

Northern Ireland Seabird Report 2017



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Northern Ireland Seabird Report 2017

NI Seabird Steering Group

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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.

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Editorial

Welcome to the fifth Northern Ireland Seabird Report, covering 2017. This report is the published outcome of the work of the Northern Ireland Seabird Network of volunteers, overseen by the British Trust for Ornithology (BTO) on behalf of the Northern Ireland Environment Agency (NIEA), plus organisations such as National Trust, Ulster Wildlife and the Royal Society for the Protection of Birds (RSPB), who have provided data for 2017 and previous years.

2017 has seen a change in the organisation of seabird data collection and reporting in Northern Ireland, with the appointment of a BTO NI Science Officer, Katherine Booth Jones, taking over the coordination of the NI Seabird Network from Kerry Leonard. Kerry's excellent work as a facilitator has greatly increased our knowledge of Northern Ireland's seabirds since 2013, making the production of an annual report - an invaluable source of information - possible. We would like to thank Kerry for his instrumental professional work coordinating the NI Seabird Network and producing the annual NI Seabird Reports during the past four years. Kerry will continue to be closely involved through his willingness to sit on the NI Seabird Steering Group. Thanks, Kerry.

As always, at the core of the Seabird Network in Northern Ireland are our surveyors, some of whom work for Government bodies such as NIEA, and others on behalf of Non-Government Organisations (NGOs) such as RSPB, Ulster Wildlife and the National Trust. We are grateful for their cooperation and assistance. Many other surveyors are volunteers who give their time freely to help. The amount and quality of work undertaken by volunteers is amazing, and we are fortunate that many enthusiastic and talented people are part of the NI Seabird Network. This network now numbers 75 people, a great achievement when there were only 20 people in Northern Ireland surveying seabirds just five years ago.

This 2017 report on breeding seabirds in Northern Ireland follows the format of 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 we are taking a similar stance to the Joint Nature Conservation Committee (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 seabird 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 wish to encourage more people to join the Seabird Network. We would also like to thank NIEA for their continued financial support for both the Seabird Coordinator role and for the production of this annual report.

Naturally a summary such as this does not report all data, but all records collected are of real value in understanding our local seabirds. A report such as this is only as robust as the data that we collected, as we are aware, so if you have additional 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

Katherine Booth Jones
BTO NI Seabird Officer and Seabird Coordinator

February 2018

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 European Storm-petrel *Hydrobates pelagicus* and Leach's Storm-petrel *Oceanodroma leucorhoa*, Manx Shearwater *Puffinus puffinus*, Razorbill *Alca torda*, Common Guillemot *Uria aalge*, Black Guillemot *Cepphus grylle* and Atlantic Puffin *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 from 1985 to 1988. 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 through comparison with results from 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 (SPAs) under the EC 'Birds Directive'. A legacy of the Seabird Colony Register was the establishment of the Seabird Monitoring Programme (SMP, see below).

The third national census was Seabird 2000, the most ambitious survey to date. It was coordinated by the Joint Nature Conservation Committee (JNCC) in partnership with other organisations: Scottish Natural Heritage (SNH), Countryside Council for Wales (CCW), Natural England (NE), NIEA, Royal Society for the Protection of Birds (RSPB), The Seabird Group, Shetland Oil Terminal Environmental Advisory Group (SOTEAG), Birdwatch Ireland, and National Parks and Wildlife Service (Dept. of Environment, Heritage and Local Government, Republic of Ireland). Fieldwork was carried out from 1998 to 2002. Seabird 2000 provided population information on the 24 species of seabird which breed regularly in the UK and Ireland, estimating that over eight million seabirds breed in Britain and Ireland each year. Coverage was as comprehensive as possible and included, for the first time, counts of inland colonies. The updated population estimates allowed the identification of new, and the continued monitoring of, existing SPAs, and provided updated national trends. Crucially Seabird 2000 used recently developed playback techniques for the first time, providing reliable baseline estimates for petrel and shearwater populations. The results were published in Mitchell *et al.* (2004) *Seabird Populations of Britain and Ireland*, and demonstrated that the seabird assemblage that breeds here is of extraordinary international importance.

The fourth national census, Seabirds Count (<http://jncc.defra.gov.uk/page-7413>) (JNCC 2017), has been developed by the SMP Partnership and is coordinated by JNCC. Data collection for the current census is being undertaken between 2015 and 2019; its completion is subject to funding. The continued support of the seabird surveying network in Northern Ireland who have contributed to this report will be vital, especially to fill monitoring gaps (see page 50 for details of areas needing volunteers).

The National Seabird Monitoring Programme

Since 1986 most annual seabird surveillance in the UK and Ireland has been undertaken as part of the Seabird Monitoring Programme (<http://jncc.defra.gov.uk/page-1550>) coordinated by the JNCC. The programme is a partnership of 19 stakeholder organisations throughout the UK. Data are collected from four key sites (Isle of May, Canna, Fair Isle and Skomer) along with supplementary data provided from other colonies. To examine trends at individual colonies, at country level and across the whole UK, it is essential that individual sites can be monitored consistently for many years. Data are gathered in a consistent manner using standard published methods (Walsh *et al.* 1995), and entered into a central database (<http://jncc.defra.gov.uk/smp/>). The SMP gathers data relating to:

1. breeding abundance – 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 a short term or more immediate measure of population status.

The SMP generates annual indices of abundance 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 population trends 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;
- seabirds are top predators and a useful indicator of the state of marine ecosystems;
- human activities impact upon seabirds, both positively and negatively, and these effects should be monitored;
- the UK is recognised as being 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 Coordinator Role

In 2013, NIEA initiated funding for a 'Northern Ireland Seabird Coordinator' post at the BTO. The main aim of the Seabird Coordinator is to facilitate an increase in annual seabird monitoring across Northern Ireland. The Coordinator works closely with JNCC to ensure that all monitoring data collected feeds into the SMP, which has included the creation of a definitive register of Northern Ireland sites (see below). The role also includes the compilation of an annual report on the state of seabird populations (this report), and coordinates 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 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). The five year plan extended to 2018 and in the future the Seabird Coordinator role is included in the duties of the new BTO Science Officer for Northern Ireland. The Northern Ireland Strategy for Seabird Monitoring.

The Northern Ireland Strategy for Seabird Monitoring

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 for data entry in the SMP online database. All known inland sites are also listed. Due to legacy issues from historical record keeping and the way that data are held in the JNCC database, a separate site register is maintained for Black Guillemot.

Breeding Seabirds in Northern Ireland in 2017

Katherine Booth Jones
BTO NI Science Officer and Seabird Coordinator

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 exist. 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. 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 ¹	BoCCI Status ²	UK BOCC ³
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

¹ NI Priority species are those identified during the preparation of the NI Biodiversity Strategy (2002) and, subsequently, using criteria set out by stakeholders (<http://www.habitas.org.uk/priority/>).

² Birds of Conservation Concern in Ireland 3 (Colhoun & Cummins 2013).

³ UK Birds of Conservation Concern 4 (Eaton *et al.* 2015).

* Not currently breeding, historical only.

In Northern Ireland, the Birds of Conservation Concern Ireland (BoCCI) list is used for flagging species conservation issues (Colhoun & Cummins 2013). Following the 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). However, the assessment of status change for seabirds in the BoCCI took place in the first year of the NI Seabird Network, and was based on a relatively small proportion of counted populations (Colhoun & Cummins 2013). The authors of the BoCCI recommend a six-year interval for revising the list, therefore new data collected by the network will undoubtedly be of use to the 2019 assessment.

There are some notable differences between the all-Ireland BoCCI list and the UK Birds of Conservation Concern (Eaton *et al.* 2015). In particular, European Shag, Black-legged Kittiwake and Roseate Tern are in the UK Red list, with the first two species being new additions in 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 & Wolsey 2016).

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).

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	A territory based on the spacing of birds or pairs, if actual nests or incubation cannot be discerned. Used for Great Skuas and sometimes for gulls if AONs cannot be counted.
Apparently Occupied Burrow	AOB	An apparently active and occupied burrow which may have a nest.
Individuals	Ind	Individual birds.

Table 3 Seabird survey methods endorsed in Northern Ireland. The methods listed here are derived from Walsh *et al.* 1995. Alternative survey methods for each species are available in Walsh *et al.* 1995; however, for consistency and for convenience to volunteers we recommend following these guidelines. More detailed descriptions and comparisons of survey methods can be found in Walsh *et al.* 1995.

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. (Population monitoring method 1, Walsh <i>et al.</i> 1995).
Manx Shearwater	AOB	Late May to mid-June. Survey using tape playback between 09.00 and 17.00. (Population-monitoring method 2, Walsh <i>et al.</i> 1995).
Great Cormorant	AON	Count period 15th May to 25th June. (Population-monitoring method 1, Walsh <i>et al.</i> 1995).
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. (Population monitoring method 1, 3, or 5, Walsh <i>et al.</i> 1995).
All tern species	AON Ind	Count mid-June. Counts of adults on nests, or transects to count nests. Alternatively flush counts of individual adults. (Population monitoring method 1, 2 or 3, Walsh <i>et al.</i> 1995).
Common Guillemot	Ind	Count between 08.00 and 16.00, and from 1st – 21st June with ~5 repeats if possible. 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 any birds seen within c. 300m of the shore and any on land, between 05.00 and 09.00, and from 26th March to 15th May.
Atlantic Puffin	Ind	Ideally, AOS/AOB should be counted, following methods described in Walsh <i>et al.</i> 1995. For small colonies, as may be present in Northern Ireland (outside of Rathlin Island), count individuals above ground, flying over the colony and birds within 200m of the shore in April (Census-method 3, Walsh <i>et al.</i> 1995). Evening or early morning visits will produce highest counts.

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 (abundance) in Northern Ireland, with historical trends where data are available, and comparison with UK populations and trends, which are available up to 2015 (JNCC 2016). Graphs show population trends, and, unless otherwise stated, gaps in graphs mean no count was carried out 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 (which, as above are available up to 2015: JNCC 2016).

A table detailing specific counts for seabirds within regions (referred to in the JNCC Seabird Monitoring Programme database as 'Master Sites') can be found in Table 9 in the Appendix on page 70.

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. During the incubation stage of their breeding cycle, Fulmars can range an incredible 2,890km from the colony in search of food (Edwards *et al.* 2016).

In Northern Ireland, Fulmars are a widespread breeding species, with the most important site being at Rathlin Island. Other notable 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 (Figure 1), Rathlin Island (Figure 2) and Muck Island (Figure 3), although not on an annual basis. The Gobbins held 310 AOSs in 2017, the highest ever recorded, and Muck Island 80 AOSs, the highest since 2004. For other sites a comparison is made between Seabird 2000 counts and 2017 counts (Figure 4). Away from The Gobbins and Muck the trend has been downwards. A full count at Rathlin Island has not occurred between 2013–2017.

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 (Figure 4), and a similar trend has also been seen in the breeding abundance index across the UK (JNCC 2016).



Figure 1 Northern Fulmar numbers (AOSs) at The Gobbins, 1969–2017.

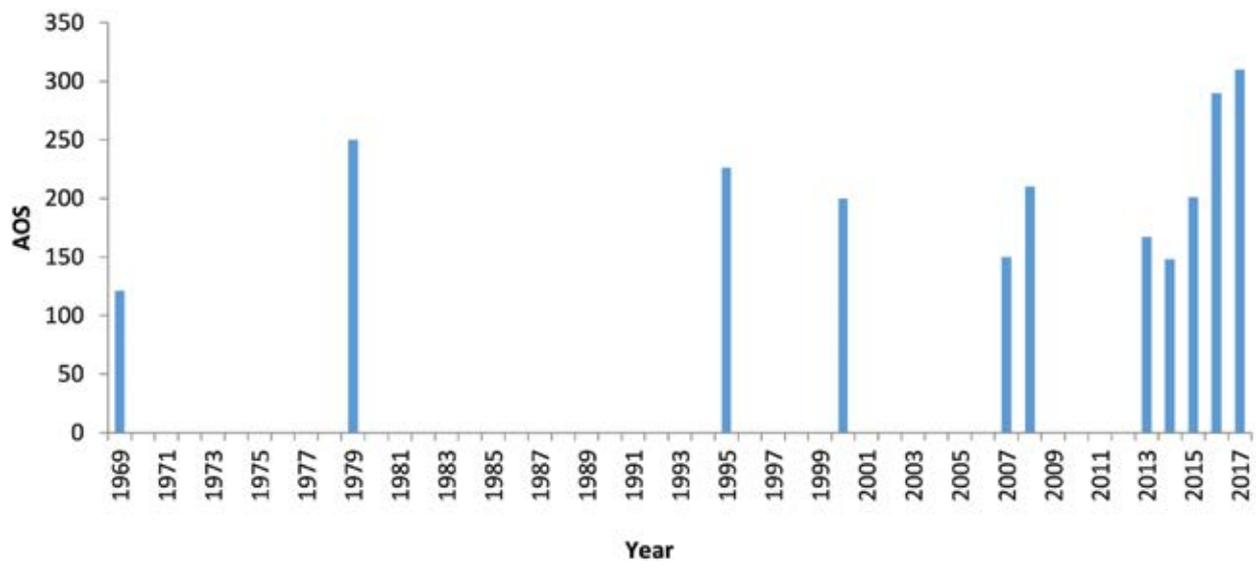


Figure 2 Northern Fulmar numbers (AOSs) on Rathlin Island, 1985–2011.

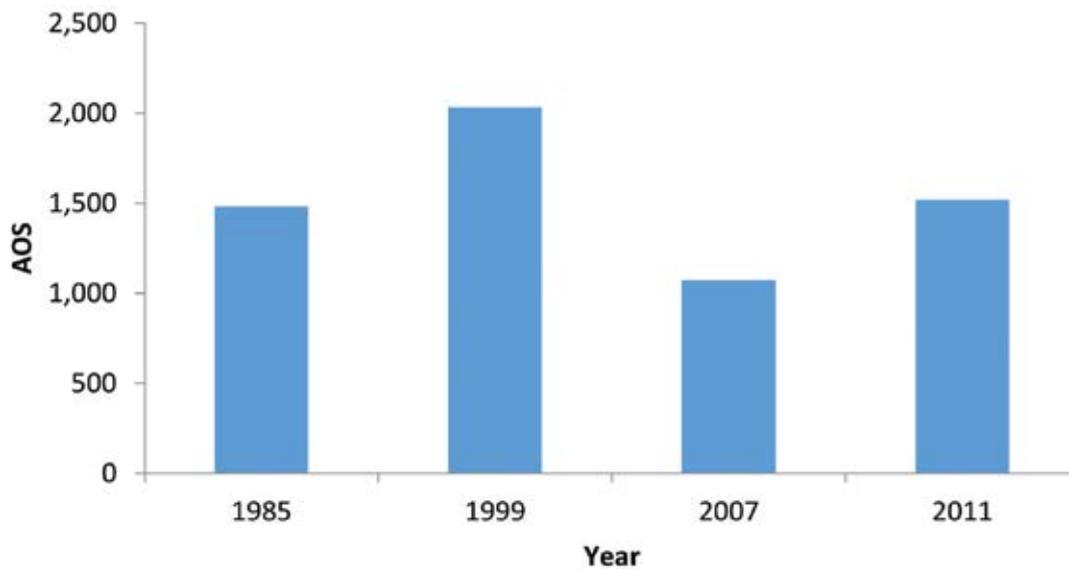
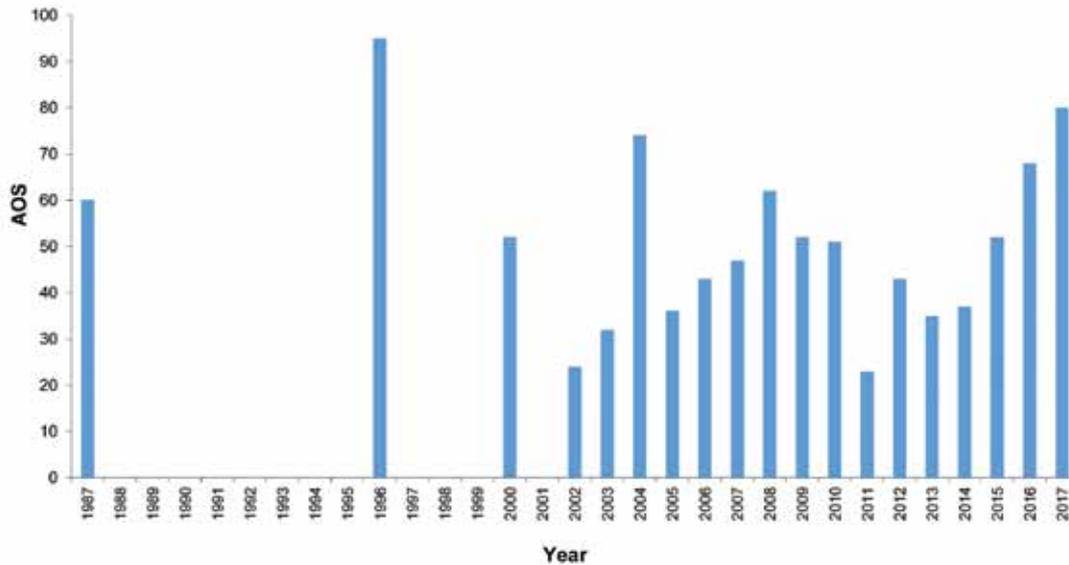
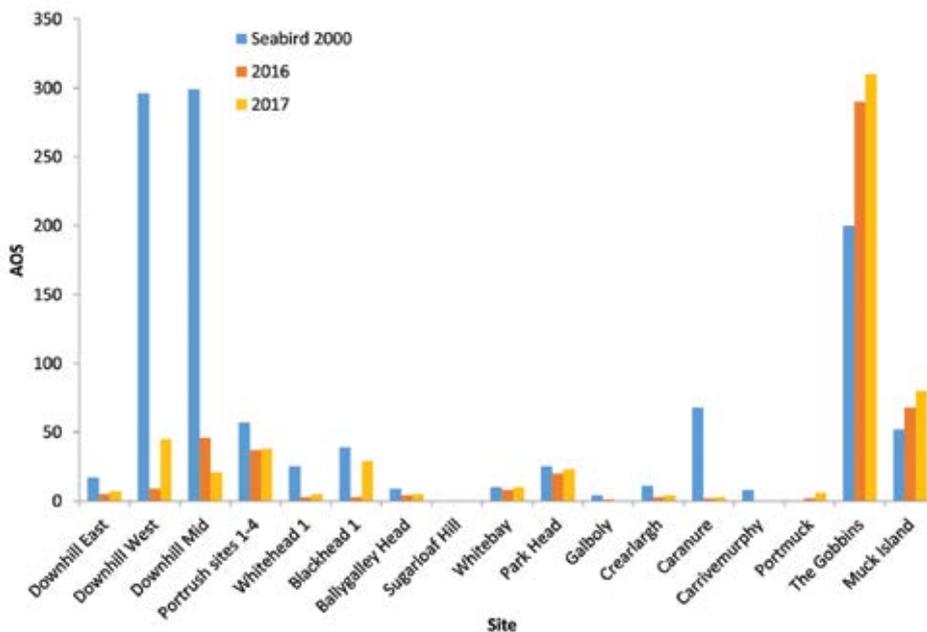


Figure 3 Northern Fulmar numbers (AOSs) at Muck Island, 1987–2017.**Figure 4** Northern Fulmar numbers (AOSs) at other sites in NI, surveyed in 2000, 2016 and 2017.

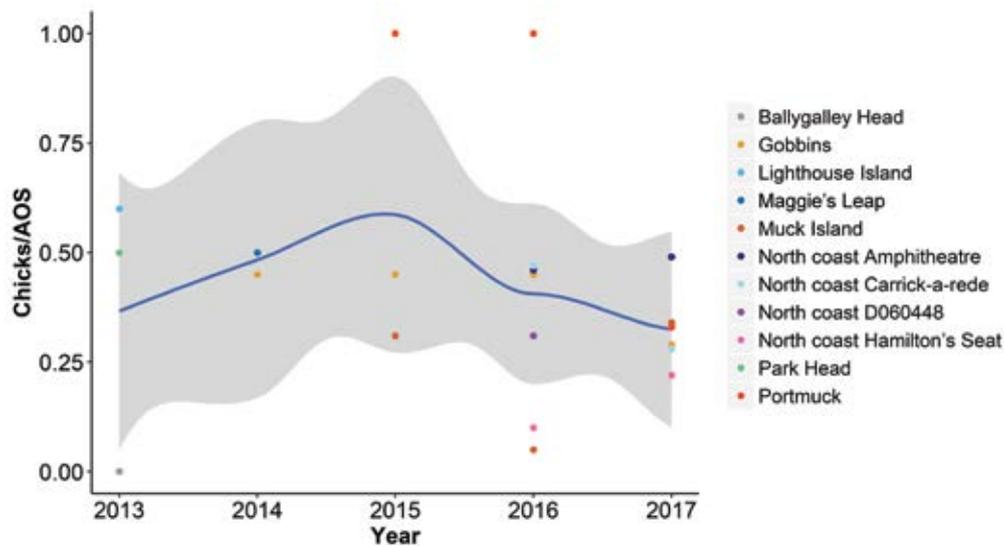
Breeding success

In Antrim, data on breeding success were collected for The Gobbins (0.29 chicks/AOS, lower than the 0.45 chicks/AOS recorded between 2014 and 2016), Portmuck (0.33 chicks/AOS, lower than 2016) and Muck Island (0.34 chicks/AOS, higher than 2016). In 2016, very few chicks were fledged from Muck Island, even when birds on the nearby cliffs 400m away on the mainland were performing well, with predation by Brown Rat (*Rattus norvegicus*) on Muck Island being a possible cause of the difference. However, in 2017, the trend for higher productivity at The Gobbins colony has reversed slightly, with Fulmars at The Gobbins performing slightly lower than Muck Island. This year's breeding success at The Gobbins is below the current UK average (JNCC 2016).

Breeding success data were also collected for three sites known as Amphitheatre, Hamilton's Seat and Carrick-a-Rede on the north coast. These sites had productivities of 0.49, 0.22 and 0.28 chicks/AOS respectively (Cliff Henry *pers. obs.*). Over the past five years, Fulmar productivity has been highly variable between sites and breeding seasons, although it has appeared to have declined slightly overall since 2015 (Figure 5).

At the UK level, the annual productivity index has been steadily decreasing since 1986 (JNCC 2016). Analysis of the SMP dataset by (Cook & 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.

Figure 5 Productivity (Chicks/AOS) for Fulmar between 2013 and 2017. The curve (blue line) represents the trend in Fulmar productivity between years, across different sites. The curve is fitted through the data points using the smoothing function 'geom_smooth' in the package 'ggplot2' version 2.2.1 (R version 3.4.1), with 95% confidence intervals (grey shading).



Manx Shearwater *Puffinus puffinus*

EC Birds Directive – migratory species

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

Overview

Most of the world's population of Manx Shearwater breeds in Britain and Ireland (Hamer & Hill 1997; Mitchell *et al.* 2004). They are highly pelagic and spend most of the year at sea. Manx Shearwaters tracked with geolocators have been recorded as travelling as much as 1,193km in a day, at an average speed of 55km/h (Guilford *et al.* 2009). 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 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 old Lighthouse Island and Big Copeland. Rathlin Island formerly held a colony of unknown size (Brooke 1990) but the species has not been confirmed breeding for many years (Liam McFaul, RSPB *pers. comm.*) and surveys for Seabird 2000 did not detect any birds (Mitchell *et al.* 2004). Deane (1954) estimated 150 AOBs on Rathlin Island 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. A recent MSc dissertation tested burrow occupancy at a subsample of 177 burrows using a dual-sex call playback methodology. A total of 90 response calls were recorded in this subsample, equating to a burrow occupancy of around 50% (Rhodes 2017).

The presence of European 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 (Rhodes 2017). Surveys have not been carried out over the period 2008–2017 on the Copeland Islands due to the labour intensive and costly monitoring which would be required, and therefore the shearwater population is urgently due a resurvey. For similar reasons, there is little information available from which to derive UK or country level population trends since Seabird 2000 (JNCC 2016).



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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 4), 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. Breeding 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 chicks/pair, respectively (JNCC 2016). If a Manx Shearwater chick hatches the chance of successful fledging is high with most losses occurring during incubation (Kerry Leonard *pers. obs.*).

Table 4 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). While new monitoring techniques, such as passive infra-red monitoring, are being tested for their usefulness in monitoring Storm-petrels, these methods are still costly in terms of fieldwork effort and equipment (Perkins *et al.* 2017). 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 37km 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, Great 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.* 2013; 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 AONs (Figure 6). Since then numbers have fallen back to 360 AONs in 2017 (Figure 6), although this is an increase on 2016 (343 AONs). No survey was possible at The Skerries in 2016; however, in 2017 160 AONs were counted. The colony at Sheep Island has fluctuated in numbers annually but shows an overall decrease since 1985 (380 AONs) to just 100 AONs in 2017. The colony at the Skerries has increased as that at 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 (Figure 7), and interchange with the colony at Inishowen (Co. Donegal) is possible – although this assertion has yet to be validated e.g. by movements of colour-ringed birds. The combined population at The Skerries and Sheep Island has declined to 86% of the 2010 population count. Periodic counts of the numbers at the Gobbins cliffs dating back to 1969 (Figure 8) have shown fluctuating numbers in recent years, dropping as low as two AONs in 2007, returning to 33 AONs in 2008. Numbers remained low with 13 pairs in 2017.

The UK breeding abundance index for Cormorants 1986–2015 indicates that the population increased and stayed high until 2005 but has now rapidly returned to 1986 levels (JNCC 2016).

Figure 6 Cormorant numbers (AONs) at Bird Island, Strangford Lough, 1986–2017.

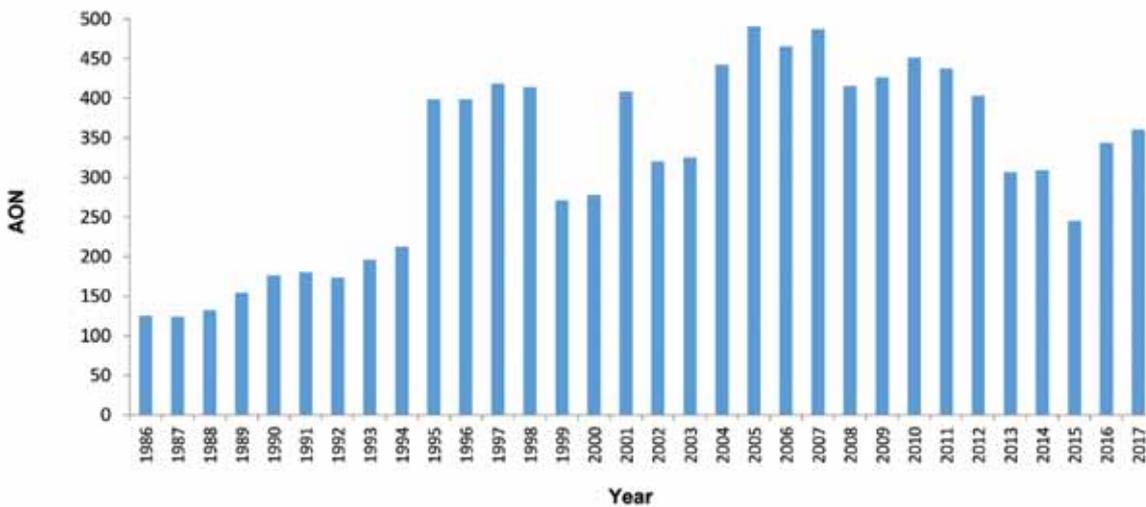


Figure 7 Cumulative Cormorant numbers (AONs) at Skerry Islands and Sheep Island, 1985–2017. The Skerry Islands were not surveyed before 2010 as it was believed that no Cormorants were present. The Skerry Islands were also not surveyed in 2016.

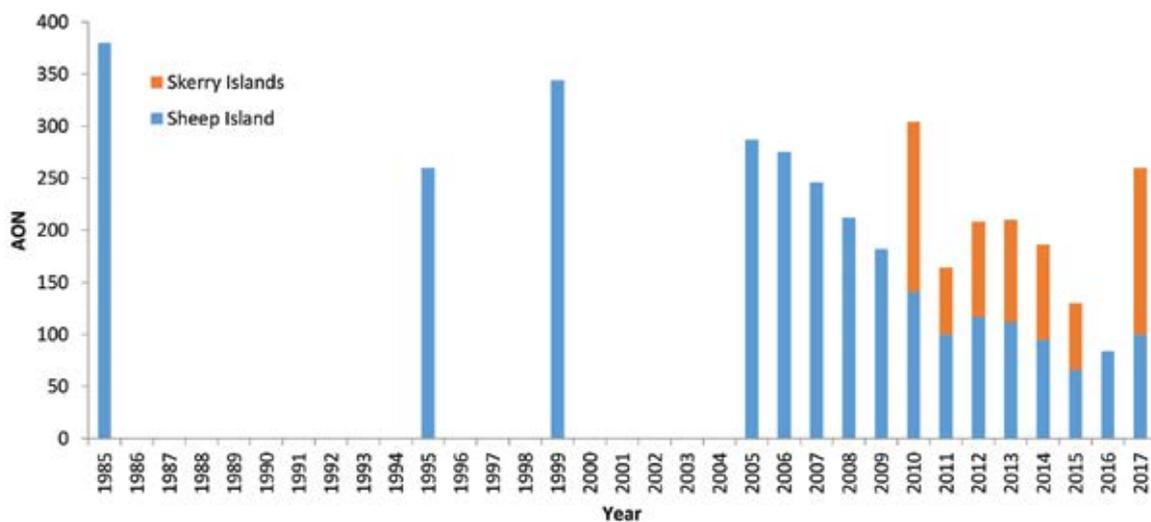
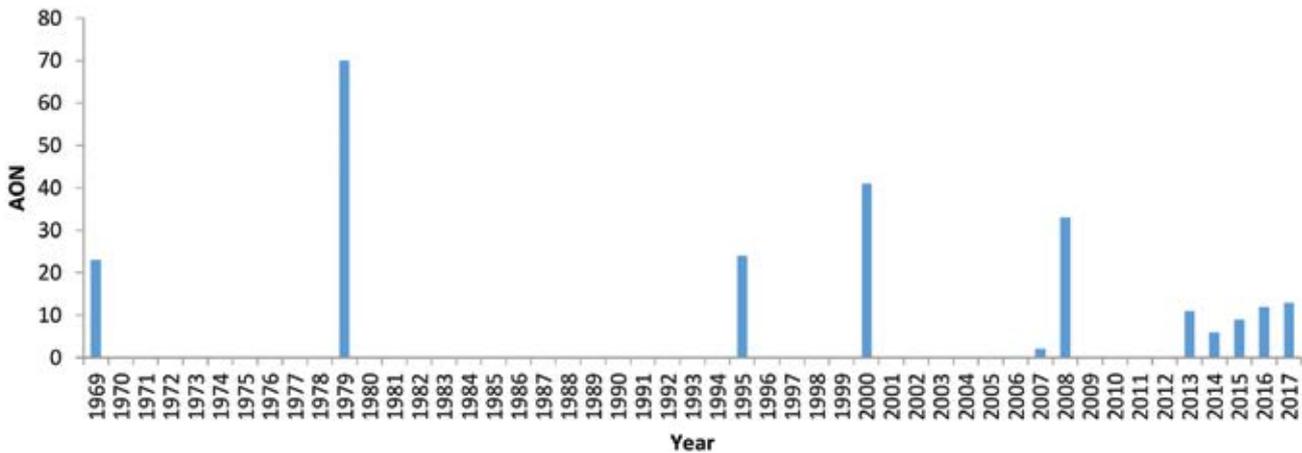


Figure 8 Cormorant numbers (AONs) at The Gobbins, 1969–2017.

Breeding success

Productivity data were collected at The Gobbins, where 1.00 chicks/AON compared poorly to 2016, when 2.20 chicks/AON fledged. UK productivity has declined by 47% between 1986 and 2008 (JNCC 2016).

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 north-east 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. Unlike many seabirds, Shags do not make long trips to forage at sea but instead use social information with others from their colony to find local, shared foraging grounds (Evans *et al.* 2016). Over a third of the world population breeds 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 and The Gobbins (Figure 9) have fluctuated upwards over the long term, although populations remain relatively low. The population on Rathlin Island is currently half that present in 1985 (Figure 10), but appears to have remained fairly stable over the past decade. Shags stopped breeding at Strangford Lough in 2007 (Figure 11). The species has been recorded in small numbers at several new locations since 2013.

The UK 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). Declines may be related to a reduction in the availability of Shag's preferred prey species, the Lesser Sandeel *Ammodytes marinus* (Heubeck *et al.* 2015; Howells *et al.* 2017). 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; Heubeck *et al.* 2015).



Figure 9 Cumulative European Shag numbers (AONs) at Muck Island and The Gobbins, 1987–2017.

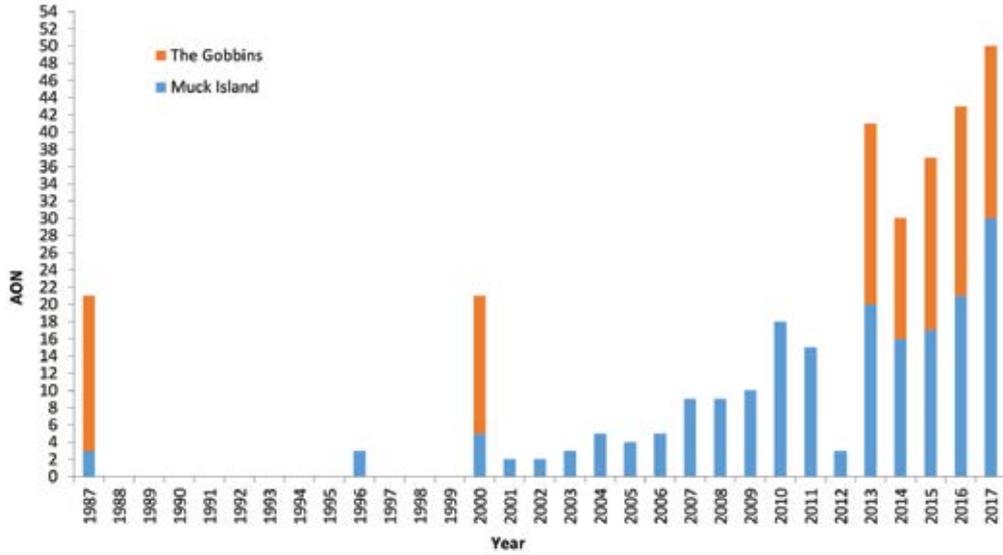


Figure 10 European Shag numbers (AONs) at Rathlin Island, 1985–2017.

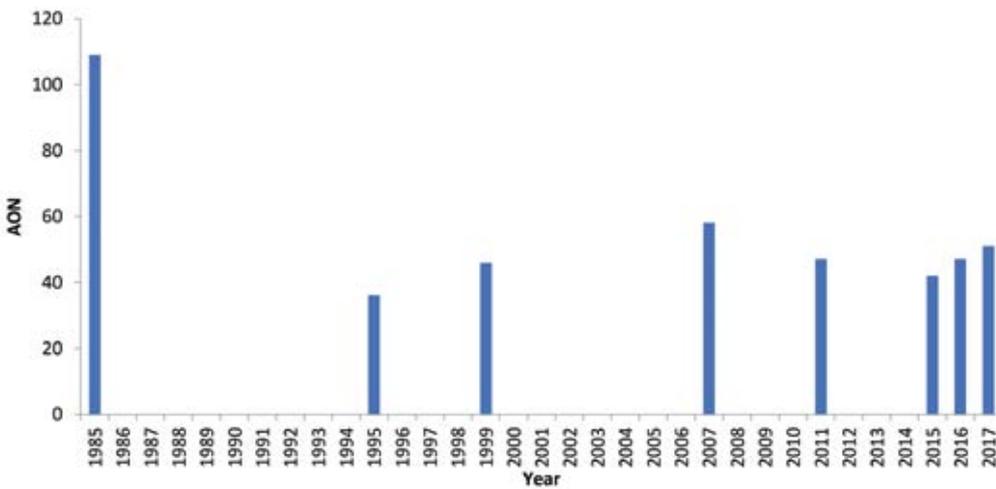
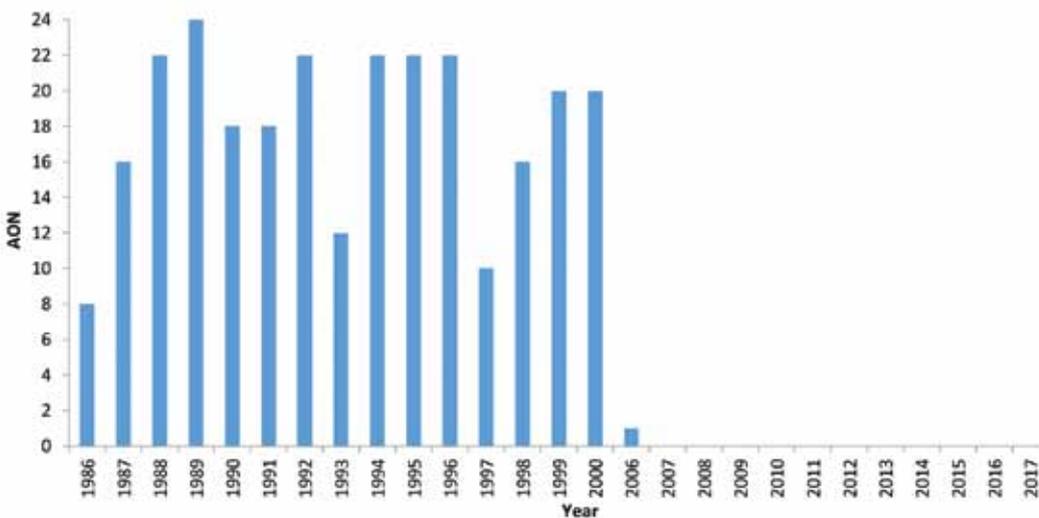


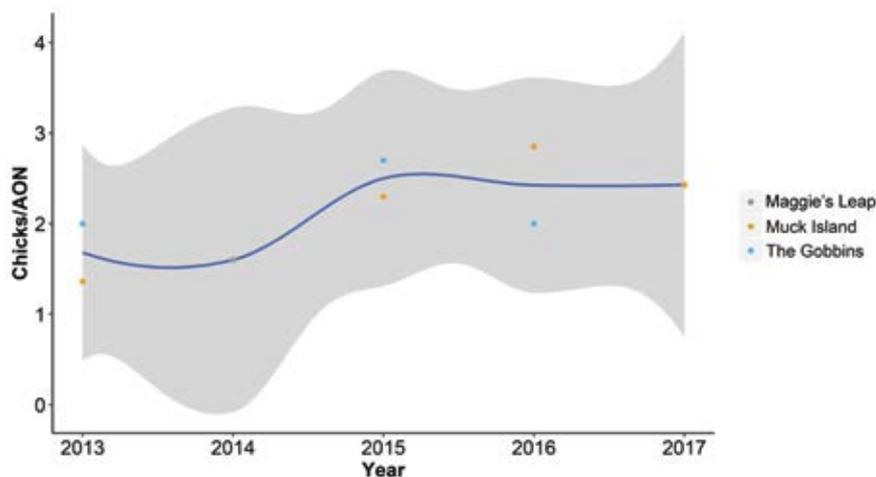
Figure 11 European Shag numbers (AONs) at Strangford Lough, 1986–2017. Although counts have taken place in all years, no Shags were counted from 2007.



Breeding success

In 2017, the Muck Island colony produced 2.43 chicks/AON, slightly fewer than the 2.85 chicks/AON produced in 2016. Breeding success at The Gobbins was not measured in 2017, so cannot be compared to the 2.00 chicks/AON produced in 2016. Figure 12 shows the trend in Shag productivity between 2013 and 2017, and it appears to be fairly stable. However, there are very few sites monitored for Shag productivity, and these do not have records for all years, therefore the trend line has a large confidence interval (grey shading) and is a rough guide only. 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 1.00 and 1.60 chicks/AON. Population Viability Analysis calculations by Cook and Robinson (2010) 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 12 Productivity (Chicks/AON) for European Shags between 2013 and 2017. The curve (blue line) represents the trend in Fulmar productivity between years, across different sites. The curve is fitted through the data points using the smoothing function 'geom_smooth' in the package 'ggplot2' version 2.2.1 (R version 3.4.1), with 95% confidence intervals (grey shading).



Great Skua *Stercorarius skua*

EC Birds Directive – migratory species

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

Overview

Also colloquially known as 'Bonxies', Great Skuas are known for their aggressive behaviour towards human intruders on their territories (Mitchell *et al.* 2004). Individuals in a population have foraging specialisations, for example foraging on fish, exploiting fisheries discards, directly preying on smaller seabirds or stealing food from other seabirds (Votier *et al.* 2004). The first occurrence of Great Skuas breeding in Northern Ireland occurred in 2010. During the Seabird 2000 surveys, the UK held 60% of the Great Skua world population (Mitchell *et al.* 2004), and due to this the UK has an international responsibility to monitor and protect Great Skuas. 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.* 2011) 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. In 2017, however, the pair failed to fledge any young, probably due to disturbance by cattle in the area of the nest (Liam McFaul, RSPB *pers. comm.*). Annual sampling of breeding abundance is insufficient to generate reliable population trends for the UK, country level or at individual sites.



TOM McDONNELL

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. However, the Kittiwake is currently suffering a well-publicised and catastrophic decline (Birdlife International 2018), largely due to the over-fishing of sandeels, its main prey resource (Morten Frederiksen *et al.* 2004; Nikolaeva *et al.* 2006), oil spills (del Hoyo *et al.* 1996; Nikolaeva *et al.* 2006) and other forms of pollution (Nikolaeva *et al.* 2006). In Britain and Ireland, the largest and most numerous colonies are found along the North Sea coasts 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 approximately 10% the size of the Rathlin Island colony. 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 gone extinct in the last 15 years.

Breeding numbers

At Rathlin Island, Kittiwake numbers grew from 6,822 AONs in 1985 to 9,917 AONs in 1999, but at the latest survey in 2011 had dropped back to 7,922 AONs, a decrease of 20% (Allen *et al.* 2011). There are good historical datasets for The Gobbins (Figure 13), Maggie's Leap (Figure 14) and Muck Island (Figure 15). In 2017, The Gobbins held 1,053 AONs, only slightly fewer than the 1,072 AONs in 2016, while Muck Island held 369 AONs. The Portrush cliffs held 236 AONs, again fewer than the 279 AONs in 2016. At Strangford Lough, a peak of 466 AONs was reached in 1996 before Kittiwake 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 some 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, 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.



NEAL WARNOCK

Figure 13 Black-legged Kittiwake numbers (AONs) at The Gobbins, 1969–2017.

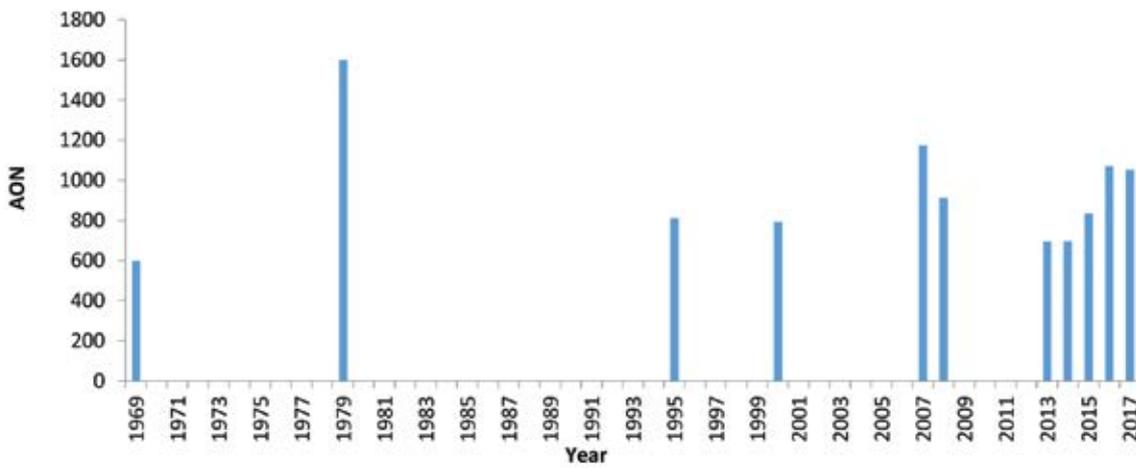


Figure 14 Black-legged Kittiwake numbers (AONs) at Maggie’s Leap, 1999–2017. No surveys were undertaken between 2009 and 2012.

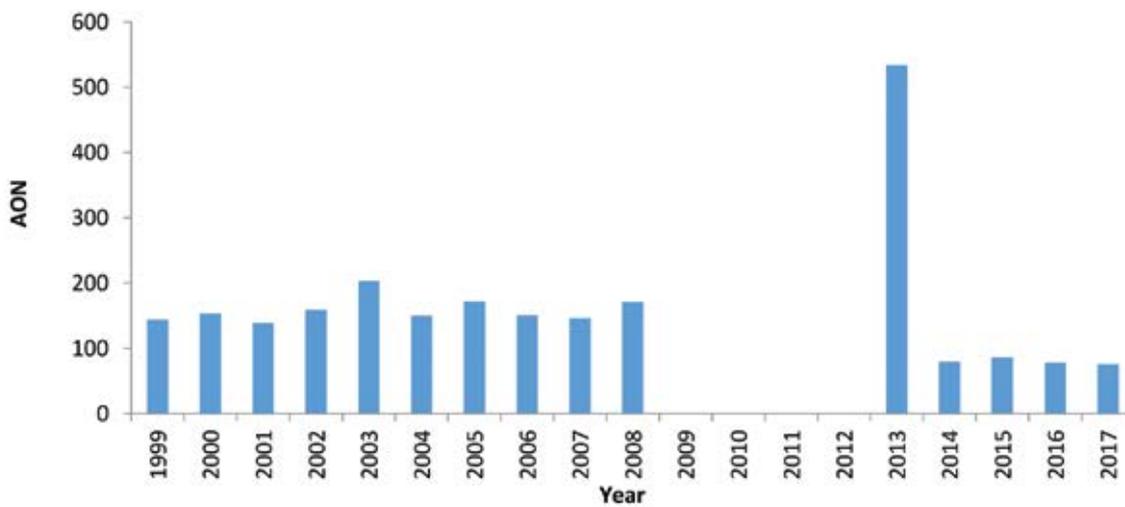
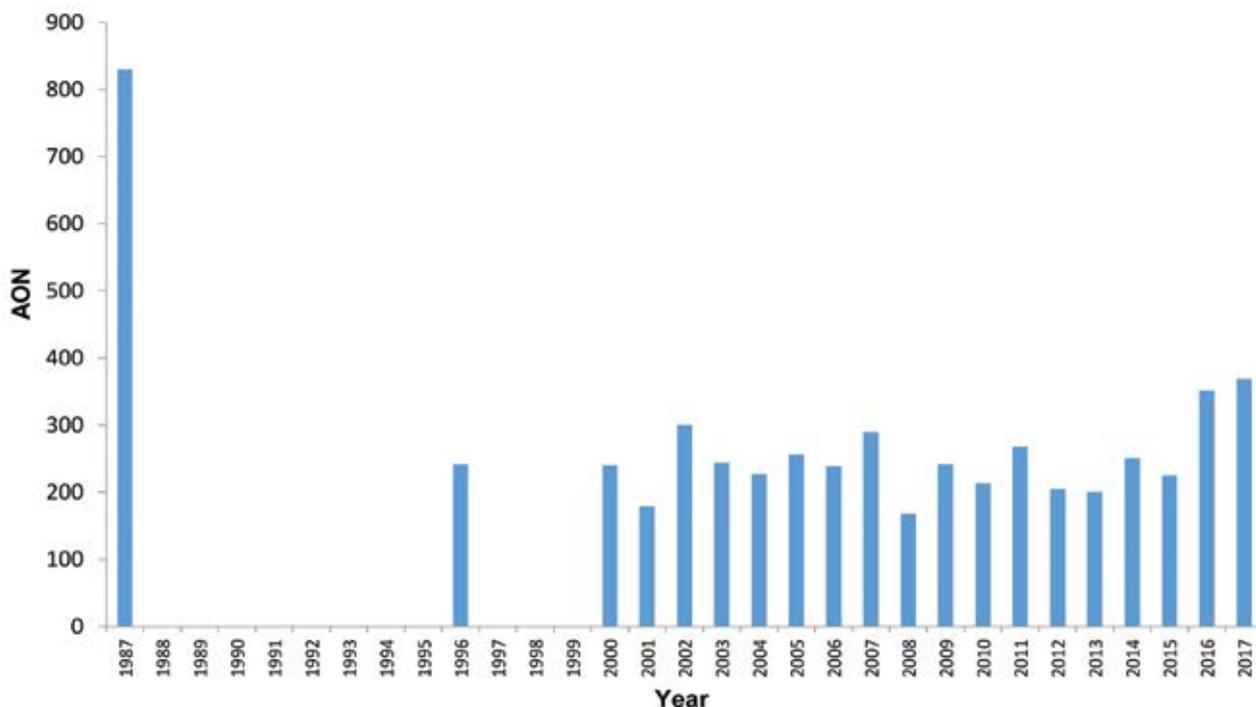


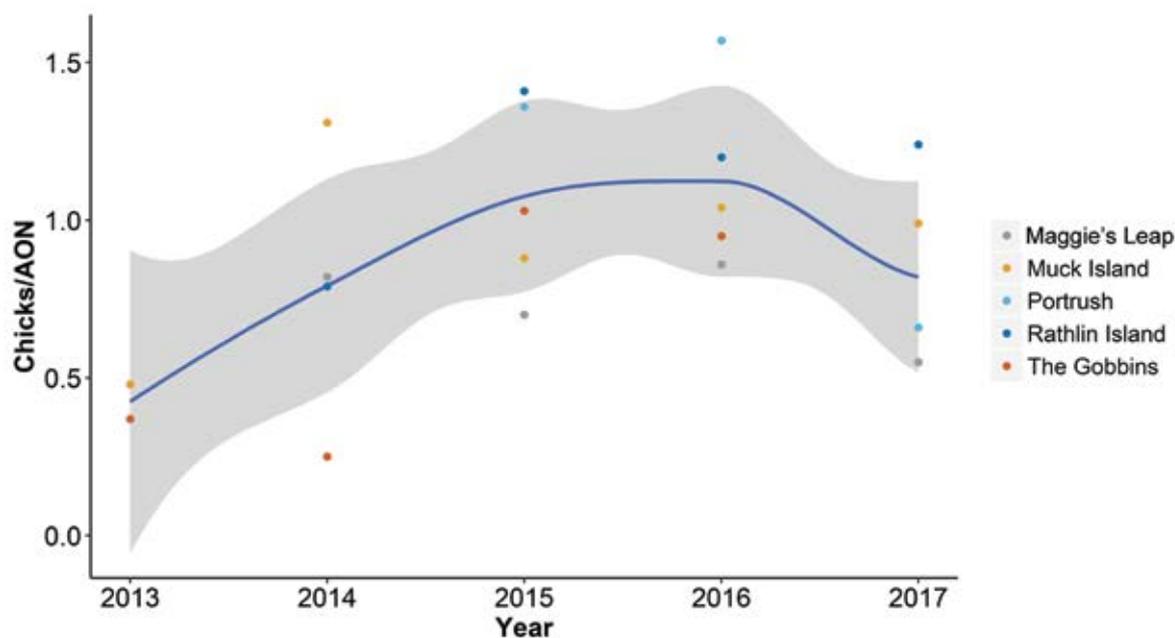
Figure 15 Black-legged Kittiwake numbers (AONs) at Muck Island, 1987–2017.

Breeding success

A five-year trend in Kittiwake productivity can be seen in Figure 16. At the Gobbins, nine plots were investigated for Kittiwake productivity, which ranged from 0.36 to 1.00 chicks/AON. Overall the productivity was 0.55 chicks/AON, lower than 2015 and 2016. Four plots were studied at Muck Island, recording productivity ranging from 0.88 to 1.21, averaging 0.99 chicks/AON, slightly lower than 2016.

Breeding success at Maggie's Leap (0.55 chicks/AON) was the lowest recorded. However, the second visit to this site was late in the season so it is likely that some chicks had already fledged. In previous years some nests were abandoned, possibly due to gull or Peregrine *Falco peregrinus* predation (Andy Carden, *pers. comm.*). Productivity on the north coast was mixed in 2017. At Rathlin there were 1.24 chicks/AON, which although not as high as 2015 (1.41 chicks/AON), still represents good productivity. Following last year's incredible 1.57 chicks/AON at Portrush, productivity declined to 0.66.

Figure 16 Kittiwake productivity (chicks/AON) from 2013 to 2017 across five sites in Northern Ireland. The curve (blue line) represents the trend in Kittiwake productivity between years, across different sites. The curve is fitted through the data points using the smoothing function 'geom_smooth' in the package 'ggplot2' version 2.2.1 (R version 3.4.1), with 95% confidence intervals (grey shading).



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 AONs for many colonies (JNCC 2016; Miles 2013). New research on records spanning 1985 to present in Britain suggests that 0.8 fledglings per pair are needed to maintain steady breeding populations of Kittiwakes (Coulson 2017), a productivity value exceeded on average by Northern Irish Kittiwake colonies since 2014.

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, numbering at around 140,000 pairs (Mitchell *et al.* 2004). 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). Like other gull species, Black-headed Gulls have likely benefited from anthropogenic sources of food, such as fisheries discards and domestic waste (Mitchell *et al.* 2004). Black-headed Gulls are particularly abundant in the winter, when the UK is estimated to host nearly ~2,200,000 individuals, of which ~44,000 are found in Northern Ireland (Burton *et al.* 2013).

In Northern Ireland, the Black-headed Gull is a widespread species breeding in relatively few large colonies, with major concentrations at Strangford Lough, Belfast Lough, Larne Lough, Copeland Islands, Lough Neagh and Lower Lough Erne.



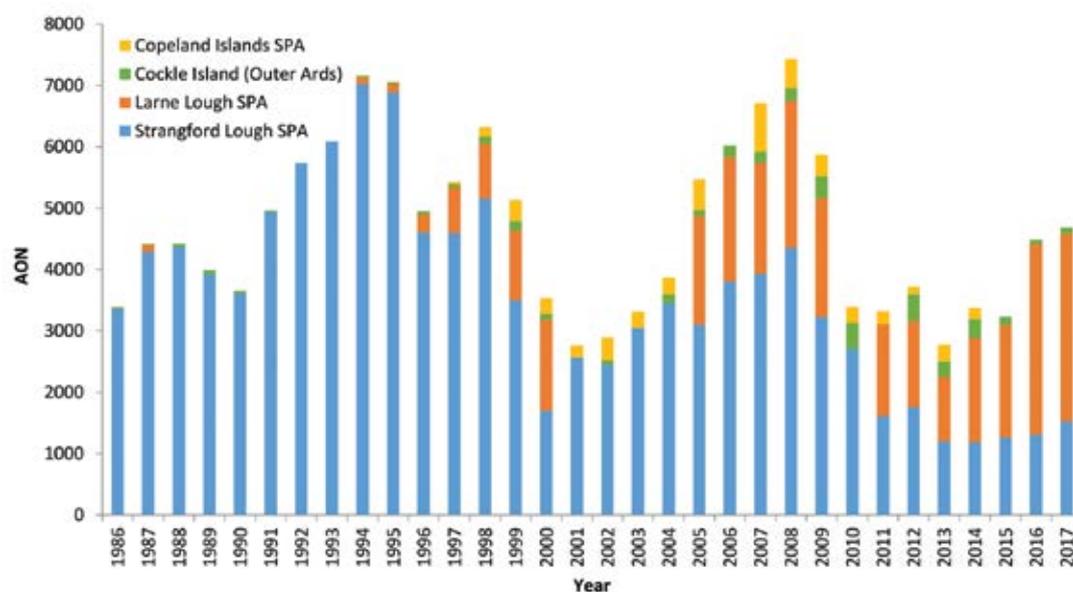
GAVIN FERGUSON

Breeding numbers

The numbers at Larne Lough grew from just 109 AONs in 1987 to nearly 2,400 AONs in 2008, but then receded. However, in 2016 the count of 3,102 AONs was a record. This was the first time in several years that a completely accurate nest counting census was carried out. While the accuracy of the 2016 count is likely to have been responsible for some of the increase in recorded numbers, Black-headed Gull populations can fluctuate between years, something which has been previously seen at Larne Lough. This year in 2017 numbers remained fairly constant, at 3,060 AONs. Belfast Lough held 717 AONs in 2017, nearly double the 386 AONs recorded in 2016. The Strangford Lough population remains at low levels, although 1,524 AONs is the highest record since 2012. At Portmore Lough 115 AONs were recorded, up on 95 AONs in 2016.

The cumulative population for Cockle Island, Larne Lough, Strangford Lough and the Copeland Islands for 1986–2017 are shown in Figure 17, for years where data were available for each site.

Figure 17 Cumulative Black-headed Gull numbers (AONs) at the Copeland Islands, Cockle Island, Larne Lough, Strangford Lough and the Copeland Islands, 1986–2017.



On Lough Neagh a count of the main breeding islands gave an estimate of 11,595 individuals in 2016, an increase of 78% over Seabird 2000 (Bob Davidson and 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. 2017 counts for Black-headed Gulls have not yet been collated due to the size of the task.

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

Productivity is only formally recorded at Portmore Lough, where 105 AONs produced 149 chicks (1.30 chicks/AON). This is an improvement on 2016, when 0.63 chicks/AON were recorded. However, breeding success was also estimated at Blue Circle Island and Swan Island in Larne Lough as approximately 2.00 chicks/AON (Matthew Tickner, RSPB *pers. comm.*). Despite being on the 2013 BoCCI list, very little productivity data have ever been collected in Northern Ireland.

In the UK productivity fluctuates from 0–1.20 chicks per AON (JNCC, 2016). This pattern of ‘boom or bust’ is seen frequently in local colonies (Kerry Leonard *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) or Eurasian Otters (*Lutra lutra*) on inland colonies in Northern Ireland are largely unstudied. Collecting productivity data is a high priority.

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

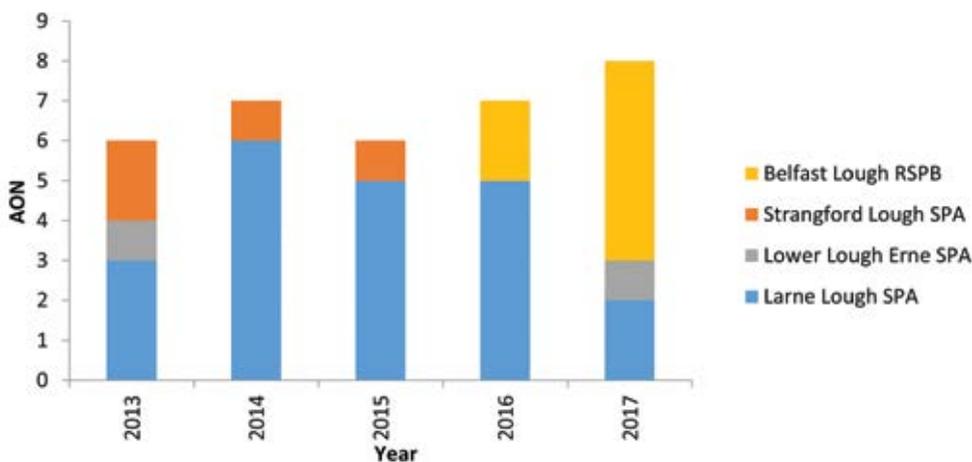
After first breeding in 1995, there were one to three AONs annually at three sites in Northern Ireland. This has gradually increased to five to seven AONs annually, mostly at Strangford and Larne Loughs. This year a record of eight AONs were recorded (Figure 18). Five AONs were at Larne Lough in 2016, but this dropped to two in 2017. Once again, there were no AONs at Strangford Lough (the last known breeding attempt was in 2015), but the number of AONs at Belfast Lough increased to five in 2017.



Breeding success

The Larne birds raised four chicks in 2017, making the productivity 2.00 chicks/AON. At Belfast Lough RSPB in 2016, two pairs raised 2.50 chicks/AON. In 2017, although 11 chicks were seen initially, vegetation growth obstructed the view of the nests later in the breeding season and therefore productivity cannot be calculated.

Figure 18 Cumulative Mediterranean Gull numbers (AONs) in Northern Ireland, 2013–2017.



Common 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. Over half (57%) of the breeding Common Gulls in Seabird 2000 bred inland (Mitchell *et al.* 2004). 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 322 AONs in 2017, slightly fewer than the 333 AONs of 2016, while numbers at Lower Lough Erne also declined from 189 AONs in 2016 to 143 in 2017 (Figure 19). Larne Lough held 32 AONs in 2017, the highest number on record (Figure 20). There are few Mediterranean Gulls at Carlingford Lough compared with Larne Lough, however six AONs recorded in 2017

is the highest number since 2007 (Figure 21). A few pairs of Common Gulls per year have bred in the Outer Ards since 1986, and the number has fluctuated between zero and nine AONs during this time (Figure 21).

Since Seabird 2000 the species has spread around the coast, with small numbers appearing at several locations – although unfortunately not formally monitored (Kerry 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).

Figure 19 Common Gull numbers (AONs) at the Copeland Islands, Lower Lough Erne and Strangford Lough, 1985–2017.

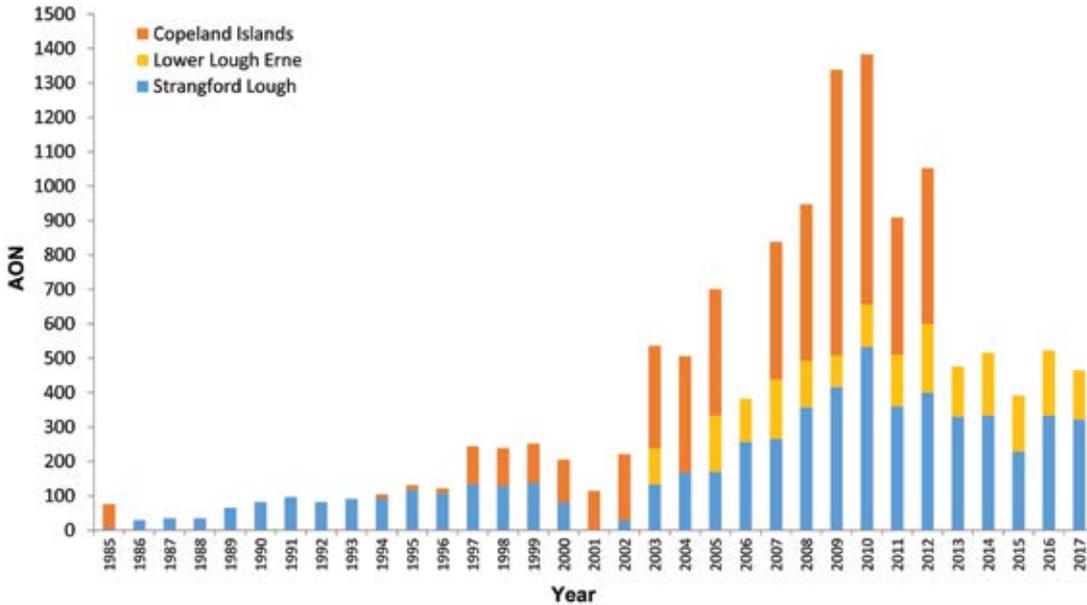


Figure 20 Common Gull numbers (AONs) at Larne Lough, 1995–2017.

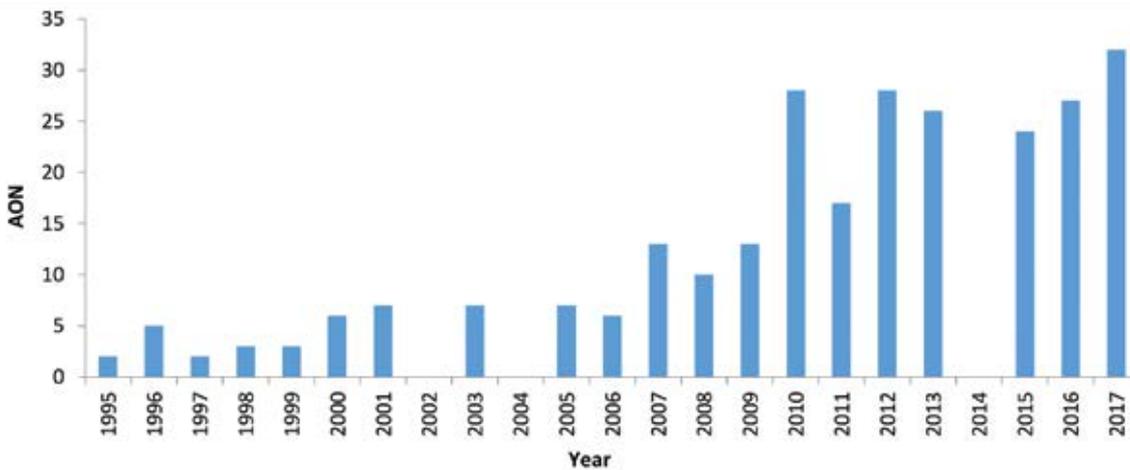
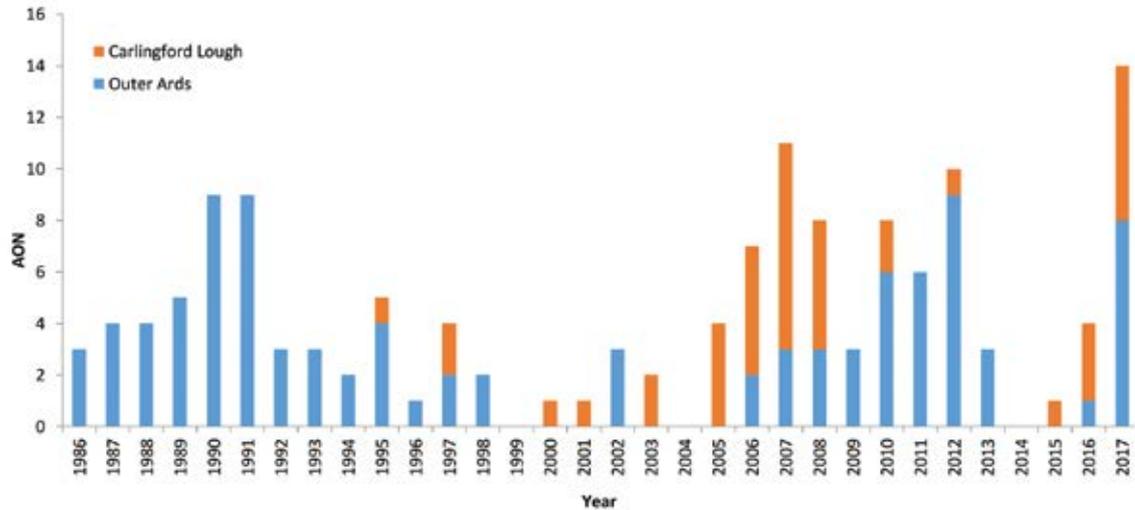


Figure 21 Common Gull numbers (AONs) in Carlingford Lough and the Outer Ards, 1986–2017.

GAVIN FERGUSON

Breeding success

No formal productivity data were collected in 2017 at any sites in Northern Ireland. However, at Blue Circle and Swan Island in Larne Lough, productivity was estimated at 2.00 to 3.00 chicks per AON (Matthew Ticker, RSPB *pers. comm.*). In Scotland 0.10–0.70 chicks per nest has been recorded (JNCC 2016). American Mink predation has a large impact at some colonies (Craik 1997).

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

The species breeds across north and west Europe and has increased in numbers throughout its range during much of the 20th century. Lesser Black-backed Gulls nest colonially, often with other gull species and particularly with Herring Gulls (Mitchell *et al.* 2004). Colonies can occur in a diverse range of habitats, from offshore islands, cliffs, moorland and in recent decades, on the roofs of buildings (Mitchell *et al.* 2004). During Seabird 2000 the UK held 38.4% of the world population.

However, unlike Herring Gulls, Lesser Black-backed Gulls from the UK generally migrate to Iberia or North Africa during the non-breeding period (Mitchell *et al.* 2004; Rock 2002).

The Lesser Black-backed Gull is a widespread breeding species in Northern Ireland, mainly in a few large colonies at Strangford Lough, the 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; however, urban nesting gulls are currently not counted in Northern Ireland. It is hoped that urban nesting Lesser-black Backed Gulls will be counted in the future, and records of roof nesters from volunteers would be welcome.



RONALD SURGENOR

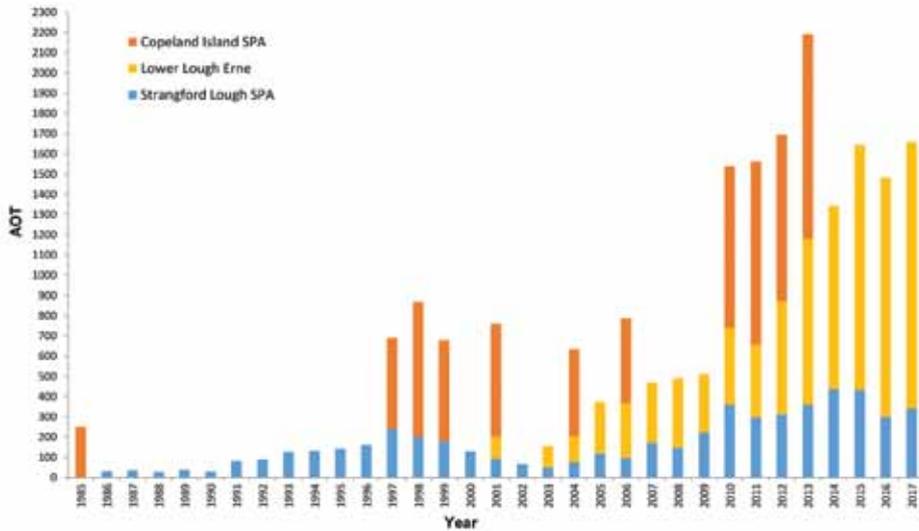
Breeding numbers

Strangford Lough held 343 AOTs, a 15.1% increase from 298 AOTs in 2016, although still below 2015 numbers. Lower Lough Erne had a record year with 1,316 AOTs, an increase of 11% over 1,185 AOTs in 2016 (Figure 22). Colonies on Lough Neagh were counted for the first time in recent years in 2016, with 1,843 individuals counted. The population on Lough Neagh has approximately doubled since Seabird 2000. Lough Neagh counts were not available for the 2017 report.

The breeding abundance index for the UK population indicates increases up to 2000, but this 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 2017 in Northern Ireland. In the UK as a whole, productivity measured at natural-nesting (i.e. non-urban) colonies is generally low, below 0.60 chicks/AOT (JNCC 2016). The factors causing low productivity in Lesser Black-backed Gulls are unknown.

Figure 22 Cumulative Lesser Black-backed Gull numbers (AOTs) at the Copeland Islands, Lower Lough Erne and Strangford Lough, 1985–2017.

Herring Gull *Larus argentatus*

EC Birds Directive – migratory species

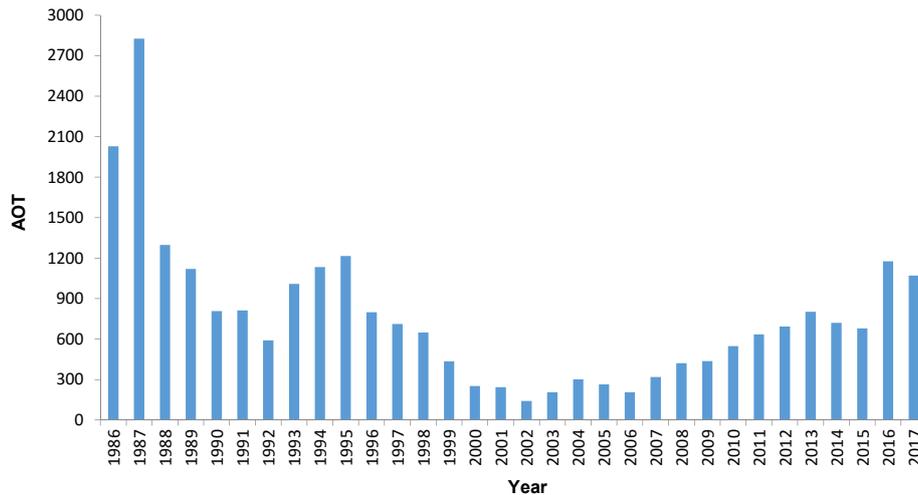
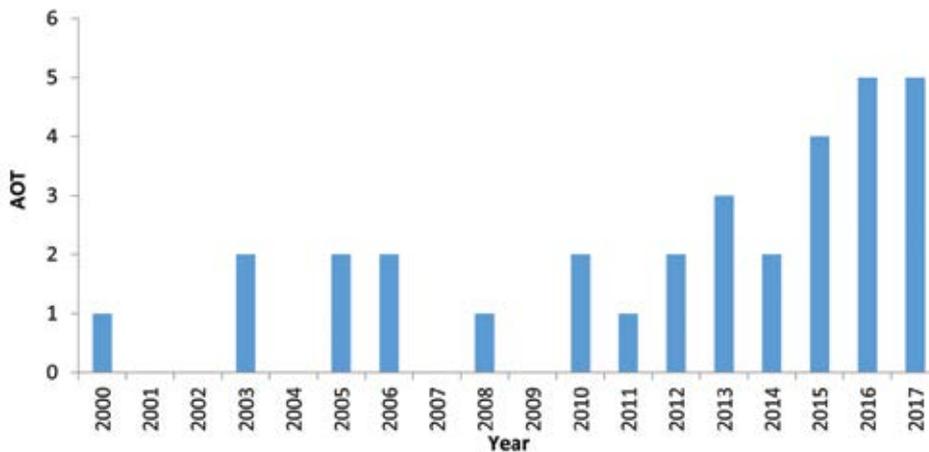
Red listed in the Birds of Conservation Concern in Ireland 3 (2014–2019)

Northern Ireland Priority species (Northern Ireland Biodiversity Strategy 2002)

Overview

The Herring Gull was historically widespread in Britain and Ireland and is largely resident (Mitchell *et al.* 2004). However, Herring Gulls suffered a well-publicised catastrophic decline in the late 1980s, largely because of botulism (Mitchell *et al.* 2004), and the population in Northern Ireland declined by 96% between Operation Seafarer and Seabird 2000 (Stanley Cramp *et al.* 1974; Mitchell *et al.* 2004). Concentrations of Herring Gulls occur at the Copeland Islands and Strangford Lough. These two populations have recently been shown to exploit marine, intertidal and terrestrial food resources in different proportions, which may differentially affect their breeding successes at the two locations (O’Hanlon *et al.* 2017). Smaller colonies occur on Rathlin Island, Burial Island, Muck Island and The Skerries. The population on Rathlin Island 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 23) 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, numbers of AOTs at Copeland and Strangford have shown sustained growth. Like the Lesser Black-backed Gull, the Herring Gull is increasingly being recorded as a roof nesting bird throughout the UK (Mitchell *et al.* 2004), and it is hoped that Herring Gulls in urban areas will be counted in the future. Any volunteer records would be welcome.



Figure 23 Herring Gull numbers (AOTs) at Strangford Lough, 1986–2017.**Figure 24** Herring Gull numbers (AOTs) at Lower Lough Erne, 2000–2017.

Breeding numbers

The colony at Strangford Lough increased to 1,177 AOT in 2016, up 73% from 2015, but dropped to 1,070 in 2017 (Figure 23). The major colony on the Copeland Islands has not been surveyed since 2012. Small numbers have bred at Lower Lough Erne and, since records began in 2000, this population has been gradually increasing (Figure 24).

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 & Robinson 2010).

Breeding success

No productivity data were collected in Northern Ireland in 2017. Analysis of the SMP dataset found that between 1986 and 2015 the mean productivity of Herring Gulls was 0.75 chicks/AOT, and declined at a rate of 0.016 chicks per nest per year (Cook & Robinson 2010; JNCC 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

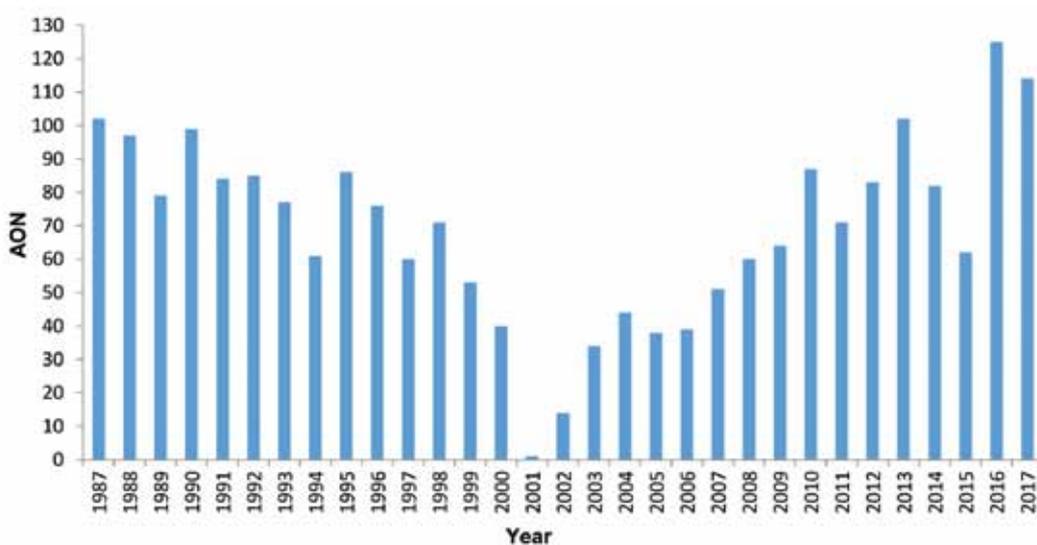
The Great Black-backed Gull has an extensive breeding range across the North Atlantic. Historically, Britain and Ireland have hosted most of the world population after Iceland and Norway. Great Black-backed Gulls in Britain and Ireland breed mainly in the Outer and Inner Hebrides and the Northern Isles 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. 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 there (Kerry Leonard *pers. obs.*).



RONALD SURGENOR

Figure 25 Great Black-backed Gull numbers (AONs) at Strangford Lough, 1986–2017.

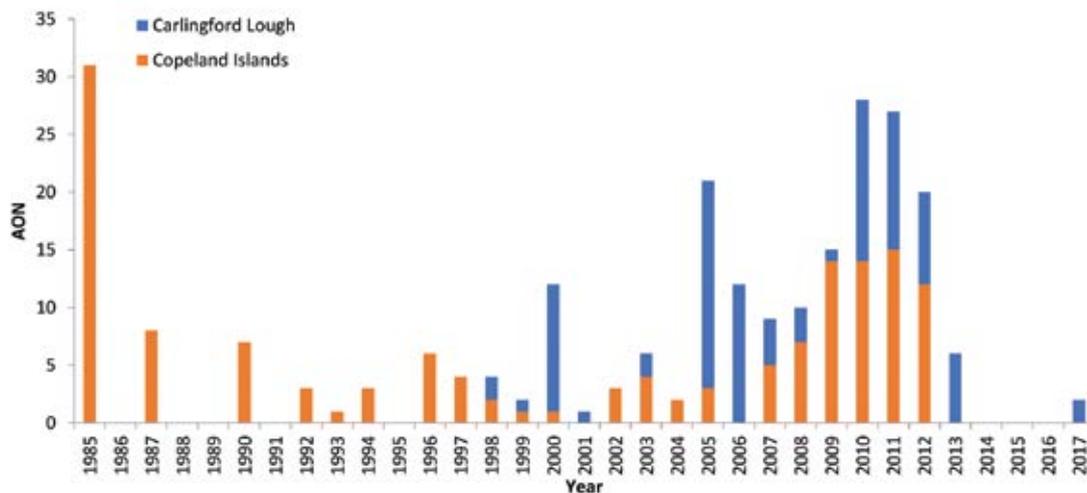


Breeding numbers

There were 114 AONs at Strangford Lough (Figure 25) in 2017, which is the second highest number recorded at the site, falling slightly from 2016's 125. Two AONs were found at each of Muck Island, The Gobbins, Maggies Leap and Green Island in Carlingford Lough, but numbers have not been counted on the Copeland Islands since 2012 (Figure 26). Four AONs were found at Lower Lough Erne in 2017, echoing last year's numbers.

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).

Figure 26 Great Black-backed Gull numbers (AONs) at the Copeland Islands and Carlingford Lough, 1985–2017. Surveys were not carried out in all years.



Breeding success

Monitoring across the UK has shown that productivity has increased since the early 2000s (JNCC 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 and 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 were reported in 2017.

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). During the breeding season Sandwich Terns make foraging trips an average distance of 27km from the colony, and vary in their habitat use between years (Fijn *et al.* 2017).

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.

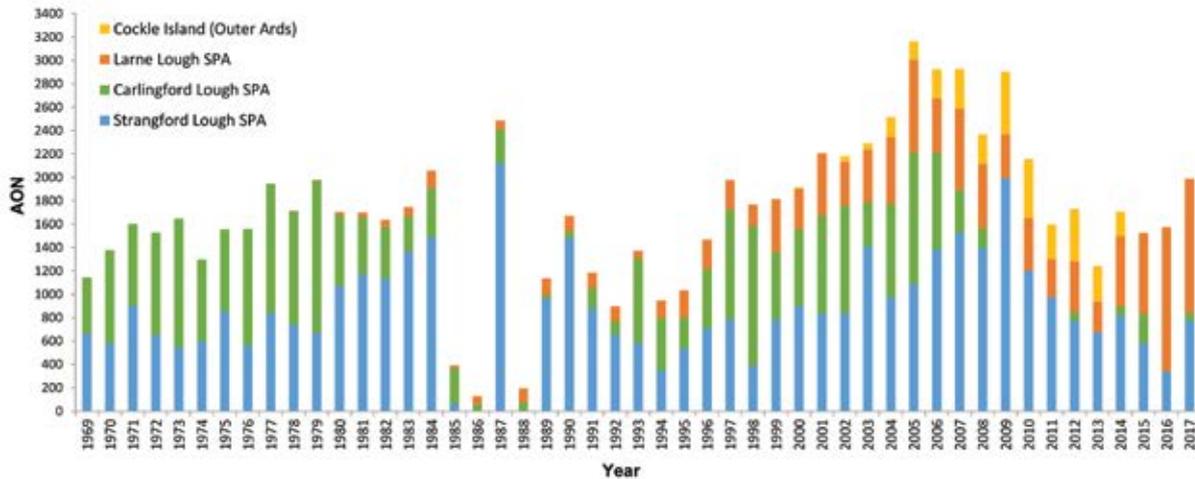
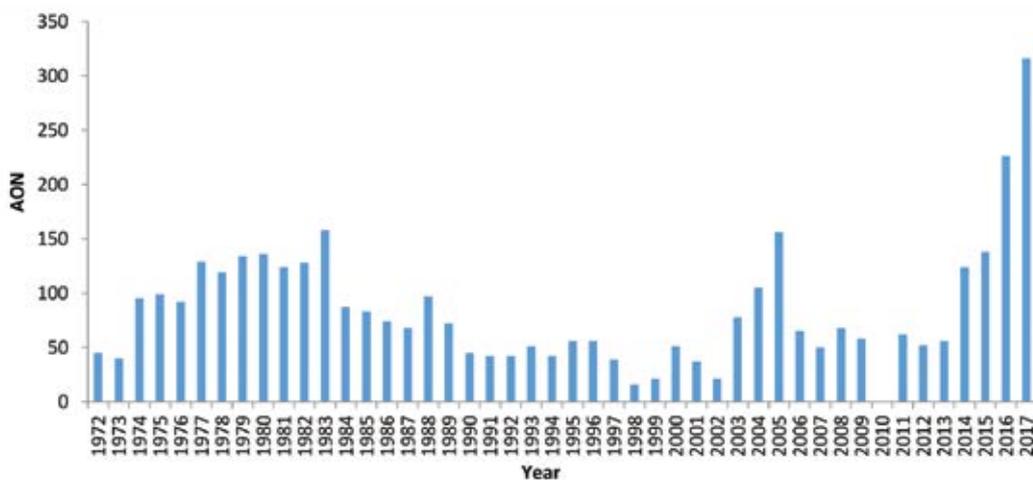


JILL PAKENHAM

Breeding numbers

Presenting the total populations for the main colonies (Figure 27) 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, and have rebounded to 71 this year. Cockle Island had no pairs at all in 2017, for the third year in a row. Larne Lough supported an extraordinary 1,229 AONs in 2016, but this fell slightly to 1,141 in 2017. This loss was more than made up for at Strangford Lough, where 2016's 337 AONs more than doubled in 2017 to 775 AONs. The total for these four colonies was 1,916 AONs in 2017, slightly up on 2016, but a redistribution of breeding birds has occurred. At Lower Lough Erne 316 AONs was the highest count since records began (Figure 28).

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).

Figure 27 Cumulative Sandwich Tern numbers (AONs) at Cockle Island, Larne Lough, Carlingford Lough and Strangford Lough, 1969–2017.**Figure 28** Sandwich Tern numbers (AONs) at Lower Lough Erne, 1972–2017.

Breeding success

Breeding success has been monitored intermittently at Lower Lough Erne since 1990. The success rate has rarely been greater than 0.50 chicks per nest and is usually much lower (Brad Robson *pers. comm.*). No specific data are available for 2017. Despite improving breeding success at Carlingford Lough between 2011–2015 due to an intensified programme of monitoring and conservation, no chicks fledged from 71 AONs in 2017 (Table 5), along with a near total breeding failure for Arctic and Common Terns at the same site. Suspected predation of eggs and young by Eurasian Otter (*Lutra lutra*) is the potential cause of breeding failure for terns at Carlingford (Matthew Tickner, RSPB *pers. comm.*). However, good productivity was recorded at Larne Lough, at 0.82 chicks/AON for 1,141 AONs (Matthew Tickner, RSPB *pers. comm.*). UK productivity has decreased from a peak of over 0.80 chicks/AON in 2000 to 0.40 chicks/AON in 2015.

Table 5 Productivity (Chicks/AON) of breeding Sandwich Terns at Carlingford Lough since 2014.

Year	Productivity
2014	0.66
2015	0.56
2016	0
2017	0

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

Despite their name, 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 area (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.

Interestingly, a recent study (Mostello *et al.*, 2016) found that Common Terns and Arctic Terns (*Sterna paradisaea*) are able to successfully hybridise. A mixed-species pair was observed in a colony in Massachusetts, USA. Over their eight year pair-bond they raised nine chicks, one of which was observed successfully backcrossing with a Common Tern (Mostello *et al.* 2016).



RONALD SURGENOR

Breeding numbers

Historical data for the main Northern Ireland colonies are incomplete. The cumulative total for the main eastern colonies is shown in Figure 29. 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 population for the six main east coast colonies was slightly lower than in 2016, down from 1,349 to 1,154.

In 2017, 51 AONs were located at Gravel Ridge Island, Lower Lough Erne, following the pattern of population increase over recent years (Figure 30). Other population increases were recorded at Portmore Lough (102 AONs, increasing from 75 in 2016) and at a collection of locations around Lough Neagh (346 individuals, increasing from 243 in 2016). Thirteen AONs were on the tern raft 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 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

Table 6 shows the breeding productivity of Common Terns in Northern Ireland in 2017. At Portmore Lough, productivity remained fairly constant from 2016, at 0.89 chicks/AON fledged. No chicks fledged at Green Island, Carlingford Lough in 2016, but in 2017 nine chicks were produced from 147 AONs. On the tern raft at the River Lagan productivity improved from 0.66 chicks/AON in 2016 to 0.85 in 2017. Some chicks from this raft were lost before fledging due to falling into the water and being predated by Lesser Black-backed Gulls (Ronald Surgenor *pers. comm.*). 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 29 Cumulative Common Tern numbers (AONs) at Cockle Island, Copeland Islands, Carlingford Lough, Belfast Lough RSPB, Larne Lough and Strangford Lough, 1975–2017.

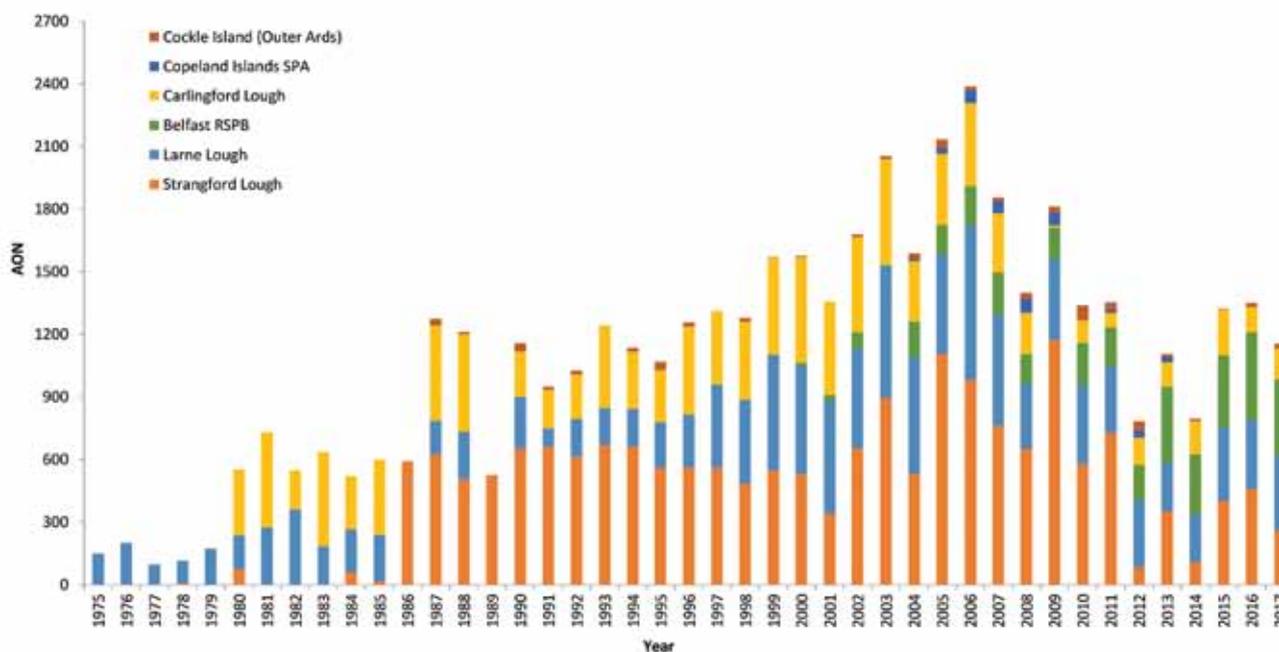


Figure 30 Common Tern numbers (AONs) at Lower Lough Erne, 1984–2017.

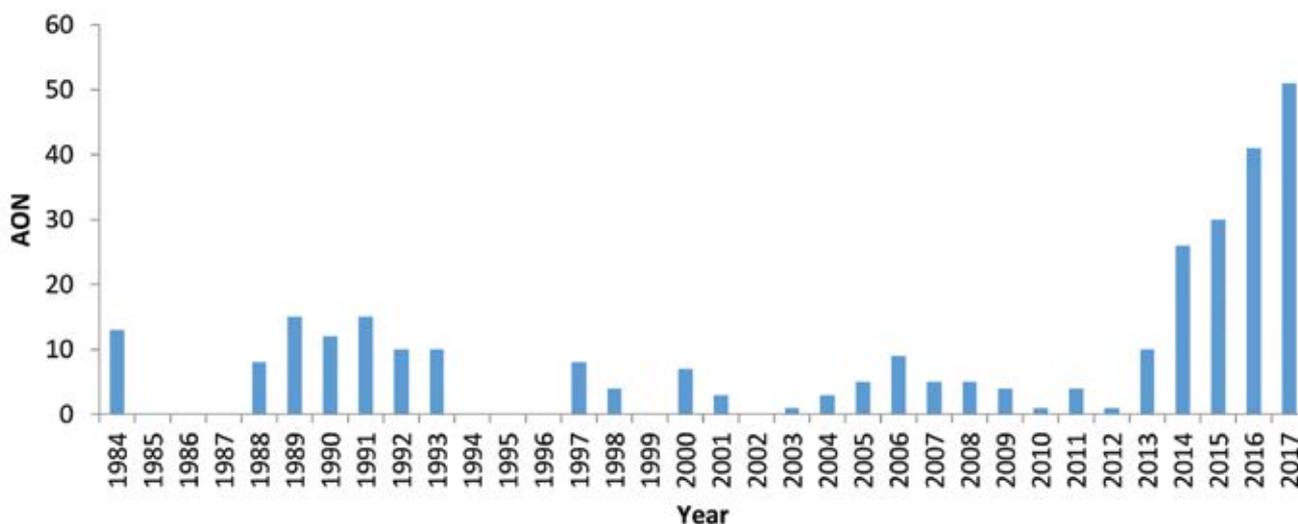


Table 6 Productivity (chicks/AON) of breeding Common Terns across four sites in 2017.

Year	Productivity
Portmore Lough	0.89
Lagan Tern Raft	0.85
Carlingford Lough (Green Is.)	0.06
Larne Lough (Blue Circle and Swan Is.)	0.28

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; while some European populations have continued to decline other colonies have increased, with focused conservation measures helping this recovery (Newton & 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 Britain and Ireland is now in south-east Ireland at Rockabill Island and Lady's Island Lake.

Historically Mew Island in the Copeland Group was one of the major sites for Roseate Tern in Ireland (Thompson 1851). However, the species ceased to breed in Northern Ireland around 1880 before apparently re-colonising in the first quarter of the 20th century (Deane 1954) and good numbers were again breeding on Mew by 1941 (Williamson *et al.* 1941) before rapidly decreasing to extinction in the 1950s.



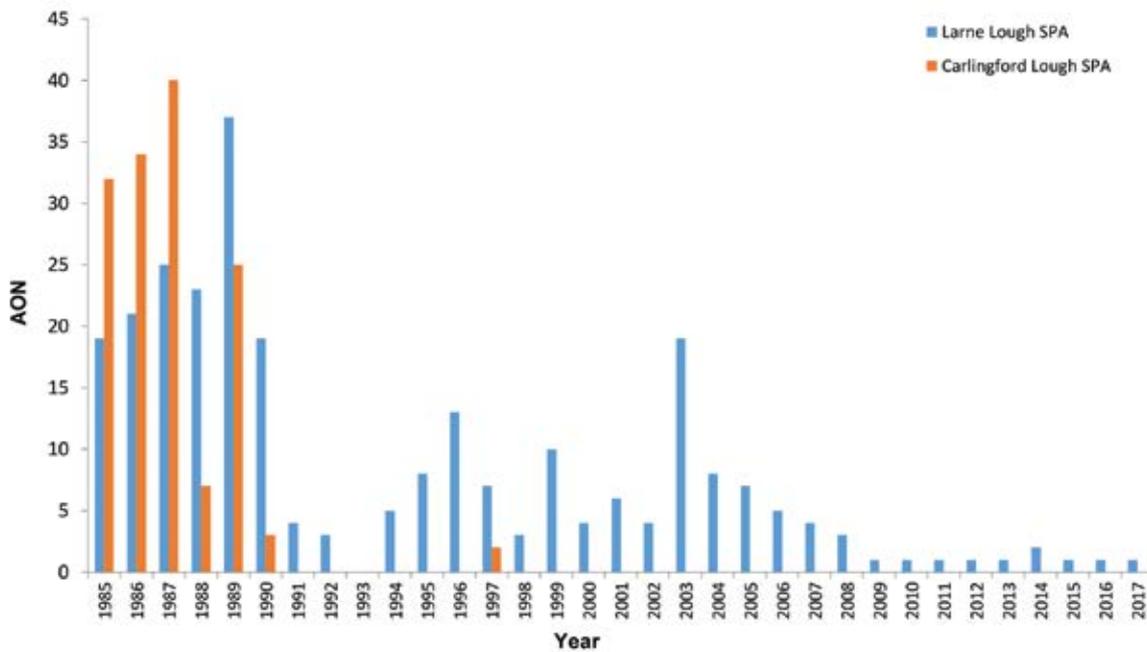
NEAL WARNOCK

Breeding numbers

The species has suffered a near terminal decline as a breeding species in Northern Ireland since the late 1980s (Leonard 2016b) (Figure 31). In 2017, there was again a single pair at Larne Lough.

Breeding success

The pair at Larne Lough hatched two chicks, but there was no confirmed evidence of these fledging (Matthew Tickner, RSPB *pers. comm.*).

Figure 31 Roseate Tern population numbers (AONs) in Northern Ireland, 1985–2017.**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 (73%) nests in the Northern Isles (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.

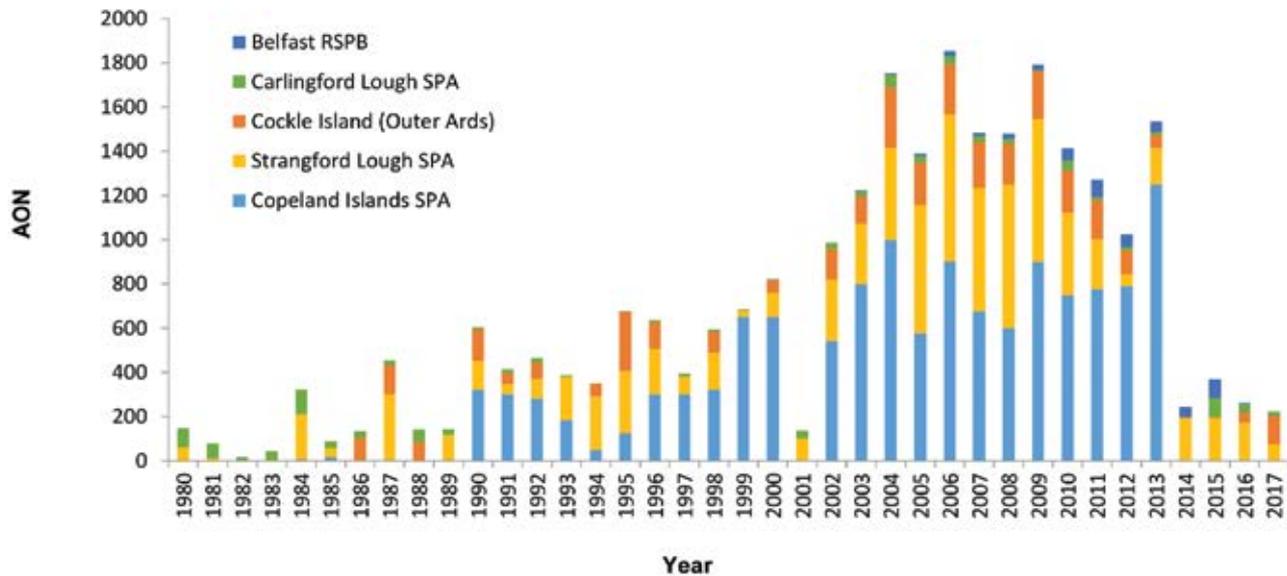


GEOFF CAMPBELL

Breeding numbers

Numbers present at Strangford Lough have plummeted in the past decade, falling from a high of 663 AONs in 2006 to 73 AONs in 2017 (Figure 32). Despite a high of 83 AONs at Belfast Harbour in 2015, Arctic Terns did not breed there in 2017 (Figure 32). The Cockle Island population increased from 43 AONs in 2016 to 129 in 2017. The colony at Green Island, Carlingford Lough decreased for a second year running to 20 AONs.

Figure 32 Arctic Tern numbers (AONs) at Belfast Lough RSPB, Carlingford Lough, Copeland Islands, Strangford Lough, and Cockle Island (Outer Ards), 1980–2017.



Breeding success

Just one chick was produced (0.05 chicks/AON) from the 20 AONs at Green Island, Carlingford Lough.

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 or Common Murre) is one of the most abundant seabirds in the northern hemisphere (Mitchell *et al.* 2004). Guillemots are extremely gregarious and colonies can contain many tens of thousands of individuals, and these very large populations occur both in the Atlantic and Pacific Oceans (Mitchell *et al.* 2004). Guillemots are proficient divers, and can dive deeper (~30–70m) than the other auks they often share colonies with, like Puffins and Razorbills (Shoji *et al.* 2015; Thaxter *et al.* 2010). This is likely due to the fact that they carry only a single prey item back to the colony when provisioning chicks and therefore must spend more time searching for larger prey for trips to be energetically worthwhile (Thaxter *et al.* 2010).

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 2017, 2,326 individuals were recorded at The Gobbins (Figure 33) and 2,554 individuals at Muck Island (Figure 34).

The breeding abundance index shows that, across the UK, Guillemots have increased by approximately 50% since 1986 (JNCC, 2016). However, the increase at Rathlin Island 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 Island in 2007. On Rathlin Island the RSPB carry out annual comparative counts of study plots to monitor population levels (Figure 35). In 2017, 3,470 Guillemots were counted in the study plots, representing a fairly stable count since 2015.

Breeding success

No Guillemot productivity data were collected in 2017. Hooded Crows (*Corvus cornix*), Carrion Crows (*Corvus corone*) and Herring Gulls are responsible for the predation of many Guillemot eggs at The Gobbins (Kerry Leonard *pers. obs.*).

Between 2002 and 2007 just 0.30 chicks/pair were fledged at sites monitored in the UK. Levels of productivity have recovered since 2007 to 0.50–0.60 chicks/pair, but are still below that of the 1980s (JNCC 2016).



RONALD SURGENOR

Figure 33 Common Guillemot numbers (individuals) at The Gobbins, 1969–2017.

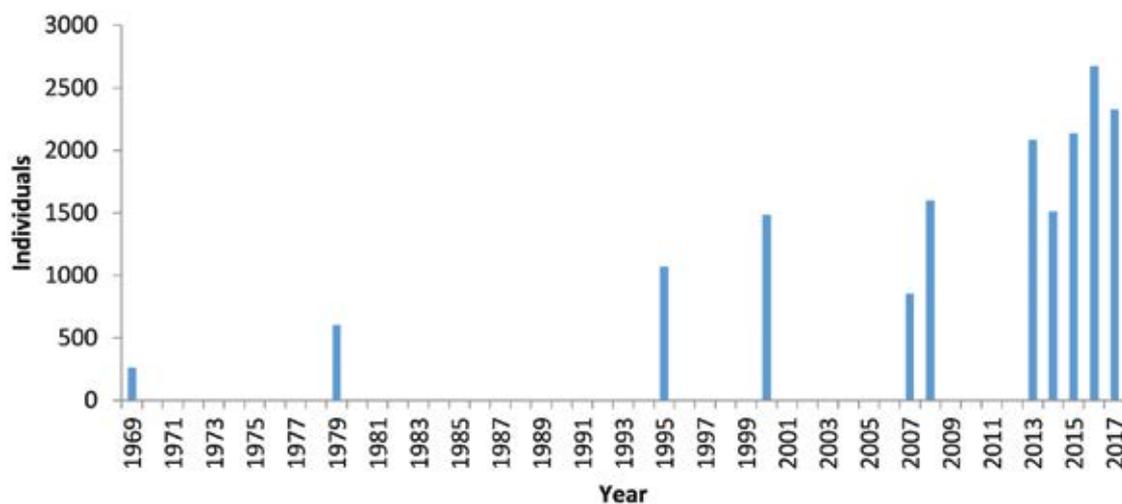


Figure 34 Common Guillemot numbers (individuals) at Muck Island, 1987–2017.

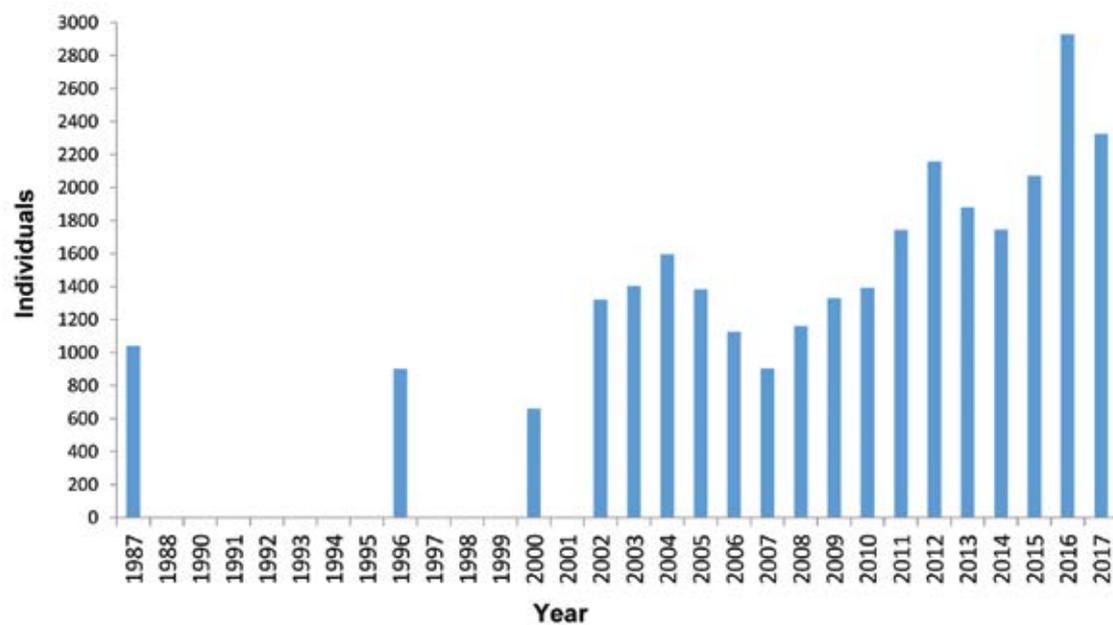
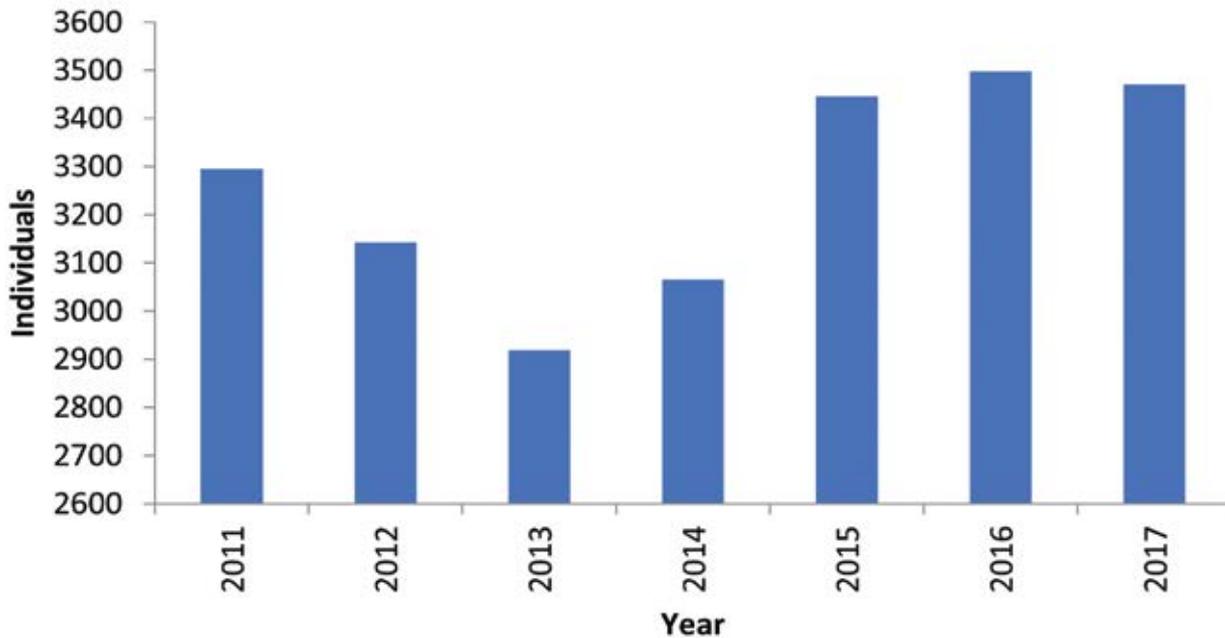


Figure 35 Common Guillemot study plot counts (individuals) at Rathlin Island, 2011–2017.

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, which breeds on both sides of the Atlantic. Razorbills nest on ledges with Common Guillemots and Kittiwakes, but also frequently in clefts, holes and under boulders. Unlike Guillemots, Razorbills are able to carry several prey items in their bills back to the colony when chick provisioning and, therefore, can afford to make shorter and shallower dives for smaller prey (Thaxter *et al.* 2010), thus avoiding competition for food with Guillemots.

Razorbill populations showed successive increases during the UK and Ireland censuses, though the population at the time of Operation Seafarer may have been underestimated, because the small ledges they nest on can often be hidden from view, making them difficult to census (Mitchell *et al.* 2004).

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 UK breeding abundance index has fluctuated over the last 25 years but is still well above 1980s levels (JNCC 2016). 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 was the largest colony in the UK and Ireland at the time of Seabird 2000 (Mitchell *et al.* 2004).

Although numbers of Razorbills at Muck Island and the Gobbins were down in 2017 compared to 2016 counts (Figure 36, Figure 37), numbers at the study plots on Rathlin Island increased this year (Figure 38). However, it should be noted that numbers of Razorbills in attendance at the colony can be subject to large fluctuations, particularly where many birds may not breed each year. For example, comparing 2016 counts to those in 2014 shows how perilous it could be to count nesting Razorbills at a site one year in 10 or 20, to discern national trends.



TOM MCDONNELL

Figure 36 Razorbill numbers (individuals) at Muck Island, 1987–2017.

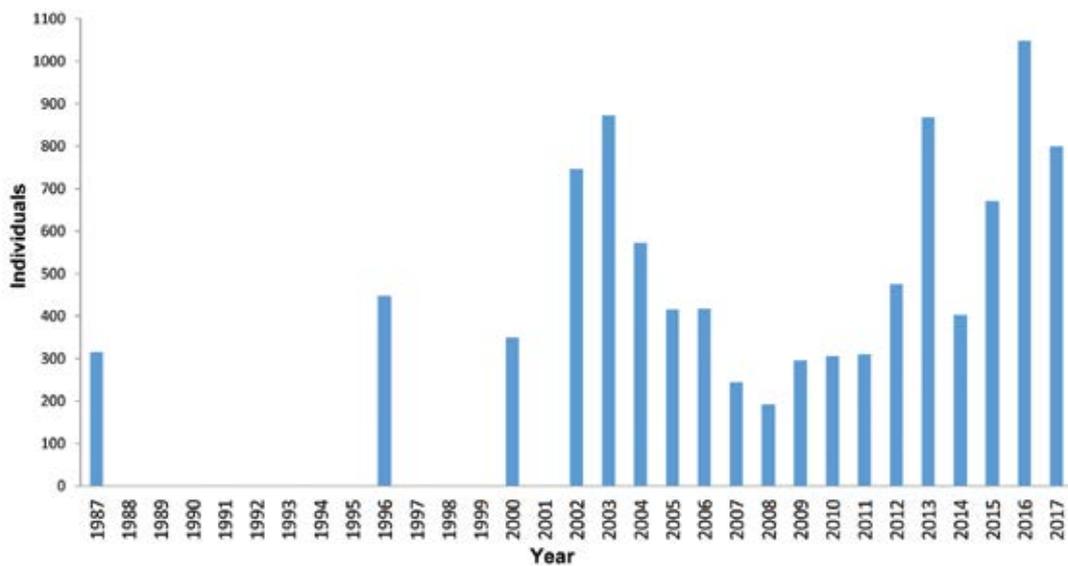


Figure 37 Razorbill numbers (individuals) at The Gobbins, 1969–2017.

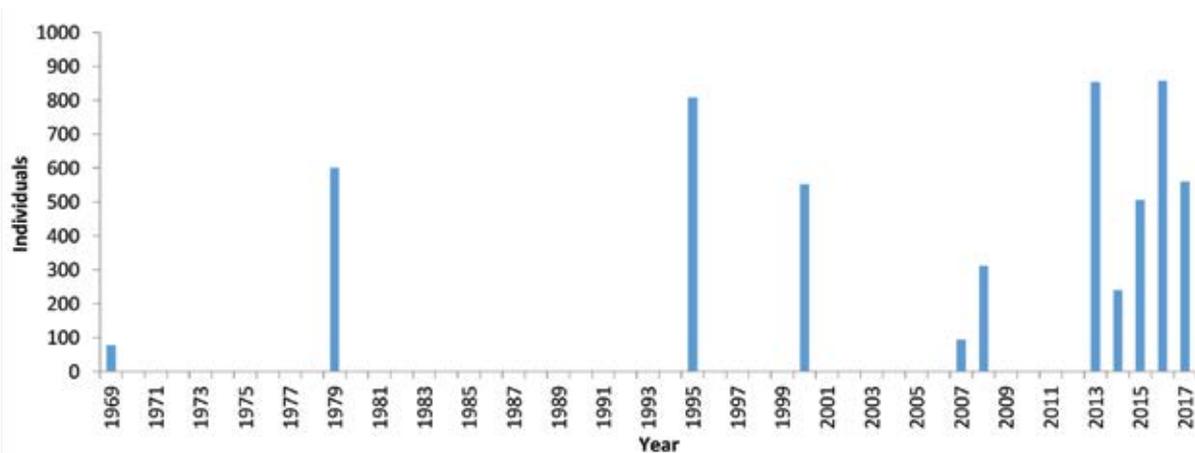
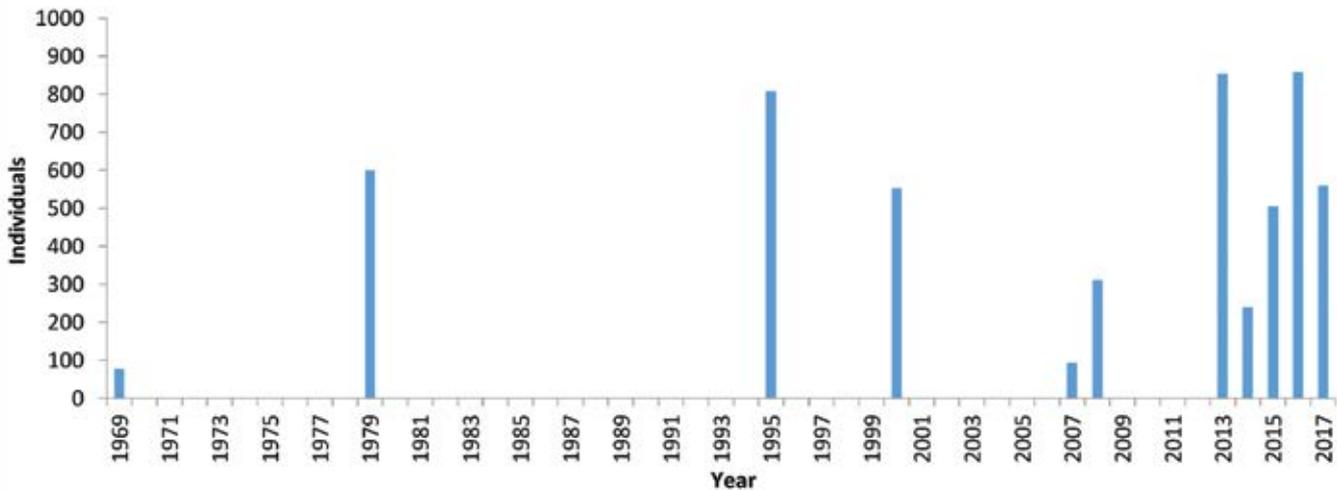


Figure 38 Razorbill study plot numbers (individuals) at Rathlin Island, 2011–2017.

Breeding success

Across the UK annual productivity has declined slowly over the last 25 years and is now approximately 0.50 chicks/pair (JNCC 2016). Razorbill productivity is not currently recorded at any sites in Northern Ireland.

Black Guillemot *Cephus grylle*

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

Overview

The Black Guillemot (or Tystie) 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 artificial) and can be difficult to survey. It is essential the recommended methodology is followed.

Research carried out on the population nesting in Bangor Harbour revealed that, as for some other UK seabird species (e.g. Kittiwake, Common Guillemot, European Shag (Morten Frederiksen *et al.* 2004)) onset of breeding for Black Guillemots is influenced by environmental conditions in that breeding year (Greenwood 2007). First egg dates for Black Guillemots in Bangor Harbour were correlated with sea surface temperature in the Firth of Clyde (Greenwood 2007). These and other published results from Julian Greenwood's work on Black Guillemots in Bangor Harbour highlight the scientific value of relatively local studies performed by volunteers.



Breeding numbers

The nests usually monitored at Bangor Harbour were not monitored this year, due to the sad passing away of Julian Greenwood (Page 52). Counts of Black Guillemots from around the coast of Northern Ireland in 2017 are recorded in Table 7.

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 39).

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 & Petersen 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 Butterfish *Pholis gunnellus* (Kerry Leonard *pers. obs.*; Cramp and Simmons 1983; Gaston and Jones 1998) and the distribution and abundance of this fish species must be a key factor influencing Black Guillemot populations and distribution.

Figure 39 Black Guillemot numbers (individuals) at Rathlin Island, 1999–2017.

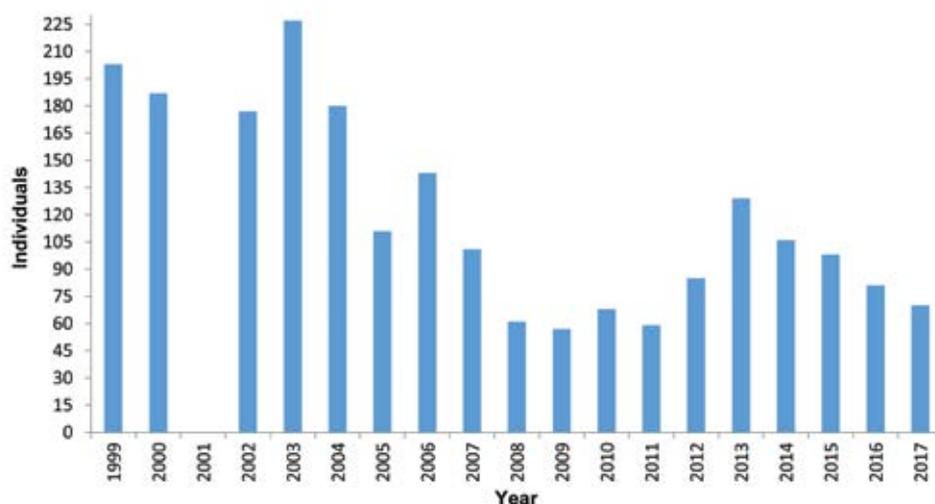


Table 7 Black Guillemot numbers (individuals) at sites in Northern Ireland in 2017.

Parent Site	Site	Count
Lough Foyle	Longfield	0
	Myroe	0
	Roe-Magilligan	0
Portrush Harbour	Portrush Harbour 1	22
Rathlin Island	Rathlin Island 1	70
Larne to Torr Head	Cushendall	8
	Garron Coast	4
	Glenarm Harbour	66
Larne Lough and Island Magee	Ballygalley	0
	Larne Lough	76
Barr's Head to Black Head	The Maidens	35
	Castle Robin to Portmuck	6
Whitehead Town	South Islandmagee	0
	Whitehead Town 1	0
Carrickfergus to White Head	Carrickfergus	15
	Eden to White Head	183
Belfast (Harbour)	Belfast Harbour	113
Belfast to Grey Point	Belfast to Grey Point 1	0
Grey Point to Bangor	Grey Point to Bangor 1	0

Parent Site	Site	Count
Bangor to Groomsport	Bangor to Groomsport1	0
Groomsport	Groomsport 1	16
Groomsport to Donaghadee	Groomsport to Donaghadee 1	0
Donaghadee	Donaghadee 1	6
Millisle	Millisle 1	0
Ballywalter	Ballywalter 1	2
Ballywalter to Ballyhalbert	Ballywalter to Ballyhalbert 1	0
Ballyhalbert	Ballyhalbert 1	0
Ballyhalbert to Portavogie	Ballyhalbert to Portavogie 1	0
Portavogie	Portavogie 1	2
Strangford Lough	Strangford Mainland - Portaferry	10
	Strangford Mainland - Portaferry to Kircubbin	20
	Strangford Mainland - RingNeill	0
	Strangford Mainland - Whiterock	0
	Strangford Mainland - Ballymoran	0
	Strangford Mainland - Killyleagh to Castle Island	0
	Strangford Mainland - Castle Island to Strangford	0
Ardglass	Ardglass 1	18
South Down	Killough to Minerstown	0
	Minerstown to Ballykinler	0
Carlingford Lough	Carlingford Lough1	27
	Rostrevor	5
	Warrenpoint	22

Breeding success

In the Lagan, one pair of Black Guillemots fledged two chicks from a Kingfisher (*Alcedo atthis*) nest box (Ronald Surgenor *pers. comm.*). Between Portaferry and Kircubbin, five nests produced three chicks (productivity = 0.60). Artificial nest sites in walls were inspected for eggs and chicks using a 'selfie stick', a rod on which a camera or smartphone can be attached (Noeleen Farry *pers. comm.*).



Figure 40 An example of artificial nest sites in the sea wall along Lough Shore Road.



Figure 41 A photo of two Black Guillemot chicks taken using a selfie stick to inspect an artificial nest cavity.

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. This is a secretive bird on land, nesting in burrows; until recently relatively little was known about their pelagic lifestyle. This is changing with the use of new technology to discover wintering areas, migratory routes (Guilford *et al.* 2011; Harris *et al.* 2010) and foraging behaviours (Shoji *et al.* 2015). The latest research suggests that breeding pairs follow similar migratory routes post breeding season (although the mechanism for this is still unknown) and that this subsequently allows pairs to breed earlier and more successfully the following spring (Fayet *et al.* 2017).

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 (Wolsey & Smyth 2017). 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

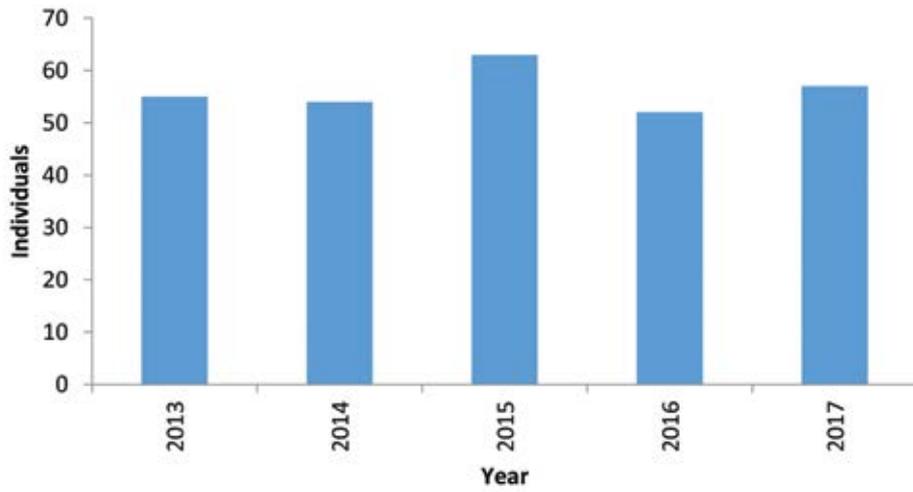
In 2017, a peak count of 57 was recorded at the Gobbins, in the same range as counts during 2013–2016 (Figure 42). Birds were present around Lighthouse Island, the Copeland Islands, with approximately 82 individuals present in late May. One Puffin was seen on Lighthouse Island on the 21 May excavating and carrying nest material, however, the number of AOBs is unknown, as Puffin breeding is not monitored on the Copeland Islands at present (Copeland Bird Observatory *pers. comm.*).

The logistical difficulties in monitoring Atlantic Puffin colonies means that few data are collected annually and that a bias toward smaller colonies exists; 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

In 2016, two chicks fledged from the new colony on Lighthouse Island. However, there are no records from 2017. Monitoring elsewhere in the UK has shown that productivity is highly variable, it was 0.55 chicks per pair in 2015 (JNCC 2016).

Figure 42 Puffin numbers (individuals) at the Gobbins, 2013–2017.



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Join our Seabird Network!

Katherine Booth Jones

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Why volunteer?

Following in the footsteps of Charles Darwin, who joined the crew of the HMS Beagle as an unpaid naturalist, the efforts of volunteer citizen scientists continue to be of vital importance to our understanding of the wildlife around us. Volunteer recorders allow data to be collected in larger volumes, over greater geographic scales and over longer periods than could be achieved using paid fieldworkers and this results in a greater ability to detect changes in nature and informs conservation efforts. In turn, volunteers themselves increase their own knowledge of their local wildlife and gain physical, mental and emotional health benefits by spending time in nature.

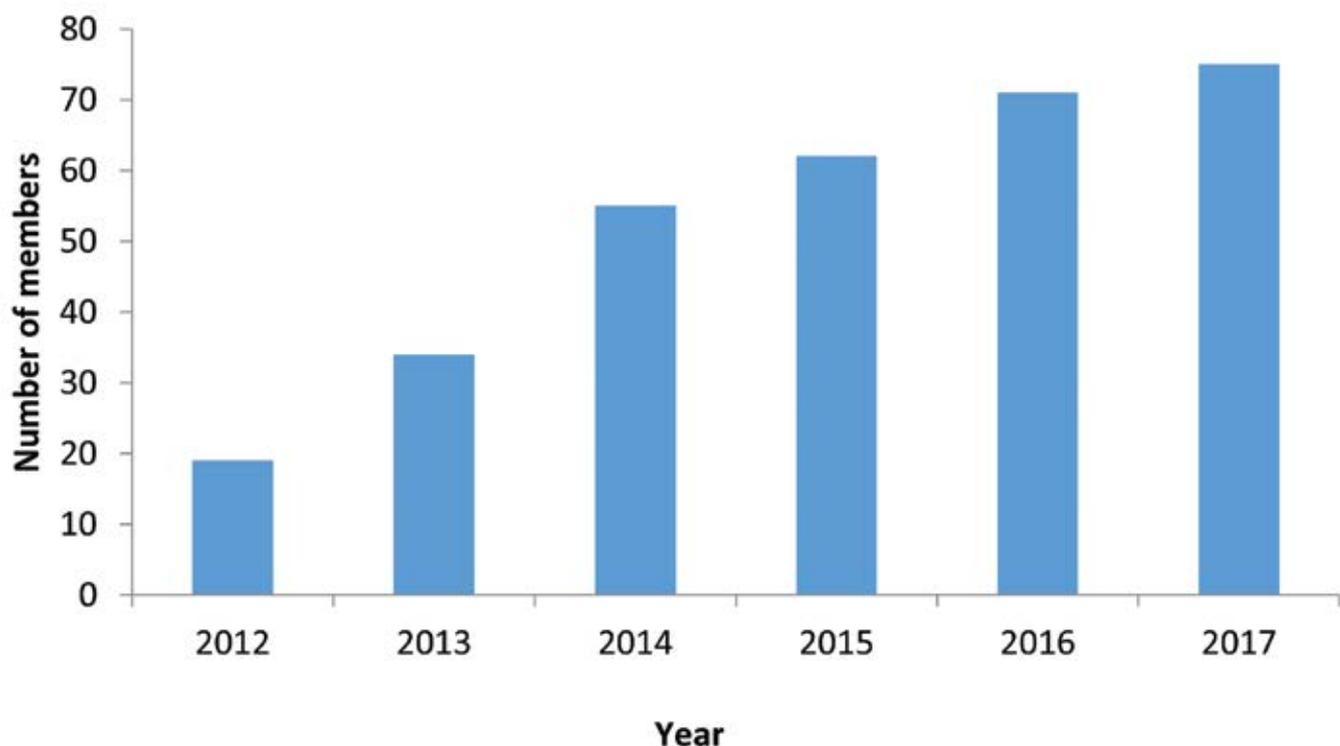
Why seabirds?

The UK hosts internationally important populations of seabirds, and these are a key component in the marine biodiversity of the UK. Monitoring seabird population changes and annual productivity can be used to measure the condition of marine ecosystems and the impact that human activities are having on the environment.

Seabird monitoring in Northern Ireland

For Northern Ireland's seabirds, the work of volunteers is irreplaceable. In the past, seabird monitoring focused on a small number of important sites, with monitoring carried out by local and national NGOs and the government. However, the resources of such organisations are always stretched and a need to increase the scope of monitoring was identified. The engagement of Kerry Leonard in 2013 as the NIEA-funded BTO Seabird Coordinator for Northern Ireland increased the annual seabird monitoring across the country by encouraging the involvement of volunteers in the collection of data on seabird numbers and breeding success. In 2012, the NI Seabird Network consisted of just 12 members, and now we are up to 75 members (Figure 1).

Figure 1 Numbers of members of the Northern Ireland Seabird Network, 2012–2017.



This increase has led to an expansion of the number of sites and species that can be monitored in Northern Ireland, in turn increasing the scientific robustness of the data collected, and this can then be used to inform effective management of seabird populations in the future.

Can you help?

Despite the increase in volunteer effort, there are still several sites without volunteer seabird counters around the coast of Northern Ireland. Table 1 shows sites with a high priority for volunteers for 2018, and these sites are highlighted in red on Figures 2 and 3 (numbers on the maps correspond to Table 1). The Seabird Monitoring Programme divides sites into two categories, one for seabirds generally (numbers 1–15, Table 1, Figure 2), and one for Black Guillemots only (numbers 16–22, Table 1, Figure 3). Volunteers can collect data on breeding numbers (Apparently Occupied Nests/Sites/Burrows for most seabirds; number of individuals for auk species), productivity (usually recorded as the number of chicks per breeding pair) or both, depending on the amount of time they are able to contribute.

To ensure scientifically repeatable data collection, seabird counts and productivity data must be collected in a standardised manner. Recommended methods are clearly explained in the *'Seabird monitoring handbook for Britain and Ireland'* (Walsh *et al.* 1995), which can be freely downloaded from the Internet here: http://jncc.defra.gov.uk/PDF/pub95_SeabirdHandbook.pdf. Although Northern Fulmar, European Shag, Black-legged Kittiwake, Common Guillemot and Razorbill are defined as indicator species for Northern Ireland, and therefore are a monitoring priority, records of any species in the sites 1–15 (Table 1, Figure 2) or of Black Guillemots in sites 16–22 (Table 1, Figure 3) are sought. In addition, no data are currently collected on urban nesting gulls, in particular Lesser Black-backed Gulls or Herring Gulls. If there is a colony of urban nesting gulls near you that you are able to safely observe and you would be willing to collect yearly count or productivity data (the chicks per Apparently Occupied Territory), please get in touch with the current BTO Seabird Coordinator for Northern Ireland, Katherine Booth Jones.

There are also medium-priority sites not listed in Table 1 requiring volunteer seabird counters. Therefore, if you would like to volunteer and cannot see a site near you in Table 1, please contact the Seabird Coordinator for the full list of available sites. If you are not currently a member of the Northern Ireland Seabird Network and would like to be, please also contact Katherine to be added to the list.

We hope that the Seabird Report will inspire even more nature lovers and birdwatchers to join the Northern Ireland Seabird Network and to get out and about along the coastline in the spirit of contributing to our understanding of the fantastic seabird populations of Northern Ireland.

Figure 2 High priority sites for volunteer seabird counts 2018.

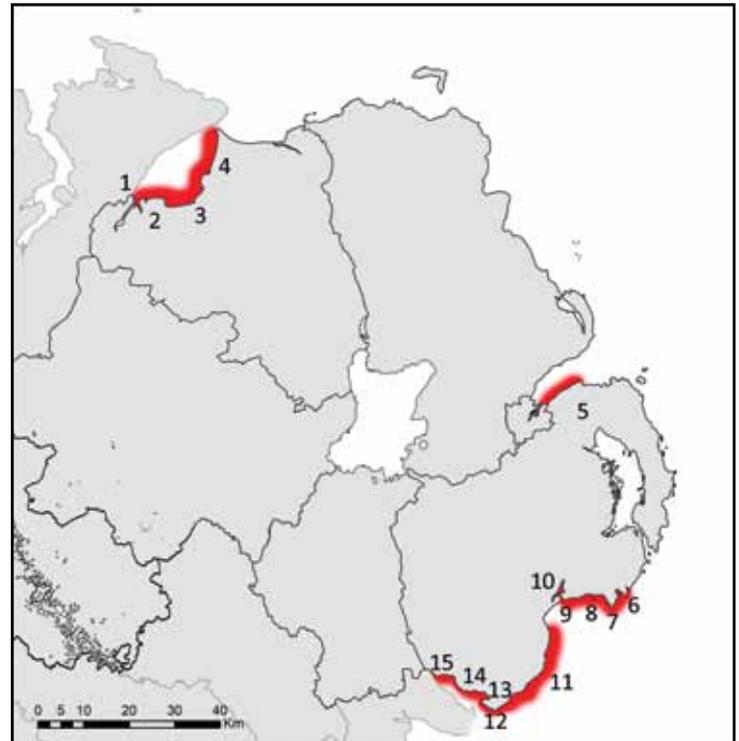


Figure 3 High priority sites for volunteer Black Guillemot counts 2018.



Table 1 High priority sites in need of volunteers in 2018.

No	Priority	Requirement	Master Site	Subsite	Grid Start	Grid End
1	High	Any Seabirds	Lough Foyle	River Foyle	C 481 242	C 501 238
2	High	Any Seabirds	Lough Foyle	Longfield	C 501 238	C 544 236
3	High	Any Seabirds	Lough Foyle	Myroe	C 544 236	C 635 293
4	High	Any Seabirds	Lough Foyle	Roe-Magilligan	C 635 293	C 659 391
5	High	Any Seabirds	Belfast to Grey Point	Belfast to Grey Point 1	J 371 786	J 457 833
6	High	Any Seabirds	South Down	Ardglass to Killough	J 566 373	J 540 354
7	High	Any Seabirds	South Down	Killough to Minerstown	J 540 354	J 510 357
8	High	Any Seabirds	South Down	Minerstown to Ballykinler	J 510 357	J 412 361
9	High	Any Seabirds	South Down	Dundrum Bay	J 412 361	J413 370
High	Any Seabirds		South Down	Dundrum Inner Bays	J 413 370	J 377 313
11	High	Any Seabirds	Mourne Coast	Maggie's Leap to Kilkeel	J 387 282	J 302 125
12	High	Any Seabirds	Mourne Coast	Kilkeel	J 302 125	J 269 099
13	High	Any Seabirds	Mourne Coast	Greencastle	J 269 099	J 241 117
14	High	Any Seabirds	Carlingford Lough SPA	Greencastle to Rostrevor	J 241 117	J 169 180
15	High	Any Seabirds	Carlingford Lough SPA	Rostrevor to Warrenpoint	J 169 180	J 127 191
16	High	Black Guillemot	Belfast to Grey Point	Belfast to Grey Point 1	J 371 786	J 457 833
17	High	Black Guillemot	Grey Point to Bangor	Grey Point to Bangor 1	J 457 833	J 499 823
18	High	Black Guillemot	Bangor to Groomsport	Bangor to Groomsport 1	J 508 826	J 534 839
19	High	Black Guillemot	Portavogie to Ballyquintin	Portavogie to Ballyquintin 1	J 659 592	J 623 453
20	High	Black Guillemot	South Down	Minerstown to Ballykinler	J 510 357	J 412 361
21	High	Black Guillemot	South Down	Dundrum Bay	J 412 361	J413 370
22	High	Black Guillemot	Kilkeel Harbour	Harbour	J 316 139	J 270 108

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Julian Greenwood remembered by his brother, Jeremy

Jeremy Greenwood

Julian and I were three and 10 years old respectively when the family moved to a house on the outskirts of Worcester. It was surrounded by abandoned fields, destined to be built on but in 1953 still available for small boys to roam in. There were two large woodlands nearby and beyond a mixed farming landscape into which we could penetrate on bicycles, looking both for the adventures of damming streams and evading gamekeepers and for the delights of discovering birds and other creatures (still common on farmland in those days). I soon took up birdwatching and Julian followed suit when he himself entered his early teens – though by then our opportunities for going out together were limited because I was at university. When a friend and I made an expedition to the Scottish Highlands and Islands in 1964 it was planned that Julian should join us for a while. The plan was scuppered by a gale that destroyed our tent but he was still able to visit the dramatic seabird colonies on Handa Island. To make up for Highland holiday being curtailed, we spent a week in North Norfolk where we not only saw some exciting birds (once having two Black Terns and a White-Winged Black Tern in view at once) but also sat on the famous East Bank at Cley with the great bird artist Richard Richardson.

Perhaps it was those 1964 experiences that confirmed Julian's interest in birds. It soon became serious: from the age of 18 until his death he kept systematic notebooks of his observations, entering all his past records into BirdTrack after he retired. His interest in natural history took him to Liverpool Polytechnic for a degree in biology in a department headed by Prof W G Hale. Studying in Liverpool had two major influences on his life. First, he met Mary, an Irish girl also studying there who was destined to be his wife. Second, Bill Hale was both a keen ornithologist and an expert at finding research funding, which allowed Julian to proceed to a Ph.D. on geographical variation in Dunlin (on which he later published six papers). Afterwards he worked briefly at the Liverpool Museum and then taught in a private girls' school. This last experience apparently qualified him to educate student teachers for in 1979 he obtained a lectureship at Stranmillis College, where generations of students subsequently benefited from his enthusiasm for the living world and his ability to explain its workings. Later, he became a frequent visitor to Provence (even buying a house there) and he took four groups of students there, to open their eyes through brief studies of unfamiliar ecosystems and spectacular birds.

Julian's undergraduate degree was a sandwich course and one of his 'industrial' placements was at the fisheries lab in Coleraine, working on mayflies and Black-headed Gulls in Lough Erne. Many years later he wrote two papers on this work. After he became resident in Northern Ireland there was much other work on birds, though almost all in his spare time.

Partly as a demonstration project for his students, he established a nest box project in the grounds of the college. As well as studying the general breeding biology of Blue and Great Tits, he studied aspects of their lives that others have largely overlooked. After the birds had finished breeding each year, he collected and dried the nest material, getting his students to weigh it so that they could see how the quantities of material used by the birds varied. They found that the birds that built bigger (heavier) nests fledged more young.

In 1985 Julian began work on the Black Guillemots breeding in Bangor harbour, a study that occupied the last 32 years of his life and which gave rise to over 20 scientific papers as well as a number of popular articles and talks to a variety of audiences. When he heard that the harbour was to be redeveloped in the late 1980s, he suggested that, since the redevelopment would destroy many of the traditional nest sites, it would be good to incorporate nestboxes for them into the new structures. This was done, resulting in a growth of the population from under 10 pairs to over 30, as well as the species becoming the symbol of the harbour. A paper on the relationship between the date of breeding of the birds and seawater temperature was in preparation when he died.

Several other ornithological topics gave rise to short notes in various journals and he also published seven papers on education. He believed in involving students in original research projects as part of their scientific education. As a result, one of his Black Guillemot papers was co-authored with a student. So were two papers on 'sidedness': one showed that asymmetries in the use of the lower limbs were influenced by Irish-dance training, another that 80% of people turn their heads to the right when kissing, independent of whether they were right- or left-handed. With colleagues and cohort of student teachers from both Stranmillis and St Mary's University Colleges he involved over 2,000 primary school children in a survey of various lateral biases: not just left-handedness in writing but biases in throwing, kicking, listening, and looking.



Julian (left) and Jeremy on a birding trip to Provence (June 2015)

JEREMY GREENWOOD

Julian believed in sharing his enthusiasm for science, birds and conservation not just with his students but also with the wider community, through talks and popular articles. On one occasion he arranged to lead a birdwatching walk in the grounds of Stranmillis: interviewed about it on the radio a few hours before the event he found that, instead of the expected 10–20 people, over 100 turned up. He served on the RSPB NI Committee twice (1984–95 and 2005–12), chairing the Committee and serving on the Society’s Council during 1990–95 and 2007–12. His input was valued both in Northern Ireland and at RSPB HQ. He also gave much support to BTO in the Province.

Julian was only 67 when he died unexpectedly on 23 April 2017 but he had achieved much. The many expressions of sympathy that came to his family (he is survived by Mary, their three daughters and four grandchildren) attest to how much he was appreciated both for what he did and for his warm personality – in the words of the patron of one of his favourite restaurants in Provence: “*The man who always had a smile on his face and who made everybody else smile.*”



Julian measuring the mass of a Black Guillemot in 2015

Northern Ireland Black-headed Gull Study – What have we learned so far?

Adam McClure and Gareth D.A. Platt

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Introduction

Recent evidence has suggested an increase in the breeding population of Black-headed Gull at some of the most important sites in Northern Ireland (Davidson and Foster 2017; Tickner and Wolsey 2017; Robson 2017). Despite this, the species is still listed as a priority species in Northern Ireland (Allen and Mello, 2011) and is a Red listed bird of conservation concern in Ireland (Colhoun and Cummins 2013). In Britain, the species is an Amber listed bird of conservation concern (Eaton *et al.* 2015).

Black-headed Gull is notoriously a 'boom or bust' species (Leonard and Wolsey 2017), with dramatic fluctuations in breeding numbers and productivity. In addition, the species is long-lived with a typical lifespan of 11 years (Robinson 2017) and a longevity record of 32 years, 8 months and 24 days (van Dijk *et al.* 2012). It is therefore important to understand overall life-history of the species in Northern Ireland and the dynamics and factors affecting population size over a long period, rather than focus solely on overall population size which may fluctuate widely annually. As such, a colour-ringing study was initiated in 2012 which aimed to aid our understanding of the patterns of long distance migration, juvenile dispersal and survival rates, and breeding and wintering site fidelity of Black-headed Gull in Northern Ireland. Despite being referred to as the Northern Ireland Black-headed Gull Study, the project has also included a study colony in Co. Donegal, Republic of Ireland.

Methods

During the breeding season, colonies are visited and young birds colour-marked using coloured leg rings with alpha-numeric codes, prior to fledging. This method has several advantages in that we know for certain the age and origin of individuals. It also has the added benefit that a relatively large number of birds can be marked efficiently in a short period. Given the cost implications of purchasing colour-rings and increased likelihood of successful fledging, larger, mobile young are targeted when visiting colonies. If time permits, smaller young may be ringed with a standard metal ring, without fitting a colour-ring.

It is estimated that up to two thirds of Black-headed Gulls wintering in the British Isles may be migrants from continental Europe (Lack 1986). We know from reports of ringed birds that Black-headed Gulls from outside Northern Ireland begin to return to their respective wintering sites from as early as July, with the 'winter' extending from July through to March (MacKinnon and Coulson 1987). In order to investigate this, birds are also caught during winter months (primarily October to February) at various sites across Northern Ireland as and where opportunities and permissions exist.

All birds are ringed with a standard metal BTO ring on the right leg and a field-readable, plastic ring with an engraved code on the left leg (Figure 1). The project in Northern Ireland uses orange rings with a four-figure alpha-numeric code beginning '2' followed by a combination of letters (McClure 2014).

Figure 1 Example of colour-ring on a Black-headed Gull



As well as catching and colour-ringing birds, contact has also been made with ringers across Europe and records are being kept of Black-headed Gulls ringed / colour-marked elsewhere and re-sighted in Northern Ireland, almost exclusively during winter months. This information has provided more detail of where birds are coming from to winter here.

Throughout the year regular observations are made at flocks across Northern Ireland with the aim of re-sighting colour-ringed birds. All records are added to a Microsoft Access database which produces life-histories which are sent to observers. Sightings are also reported to the BTO via IPMR, now superseded by the new DemOn reporting system.

Public engagement through a project blog (www.bhgullsnri.blogspot.com) and social media has been a major aspect of the project, helping us to raise awareness of the conservation status of Black-headed Gull in Northern Ireland.

The various media formats have also been used to encourage members of the public to check birds for colour-rings and report their sightings.

Results

As of 30th November 2017, a total of 634 birds had been colour-ringed (76 fledged birds and 558 pulli). We have received 4,299 re-sightings of 161 individual birds by 101 different observers.

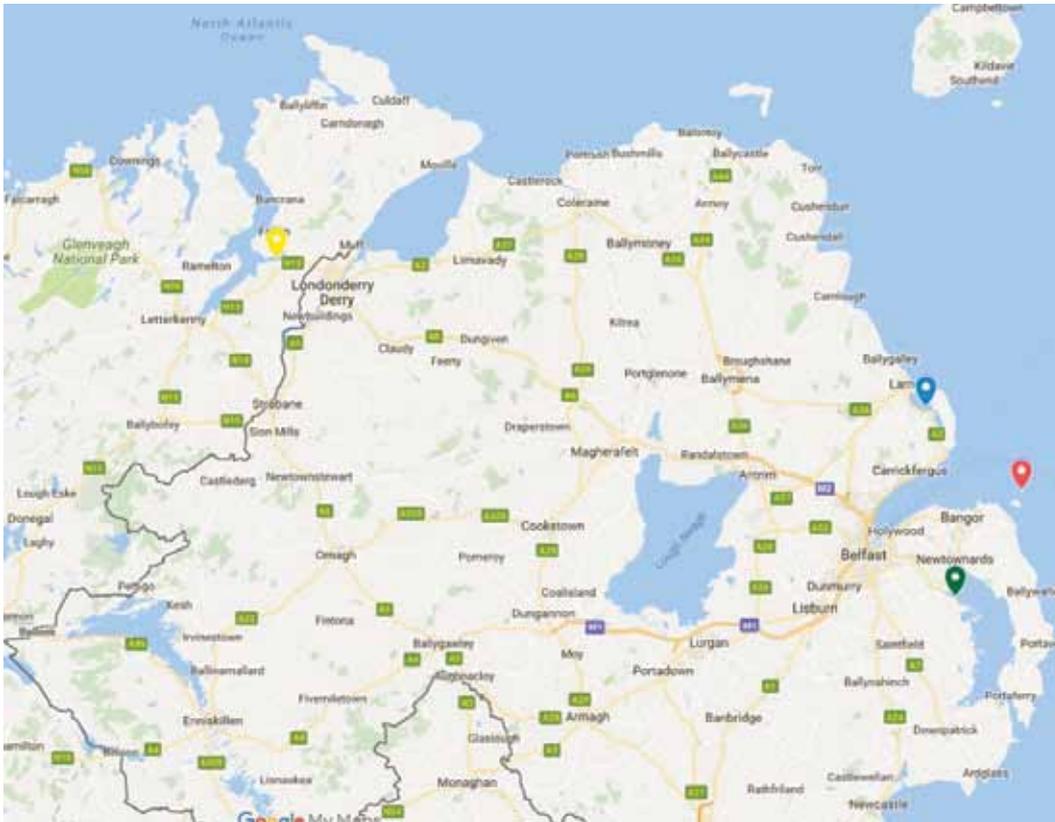
Dispersal of young birds

Since 2013, four Black-headed Gull colonies in the north of Ireland have been visited for the purposes of colour-marking young birds, namely the Copelands Islands and Castle Espie in Co. Down; Larne Lough Islands, Co. Antrim; and Inch, Co. Donegal (Table 1 and Figure 2). Note that low counts of birds ringed do not necessarily reflect poor productivity. Given the reliance on permissions and assistance accessing colonies, it was not always possible to visit at the optimal time during the season.

Table 1 Breakdown of number of young birds ringed at study colonies.

	2013	2014	2015	2016	2017	Total
Blue Circle Island	59	62	9	3	53	186
Copeland Islands	26	19	0	Not visited	Not visited	45
Castle Espie	6	61	51	61	26	205
Inch Lake	Not visited	Not visited	Not visited	122	Not visited	122
Total	91	142	60	186	79	558

Figure 2 Study colonies. Blue marker = Blue Circle Island, red marker = Copeland Islands, green marker = Castle Espie and yellow marker = Inch Lake. Map data © Google.



Some 558 young birds have been colour-marked, of which 69 have been re-sighted to date. This currently represents a re-sighting rate of just over 12% which is much higher than projects relying on metal rings alone (Rock 1999). It should also be noted that the absence of a re-sighting does not necessarily mean the bird has perished. We know from similar studies that colour-ringed individuals can go many years (up to 10 or more) between ringing and first re-sighted report (Eoin McGreal *pers. comm.*).

Records from our own colour-ringed birds have shown that birds can go over three years between ringing and first re-sighting, for example Orange 2AHK ringed at Castle Espie in 2014 was not recorded again until late November 2017 when it was photographed at Ballyholme, Co. Down.

Other notable reports of juvenile dispersal from our study colonies include Orange 2ALP which was ringed on Blue Circle Island in 2013. The bird was first re-sighted at Whitehouse Lagoon, Belfast Lough in September 2015 but was then subsequently photographed in Oslo in July 2016, before being re-sighted back at Whitehouse in September 2016. This is an

unusual and unexpected movement as we would not expect a bird born here to move such distances to the east during the breeding season as an adult. It will be interesting to retrieve future reports of this bird in the hope of establishing where it is breeding.

We have also used data from reports we have received to try to ascertain the cause of death of colour-ringed birds. The benefits of ringing at a site such as Castle Espie is that the colony is closely monitored and we can receive accurate figures on how many birds do not fledge and the factors why. A total of 15 are known to have died, or are presumed dead due to the colour-ring being found.

Notable recoveries have included:

- 2BJX which fledged from WWT Castle Espie in 2014, but was hit by a golf ball at Ballyearl Golf Course in October 2014 and was euthanised by a local vet.
- The colour-ring for 2BBF was recovered a week after ringing from a Herring Gull pellet by Nina O’Hanlon during her research on Copeland Bird Observatory. It is not known if the Herring Gull predated the young Black-headed Gull or if it was scavenging on the bird after it had died.
- 2CAL was observed flying at WWT Castle Espie in July 2016. A short time later, the bird was seen to be predated by a Lesser Black-backed Gull.

Breeding birds

One of the objectives of the project from the outset was to try to determine the location of colonies at which marked birds entered the breeding population. Nine birds colour-marked as pulli have been confirmed breeding from re-sighting records. Unfortunately, the nature of some of the island colonies means it is difficult to observe breeding adults to search for rings without causing disturbance.

We have therefore relied upon reports from colonies where breeding birds are easily observed. As a result all nine marked birds confirmed breeding have been identified in colonies at sites where they can be observed from a distance without causing disturbance, namely RSPB Belfast Harbour Reserve and WWT Castle Espie (Table 2).

Table 2 Confirmed breeding colour-ringed birds.

Bird	Natal colony	Year ringed	Breeding colony
2ASF	RSPB Blue Circle Island	2013	RSPB Belfast Harbour
2AFP	Mew Island	2013	RSPB Belfast Harbour
2ASA	Mew Island	2013	WWT Castle Espie
2BHB	RSPB Blue Circle Island	2014	RSPB Belfast Harbour
2ABH	WWT Castle Espie	2014	WWT Castle Espie
2BKK	WWT Castle Espie	2014	WWT Castle Espie
2BKL	WWT Castle Espie	2014	WWT Castle Espie
2APB	WWT Castle Espie	2015	WWT Castle Espie
2ANH	RSPB Blue Circle Island	2015	RSPB Belfast Harbour

Wintering birds

In the five years since our study began (November 2012–November 2017) we have recorded a total of 81 colour-ringed or ringed birds from 15 different countries wintering in Northern Ireland (Table 3 and Figure 3).

Table 3 Number of ringed birds originating from outside NI recorded here during the winter.

Country of origin	No. of birds recorded	Country of origin	No. of birds recorded
Scotland	19	Germany	3
England	13	Sweden	3
Norway	9	Belgium	2
Ireland	8	Denmark	2
Poland	6	Netherlands	2
Finland	4	Belarus	1
Iceland	4	Latvia	1
Lithuania	4		
Total			81

Figure 3 Origins of wintering birds sighted in Northern Ireland.

We have been fortunate enough to have a significant proportion of colour-ringed birds show high site fidelity and constancy, both in terms of wintering and breeding, with almost 70% being recorded at the same site in two or more winters. This has allowed individual birds to be recorded multiple times in Northern Ireland and at their respective breeding sites in Europe. Examples of over-wintering birds colour-marked in Northern Ireland and subsequently recorded in Europe and back in Northern Ireland over multiple seasons include 2ANX (Table 4) and 2AFD (Table 5).

Table 4 Life history of 2ANX.

Month	Comment	Location
May 2008	Ringed as a breeding adult	Böhmke, NE Germany
May 2009	Re-sighted at breeding colony	Böhmke, NE Germany
June 2010	Re-sighted at breeding colony	Böhmke, NE Germany
May 2011	Re-sighted at breeding colony	Böhmke, NE Germany
Nov 2013	Re-sighted	Carrickfergus, Belfast Lough
March 2014	Re-sighted	Heringsdorf, Germany
May 2014	Re-sighted at breeding colony	Böhmke, NE Germany
Dec 2015	Re-sighted	Carrickfergus, Belfast Lough
Jan 2016	Controlled and colour-ring added	Carrickfergus, Belfast Lough
Feb 2016	Re-sighted	Carrickfergus, Belfast Lough
March 2016	Re-sighted	Świnoujście, NW Poland
July 2016	Controlled by ringer	Świnoujście, NW Poland
Dec 2016	Re-sighted	Carrickfergus, Belfast Lough
Jan 2017	Re-sighted	Carrickfergus, Belfast Lough
Feb 2017	Re-sighted	Carrickfergus, Belfast Lough
May 2017	Re-sighted at breeding colony	Böhmke, NE Germany
June 2017	Re-sighted	Świnoujście, NW Poland
Nov 2017	Re-sighted	Carrickfergus, Belfast Lough

Table 5 Life history of 2AFD.

Month	Comment	Location
Feb 2014	Ringed	Antrim, Lough Neagh
Nov 2014	Re-sighted	Ballymena
Nov 2014	Re-sighted	Antrim, Lough Neagh
Dec 2014	Re-sighted	Antrim, Lough Neagh
Jan 2015	Re-sighted	Antrim, Lough Neagh
Feb 2015	Re-sighted	Antrim, Lough Neagh
March 2015	Re-sighted	Antrim, Lough Neagh
April 2015	Re-sighted (Figure 4)	Riga, Latvia
Nov 2015	Re-sighted	Antrim, Lough Neagh
Dec 2015	Re-sighted	Antrim, Lough Neagh
Jan 2016	Re-sighted	Antrim, Lough Neagh
Feb 2016	Re-sighted	Antrim, Lough Neagh
March 2016	Re-sighted	Antrim, Lough Neagh
April 2016	Re-sighted	Riga, Latvia
Nov 2016	Re-sighted	Antrim, Lough Neagh
Dec 2016	Re-sighted	Antrim, Lough Neagh
Nov 2017	Re-sighted	Antrim, Lough Neagh

Figure 4 2AFD at Riga, Latvia in April 2015

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Discussion

Data gathered during the first five years of this long-term study are starting to help us gain a better understanding of movements of Black-headed Gulls breeding and wintering in Northern Ireland, but also raises questions we cannot answer. For example, we know how faithful some birds are to certain breeding and wintering sites, but we do not know what route they take during migration. Do they cross over land? Do they follow the coast? These are questions which could be answered using modern tracking technology and the constancy and regularity of certain individuals' behaviour would allow ample opportunities for birds to be re-trapped, allowing more affordable technologies to be used.

In the interim, low-tech methods such as colour-ringing should be encouraged when ringing gulls to generate more data on these species. Results from long-term colour-ringing studies of gulls which have been ongoing in parts of Britain and Europe for many years highlight the effectiveness of colour-rings in obtaining re-sighting data (Rock 1999). It is extremely unlikely that we would have received the same level of reporting had colour-rings not been used, particularly from members of the general public.

In addition there is still a need for more information on the factors influencing the Black-headed Gull population in Northern Ireland. We know that predation can be a factor at some sites, but habitat management, food availability and weather can also influence productivity rates. Collecting productivity data on the species has been highlighted as a high priority (Leonard and Wolsey 2016). Colour-ringing should continue at study colonies and new colonies added as and where permissions allow.

Although some sites have been regularly monitored over a long period, these are generally coastal colonies (Leonard and Wolsey 2017). Despite recent efforts, many inland colonies are still largely unstudied and we do not know the potential impact of predation on individual sites (Davidson and Foster 2017; Robson 2017). It would be beneficial to undertake a coordinated census of the species to gain an accurate, up-to-date population estimate for the species in Northern Ireland.

There is currently a network of 22 colour-ringing studies across the UK and Ireland and it would be valuable to work more collaboratively and with ringers / researchers of other gull species.

Acknowledgements

Many thanks to everyone who has taken the time to report sightings of ringed birds, provided photographs or helped during ringing sessions. All reports of all birds are greatly appreciated.

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Reading Rings

Gareth D.A. Platt

Introduction

I have been a birdwatcher since the age of seven. During the 1980s and early 1990s, I became involved with raptor surveying in Northern Ireland and also trained to become a ringer, reaching 'C' status, which allowed me to ring nestlings. My yearly totals often exceeded 1,000 ringed chicks, with 144 Raven and 63 Peregrine youngsters being ringed in one particular year. However, from 1995 I had all but disappeared from the birding scene and had also ceased ringing altogether.

This all changed in 2013, when I came across a Black-headed Gull (*Chroicocephalus ridibundus*), bearing a white Darvic ring at Antrim Marina. Darvic rings are lightweight coloured plastic rings with large lettering that can be read at a distance using binoculars or a scope. Fitting birds with Darvic rings contributes to our knowledge of bird survival and movement (for more information, see: <https://www.bto.org/volunteer-surveys/ringing/about-ringing/why-colour-ring-birds>).

Having secured the code on the gull's ring – T35J – I then came across another three gulls this time with orange Darvics. With their codes recorded as well, I had to depart. However, I was intrigued by what I found and returned to Antrim Marina the following day. I discovered a further nine Black-headed Gulls with the orange Darvic rings on this visit I reported all 13 ring codes to the British Trust for Ornithology, plus the metal-numbers on two Mute Swans (*Cygnus olor*) also read on the visit. With the exception of White T35J, the other Black-headed Gulls and Mute Swans had been ringed at Antrim Marina. Black-headed Gull T35J was originally ringed as a chick in Lithuania in 2006. Five years later it was recaptured by a Polish ringing team, given a replacement metal-ring and fitted with the coloured Darvic. T35J has been spotted at Antrim Marina every winter since 2012. The Mute Swans were ringed by trainee ringers, under the guidance of Ken Perry.

The orange Darvic rings, belonged to Adam McClure, who began a Northern Ireland study of Black-headed Gulls in 2012 (see Page 55 for further details, and Page 34 of the *Northern Ireland Seabird Report 2013*). After my initial contact with Adam, I decided to become involved with his study – the 'ring reading' bug had now 'bitten'. During the 2013/14 winter, I visited Antrim Marina once a week until the end of March, recording 30 individually 'colour-ringed' Black-headed Gulls as well as 'metals' on other gulls, swans and ducks. This winter (2017/2018), is my fifth winter at Antrim Marina, recording rings.

It has become a study within a study, and I have built up profiles for every 'ringed' bird. I now know which birds are residents and which are winter visitors. Using this knowledge I can predict the return date for many of the gulls which spend the winter at the Marina with a high degree of accuracy, demonstrating how individuals can be extremely consistent in their annual cycles.

With the start of my second winter 'ring reading' at Antrim Marina, I also decided to 'spread my wings', and began looking for ringed birds elsewhere. I also created my own blog (<http://birdingatantrimmarina.blogspot.co.uk/>), where I could record and share my efforts with interested parties.

I have learnt that there are a fair number of ringed birds about. The challenge, having spotted a ring, is to obtain the code or number. I liken it to trophy hunting – obtain the details – the prize is the ringing information in return. I have now recorded a few hundred 'ringed' birds of various species, with multiple sightings for many of these. It has dawned on me, without my efforts many birds would have gone un-recorded in Northern Ireland.

Overall Aim

My main objective is to locate and read the rings on as many birds as possible. The next task is to keep track of each one, creating a re-sighting history. Some of them are recorded on a weekly basis, such as those at Antrim Marina. Sometimes, random visits to certain sites may provide an opportunity to re-sight known individuals. The ultimate goal is to record each 'ringed' bird at least once a year, thereby increasing its longevity record and providing important information on adult survival rates.

The codes on 'colour-ringed' birds are fairly easy to read, even at quite long distances. My pride and joy though, comes through reading 'metal-rings'. These are often hard won but give great satisfaction when achieved. Only a small percentage of 'metal-ringed' birds are ever recovered, despite the large numbers ringed in the first instance. Just to think, the joy every ringer gets when one of their birds have been re-sighted and reported – a just reward for their time and effort in the first instance.

Methods

When out and about I'll take two pairs of binoculars – 8x20 for close work and 10x50 for more middle distance viewing. For longer distances I use a telescope with a 60 to 80x lens. Once a ring is spotted, the camera is then brought into play. Having initially used a mediocre bridge camera I then purchased a Nikon P900. This powerful bridge camera has an 83x Optical Zoom, which doubles to 166x in digital mode. On two occasions I have gone head-to-head against a couple of men using expensive long lens camera systems. The result – I won! My Nikon was able to pick up the details on 'metal-rings', whereas, the long lenses failed.

Wherever possible, I use the car as a hide and make sure I have the most important equipment of all – a couple of loaves of bread. By throwing out bits of bread, gulls are quickly attracted to the easy meal. Any ringed birds that appear are far easier to work with when attracted by food. Even shy birds, which will land a short distance away, are still in range of a good camera.

Gulls that are 'colour-ringed' are quickly sorted and the code read. 'Metals' are more challenging. Zooming into the ring, I take as many photos as possible, especially after the target has moved around a bit. In either case, it is important to remember to take

a photo of the bird itself. After checking the resulting photos and ensuring that the full ring number is obtained, this can then be reported online to The British Trust for Ornithology (<https://app.bto.org/euring/lang/pages/rings.jsp>).

I use a photo editor to crop out the ring numbers from my pictures. These can then be 'stitched' together, showing the correct sequence with the result being pasted onto a full photo of the bird itself. They say the camera never lies and you'll have a result to validate the find.

Some of my interesting results

Oldest

As stated previously, I have now recorded a few hundred 'ringed' birds. For each species I'm always hoping to find an 'oldie'. These usually come with 'metal-ringed' birds, as 'colour-rings' are a more recent addition to a ringers resources. I have recorded three birds that were ringed before the year 2000.

Sandwich Tern (*Sterna sandvicensis*) DK6678*, is currently the oldest on my records. Spotted at the East Strand car park in Portrush, I was unable to catch the final digit of its ring number with my camera. This was due to a couple of people who walked straight towards the group of birds, causing them to fly off. My tern never returned, but the BTO were able to generate a ringing recovery, as many chicks had been ringed on the same date with the same set of rings. Spotted on the 11th August 2016, DK6678* was ringed as a chick at Ogilby Island, Strangford Lough on the 16th July 1993. At the time of re-sighting the tern was 23 years old.

The second oldest is a Common Gull (*Larus canus*), which I class as my most prized sighting. ST177.028 was ringed as a juvenile on the 6 August 1995, at Maaninka, Finland. Spotted at Antrim Marina on the 28th February 2016, I'm fairly sure that this was the same gull which I had spotted during the winter of 2014/15. As I was about to take photos of the gull and its ring, it and the other gulls flew off due to the untimely arrival of a male Sparrowhawk. ST177.028 returned to the Marina in January 2017, when I recorded it on the 2 and 22. The duration since being ringed was now 21 years, 5 months and 16 days. After posting the sighting on my blog I received an email from Neville McKee, with photos attached. He had spotted a Finnish Common Gull at Antrim Marina on the 7 January 2010. Although he only obtained a partial number ST1****8, this was undoubtedly the same bird.

A Black-headed Gull at Ballywalter in County Down is the third oldest bird that I've recorded. Ringed as a chick on the 15 June 1998, ET02500 is from the Copeland Islands. I have recorded this gull on four occasions; the last sighting was made on the 30 July 2017. At this point, the duration since ringing was 19 years, 1 month and fifteen days. Hopefully ET02500 will be re-sighted again during the 2017/18 winter.

Wrong species

I have two records of birds incorrectly identified at the time of ringing. Both of these were ringed as chicks, which exemplifies the need to correctly identify the species prior to ringing, as stated in the BTO's Ringing Manual. Black-headed Gull - EG55380 and Herring Gull (*Larus argentatus*) - EG15300 were originally ringed as Common Gull and Lesser Black-backed Gull chicks. Interestingly they were both ringed on the same date - 22 June 2005, and both had their rings fitted up-side down! They were obviously ringed by the same ringer, who was surely having a bad day, on the Copeland Islands.

Duplicated ring

In August 2014, I recorded a female Mallard (*Anas platyrhynchos*) with an unusual metal-ring. There was no address on the ring, but it had two rows of numbers. The upper row read 00 353 862328356 and the lower row read 4MN 0813. Having reported it to the BTO, they had no idea of the duck's origin. It was Jim Wells who came up with the solution. The upper row of numbers was that of a phone number in the republic of Ireland. The number belonged to Dan Curly, secretary of the 16 gun clubs in County Monaghan. These gun clubs between them purchase 1,000 to 1,500 ducklings from a breeding farm each summer. The youngsters are reared and before release they are ringed with the clubs own set of rings. The aim of this is to replace the number of ducks in the wild which would be shot by members of the gun clubs. At least the origin of the mystery rings was now sorted. In October 2014, I spotted a second Mallard which bore one of the County Monaghan rings. Having successfully captured the code, this drake was ringed with the exact same set of two numbers as my female back in August. After contacting Dan, it turns out that both ducks should have had different numbers. I had encountered a ringing error.

Somehow the company Porzana had manufactured and despatched the rings, not realising there was a duplicated number. This error had not only slipped past the staff at Porzana, but also slipped past Dan as well. To me, this was an excellent discovery. What are the chances that the same observer recording the same ring number on both a male and female Mallard at the same site? Incidentally, Porzana are also the same company that produces the rings used by BTO ringers.

More Readers

Northern Ireland has a healthy population of birdwatchers, seemingly out to just watch birds, especially scarcities and rarities. There appears to be a good number of ringed birds all around the country. I personally think more people should invest in their time to try and 'read rings'. It can be challenging but it does have its rewards, as some of the interesting stories I have uncovered show. On top of that, ring reading and reporting enhances our knowledge of birds, particularly their movements and survival.

Sandwich Tern (*Sterna sandvicensis*) – A review of 2017 nesting season and a look back at the recent history of this species on Strangford Lough

Hugh Thurgate, National Trust Head Ranger, Strangford Lough

2017 – 786 Apparently Occupied Nests (AONs)

Breeding locations on Strangford Lough: Swan Island – 356 AONs, South Sheelaha Island – 70 AONs, Gabbock Island – 360 AONs – 3 islands

Breeding locations on Outer Ards: Green Island, Portavogie – 145 AONs – 1 island

Annual seabird monitoring at Strangford Lough has been undertaken by the National Trust since 1969 and it wasn't until 1986 that Sandwich Terns first nested on Swan Island. There then followed regular use by this species from 1986 to 2000, albeit with the odd year when no birds nested. The next nesting year was 2009 and they then nested annually from 2014. In 2016/2017, a count of 12 Sandwich Terns at the marina in Portaferry on 1 March was the highest winter count for this species and may have included some of the first spring arrivals. The first eggs were laid on or around 1 May on Swan Island; 356 clutches were found there on 24 May, of which 247 (69%) were found on the artificial shell bed on top of the island. A further 109 clutches occurred in a discrete congregation of nests on the eastern slope and tip of the island facing The Narrows. This group of nests was separated from those on the top of the island by a belt of dense Alexanders (*Smyrniium olusatrum*), but were not considered to be a sub-colony.

On 24 May a maximum of 45 chicks were found from 32 clutches (based on ringing notebook entry). The chicks were still in their nest scrapes and were deemed to be under 48 hours old. In three of the nests, where two eggs had been laid and one nest where three had been laid, only one chick was ringed. This was either because the second egg in the clutch had not hatched or, if hatched, the chick was considered too small for ringing (hence maximum of 45 chicks may have been 40 hatched five still to hatch or 40 hatched, four still to hatch, one too young etc.). This would give a minimum mean clutch-size of 1.41 per pair given a maximum of 45 chicks, assuming no egg or chick loss had occurred up until this date. Mean clutch-size would therefore have exceeded this figure if there had been any egg or chick loss. Average clutch-sizes reported for Sandwich Terns in Britain and Ireland have ranged from 1.15 at Coquet Island in 1966 to 1.58 at Scolt Head in 1957. However, the average clutch-size in France has been reported to be as high as 1.87 and in some colonies in Sweden as high as 2.07.

Forty pulli were ringed on the 24 May visit to Swan Island, seven days earlier than the first ringing date for this species on any island in Strangford Lough in any of the preceding 26 years. Whilst chicks have not always been ringed at the first opportunity each year and in three years no ringing took place at all, it seems reasonable to assume that 2017 was an early if not the earliest start to a breeding season for Sandwich Tern on Strangford Lough in at least 26 years. A 48 hour old chick on 24 May would give a hatching date of 22 May and a laying date of 27 April given a 25 day incubation period. A second visit was made to the island on 13 June when just 39 chicks were ringed. There were expected to be significantly more considering there were 356 AONs on 24 May. Given nesting is normally highly synchronised in this species with most pairs laying within a 3–5 day period and hatching occurring over a 3–4 day period, it appeared that a large number of pairs had failed at late incubation and/or early brood stage. A further 21 chicks were ringed on 20 June.

On 16 June, 59 Sandwich Tern clutches were found on South Sheelaha Island, none of which had hatched. Of these just six were 'doubles' (10%) though pulli ringing in the following month revealed that there had been a minimum of seven doubles. In western Europe and Scandinavia the proportion of pairs that lay two eggs varies widely among sites and years; in some cases as low as 15% and in others almost 100%. This proportion also varies within a single year; it is usually highest early in the season (in the UK and Ireland up to 80% in some colonies) and at the peak period of laying, declining almost to zero among late layers. The age and experience of birds is also important with birds breeding for the first time almost invariably laying single eggs late in the season while birds older than seven usually laying two eggs early in the season. Variation in the availability of food near to the colony is also thought to be an important factor. The figure of approximately 10% for two egg clutches on the South Sheelaha may have been attributed to the fact that this colony was dominated by a cohort of younger birds arriving late in the season but is more likely to include all of the aforementioned influences on clutch size. On the 17 July, 40 chicks were ringed from 38 nests, seven of which were nests where two eggs had been laid. The majority of the chicks were deemed to be approximately 48 hours to a week old which, if correct, would have meant a first hatching date of c.10 July and first laying date of c.15 June assuming a 25 day incubation period. This estimated hatching date would mean that the 59 clutches found on 16 June must have been at a very early stage of incubation. Given there were some 'doubletons' on the 16th June and that eggs are normally laid three or four days apart then the first laying date could be brought forward to c.12th June. Thirty-two chicks, all singletons, were ringed on 24 July, though because most of these were not in the nest scrape it is possible that some of these may have been siblings. This colony was assumed to be additional birds to those that nested at Swan Island, as the apparent significant loss of eggs and or young chicks there happened late on in the breeding season. If failure happens at late incubation or early chick rearing stage Sandwich Terns tend to stay put, it's normally only if they encounter predators early in the season that they relocate to another site.

Sandwich Terns were not found on Gabbock Island until 18th July when 360 AONs were counted. The oldest chicks present were adjudged to be between five days and a week old which would put first hatching at *c.* 11th of July and first laying to *c.* 16 June, making the Gabbock colony the same 'vintage' as that on South Sheelahs bringing their combined total to 430 AONs and that for Strangford Lough as a whole to 786 AON. Ninety-two chicks were ringed on Gabbock on 24 July and a follow up visit was made on 10 August to ring the next 'batch' of pulli. However not one live Sandwich Tern chick, either ringed or un-ringed was found, nor any clutches. There were three dead adults which was slightly unusual, a small number of reasonably advanced dead Common Tern pulli and one dead Sandwich Tern chick. There were however no obvious signs of predation. The Sandwich Terns had opted to nest on the fescue tussocks high up the island and a wash-out seems highly unlikely. A period of sustained heavy rainfall could have adversely affected chick survival but no note of such weather had been made. Predation, therefore, may have been behind the huge losses of chicks and eggs. Gabbock Island would appear to be vulnerable to mammalian predators from the mainland, being separated by only a small body of water at low tide from Janes Rock which is close to a large expanse of intertidal mudflat that extends to the mainland and The Ragheries, which dries out to the mainland at low tide.

A fourth colony was found on Green Island, Portavogie on 19 June where there were 145 AONs none of which had hatched. The colony was visited a month later on 20 July. At some point in the intervening four and a half weeks the colony had been completely abandoned. There was no evidence of any adults or chicks and the few eggs that remained were broken into small fragments. This was not deemed to be consistent with mammalian or bird predation. The fact there were no chicks present on the 19 June would have put the earliest laying date at 25 May. However, clutches may only have been recently completed, which would mean a first laying date of mid-June tying in with the colonies on Gabbock and South Sheelahs. The total number of AONs for these three colonies was 575. A first laying date of mid-June was over seven weeks after the first laying date for Swan Island and would be consistent with an early breeding season desertion from another location(s) or a large number of young birds in the population. If the 'mid-June' colonies were made up of birds relocating from a site or sites outside of the Lough following desertion, then the 'core' Strangford population of 356 AONs for 2017 would tie in with the total of 337 for 2016. This would represent more than a 'halving' of the 'typical' Strangford Lough population (5 yr. mean 2011–2015: 765 AONs, 10 yr. mean 2006–2015: 1,109 AONs).

As already stated, Sandwich Terns will 'up sticks' and desert breeding sites, particularly during the early part of the season in response to the presence of predators. There can be a delay of several years between desertion and colonisation of a new site during which many adult birds do not breed. It is possible that the depressed breeding status of this species on Strangford Lough in 2016 was due in part to the mass desertion after the 2015 breeding season, from what had become their main breeding site on the Lough, Dunsy Rock. However there are likely to be other factors at play.

A well-known characteristic of Sandwich Tern breeding biology is that they will often nest in association with Black-headed Gulls. The population of Black-headed Gulls on the Lough has dropped from a peak of 4,351 AONs in 2008 to 1,181 AONs in 2014, but since then the trend has been for small annual increase to a figure of 1,524 in 2017. Historically the most significant of the Sandwich Tern colonies on Strangford Lough have occurred amongst large Black-headed Gull colonies e.g. on Jackdaw Island from 1977 to 1989, Green Island off Killyleagh from 2002 to 2009, Ogilby Island from 1969 to 2008, Dunnyneill Island from 2002 to 2007 and Dunsy Rock between 1999 and 2002 and again from 2007 to 2015 and most recently Swan Island from 2014 to the present day. It is not an exact relationship but in general terms colonisation of an island on Strangford Lough by Sandwich Terns tends to either occur simultaneously or soon after the establishment of a large Black-headed Gull colony, e.g. on Dunsy Rock the Black-headed Gull colony established in 1998, Sandwich Tern in 1999; on Dunnyneill Island both species established colonies in 2002; on Green Island, Killyleagh, Black-headed Gulls established a colony in 2002, Sandwich Tern followed in 2004 and both species established colonies simultaneously on Ogilby Island in 1970. Typically, Black-headed Gulls will nest in small numbers for a year or two and then their numbers jump significantly. It is this significant increase which seems to be the cue for the Sandwich Terns to establish a colony, e.g. on Swan Island where small numbers of Black-headed Gulls nested in 2006, increasing by small amounts to 2011 and then jumping to 226 in 2012, the year Sandwich Terns established themselves with 257 AON. Similarly on Dunsy Rock where the Black-headed Gull colony jumped from 322 in 1998 to 840 in 1999 the year when a significant colony of 261 AONs Sandwich Terns was established. However, there have been occasions when Sandwich Terns have established a large colony with few or no Black-headed Gulls present or where mass settlement of Sandwich Tern one year can lead to a significant arrival of Black-headed Gulls the next or a few years afterwards, as happened on Dunnyneill in 1982 and 1983 and Jackdaw Island in 1975 and 1977, though on Jackdaw it should be noted that Black-headed Gull nests were only recorded as being 'present' in 1975 and only estimated in 1977.

The desertion of islands by large colonies of both species tends to occur within a few years of one another, with Sandwich Terns deserting first, e.g. on Dunnyneill Island, when Black-headed Gulls failed to return in significant numbers in 2008, Sandwich Terns had departed in 2007. On Ogilby Island the greater part of the large Black-headed Gull colony failed to return in 2011, Sandwich Tern in 2008. On Green Island, Killyleagh the colony of Sandwich Tern failed to return in 2010 and Black-headed Gulls in significant numbers in 2012, though Black-headed Gull numbers had fallen by 70% between 2008 and 2009. On Dunsy Rock, Sandwich Terns failed to return in 2016 after Black-headed Gulls had dropped to just 47 pairs in 2015. In the latter two examples it was more a case of large colonies of both species being abandoned at the

same time. The situation on Jackdaw Island didn't follow this pattern exactly; Sandwich Terns last occurred in significant numbers in 1988, but the large colony of Black-headed Gulls continued to breed in significant numbers until 1998. The suspicion at the time was that the Sandwich Tern colony had been subject to repeated attacks by Peregrine (*Falco peregrinus*) during 1987 and that this caused them to desert, not the desertion of the Black-headed Gulls. It would appear that if predation is species specific, as seemed to be the case on Jackdaw Island, then only the species affected will desert. In simultaneous desertion events, it is likely that both species have been affected by the same predator as occurred on Green Island, Killyleagh. The desertion by Sandwich Terns there in 2010 was attributed to significant failure at the colony the previous year as a result of suspected predation. There were 439 AONs counted on 4th June that year, but by 25 June only 12 chicks were ringed when it was expected that most or all of the clutches should have hatched (Note book entry: "A huge number of 'missing' Sandwich Tern chicks with no or an insignificant amount of viable eggs still to hatch"). In 2009 a visit to the island on 21 May revealed that there were a very significant number of Black-headed Gull nests with only one egg or without any eggs at all, when full clutches would have been expected. That year there were also mass losses of eggs or young chicks in the Arctic and Common Tern colonies, with rats noted as being present on a 'small scale'.

In summary, Sandwich Terns will occasionally select islands to breed on without the presence of Black-headed Gulls, but that the general pattern for the larger colonies is for Sandwich Terns and Black-headed Gulls to either establish at the same time or for Sandwich Terns to follow after Black-headed Gull numbers build up. It doesn't appear to be a case of Sandwich Terns always following Black-headed Gulls, but rather that large numbers of either species can attract in large numbers of the other. Colony desertion appears to be a response to a high level of predation with Sandwich Terns appearing to be either more sensitive or suffering from disproportionately higher losses than the gulls, triggering them to abandon the colony first.

On Strangford Lough, the Black-headed Gull population has dropped significantly in recent years from a peak of 4,351 AONs in 2008 to a five year mean in 2017 of just 1,298 AON. In the past solitary islands, even those as small as Dunsy Rock and Dunnyneill Lower, could host huge colonies, e.g. 3,589 AONs on Jackdaw Island in 1979, 1,512 AONs on Ogilby Island in 2008, 1,262 AONs on Green Island, Killyleagh in 2008, 1,051 AONs on Dunsy Rock in 2010 and 920 AONs on Dunnyneill in 2003. In recent years the smaller population has started to relocate in increasing numbers to 'outside' of the Lough, i.e., to such an extent that in 2017, 73% of the 'Lough's' population nested 'outside' it at Castle Espie. Black-headed Gulls first started breeding at WWT's site at Castle Espie near the Comber Estuary at the north western corner of Strangford Lough in 2012. This followed extensive landscaping and habitat creation works which were completed in 2010. Only one notable colony of Black-headed Gulls remains on Strangford Lough; 312 pairs on Swan Island. The biggest colony by far is now at Castle Espie, with 1,105 AONs in 2017, although on the mainland this in itself is not necessarily a deterrent to Sandwich Terns, a species that is not restricted solely to island sites. The site is also in effect an island by virtue of its perimeter predator fencing. It may only be a matter of time before we see the first Sandwich Terns nesting at Castle Espie, particularly in the light of significant breeding failures of Sandwich Terns in 2017 at Green Island, Portavogie and South Sheelaha and Gabbock Islands on Strangford Lough.

References

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2017 Seabird Nesting Report for Strangford Lough and the Outer Ards

Hugh Thurgate, National Trust Head Ranger Strangford Lough

Monitoring visits were undertaken on: 2 May, 3 May, 9 May, 18 May, 23 May, 24 May, 25 May, 30 May, 31 May, 2 June, 13 June, 14 June, 16 June, 19 June, 20 June, 22 June, 26 June, 17 July, 18 July, 20 July, 24 July & 10 August.

Fieldworkers: Rachel Bolt (2), Tomasz Ciesielski (9), Patrick Crothers (1), Sena Hartmann (4), Will Hawkins (12), Ed McGuiggan (2), Adam Middleton (1), Ruth Pinkerton (1), Gemma Sandford (1), Faye Shiels (15), Hugh Thurgate (21 visits).

Species accounts

Sandwich Tern *Sterna sandvicensis* – 786 Apparently Occupied Nests (AONs)

Breeding locations on Strangford Lough – 3 islands: Swan Island – 356 AONs, South Sheelahs Island – 70 AONs, Gabbock Island – 360 AONs.

The Swan Island colony had a very early start to the season with the first eggs being laid on or around 1 May. Those on Gabbock and South Sheelahs started considerably later in the season with the first eggs thought to have being laid at both colonies around the 15 June. The later colonies may have been made up of a cohort of early breeders or birds relocating from another colony outside of the Lough.

Breeding locations on Outer Ards – 1 island: Green Island, Portavogie – 145 AONs.

A colony was found on Green Island, Portavogie on 19 June where there were 145 AONs, none of which had hatched. The colony was visited a month later on 20 July. At some point in the intervening four and a half weeks the colony had been completely abandoned. There was no evidence of any adults or chicks and any of the few eggs that remained were broken into small fragments, which was not thought to be consistent with mammalian or bird predation.

Common Tern *Sterna hirundo* – 262 AONs (plus 'Commic' – 57 AONs)

Breeding locations on Strangford Lough – 10 islands (maximum as may not have been represented in 'Commic' counts): Black Rock (Ringdufferin) 21 AONs {Commic}, Chanderies 1 AON, Dunnyneill 99 AONs, Gabbock Island 62 AONs, North Boretree Rock 2 AONs, Ogilby 33 AONs {Commic}, Rat Island 44 AONs, South Sheelahs Island 3 AONs {Commic}, Shones Island 1 AON, Swan Island 53 AONs

Breeding locations on Outer Ards – 2 islands: Cockle Island (Groomsport) 23 AONs Green Island (Portavogie) 180 AONs.

The most important island for Common Tern in 2017 was Dunnyneill, an island that they had only nested on twice in the previous seven years, after repeated years of suffering mass failure due to tidal wash-outs and mustelid predation. The first chicks were noted on Dunnyneill on 20 June. Subjective assessment of productivity for this species is that it has been consistently very low on Strangford Lough for more than a decade. There are no obvious 'good years' for fledging and many occurrences of huge failures at the egg laying stage or early chick stage. Islands that would have held good numbers in the past are now holding very low or no breeding pairs partly as a result of coastal erosion. Islands in the north of the Lough such as Turley Rock, Chanderies, Gull Rock, Salt Rock, Sheelahs and South Sheelahs Islands all of which were 'good' Common and Arctic Tern islands in the past are consistently getting covered at high spring tides and all of them have all but lost their vegetated surface. Coastal erosion is not limited to the north of the Lough; Green Island Rock and Gull Rock in the Mid-lough islands have virtually no turf left on them and their shingle edges are regularly swamped.

Other 'strongholds' such as Ogilby Island now have evidence of rats and potential spread of terns into the more robust larger islands off Whiterock is limited by the presence of rats and large gull colonies. Both Arctic and Common Tern now seem to be making 'bad' choices where they have moved onto islands that historically were not 'first preferences' such as Green Island (Killyleagh) and Rat Island that both have resident rat populations. The rat issues of Rat Island are compounded by the fact that the island dries out to another island that in turn is linked to the mainland at low tide. This year significant failures during incubation were noted at Rat Island in Strangford Lough and on Green Island, Portavogie, the latter holding 180 AONs on 19 June but not a single viable clutch on 20 July. All the nests on the shore of Green Island had disappeared and of the notable number that were on the red fescue tussocks on top of the island all but a handful had gone. A high tide wash-out might have accounted for the clutches on the islands edge but not those on the top. The 248 strong Arctic Tern and 145 Sandwich Tern colonies had suffered the same fate.

Swan Island has held on average 95 AONs of Arctic and Common Tern since 2005, one year after an oyster shell 'beach' was created on the top of the island in 2004. In the first year after the creation of the beach whilst the breeding populations of Arctic and Common Tern didn't change with a combined total of 24 AONs (18 in 2003 and 21 in 2004), 38% of the terns opted to nest on the shell, whereas historically they were confined to the lower and peripheral parts of the islands due to the presence of tall, rank vegetation on the top. In the second year of the shell beach, combined Arctic and Common Tern numbers increased four-fold with 30% nesting on the beach. Since then the population has remained relatively stable.

However, in five of the last six years Sandwich Terns have established a colony on the island and they have started to dominate the shell beach and have pushed the smaller tern species back to the periphery.

Arctic Tern *Sterna paraoaesia* – 73 AONs (plus ‘Commic’ – 57 AONs)

Breeding locations on Strangford Lough – 8 islands (maximum as may not have been represented in ‘Commic’ counts): Black Rock (Ringdufferin) 21 AONs {Commic}, Dunnyneill 25 AONs, Dunsy Rock 7 AONs, Gabbock Island 36 AONs, Green Island Rock 2 AONs, Ogilby 33 AONs {Commic}, South Sheelahs Island 3 {Commic}, Swan Island 3 AONs.

Breeding locations on Outer Ards – 3 islands: Bird Island (Portavogie) 140 AONs, Cockle Island (Groomspout) 129 AONs, Green Island, Portavogie – 248 AONs.

Cormorant *Phalacrocorax carbo* – 360 AONs

Breeding locations on Strangford Lough – 1 island: Bird Island (Kircubbin) 360 AONs.

Cormorants first bred on the Lough in 1980 when 28 nests were built on Bird Island. They have bred there every year since, apart from in 1985, the year following desertion as a result of vandals destroying their nests. Birds moved off after this event to Black Rock, Ringdufferin, with 49 pairs re-laying. In 1985, ninety-one pairs bred on Black Rock and in 1986 ninety pairs bred at Black Rock with 35 returning to Bird Island. These two colonies existed until 1998 but since 1999 there has been just the one colony on Bird Island. The nests on Black Rock were very vulnerable to swamping from high spring tides and it may have been as a result of this that encouraged a significant number of birds to re-locate back to the original colony in 1998 before abandoning altogether in 1999.

Canada Goose *Branta canadensis* – 40 AONs

Breeding locations on Strangford Lough – 14 islands: Boretree Island East 1 AON, Boretree Island West 2 AONs, Chanderies 1 AON, Drummond Island 4 AONs, Dunnyneill 4 AONs, Great Minnis Island 2 AONs, Green Island (Killyleagh) 4 AONs, Green Island (Ringhaddy) 4 AONs, Inisharoon Island 1 AON, Jackdaw Island 2 AONs, Parton Island 2 AONs, Roe Island 7 AONs, Round Island 1 AON, Trasnagh Island 6 AONs.

This species nesting distribution is concentrated in the Mid-lough islands off Whiterock but it does occur Lough wide nesting on 14 islands in 2017. Breeding pairs down 20% on 2016.

Barnacle Goose *Branta leucopsis* – 108 AONs

Breeding locations on Strangford Lough – 3 islands: Inishanier Island 41 AONs, Inisharoon Island 60 AONs, Roe Island 7 AONs.

This species was introduced to the Lough in 1951 by the Mackie family after a small number of wild birds were caught in County Mayo and brought to Ringdufferin for nurturing into a viable feral population. They first started breeding as a free flying feral species on the Lough in 1971 with two pairs nesting on Trasnagh. Two years passed before breeding was confirmed again, this time on Parton Island and by the mid-1980’s over 10 pairs bred annually. At that time productivity remained low with the majority of clutches deemed to be infertile, thought to be a result from inbreeding in a small population. However, this may not have actually been the case as numbers started to slowly creep up reaching 14 pairs in 1990 and 28 pairs by 1995. There then followed a period of six years where the population remained stable but in 2001 the number of breeding pairs jumped to 51, dropped back for two years and then from 2004 started a steady upward trend reaching over one hundred pairs for the first time in 2012. By 2005 and in every year since it has been the most common breeding feral goose on the Lough.

Mallard *Anas platyrhynchos* – 19 AONs

Breeding locations on Strangford Lough – 7 islands: Bird Island (Kircubbin) 1 AON, Boretree Island East 3 AONs, Boretree Island West 1 AON, Dunnyneill Island 6 AONs, Green Island (Killyleagh) 5 AONs, Jackdaw Island 2 AONs, Trasnagh Island 1 AON.

There is always a risk with this species that numbers are underestimated, due to it starting to lay early in the spring, its habit of nesting in dense vegetation and because females can sit tight and may not be flushed unless fieldworkers are walking in narrow transects. The first nest count in 2017 wasn’t until 2 May so Mallard nesting early may well have been overlooked.

Tufted Duck *Aythya fuligula* – 6 AONs

Breeding locations on Strangford Lough – 3 islands: Dunsy Rock 1 AON, Jackdaw Island 4 AONs, Rat Island 1 AON.

The Tufted Duck is the last duck to start breeding on the Lough and because of this there is a chance that some nesting attempts may be overlooked if they occur after the normal cessation of nest monitoring, when Common and Arctic Tern have been accounted for. Seven adults were seen on 9 May close offshore to Green Island (Killyleagh) normally one of this species strongholds. Unfortunately a note was not made of the number of males and females. A visit to the island on 20 June specifically targeting Tufted Duck nests proved fruitless. Tufted Duck starting incubation soon after the 9 May visit would have been unaccounted for on the 20 June visit, given their incubation period of 23–25 days.

Eider Duck *Somateria mollissima* – 251 AONs

Breeding locations on Strangford Lough – 21 islands: Bird Island (Kircubbin) 2 AONs, Boretree Island East 61 AONs, Boretree Island West 57 AONs, Chanderies 1 AON, Drummond Island 26 AONs, Dunnyneill Island 2 AONs, Gabbock Island 1 AON, Great Minnis Island 9 AONs, Green Island (Killyleagh) 6 AONs, Green Island (Ringhaddy) 7 AONs, Inishanier Island 12 AONs, Inisharoan Island 9 AONs, Little Minnis 7 AONs, North Boretree Rock 1 AON, Ogilby 4 AONs, Parton 1 AON, Pig Island 1 AON, Roe Island 17 AONs, Round Island 6 AONs, South Sheelaha Island 1 AON, Trasnagh Island 20 AONs.

Breeding locations on Outer Ards – 1 island: Green Island, Portavogie – 1 AON.

Eider first bred on the Lough in 1985 and remained at just 1–2 pairs for the remainder of the 80's. Numbers increased from 5 in 1990 to 71 by the end of the decade. From 2002 to 2012 there was year on year increase with numbers peaking in 2012 with 353 AONs. However there was an apparent appreciable drop in Eider Duck numbers in 2014 but this lower figure was almost certainly attributable to a late first visit to its main nesting site on Boretree Island East on 6 June. The same issue occurred in 2015 when the first nesting visit wasn't until 8 June. By the first week of June many Eider Ducks have finished incubation and have taken their broods to open water.

Red-breasted Merganser *Mergus serrator* – 0 AONs

The Red-breasted Merganser is a notoriously difficult species to monitor given its propensity to nest in dense vegetation, thickets, cavities and occasionally burrows. Although normally in annual breeding monitoring on the Lough one or two nests are located or an incubating female flushed, in 2017 the monitoring team drew blank.

Oystercatcher *Haematopus ostralegus* – 81 AONs

Breeding locations on Strangford Lough – 28 islands: Bird Island (Kircubbin) 3 AONs, Black Rock (Ringdufferin) 5 AONs, Boretree Island East 4 AONs, Boretree Island West 2 AONs, Chanderies 7 AONs, Drummond Island 3 AONs, Dunnyneill Island 4 AONs, Dunsy Rock 4 AONs, Gabbock Island 5 AONs, Great Minnis Island 4 AONs, Green Island (Killyleagh) 2 AONs, Green Island (Ringhaddy) 1 AON, Gull Rock, Boretrees 2 AONs, Gull Rock, Dunsy 2 AONs, Jackdaw Island 6 AONs, Little Minnis 2 AONs, North Boretree Rock 3 AONs, Parton Island 1 AON, Pig Island 2 AONs, Rat Island 1 AON, Roe Island 1 AON, Round Island 6 AONs, Salt Rock 2 AONs, South Sheelaha Island 2 AONs, Sheelaha Island 2 AONs, Shones Island 1 AON, Swan Island 2 AONs, Trasnagh Island 2 AONs.

Breeding locations on Outer Ards – 2 islands: Bird Island, Portavogie 2 AONs, Green Island, Portavogie – 7 AONs.

The Oystercatcher's presence on 28 islands makes it the most ubiquitous species of seabird or waterfowl on Strangford Lough.

Ringed Plover *Charadrius hiaticula* – 2 AONs

Breeding locations on Strangford Lough 2 islands: Dunsy Rock 1 AON, Black Rock (Ringdufferin) – 1 AON.

The Ringed Plover has been fairing very badly in recent years with a sharp drop after 2010. The mean number of AONs found on the Lough in the period 2001–10 was 14.6, in the seven years since this had decreased to just 2.6.

Breeding locations on Outer Ards – 2 islands: Bird Island, Portavogie 2 AONs, Green Island, Portavogie – 3 AONs.

Black-headed Gull *Chroicocephalus ridibundus* – 425 AONs

Breeding locations on Strangford Lough – 11 islands: Black Rock (Ringdufferin) 15 AONs, Drummond Island 1 AON, Dunnyneill Island 19 AONs, Dunsy Rock 15 AONs, Gabbock Island 13 AONs, Green Island (Killyleagh) 6 AONs, Green Island Rock 3 AONs, Rat Island 9 AONs, Round Island 6 AONs, South Sheelaha's Island 26 AONs, Swan Island 312 AONs.

Breeding locations on Outer Ards – 1 island: Cockle Island (Groomsport) 93 AONs.

Numbers of breeding Black-headed Gull increased on Strangford Lough from 1976–81, fell to 1984, rose once more from 1985 to 1992 and possibly 1993 (huge margin of error that year with total of 6,075–9,075 AONs) then declined to 2000 then rising with the odd fluctuation to 2008. Since 2008 numbers declined to 2012, but have increased gradually since to 1,550 AONs in 2017. However, just 425 pairs were recorded on the islands of the Lough in 2017.

The population increase since 2012 is due to the establishment of a colony at WWT's Castle Espie, after significant landscaping and water level control measures were carried out as part of a major 're-vamp' of the site. This starter colony almost certainly included birds that had previously bred on nearby Ogilby Island. Since the establishment of the colony at Castle Espie its numbers have continued to rise whilst the Lough 'proper' population has continued to fall.

Only one significant colony remains on the Lough, one of 312 pairs on Swan island c.f. 1993 when a colony of c. 6,000 pairs existed in Jackdaw Island. The first chicks of a few days of age noticed on 20 May. Although the species nests on a further ten islands their total numbers amount to just 113 pairs. Some of the Black-headed Gull's former nesting sites now have rats, e.g. Ogilby, or still have rats, Green Island (Killyleagh), or have had issues with mustelid predation (Dunsy and Dunnyneill). Other islands that might be suitable in terms of size and topography have significant large gull populations which make them unfavourable.

It would seem that for the foreseeable future birds will continue to shift to Castle Espie and the Lough's island populations will continue to dwindle. In terms of the species as a whole the Castle Espie colony has to be considered as part of the Lough's population and so it is the combined population figure that is more meaningful.

Common Gull *Larus canus* – 331 AONs

Breeding locations on Strangford Lough – 22 islands: Bird Island (Kircubbin) 1 AON, Boretree Island East 7 AONs, Boretree Island West 2 AONs, Chanderies 7 AONs, Drummond Island 34 AONs, Dunnyneill Island 3 AONs, Gabbock Island 3 AONs, Great Minnis's Island 4 AONs, Green Island (Killyleagh) 55 AONs, Green Island (Ringhaddy) 12 AONs, Inishanier Island 9 AONs, Jackdaw Island 11 AONs, Little Minnis's – 30 AONs, Ogilby 1 AON, Roe Island 61 AONs, Round Island 23 AONs, Salt Rock 9 AONs, Sheelah's Island 5 AONs, South Sheelah's Island 2 AONs, Shones Island 1 AON, Swan Island 5 AONs, Trasnagh Island 37 AONs.

Breeding locations on Outer Ards – 2 islands: Cockle Island (Groomsport) 8 AONs, Green Island, Portavogie – 1 AON.

Whilst overall breeding numbers have remained relatively stable for the last seven years (with the exception of a dip in 2015) there are indications from later visits to some of the islands that productivity is consistently low with significant losses particularly at the egg and early chick stage on Green Island (Killyleagh) and Roe Island. In 2017 nest building was first noted on Green Island (Ringhaddy) on 2 May but no eggs had been laid.

Mediterranean Gull *Larus melanocephalus* – 0 AONs

Mediterranean Gulls settled to breed on Swan Island in 2014 and 2015, amongst the Black-headed Gull colony there, successfully fledging two young in 2014 but failing at the young chick stage in 2015. An adult was present on Swan Island on 31 March 2016 and at least two possibly three were present on 14 April. There were sightings of single Mediterranean Gulls on or near Killyleagh harbour on 27 and 30 April and 1 May but no further sightings on Swan Island. In 2017 no Mediterranean Gulls were detected on a visit to Swan Island on 4 April and for the rest of the monitoring season were not seen to settle anywhere. Sightings were limited to a solitary third summer bird over Round Island on 23 May and two adults over Green island (Killyleagh) on 20 June.

Ever since first breeding on Strangford Lough in 2002, Mediterranean Gull has attempted to breed in 11 of the following 15 years, but at no point exceeding three pairs. It has generally nested amongst Black-headed Gulls, although one pair bred amongst a loose congregation of Common and Herring Gulls on Drummond Island in 2007 and 2011 and Little Minnis in 2010. It has also nested on Ogilby in 2006, North Boretree Rock in 2007, Green Island (Killyleagh) in 2002, 2003, 2005–2009, Chanderies in 2008, Dunsy Rock in 2011 and Swan Island in 2014 and 2015. Mediterranean Gulls were thought to successfully rear young on Green Island, Killyleagh and Ogilby Island in 2006 and Swan Island in 2014. The species has yet to establish itself as a regular breeder on the Lough.

Herring Gull *Larus argentatus* – 1,070 AONs

Breeding locations on Strangford Lough – 19 islands: Bird Island (Kircubbin) 242 AONs, Boretree Island East 43 AONs, Boretree Island West 4 AONs, Chanderies 3 AONs, Drummond Island 136 AONs, Dunnyneill Island 7 AONs, Gabbock Island 9 AONs, Great Minnis's Island 20 AONs, Green Island (Killyleagh) 262 AONs, Inishanier Island 30 AONs, Inisharoan 1 AON, Jackdaw Island 26 AONs, Little Minnis's 11 AONs, Ogilby 1 AON, Roe Island 1 AON, Round Island

269 AONs, Salt Rock 1 AON, Sheelah's Island 3 AONs, Trasnagh Island – 1 AON.

There are two main colonies of Herring Gull, those on Green Island, Killyleagh and Round Island which account for almost half the breeding population. Breeding numbers dropped by 9% this year but has been increasing steadily since 2007, with a significant jump from 2015 to 2016.

Lesser Black-backed Gull *Larus fuscus* – 343 AONs

Breeding locations on Strangford Lough – 13 islands: Bird Island (Kircubbin) 60 AONs, Boretree Island East 43 AONs, Boretree Island West 19 AONs, Chanderies 1 AON, Drummond Island 24 AONs, Gabbock Island 6 AONs, Great Minnis's Island 11 AONs, Green Island (Killyleagh) 59 AONs, Inishanier Island – 4 AONs, Jackdaw Island 6 AONs, Little Minnis's 1 AON, Ogilby 21 AONs, Round Island 42 AONs.

Lesser Black-backed Gulls increased by 15% this year and they are becoming the dominant gull species from the Boretrees north to Ogilby.

Greater Black-backed Gull *Larus marinus* – 114 AONs

Breeding locations on Strangford Lough – 10 islands: Bird Island (Kircubbin) 2 AONs, Black Rock, Ringdufferin 1 AON, Boretree Island East 4 AONs, Boretree Island West 5 AONs, Chanderies 1 AON, Dunsy Rock 1 AON, Great Minnis's Island 93 AONs, Green Island (Killyleagh) 1 AON, Green Island, Ringhaddy 1 AON, Gull Rock, Boretrees 1 AON.

Over 80% of the Lough's Greater Black-backed Gulls breed at their main colony on Great Minnis. Similarly to the Herring Gull, their numbers have increased significantly from 2007.

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Appendix: Species counts

Table 9 Cumulative counts (N) of all species of seabird (except Black Guillemot) within Master Sites in Northern Ireland between 2014 and 2017. NS = the number of sub-sites surveyed in a Master Site (an indication of relative survey effort between years). NR = Not Recorded, sub-sites not specified. Hyphens (-) denote that no data were collected. Seabirds are counted using recommended census units from Table 3.

	Master Site	2014		2015		2016		2017	
		NS	N	NS	N	NS	N	NS	N
Fulmar	Downhill	5	398	6	135	4	78	4	81
	North Antrim Coast	9	30	10	16	10	37	10	38
	Rathlin Island	-	-	-	-	-	-	3	28
	East Antrim Coast	23	57	21	31	16	45	11	60
	Larne Lough to Portmuck	2	2	2	2	1	2	1	6
	Muck Island	1	22	1	52	1	68	1	80
	The Gobbins	5	148	5	201	NR	290	NR	310
	Islandmagee South	1	0	1	0	-	-	-	-
	Blackhead	1	3	1	3	1	3	1	29
	Whitehead Town	1	0	-	-	-	-	-	-
	Whitehead	1	6	1	3	1	3	1	5
	Maggie's Leap to Newcastle	1	4	1	12	-	-	-	-
Maggie's Leap	1	2	-	-	-	1	1		
Cormorant	Skerry Islands	5	91	-	-	-	-	NR	60
	Sheep Island	1	95	-	-	1	84	1	100
	Muck Island	-	-	1	0	-	-	1	0
	The Gobbins	5	6	5	0	NR	12	NR	13
	Strangford Lough	NR	309	NR	245	NR	343	NR	360
Shag	Downhill	-	-	2	3	4	0	-	-
	North Antrim coast	9	2	1	2	10	1	10	1
	Skerry Islands	-	-	1	64	-	-	-	-
	Sheep Island	-	-	1	66	-	-	-	-
	Rathlin Island	-	-	NR	42	NR	47	NR	51
	Muck Island	1	16	1	17	1	21	1	30
	The Gobbins	5	14	5	20	NR	22	NR	20
	Strangford Lough	NR	0	NR	0	NR	0	NR	0
	Maggie's Leap to Newcastle	1	6	1	4	1	3		
Maggie's Leap	1	5	1	3	1	3	1	5	
Great Skua	Rathlin Island	1	1	1	1	NR	1	NR	1
Kittiwake	Downhill	-	-	2	92	-	-	-	-
	North Antrim coast	9	122	10	207	10	279	10	236
	Rathlin Island	-	-	-	-	-	-	3	340
	East Antrim Coast	-	-	-	-	2	0	-	-
	Muck Island	1	251	1	225	1	351	1	369
	The Gobbins	5	695	5	835	NR	1072	NR	1053
	Strangford Lough	-	-	NR	0	NR	0	NR	0
	Maggie's Leap to Newcastle	1	667	1	483	-	-	-	-
	Maggie's Leap	1	80	1	86	1	78	1	76
Mediterranean Gull	Larne Lough	NR	6	NR	5	NR	5	NR	2
	Belfast Harbour	-	-	-	-	1	2	1	5
	Strangford Lough	NR	1	NR	1	NR	0	NR	0
	Lower Lough Erne	NR	1	NR	1	NR	1 Ind	NR	1
	Lough Neagh and Lough Beg (Antrim)	-	-	-	-	1	1 Ind	-	-
Black-headed Gull	Larne Lough	1	1700	NR	1825	NR	3102	NR	3060
	Belfast Harbour	1	470	1	~450	1	386	1	717

Table 9 (contd)

	Master Site	2014		2015		2016		2017	
		NS	N	NS	N	NS	N	NS	N
	Outer Ards	-	-	1	135	1	67	1	93
	Strangford Lough	NR	1181	NR	1265	NR	1312	NR	1524
	Carlingford Lough	-	-	1	1	-	-	-	-
	Lower Lough Erne	NR	1002	NR	1026	NR	1238	NR	1216
	Moorlough Lake	-	-	1	0	1	66 Ind	-	-
	Lough Vearty	-	-	1	5	-	-	1	0
	Lough Galboly	-	-	-	-	1	-	-	-
	Lough Neagh and Lough Beg (L/derry)	-	-	-	-	2	250 Ind	-	-
	Lough Neagh and Lough Beg (Antrim)	-	-	1	95	9	4565 Ind AON	1	115
	Lough Neagh and Lough Beg (Tyrone)	-	-	-	-	4	6750 Ind	-	-
	Lough Neagh and Lough Beg (Armagh)	-	-	-	-	6	30 Ind	-	-
	Antrim Town	-	-	-	-	1	15	-	-
Common Gull	Rathlin Island	-	-	NR	76	NR	84	NR	70
	East Antrim Coast	-	-	-	-	-	-	1	22 Ind
	The Maidens	-	-	-	-	-	-	-	-
	Larne Lough	-	-	NR	24	NR	27	NR	32
	Muck Island	1	51 Ind	1	20	-	-	1	51 Ind
	Outer Ards	-	-	-	-	1	1	1	8
	Strangford Lough	NR	333	NR	229	NR	333	NR	322
	Carlingford Lough	-	-	1	1	1	3	1	6
	Lower Lough Erne	NR	183	NR	163	NR	189	NR	143
	Moorlough Lake	-	-	1	0	-	-	-	-
	Lough Vearty	-	-	1	16	1	3	1	8 Ind
	Lough Galboly	-	-	1	0	-	-	1	22 Ind
	Lough Neagh and Lough Beg (Armagh)	-	-	-	-	1	15	-	-
Lesser Black-backed Gull	Muck Island	1	10 Ind	-	-	-	-	-	-
	Belfast Harbour	-	-	-	-	-	-	1	1
	Strangford Lough	NR	438	NR	433	NR	298	NR	343
	Lower Lough Erne	NR	904	NR	1211	NR	1185	NR	1316
	Lough Neagh and Lough Beg (L/derry)	-	-	-	-	2	0	-	-
	Lough Neagh and Lough Beg (Antrim)	-	-	-	-	9	980 Ind	-	-
	Lough Neagh and Lough Beg (Tyrone)	-	-	-	-	4	353 Ind	-	-
	Lough Neagh and Lough Beg (Armagh)	-	-	-	-	6	390 Ind	-	-
Antrim Town	1	200	-	-	1	600	-	-	
Herring Gull	Muck Island	1	10 Ind	-	-	-	-	-	-
	The Gobbins	-	-	5	2	NR	2	1	1
	Strangford Lough	NR	720	NR	679	NR	1177	NR	1070
	Maggie's Leap to Newcastle	-	-	1	4	-	-	-	-
	Maggie's Leap	1	1	-	-	-	-	-	-
	Carlingford Lough	-	-	-	-	1	0	-	-
	Lower Lough Erne	NR	2	NR	4	NR	5	NR	5
	Lough Neagh and Lough Beg (L/derry)	-	-	-	-	2	0	-	-
	Lough Neagh and Lough Beg (Antrim)	-	-	-	-	9	0	-	-
	Lough Neagh and Lough Beg (Tyrone)	-	-	-	-	4	0	-	-
	Lough Neagh and Lough Beg (Armagh)	-	-	-	-	6	0	-	-
Antrim Town	-	-	-	-	1	15	-	-	
Great Black-backed Gull	Muck Island	1	4	1	1	-	-	1	2
	The Gobbins	-	-	5	2	NR	1	NR	2
	Strangford Lough	NR	82	NR	62	NR	125	NR	114
	Maggie's Leap to Newcastle	-	-	1	3	-	-	-	-
	Maggie's Leap	1	2	-	-	-	-	1	2
	Carlingford Lough	-	-	1	2	1	2	1	2

Table 9 (contd)	Master Site	2014		2015		2016		2017	
		NS	N	NS	N	NS	N	NS	N
	Lower Lough Erne	NR	3	NR	2	NR	4	NR	4
	Lough Neagh and Lough Beg (Armagh)	-	-	-	-	1	1	1	1
Sandwich Tern	Larne Lough	-	-	NR	694	NR	1229	NR	1141
	Outer Ards	-	-	1	0	1	0	-	-
	Strangford Lough	NR	819	NR	581	NR	337	NR	775
	Carlingford Lough	-	-	1	250	1	7	1	71
	Lower Lough Erne	NR	124	NR	138	NR	226	NR	316
Common Tern	Larne Lough	NR	287	NR	353	NR	333	NR	355
	Belfast Harbour	1	287	1	344	1	418	1	367
	Belfast Channels	-	-	1	7	1	12	1	13
	Outer Ards	-	-	1	3	1	18	1	23
	Strangford Lough	NR	110	NR	401	NR	457	NR	262
	Carlingford Lough	-	-	1	220	1	123	1	147
	Lower Lough Erne	NR	24	NR	30	NR	41	NR	51
	Moorlough Lake	-	-	1	0	1	4	-	-
	Lough Vearry	-	-	-	-	-	-	1	0
	Lough Galboly	-	-	1	0	1	-	-	-
	Lough Neagh and Lough Beg (L/derry)	-	-	-	-	2	0	-	-
	Lough Neagh and Lough Beg (Antrim)	-	-	1	84	9	75	-	102
							AON 240	4 Ind	AON 271 Ind
		Lough Neagh and Lough Beg (Tyrone)	-	-	-	-	4	0	-
	Lough Neagh and Lough Beg (Armagh)	-	-	-	-	6	3 Ind	1	60 Ind
	Antrim Town	-	-	-	-	1	0	-	-
Roseate Tern	Larne Lough	NR	2	NR	1	NR	1	NR	1
Arctic Tern	Larne Lough	NR	48	NR	1	-	-	-	-
	Belfast Harbour	1	48	1	83	1	4	-	-
	Outer Ards	-	-	2	105	1	43	2	269
	Strangford Lough	NR	196	NR	194	NR	173	NR	73
	Carlingford Lough	-	-	1	85	1	41	1	20
	Lower Lough Erne	-	-	-	-	NR	0	-	-
Common Guillemot	Rathlin Island	-	-	-	-	-	-	3	3470
	Muck Island	1	1745	1	2070	1	2926	1	2554
	The Gobbins	5	1510	5	2137	NR	2675	NR	2326
Razorbill	Rathlin Island	NR	631	NR	716	NR	698	3	707
	Muck Island	1	402	1	671	1	1048	1	799
	The Gobbins	5	240	5	506	NR	858	NR	560
Puffin	Rathlin Island	NR	3	NR	3	NR	5	3	6
	Muck Island							1	0
	The Gobbins	5	54	5	63	NR	52	NR	57

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