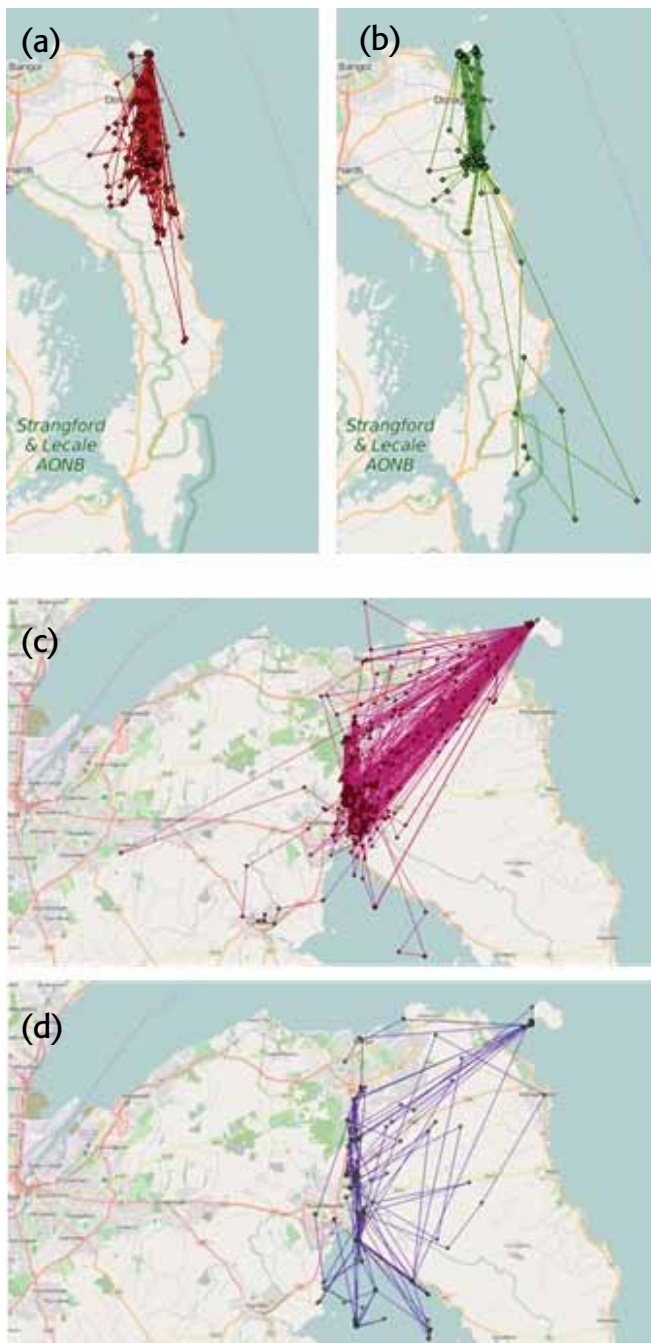


Figure 3 Examples of movements recorded for two of the tagged Herring Gulls. Individual 1 - (a) May to 31 July movements and (b) movements from 1 August to 31 October. Individual 2 - (c) May to 31 July movements and (d) movements from 1 August to 31 October

For each bird, there were strong similarities between their movements during the period they are actually breeding and provisioning young (May to the end of July) and the subsequent three months (August to the end of October) (two example birds in Figure 3). All but one of the 18 birds made trips between Big Copeland and the mainland during the later period indicating that, even after the breeding period, it was important for individuals to remain near their breeding areas.

In all, between fitting the tags on 4-6 May and the 31 July, a total of 16,027 fixes were received. Of these, 52.6% were from Big Copeland (8,532 fixes), 42.1% (6,016 fixes) were from the mainland and 5.3% (859 fixes) were from marine or coastal areas, showing how few points were from marine or intertidal areas. These results are supported by analysis of Carbon and Nitrogen stable isotopes which showed that in 2014, birds from Big Copeland were feeding mostly on terrestrial food sources, whereas birds from Green Island (Strangford Lough) were feeding predominantly on food with a marine origin (O'Hanlon 2014).

These results show that Herring Gulls feeding on the Copeland Islands tend to follow very similar foraging patterns when provisioning young. With the exception of two individuals, there were no offshore foraging trips observed and the vast majority of foraging was spent in urban and suburban habitats. The population of urban nesting gulls is increasing across Britain and Ireland and there has been an increase in human-gull conflicts, both in terms of direct conflict (aggression shown to humans) and indirect in terms of noise, fouling and fears about disease transmission. Coupled with changes to the way refuse is disposed of (more covered tips and covering up of freshly dumped waste) and the reduction in fisheries discards brought about by changes in EU fishing policy, scavenging gulls, such as the Herring Gull, are increasingly coming under pressure in both the marine and terrestrial environments. This study highlights the potential vulnerability of the wild population breeding on the Copeland Islands to changes in the availability of anthropogenic food. Measures intended to reduce access to refuse, reduce gull usage of public areas and discouragement of feeding by the public will likely impact on the Copeland Islands' gull population.

Thanks

We would like to thank all the volunteers who assisted with catching and tagging gulls, as well as Philip McNamara, our boatman, who facilitated access to the island, and the islanders who gave us moral support and advice. We would also like to thank Adam McClure who is managing the collection of colour ring re-sightings data, and NIEA for their licensing support. Finally, we would like to thank the 2014 NGO Challenge Fund which has part-funded this project.

References

- Bukacińska, M., Bukaciński, D. & Spaans, A.L. (1996) Attendance and Diet in Relation to Breeding Success in Herring Gulls (*Larus argentatus*). *The Auk* **113**: 300–309.
- Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014–2019. *Irish Birds* **9**: 523–544.
- Cramp, S., Bourne, W.R.P. & Saunders, D. (1974) *The Seabirds of Britain and Ireland*. Collins.
- Eaton, M.A., Aebischer N.J., Brown A.F., Hearn R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* **108**, 708–746.
- Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. (2004) *Seabird Populations of Britain and Ireland: Results of the Seabird 2000 Census (1998–2002)*. T & AD Poyser.
- O’Hanlon, N., McGill, R. & Nager, R. (2014) Resource use of Herring Gulls in Northern Ireland. In Leonard, K. & Wolsey, S. (eds) *Northern Ireland Seabird Report 2014*. Belfast: British Trust for Ornithology.
- Pierotti, R. & Annett, C.A. (1991) Diet choice in the Herring Gull: constraints imposed by reproductive and ecological factors. *Ecology* **72**: 319–328.

Acknowledgements

The Editors of the Northern Ireland Seabird Report 2015 are grateful to Roddy Mavor of JNCC for assistance with data and strategy. Many thanks to all those who have surveyed seabirds, collected data or provided information to assist us over the year. This report would be impossible without your efforts and you have contributed to our knowledge of seabird populations in Northern Ireland. The following people and organisations have helped in some way and to them we are very grateful:

Adam McClure	Ernest Hunter	Matthew Tickner
Akiko Shoji	Gavin Duffy	Michael Parr
Amy Burns	Gavin Ferguson	Michael Stinson
Ana Almeida	Gillian Parr	Neil McCullough
Andrew Croy	Girvin Buick	Nina O'Hanlon
Andrew Upton	Hayley Sherwin	Philip Carson
Andy Carden	Hugh Thurgate	Philip Galbraith
Anne Guichard	Ian Enlander	Ronald Surgeoner
Annette Fayette	Ian Irvine	Stephen Foster
Anthony McGeehan	Ian Humphreys	Susan Price
Bob Bleakley	James McCrory	Tim Guilford
Brad Robson	John McKillop	Tracy Platt
Carol Richmond	John Smyth	Wesley Smyth
Catherine Hunter	Julian Greenwood	Simon Pickett
Chris Sturgeon	Kendrew Colhoun	Shane Wolsey
Claire Dore	Kerry Leonard	
Dave Allen	Kerry Mackie	Bangor Marina
David Galbraith	Kyle Hunter	Copeland Bird Observatory
David Morrow	Laura Smith	Natural Copeland
Declan Clarke	Liam McFaul	NIEA
Donnell Black	Marcus Austin	RSPB
Ed McGuigan	Mark Smyth	Ulster Wildlife
Emma Cunningham	Matthew Scott	

Appendix – The Seabird Co-ordinator Role

Seabird Co-ordinator

The main aim of the Seabird Co-ordinator is to facilitate an increase in annual seabird monitoring across Northern Ireland. The co-ordinator will work closely with JNCC to create a definitive register of Northern Ireland sites. The Co-ordinator will publish an annual report of the state of seabirds populations, monitoring and research in Northern Ireland. The Seabird Co-ordinator role is funded by the Northern Ireland Environment Agency (NIEA).

Steering Group

The NI Seabird Steering Group will advise on the development of a five year strategy, will advise on the evolution of a NI wide group of volunteers, the programme of activities that the Seabird Coordinator will undertake, and on the preparation of a five-year data collection strategy.

NI Seabird Network

This is a network of seabird surveyors and researchers in Northern Ireland which that will be created through the work of the Co-ordinator.

Project Aims

The aims and objectives for the Co-ordinator are as follows:

1 To act as a regional co-ordinator for the collection and dissemination of seabird data in NI.

Objectives

- 1.1 Ensure all data already being collected is submitted to JNCC by end year one.
- 1.2 Develop a five year data collection strategy within eight months of appointment.
- 1.3 Publish an NI seabird annual report.

Methodology

- i. Identify and liaise with all current surveyors. This will include:
 - a. liaising with JNCC to identify who currently provides data and who does not;
 - b. liaise with known surveyors to ensure their data is available, and to understand exactly what they survey and what they do not (including RSPB, UWT, BTO, NT, consultants, and individuals);
 - c. Gather all currently collected data, collate this, and ensure submission to JNCC.
- ii. Identify gaps in data, including for example: geographic omissions, abundance counts, productivity, diet, birds at sea and assess practical methods for collecting these data (volunteers, professional).
- iii. With the advice of the NI Seabird Steering Group prepare a five year strategy for formalising the collection of all data.
- iv. Working with the NI Project Manager, the Seabird Co-ordinator will prepare an annual 'NI Seabird Report' that is suitable for public distribution at the end of each calendar year.
- v. Site data for sensitive species will not be revealed.

Outputs

- a. All collected data goes to JNCC Seabird Monitoring Programme, NIEA and the Centre for Environmental Data and Recording (CEDaR) in the following formats:
 - i. A spreadsheet containing species-specific counts, arranged by count section and in a format compatible with the Seabird Monitoring Programme database and the NIEA computer system.
- b. A five year strategy document.
- c. NI Seabird Report.

2 To encourage and manage the involvement of volunteers in the collection of data.

Objectives

- 2.1 Create a NI Seabird Group of volunteers and act as secretary.
- 2.2 Develop an active surveyor network of 30 people by end year one, 40 by end year two, and 50 by end year three.

Methodology

- v. Establish, by invitation, an NI Seabird Steering Group to advise on the development of the five year strategy, and to act as an advisory body for the evolution of a NI wide group of volunteers.

- vi. Through open invitation, seek volunteers who would like to be members of the NI Seabird Network (with membership being free). This means that the following will be invited to join:
 - a. BTO and RSPB members in NI
 - b. participants in the Ocean of Wings Film Festival
 - c. members of BTO NI Representative's 'bird people' list (about 500 members)
 - d. other individuals who are not included in the above.
- vii. Organise two seabird events that will bring together the network of volunteers annually. These events could include the following:
 - a. Survey methodology training.
 - b. Marine environment issues conference or workshop (possibly in partnership with UWT).
 - c. A follow-up film festival.
 - d. Speaker events (optimising any visit made to NI by noted seabird scientists).
- viii. Regular email updates and encouragement sent to members of the NI Seabird Network.
- ix. Create an NI Seabird Monitoring web presence that will facilitate the dissemination of results and will link to sources of national and international seabird information and research.
- x. The NI Seabird Steering Group, and the NI Seabird Network, will forge links with The Seabird Group www.seabirdgroup.org.uk

Outputs

- a. Formalised NI Seabird Steering Group.
- b. Creation of NI Seabird Network.
- c. Two networking, learning and awareness events annually.
- d. Increased number of active volunteers assisting with surveying.
- e. NI Seabird Monitoring website.

3 To champion the evolution of NI towards being a role model region within the SMP.

Objectives

- 3.1 Co-ordinate with JNCC within UK, and BWI in RoI, throughout period of appointment.
- 3.2 Promote and encourage new research into seabird distribution, productivity, survival and movements with a view to publication in the scientific literature.
- 3.3 Act as a focal point for the planning of site coverage within Northern Ireland, assisting with integration of professional and volunteer input as the next cycle of Common Standards Monitoring for national and European designated sites and the UK National Seabird Census approach.

Methodology

- i. Maintain regular and appropriate communication with JNCC and BWI.
- ii. Identify all historical seabird colonies in Northern Ireland.
- iii. Create a comprehensive register of seabird breeding sites in Northern Ireland.
- iv. Through advice from the NI Seabird Steering Group and close liaison with NIEA, identify, and prioritise, areas of weak survey coverage, as well as research needs and opportunities.
- v. Identify seabird ecology monitoring projects which can be carried out to give improved data on seabird ecology and productivity.
- vi. Identify additional sources of funding that will assist with enhanced survey costs.
- vii. Encourage NI Seabird Network members to access existing JNCC grants for volunteers.
- viii. Actively manage volunteers to survey all seabird breeding sites.
- ix. Make appropriate assessments with regard to the ability and expertise of volunteers to undertake certain surveys.
- x. Total survey effort – volunteers and professionals – will be recorded.

Outputs

- a. Regional (NI) seabird trends will be available for key species.
- b. Regional productivity data for key species will be available on an annual basis.
- c. Robust data available for regional marine policy making and protection action planning.
- d. Increased output of scientific papers.

This is the third edition of the Northern Ireland Seabird Report, covering 2015. This report is the published outcome of the work of the Northern Ireland Seabird Network – a network of volunteers, researchers and organisations – coordinated by the BTO Seabird Coordinator, and funded by NIEA.

FRONT COVER IMAGE: LUKE MCCLEAN

British Trust for Ornithology
Head Office:
The Nunnery, Thetford
Norfolk IP24 2PU
Tel: +44 (0)1842 750050
www.bto.org
Registered Charity No 216652 (England & Wales) SC039193 (Scotland)
Company Limited by Guarantee No 357284 (England & Wales)

ISBN No 978-1-908581-63-1



BTO
Looking out for birds



Northern Ireland Seabird Report 2015

NI Seabird Steering Group

Dave Allen (Allen & Mellon Environmental)

Kendrew Colhoun (RSPB)

Kerry Leonard (BTO)

Neil McCulloch (NIEA)

Andrew Upton (National Trust)

Shane Wolsey (BTO)

Report editors

Kerry Leonard and Shane Wolsey

This report is the published outcome of the work of the Northern Ireland Seabird Network – a network of volunteers, researchers and organisations – coordinated by the BTO Seabird Coordinator, and funded by NIEA.

British Trust for Ornithology

The Nunnery

Thetford

Norfolk

IP24 2PU

www.bto.org

info@bto.org

+44 (0) 1842 750050

Registered Charity No.216652 (England & Wales) No.SC039193 (Scotland).

Company Limited by Guarantee No. 357284 (England & Wales)

February 2016 ©British Trust for Ornithology & Northern Ireland Environment Agency

ISBN 978-1-908581-63-1



All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.
