

Ireland's Eye 2016 – Breeding Birds Survey and Visitor Activity and Impact Study

Report to Fingal County Council

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BirdWatch Ireland



Summary

- This report summaries breeding bird surveys conducted over 7 days during summer 2016 (May, June and July) and observations of visitor presence, activity and instances of disturbance of breeding seabirds.
- Ireland's Eye is a Special Protection Area designated for its important assemblage of breeding seabirds.
- Eleven species were confirmed as breeding on the island during these surveys: two have declined over the last 17 years, Fulmar *Fulmaris glacialis* and Kittiwake *Rissa tridactyla*, three have increased dramatically, Shag *Phalacrocorax aristotelis*, Guillemot *Uria aalge* and Razorbill *Alca torda*, three have remained stable, Cormorant *P. carbo*, Lesser Black-backed Gull *Larus marinus* and Puffin *Fratercula arctica*. The two common large gulls, Herring *L. argentatus* and Great Black-backed, have shown moderate increases. Gannets *Morus bassana* were not censused in full but have also increased, at least up to 2013.
- The terrestrial avifauna is remarkably constant though one new species proved breeding for the first time is the Robin *Erithacus rubecula*. The island supports a locally important population of breeding Oystercatchers *Haematopus ostralegus* (10 pairs) and Shelduck *Tadorna tadorna*.
- Large areas of the island were effected by a wildfire in summer 2015 but this appears to have had little impact on the breeding numbers of Great Black-backed and Herring Gulls that nest in the impacted area although the breeding productivity of these species must have been reduced.
- These two species are also disturbed on their nests by visitor traffic commuting to the west beach or the viewpoints along the north cliffs and we observed some instances of direct nest interference.
- We review management options for the island and suggest some form of wardening would be beneficial to the conservation interests of the island and enhance the visitor experience through a series of guided walks.

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Introduction

Ireland's Eye is a popular visitor destination in north County Dublin. It can be reached by a 15 minute boat trip from Howth Harbour and attracts birdwatchers and naturalists, adventurous types and beach goers in varying proportions throughout the summer. It supports a significant seabird colony, with large numbers of cliff-nesting species (Fulmar *Fulmarus glacialis*, Shag *Phalacrocorax aristotelis*, Kittiwake *Rissa tridactyla*, Guillemot *Uria aalge*, Razorbill *Alca torda*), a spectacular Gannet *Morus bassanus* colony and good numbers of large *Larus* gulls and Cormorant *Phalacrocorax carbo* on the less steep areas (Merne & Madden 2000). It is well known amongst birders as the best place to see Puffins *Fratercula arctica* in Dublin. The terrestrial birds are less well known but have been documented by Madden & Merne (2006).

Ireland's Eye has been designated a Special Protection Area under the EU Birds Directive. Although it has been designated as such for 20+ years, the most recent review and government documentation, including the Statutory Instrument, dates from 2010. The Features of Interest, implying the breeding populations of these species are of National significance, are Cormorant, Herring Gull *Larus argentatus*, Kittiwake, Guillemot and Razorbill. However, this does not mean that the other seabirds are present at 'insignificant' levels: those of Gannet, Shag and Great Black-backed Gull *Larus marinus* are of Regional Importance in an East Coast/Irish Sea context.

The island has gained a certain notoriety as being the home of a very aggressive breeding gull population (mostly Great Black-backed Gulls) and there are occasional outcries in the tabloid press urging the authorities to do something about them following incidents where members of the public are knocked to the ground or receive superficial head injuries.

During late June 2015, a large wildfire occurred on the island and this was also widely reported in the media. Although concerns were raised as to the impact on the breeding seabirds no realistic (qualitative or quantitative) assessment was made at the time. It is almost certain that nests (eggs and chicks) would have been destroyed though it is likely adults escaped.

Fingal County Council officials are aware of the potential conflict between recreational activities and the importance of the island for conservation and biodiversity (it is a Special Protection Area under the EU Bird's Directive) and they commissioned further bird survey work for the 2016 breeding season and an exploratory investigation in to how the public access can be maintained without negative impacts on the birds.

This report summarises the results of survey work undertaken in 2016 which aimed to quantify the total numbers of seabirds nesting, and to provide an assessment of the possible impacts of the fire in 2015, and of summertime visitor pressure on nesting birds.



Photo 1 (A-D): Fire on Ireland's Eye in 2015, illustrating (A) the extent of damage as shown by an aerial photo, and (B-D, photos by Niall T. Keogh) the damage caused based on photos taken in the latter stages of the fire period.

Methods

Full details of all visits made to Ireland's Eye as part of this study between 2nd May and 19th July 2016 are summarised in Table 1 below.

Survey methods

Seabirds were censused using the standard '*Seabirds Count*' Census methods manual which is a document that has been adapted from Walsh *et al.* (1995). Seabirds Count is the fourth comprehensive national seabird census coordinated by the UK-Irish Seabird Monitoring Programme Partnership. These censuses are undertaken at 15-year intervals with Seabirds Count spanning 2015-2018(19). The census methods proposed in the Seabird Monitoring Handbook (Walsh *et al.* 1995) are reviewed at the start of each cycle and updates/clarifications are drafted and adopted by all partners. Ireland's Eye is divided into 5 subsites and these are illustrated in Figure 2. The seabirds within each section were censused on three occasions, 27th May, 1st June and 3rd June 2016. During each survey session, the total numbers of all nesting species were recorded. Count units vary across species. These are described below and given next to respective species in relevant tables:

- AOS (Apparently Occupied Sites equates to breeding pairs in species that do not make a substantial nest or which lay their eggs directly on the substrate;
- AON (Apparently Occupied Nests) are species which build conspicuous nests but if these cannot be seen and are inferred then AOT (Territory) is used;
- Guillemots and Razorbills are counted as IND (individuals) on the nesting ledges and boulder slopes; the number of pairs of these species can be calculated by multiplying IND by 0.67;
- The preferred method for counting Puffins is AOB (Apparently Occupied Burrows) but these can be difficult to detect on the steep slopes of Ireland's Eye north cliffs and the number of individuals on land or sea close to the cliff base is thought to equate to the approximate number of breeding pairs.

In order to monitor other birds, a territory mapping approach was used with a minimum of two visits. The whole island was walked between dawn and 10:00 AM mapping the location of waders and passerines (the most abundant groups) and allocating each observation to a breeding evidence code (BTO guidelines for BirdTrack) e.g. singing male, nest-building, nest, feeding young. First visits should be undertaken between April 1st and 15th May and second visits between 16th May and 30th June. Later observations were used to upgrade breeding evidence (i.e. fledged family groups seen in July).

The Peregrine eyrie was checked on three visits: early, approximately April, for occupancy; May for eggs and incubation; June for young in nest. A later visit can be added for the number of fledged young.

Disturbance study

The observers aimed to be on the first boat out to the island so that arrival times of all subsequent boats and the numbers of people getting off (and on) boats were observed and their behaviour and activity patterns were recorded in an unobtrusive manner. Disturbance to breeding birds and other interesting behaviour was also observed. We were particularly interested to record routes visitors chose when exploring the island.

Table 1: Fieldwork Itinerary on Ireland's Eye, 2016.

02/05/2016 10:45 – 17:00	Passerine and breeding bird survey (not seabirds) conducted. Preliminary check of island for gull and seabird survey.
27/05/2016 9:45 – 18:00	Great Black-backed Gull, Herring Gull, Lesser Black-backed Gull, Shag, Cormorant and Fulmar breeding populations surveyed. Follow up passerine and breeding bird survey (not seabirds) conducted.
01/06/2016 11:00 – 14:00	Seabird colonies not visible from land surveyed from boat.
03/06/2016 11:00 – 21:30	Guillemot, Razorbill and Kittiwake breeding populations surveyed during the day. Puffin breeding colony surveyed in late evening.
04/06/2016 6:00 – 17:00	Follow up passerine and breeding bird survey (not seabirds) conducted early in the morning. Monitored human disturbance on the island, attempted to establish a potential walking route for next season to minimise disturbance to breeding seabirds.
05/06/2016 11:00 – 17:00	Monitored visitor numbers and activities, tourist behaviour and human/seabird interactions.
19/07/2016 10:55 – 17:16	Monitor visitor numbers and activity on a very hot day. Assess breeding productivity of Kittiwakes and Cormorants.



Figure 1: Map showing sites and locations mentioned in the text. Note: 'Old House' refers to the Church ruins.



Figure 2: Subdivisions of Ireland’s Eye for seabird and terrestrial bird surveys (1 = North cliffs from Martello Tower to northeast corner; 2 = East cliffs and coast, including stack and main Gannetry; 3 = Thulla; 4 = Central, interior area including church; 5 = West and South coast including Carrigeen Bay).

Results

Abundance, distribution and trends

Abundance and distribution of seabirds

Full details are given below on the long-term patterns of change in seabird numbers on Ireland’s Eye. In the shorter term, breeding seabird numbers appear to be stable and were very similar to 2015 (Table 2). Twenty-two fewer Great Black-backed nests were discovered this year. This may have been a result of the fire last year. However, the Herring Gulls do not appear to have been affected with 80 more nests recorded than last year. A higher proportion of them nest in areas not reached by the fire. Black Guillemots and Manx Shearwater were not recorded breeding on Ireland’s Eye.

Table 2: Summary of the 2016 breeding seabird survey and comparison with the previous year and the Seabird 2000 baseline (conducted 1999, Mitchell *et al.* 2004).

Species	Latin name	BoCCI listing	1999	2015	2016
Fulmar (AOS)	<i>Fulmarus glacialis</i>	Green	70	37	34
Kittiwake (AON)	<i>Rissa tridactyla</i>	Amber	941	455	401
Guillemot (IND)	<i>Uria aalge</i>	Amber	2191	4,410	4,274
Razorbill (IND)	<i>Alca torda</i>	Amber	522	1,600	1,335
Lesser Black-backed Gull (AOT)	<i>Larus fuscus</i>	Amber	1	2	3
Great Black-backed Gull (AOT)	<i>Larus marinus</i>	Amber	100	154	132
Herring Gull (AOT)	<i>Larus argentatus</i>	Red	250	318	398
Cormorant (AON)	<i>Phalacrocorax carbo</i>	Amber	306	424	398
Shag (AON)	<i>Phalacrocorax aristotelis</i>	Amber	32	81	72
Puffin	<i>Fratercula arctica</i>	Amber	4 IND	3 (burrows) + 11 (sea)	6 (burrows) + 18 (sea)

A recent census of Gannets was not undertaken in 2016 as a thorough census was conducted by aerial survey in 2013. This gave the population as 547 Apparently Occupied Sites (AOS, Newton *et al.* 2015). Nesting Gannets were discovered to have colonised an area on the main north cliffs away from the 'traditional stack' during that survey. During the visit on 19th July, there were 15 AOS with at least three pairs supporting young on the north cliffs. They were attended by 37 adult birds and 2 sub-adults.

The breeding success of Kittiwakes was assessed on 19th July by counting the number of well-grown young in nests in 4 sub-colonies. In total 35 young were present in 103 nests giving a productivity of 0.34 potentially fledged young per nesting pair. This is on the poor side of average for this species; only two nests contained two young with the remainder having a single offspring. The mean brood size of thirty Great Black-backed Gull nesting pairs was 1.93. A total of 177 well-grown young (of the year) Cormorants were counted on the North cliffs, indicating a reasonably good breeding season for this species.

Maps illustrating predominant landmarks and the survey sections used during the field surveys are illustrated in Figures 1 and 2 respectively.

All seabirds were recorded in Sections 1, 2 and 3 (refer to Fig. 2) and none were recorded nesting in Sections 4 and 5. The sections to the north and east of the island (Fig. 2) supports largest numbers of almost all species (Table 3). These are the main cliff-nesting areas of the island.

Table 3. Totals of each species recorded in each of the survey sections (refer to Figure 2 for location of sections).

Species	Latin name	Ireland's Eye 1	Ireland's Eye 2	Ireland's Eye 3
Fulmar	<i>Fulmarus glacialis</i>	25	9	
Cormorant	<i>Phalacrocorax carbo</i>	85	262	51
Shag	<i>Phalacrocorax aristotelis</i>	51	21	
Lesser Black-backed Gull	<i>Larus fuscus</i>		3	
Herring Gull	<i>Larus argentatus</i>	136	203	59
Great Black-backed Gull	<i>Larus marinus</i>	96	17	19
Kittiwake	<i>Rissa tridactyla</i>	54	347	
Guillemot	<i>Uria aalge</i>	3456	818	
Razorbill	<i>Alca torda</i>	704	631	
Puffin	<i>Fratercula arctica</i>	24		

Abundance and distribution of other birds

The passerine avifauna of the island is described in Table 4. Seventeen species were recorded, virtually all in low numbers (1-3 pairs) or handfuls of visiting migrants (e.g. Hirundines). It has not changed significantly since the last published list (up to October 2005), particularly with regard to breeding species. However, two new non-breeding species were recorded – Sand Martin and Song Thrush, and a new species with proved breeding added - Robin.

Table 4: Summary of passerine survey and breeding status (refer to Figure 1 for further details about the locations of the survey sections).

Species	Latin name	Status on Ireland's Eye 2016	Location
Hooded Crow	<i>Corvus cornix</i>	Breeding confirmed	1 pair on nest. Ireland's Eye 4 (base of hill)
Rock Pipit	<i>Anthus petrosus</i>	Breeding confirmed	At least 2 pairs bred. Fledglings seen at Ireland's Eye 2 (pond area) and Ireland's Eye 4 (old church), probably more nests on island.
Stonechat	<i>Saxicola torquatus</i>	Breeding confirmed	At least 2 pairs bred. Fledglings seen at Ireland's Eye 1 (narrow path) and an adult carrying food seen at Ireland's Eye 2 (peninsula).
Wren	<i>Troglodytes troglodytes</i>	Breeding confirmed	Fledglings seen at Ireland's Eye 1 (narrow path). Multiple singing males on island.
Blackbird	<i>Turdus merula</i>	Breeding confirmed	At least 2 pairs bred. Fledglings seen at Ireland's Eye 1 (narrow path) and Ireland's Eye 4 (old church).
Robin	<i>Erithacus rubecula</i>	Breeding confirmed	At least 1 pair bred. Fledglings seen at Ireland's Eye 4 (old church).
Reed Bunting	<i>Emberiza schoeniclus</i>	Breeding confirmed	Fledgling seen at Ireland's Eye 4 (old church).
Linnet	<i>Carduelis cannabina</i>	Breeding confirmed	Adult seen with nest material at Ireland's Eye 1 (narrow path).
Whitethroat	<i>Sylvia communis</i>	Probable breeder	Multiple and singing individuals seen on 3 different visits. Ireland's Eye 4 (base of hill)
Meadow Pipit	<i>Anthus pratensis</i>	Probable breeder	Multiple and singing individuals seen on 3 different visits. Ireland's Eye 4 (base of hill, old church) and Ireland's Eye 2.
Pied Wagtail	<i>Motacilla alba</i>	Possible breeder	Adult individual seen on 2 separate visits in same location. Ireland's Eye 2 – pond area.
Wheatear	<i>Oenanthe oenanthe</i>	Non-breeding visitor/migrant	Seen on only 1 visit. Ireland's Eye 1 (landing area).
Willow Warbler	<i>Phylloscopus trochilus</i>	Non-breeding visitor/migrant	Seen on only 1 visit. Ireland's Eye 1 (pond area). Ireland's Eye 4 (base of hill).
Song Thrush	<i>Turdus philomelos</i>	Non-breeding visitor/migrant	Seen on only 1 visit. Ireland's Eye 4 (old church).
House Martin	<i>Delichon urbicum</i>	Non-breeding visitor/migrant	
Sand Martin	<i>Riparia riparia</i>	Non-breeding visitor/migrant	
Swallow	<i>Hirundo rustica</i>	Non-breeding visitor/migrant	



Figure 4: Rough distribution map of breeding passerines on Ireland's Eye. Abbreviations used:
 PW = Pied wagtail RC = Rock Pipit R. = Robin WH = Whitethroat
 B. = Blackbird HC = Hooded Crow SC = Stonechat RP = Ringed Plover
 WR = Wren MP = Meadow Pipit LI = Linnet

The list of non-passerine birds is given in Table 5. Shelduck and Oystercatcher are the most numerous non-passerine breeding species. As with the Passerines, there has been little significant change when compared with the list of Madden & Merne (2006).

In summary, overall the non-seabird summer/breeding avifauna has not significantly changed over the last 11 years (Table 6). However, unlike during previous censuses, in 2016 we confirmed breeding of several species that had previously been assigned 'probable' breeding status. This is perhaps due to our overnighting on the island and able to make observations of singing and breeding activity early in the morning before the main influx of visitors. We also added 3 new species, one of which, the Robin, was proved to breed and represents a new 'colonist'.

It would appear that the breeding avifauna was not significantly altered by the summer 2015 wildfire, perhaps because most species have already completed breeding (fledged one brood) by the time of the fire in June. A reasonable proportion of the breeding passerines that did nest in the spring/summer of 2016 did nest in the area that was burnt, further indicating a lack of significant effect, even if some late nests may have been destroyed in 2015. The populations of two breeding waterbirds, Shelduck and Oystercatcher, appear to have increased and one, Ringed Plover, may have

decreased. These species move their young to coastal habitat once out of the nest and so perhaps most young survived the 2015 fires. Islands off County Dublin, Lambay, Ireland's Eye and Dalkey appear to be the stronghold of the east coast of Ireland breeding Oystercatcher; the largest 'colony' would be Lambay (Madden 2004) with about 25 pairs, followed by about 10 each on Ireland's Eye and Dalkey (this report; S. Newton, pers. obs.).

With regard to BoCCI listing (Colhoun & Cummins 2013), the colour coding in Table 6 shows the island to support one Red-listed breeding passerine, the Meadow Pipit, and three Amber-listed species, Robin, Stonechat and Linnets.

Table 5: Other non-passerine birds of interest on Ireland's Eye. (refer to Figure 1 for further details about the locations of the survey sections).

Species	Latin name	Status on Ireland's Eye 2016	Location
Peregrine Falcon	<i>Falco peregrinus</i>	Breeding confirmed	1 nest discovered (stack) Ireland's Eye 1
Shelduck	<i>Tadorna tadorna</i>	Breeding confirmed	6 probable nests discovered Ireland's Eye 1 (1) Ireland's Eye 2 (3) Ireland's Eye 5 (2)
Oystercatcher	<i>Haematopus ostralegus</i>	Breeding confirmed	10 nests discovered Ireland's Eye 1 (4) Ireland's Eye 2 (2) Ireland's Eye 5 (4)
Ringed Plover	<i>Charadrius hiaticula</i>	Breeding confirmed	1 nest discovered Ireland's Eye 5
Mallard	<i>Anas platyrhynchos</i>	Potential breeder	1 pair seen on separate visits in same location. Ireland's Eye 1
Short-eared Owl	<i>Asio flammeus</i>	Winter visitor/passage migrant	Pair seen on only 1 visit Ireland's Eye 4
Brent Goose	<i>Branta bernicla hrota</i>	Winter visitor	Pair seen on only 1 visit Ireland's Eye 1
Sandwich Tern	<i>Sterna sandvicensis</i>	Summer visitor	Two seen Ireland's Eye 1 in July
Feral or Racing Pigeon (Rock Dove)	<i>Columba livia</i>	Visitor and possible breeder	One seen in July

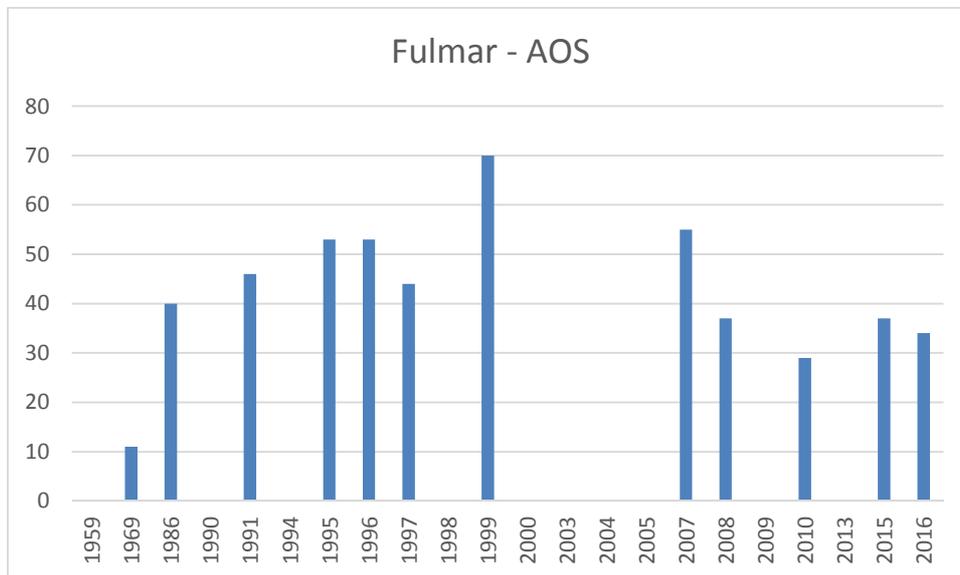
Table 6. Review of the ‘summer’ birds of Ireland’s Eye (excluding breeding seabirds) with BoCCI status (Red-list, Amber and Green) indicated.

Species	Status up to 2005	Status summer 2016	Status Change
Pale-bellied Brent Goose	Winter visitor	Lingering migrant	No change
Shelduck	Breeds, 1-2 pairs	Probably 6 nests	Yes, increase
Mallard	Breeds	1 pair prob. nests	No change
Eider	Rare visitor	No record	Established breeder Fingal area
Kestrel	Occasional visitor	No record	No change
Peregrine	Occasional breeder	Pair nested	Yes, established pair most years
Oystercatcher	Breeds 1-9 pairs	10 pairs nested	Yes, probable increase
Ringed Plover	Breeds 2-4 pairs	1 pair nested	Slight decline
Sandwich Tern	Visitor, has bred	Seen	No change
Rock/Feral Dove	Former breeder	Uncertain, present	No change
Short-eared Owl	Not recorded	Single sighting	Yes, new species in ‘summer’
Hooded Crow	Regular, breeds?	Pair nested	Confirmation of breeding
Sand Martin	Visitor	Visitor	No change
House Martin	Visitor	Visitor	No Change
Swallow	Has bred, M. Tower	Seen, no breeding	Possible loss as breeder
Willow Warbler	Last seen 1946	Seen, no breeding	Rediscovered
Whitethroat	Prob. breeds, 1 pair	Prob. several pairs	Yes, likely increase
Wren	Breeds, max 6 pairs	Prob. several pairs	No change, breeding confirmed
Starling	Regular visitor	No record	Apparent loss
Blackbird	Breeds, 1-4 pairs	2 pairs bred	No change
Song Thrush	Not recorded	Single sighting	Yes, new species in ‘summer’
Robin	Not recorded	1 pair bred	Yes, new colonist
Stonechat	Prob. breeds, 2 prs	2 pairs bred	No change
Wheatear	Has bred, 1 pair	Seen	No change
Pied Wagtail	Prob. has bred	Prob. 1 pair	No change
Meadow Pipit	Breeds? max 3 prs	3 territories	No change
Rock Pipit	Breeds, max 3 prs	Prob >2 territories	No change
Linnet	May breed, 1-2 prs	Def. at least 1 pair	No change, breeding confirmed
Reed Bunting	Prob 1-2 prs breed	1 pair bred	No change, breeding confirmed

Long-term Patterns of change in numbers 1959 - 2016

Northern Fulmar *Fulmarus glacialis*

Fulmars are thought to have colonised the island in the early 1930s with the first proved breeding pair in 1937. The first comprehensive census in 1969 indicates growth had been slow to that date but accelerated in the 1980s reaching a peak of 70 pairs (Apparently Occupied Sites) at the time of the Seabird 2000 census in 1999. Since then the population has declined, on a par with the national trend over the last 10-15 years but has been stable at 30-40 AOS for approximately 8 years.



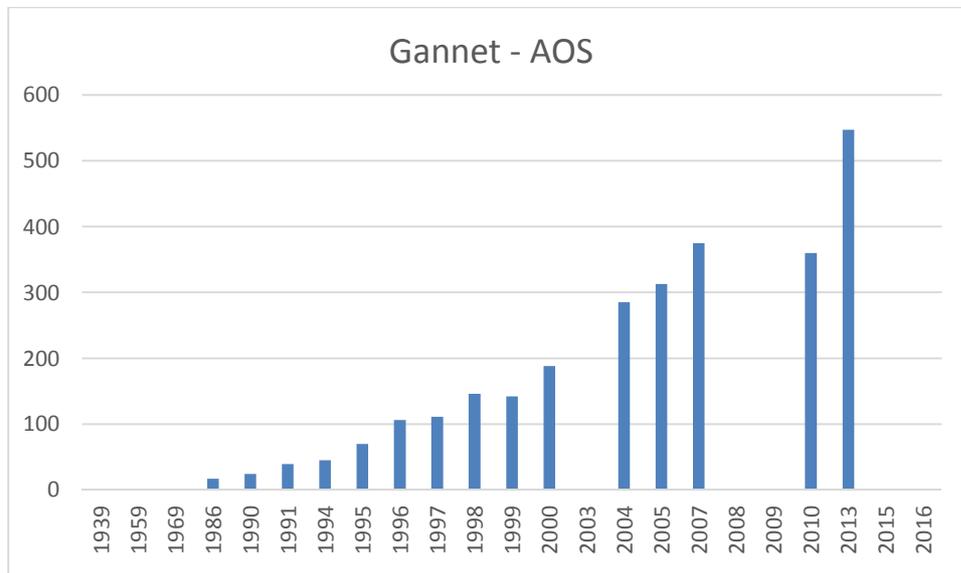
Ireland's Eye is rarely visited in winter so the time of return to the colony is not recorded directly. Elsewhere in North County Dublin, Fulmars can be seen in Loughshinny or Shennick Island, Skerries on their likely breeding sites early in the year, January or February and can occupy them for lengthy periods well before laying commences in May. Young hatch around late June/early July and have a prolonged nestling period with fledging in later August or early September.

Manx Shearwater *Puffinus puffinus*

The present breeding status of this species on the island is poorly known though Madden & Merne (2006) have found positive evidence for a small breeding population of about 20 pairs in the period 1926-1930. Brown rats are likely to have had a detrimental impact and presumably have more or less exterminated them. Hopefully, a thorough search can be undertaken as part of the current 4th national seabird census (2015-2018).

Atlantic Gannet *Morus bassanus*

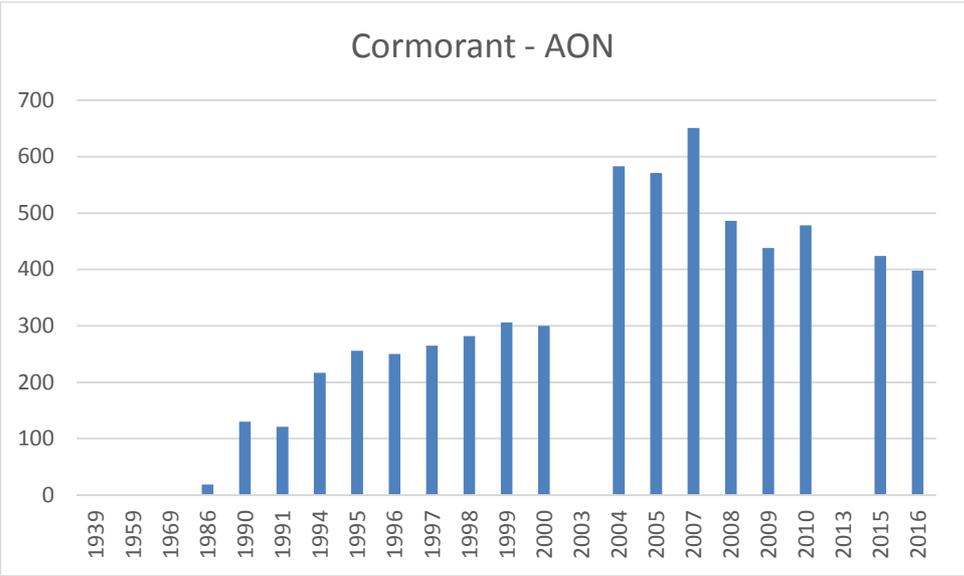
Colonisation of the island occurred from 1985 with the first successful nests recorded in 1989. The colony occupies the northeast stack and adjacent parts of the main island. A small number of pairs have nested in the central north cliffs in recent years. Growth has been steady from 1986 to 2007 but then checked at just under 400 AOS for unknown reasons, but this was at the time of colonisation of nearby Lambay Island, before a jump to the present numbers of 545 AOS (Newton et al. 2015) and is unlikely to increase much because of lack of space on the stack. Expansion may occur on the north cliffs. Gannets can be seen in all months off then Dublin coast but nesting starts in earnest in April with young fledging in August and September.



Great Cormorant *Phalacrocorax carbo*

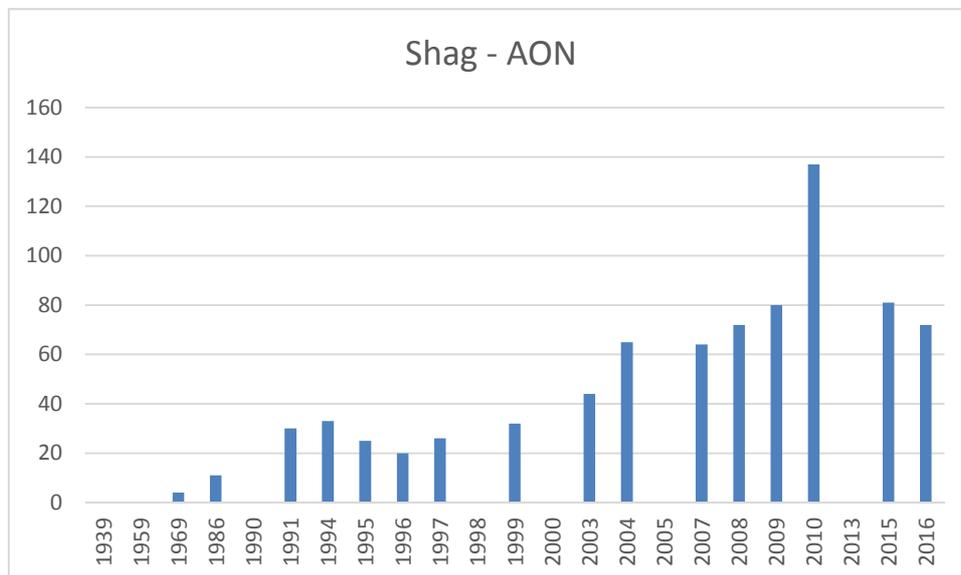
Apparently Cormorants bred on the island in late 19th century but then disappeared until 1983 (Madden & Merne 2006). Peak numbers occurred in 2007 but have fallen back and stabilised at between 400 and 500 pairs in the last 8 years. Nesting occurs on both Thulla and the steep slopes above the north cliffs. Breeding probably commences in April and May with fledged or mobile young seen from out of nests by early July.





Atlantic Shag *Phalacrocorax aristotelis*

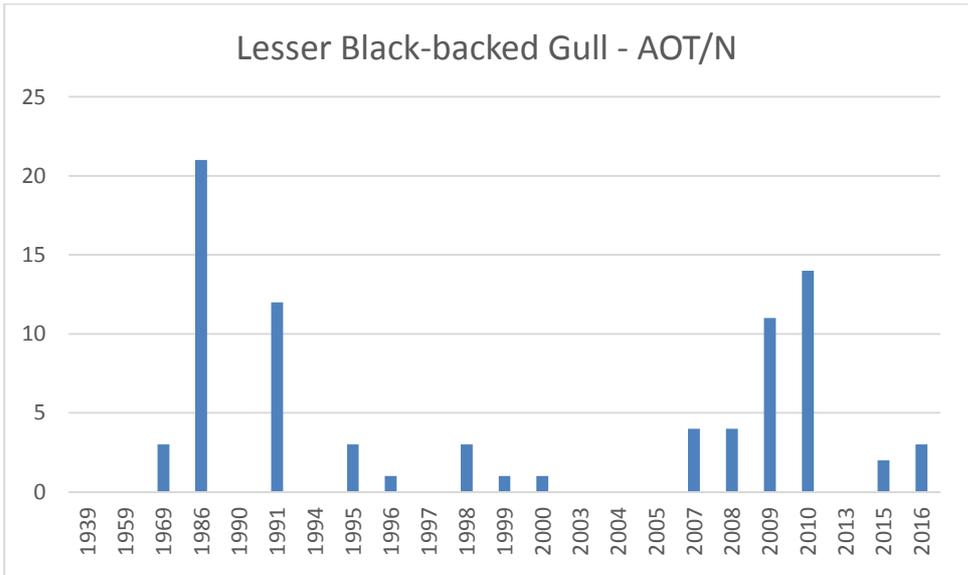
Never as numerous as Cormorants but available data show similar colony growth but with a peak in 2010 at just under 140 nests. Since then, numbers have returned to a level between 70 and 80 pairs. A significant decline has also been recorded at nearby Lambay Island over the last 6-7 years. Most Shags nest around the northeast corner of the island, often among boulders.



Cormorants and Shags are both resident species and can be found in the vicinity of their breeding colonies year round. These species are not sufficiently insulated to spend nights on the water and they always assemble on exposed rocks and islands to roost at night. Shags build nests in April, lay clutches in May and young fledge from July onwards.

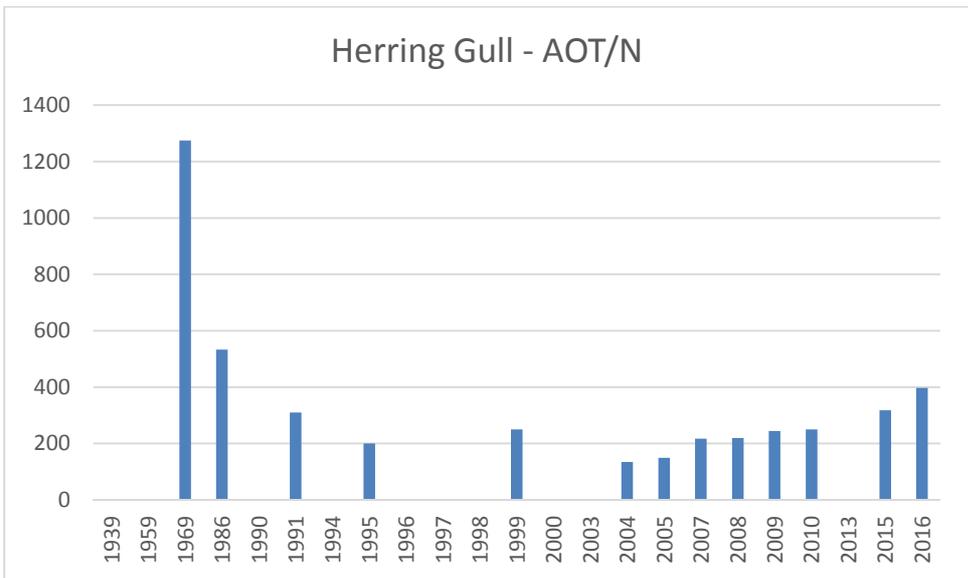
Lesser Black-backed Gull *Larus fuscus*

Lesser Black-backed Gulls are the scarcest of the three *Larus* species breeding on Ireland's Eye. Numbers have varied between 2-3 pairs and 21 pairs (in 1986); in some year, they appear to have been absent but this is probably a function of lack of search effort in the thickly vegetated inland parts of the island. A secondary population peak occurred in 2009-10 with 12-14 pairs but in the last two years only 2 or 3 pairs have been found despite intensive searches. This species is migratory and the breeding birds move to areas off the Iberian or Northwest African coast in the autumn and will return to colonies about March or April.



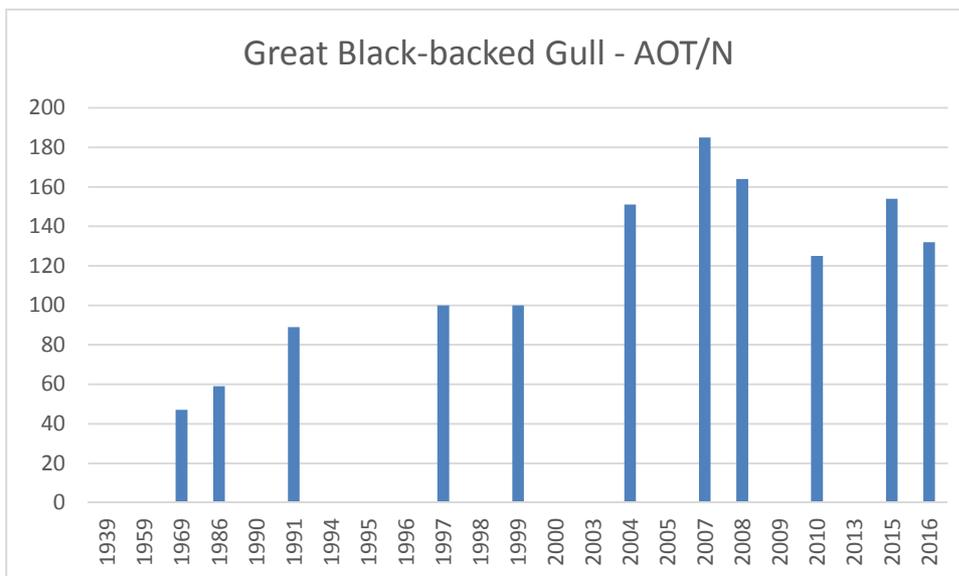
Herring Gull *Larus argentatus*

Generally regarded as the archetypal ‘seagull’ and the most abundant of the three *Larus* species on Ireland’s Eye and other neighbouring islands. Unfortunately, gulls are regarded as ‘second class seabirds’, even by experienced ornithologists, and they are at the bottom of the priority list of species to see and census properly on a visit to the island. Consequently, breeding numbers are estimated rapidly by scanning from a number of vantage points. Numbers on the island apparently peaked in 1969 and the considerable decline between then and the mid 1980’s was potentially attributed to avian botulism by Merne & Madden (2000). Numbers dipped to an all-time low in 2004 but in the last decade have recovered to 300-400 breeding pairs. They are distributed along most coastal and upland areas but noticeable concentrations are found in the northeast corner of the island and along the east coast. Herring Gulls are present on the island all year and wintering birds will include migrants from further north in Europe. They frequently scavenge and follow fishing boats and the proximity of Howth Harbour is a considerable attraction and presumably provides a regular source of food.



Great Black-backed Gull *Larus marinus*

The largest and frequently most aggressive to the gulls nesting on Ireland's Eye. In common with Herring Gulls, census effort is generally poor. The breeding population appear to have increased since the 1969 census up to 2007 when it approached 200 pairs. Since then there has been a slight decline but numbers appear approximately stable with between 120 and 150 pairs. The majority nest on the northern rocky 'upland' areas and the northwest corner, around the landing area. Once eggs are laid in late April and through the incubation and chick-rearing period (June/July) parent birds can be very aggressive towards humans passing through their territory; in most dive bombings the intruder is not hit but some birds can strike and do draw blood from unprotected heads. Great Black-backed Gulls are present throughout the year and have an intimate relationship with the Howth-based fishing industry.

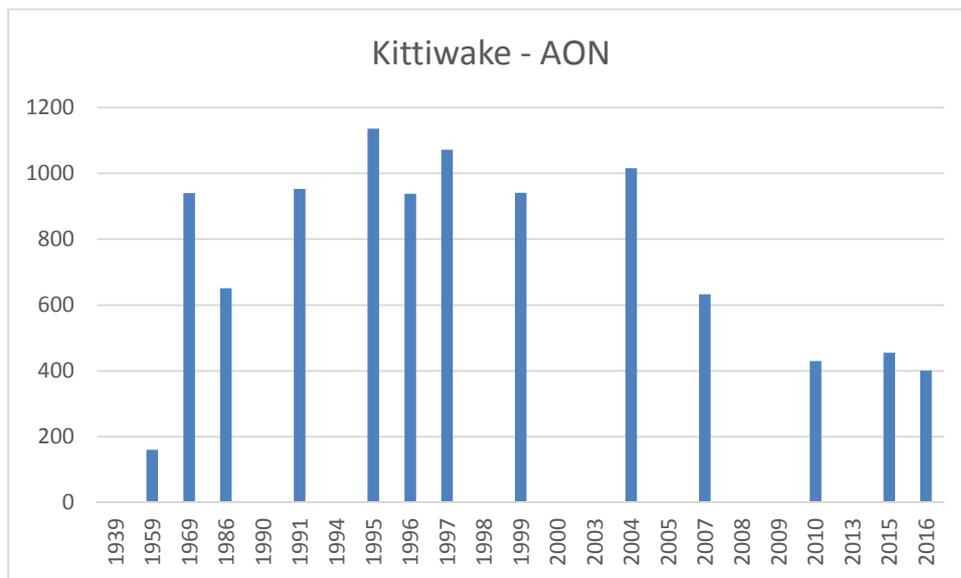


Black-legged Kittiwake *Rissa tridactyla*

Kittiwakes nest on the steepest cliffs on the north and east coasts of the island, and a few manage to squeeze in their nests in among the Gannets on the stack. Between the 1969 census and 2004 the population appeared stable at approximately 1000 pairs, albeit with a dip in 1986 around the time of the second national census. Since 2004, numbers have decreased dramatically and now seem to have stabilised at about 400 AON. A recent decline has also been noted



at Lambay Island and the national trend is of a similar decline (33%) over 15 years (Newton et. al. 2015). Kittiwakes construct their nest in May and usually lay in early June; young fledge towards the end of July and early August. Kittiwakes are usually pelagic in winter and are absent from their colonies from September to March, though small numbers can be seen in Dublin Bay in winter, often following ferries.

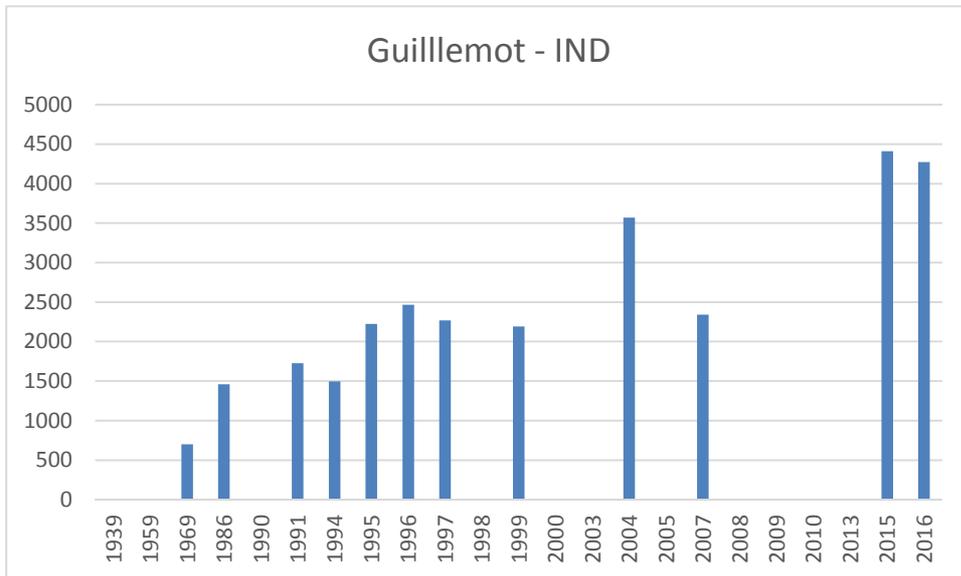


Common Guillemot *Uria aalge*

The myriad of caves and steep cliffs on the north coast of Ireland's Eye makes this a difficult species to census. However, breeding numbers have risen steadily since about 600 (IND) were recorded in 1969. The present population exceeds 4000 and this represents a doubling of the population over 15 years mirrors; the national trends on a similar upward trajectory. Guillemots usually lay their single egg in May and half-grown young depart (jump off) their



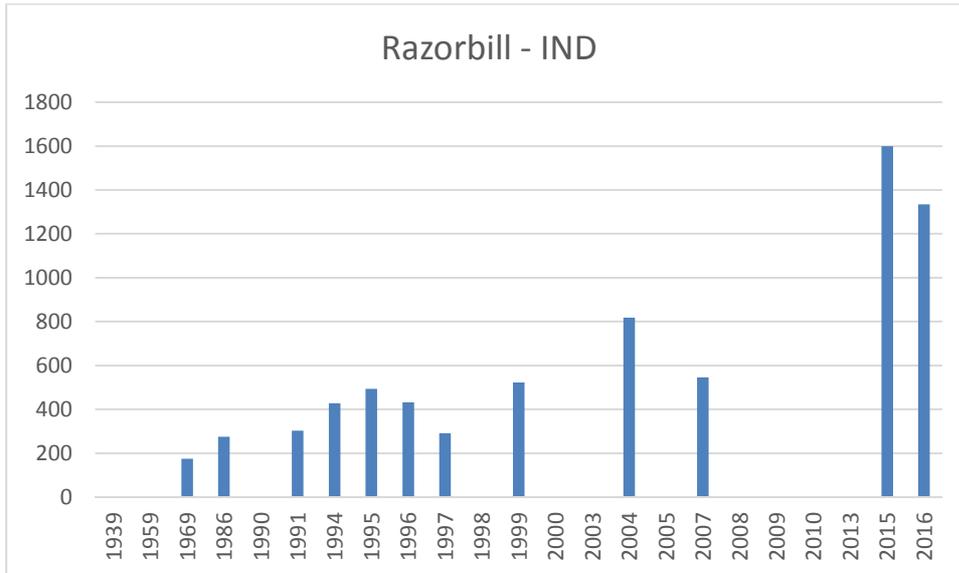
breeding ledges with their fathers in the first half of July and these parent offspring pairings swim away from the colony to good foraging grounds, presumably on the nearby Bennett and Kish Banks. Guillemots are generally pelagic in the non-breeding season but can show coordinated 'spontaneous' returns to the colony and breeding ledges in winter, often in unseasonal calm sunny weather. Small numbers can be seen off Howth Harbour and in Dublin Bay at any time of year.



Razorbill *Alca torda*

Razorbills usually nest in more secluded locations on cliffs, using crevices and under boulders though some nest amongst Guillemots in open ledges. Although much less numerous, and with a different ecology and foraging technique, the population trajectory is similar to that of Guillemots. Numbers have steadily risen up to a peak at 1600 (IND) in 2015, with slightly fewer in 2016. The timing of breeding is similar to Guillemots and they too can make occasional returns to the colony in winter.





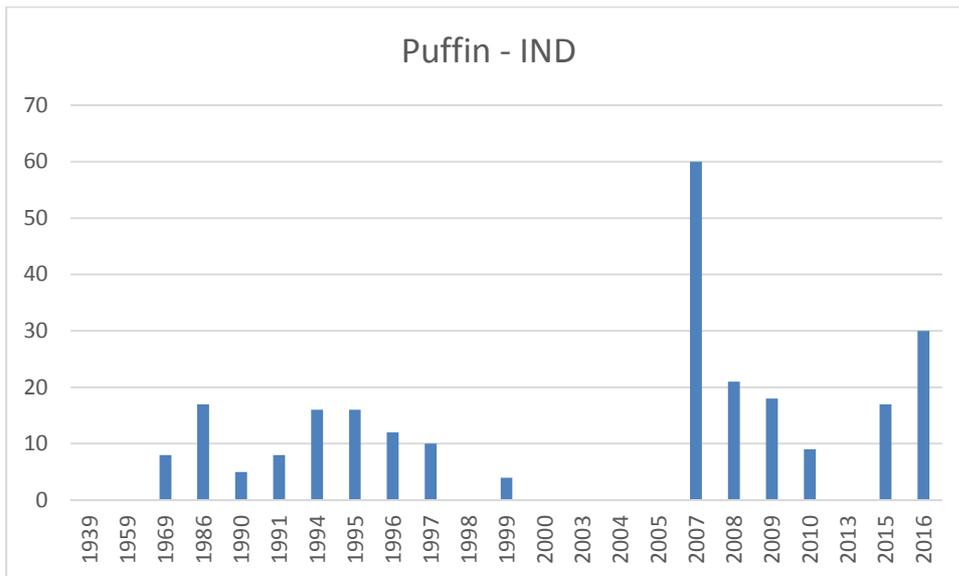
Black Guillemot *Cepphus grylle*

Presumed to nest on Ireland’s Eye but nest holes/crevices rarely seen or documented. Birds seen around the island may be from the larger local population that nests in man-made structures in Howth (holes in piers and rock armour).

Atlantic Puffin *Fratercula arctica*

A charismatic species, much sought after by birdwatchers and the general public during a visit to Ireland’s Eye. However, in the last 40 years they have never been numerous and it is assumed that rat depredation of eggs and young in their burrows are a perennial problem. However, there are signs that the population has increased somewhat in the last decade. Puffins return to their colonies in late April and adults depart, en mass, in early August, often before their young have fledged. Young birds make their own way to sea and adults take no part in rearing them away from the colony. Puffins are highly pelagic and winter in the Atlantic and are not seen from land between September and March.





Disturbance Surveys

General movements of people on the island

As people get off the ferry they typically go to the Martello Tower first which is very close to the landing area (Fig. 5), and after that they typically split into two different directions. Some people walk straight to the main beach (Track 2, 3, 5 in Fig. 5) and an actual pathway has been formed from people using this route frequently. The nesting gulls in this region appear to be more acclimatised to people and aggressive behaviour was witnessed on very few occasions, although they were seen displaying defensive behaviour.

From here people tended to descend onto the main beach (Track 3) as dense vegetation limits passage through the interior of the island. However, in April, when the vegetation was much lower a lot of people walked straight into the interior of the island (Track 4) towards the only real landmark/feature there, namely the ruins of the church. However, by May and June this area was completely overgrown, although some people were seen wading through the dense vegetation to get to the building.

In general, most people were seen staying on the main beach (Track 5) as either a walking route or a place to spend their visit on the island. There were no nesting birds on the main beach, which may have been the result of constant human disturbance, or because the area is well used by foraging gulls.

People walking along the beach tended to follow it around the corner onto the south beach where nesting Oystercatcher, Ringed Plover and Herring Gulls were present (Track 6). From here, some were seen climbing back onto the main part of the island, and walk towards the sea stack area along the east coast of the island (Track 7). This area has nesting gulls, mostly Herring Gulls, which are less aggressive than Great Black-backed Gulls. There is a beaten-down trail from people walking it, but parts are overgrown and difficult to navigate.

Once they are at the top (Track 8) they either go back the way they came or head towards the landing area by walking through the hills and gull colony along the north of the island (Track 9). There is no single route to the landing area; people tend to walk in different, near random directions. Great Black-backed Gull density is very high in this area and the defensive behaviour displayed by the gulls was seen to influence where people walked. According to Ireland's Eye Ferry

operators, more people attempt to climb to the top of the hill early and late in the summer due to the aggressive nature of Herring and Great Black-backed Gulls.

People walking from the landing area often attempt to head to the sea stack/top of the hill immediately by walking along the north of island uphill (Track 9). As previously stated there is no set walking route through the hilly area/gull colony and people diffuse randomly through the colony as they attempt to walk through it.



Figure 5: Walking routes used by people when on the island.

Dedicated observation sessions of human activities and the responses shown by nesting seabirds

3rd June 2016

Single aggressive incident observed where one parent together with 3 children were attacked by nesting Great Black-backed Gull very close to landing area. Two cuts opened on back of head with quite a lot of blood. The parent was unaware that there were nesting gulls on the island and was open to the idea of sectioned off areas, information signs and leaflets.

Observations on 5th June 2016 from fixed location near the landing area between 11:40 and 14:00

During this time period, 11 boats landed and a total of 160 people and one dog were dropped on Ireland's Eye, mostly by ferries operated by Ireland's Eye Ferries (2 boats: Christmas Eve and Pinalia) and Island Ferries (M.V Little Flower) (Table 5). Boats have been operating to Ireland's Eye before and after these times. The island was already well populated by people who had accessed the island using their own personal yachts, boats, jet skis, paddle boards or kayaks.

Table 5: Table showing the arrival times of boats as well as the number and activities of tourists on 5th June 2016.

Time and boat arrival	Number of people and their activity
11:40 Christmas Eve	<ul style="list-style-type: none"> Family of 5 (2 adults, 3 children) walked straight to Martello Tower – mobbed by Herring Gulls. Attempted to climb hill, turned back after persistent mobbing by Great Black-backed Gulls. Family of 4 (2 adults, 2 children) attempted to climb hill, turned back after persistent mobbing by Great Black-backed Gulls. 3 stayed on boat
11:50 Pinalia	<ul style="list-style-type: none"> Family of 6 (3 adults, 3 children). Great Black-backed Gulls instantly disturbed, family attempted to climb hill but turned back after persistent mobbing by Great Black-backed Gulls. Moved towards to Martello Tower but turned away after mobbing from Herring Gulls. Walked towards main beach. 6 Foreign students walked straight to Martello Tower. Briefly mobbed by Herring Gulls.
12:15 Christmas Eve	<ul style="list-style-type: none"> Family group of 7 (3 adults, 4 children) presumably on island from previous boat setup picnic in landing area in close proximity to nesting Great Black-backed Gulls. Family group of 7 (3 adults, 4 children) presumably on island from previous boat returned to landing area after climbing hill. Reported frequent mobbing but no serious incidents.
12:20 M.V Little Flower	<ul style="list-style-type: none"> 2 students attempted to climb hill, turned back after persistent mobbing by Great Black-backed Gulls. Walked towards main beach. 2 students climbed hill, zig-zagged their way to the top. Group of 5 adults walked straight to main beach. Family group of 4 (2 adults, 2 children) walked to tower. Herring Gulls disturbed but limited mobbing. Family group of 4 (2 adults, 2 children) walked to tower. Herring Gulls disturbed but limited mobbing. Attempted to climb hill, turned back after persistent mobbing by Great Black-backed Gulls.
12:45 Christmas Eve	<ul style="list-style-type: none"> Irish Wildlife Trust outing (24 people divided between 2 boats). Family group of 4 (2 adults, 2 children) climbed hill. Disturbance and mobbing occurred. 1 individual climbed hill. Disturbance and mobbing occurred.
12:50 Pinalia	<ul style="list-style-type: none"> Family group of 6 (3 adults, 3 children) walked straight to main beach 4 adults, 1 child walked straight to main beach.
12:55 M.V Little Flower	<ul style="list-style-type: none"> Family group of 4 (2 adults, 2 children) walked straight to Martello Tower. 3 adults attempted to climb hill, turned back after persistent mobbing by Great Black-backed Gulls and returned to landing area.
13:00	<ul style="list-style-type: none"> Private boat with 3 adults. Got off at landing area and setup picnic on landing area beach.
13:06 Christmas Eve	<ul style="list-style-type: none"> 9 adults and 1 child got off.
13:50 M.V Little Flower	<ul style="list-style-type: none"> 2 adults walked straight for main beach. 3 students 1 family of 5 (2 adults and 3 children) with one dog on lead. 3 adults. 3 adults and 1 child.
14:00 Pinalia	<ul style="list-style-type: none"> 1 family group (2 adults and 3 children). 4 students.

Table 6: The distribution of people on the island at roughly 15-minute time intervals on 5th June 2016.

Time	Number of people and their location
11:40	5 – Martello Tower 19 – Climbing hill 2 – Landing area 2 – Small beach
12:00	30 – Climbing hill 6 – Landing area
12:30	11 – Martello Tower 11 – Climbing hill 24 – Landing area 2 – Small beach 1 – Kayaker close to small beach
12:45	2 – Martello Tower 2 – Climbing hill 9 – Landing area 5 – Landing area beach 5 – Walking towards main beach
13:00	4 – Martello Tower 5 – Climbing hill 4 – Walking towards main beach 8 – Small beach
13:15	7 – Martello Tower 10 – Climbing hill 4 – Landing area 8 – Small beach 7 – On paddle boards moving towards small beach
13:30	4 – Martello Tower (picnicking) 4 – Climbing hill 4 – Landing area beach 6 – Landing area 7 – Small beach
13:45	5 – Martello Tower (picnicking) 1 – Climbing hill 7 – Small beach 15 – Landing area
14:00	4 – Martello Tower (picnicking) 3 – Climbing hill 3 – Landing area beach 21 – Landing area 7 – Small beach
14:15	5 – Martello Tower (picnicking) 3 – Climbing hill 12 – Landing area 3 – Landing area beach 15 – Small beach

Roughly every 15 minutes, between 11:40 and 14:15, the location of every person in view was recorded (Table 6). There were people in the process of climbing the hill and walking through the landing area for the entire duration of this survey. These areas have the highest densities of nesting Great Black-backed Gulls and disturbance of nesting birds and mobbing was constant during this time period. The rest of the island was surveyed (away from landing area, Table 7) later in the afternoon. Large numbers of people seemed to head straight for the main beach.

During the day, several notable observations of disturbance were recorded (Table 8). Great Black-backed Gulls closer to landing area appear to be more acclimatised to people than the rest of the colony but still aggressive and frequently disturbed off their nest.

Table 7: The distribution of people on the remaining areas of the island on 5th June 2016.

Area	14:20	15:00
Ireland's Eye 1 (Narrow Path)	16 people (3 tents)	15 people
Ireland's Eye 5 (Main Beach)	63 people, 2 jet skis, 6 yachts, 2 boats, 2 barbeques, 1 dog, 1 paddle board	83 people, 3 dogs
Ireland's Eye 5 (South Beach)	5 people, 2 kayakers	16 people, 2 kayakers
Ireland's Eye 2		20 people (ascending hill from opposite side)
Ireland's Eye 4 (interior)		10 people

Table 8: Notable instances of disturbance on 5th June 2016.

12:50	11 people after getting off 12:50 boat crowded around 2 Great Black-backed Gull nests, one with chicks and one with eggs. Proximity less than 1 metre. The group were taking pictures of chicks from an extremely close distance. (Photograph 2)
12:50	1 child moved eggs from one nest to another creating a 5-egg clutch (Great Black-backed nest). Eggs were returned to their original nest. (Photograph 4)
14:00	Small child chased around and attempted to pick up a young Great Black-backed Gull chick.
14:20	One dog off leash on main beach.
14:25	One Oystercatcher nest trampled on south beach.
14:30	Group of people standing unknowingly around Ringed Plover nest. 1 member of the group started throwing stones at a nesting Herring Gull.
14:45	One man attacked by Great Black-backed Gull while climbing hill, blood drawn through hat (near sea stack).
15:00	One man threw a stick at a nesting Herring Gull that was approximately 3 metres away from him.



Photograph 2: Disturbance to Great Black-backed Gull nesting near the landing area on 5th June 2016.



Photograph 3: Gulls further away from landing area depart nest quickly and appear to be more aggressive.



Photograph 4: A child moved eggs from one Great Black-backed Gull nest to another creating this 5-egg clutch.

Observations on 19th July 2016

At least 18 ferry trips were recoded from 10:55 hrs up to 17:10 hrs and given the exceptional weather on this day, it looked as though return pick-up trips would continue throughout the early evening. A total of 174 people were recorded on the ferries, and approximately 85% disembarked with 15% staying on board for a round-island 'cruise'.

Of those who disembarked, 67% headed straight for the main beach, 17% proceeded along the north cliffs to photograph birds or ascend the main hill and 16% visited other areas (e.g. Martello Tower) and this included a group of 4 botanists.

During the afternoon, at least 33 people were present on the main beach, 8 yachts were moored in the bay together with one RIB and a tender. Two kayaks were hauled up on the beach. A further group of 5 were on the small beach to the south of the Martello Tower. Only 3 people reached the north-eastern corner of the island where they could view the Gannets. Most North cliff hikers seemed happy enough with photographing the views from the main summit.

Discussion

Assessment of the SPA

Overall, the seabird populations of Ireland's Eye appear to be doing well. Most species for which the island was designated, with the exception of Kittiwakes, are at high levels (relative to other surveys undertaken over the past 20 years). However, breeding success of these species has only been assessed on the island once, in 2007. More intensive monitoring should be undertaken on this highly accessible and well visited island. Where possible, diets ought to be studied by direct observation (auks) or from regurgitates (Cormorant, Shag, *Larus* gulls and kittiwakes) to assess their relative dependence on fisheries waste and other human sources (rubbish, discarded take-aways) and whether this is linked to population trajectories and breeding success.

Disturbance survey overview

With the exception of the gulls (Great Black-backed and Herring) nesting in the northwest parts of the island, visitors probably have little direct impact on the other seabirds nesting on the island. Birds may be irregularly flushed from their nests and such brief absences can give neighbouring pairs the opportunity to steal eggs or small chicks. In the northwest corner of the island near the landing, breeding gulls are probably more habituated to visitor disturbance and probably rise from their nests less often or only walk off short distances thereby reducing the opportunity for predation. However, these tentative conclusions can only be fully validated by a more comprehensive study of marked gull nests, looking at all aspects of the breeding cycle, and in particular at breeding success (refer to recommendation below).

Establishing routes to mitigate visitor impacts

In addition to the gull colony described above, other sensitive nesting locations on the island include the Peregrine eyrie on the 'Tower' in the northeast corner of the island, the Cormorant colony on Thulla, and perhaps the Shags nesting under the boulders in the northeast. The Gannetry is inaccessible. The location of wader nests and territories probably vary slightly from year to year, and these also would be considered to be sensitive, and thus set-back distance buffers would need to be set on an annual basis. Otherwise, the terrestrial breeding birds are not especially vulnerable to visitor disturbance.

Appropriate siting of a north cliff walking route needs to be done considering, taking care not to increase impacts on the gulls with territories nearby. This route could be extended into a loop so that other seabirds on the east coast of the island, along with the Church ruin could be visited.

The central lowland area is probably the least sensitive area but holds little interest apart from the Church ruin. Also, the main beach is presently of little ornithological interest, but this has probably arisen due to the regular disturbance and displacement of nesting Oystercatchers and Ringed Plovers over many years. These pairs have presumably been 'forced' to nest elsewhere.

Management of visitor pressure on other accessible east coast islands

A number of other important colonies are located on the Irish East coast that are subject to considerable pressure from visitors:

- Lambay Island: Large, privately owned island with access restricted. Wildlife walking tours, about 3 hours in duration, have to be pre-booked and groups are guided along an agreed route to vantage points where species/features of interest can be seen e.g. Gannetry and

sites with good views of cliff-nesting species (Guillemot, Razorbill and Kittiwake). The route does take in the Nose (easternmost peninsula) and this is one part of the island with a high density of nesting gulls (3 large *Larus* species). Impacts have not been monitored, but counts have not changed significantly over the period in which these tours have operated.

- Dalkey Island: Relatively small publicly owned island, managed as an amenity park by Dun Laoghaire Rathdown County Council. The principal seabird interest on the accessible islands are terns and gulls, with the gulls the nesting closer to the main visitor features of interest (Martello Tower and gun battery). On this island, the landing area (harbour) and assembly point for the ferry are well separated from the densest gull nesting areas and this alleviates much of the visitor pressure on the birds. However, some pairs nesting closest to the historic buildings do get disturbed fairly frequently. Some of the Great Black-backed Gulls are as equally aggressive as those on Ireland's Eye. Further work on visitor impact and management of people around nesting seabirds needs to be addressed in the current Conservation Plan which is overseen by the Council.
- Great Saltee: Large privately owned island with open access policy and regular ferry crossings from Kilmore Quay. This island has very similar seabird interest to Ireland's Eye. The landing and assembly area is well away from most breeding seabirds and there is a lower density of nesting gulls. The most popular feature with photographers and wildlife watchers is the Gannetry in the southwest corner of the island and birds nesting on the upper parts of this can be heavily disturbed and occasionally nests may be interfered with. BirdWatch Ireland have been concerned about this for a long time but the landowners do not seem overly concerned and there has been no obvious pressure from NPWS to implement a management plan for the SPA.

Recommendations

Enhancing awareness

A number of initiatives could be implemented to enhance awareness about the importance of the island for biodiversity, and these include:

- Provision of information leaflets on nesting seabirds to visitors while they are on the ferry. The same leaflets could be left on the ferry and re-used.
- An information sign could be setup in the landing area with more detailed information and advice on how to avoid disturbing the breeding birds. Both ferry companies use the same landing area so most tourists would see it as they disembark. This may also be useful for people who get to the island by their own means although a similar sign may need to be erected on or close to the main beach.

Mitigating the impacts of visitors

- A 'no dogs' policy should be considered, although this could be allowable if dogs were kept on a leash while on the island if wardening was introduced (see below).
- A cleared pathway to the ruined building in the interior of the island should be made as the island becomes overgrown and the area is also free of nesting seabirds.
- A single pathway in general should be maintained so breeding birds can acclimatise. This should be done before breeding season begins.
- A simple string fence could be erected in certain locations to keep people away from the bulk of the nesting gulls along the north of the island (Section 1). This would allow the gulls to acclimatise to people. As it stands people diffuse randomly as they walk up the hill towards the sea stack instead of following one single route.
- The small beach to the south could be closed off as it has nesting Oystercatchers, Ringed Plover and Herring Gulls. An alternative path could be established (2) just above the beach.

- Some of the above points could be combined by the creation of a looped walk taking in the North Cliffs, Gannetry viewpoint near the stack, East cliffs as far as Rowan Rocks then cutting west to the church, beach and back to the landing area and Martello Tower. This route would need to be strimmed several times through the summer and would be marked using two parallel string fences. This would circumvent the need for marked path 2 on Figure 6.



Figure 6: Rough location of potential string fences.

Seasonal wardening

The presence of a warden, part-time or full-time, during the spring and summer months would be very helpful in delivering a conservation and visitor management plan for the island. The potential remit should include:

- Communication, especially towards enhancing awareness of the importance of the island for biodiversity through wildlife walking tours and with the help of leaflets
- Supervision of visitors to reduce congestion around landing area
- Maintenance of recommended pathways and walking routes
- Monitoring bird populations (seabirds and terrestrial) – numbers and productivity, and initiating a specific study of visitor impact on nesting gulls
- Possibly start an assessment of the distribution, density and impact of rats on breeding seabirds
- Assist with control programmes for invasive plant species
- Work towards preventing wildfires, checking discarded BBQs etc.

Monitoring impacts on gulls

- Study plots could be established in three or more areas of the island covering the range of levels of disturbance (e.g. highly disturbed (northwest corner), moderately disturbed (central north summit area) and least disturbed (south or southeast area)).
- Each plot would ideally comprise 10-30 marked (late April-early May, once nests built) nests, including both Great Black-backed Gulls and Herring Gulls in approximately equal numbers.
- These nests would be followed as closely as possible up to late July when young begin to fledge and the monitoring ought to include metal ringing (and maybe colour ringing) to keep track of which young are from which nests.
- Some plots may need to be fenced in some way to 'contain' young and limit their movements.

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