

Northern Ireland Seabird Report 2016



BTO
Looking out for birds



Northern Ireland Seabird Report 2016

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 2017 ©British Trust for Ornithology & Northern Ireland Environment Agency

ISBN 978-1-908581



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 2016 <i>Kerry Leonard</i>	6
The East Coast (Northern Ireland) Marine SPA <i>Neil McCulloch</i>	32
2016 is a Record Year for Larne Lough Islands <i>Matthew Tickner & Shane Wolsey</i>	35
Establishing a Puffin Colony on the Copeland Islands <i>Shane Wolsey & Wesley Smyth</i>	38
Lower Lough Erne Islands RSPB Nature Reserve Seabird Report 2016 <i>Brad Robson</i>	41
Monitoring Gulls and Terns on Lough Neagh <i>Bob Davidson & Stephen Foster</i>	43
Acknowledgements.....	48
Appendix – The Seabird Coordinator Role.....	49



Editorial

This is the fourth edition of the Northern Ireland Seabird Report, covering 2016. This report is the published outcome of the work of the BTO NI Seabird Coordinator, 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 2016 and previous years.

At the core of the Northern Ireland Seabird Network are our surveyors, some of whom work for government bodies such as NIEA, and others 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 their time freely to help, simply because of a love and admiration for these bird species. The amount and quality of work undertaken by volunteers is amazing, and we are fortunate that so many enthusiastic and talented people are part of the NI Seabird Network. This network now numbers more than 70 people, a great achievement when there were only 20 people in Northern Ireland surveying seabirds just four years ago.

This 2016 report on breeding seabirds in Northern Ireland is like the preceding reports. 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 approach we are taking a similar stance to JNCC and their online Seabird Monitoring Programme (SMP) report and this is doubtless the best way to present such a report.

As in previous years several articles have been submitted for inclusion in the 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, additionally, encourage more people to join the Seabird Network. Naturally, a summary such as this does not report all data but all records collected are of real value in understanding our local seabirds. The report is only as robust as the data we are aware of, 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

Kerry Leonard
BTO NI Seabird Coordinator

February 2017



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 in 1969 and 1970 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 aalge*, Black Guillemots *Cephus grylle* and Atlantic Puffins *Fratercula arctica*.

The second census, known as the Seabird Colony Register (SCR), was instigated by the then Nature Conservancy Council and the Seabird Group. 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 SCR 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. It was co-ordinated by the Joint Nature Conservation Committee (JNCC) in partnership with other organisations: Scottish Natural Heritage, Countryside Council for Wales (CCW), Natural England (NE), NIEA, RPSB, The Seabird Group, Shetland Oil Terminal Environmental Advisory Group (SOTEAG), Birdwatch Ireland, and National Parks and Wildlife Service (Dept. of Environment, Heritage and Local Government, Republic of Ireland). 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 as possible, including counts of inland colonies for the first time. The updated estimates allowed the identification of new, and the continued 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*.

Data collection for a fourth national census is being undertaken between 2015 and 2019, its completion 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 most annual seabird surveillance in the UK has been undertaken as part of the Seabird Monitoring Programme¹ (SMP) coordinated by the JNCC. The programme is a partnership of stakeholder organisations throughout the UK. 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 database². The SMP gathers data relating to:

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

The SMP generates annual indices of populations and breeding success from these data which are expressed as a percentage of the population recorded at sites in 1986 when standardised monitoring began (JNCC 2016). 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 at 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 several 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;

¹<http://jncc.defra.gov.uk/page-1550>

²<http://jncc.defra.gov.uk/smp/>

- human activities impact upon seabirds, both positively and negatively, and these effects should be monitored;
- the UK is internationally important for seabirds;
- 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 the post of 'Northern Ireland Seabird Coordinator', was funded by the NIEA, and 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 has created a definitive register of Northern Ireland sites, has compiled an annual report on the state of seabird populations (this report), and has 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

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. 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 a separate site register.



Breeding Seabirds in Northern Ireland in 2016

Kerry Leonard
BTO NI Seabird Co-ordinator

The following species accounts summarise the known status of each breeding seabird species in Northern Ireland (see Table 1). Those accounts also provide a summary of population trends at the main breeding sites, where data exists. These data were collected by many 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	RED

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

** UK Birds of Conservation Concern 4 (Eaton *et al.* 2016)

*** 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 used for flagging species conservation issues (Colhoun & Cummins 2013). Following a 2013 reassessment Great Cormorant, European Shag and Atlantic Puffin moved from the 'Green' to 'Amber' list – a higher concern status – leaving only Northern Fulmar on the Green list (Colhoun & Cummins 2013).

There are some notable differences between the All-Ireland list and the recently published UK Birds of Conservation Concern (Eaton *et al.* 2016). 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 2016. The European Shag is stable in Northern Ireland, while populations of Black-legged Kittiwakes have remained stable or declined at a lower rate than the rest of the UK (Leonard 2016a). The Roseate Tern is not Red listed in Ireland, which supports the largest European colony for the species at Rockabill in Dublin (Leonard 2016a).

Seabird surveys of abundance (breeding numbers) and breeding success in the UK and Ireland are undertaken using standard survey guidelines for each species (Walsh *et al.* 1995). Tables 2 and 3 briefly outline the survey units and methods used for estimating the numbers of each species under consideration in Northern Ireland. For further information please refer to Walsh *et al.* (1995).

²<http://www.habitats.org.uk/priority>

Table 2 Units for surveys of seabird numbers

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 Territory	AOT	An apparently active and occupied territory which may have a nest
Apparently Occupied Burrow	AOB	An apparently active and occupied burrow which may have a nest.
Individuals	Ind	Individual birds.

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, which are available up to 2015. Graphs show population trends, unless otherwise stated gaps in graphs mean no count during that year.

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.

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 AOT 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, Binevenagh, The Gobbins and Muck Island. Small numbers are scattered around the coast where suitable cliff habitat occurs.

Breeding numbers

Long-term data are available for The Gobbins (Table 4), Muck Island (Figure 1) and Rathlin Island (Table 5), although not on an annual basis. The Gobbins held 290 AOSs in 2016, the highest ever recorded, and Muck Island 68 AOS, the highest since 2004. For other sites a comparison is made between Seabird 2000 counts and 2016 counts (Table 6). Away from The Gobbins and Muck the trend has been downwards. Rathlin Island has not been counted during 2013–2016.

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 2016). Since that date numbers in Northern Ireland have generally decreased (Table 6), and a similar trend has also been seen in the breeding abundance index across the UK (JNCC 2016).

Table 4 Northern Fulmar numbers at The Gobbins 1969–2016

Year	Count (AOS)
1969	121
1979	250
1995	226
2000	200
2007	150
2008	210
2013	167
2014	148
2015	201
2016	290

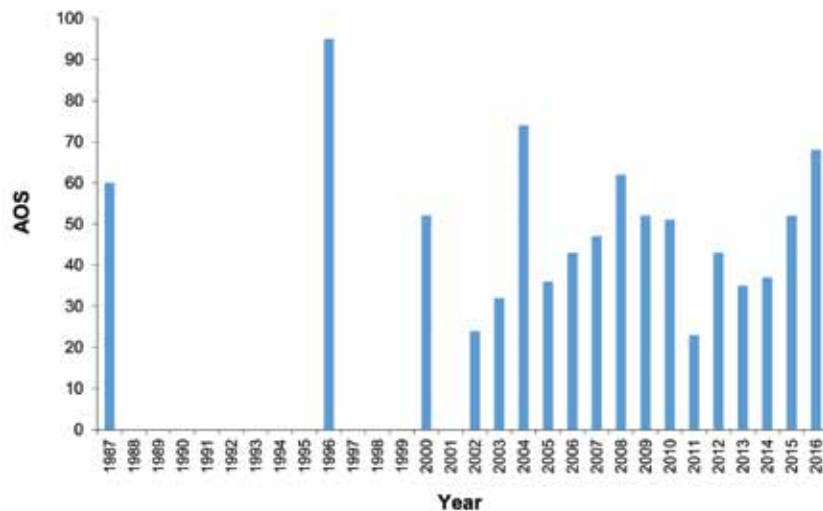


Figure 1 Northern Fulmars at Muck Island 1987–2016

Table 5 Northern Fulmars on Rathlin 1985–2011

Year	Count (AOS)
1985	1,482
1999	2,032
2007	1,072
2011	1,518

Table 6 Northern Fulmar numbers at other sites in NI, surveyed in 2000 and 2016

Master Site	Site	Seabird 2000 AOS	2016
Downhill	Downhill East	17	5
Downhill	Downhill West	296	9
Downhill	Downhill-Mid	299	46
NC North Antrim Coast	Portrush sites 1–4	57	37
Whitehead	Whitehead 1	25	3
Blackhead	Blackhead 1	39	3
East Antrim Coast	Ballygalley Head	9	4
East Antrim Coast	Sugarloaf Hill	0	0
East Antrim Coast	Whitebay	10	8
East Antrim Coast	Park Head	25	20
East Antrim Coast	Galboly	4	1
East Antrim Coast	Crearlargh	11	3
East Antrim Coast	Caranure	68	2
East Antrim Coast	Carrievemurphy	8	0
East Antrim Coast	Portmuck	0	2
The Gobbins	The Gobbins	200	290
Muck Island	Muck Island	52	68
Total for these sites		1,178	501

Breeding success

In Antrim breeding success data were collected for The Gobbins (0.45 chicks/AOS, the same as in 2014 and 2015), Portmuck (1.0 chick/AOS) and Muck Island (0.05 chicks/AOS). The breeding success at The Gobbins is similar to the current UK average (JNCC 2016). Very few chicks were fledged from Muck Island, even when birds on the nearby cliffs 400m away on the mainland were performing well. The reason for this difference is unknown but it is possible that predation plays a part. Muck Island has a population of rats that may be impacting Fulmar productivity and the number of breeding pairs. Most Fulmars nest along the top of the cliff and their ledges are very accessible from above so could be easily predated. There seems to be no other reasonable explanation for the continued poor fortunes compared to The Gobbins.

Breeding success data was also collected for four sites on the north coast in the Carrick-a-rede and Ballintoy areas. These sites had productivity of 0.46, 0.1, 0.47 and 0.31 chicks/AOS respectively (Cliff Henry *pers. obs.*).

At the UK level, the annual productivity index has been steadily decreasing since 1986 (JNCC 2016). Analysis of the SMP dataset by Cook and Robinson (2010) found that mean breeding success of Fulmars was 0.39 chicks/AOS 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 highly pelagic 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). Although tiny numbers had recolonised the Calf, a rat eradication programme in 2012 has resulted in an increasing population (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 AOBs at the turn of the century (Smith *et al.* 2001), a new survey in 2011 suggested that the population was approximately 316,000 AOBs (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 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 AOBs on Rathlin but the Operation Seafarer figure was 1,000–10,000 AOBs (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 AOBs – 3,444 AOBs on Lighthouse Island and 1,406 AOBs 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 could facilitate the colonisation by breeding Manx Shearwater due to the creation of suitable nesting burrows. Surveys have not been carried out over the period 2008–2016 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 2016).

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 was usually a little higher than other sites (Table 7), 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 five other sites across the whole of the UK and consequently there are no UK or country level productivity indices. (JNCC 2016). On Rum, in Scotland, the average has been approximately 0.69 chicks/pair (JNCC 2016). On Skomer, in Wales, average breeding success 1995–2015 was 0.62 chicks/pair. Success on Bardsey has been slightly higher with an average of 0.73 chicks/pair 2004–2012, and in 2014 and 2015 0.70 and 0.66, respectively (JNCC 2016). If a Manx Shearwater chick hatches the chance of successful fledging is high with most losses during incubation (*pers. obs.*).

Table 7 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 UK breeding population of European Storm Petrel was only comprehensively surveyed for the first time during Seabird 2000 (Mitchell *et al.* 2004). Due to the 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 2016). 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’. The only small islands which they could realistically have been referring to are Sheep Island, Antrim and one of The Skerries. Deane (1954) reported up to a dozen pairs on Sheep Island, 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

The Great Cormorant (Cormorant) is a widespread breeding species, often found in dense colonies. Historically, Cormorants have been regarded as primarily coastal birds in Britain and Ireland, but during the last 40 years there has been a gradual shift of wintering quarters inland, to the extent that almost every lowland lake and river has some. In England increasing numbers of Cormorants breed inland, in trees (Newson *et al.* 2007), 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 (Co. Antrim) 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 2). Since then numbers have fallen back to 343 AON in 2016, although this is an increase on 2015 (245 AON). No survey was possible at The Skerries in 2016. The colony at Sheep Island has fluctuated in numbers annually but shows an overall decrease since 1985 (380 AON) to just 84 AON in 2016. The colony at The Skerries has increased as Sheep Island has decreased, so much so that these colonies are now very similar in size. It seems probable that the original population is now spread between the two sites (Table 9), and interchange with the colony at Inishowen (Co. Donegal) is possible – although this assertion cannot be validated e.g. movements of colour-ringed birds. The combined population at The Skerries and Sheep Island has decreased by 66% since 1999. Periodic counts of the numbers at The Gobbins cliffs dating back to 1969 (Table 8) have shown fluctuating numbers in recent years, dropping as low as two AON in 2007, returning to 33 AON in 2008. Numbers remain low with 12 pairs in 2016.

The UK breeding abundance index for Cormorants 1986–2016 indicates that the population increased and stayed high until 2005 but has now rapidly returned to 1986 levels (JNCC 2016).

Table 8 Cormorants at The Gobbins 1969–2016

Year	Count (AON)
1969	23
1979	70
1995	24
2000	41
2007	2
2008	33
2013	11
2014	6
2015	9
2016	12

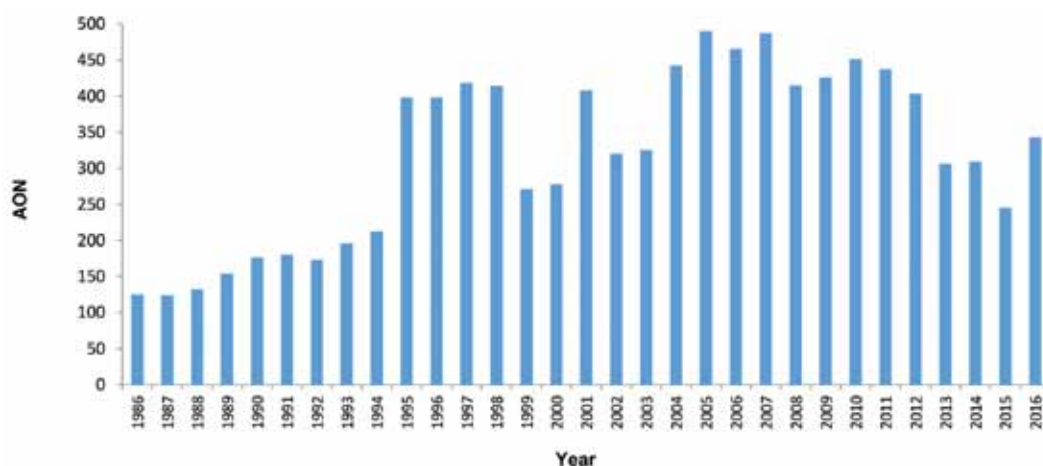


Figure 2 Cormorants at Bird Island, Strangford Lough 1986–2016

Table 9 Cormorants at Sheep Island and The Skerries 1985–2015

Year	Skerries Count*	Sheep Island	Total AONs
1985	0	380	380
1995	0	260	260
1999	0	344	344
2005	0	287	287
2006	0	275	275
2007	0	246	246
2008	0	212	212
2009	0	182	182
2010	163	141	304
2011	64	100	164
2012	91	117	208
2013	98	112	210
2014	91	95	186
2015	64	66	130
2016	Not counted	84	84

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

Breeding success

Productivity data were collected at The Gobbins, where 2.2 chicks/AON fledged. UK productivity has declined by 47% between 1986 and 2008 (JNCC 2016) so the productivity at The Gobbins remains good.

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 2016). 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

Numbers at Muck Island (Figure 4) and The Gobbins (Table 11) have fluctuated upwards over the long term, although populations are relatively low. The population on Rathlin is currently less than half that in 1986 (Table 10). Shag stopped breeding in Strangford Lough in 2007 (Figure 3). The species has been recorded in small numbers at several new locations since 2013.

For the UK the breeding abundance index shows a 45% decline between 1986 and 2015, though this decline has been predominantly in Scotland with populations in England and Wales showing little change (JNCC 2016). Annual return rates of adults are usually in the order of 80–90% (JNCC 2016) but Shags are vulnerable to one off events such as extreme winter storms and the return rate may drop to below 15% because of their impact (Frederiksen *et al.* 2008).

Breeding success

At the Gobbins 2.0 chicks/AON were produced and 2.85 chicks/AON at Muck Island. Productivity at these sites is well above the current UK average of approximately 1.5 chicks/AON (JNCC 2016). Longer term, in the UK from 1986–2015 productivity has varied between 1.0 and 1.6 chicks/nest. 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.

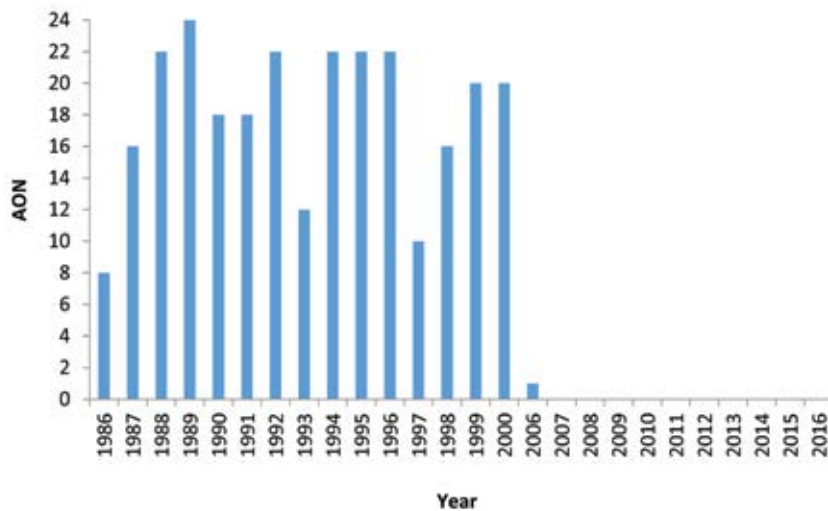


Figure 3 European Shag population at Strangford Lough 1986–2016

Table 10 European Shag population at Rathlin 1985–2016

Year	Count (AON)
1985	109
1995	36
1999	46
2007	58
2011	47
2015	42
2016	47

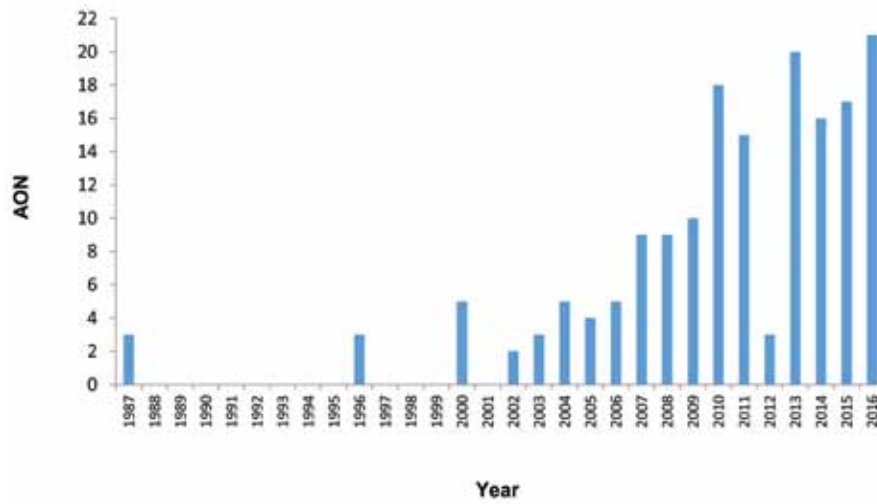


Figure 4 European Shag population at Muck Island 1987–2016

Table 11 European Shag population at The Gobbins 1969–2016

Year	Count (AON)
1969	0
1979	0
1987	18
1995	19
2000	16
2007	7
2008	9
2013	21
2014	14
2015	20
2016	22

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 2016). On Orkney the population increased 23% from 2000 to 2010 (Meek *et al.* 2010) and on Fair Isle the number of AOTs from 1986–2008 increased from 84 to 294 (JNCC 2016).

In the Republic of Ireland the first breeding occurred in the late 1990s in Co. Mayo (Mitchell *et al.* 2004) and there are now likely to be approximately 15 AOTs 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. In 2016 the pair fledged two chicks 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 the most numerous gull species in the world. It is the most oceanic in its habits and most adapted to nesting on vertical rocky sea-cliffs. In Britain and Ireland, the largest and most numerous colonies are found along the North Sea coasts of Britain, around Orkney and Shetland, and off north-west 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 fifteen years.

Breeding numbers

At Rathlin Island, Kittiwake numbers grew from 6,822 AONs in 1985 to 9,917 AONs in 1999, but in the latest survey (2011) had dropped back to 7,922 AONs, a decrease of 20% (Allen *et al.* 2011). There are good historical datasets for The Gobbins (Table 12), Muck Island (Figure 5) and Strangford Lough. In 2016 The Gobbins held 1,072 AONs, representing a continued population increase. Muck Island held 351 AONs. The Portrush cliffs held 279 AONs, an increase from 2015. At Strangford Lough a peak of 466 AONs 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 or growing (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. The breeding abundance index for the UK showed a decline of 60% between 1986 and 2015 (JNCC 2016). During this period the adult return rate at the Isle of May, although fluctuating annually, has declined overall so the survival of adults may be a key issue for Kittiwake conservation (JNCC 2016). 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 0.95 chicks/AON, marginally up on 2015. There was wide variation at different sections of the colony, from 0.6 to 1.25 chicks/AON. At Muck Island it was 1.04 chicks/AON, again a slight increase on 2015. Overall it was a reasonably good breeding season at these sites.

Productivity at Maggie's Leap (0.86 chicks/AON) was lower than in 2014 but a slight increase from 2015. For the second year running some nests were abandoned, possibly due to gull or Peregrine predation (Andy Carden *pers. comm.*). Productivity at the North Coast was again high. At Rathlin there were 1.20 chicks/AON, slightly down on 2015 (1.41 chicks/AON) but still the second highest rate in recent years (Liam McFaul *pers. comm.*). At Portrush a tremendous 1.57 chicks/AON were fledged.

The current trend for productivity across the UK has been a slight increase since a low point in 2007, although productivity is still rarely over 0.6 chicks fledged per AON for many colonies (JNCC 2016, Miles 2013). The last two seasons in Northern Ireland have thus been very good.

Table 12 Black-legged Kittiwake at The Gobbins 1969–2016

Year	Count (AON)
1969	600
1979	1,600
1995	812
2000	791
2007	1,173
2008	914
2013	694
2014	695
2015	835
2016	1,072

Table 13 Black-legged Kittiwake at Maggie's Leap/Bloody Bridge 2013–2016

Year	Count (AON)
2013	534
2014	747
2015	569
2016	NC

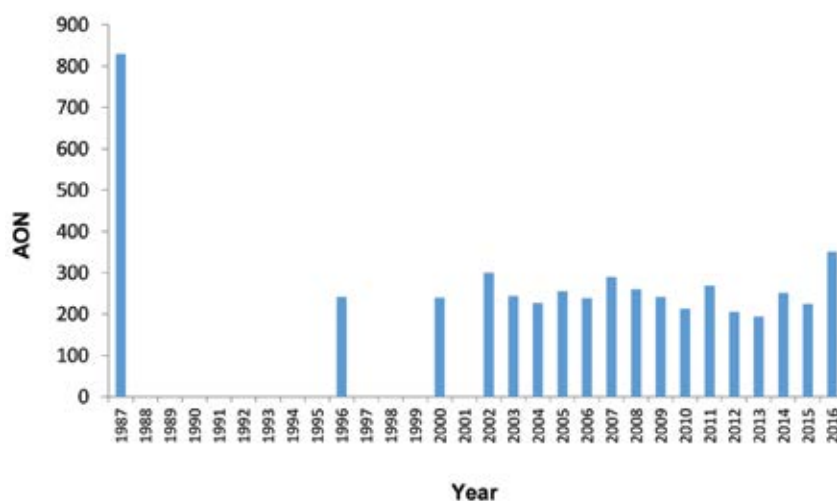


Figure 5 Black-legged Kittiwake at Muck Island 1987–2016

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 Seabird 2000 showed an apparent increase, this was due to more comprehensive surveying that may have masked an actual population decline (JNCC 2016). 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 Lower Lough Erne.

Breeding numbers

The numbers at Larne Lough grew from just 109 AONs in 1987 to over 2,000 AONs in 2008, but then receded. However, in 2016 the count of 3,102 AONs was a record. This is the first time in several years that a completely accurate nest counting census has been carried out. This figure represents nearly a doubling of numbers from 2015. While the accuracy of the 2016 count may be responsible for some of this change, Black-headed Gull populations can fluctuate between years, something which has been previously seen at Larne Lough. Belfast Lough held 386 AONs in 2016. The Strangford Lough population remains at historically low levels.

Figure 6 shows the total population for Cockle Island, Larne Lough, Strangford Lough and the Copeland Islands, 1986–2016, in years where data were available for all four sites.

At Portmore Lough there were 95 AONs. On Lough Neagh a count of the main breeding islands gave an estimate of 11,595 individuals, an increase of 78% over Seabird 2000 (Bob Davidson & Stephen Foster *pers. obs.*). These colonies had not been fully counted in recent years, and counting Lough Neagh presents many challenges, so these counts are very welcome.

Data submitted to the SMP show an increase in the UK abundance index during the late 1980s, but a decline thereafter until 2003. The trend has been upward since then, although with a slight decline in 2015.

Breeding success

The only productivity data reported were from Portmore Lough where 0.63 chicks/AON fledged. Despite being on the 2013 BoCCI list, very little productivity data have ever been collected in Northern Ireland.

In the UK productivity fluctuates from 0–1.2 chicks per AON (JNCC 2016). 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.

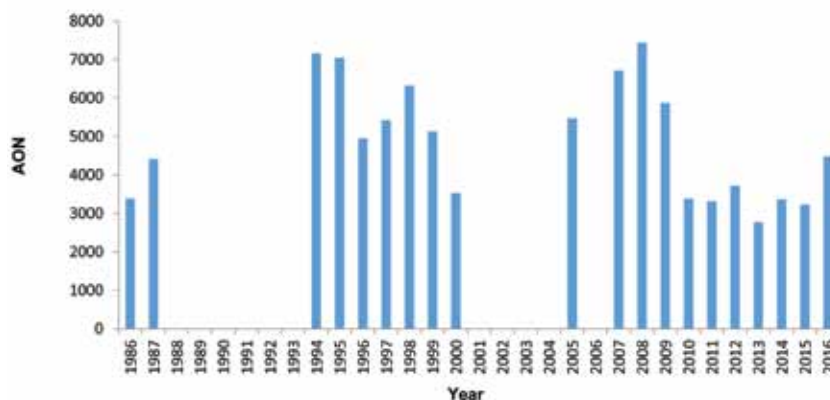


Figure 6 Total population of Black-headed Gulls at Cockle Island, Larne Lough, Strangford Lough and the Copeland Islands 1986–2016

Mediterranean Gull *Larus 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 AONs during Seabird 2000 and there are now approximately 800 AONs across the UK (JNCC 2016). Most large colonies are located in south and south-east England, although the distribution is expanding northward with smaller colonies becoming established elsewhere. The colonisation of the UK was a result of the expansion in population size and range from the species' core population around the Black Sea and into other European countries in the 1950s and 1960s (JNCC 2016). Breeding was first proven in Northern Ireland in 1995.

Breeding numbers

After first breeding in 1995, there were 1–3 AONs annually at three sites in Northern Ireland. This has gradually increased to 5–7 AONs annually, mostly at Strangford and Larne Loughs. Five AONs were at Larne Lough in 2016, none at Strangford Lough but two AONs at Belfast Lough, a new breeding location. A single male was again present on Lower Lough Erne. A single adult was seen in flight at Padian Island, Lough Neagh.

Breeding success

The Larne birds raised eleven chicks, 2.2 chicks/AON. The Belfast Lough birds raised five chicks, 2.5 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.

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 AONs, down from a peak of 830 AONs in 2009. On Strangford Lough there were 333 AONs in 2016, an increase after a dip to 229 AONs in 2015. Larne Lough held 27 AONs in 2016. 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 several locations, although unfortunately not formally monitored (K Leonard *pers. obs.*). 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 2016).

Breeding success

No productivity data were collected in 2016 at any sites in Northern Ireland. In Scotland 0.1–0.7 chicks per nest has been recorded (JNCC 2016). American Mink predation has a large impact at some colonies (Craik 1997).

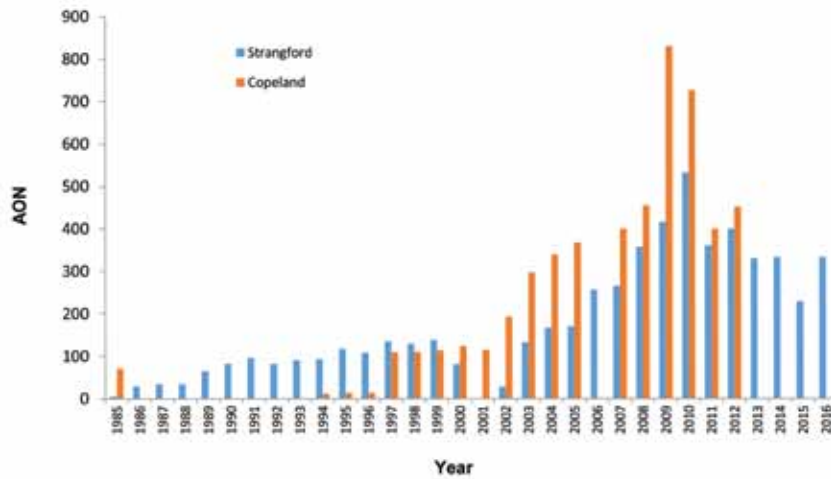


Figure 7 Common Gulls at Strangford Lough and the Copeland Islands 1985–2016

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 in more recent decades on 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 unreported in the rest of Northern Ireland and other records of roof nesters would be welcome.

Breeding numbers

Strangford Lough held 298 AOTs, a 31% decrease from 2015, and Lower Lough Erne 1,185 AOTs. On Lough Neagh the colonies were counted for the first time in recent years, with 1,843 individuals. The population on Lough Neagh has approximately doubled since Seabird 2000.

The breeding abundance index for the UK population indicates increases up to 2000 but has since decreased and is now at 1986 levels (JNCC 2016). This is in marked contrast to the Northern Irish population which has continued to increase since 2000.

Breeding success

No productivity data were collected in 2016 in Northern Ireland.

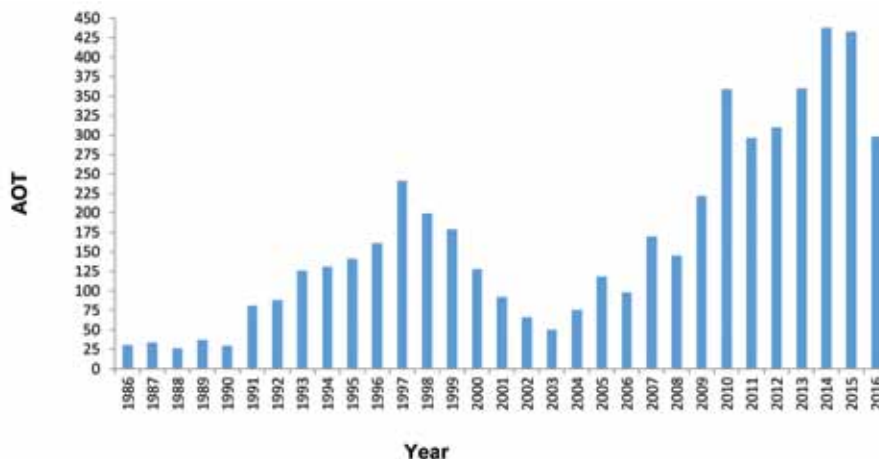


Figure 8 Lesser Black-backed Gulls at Strangford Lough and the Copeland Islands 1986–2016

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 because 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 AOTs in 1985 to 225 AOTs in 2004. The figures for Strangford Lough (Figure 9) mirror this trend, with a massive and rapid decline in the mid-1980s, numbers reaching a low point just after the turn of the century. Since 2007 Copeland and Strangford have shown sustained growth in AOTs. Like the Lesser Black-backed Gull, it is increasingly being recorded as a roof nesting bird throughout the UK (Mitchell *et al.* 2004).

Breeding numbers

The colony on Strangford Lough increased to 1,177 AOT, up 73% from 2015 and the highest annual total since 1995. None of the other major colonies were fully surveyed.

Across the UK the breeding abundance index has declined by around 60%, despite a small recovery observed in the 1990s (JNCC 2016), 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 productivity data was collected in Northern Ireland in 2016.

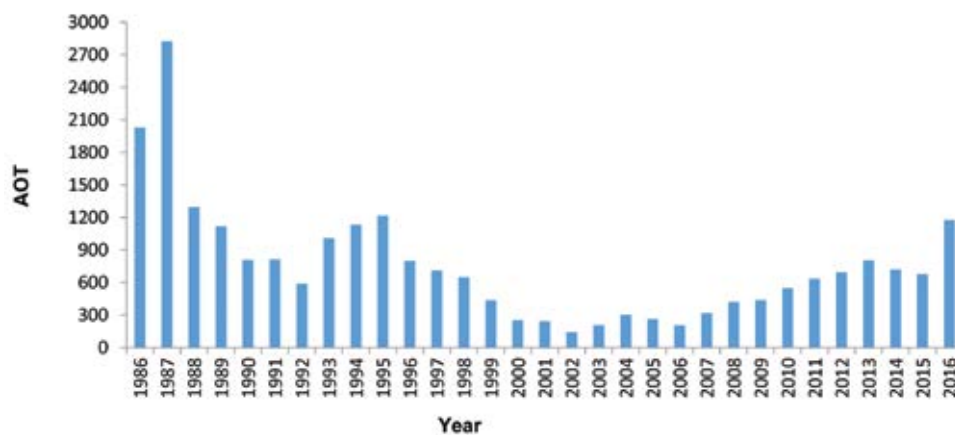


Figure 9 Herring Gulls at Strangford Lough 1986–2016

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 10). 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 125 AONs in 2016, more than double the 2015 total and the highest population since the current recording began in 1986. Four AONs were at Lower Lough Erne in 2016, the highest number since 2002. 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 2016). However, the population has recovered a little and is presently back to 1986 levels (JNCC 2016).

Breeding success

Monitoring across the UK has shown that productivity has increased since the early 2000s (JNCC 2016).

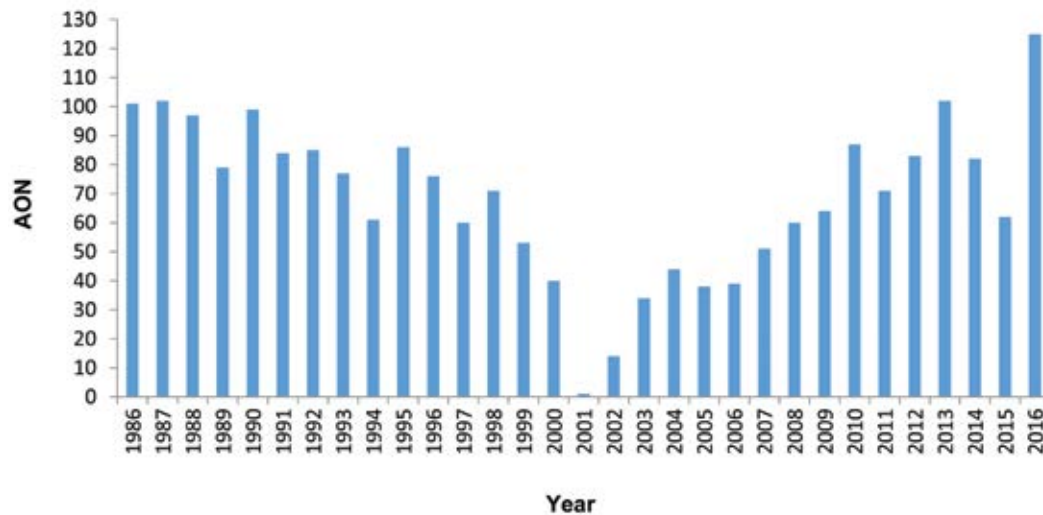


Figure 10 Great Black-backed Gull populations at Strangford Lough 1986–2016

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 as definitely nesting since 1996.

Breeding numbers

No breeding attempts reported.

Sandwich Tern *Sterna 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 between 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 2016). 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.

In Northern Ireland most Sandwich Terns (and other tern species) breed in a few large colonies. For Sandwich Tern, these colonies are at Strangford Lough, Larne Lough, Lower Lough Erne and Cockle Island, Groomsport.

Breeding numbers

Presenting the total populations for the main colonies (Figure 11) is advantageous as terns may move colony from year to year, and it allows an overall appraisal of the Northern Ireland population. At Carlingford Lough numbers collapsed to just seven AONs in 2016 after there were 250 AONs in 2015. Cockle Island had no pairs at all in 2016. Larne Lough supported an extraordinary 1,229 AONs, nearly double the 2015 total, and nearly the same as the total population at the four largest colonies in Northern Ireland during 2015. The total for these four colonies was 1,566 AONs in 2016, slightly up on 2015, but a redistribution of breeding birds has occurred. At Lower Lough Erne 226 AON was the highest count since records began (Brad Robson *pers. comm.*).

Sandwich Tern has the most complete monitoring record over the longest period of any seabird species in Northern Ireland. The UK abundance index indicates that numbers are now similar to those in 1986 but that numbers can fluctuate greatly from year to year (JNCC 2016).

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 no chicks fledged in 2016. UK productivity has decreased from a peak of over 0.8 chicks/AON in 2000 to 0.4 chicks/AON in 2015.

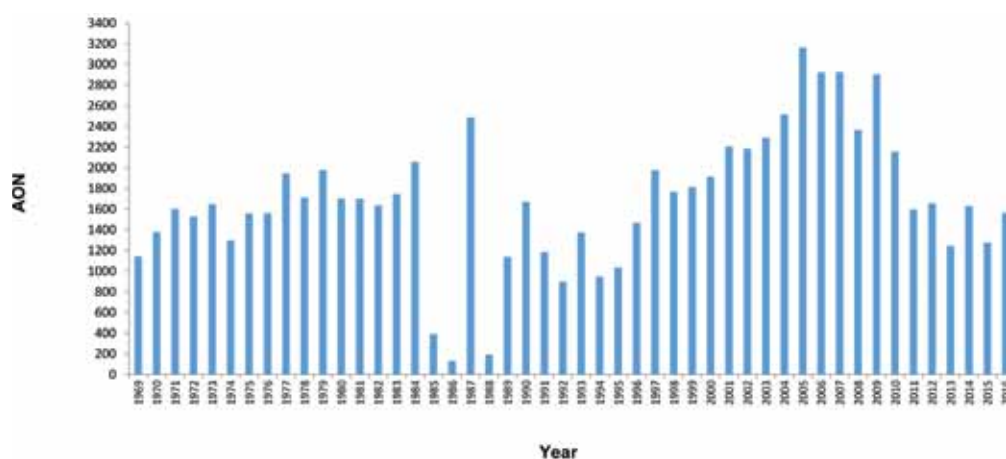


Figure 11 Cumulative Sandwich Tern populations at Cockle Island, Strangford, Carlingford and Larne Lough 1969–2016

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 Northern Ireland colonies are incomplete. The cumulative total for the main eastern colonies is shown in Figure 12. In the late 1980s there was a sudden increase to over 1,000 AONs and, by the early 21st Century there were over 2,000 AONs. Since this peak the population has again declined and numbers are now similar to the late 1980s. The total population for the six main east coast colonies in 2016 was similar to 2015.

In 2016, 41 AONs were located at Gravel Ridge Island, Lower Lough Erne, the highest total there since 1975. There were 75 AONs on the nesting raft at Portmore. Other sites at Lough Neagh held 243 individual adults, at least a doubling of the population since Seabird 2000. At Belfast Lough RSPB reserve held 418 AONs and Cockle Island, Groomsport held 18 AONs. The population at Carlingford Lough dropped to 123 AONs. Larne Lough had 333 AONs. Twelve AON were on a tern raft which has been installed in the river Lagan (Ronald Surgenor *pers. obs.*).

Across the UK the population remained steady from 1986–2006 but since then there has been a decline with the abundance index in 2015 now 19% below that of 1986 (JNCC 2016). Although the reasons for this are unproven there has been a decrease in breeding success in the last 15 years (JNCC 2016).

Breeding success

At Portmore 0.87 chicks/AON fledged. No chicks fledged at Green Island, Carlingford Lough. On the tern raft at the River Lagan 0.66 chicks/AON were fledged. Productivity data for Common Terns in Northern Ireland show they had an average fledging rate of 0.32 chicks/AON between 1999 and 2011 (JNCC 2016).

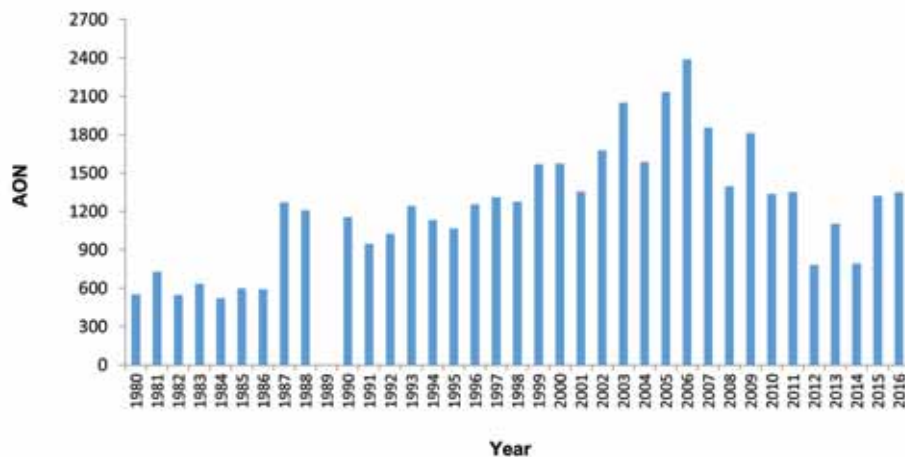


Figure 12 Cumulative Common Tern populations at Cockle Island, Strangford, Carlingford, Copeland Islands, Belfast Lough and Larne Lough 1980–2016

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).

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 2016). The only colony in England, on Coquet Island, has increased slowly this century but has currently levelled out at approximately 100 AONs annually. 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.

The species has suffered a near terminal decline as a breeding species in Northern Ireland (Leonard 2016a). 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) before rapidly decreasing to extinction in the 1950s.

Breeding numbers

In 2016 there was again a single pair at Larne Lough. There was again a considerable influx of birds into Northern Ireland during the late summer, presumably all originating from Rockabill in Dublin.

Breeding success

The pair at Larne Lough fledged one chick.

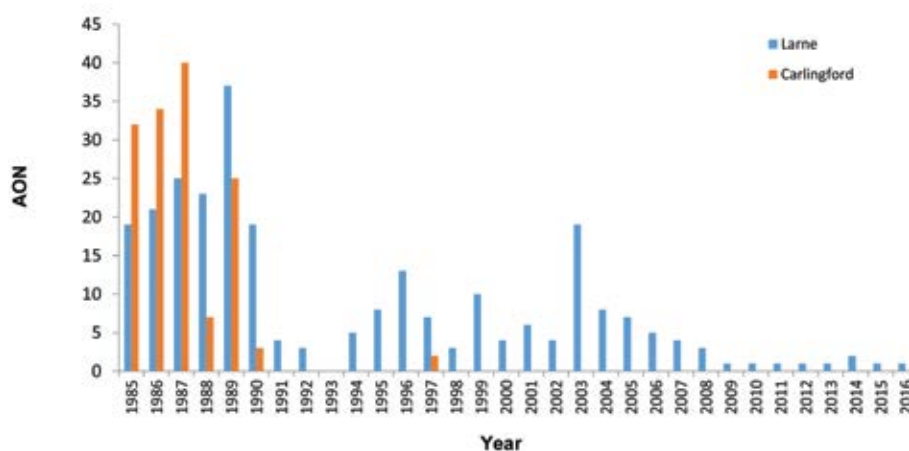


Figure 13 Roseate Tern populations in Northern Ireland 1985–2016

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 as to the true magnitude of this change due to questions of compatibility of methods between censuses. Most 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 the Copeland Islands, Strangford Lough, Belfast Harbour, Bird Island, Green Island, and Cockle Island.

Breeding numbers

Strangford Lough held just 173 AONs in 2016, while numbers at Belfast Harbour collapsed from 83 to four. No full survey took place on the Copeland Islands. Cockle Island held 43 AONs. The colony at Green Island, Carlingford Lough, decreased to 41 AONs.

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 fluctuated between 600 and 1,250 AONs since 2000.

The UK breeding abundance index for Arctic Tern showed an apparent rapid increase, followed by decrease, during 1986 to 1990. From 1990 the index has fluctuated, mainly above 1986 levels (JNCC 2016). The 2015 index was 18% above the 1986 level (JNCC 2016).

Breeding success

No chicks fledged at Green Island, Carlingford Lough in 2016.

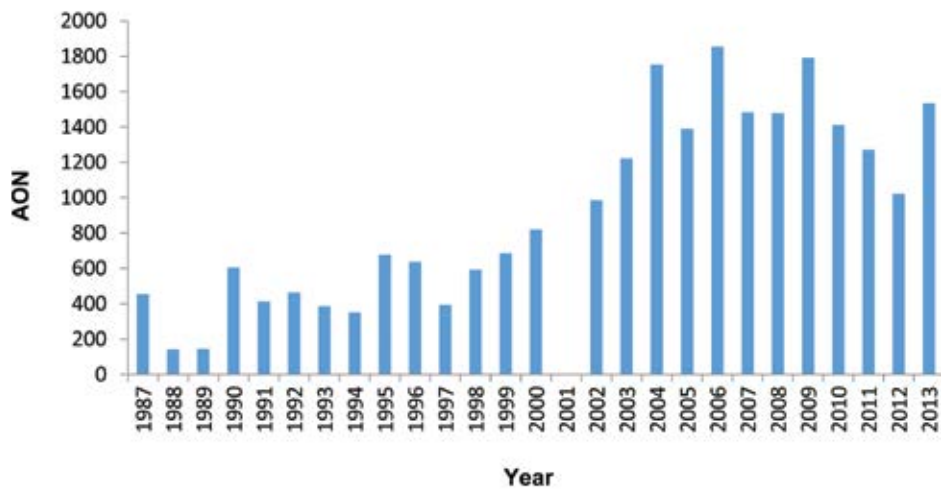


Figure 14 Arctic Tern populations at Copeland, Strangford, Belfast Lough and Cockle Island colonies 1987–2013

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 in 2000 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 2016). 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 2016, 2,675 individuals were recorded at The Gobbins (Table 14) and 2,926 individuals at Muck Island (Figure 15). These were record counts for both sites.

The breeding abundance index shows that across the UK Guillemots have increased by approximately 50% since 1986 (JNCC 2016). However, the increase at Rathlin contrasts with Handa, the largest colony during Seabird 2000, where the population has decreased by 42% since 2000 (JNCC 2016). Studies on the Isle of May have shown that Guillemot adults have a 90% annual return rate (JNCC 2016), 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 15).

Breeding success

No productivity data were collected in 2016. Hooded and Carrion Crows, and Herring Gulls, are responsible for the predation of many Guillemot eggs at The Gobbins.

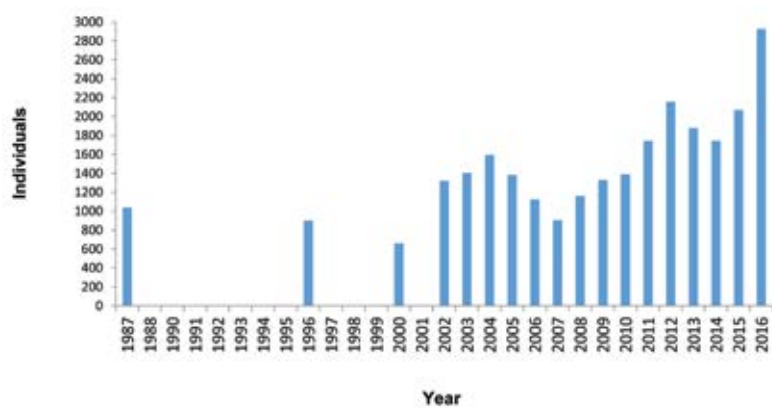
Between 2002 and 2007 just 0.3 chicks/pair were fledged at sites monitored in the UK. Levels of productivity have recovered since 2007 to 0.5–0.6 chicks/pair, but are still below that of the 1980s (JNCC 2016).

Table 14 Common Guillemot populations at The Gobbins 1969–2016

Year	Count (Individuals)
1969	260
1979	600
1995	1,068
2000	1,484
2007	852
2008	1,598
2013	2,084
2014	1,510
2015	2,137
2016	2,675

Table 15 Common Guillemot study plot counts at Rathlin 2011–2016

Year	Study plot count (individuals)
2011	3,295
2012	3,142
2013	2,919
2014	3,065
2015	3,446
2016	3,497

**Figure 15** Common Guillemot counts at Muck Island 1987–2016

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.

This year saw record counts at both The Gobbins and Muck Island. Very large numbers of Razorbill and Guillemot were present offshore at Muck in June. Daily fluctuations in attendance can be large, particularly where many birds may not breed each year. Comparing these 2016 counts to those in 2014 shows how perilous it could be to count nesting Razorbills at a site one year in ten or twenty, to discern national trends.

The UK breeding abundance index has fluctuated over the last 25 years but is still well above 1980s levels (JNCC 2016). On Rathlin the RSPB carry out annual comparative counts of study plots to monitor population levels (Table 17).

Breeding success

Across the UK annual productivity has declined slowly over the last 25 years and is now approximately 0.5 chicks/pair (JNCC 2016).

Table 16 Razorbill populations at The Gobbins 1969–2016

Year	Count (individuals)
1969	78
1979	600
1995	808
2000	552
2007	94
2008	312
2013	854
2014	240
2015	506
2016	858

Table 17 Razorbill study plot counts at Rathlin 2011–2016

Year	Study Plot Count (individuals)
2011	761
2012	700
2013	600
2014	631
2015	716
2016	698

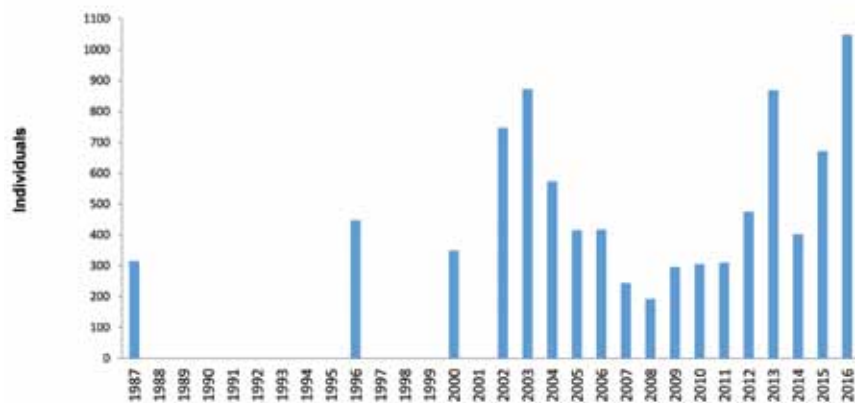


Figure 16 Razorbill counts at Muck Island 1987–2016

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 2016). This increase has 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

Thirty-one nests were monitored in detail in 2016 at Bangor Harbour by Julian Greenwood, with four more at the adjacent Seacliffe Road. The number of Black Guillemots breeding in the Marina has been growing but this represents a small drop from 2015. Some adults were a little underweight in the spring (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 17).

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 fish species must be a key factor influencing Black Guillemot populations and distribution.

Breeding success

In 2016 the Bangor Harbour colony fledged 0.9 chicks per nest (Julian Greenwood *pers. comm.*).

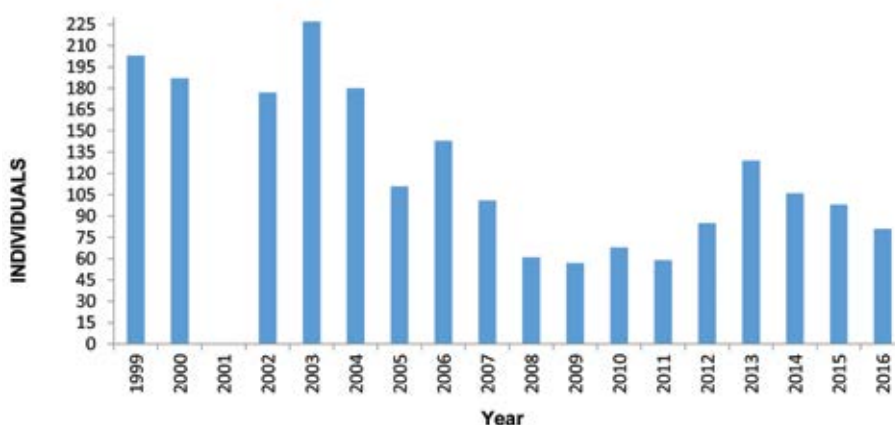


Figure 17 Black Guillemot populations at Rathlin 1999–2016

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 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, using decoys and sound lures to attract birds, has resulted in a new colony with breeding confirmed in 2015. This was 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.

Breeding numbers

In 2016, a peak count of 52 was recorded at the Gobbins, in the same range as counts during 2013–2015 (Leonard 2016a). Birds were present around Lighthouse Island, Copeland Islands, with approximately 60 individuals present. In 2016 there were at least two AOBs but possibly more, the birds are not disturbed and burrows are not investigated (D. Galbraith *pers. comm.*).

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 2016).

Breeding success

Two chicks are known to have fledged from the new colony on Lighthouse Island. Monitoring elsewhere in the UK has shown that productivity is highly variable, it was 0.55 chicks per pair in 2015 (JNCC 2016).



References

- Allen, D., Archer, E., Leonard, K. & Mellon, C. (2011) *Rathlin Island Seabird Census 2011*. Report to the Northern Ireland Environment Agency.
- 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. (2016) 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.
- 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 (2016) *Seabird Population Trends and Causes of Change: 1986–2014 Report* (<http://www.jncc.defra.gov.uk/page-3201>). JNCC. Updated October 2016. [Accessed 20/11/2016].
- Leonard, K. (2014) Breeding Seabirds in Northern Ireland in 2013. *Northern Ireland Seabird Report for 2013*: 6–26. BTO, Thetford.
- Leonard, K. (2016a) Breeding Seabirds in Northern Ireland in 2015. *Northern Ireland Seabird Report for 2015*: 6–27. BTO, Thetford.
- Leonard, K. (2016b) *Seabird Monitoring at The Gobbins in 2016*. Unpublished 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.
- Newson S.E., Marchant J.H., Ekins G.R. & Sellers R.M. (2007) The status of inland-breeding Great Cormorants in England. *British Birds* **100**: 289–299.
- 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., Garraway, 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., Denis Rankin, D., Rankin N. & Jones H.C.** (1941) *Survey of Mew and Lighthouse Islands (Copeland group) in 1941*. Unpublished 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.

The East Coast (Northern Ireland) Marine SPA

Neil McCulloch¹

¹Biodiversity & Conservation Science, Northern Ireland Environment Agency, Klondyke Building, Cromac Avenue, Gasworks Business Park, Lower Ormeau Road, Belfast, Northern Ireland, BT7 2JA, UK

Email: Neil.McCulloch@daera-ni.gov.uk

Seabirds often breed in large colonies and are particularly vulnerable when they return to land. Most effort in protecting these species has gone into securing such traditional nesting sites. Much of this effort has been in the form of site designation at local, national and international levels. The highest level of protection accorded to seabird sites in Northern Ireland is designation as Special Protection Areas (SPA) under the European Union (EU) Birds Directive.

The Birds Directive, along with the EU Habitats Directive, provides the framework for the conservation of nature and wild birds within Europe. These legislative measures provide for a network of protected areas across Europe called Natura 2000 sites. The main objective for all Natura 2000 sites is to maintain (or restore) 'favourable conservation status' of their habitats and species.

Article 4 of the Birds Directive requires Member States to designate the most suitable territories in terms of bird abundance and extent as Special Protection Areas for the conservation of certain wild bird species (EU 2015). Areas selected for SPA designation are typically the most important habitats or territories of certain rare, vulnerable, and migratory bird species, particularly:

- *rare or vulnerable bird species listed in Annex 1 of the Birds Directive.*
- *regularly occurring migratory species.*

The Department of Agriculture, Environment and Rural Affairs (DAERA), is responsible, through the Northern Ireland Environment Agency (NIEA), for the selection, designation and assessment of Special Protection Areas in Northern Ireland. Sites which hold qualifying populations of bird species are selected according to criteria developed for the UK by the Joint Nature Conservation Committee (JNCC 2010).

Northern Ireland has a number of SPAs which are at least partially designated for seabird species, the most important of these being Rathlin Island, the Copeland Islands, Strangford Lough and Larne Lough. Until recently, however, a shortcoming of the SPA programme in the UK was that it largely failed to protect marine areas of importance to seabirds away from their breeding sites. These are predominantly foraging areas but may also include areas important for resting and preening away from the colony or for 'rafting' prior to visiting the colony, as in Manx Shearwaters.

Following a review of the UK SPA network in 2001, the JNCC has led on work to highlight areas used by marine birds as suitable for selection as marine SPAs. For many years the JNCC together with the UK nature conservation agencies have undertaken extensive survey work and collected data on marine birds in UK waters. Analysis of these data has helped to identify the most important aggregations suitable for consideration as part of a network of marine SPAs (JNCC 2015 a, b). As a result of this, a number of important sites have been identified in Northern Ireland's inshore waters (i.e. within the 12 mile limit).

The areas identified are all located off the east coast. In order to incorporate the majority of these, a large, composite area has been proposed for designation as a Marine SPA. The proposed SPA would encompass an area of 96,668 ha and would extend from Ringfad, near Carnlough to Cloughan Head, just north of Ardglass (see map). The new site will incorporate the area of Belfast Lough below the low-water mark that is currently protected as the Belfast Lough Open Water SPA and will also take in the open water and tidal lagoons of Larne Lough, which are not covered by the current SPA designation.

The proposed designation is one element in a suite of measures to improve protection of significant seabird populations in Northern Ireland. These also include provision of a marine extension to the Carlingford Lough SPA covering important foraging areas for terns breeding at Green Island. The Belfast Lough and Larne Lough SPAs have also been re-notified, allowing the inclusion of new selection features. In the case of Belfast Lough these are breeding Common and Arctic Terns and wintering Black-tailed and Bar-tailed Godwits. The new features of Larne Lough are Mediterranean Gull and Sandwich Tern.

The main driver behind the designation of the East Coast Marine SPA has been the UK-wide need to protect important foraging areas for breeding terns. A large-scale study has been carried out by JNCC to identify these (Wilson *et al.* 2013). The results of boat-based tracking of individual birds and shore-based observations have been used to assess foraging ranges from several tern colonies and to provide calibration for a statistical modelling approach used at sites where tracking was not possible (Allen & Mellon 2015). The new SPA will provide protection for the most important coastal feeding areas for Common, Arctic, Sandwich and Roseate terns from the colonies at Larne Lough, Belfast Lough, the Copeland Islands, Cockle Island (Groomsport) and Strangford Lough. During the period 2010 – 2014 the mean maximum combined numbers nesting at these colonies were: Common Tern – 908 pairs; Arctic Tern – 1,351 pairs; Sandwich Tern – 1,656 pairs; Roseate Tern – 1 pair.

While the principal focus underlying the proposed designation has been on terns, the SPA area provides opportunities for the protection of important populations of a number of other species during both breeding and non-breeding seasons.

Prior to visiting the colony under cover of darkness, Manx Shearwaters breeding on the Copeland Islands gather in large flocks ('rafts') on the surface of the sea. These gatherings may start to form several kilometres from the islands, the birds using tidal currents to drift closer to the colonies. As rafting shearwaters in regularly used areas could be susceptible to disturbance or displacement by an increase in vessel movements or inappropriate offshore development, NIEA commissioned a study of rafting behaviour and distribution in 2009 (Leonard *et al.* 2011). The results of this have been taken into account when drafting the boundary of the East Coast SPA and rafting Manx Shearwater will be a selection feature of the new site.

The inshore waters included within the East Coast Marine SPA, especially around Belfast Lough, have been identified as being of international significance in winter for Red-throated Diver, Great Crested Grebe and Common Eider. As a consequence, wintering populations of all these species will be selection features of the SPA.

Aerial surveys by JNCC between 2006 and 2008 found a mean of 142 Red-throated Divers using Belfast Lough in winter. Land-based observations suggest that the majority of these birds spend the night outside the Lough, along the Co. Antrim and Co. Down coasts and fly in to feeding areas in the outer Lough at dawn. Simultaneous counts of these dawn flights from both shores during the period 2010/11 – 2014/15 gave a mean of 121 wintering individuals (6% of the all-Ireland wintering population). Feeding and roosting areas are both covered by the SPA. This species is considered to be particularly susceptible to disturbance.

The current Belfast Lough Open Water SPA, which will be incorporated into the new designation, was classified in 2009. At that time the site qualified for the wintering population of Great Crested Grebe (Mean for 1991/92 – 1995/96 = 2,466 individuals) and this species has been carried forward as a selection feature. In recent years, however, the population of Great Crested Grebe on Belfast Lough has declined. The reasons for this are not clear but there have been no obvious changes in the condition of the site over the period of the decline. Between 2008/09 and 2012/13, the mean number of Great Crested Grebes was 737 wintering individuals (<1% of the international biogeographical population). The species has, however, been retained as a qualifying species for Belfast Lough as the population is still significant (13.4% all-Ireland population) and the site may be of continued importance e.g. as a cold weather refuge. This approach to retention of such site selection features is in line with agreed UK practice.

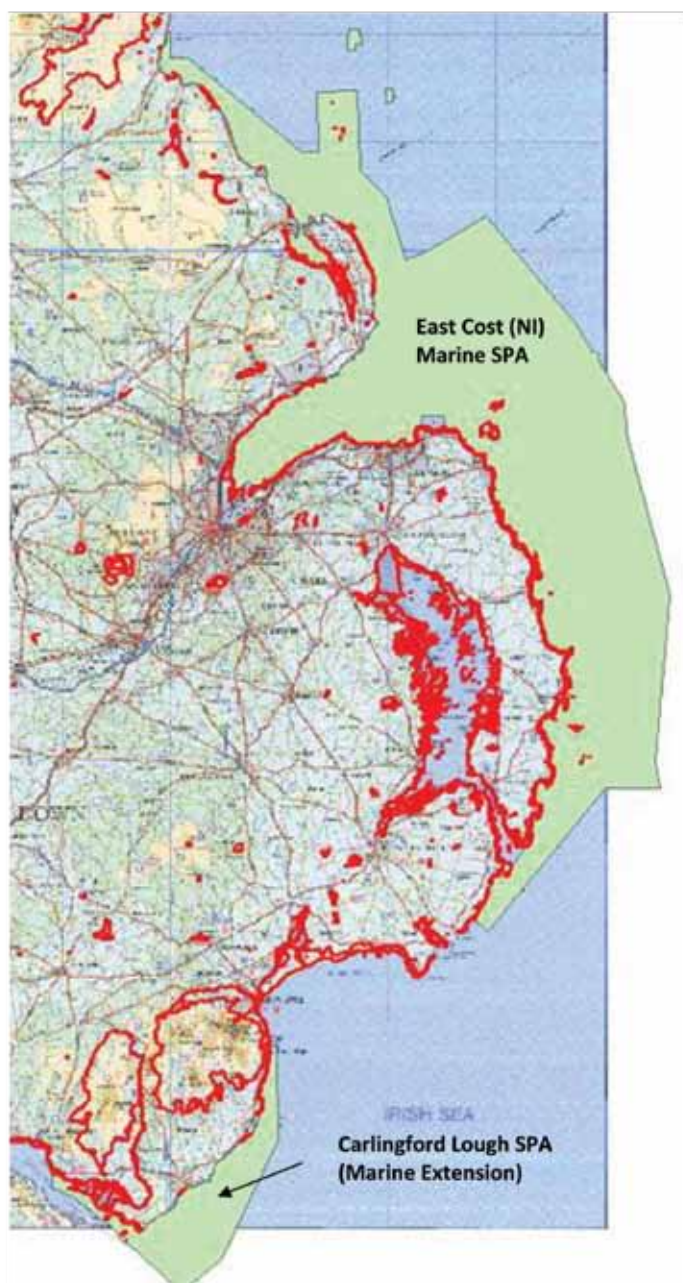
The winter population of Common Eider in the East Coast Marine SPA area, particularly within Belfast Lough, is the largest aggregation of this species in the island of Ireland. The mean number of wintering Eiders during the period 2011/12 – 2014/13 was 3,126 individuals. This population is likely to consist predominantly of birds which breed along the County Antrim and County Down coast but will also include birds from elsewhere in Ireland, and almost certainly birds from Scottish breeding populations.

The proposed marine SPA area is subject to a wide range of commercial and recreational use. Industry, shipping, commercial fishing and shellfish production all operate along the adjacent coast and in the marine waters put forward for designation. There are several working harbours along this coastline. Belfast and Larne Ports are predominant in handling passenger ferries, freight shipping and cruise ships but all the east coast ports contribute to some extent to the above activities, fishing, and water-based recreational pursuits. There is also a heavily used marina at Bangor.

At present significant bird populations within the East Coast SPA area are largely being sustained, suggesting that current levels of human marine activity are not having an adverse impact on these species. The proposed SPA designation would, however, strengthen their protection (particularly outside the area currently covered by the Belfast Lough Open Water SPA) by ensuring that any new projects, developments, or other significant activities within or potentially beyond the site boundary will be assessed under the Habitats Regulations to ensure that they will have no direct or indirect adverse impact on the birds and the habitats which support them.

The proposed designation aims to ensure that a balance is maintained that allows the continuation and evolution of commercial and recreational marine activities while maintaining or increasing populations of the selection features and other bird species using the SPA area.

The public consultation period for the proposed designation has now been completed and it is intended that the proposal will be presented to the European Commission for designation by the end of 2016.



References

- Allen & Mellon Environmental Ltd** (2015) *Validation of selected tern foraging areas associated with breeding colony SPAs*. Unpublished report to the Northern Ireland Environment Agency.
- European Commission (EC)** (2015) *The Birds Directive*. [Online]. http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm
- Leonard K.S., Guilford T.C., Kirk H., Dean B.J., Evans T. & Meade, J.** (2011) *Rafting behaviour of the Manx Shearwater at the Copeland Islands: identifying seaward boundary extensions to the Special Protection Area*. Unpublished report to the Northern Ireland Environment Agency.
- Joint Nature Conservation Committee (JNCC)** (2010) *SPA selection guidelines*. [Online]. <http://jncc.defra.gov.uk/page-1405#s1>.
- Joint Nature Conservation Committee (JNCC)** (2015a) *Marine SPA identification*. [Online]. <http://jncc.defra.gov.uk/page-4184>.
- Joint Nature Conservation Committee (JNCC)** (2015b) *Marine SPAs*. [Online]. <http://jncc.defra.gov.uk/page-1414>.
- Wilson L. J. Black J., Brewer M. J., Potts J. M., Kuepfer A., Win I., Kober K., Bingham C., Mavor R. and Webb A.** (2013) Quantifying usage of the marine environment by terns *Sterna* sp. around their breeding colony SPAs. *JNCC Report No. 500*. JNCC, Peterborough.

2016 is a Record Year for Larne Lough Islands

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

Larne Lough is an enclosed sea lough on the east coast of Northern Ireland, protected from the Irish Sea by the sheltering arm of Islandmagee. It is a largely shallow estuary, comprising extensive intertidal muds, saltmarsh and saline lagoons that support an interesting range of flora and fauna validating the Lough's designation as an Area of Special Scientific Interest (ASSI), Special Protection Area (SPA) and as a RAMSAR site. It is designated as an SPA in part because of its importance as a breeding site for Sandwich Tern *Sterna sandvicensis* and Common Tern *Sterna hirundo*, and for its Light-bellied Brent Goose *Branta bernicla hrota* wintering population. The site is also important for breeding Black-headed Gull *Chroicocephalus ridibundus* as described below.

Midway between the busy Port of Larne to the north and the mudflat-dominated south of the estuary sits RSPB Larne Lough Islands Reserve, consisting of Swan Island and Blue Circle Island. These two islands, both lying around 500m offshore and set apart from each other by 800m, are quite different in character. Whilst the former is a tiny (c.0.14ha), low-lying natural island made up of a thick layer of boulder clay, stony deposits and shell material deposited on chalk bedrock, the latter is a far larger (c.0.6ha) man-made structure, much of which is more elevated above the high water mark.

Island creation

Blue Circle Island was built by the cement company of the same name that operated the quarry at Magheramorne at the time the project was envisaged. Construction commenced in the late 1970s, but for legal reasons was not completed until 1990. As a result of conversations between the company and erstwhile director of RSPB in NI, Dinah Browne, the island was purpose-built to host a seabird sanctuary and to complement the existing smaller seabird island. It was constructed by placing a ring of basalt blocks on the (shallow) seabed to well above the mean high water mark, lining with a heavy geotextile and infilling with two materials that were locally available in large amounts: dredged seabed sediment and inert kiln dust.

Seabird colonisation

Following completion in 1990, the newly-created island was quickly colonised by ruderal plants and the first breeding birds soon followed. 1993 saw the first pioneers using the island, with a handful of Black-headed Gull pairs being joined by such species as Red-breasted Merganser *Mergus serrator* and Meadow Pipit *Anthus pratensis*.

RSPB took on the lease of the site in 1994, and a range of seabird species started to make this their home. Ireland's first recorded breeding Mediterranean Gulls *Larus melanocephalus* used Blue Circle Island in 1995, and there are now 12 seabird species regularly nesting here; these include Black Guillemots *Cephus grylle* that find the gaps between the basalt blocks to their liking.

Population trends of key bird species monitored since 1993 are shown in the accompanying graphs. Numbers of breeding terns and gulls are collated on the basis of clutch counts or AONs (Apparently Occupied Nests).

Breeding season 2016

2016 has seen a record number of seabirds breeding on the two islands. There has been a dramatic increase in overall breeding numbers of seabirds from 408 pairs in 1993 to the 4,796 pairs recorded in 2016: a testament to the vision - and ultimately, a demonstration of the tremendous success - of this island creation project.

The bulk of this total comprises Black-headed Gulls and Sandwich Terns. There were 3,201 Black-headed Gull (AON) at Larne Lough, and Blue Circle Island (with 3,050 AON) is the largest individual colony of this Red listed species in Ireland. In an Irish 'league table' for 2016 the most important overall site for the species is Lough Neagh (Davidson & Foster 2016) with the equivalent of 5,798 AON (spread over eight locations), including its largest colony at Scaddy Island with the equivalent of 2,125 AON. The second largest overall site is Larne Lough. Lady's Island Lake, Co Wexford came next with 2,429 AON and Lough Swilly, Co Donegal followed with 1,450 AON. In Northern Ireland other important sites include Strangford with 1,312 AON and Lower Lough Erne with 1,238 AON (K. Leonard *pers. comm.*).

The number of Sandwich Terns in 2016 has been the highest ever recorded at Larne Lough with 1,229 AON, making this the second largest colony in Ireland this year behind Lady's Island Lake, Co Wexford (1,682 AON). The only other significant colonies in Northern Ireland this year have been Strangford with 337 AON, and Lower Lough Erne, also with its highest ever record of 226 AON (Robson 2016). Sandwich Terns were nearly absent elsewhere in Northern Ireland, including from Green Island in Carlingford Lough and Cockle Island, Groomsport, two sites which have regularly held breeding birds in the recent past.



Figure 1 Young Black-headed Gulls on Blue Circle Island



Figure 2 Young Sandwich Terns on Blue Circle Island

SHANE WOLSEY



Figure 3 A few of the many fledged and nearly fledged Sandwich Terns and Black-headed Gulls on Blue Circle Island in 2016

SHANE WOLSEY

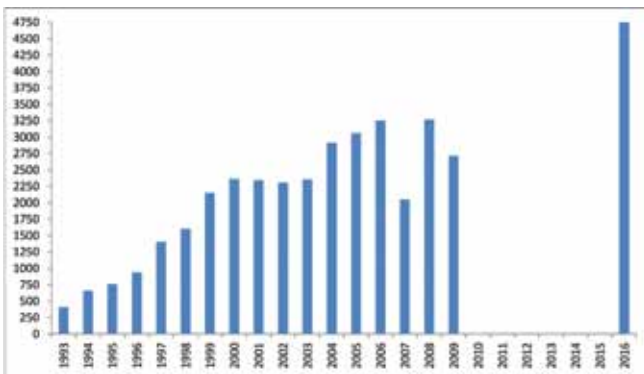


Figure 4 Counts of all seabirds at Larne Lough Islands, for years where accurate AON data is available for all species

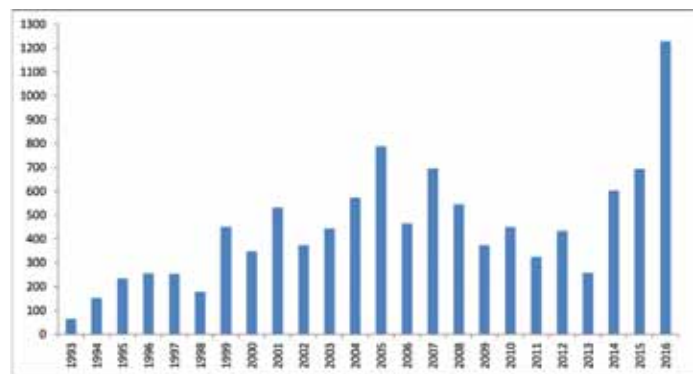


Figure 5 Counts of Sandwich Terns at Larne Lough

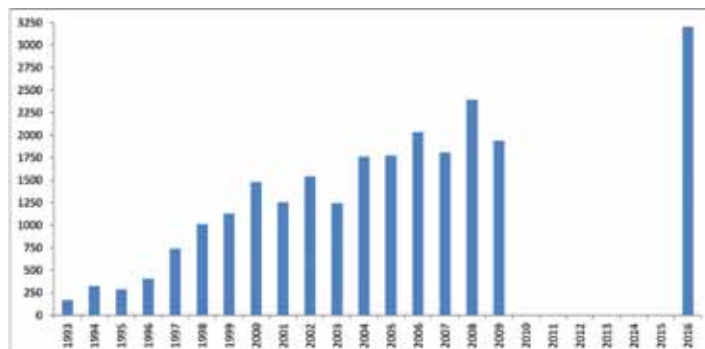


Figure 6 Counts of all Black-headed Gulls at Larne Lough Islands, for years where accurate AON data is available for all species

Conclusion

With over 4,300 pairs of seabirds now breeding on Blue Circle Island, there has been a change in character of the vegetation, given the increased nutrient status of the site. Vegetation is much more lush and extensive than previously, and is mainly Couch Grass *Elymus repens* which is perennial and persistent in nature. The resultant reduction in the amount of open ground may have contributed to the downturn in Common Tern numbers, which peaked at 743 pairs on the two islands in 2006, but is now down to 333 pairs. It is hoped that ongoing and planned vegetation management will create more open ground again and benefit these terns. Maintaining the islands and their breeding seabirds is a priority.

References

Davidson B. & Foster S. (2017) Breeding seabird on Lough Neagh. *Northern Ireland Seabird Report 2016*. BTO, Thetford.

Robson B. (2017) Lower Lough Erne Islands RSPB Nature Reserve Seabird Report 2016. *Northern Ireland Seabird Report 2016*. BTO, Thetford.

Establishing a Puffin Colony on the Copeland Islands

Shane Wolsey^{1*} and Wesley Smyth²

¹25 Ballyholme Esplanade, Bangor, Co Down BT20 5LZ, UK

²c/o Copeland Bird Observatory, Co Down, UK

*Author for Correspondence: Shane Wolsey, Email: shane.wolsey@btinternet.com

Background

Puffins *Fratercula arctica* are vulnerable as a breeding species in Northern Ireland because the only large breeding colony is on Rathlin Island where the population declined 56% 1999–2011, from 1579 birds to 695 birds (Allen *et al.* 2011). Their only other breeding location in Northern Ireland is at the Gobbins, Co Antrim, where only 45–55 are present annually (Leonard 2016).

Puffins breed in burrows and require a breeding location that is free from ground predators. This not the case at either Rathlin or The Gobbins. The steep decline on Rathlin is likely to be because of the presence of Ferrets *Mustela Putorius furo*, a species relatively recently introduced to hunt rabbits. Puffins are colonial breeders with a strong affinity for their natal site, and therefore need some encouragement to breed elsewhere.

The Copeland Islands have never had a Puffin colony. They are free from ground predators with the exception of Otter *Lutra lutra* on Lighthouse Island¹ which will periodically kill birds (Leonard & Preston 2013). Copeland, and in particular the two outer islands (Lighthouse and Mew), is a location where human disturbance can be relatively easily managed.

The Project

The Copeland Puffin project was proposed by Copeland Bird Observatory (CBO) and was designed to encourage the establishment of a new colony of Puffins on Lighthouse Island. Observatory records indicated that Puffins had shown a modicum of interest in the island over many years, with 2–10 birds occasionally sitting just offshore in June and July, but very rarely landing. Puffins show a high degree of philopatry being faithful to their natal site and consequently have to be encouraged to move, or to start breeding, elsewhere. On the Copeland Islands there were no other Puffins and so this project set out to emulate an established Puffin colony.

The project involved:

- encouraging more Black Guillemots *Cepphus grille* to breed through the provision of 50 new nest boxes on the basis that Black Guillemots are a social auk which already used the island to breed, and with which visiting Puffins already associate;
- the deployment of 50 puffin decoys; and
- the deployment of a sound system to broadcast Puffin colony calls.

At the time of initiating the project and the first deployment of the various bits of kit in late May 2012, it was anticipated that it could take 5–10 years for Puffins to become established, if they were going to be attracted at all.

Equipment and location

Decoys

The project required the purchase of 50 decoy Puffins. However, an extensive internet search did not reveal any suppliers other than a company called Mad River Decoy² located in Vermont, USA. Their decoys are hollow, roto-moulded polyethylene with a metal anchor. They were not cheap by the time they were shipped to Northern Ireland, and the appropriate import duty had been paid, but they are high quality, and after five years in the field they still look in good condition.

A steep grassy slope on the east side of Lighthouse Island was selected for deployment, close to the spot where Puffins have been seen offshore in the past. This slope also had ready-made burrows created by Rabbits *Oryctolagus cuniculus* and Manx Shearwaters *Puffinus puffinus*. The slope is at the northern end of the channel between Lighthouse Island and Mew Island, and has open views, and access to, the north Irish Sea.



Figure 1 Puffin decoys deployed in Lighthouse Island

SHANE WOLSEY



Figure 2 Solar power sound system deployed on Lighthouse Island (overlooking Mew Island) to attract Puffins

SHANE WOLSEY

¹ Lighthouse Island is the home of Copeland Bird Observatory, and where the two original lighthouses were located. Mew Island is the location of the current lighthouse.

² www.madrivedecoy.com Mad River Decoy, Jim and Nancy Henry, P O Box 363, Waitsfield, VT 05673, USA

Sound system

The Avian Acoustics birdsong player is a fully autonomous player. It was designed to operate in harsh environments (an IP68 rating – water and dust proof in marine environments) with little to no maintenance required. Puffin calls are stored on an SD card and two directional speakers deliver sound up to 1km away (dependant on positioning and wind). The system is solar powered enabling it to be positioned in remote locations. The system shuts down at night to save battery and prevent annoyance to other wildlife and people. The sound system was deployed among the decoys.

Nest boxes

Fifty Black Guillemot nest boxes of the kind described by Leonard *et al.* (2015) were manufactured and deployed in suitable locations on the eastern shore of Lighthouse Island.

Results

2012

Within a week of deployment (late May) of the decoys and sound system nine Puffins appeared and were close by on the water. A week later this number had doubled, and some Puffins were landing on the Puffin slope. By the end of June there were 50 Puffins present.

2013

The decoys and sound system were deployed in late March (as in each subsequent year). Puffins appeared in very small numbers in the early part of the season but built up to over 100 birds by the end of June. These birds were investigating burrows, mating, displaying, digging out burrows – doing everything except actually breeding.

2014

Fewer Puffins were present throughout the season (with a maximum of 60 in late June) and with fewer landing on the island. It is believed that this reduced activity was primarily due to a pair of Peregrines *Falco peregrinus* nesting a little over 100 metres from the Puffin slope, and successfully raising three young.

2015

This proved to be a similar year to 2013, with Puffins arriving early, in small numbers, but increasing through the season. From early in the season birds were investigating burrows, mating, displaying, and digging out burrows. It wasn't until 5th July, when an adult was seen bringing fish to its burrow, that breeding was confirmed. This is the first ever breeding of Puffins on Copeland. Just one pair was confirmed, though a second pair was suspected of breeding.

2016

For a variety of reasons there has been less monitoring of the Puffins in 2016, but it would appear that the season progressed in a very similar fashion to 2015, with two pairs breeding successfully.

Discussion

The pattern of visitations on Lighthouse Island has been interesting, and similar each year. Few birds are attracted to the site in the early part of the season, but these are adults of breeding age. As the season progresses, and particularly in the second half of June, more presumed immature birds start to arrive. These birds are not arriving to breed, but are prospecting for both a location to breed and a future partner, for next year or subsequent years. Thus, each year the project is run, more and more young birds develop an affinity with the site and are likely to ultimately return to breed.

A project of this nature needs to have a long term vision, and cannot be thought of as being successful until the established Puffin colony is self-sustaining. It is believed that it will be necessary to continue to encourage Puffins to establish at Copeland using decoys and the sound system, at least until a significant colony is established – probably 30–40 pairs. This will probably take at least another five years.

Success is also far from guaranteed – there are many things that could negatively impact the Puffins. The dip in progress caused by the close proximity of breeding Peregrines illustrates this point, and, in late 2016 a Rat *Rattus norvegicus* was sighted on the island. Rats could have a devastating impact on this project, and on all the other ground nesting birds on the island, if not rapidly and effectively dealt with.

Acknowledgements

Thanks to our funders, the Northern Ireland Environment Agency (NIEA) Challenge Fund, administered by the Northern Ireland Environment Link (NIEL), to the many volunteers in CBO who have given their time to implement and monitor the project, to the author's friends who have helped with habitat management and equipment deployment. Thanks also to Spark 4 who developed the sound equipment, and to Luke McClean for his dedication in confirming the first breeding pair of Puffins.



Figure 3 Puffins visiting the new Copeland colony in 2015, one carrying fish for its young

LUKE MCCLEAN

References

- Allen, D., Archer, E., Leonard, K. & Mellon, C.** (2011) *Rathlin Island Seabird Census 2011*. Report to the Northern Ireland Environment Agency.
- Leonard, K.** (2016) *Seabird Monitoring at The Gobbins in 2016*. Private report to Mid and East Antrim Borough Council.
- Leonard, K., Greenwood, J.G. & Wolsey, S.** (2015) Nest Boxes for Black Guillemots. *Northern Ireland Seabird Report 2014*, 40–41.
- Leonard, K. & Preston, J.** (2013) Predation by the European Otter *Lutra lutra* on Manx Shearwaters *Puffinus puffinus* and other seabirds at a key Irish colony – the Copeland Islands, County Down. *Irish Birds* **9**: 553-558.

Lower Lough Erne Islands RSPB Nature Reserve Seabird Report 2016

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 twelve 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.

Numbers in parentheses are No. of AONs in 2015.

Sandwich Tern *Sterna sandvicensis*

The population on Gravel Ridge Island increased to 226 AONs (138), the highest count recorded, the second highest was 158 AONs in 1983. The majority nested on the purpose-built gravel provided for them though a small group which nested amongst the vegetation again suffered during a torrential spell of rain overnight on 6th to 7th June. The impact was not as severe as in 2014 with only a small number of eggs and chicks lost. Although it was not possible to accurately measure productivity, hatching and fledging success appeared to be good.



Figure1 Sandwich Terns at Lower Lough Erne 1969–2016

Common Tern *Sterna hirundo*

The population increased to 41 AONs (30) on Gravel Ridge Island and all scrapes were on the area of purpose-built gravel. This is the highest number since 1975 when there were 60 AONs.

Lesser Black-backed Gull *Larus fuscus*

The population fell slightly for the first time since 2011 with 1185 AONs (1211) across six islands. This is the first decrease since the rapid rise from 363 to 1211 AONs between 2011 and 2015.



Figure 2 Monitoring gulls and terns



Figure 3 Monitoring gulls and terns



Figure 4 Black-headed Gulls

BRAD ROBSON

Herring Gull *Larus argentatus*

Five pairs nested (4), the highest count since 1999.

Great Black-backed Gull *Larus marinus*

Four pairs nested (2), the highest since 2001.

Common Gull *Larus canus*

The population grew slightly to 189 AONs (163) the highest since 2012 across five sites.

Black-headed Gull *Chroicocephalus ridibundus*

The population increased to 1238 AONs (1026) with almost all on Gravel Ridge Island and four pairs on Hare Island, the highest since Seabird 2000.

Mediterranean Gull *Larus melanocephalus*

The male returned to a single site in April though did not appear to form a bond with a female Common Gull for the first time. It was last seen in July.

Monitoring Gulls and Terns on Lough Neagh

Bob Davidson^{1*} & Stephen Foster²

¹14 Lough Road, Upper Ballinderry, Lisburn, Northern Ireland, BT28 2HA, UK

²60 Markville, Bleary, Craigavon, Co. Armagh, BT63 5SZ, UK

*Author for correspondence: Bob Davidson, Email: bobddavidson54@gmail.com

History of monitoring on Lough Neagh

Introduction

'I had just landed the job of nature reserves warden on Lough Neagh in 1979 and was heading out of Kinnegoe Marina in a 17-foot fibreglass Lough Erne style fishing boat with a gently chugging five horse power outboard engine, location sketch maps of islands on my knee and shiny new binoculars around my neck. The task – monitor the breeding birds of the newly established Lough Neagh Islands National Nature Reserve - but how was I going to find all these islands? The sense of adventure could not have been greater had I been setting off down the Amazon with the roughest of directions and vague stories of what I might find.'

This is one of Bob Davidson's early recollections of working on Lough Neagh for the Conservation Branch of the Department of the Environment (DOE). Over the next couple of years, and many bent propellers and sheared shear pins later, he worked out a system of accessing the islands without hitting too many rocks. It also quickly became apparent that a five horse power (HP) engine moves a boat at best about nine miles per hour, at 18 miles from the base at Kinnegoe Marina to Toome the most efficient way of getting around was to tow the boat to the nearest launch point for whichever islands were being visited. That initially meant towing the trailer and boat behind Bob's orange Beetle and putting the outboard engine on the back seat.

Health and safety in those days was not totally unheard of but was addressed through a much more relaxed system than now. Lone working was the norm but with that went a cautious approach in that staff never went out without a lifejacket, or on days where winds of force four or more were forecasted or when visibility was poor. Phil McGill (now Davidson) acted as Bob's return check-in. This matched the principle that in counting colonies of ground nesting birds they were not disturbed in poor weather. It was normal practice then to walk carefully through colonies of ground nesting birds to count the nests.

By 1983 Bob was joined by Noel McGibbon as a ranger for eight years, until he left to be replaced by Kieran Breen who continued to work on Lough Neagh reserves until he retired in 2016. Over this period the boats got bigger – firstly to a 16 foot Orkney Fastliner with a 15HP engine, then to an 18-foot RIB with twin 50HP engines, and finally a 24-foot Osprey cruiser with cabin and twin 115HP outboards. Survival suits, double manning and formal training were all introduced. In the late 1980s and 1990s Darrell Stanley and Brigid O'Neill worked as Assistant Wardens to Bob. Bob moved on in 1994 to be replaced by Stephen Foster as Warden, followed by Judith Montgomery and then Laura Stevenson. The current Warden is Anne McCourt.

Monitoring breeding birds

With the establishment of the Lough Neagh Islands National Nature Reserve (NNR) in 1979, and the allocation of staff resources, a systematic programme of breeding bird monitoring was initiated. In most years through the 1980s and 1990s data was collected on breeding ducks, swans, grebes, coots, gulls and terns. Whilst very valuable from the perspective of individual islands, to guide local management decisions, this programme was focused on those islands within the NNR and was not carried out on a full Lough Neagh context. Most NNR islands were managed under agreement with the Shaftesbury Estates of Lough Neagh Ltd whilst others were managed under shorter term agreements with other owners. Others islands were never in the NNR, though some of these were monitored by informal agreement of the owners.

It was also the case that at that time the nest counting protocols were rather vague. All this means that whilst our knowledge of the breeding birds on individual islands is often good we have only very patchy data on trends of breeding birds at an overall Lough Neagh scale.

Tern management

During the 1980s and 1990s there was systematic management of some of the islands for Common Terns *Sterna hirundo*. Rats were poisoned, scrub was cleared (benefitting nesting waterfowl) and at times vegetation was cleared to maintain bare soil/gravel on tern sites. From 1980 to 1993 Lesser black-backed Gulls *Larus fuscus* were routinely culled under licence, in the knowledge that these gulls preyed on eggs and young of waterfowl and terns, out-competed other birds for nest sites and occupancy of individual islands. Culling was carried out using alpha-chloralose baits on occupied nests under carefully controlled conditions. By 1993 the cull was confined to islands with tern colonies only and from then on culls were limited to occasional very limited nest eradications. From 2005 the culls have largely finished. In the 1990s concrete

pipes and tyres cut in two to form arched shelters were provided at Padian Island tern colony, and wooden boxes on the Torpedo Platform at Antrim Forum, to give chicks protection from bad weather and aerial predators.



Figure 1 Wooden shelters and gravel provided on the torpedo platform



Figure 2 Concrete pipes and tyre arches on Padian Island - note single chicks in a pipe and under a tyre arch

Monitoring in 2016

Methods

With no government-led monitoring activity on Lough Neagh since 2011 Bob and Stephen decided to re-start the monitoring of at least gulls and terns in support of the joint BTO NIEA Northern Ireland Seabird Network, using Stephen's boat and their combined experience of the islands. There are many islands on Lough Neagh but most are small and close inshore. The largest two, Rams Island and Coney Island, are wooded and do not support gulls or terns. Water clarity is poor on Lough Neagh so it is possible to see only inches into the murky algal soup. Although the deeper open lough is easy to navigate the islands often sit within hidden rocky shoals making close approaches to islands very tricky, even with a depth sounder and chart plotter. Paper maps annotated with recommended island access routes prepared from experience gained on previous surveys by Bob Davidson were valuable supplements to the depth contours of the Admiralty chart.

The boat used is a 15-foot day cruiser with 30HP outboard engine capable of a cruising speed of about 20 knots allowing anywhere on Lough Neagh to be reached in fair conditions from Kinnegoe Marina within one hour. The boat had an auxiliary 4HP outboard engine that was set higher on the transom than the main engine and allowed motorised access to shallows. The main engine was left down while the smaller engine was running and when the skeg of the main engine hit rocks the small engine was disengaged and paddles were used until deeper water was reached again.

The work was carried out under a NIEA Wildlife Licence, a 'Licence to disturb birds for scientific purposes' under the Wildlife (Northern Ireland) Order 1985 and Conservation (Natural Habitats, etc.) Regulations (NI) 1995. Permission had not been obtained from the numerous land owners so none of the islands were accessed on foot. The 'flush from a distance method' (Walsh *et al.* 1995) reduced disturbance to nesting birds such as waterfowl and reduced panic among chicks on the ground. It was also less time consuming than walking islands conducting nest counts. The method is comparable to that used on most recent previous surveys.

The east and north shores were surveyed on 6th May and the Toome Bay, the west and south shores were covered on 24th May 2016. The 6th May was too early for terns so Padian was revisited on 24th May and the Torpedo Platform recounted on 23rd June. Lough Beg and Portmore Lough both have tern rafts but were not part of this survey.

All were approached close enough to flush the birds into the air. Both observers attempted to estimate the number of birds and an agreed figure was obtained for each species before moving on to the next colony. Photographs were taken on a compact digital camera at many of the colonies to allow checking of estimates later. Birds were crossed out one by one in colour batches of 100 to obtain a tally for birds at each colony. An example of this is shown below in Figure 3.



Figure 3 Photograph of terns flushed from the Torpedo Platform and marked in colour batches of 100

Comparison with photographs showed that our visual estimates were reasonably good. In the field counts were especially challenging as up to 2,500 gulls were in the air at a time swirling around the islands, with very little time available to estimate numbers before birds would start to hover back down to their nests. For Black-headed Gulls *Chroicocephalus ridibundus* the overall field count tally was about 85% of the number obtained from photographs. Estimate training and lessons learned from 2016 can hopefully lead to future improvements in both methods e.g. better panning photography to facilitate photo-stitching.

Results

The results from the 2016 survey are presented below. These are compared with previously published Seabird 2000 results (Mitchell *et al.* 2004) which was the last comprehensive survey of gulls and terns on Lough Neagh. There are many records of gull and tern breeding colonies going back to the late 1970s in NIEA files that are as yet un-published and are not drawn on here.

Table 1 Black-headed Gull counts for 2016 compared with Seabird 2000

Island (Clockwise from Toome)	Grid Reference	Seabird 2000 (Individuals)	2016 (Individuals)
Toome Bay Islands	H993894-H988865	800	960
Skady Tower complex	H991850-J008850	230	415
Torpedo platform	J129868	490	960
McGarry's	J098779	355	480
Padian	J063635	2,425	2,000
Phil/Owen Roe Flat	J047629	100	30
Scaddy Island	H922656	1,600	4,250
River Rock	H953724	540	2,500
Total		6,540	11,595

Black-headed Gull numbers on Lough Neagh have increased since the Seabird 2000 survey. The main gains have been at Scaddy Island with an increase of 2,650 birds, River Rock with an increase of 1,960 birds, and the Torpedo platform with an additional 470 birds. Overall Lough Neagh has the largest number of breeding Black-headed Gulls anywhere in Ireland (Leonard 2017).

Table 2 Lesser Black-backed Gull counts for 2016 compared with Seabird 2000. The numbers are of birds seen at the island breeding colonies unless cited as nests or non-breeding birds

Island (Clockwise from Toome)	Grid Reference	Seabird 2000	2016
Skady Tower Complex	H991850-J008850	205	230
Tolans Flat	J058660	90 nests	600
Padian	J063635	24	150
Phil/Owen Roe Flat	J047629	20	200
Croaghan Island	J039623	90	30
Shallow Flat	H991646	135	40
Coney Island Flat	H945646	60	120
Derrywarragh Flat	H 93965 65487	2 nests	120 non-breeding
Scaddy Island	H922656	215	300
River Rock	H953724	0	3
Taylor's Rock	H962810	18 nests	50
Total		749	1,843
		110 nests	

There has been a significant increase in the population of Lesser Black-backed Gulls on Lough Neagh since the Seabird 2000 survey (Mitchell *et al.* 1994). The largest gains have been at Tolans Flat with an additional 420 birds (assuming that the 90 nests counted in Seabird 2000 may have had 180 flying birds) followed by Phil/Owen Roe Flat and Padian with increases of 180 and 126 respectively. Similar increases have been seen at the other main colonies in Northern Ireland over the same period (Leonard 2016).

Common Tern numbers on Lough Neagh have increased since the Seabird 2000 survey. The population may have nearly doubled. The two main colony sites are at the Torpedo Platform and Padian. McGarry's, rocks off Croaghan Island and Ballyronan Island have been sporadically used by terns in the past but are small, low lying and vulnerable to storms/high water levels. Phil/Owen Roe Flat had a tern colony in 2000 and was known as a colony for many years before then (NIEA un-published records) but is now dominated by Lesser Black-backed Gulls. Scaddy Island also supported a tern colony for many years up to at least 1994 but not since 2000 (NIEA un-published records)

Table 3 Common Tern counts for 2016 compared with Seabird 2000. The numbers are of birds seen at the island breeding colonies unless cited as nests

Island (Clockwise from Toome)	Grid Reference	Seabird 2000	2016
Torpedo Platform	J129868	29 nests	190
McGarry's	J098779	4 nests	0
Padian	J063635	44 nests	50
Phil/Owen Roe Flat	J047629	22	0
Croaghan Island	J039623	0	3
Ballyronan	H949852	4	0
Total		24	243
		77 nests	

Other gulls

A Mediterranean Gull *Larus melanocephalus* was seen flying at Padian Island. A Great Black-backed Gull *Larus marinus* at Shallow Flat was probably at a nest. No Herring Gulls were seen.

Looking forward

It is planned to repeat the survey using the same method in 2017. Counting nests would be a more definitive method for monitoring but it takes more days, causes more disturbance and requires the need to negotiate access permissions. Counting from off-shore and cross-checking counts from photos is relatively straightforward, repeatable and sensitive enough to detect major swings in populations to inform conservation action. Considering the importance of Lough Neagh for breeding Black-headed Gulls these survey results add significantly to our current knowledge of the species in Northern Ireland.

References

Leonard, K. (2016) Breeding Seabirds in Northern Ireland in 2015. *Northern Ireland Seabird Report for 2015*: 6–27. BTO, Thetford.

Leonard, K. (2017) Breeding Seabirds in Northern Ireland in 2015. *Northern Ireland Seabird Report for 2015*: 6–27. In prep.

Mitchell P.I., Newton S.F., Ratcliffe N. & Dunn T.E. (2004) *Seabird Populations of Britain and Ireland*. T and A D Poyser, 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.

Acknowledgements

The Editors of the Northern Ireland Seabird Report 2016 are grateful to Roddy Mavor, Ilka Winn and Tim Dunn 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	Gillian Parr	Philip Ferguson
Akiko Shoji	Hayley Sherwin	Philip Galbraith
Amy Burns	Hugh Thurgate	Richard Donaghey
Andy Carden	Ian Enlander	Robin Brown
Andrew Crory	Ian Humphreys	Ronald Surgenor
Anthony McGeehan	Jen Lynch	Sarah McCaffrey
Anne Guichard	John Clarke	Shane Wolsey
Andrew Upton	John McKillop	Simon Pickett
Bob Davidson	John Smyth	Siobhan Thompson
Brad Robson	Julian Greenwood	Stephen Foster
Carol Richmond	Kathryn Oliver	Susan Price
Girvin Buick	Kendrew Colhoun	Tim Guilford
Catherine Finlay	Kerry Leonard	Toni Castello
Catherine Hunter	Kerry Mackie	Tracy Platt
Chris Acheson	Kyle Hunter	Wesley Smyth
Chris Murphy	Laura Smith	
Chris Sturgeon	Liam McFaul	Bangor Marina
Claire Dore	Luke McClean	Copeland Bird Observatory
Claire Dunphy	Marcus Austin	Natural Copeland
Cliff Henry	Mark Smyth	NIEA
Dave Allen	Matthew Scott	RSPB
David Galbraith	Matthew Tickner	Ulster Wildlife
Declan Clarke	Michael Parr	Wildfowl & Wetlands Trust
Donnell Black	Michael Stinson	
Ed McGuigan	Neil McCulloch	
Eimear Rooney	Nick West	
Emma Cunningham	Nina O'Hanlon	
Ernest Hunter	Patrick Casement	
Fionbarr Cross	Peter Guy	
Gavin Duffy	Peter Taylor	
Gavin Ferguson	Philip Carson	

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 the end of 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 the end of year one, 40 by the end of year two, and 50 by the end of 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 Northern Ireland.
 - 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 fourth edition of the Northern Ireland Seabird Report, covering 2016. 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: RONALD SURGENOR

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

