



# Flamborough and Filey Coast SPA Seabird Monitoring Programme

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## 2023 Report



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Front cover image: Gannet fledging at Staple Newk, 23 August 2023. © Jo Symon

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## **SUMMARY**

In 2023 the full programme of seabird monitoring was successfully completed by a full-time Seabird Research Assistant, seasonal Seabird Research residential volunteer and 28 additional members of the Bempton Cliffs reserve staff and volunteer team. In total, 52 productivity plots for six species were monitored, totaling 2,361 nests/sites, along with 21 population study plots for three species. A combined total of 1036 monitoring hours was recorded this year by the team.

Unsettled weather in late March prevented the early season Puffin census from taking place this year, but Gannets were soon underway with the first egg seen on 7 April. Strong winds and cool weather continued through April, but auks began to settle by the last week of the month. The first Guillemot egg was noted on 28 April and the first Razorbill egg on 1 May, and auk productivity monitoring began on 8 May. Kittiwake nest-building began in earnest from 27 April with the first egg noted on 10 May. Persistent northerlies kept temperatures low until mid-June, but the rest of the breeding season was warm and dry, with very few adverse weather events likely to impact seabird breeding success.

Despite the continuing impacts of Highly Pathogenic Avian Influenza (HPAI), 2023 was a relatively positive year for seabird productivity. Kittiwake productivity continued to rise to its highest level since 2010, while Gannet recovered from last year's all-time low but remained below average. Fulmar and Razorbill showed slight increases from the low levels of 2022, while Guillemot remained constant. Herring Gull productivity continued its long-term decline and crashed to its lowest ever level (Figure 1).

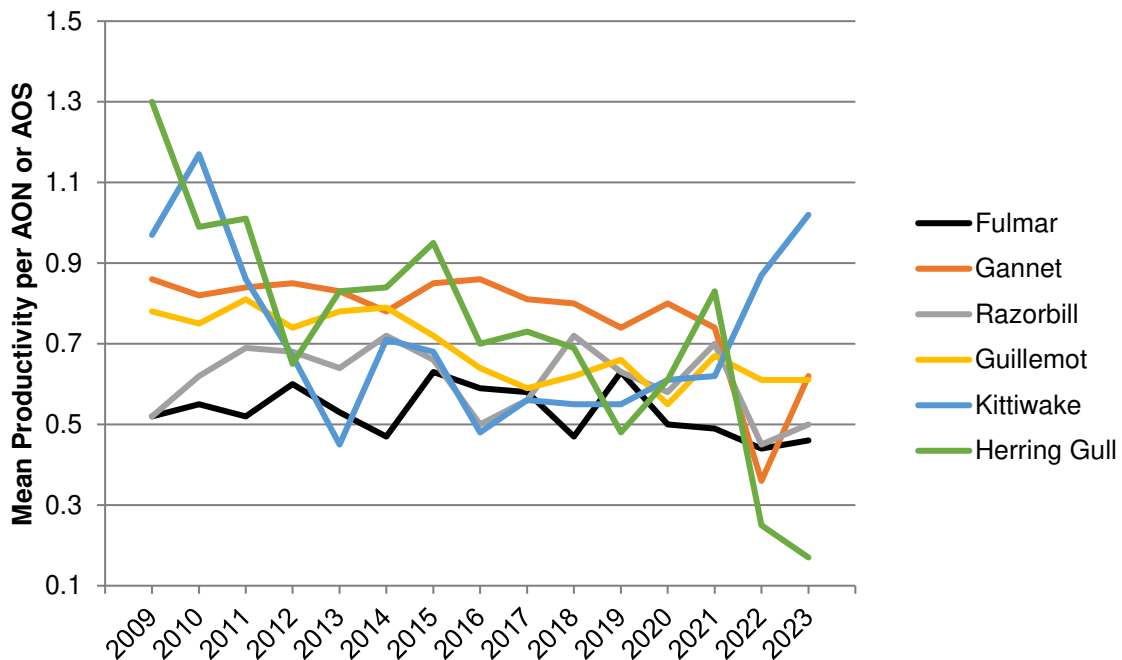


Figure 1: Summary of the productivity trends of the six seabird species monitored from 2009-2023.

*N.B.1: Kittiwake and Fulmar results include Filey in with the original Flamborough and Bempton Cliffs results from 2012 and 2017 respectively.*

*N.B.2: In 2020, productivity monitoring followed a reduced programme with a late start, a reduced number of monitoring plots and an altered method of analysis for some species.*

The results from the 2023 breeding season are as follows:

**Northern Fulmar:** Sixty-five chicks fledged from 145 Apparently Occupied Sites (AOS), resulting in a mean productivity of 0.46 chicks fledged per pair. This is a marginal increase on the productivity low point of 2022, but the general trend remains one of slight decrease.

**Northern Gannet:** An additional two plots were monitored this year, increasing the number of plots monitored to seven. Overall, Gannet productivity recovered this year to a mean of 0.62 fledged chicks per Apparently Occupied Nest (AON), after a very poor year in 2022. In total 238 chicks successfully fledged from a total of 383 AON monitored. This was nevertheless the second lowest productivity recorded since 2009, reflecting the likely ongoing impacts of HPAI on this species.

**Black-legged Kittiwake:** A total of 1041 AON were monitored in 20 plots across the SPA. From those nests, 1072 chicks successfully fledged, giving a mean productivity of 1.02 chicks per pair. This is the highest productivity recorded since 2010, despite apparent localized outbreaks of HPAI causing increased chick and adult mortality in some plots. The long-term trend is still one of decline, but the rapid increase in productivity since 2021 is encouraging.

**European Herring Gull:** Productivity reached a new low this year with just 17 chicks fledging from 92 AON, giving a mean productivity of 0.17 chicks fledged per pair. The long-term trend remains one of continued decline and is a cause for concern.

**Common Guillemot:** A total of 181 chicks fledged from 295 AOS across five plots. The mean productivity was 0.61 chicks per pair, identical to that recorded in 2022. The overall trend is still one of steady decline, although both Bempton plots continue to be affected by conflict with prospecting Gannets. It is therefore hard to know how much this result reflects the general trend across the whole colony.

**Razorbill:** Seven plots were monitored this year, with 208 chicks successfully fledging from a total of 405 AOS. The mean productivity of 0.50 chicks fledged per pair was a slight increase from last year's low productivity, although the long-term trend continues to be one of decline. Once again corvid predation had a significant effect on productivity at two Flamborough plots this year, and this may not be representative of the colony as a whole.

### **Early season Atlantic Puffin survey**

Strong winds in late March prevented a pre-breeding season count of Atlantic Puffin from taking place this year. The count made of approximately 3080 individuals in 2022 therefore remains the most recent reference for this species. ***It is important to stress that this survey is not designed to provide an accurate census of the breeding population of Atlantic Puffin at this colony, however, it provides an index where large scale year-to-year fluctuations can be monitored.***

### **Study-plot counts**

The Kittiwake, Guillemot and Razorbill study-plot counts were successfully completed in the first three weeks of June. This year's mean Kittiwake count of 1754 AON was a slight decrease

of 83 AON from 2022, which bucks the largely positive trend since 2018 and possibly reflects the ongoing effects of HPAI on this species. The mean Guillemot count of 1707 IND was the highest recorded since 2009 and continues the overall trend of steady growth since 2017. Razorbill also recorded their highest ever mean count of 1202 IND. This continues the trend of year-on-year growth since 2009.

### **Chick provisioning of Guillemot and Razorbill**

A study was once again undertaken this year into Guillemot and Razorbill chick diet at Bempton Cliffs and Flamborough Head. Observations of adult birds feeding chicks produced a total of 1,542 prey items between 5 June and 2 July. Of 842 identified prey items fed to Guillemot chicks 88.2% were clupeids, probably Sprat, 9.4% were sandeel spp., 1.8% Lesser Weever and 0.5% others. Of 613 prey items fed to Razorbill chicks 91.4% was sandeel spp. and 8.6% were clupeids. These results followed a similar pattern of dietary composition seen in previous years for both species, but also provided evidence that Lesser Weever are regularly selected by adult Guillemots as a food source for chicks.

### **Black-legged Kittiwake Retrapping Adults for Survival (RAS) project**

The 2023 field season marked the six consecutive year of the RAS colour ringing project. Weekly resighting efforts commenced at the start of April and concluded at the end of July, with a total of 73 individuals recorded. There was a notable reduction in the number of colour ringed birds present in the study site, potentially due of the impact of HPAI, and many of the previously occupied nest sites were taken up by new unringed birds. This year, an additional 19 individuals were added to the project in an attempt to replenish the sample size. These join 19 adults added in 2020, 60 adults added in 2019, and 51 adults added in 2018, bringing the total number of individuals to be colour ringed in this project to 149.

### **Gannet whole colony count**

In response to the worrying impacts of HPAI on the Gannet colony last year, a boat-based colony count of the full SPA was carried out on 16 June 2023. This recorded a total of 15,233 AOS, an increase of 2,243 AOS on the count made in June 2022. This increase was centred on the Buckton and Speeton sectors of the colony, with apparent declines at Staple Newk and Bartlett Nab. Two cliff-top based drone counts were also carried out at the end of May and in early August to enable comparison between the two count methods.

### **Recreational disturbance**

Data on recreational activities and wildlife disturbance events has been recorded around the Flamborough and Filey Coast SPA consistently since 2013, via the Yorkshire Marine Nature Partnership (YMNP). Overall, 19 seabird disturbance reports were received in 2023, of which all were considered to cause high to moderate disturbance. For comparison, in 2022, 29 disturbance records were collected with 19 observed to cause high to moderate seabird disturbance. This year, motorised boats accounted for the majority of records although a relatively high number of aircraft were also reported. Continued monitoring over the next few years will be crucial to understand these fluctuations further and explore whether a lower level of reporting equates to a lower level of disturbance.

## **INTRODUCTION**

### **Background**

Seabird population data has been collected within the Special Protection Area (SPA) since at least 1969. In 1969, all species but Shag and Puffin were counted as part of the 'Operation Seafarer' national seabird census. In 1987, all species were counted during the 'Seabird Colony Register' census. All species were counted in 2000 for the 'Seabird 2000' census, again in 2008, and in 2017 as part of the 'Seabirds Count' national seabird census. Whole colony counts of Gannet were also completed in 1970-77, 1985-94, 1996-99, 2002, 2004-05, 2008-09, 2012 and 2015. In addition, whole colony counts for Herring Gull were completed in 2010 and 2014 and for Shag in 2014.

Before the commencement of the Flamborough Head and Bempton Cliffs seabird monitoring programme in 2009, breeding success data for Flamborough/Bempton was collected for Gannet during 1973-79, 1986-94, 1996-98, and 2006. Kittiwake breeding success has been monitored continuously since 1986. Guillemot productivity was monitored during 1991-98 and 2005-06 and Razorbill productivity was monitored in 2005-06. Fulmar and Herring Gull breeding success were monitored for the first time in 2009 and is ongoing. Unfortunately, it is not possible to monitor breeding success for Puffin at this vertical cliff-nesting colony and only limited monitoring of Shag and Cormorant nests is possible depending on nest site selection.

At Filey, a whole colony count was carried out in 1986 (Williams 1996). In 2002 the 'Seabird 2000' census team identified a significant colony of cliff-nesting seabirds on the cliffs to the north of Filey Bay (Mitchell et al. 2004). The significance of this colony came to light in 2008 in response to large numbers of Guillemot and Razorbill being caught and killed in gillnets set by fishermen in Filey Bay. It was recognised that birds caught in the nets could have originated from either the Flamborough/Bempton or Filey colonies. Unfortunately, at that time there was little current data about the state of the colony at Filey.

### **The Flamborough and Filey Coast SPA Seabird Monitoring Programme**

Flamborough and Filey Coast SPA supports the largest mainland seabird colony in England, the only mainland gannetry in England and one of the largest mainland Kittiwake colonies in the UK. The landward boundary of the SPA generally follows the coast at Flamborough Head from South Landing in the south, to Speeton in the north, with an additional section from the forefront of Filey Brigg headland to Cunstone Nab. The seaward boundary extends approximately 2 km parallel to the coast from the landward boundaries before moving seawards and extends approximately 2 km into the marine environment (see maps in Appendix 1).

Flamborough Head is a highly protected site both for its wildlife and unique chalk habitats. The site is designated as a European Marine Site (EMS), a Special Area of Conservation (SAC), a Special Protection Area (SPA), a Site of Special Scientific Interest (SSSI) and a Heritage Coast site which includes three Local Nature Reserves (LNR), as well as RSPB Bempton Cliffs Nature Reserve and the Yorkshire Wildlife Trust Flamborough Cliffs Nature Reserve.

At the northern end of the SPA the Filey Brigg SSSI falls within the SPA and the Gristhorpe Bay and Red Cliff SSSI is just to the north of the SPA.

The Flamborough and Filey Coast SPA qualifies under Article 4.2 of the EU Birds Directive for the following reasons:

- It supports over 1% of the biogeographical population of four regularly occurring migratory species: Black-legged Kittiwake (*Rissa tridactyla*); Northern Gannet (*Morus bassanus*); Common Guillemot (*Uria aalge*); and Razorbill (*Alca torda*).
- It supports a breeding seabird assemblage of European importance; during the breeding season the area regularly supports up to 300,000 breeding seabirds.

Due to the importance of the seabird colony and level of site protection, Natural England and the RSPB proposed in 2008 a project to enable a baseline count, population monitoring and further research to collect data on the health of the colony and the Flamborough Head and Bempton Cliffs SPA and underpinning SSSIs. This proposal led to the establishment of the Flamborough Head and Bempton Cliffs seabird monitoring programme, which began with the 2009 seabird breeding season.

In 2009 there was also evidence to suggest that the cliffs 5 km northwest of Bempton supported a sizeable colony that might also meet the EU Birds Directive criteria. A boat-based whole colony count of the breeding seabird assemblage nesting on the cliffs between Filey Brigg and Cayton Bay was carried out by the RSPB. The results suggested that the total number of breeding seabirds in this colony exceeded 20,000 birds, and therefore this site also met SPA qualifying criteria. In response to this evidence the RSPB, with funding support from Natural England, completed five consecutive years of colony count data to verify these findings. This data supported the proposed extension of the existing Flamborough Head and Bempton Cliffs SPA to include Filey Cliffs to create the Flamborough and Filey Coast SPA, which was formally designated in November 2018.

The data collected by the now enlarged Flamborough and Filey Coast seabird monitoring programme will inform the condition and management of the Flamborough and Filey Coast SPA and underpinning SSSIs. In addition, the results will also inform current and new planning enquiries and environmental assessments e.g., the Hornsea and proposed Dogger Bank offshore wind arrays that could have a detrimental impact on the features of the designated site. It is also hoped that seabird tracking data collected from the colony will inform potential new offshore MPAs.

Data collected will also be used to inform the Seabird Monitoring Programme (SMP) coordinated by the British Trust for Ornithology (BTO), the RSPB Annual Reserves Monitoring programme, the RSPB Bempton Cliffs reserve management plan and the Yorkshire Wildlife Trust's reserve management.



The key aims of the seabird monitoring programme, and how they are currently implemented, are as follows:

- **Understanding variation and trends in seabird productivity**  
Northern Fulmar, Northern Gannet, Black-legged Kittiwake, European Herring Gull, Common Guillemot and Razorbill plots have been monitored for breeding productivity annually since 2009.
- **Understanding population numbers and trends**  
Black-legged Kittiwake, Common Guillemot and Razorbill study-plot counts have been carried out annually since 2009. A whole colony census was carried out in 2008 and repeated in 2017 and 2022. It is intended that a whole colony count be completed every five years within the reserve's management plan cycle.
- **Understanding the relationship between the colony and the larger marine environment**  
As the relevant technologies improve, we hope to better understand foraging behaviours of birds breeding in the colony and to identify preferred foraging areas and trends in provisioning such as determining key feeding areas for key species, and the factors that influence their location. This includes ongoing seabird tracking, currently focused on Black-legged Kittiwake, and monitoring of Common Guillemot and Razorbill diet composition. In the future this could extend to range finders, remote tracking, and increased use of fish population modeling data and benthic mapping.
- **Understanding how RSPB Bempton Cliffs relates to wider SPA and potential impacts on disturbance by developing research proposals to address the following management issues**  
What are the types of human activities that could disturb the colony and what are their effects? Currently recreational disturbance is monitored and recorded by Bempton Cliffs and others on an ad-hoc basis. For those activities that are of particular concern, we hope to develop specific research proposals which assess level of impact.

The annual programme of monitoring is coordinated by the RSPB Bempton Cliffs seabird team led by the reserve Warden, a Seabird Research Assistant and a team of dedicated volunteer seabird researchers including members of Flamborough Bird Observatory (FBO) and Filey Bird Observatory & Group (FBOG).

The results of the 2023 Flamborough and Filey Coast SPA Seabird Monitoring Programme are detailed in this report. Access to the monitoring data is available to researchers and conservation organisations by agreement with RSPB.

## **PRODUCTIVITY MONITORING**

Detailed productivity monitoring was completed for the fifteenth consecutive year for six of the nine breeding seabird species found in the colony: Fulmar, Gannet, Kittiwake, Herring Gull, Guillemot and Razorbill. In addition, two Shag nests at Flamborough Head were monitored this year. Unfortunately, it is not possible to monitor Puffin productivity at this vertical cliff-nesting colony. The Cormorant colony at Filey was not monitored this year as the existing viewpoint has become unstable and is considered unsafe to continue using.

The Flamborough and Filey Coast SPA seabird monitoring programme follows the methods and guidelines set out in the '*Seabird monitoring handbook for Britain and Ireland*' (Walsh et al. 1995), "the Handbook" hereafter, which summarises census and productivity monitoring techniques for seabirds at colonies in Britain and Ireland. All productivity monitoring is based on marking Apparently Occupied Sites (AOS) or Apparently Occupied Nests (AON) on a laminated photograph of the relevant plot. Please refer to the Handbook for more details on methodologies for each species and survey undertaken.

The productivity monitoring plots were identified when the Flamborough Head and Bempton Cliffs seabird monitoring programme was established in 2009. Plots were selected with a view to providing, where possible, a sample size in the region of 50 AOS or AON per plot and a minimum sample of 250 AOS/AON for each species, while providing safe vantage points for the observer with little or no disturbance to breeding seabirds. In 2011, five additional monitoring plots for Kittiwake were established at Filey Cliffs in conjunction with the census work there which led to the extension of the Flamborough Head and Bempton Cliffs SPA to include Filey Cliffs; in 2014 one of the original plots was dropped as it was too difficult to observe and an additional monitoring plot added on Filey Brigg. In 2017, two additional Fulmar plots were added at Cunstone Nab at the north end of Filey Cliffs in an effort to extend the monitoring of other species to Filey. A further Fulmar plot was added from Thornwick in 2021, as it provided a reasonable number of AOS that were easily monitored. In 2023, two additional productivity plots for Gannet were added at Bartlett Nab and Grandstand viewpoints at Bempton Cliffs. This was a response to the worrying impact of HPAI on Gannet productivity in 2022 and increases sample size across a wider area of the colony. Indicative maps of the productivity plot locations are included in Appendix 2.

As recommended by the Handbook, we present productivity calculated as the mean of the individual plot results for each species as well as presenting species productivity data by aggregating the results of each plot (total chicks fledged / total nests (or sites) monitored).

### **Northern Fulmar *Fulmarus glacialis***

All eight productivity plots were monitored this year. Plots were photographed in early May and AOS marked on laminated photographs over three visits over the late May/early June period. A final visit was made in early-mid August (with the option of a second visit if any chicks had not yet reached large size) and large chicks present at that time are assumed to have fledged. The Cunstone Nab plots were again photographed at a larger scale this season to aid accurate recording of AOS on parts of these distant plots.

The mean productivity for Fulmar was 0.46 (SE ± 0.0471) chicks per AOS. A total of 145 AOS were monitored across all eight plots, from which 65 chicks successfully fledged (Table 1, Figure 2). This is the second lowest productivity recorded to date but does at least represent a slight reversal of the downward trend since 2019.

Table 1: Fulmar productivity 2023.  
 NB Plots added in 2017 are marked \* and in 2021 marked \*\*

Plot	AOS	Chicks fledged	Productivity ch/pr
New Roll-up	4	1	0.25
Old Dor	17	7	0.41
Newcombe	6	4	0.67
Breil Nook	10	6	0.60
Swineshaw Hole	13	5	0.38
Thornwick **	15	7	0.47
Cunstone Nab A *	42	21	0.50
Cunstone Nab B *	38	14	0.37
<b>Total</b>	<b>145</b>	<b>65</b>	
<b>Mean of plot results ± SE</b>			<b>0.46 ± 0.0471 SE</b>
<b>Aggregate productivity</b>			<b>0.45</b>
<b>Original plots aggregate</b>	<b>50</b>	<b>23</b>	<b>0.46</b>
<b>Mean of original plots</b>			<b>0.46 ± 0.0756</b>

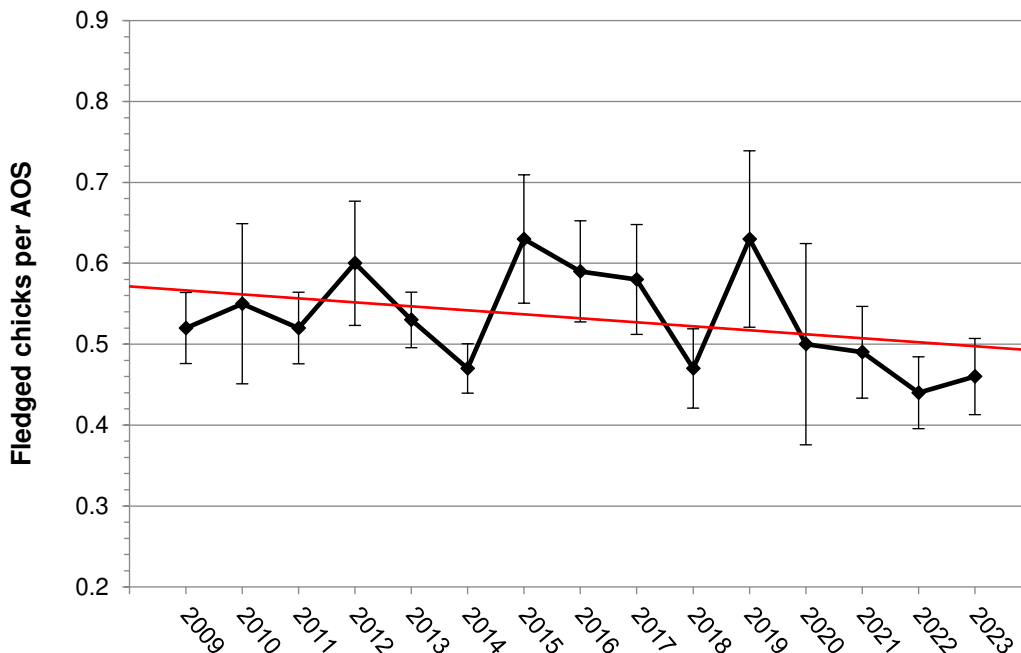


Figure 2: Northern Fulmar productivity 2009-2023, mean of plot productivity results plus/minus SE.  
 N.B.: The mean productivity from 2017 onwards includes plots from Filey, and an additional plot at Flamborough Head added in 2021.

There was very little difference between the mean and aggregate values (0.46 and 0.45 respectively), with a low standard error. Individual plot results ranged from 0.25 to 0.67 chicks fledged per pair. As with last year, the Flamborough Head plots were the most productive plots this year (mean 0.53 ch/pr), but a relatively good year at the two Filey Plots (Cunstone Nab A and B) was the main driver behind the slight overall increase in productivity from 2022.

### Northern Gannet *Morus bassanus*

In response to the impacts of HPAI in 2022, two additional productivity plots were monitored this year at Bartlett Nab and Grandstand. Plots were photographed in mid-April and up to 60 AON were marked on laminated photographs. The plots were then visited every 7-10 days until all chicks fledged in October. Average visit time early in the season was 2 to 2.5 hours per plot but reduced dramatically once chicks got larger and were more visible. Presence of an egg or chick is then recorded (if seen) each visit.

The mean productivity for Gannet was 0.62 (SE  $\pm$  0.0303) chicks per AON. A total of 383 AON were monitored across the seven plots, from which 238 chicks successfully fledged (Table 2, Figure 3).

Table 2: Gannet productivity 2023.  
NB Plots added in 2023 are marked \*

Plot	AON	Chicks fledged	Productivity ch/pr
Jubilee Corner	54	34	0.63
Nettletrip	60	34	0.57
Bartlett Nab *	56	30	0.54
Grandstand *	55	34	0.62
Staple Newk 1	47	26	0.55
Staple Newk 2	56	38	0.68
Staple Newk 3	55	42	0.76
<b>Total</b>	<b>383</b>	<b>238</b>	
<b>Mean of plot results <math>\pm</math> SE</b>			<b>0.62 <math>\pm</math> 0.0303</b>
<b>Aggregate productivity</b>			<b>0.62</b>
<b>Mean of original plots <math>\pm</math> SE</b>			<b>0.62 <math>\pm</math> 0.0386</b>
<b>Original plots aggregate</b>			<b>0.64</b>

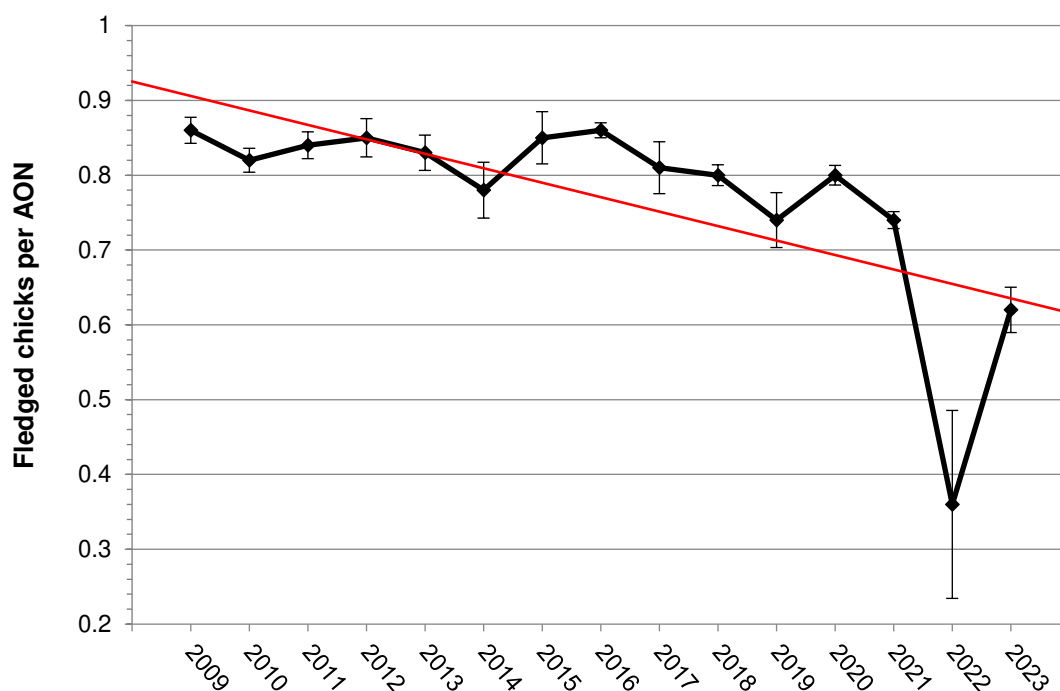


Figure 3: Northern Gannet productivity 2009-2023, mean of plot results plus/minus SE.

*N.B.: The mean productivity from 2023 onwards includes two new plots added in 2023 at Bartlett Nab and Grandstand.*

This year saw a welcome recovery in Gannet productivity after the severe impacts of HPAI on certain parts of the colony in 2022. Despite this encouraging result, the overall mean of 0.62 chicks per AON is still the second lowest value recorded since 2009, suggesting that HPAI is likely to have had an ongoing effect on productivity this year.

Mean productivity was 0.62 chicks per pair for both the five original plots and the combined seven plots (with a slight variation in SE), suggesting that the addition of the two new plots had not significantly skewed this result.

At an individual plot level, there were some marked changes in productivity compared with 2022. The three more horizontal Staple Newk plots which had the lowest productivity in 2022 recovered strongly, with Staple Plots 2 and 3 recording the highest productivity values this year at 0.68 and 0.76 chicks per pair respectively. In contrast, the plots on the vertical cliffs at Jubilee and Nettletrip, which seemed to be less affected last year, showed a slight decline again this year and both recorded their lowest productivity values since 2009. It was felt anecdotally that lower productivity on these plots was driven by an increase in mortality of older chicks, but analysis of historical data to establish a pre-HPAI baseline for chick mortality would be needed to explore this further.

See p.36 for a more detailed discussion of potential HPAI impacts on Gannet in 2023.

### **European Shag** *Phalacrocorax aristotelis*

Two Shag nests were visible and monitored within the regular area at Breil Nook this year. Both nests successfully fledged two chicks each, giving a productivity of 2.0 chicks per AON from this very small sample.

### **Great Cormorant** *Phalacrocorax carbo*

The plot established at Filey Cliffs in 2021 was not monitored this year, as the established viewpoint (also used to monitor Filey Kittiwake plot 7) was found to be unstable and no longer safe to use. Further assessment is required to establish if an alternative safe viewpoint can be found for this plot before next season.

### **Black-legged Kittiwake** *Rissa tridactyla*

Twenty productivity plots were monitored across the SPA between May and August: 18 plots between Flamborough and Bempton and two plots at Filey. Following the successful redesignation of the SPA in 2018, the Filey plots have been included in the productivity calculations with Flamborough and Bempton from 2012 onwards.

At Filey, Plot 7 was not monitored this year as the established viewpoint had become unstable and no longer safe to use. An alternative viewpoint will be sought, but this may not be possible along this section of constantly slipping cliff. At Newcombe, a pair of Carrion crows nesting within the plot caused almost complete abandonment of the colony. Monitoring began but was subsequently stopped when birds abandoned with no nests consistently occupied. No eggs or chicks were recorded either during formal monitoring or during informal checks afterwards, and so this plot has been excluded from this year's overall results.

Plots were photographed in early to mid-May and up to 72 AON were marked on laminated photographs. Plots were then visited every week, ideally on the same day so visits are seven days apart. Presence and number of eggs or chicks at each AON were recorded (if seen) each visit. Volunteers were asked to record chick size using standard codes, but not all do. Average visit times varied according to the volunteer, but 1 to 1.5 hours per visit was typical.

The mean productivity for Kittiwake across the SPA was 1.02 (SE  $\pm$  0.0331) chicks per AON. A total of 1041 AON were monitored across 20 plots, from which 1072 chicks successfully fledged (Table 3, Figure 4).

Building on last year's success, Kittiwake again had a very good season with the second highest mean productivity since 2009. Plots at Bempton and Flamborough showed similar productivity of 1.02 and 1.06 chicks per pair respectively, the highest recorded at both sites since 2010. Filey was slightly lower at 0.89 chicks per pair, but this was still the highest value since monitoring began there in 2012. Although the overall trend for Kittiwake productivity since 2009 remains one of steady decline, the stabilization since 2016 and the rapid increase of the past two seasons is encouraging. It seems likely that increased food availability is a key driver of this trend, and may be linked to the reduced sandeel catch within the North Sea since the ban on fishing by UK vessels began in 2021.

These positive results are despite the apparent impacts of HPAI, which seemed to peak in many plots in mid-July. The impact appeared to be highly localized, with clusters of nests within plots showing higher than expected mortality of large chicks in nests. The most obviously affected plots were Grandstand North Near with 12 dead large chicks in nests and Saddle from Breil with 10 dead large chicks. However, even here healthy productivity away from these clusters meant that these plots still recorded relatively high overall productivity values. Increased mortality of adults was also evident at some sites such as Grandstand, where dying adults congregated at fresh water sources at the top of the cliffs.

See p.36 for a more detailed discussion of potential HPAI impacts on Kittiwake in 2023.

Table 3: Kittiwake productivity 2023.

\*Monitoring at Newcombe discontinued this year due to Carrion crow predation and disturbance.

\*\*Plot 7 not monitored this year as viewpoint unstable and no longer safe to use.

Plot	AON	Chicks fledged	Productivity ch/pr
Jubilee Far	51	50	0.98
Bartlett Nab Near	51	52	1.02
Bartlett Nab Far	50	44	0.88
Grandstand North Near	50	38	0.76
Grandstand North Near Edge	45	41	0.91
Grandstand North Mid	50	67	1.34
Grandstand North Low	50	56	1.12
Old Dor	50	57	1.14
Newcombe*	-	-	-
Back of Newcombe	47	42	0.89
Carter Lane 1	53	51	0.96
Carter Lane 2	50	52	1.04
Saddle Nook 1	58	63	1.09
Saddle Nook 2	50	54	1.08
Saddle from Breil	50	46	0.92
Breil Nook North	54	55	1.02
Breil Nook South	50	57	1.14
Back of Breil Nook	72	79	1.10
Lighthouse	60	79	1.32
Filey plot 1	50	48	0.96
Filey plot 7 **	-	-	-
Filey plot 8	50	41	0.82
<b>Total</b>	<b>1041</b>	<b>1072</b>	
<b>Mean of plot results ± SE</b>			<b>1.02 ± 0.0331</b>
<b>Aggregate productivity</b>			<b>1.03</b>

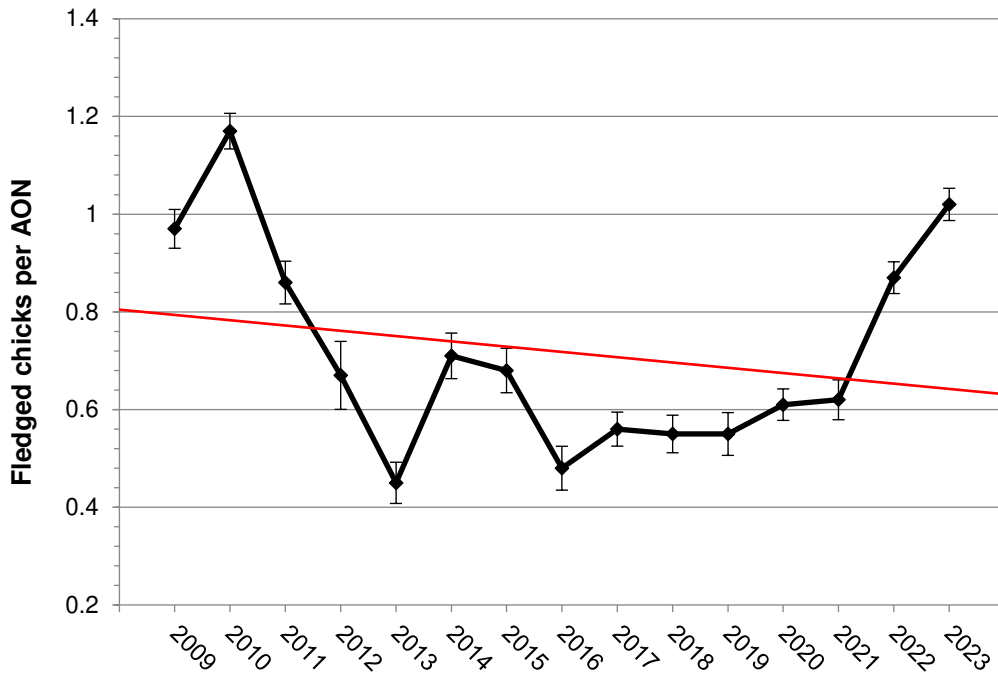


Figure 4: Black-legged Kittiwake productivity 2009-2023. Mean of plot results, plus/minus SE. *N.B.: Data between 2009-2011 are the mean of plots results for Flamborough and Bempton, from 2012 onwards the data include Filey.*

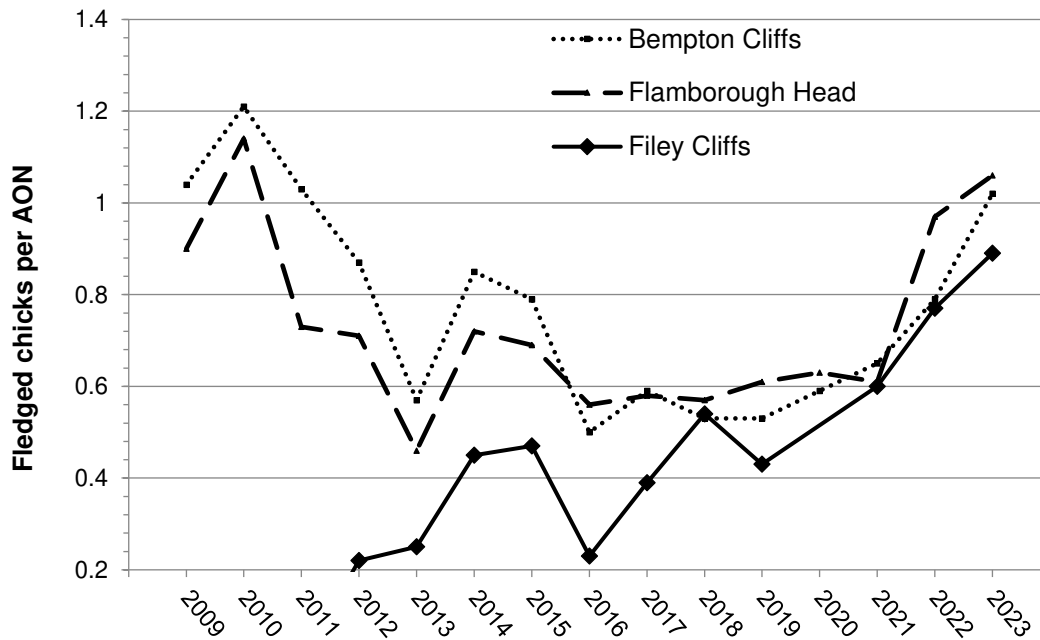


Figure 5: Black-legged Kittiwake productivity 2009-2023 comparing plots between Bempton Cliffs (dotted line), Flamborough Head (dashed line) and Filey Cliffs (solid line). Results for each year is the mean of the relevant plot results.



**European Herring Gull *Larus argentatus***

Five Herring Gull productivity plots were monitored between May and August. Two of the plots are linear and include all safely observable nests found on a defined stretch of cliff. One linear plot is at Bempton Cliffs and one is at Flamborough Head. Plots were photographed in late-May and AON marked on laminated photographs over two visits. Additional AON were added over the course of the season. Plots were then visited once a week, ideally on the same day so visits were seven days apart. Presence and number of eggs or chicks for each AON is recorded (if seen) each visit. Chicks were aged using standard codes to assess fledged or failed birds more precisely.

The mean productivity for Herring Gull was 0.17 (SE ± 0.0614) chicks per AON. A total of 92 AON were monitored across 5 plots, from which just 17 chicks fledged successfully (Table 4, Figure 6).

Table 4: Herring Gull productivity 2023.

Plot	AON	Chicks fledged	Productivity ch/pr
Jubilee to Old Dor	22	2	0.09
Newcombe North	6	0	0.00
The Saddle Rock	26	8	0.31
Breil Nook Stack	13	4	0.31
Newcombe to Breil	25	3	0.12
<b>Total</b>	<b>92</b>	<b>17</b>	
<b>Mean of plot results ± SE</b>			<b>0.17 ± 0.0614</b>
<b>Aggregate productivity</b>			<b>0.18</b>

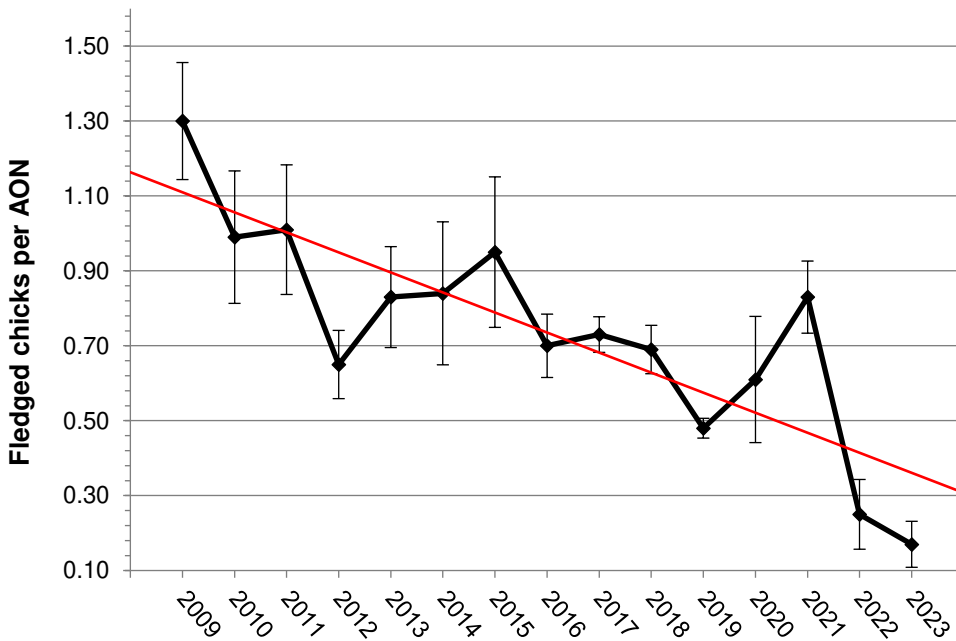


Figure 6: European Herring Gull productivity 2009-2023, mean of plot results plus/minus SE.

Following a poor year in 2022, Herring Gull productivity declined further this year to record a new lowest ever value this season. This continues the ongoing declining trend (Figure 6) since monitoring began, and a reversal of the apparent recovery between 2019 and 2021. Newcombe North colony was once again a complete failure with no chicks fledging at all from six AON, and productivity was particularly low for a second consecutive year on the linear plot at Bempton Cliffs.

A total of 92 AON across all monitoring plots reflected an average number of nests monitored (Figure 7).

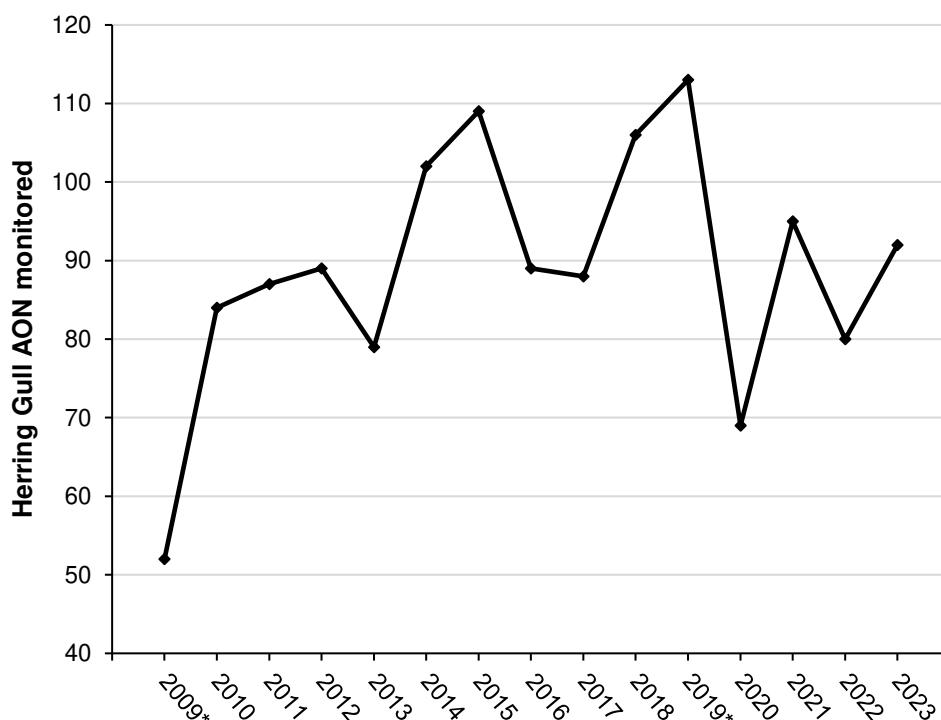


Figure 7: Number of European Herring Gull AON monitored 2009-2023.  
 N.B.: In 2009, only three plots were monitored and in 2019, six plots were monitored.

### Common Guillemot *Uria aalge*

Five productivity plots were monitored between early May and the end of July. Plots were photographed in early May and up to 65 AOS were marked on laminated photographs over two visits. Plots were then visited every third day. Additional sites may have been added over the course of the season, especially if it was hard to get 50 AOS. Presence of an egg or chick was recorded (if seen) each visit. Average visit time early in the season was 2 to 2.5 hours but reduced once chicks got larger and were more visible.

The mean productivity for Guillemot was 0.61 (SE  $\pm$  0.0472) chicks per AOS. A total of 295 AOS were monitored across five plots, from which 181 chicks successfully fledged (Table 5, Figure 8). Overall Guillemot productivity was identical in 2023 to that recorded in 2022 (Figure 8), and the long-term trend continues to be one of steady decline.

Table 5: Guillemot productivity 2023

Plot	AOS	Chicks fledged	Productivity ch/pr
Nettletrip	50	26	0.52
Grandstand North	64	34	0.53
Carter Lane 1	58	43	0.74
Carter Lane 2	58	32	0.55
Breil Nook	65	46	0.71
<b>Total</b>	<b>295</b>	<b>181</b>	
<b>Mean of plot results ± SE</b>			<b>0.61 ± 0.0472</b>
<b>Aggregate productivity</b>			<b>0.61</b>

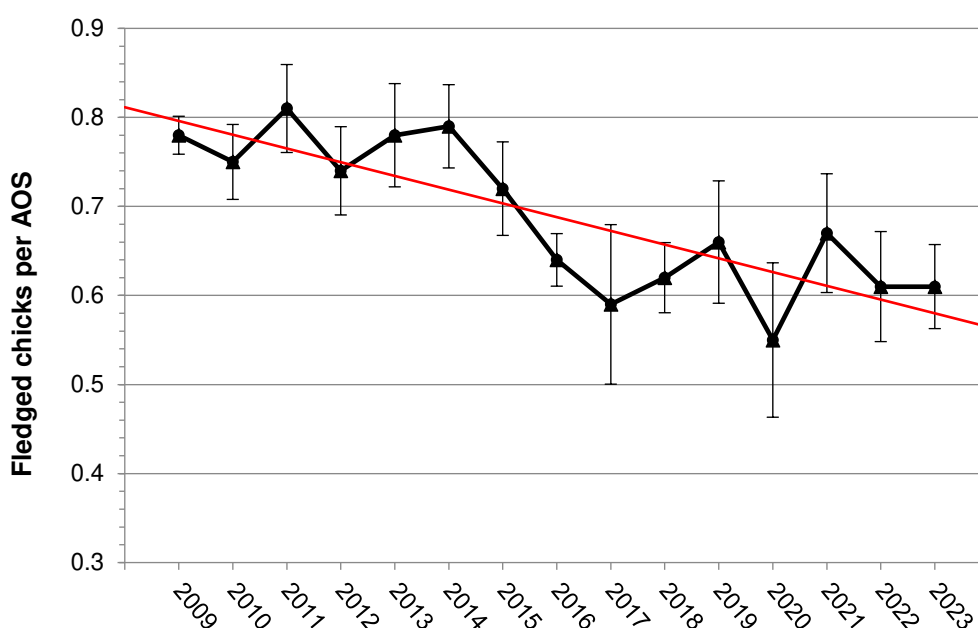


Figure 8: Common Guillemot productivity 2009-2023, mean of plot results plus/minus SE.

There were 116 failures recorded across the five plots, equal to the number recorded in 2022. However, there was a noticeable increase in failures at chick stage at both sites, which rose from 29% of all failures last year to 43% this year. As in previous years, the two sites differed in the composition of the causes of nest failures. At Flamborough, failure at chick stage (54% of all failures) was again the top cause, while at Bempton failure at egg stage was equal with pairs which failed to produce either an egg or chick (both 40% of all failures).

The longstanding difference in productivity between the Bempton and Flamborough plots remained this year, although narrowing slightly (Figure 9). On both reserve plots, conflict with Gannets moving into new nest locations was observed regularly. Although direct losses were not witnessed this year, it seems likely that this continues to be a significant cause of losses of Guillemot eggs on these plots. This is supported by the high proportion of failures at egg stage and also increased proportion of pairs failing to produce an egg as a result of continuous displacement. As a result, the Bempton values may not reflect what is happening across the wider colony.

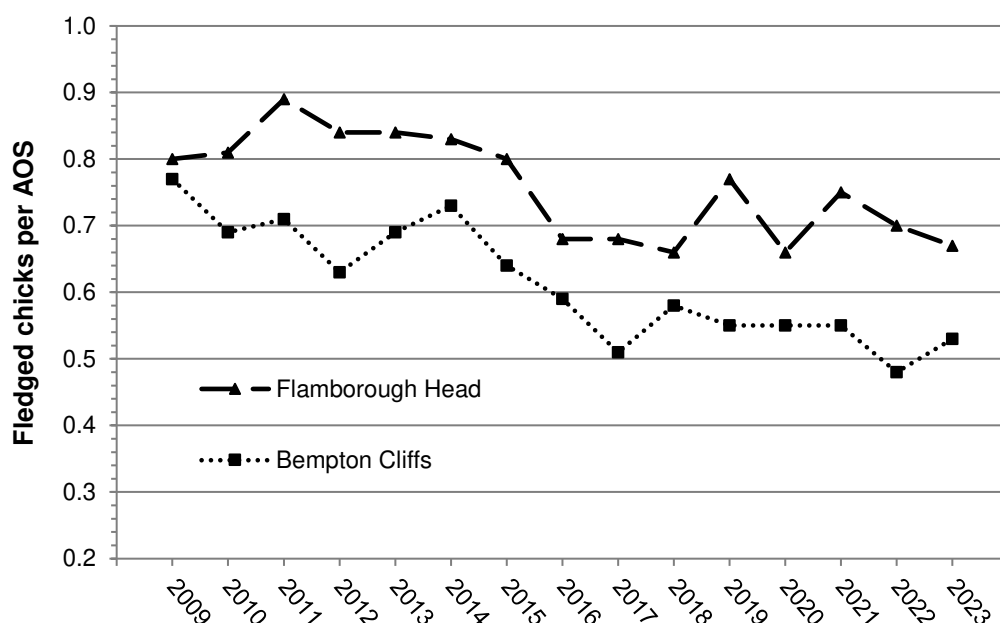


Figure 9: Comparing Common Guillemot productivity plots against Flamborough Head (dashed line) and Bempton Cliffs (dotted line) between 2009-2023. Results for each year are the mean of the relevant plot results.

### Razorbill *Alca torda*

Seven productivity plots were monitored between early May and the end of July. Plots were photographed in early May and up to 75 AOS were marked on laminated photographs over two visits. Plots were then visited every third day. Additional sites could be added over the course of the season, especially if it was hard to get 50 AOS. Presence of an egg or chick was recorded (if seen) each visit. Average visit time early in the season was 2 to 2.5 hours but reduced once chicks got larger and were more visible.

The mean productivity for Razorbill was 0.50 (SE  $\pm$  0.0648) chicks per AOS. A total of 405 AOS were monitored across five plots, from which 208 chicks successfully fledged (Table 6, Figure 10).

Table 6: Razorbill productivity 2023.

Plot	AOS	Chicks fledged	Productivity ch/pr
Grandstand Gully	31	12	0.39
Grandstand North	55	40	0.73
Grandstand South	48	18	0.38
Newcombe	59	20	0.34
Saddle Nook	69	42	0.61
Breil Nook	68	48	0.71
Swineshaw Hole	75	28	0.37
<b>Total</b>	<b>405</b>	<b>208</b>	
<b>Mean of plot results <math>\pm</math> SE</b>			<b>0.50 <math>\pm</math> 0.0648</b>
<b>Aggregate productivity</b>			<b>0.51</b>

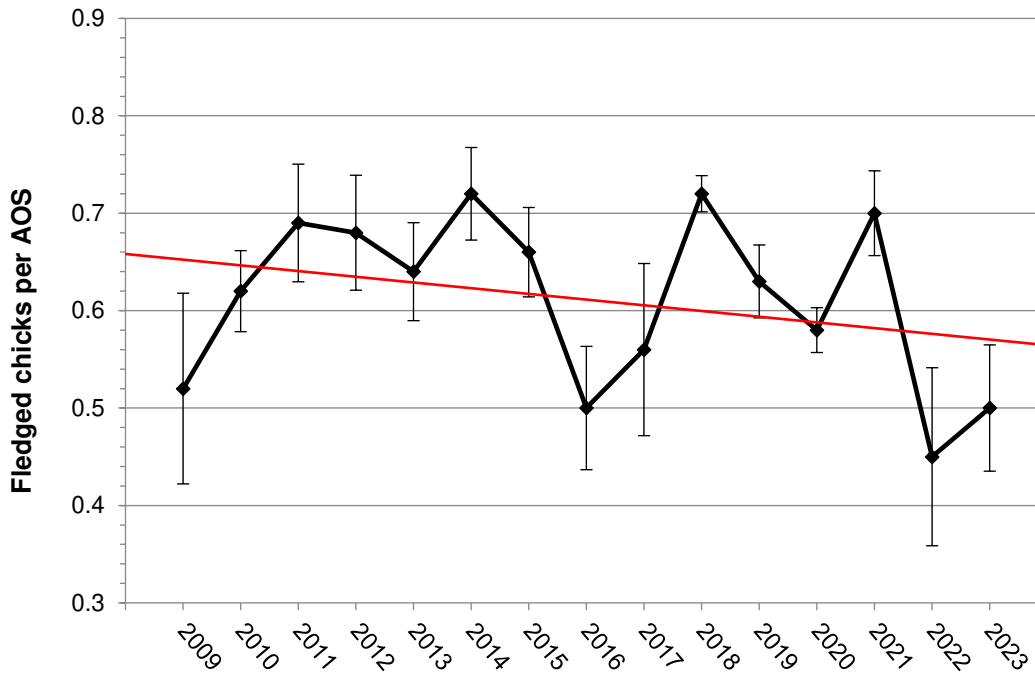


Figure 10: Razorbill productivity 2009-2023, mean of plot results plus/minus SE.

After a sharp decline in 2022, Razorbill productivity recovered slightly in 2023. However the mean productivity was still the second lowest value recorded since 2009, and so the overall trend remains one of slight decline.

The mean productivity at the two sites was almost identical this year, with Bempton increasing to 0.50 and Flamborough showing a significant dip to 0.51 chicks/AOS (Figure 11). At Bempton, the increase in mean productivity was the result of a good year on Grandstand North (0.73 chicks/AOS), which outweighed a poor year on Grandstand South (0.38).

The decline at Flamborough was driven by very low productivity in the Newcombe (0.34 chicks/AOS) and Swineshaw (0.37) plots, both of which were heavily affected by Carrion crow predation. At Newcombe, a Carrion crow pair successfully fledged chicks from a nest inside the adjacent Kittiwake plot. This pair was seen preying on Razorbill eggs on four occasions, including forcibly dragging the birds off their eggs. At Swineshaw a Carrion crow pair nested within the plot itself, fledging three chicks, and was constantly seen harassing Razorbill pairs and on one occasion preying on an egg. Fulmars were also noted displacing Razorbills on eggs at two sites at Swineshaw and one site at Saddle Nook.

There were 182 failures recorded this year, an increase from the 120 noted in 2021 - but this also reflects the fact that an additional two Razorbill plots were monitored this year. The high levels of Corvid predation noted above were reflected in the fact that 71% of total failures were at egg stage this year, compared with 50% in 2022. Nest failures at an individual site level reflected this overall trend, with 77% of nest failures at egg stage at Bempton, and 69% at Flamborough.

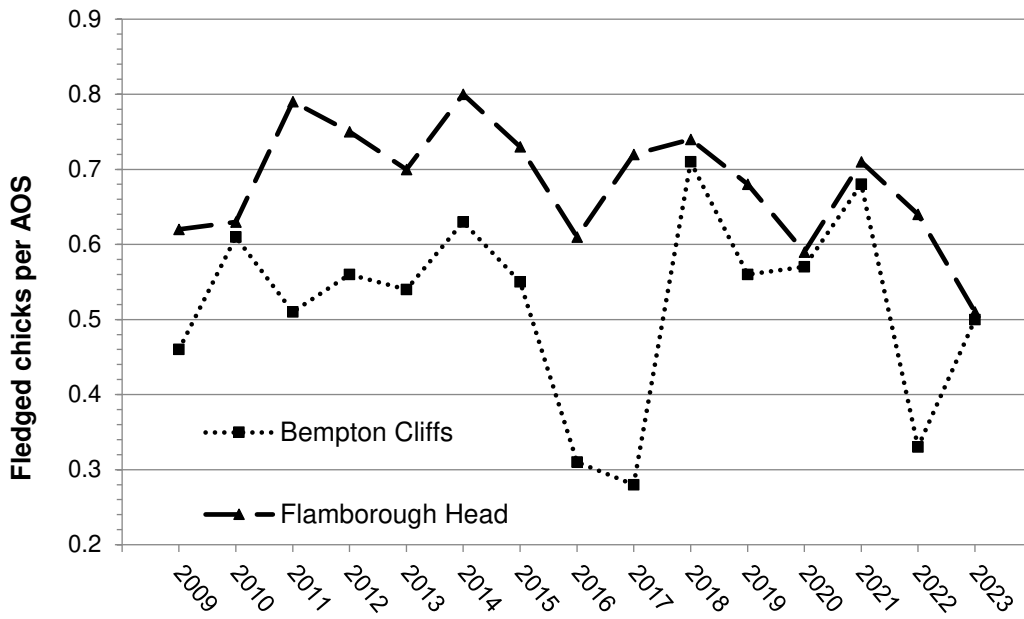


Figure 11: Comparing Razorbill productivity plots against Bempton Cliffs (dotted line) and Flamborough Head (dashed line) between 2009-2023. Results for each year is the mean of the relevant plot results.

## **EARLY SEASON ATLANTIC PUFFIN SURVEY**

### **Background**

A pre-season Atlantic Puffin survey has been carried out or attempted for the last eight years, in an effort to study broad scale population trends across the Flamborough and Filey Coast SPA. The methodology for this survey is based on advice from Professor Mike Harris, who recommended that we count adults staging on the sea when large numbers of birds return to the colony en masse at the very start of the season (M Harris pers. Comm., 2016). This cannot be considered an accurate census of the breeding population; however, it is useful to observe large scale year-on-year changes.

### **Results**

Unfortunately, the pre-breeding count of rafting Atlantic Puffin was unable to be completed in 2023. Daily checks were made from the RSPB viewing platforms throughout March and on Saturday 25th, a late afternoon arrival of 500+ birds were noted. The count team were organised for the following day, however, strong north-easterly F5 winds on the morning of Sunday 26th prevented the count from taking place. There continued to be no notable rafting events after this date. As a result, the count made of approximately 3080 individuals in 2022 therefore remains the most recent reference for this species (Table 7).

Table 7: Results of the early season Atlantic Puffin survey 2016-2022.

*N.B.: \*Estimated that several hundred birds were on the cliffs along the length of the colony; these were not included in the survey.*

	Flamborough Head to Thornwick	Thornwick to Speeton	Filey	SPA Total (not incl Filey)	SPA Total
2016	805	1462	n/a	2267	n/a
2017	712	1924	243	2636	2879*
2018	493	3612	174	4105	4279
2022	581	2405	94	2986	3080

## **STUDY-PLOT COUNTS**

The size and nature of the Flamborough and Filey Coast SPA colony means that it is not practicable to conduct annual whole colony population monitoring. Accordingly, study-plots for population monitoring of Kittiwake, Guillemot and Razorbill were established at Flamborough and Bempton in 2009. Plots were selected to be dispersed through the colony as randomly as possible given the need to provide a safe vantage point and minimise disturbance to breeding birds. Counts have been conducted annually since 2009, with the exception 2011, when counts of Guillemot and Razorbill were abandoned due to an early breeding season.

For each species the same plots are used each year as required by the Handbook; plot boundaries, based on clear cliff features, are marked on laminated photographs of the relevant area of cliff. Indicative maps of the study-plot locations at Flamborough and Bempton are included in Appendix 3.

The Handbook suggests that study-plot counts are not recommended for general use when counting Kittiwake, however, as the SPA holds one of the largest mainland populations in the UK, it is important that trends are monitored.

The study-plot count results continue to be encouraging for the auks in particular. Record mean counts were recorded in 2023 for both Razorbill and Guillemot, continuing their trend of growth since 2009. This year's mean Kittiwake count showed a slight decrease on last year's, possibly reflecting the apparent impacts of HPAI on this species since 2022 (Figure 12).

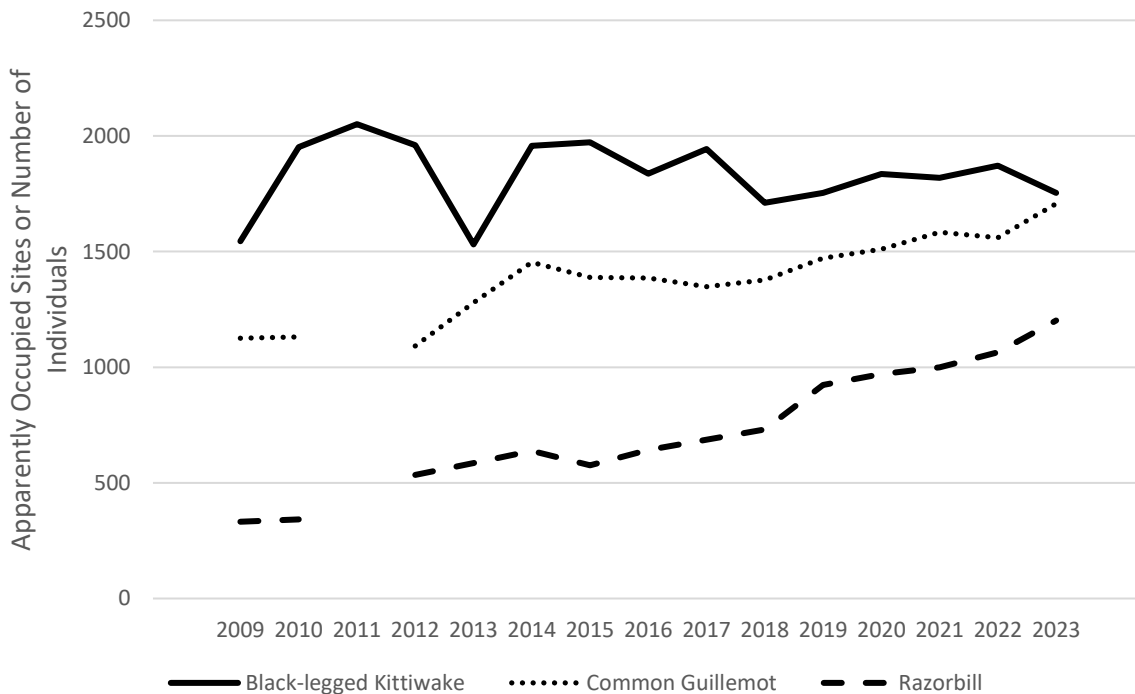


Figure 12: Historic study-plot count results for Black-legged Kittiwake, Common Guillemot and Razorbill from 2009-2023 at Flamborough Head and Bempton Cliffs.

*N.B.: Black-legged Kittiwake counted as AON, Common Guillemot and Razorbill counted as individuals (IND).*



**Black-legged Kittiwake study-plot counts**

Seven study-plots were counted between 0800 and 1600 on at least two occasions during the period 1 June to 22 June. The mean of the two counts was 1754 AON (Table 8), a decrease of 83 AON from 2022 which bucks the largely positive trend since 2018. In contrast with recent years, the first count was higher than the first.

Table 8: Black-legged Kittiwake study plot count results - last 5 years

Visit	2019 AON total	2020 AON total	2021 AON total	2022 AON total	2023 AON total
1	1802	1812	1801	1849	1769
2	1705	1858	1837	1893	1738
<b>Mean</b>	<b>1754</b>	<b>1835</b>	<b>1819</b>	<b>1871</b>	<b>1754</b>

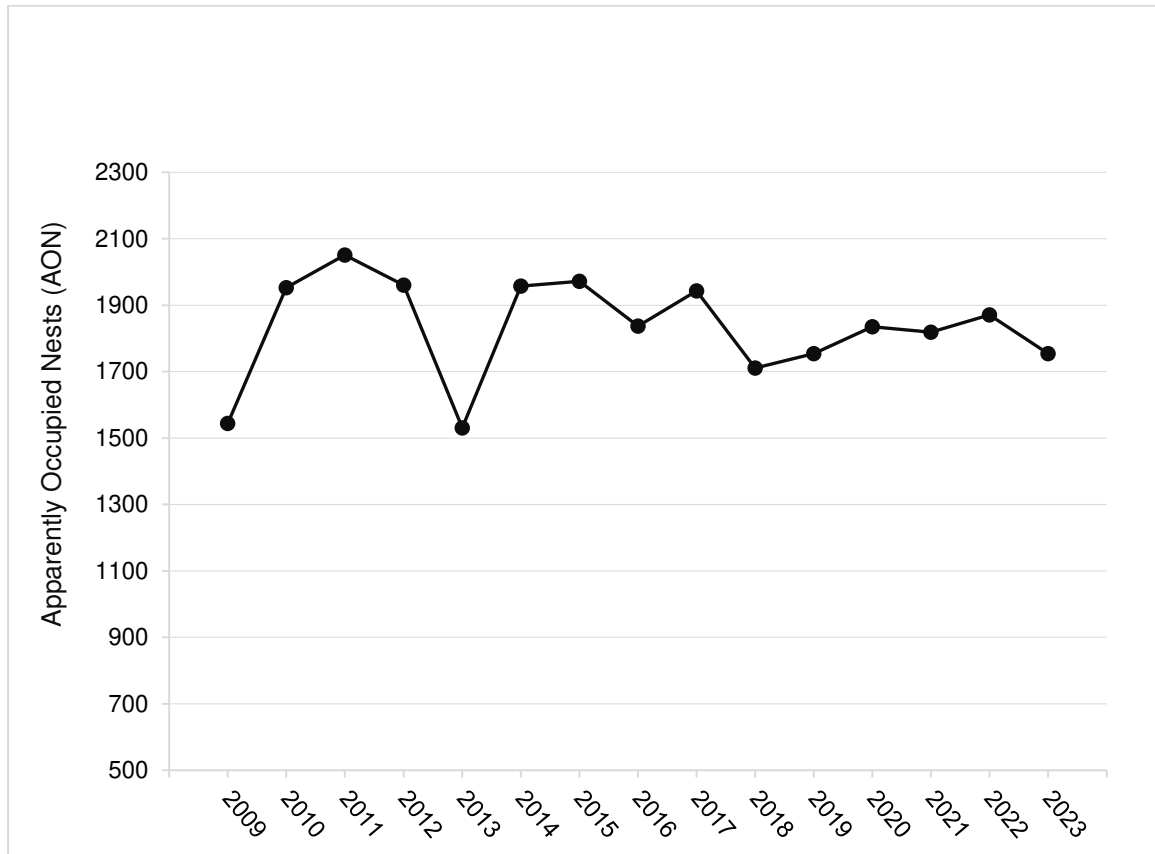


Figure 13: Number of Black-legged Kittiwake AON from 2009-2023 across seven study-plot areas.

**Common Guillemot study-plot counts**

Seven study-plots were counted between 0800 and 1600 on five occasions during the period 1 June to 22 June. The mean of the study-plot counts for Guillemot was 1707 IND (Table 9). This is the highest mean count recorded since 2009, and after the slight decrease in 2022 re-establishes the trend of steady growth since 2017.

Table 9: Common Guillemot study plot count results - last 5 years

Count	2019 IND total	2020 IND total	2021 IND total	2022 IND total	2023 IND total
1	1486	1505	1574	1710	1784
2	1416	1417	1694	1594	1841
3	1428	1555	1526	1560	1819
4	1553	1528	1580	1440	1429
5	1478	1546	1540	1498	1660
<b>Mean</b>	<b>1472</b>	<b>1510</b>	<b>1583</b>	<b>1560</b>	<b>1707</b>

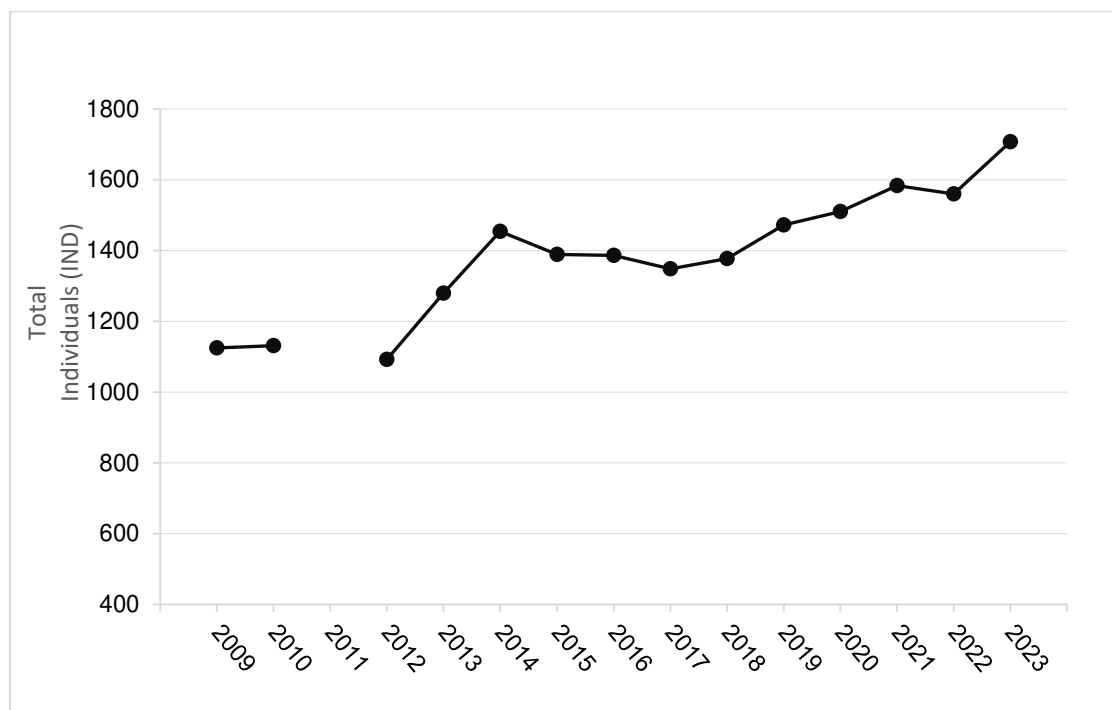


Figure 13: Total number of individual Common Guillemots from 2009-2023 across seven study-plot areas.

### Razorbill study-plot counts

Seven study-plots were counted between 0800 and 1600 on five occasions during the period 1 June to 22 June. The mean of the study-plot counts for Razorbill was 1202 IND (Table 10). This is another highest mean count, continuing the trend of year-on-year growth since 2009. For the first time, over 1000 individuals were recorded on each of the 5 counts.

Table 10: Razorbill study plot count results - last 5 years

Count	2019 IND total	2020 IND total	2021 IND total	2022 IND total	2023 IND total
1	832	868	1055	1305	1188
2	842	944	1027	1108	1327
3	859	1087	903	989	1223
4	1004	998	1047	904	1165
5	1077	951	967	1020	1108
<b>Mean</b>	<b>923</b>	<b>970</b>	<b>1000</b>	<b>1065</b>	<b>1202</b>

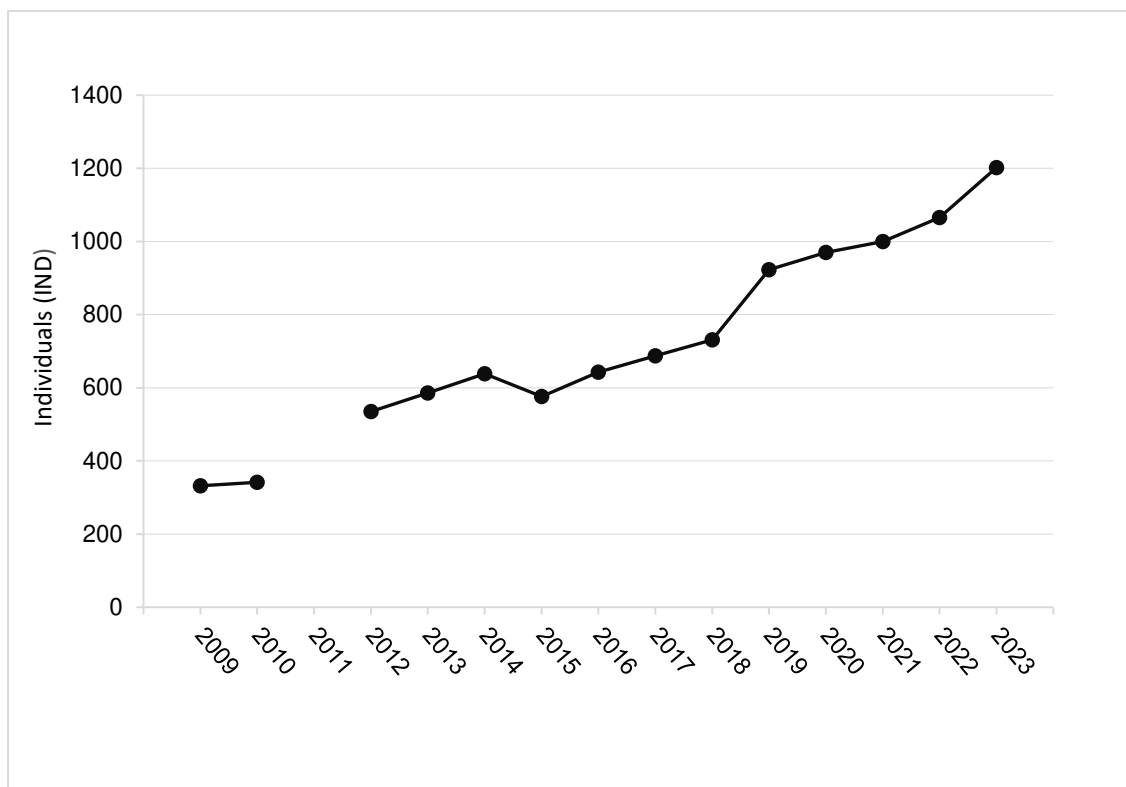


Figure 14: Total number of individual Razorbills from 2009-2023 across seven study-plot areas.

## **COMMON GUILLEMOT AND RAZORBILL CHICK DIET STUDY**

The following extracts have been taken from an unpublished RSPB report (Clarkson 2023) on auk diet study undertaken at the colony this summer, kindly provided by the author. A copy of the full report can be downloaded from the [Yorkshire Marine Partnership website](#).

### **Aims**

A programme of Guillemot and Razorbill chick diet monitoring was carried out in the F&FC colony in 2009-12, (Anderson et al 2014), 2015 (Jeavons 2015), 2018 (Baker and Duffield 2018), 2021 (O’Leary 2021) and 2022 (Mitchell 2022).

Against this background the aim of the present research in 2023 was to determine whether the diet of Guillemot and Razorbill chicks:

- differ (as shown by previous studies)
- vary in different parts of the colony
- changes diurnally
- changes through the chick-rearing period
- varies between years (based on data from previous years)

An additional aim was to create a photo library of individual feeds for both auk species to facilitate independent verification and provide an historic record.

### **Methods**

Observations were carried out during a 28-day period, from 5 June to 2 July 2023. Observations were made at Grandstand South, viewed from the Grandstand Viewpoint within the RSPB Bempton Cliffs nature reserve, and at the Carter Lane seabird monitoring site, in the Yorkshire Wildlife Trust’s Flamborough Cliffs nature reserve.

Observations were carried out from fixed clifftop viewpoints at both sites. Each site held a minimum of 300 visible Guillemot breeding sites and over 50 visible Razorbill breeding sites. Birds were located with the naked-eye as they flew-in towards the cliff. By transferring quickly to binoculars it was possible, in most cases, to determine and record whether the bird was carrying prey, the identification of the prey item/s, the approximate length of the prey item/s and whether a feed occurred or not.

Whenever possible photographs of feeds were taken. The photographs helped enable confirmation of fish identification and provide a permanent record of the observations. The photographic record also enabled independent verification by experts (Larson and Craig 2006).

The diurnal timing of observations was chosen to maximise the number of ‘feeds’ recorded. Guillemot feeding rates are recorded as being highest in the first few hours after dawn and again in the evening (Birkhead 1977, Harris and Wanless 1985, Hatchwell 2008). The pattern of Razorbill feeding events is more evenly spread through the day although fewer feeds are recorded in the evening (Harris and Wanless 1986). Once a week, observations were carried out at through the daylight hours to monitor the diurnal feeding pattern.

Fish identification sheets based upon the RSPB STAR project (Owen et al 2010) were prepared in advance to assist with the identification of prey items in the field. Food items were recorded as Clupeid, Sandeel, Gadoid, Squid and other. It was not possible to distinguish

individual species e.g., Sprat *Sprattus sprattus* from Herring *Clupea morhua* or the Sandeels *Ammodytes spp.* due to the similarity between species (Henderson 2014). Feeds, in which the prey item/s were unidentified, were recorded and included in the analysis to enable direct comparison with previous diet studies in the SPA.

The standard auk chick diet methodology of categorising prey-size into small, medium, or large was adopted (Harris and Wanless 1986).

## Results

For Guillemots, a total of 842 prey items was identified and 71 remained unidentified. All feeds comprised a single prey item. With the exception of one large prawn and a European Common Squid *Alloteuthis subulata* all prey items were fish, mainly clupeids (88.2%) and sandeels *Ammodytes spp.* (9.4%) (Table 1). 15 Lesser Weever *Echiichthys vipera*, three gadids *Gadidae spp.*, and one Butterfish *Pholis gunnellus* were also recorded.

Table 1. A comparison of Guillemot chick diet composition between sites within the Flamborough and Filey Coast colony, 2023.

	No. and percentage of Sandeels fed to chicks	No. and percentage of Clupeids fed to chicks	No. and percentage of Lesser Weever fed to chicks	No. and percentage of other species fed to chicks
Bempton	19 (6.0%)	291 (92.4%)	3 (1.0%)	2 (0.6%)
Flamborough	60 (11.4%)	452 (85.7%)	12 (2.3%)	3 (0.6%)
TOTAL	79 (9.4%)	743 (88.2%)	15 (1.8%)	5 (0.6%)

For Razorbills, a total of 195 feeds was observed comprising 613 identified prey items (all fish), 16 unidentified fish. The Razorbill chick diet comprised 91.4% sandeels *Ammodytes spp.* and 8.6% clupeids.

Table 2. A comparison of Razorbill chick diet composition between sites within the Flamborough and Filey Coast colony, 2023

	No. and percent sandeels fed to chicks	No. and percent of clupeids fed to chicks
Bempton	105 (98.1%)	2 (1.9%)
Flamborough	455 (89.9%)	51 (10.1%)
TOTAL	560 (91.4%)	53 (8.6%)

There was no apparent difference in the size of clupeids fed to Guillemot chicks at Bempton Cliffs and Flamborough Cliffs (Table 3).

Table 3. A comparison between the frequency and size of clupeid prey items fed to Guillemot chicks at different sites within the Flamborough and Filey Coast colony in 2023

		Small (<50 mm)	Medium (50 - 70 mm)	Large (> 70 mm)
Bempton	No. and percentage of clupeids fed to Guillemot chicks (n=291)	21 (7.2%)	164 (56.4%)	106 (36.4%)
Flamborough	No. and percentage of clupeids fed to Guillemot chicks (n=452)	36 (8.0%)	280 (61.9%)	136 (30.1%)

Similarly, there was no significant statistical difference in the size of sandeels fed to Razorbill chicks at either Bempton or Flamborough Cliffs (Table 4).

Table 4. A comparison between the frequency and size of sandeel prey items fed to Razorbill chicks at different sites within the Flamborough and Filey Coast colony in 2023.

		Small	Medium	Large
Bempton	No. and percentage of sandeels fed to Auk chicks (n=103)	40 (38.8%)	58 (56.3%)	5 (4.9%)
Flamborough	No. and percentage of sandeels fed to Auk chicks (n=450)	194 (43.1%)	208 (46.2%)	48 (10.7%)

## Photo library

A library has been created containing all the available images of 'feeds'. This library is accessible via RSPB Bempton Cliffs.

## Discussion

The prey fed to Guillemot chicks was 88.2% clupeid (probably Sprat *Sprattus sprattus*), 9.4% sandeel, 1.8% Lesser Weever *Echiichthys vipera* and 0.5% others. The diet composition for Razorbill chicks was 91.4% sandeel spp. and 8.6% clupeid spp. The diurnal pattern of chick-feeding differed slightly between the two species. Guillemot feeds were concentrated in the first two-three hours of daylight with a smaller peak in mid-late afternoon and a further small peak in the evening. Razorbill feeds were more uniformly spread across the day and were negligible in the evening. The proportion of clupeids in the Guillemot chick diet declined through the day, increasing again towards dusk. Whilst in the Razorbill chick diet the proportion of clupeids increased during the day.

Although neither species showed any significant seasonal variation in the diet composition the last two days of the study, the 1 and 2 July, an increase in the number of large sandeels fed to Guillemot chicks and the number of small Sprat fed to Razorbill chicks was noted.

Auk chick diet varies significantly between years although there appears to be no overall trend across the years. Throughout this period the mix of prey items in the Guillemot chick diet is dominated by clupeids whilst Razorbill chick diet is predominantly sandeels (Table 5).

Studies of Guillemot chick diet within the F&FC SPA since 2007, including this study, show that clupeids comprise an important and increasing component of their diet (Anderson et al 2014, Jeavons 2015, Baker and Duffield 2018, O’Leary 2021, and Mitchell 2022). Baltic Sea studies have shown a positive correlation between the abundance of Sprats and the size of the local Guillemot and Razorbill populations (Hjernquist & Hjernquist 2010).

The ongoing growth in the Razorbill population and the high proportion of Sandeels in Razorbill chick diet suggest that sandeel availability is not currently limiting Razorbill breeding success in the F&FC SPA.

The chick diet study also provided evidence that Lesser Weever *Echiichthys vipera* are regularly selected by adult Guillemots as a food source for chicks. It is likely that the number of Lesser Weever brought back by Guillemots was higher than recorded with earlier specimens going unidentified. Without knowledge of their key identification features they may have been missed in earlier studies.

Table 5. Annual variation in the percentage composition of Guillemot and Razorbill chick diet, at the Flamborough and Filey Coast colony, 2007-2023

		Auk chick diet composition (%)					
	Year	2009-11	2015	2018	2021	2022	2023
Guillemot	No. of identified prey items	481	656	240	70	365	842
	Clupeid	<75%*	95.1%	85.8%	96%	79.1%	88.2%
	Sandeel	>25%	4.3%	14.2%	4%	15.7%	9.4%
	Lesser Weever	0	0	0	0	0	1.8%
	Other	<2%	0.6%	0	0	5.2%	0.6%
Razorbill	No. of identified prey items		546	345	187	277	613
	Clupeid		10.3%	2.9%	3.6%	1.4%	8.6%
	Sandeel		89.7%	96.8%	96.4%	98.6%	91.4%
	Other		0	0.3%	0	0	0
	Source of data	(Anderson et al 2014)	(Jeavons 2015)	(Baker & Duffield 2018)	(O’Leary 2021)	(Mitchell 2022)	

Reference:

Clarkson, K (2023). Chick provisioning of Guillemot *Uria aalge* and Razorbill *Alca torda*, in the Flamborough and Filey Coast SPA seabird colony, England, in 2023

## **BLACK-LEGGED KITTIWAKE RETRAPPING ADULTS FOR SURVIVAL PROJECT**

### **Background**

In 2018, a colour ringing project was set up for Black-legged Kittiwake at North Landing, Flamborough with the aim of establishing adult survival rates. In 2020, the project was formally registered as a Retrapping Adults for Survival (RAS) with the British Trust for Ornithology (BTO) with the previous two years data contributing to the project. The results from this study will provide a key monitoring tool when assessing the health of this red-listed species and compliment detailed productivity and population monitoring already carried out on Black-legged Kittiwake within the Flamborough and Filey Coast SPA.

### **Results**

The 2023 field season marked the six consecutive year of the RAS colour ringing project. Weekly resighting efforts commenced at the start of April and concluded at the end of July; during that period a total of 73 individuals were recorded. There was a notable reduction in the number of colour ringed birds present in the study site, potentially due of the impact of High Pathogenicity Avian Influenza (HPAI), and many of the previously occupied nest sites were taken up by new unringed birds.

This year, an additional 19 individuals were added to the project in an attempt to replenish the sample size. Birds were fitted with a plain colour ring (Yellow) above a metal BTO ring on the right leg, and an alpha-numeric colour ring starting with the letter X on the left leg. These join 19 adults added in 2020 (Green), 60 adults added in 2019 (Red) and 51 adults added in 2018 (Blue), bringing the total number of individuals to be colour ringed in this project to 149.

Due to the presence of HPAI, strict Health and Safety protocols set out by the RSPB and the BTO were followed to ensure the welfare of both birds and fieldworkers were maintained at all times whilst working in the colony and handling birds.



Image: Black-legged Kittiwake catching, North Landing, Flamborough, 2023. © James Butcher



## **EUROPEAN SHAG COLOUR RING RE-SIGHTINGS**

Two colour-ringed Shags were noted at the colony this year. Blue TDI was a new individual to us, and this was also the first time it had been sighted away from the Isle of May since it was ringed there as a pullus in 2022. Green DAN was noted twice, the fifth year that this bird has been recorded. To date, 35 individuals have been recorded here (Table 11).

Table 11: European Shag colour ring re-sightings at Flamborough & Filey Coast SPA 2014 – 2023.

<b>Code</b>	<b>BTO ring number</b>	<b>Year Ringed</b>	<b>Age</b>	<b>Colony</b>	<b>Year recorded at Flamborough &amp; Filey Coast SPA</b>
<b>EUH</b>		2014	Pullus	Fidra	2014, 2017
<b>CLR</b>		2014	Pullus	Farne Islands	2014, 2015
<b>END</b>	1478565	2014	Pullus	Inchmickery	2014, 2015, 2016, 2017
<b>CHC</b>	G8898	2006	Pullus	Isle of May	2014, 2015, 2016, 2017
<b>CNE</b>		2014	Pullus	Farne Islands	2014
<b>ACE</b>	1472974	2014	Adult	Craigleith	2015, 2016
<b>ESB</b>	1478625	2014	Pullus	Inchmickery	2015
<b>ARI</b>		2014	Pullus	Craigleith	2015
<b>NEJ</b>		2015	Pullus	Farne Islands	2015
<b>DAN</b>	1485389	2016	Pullus	Isle of May	2017, 2018, 2020, 2021, 2023
<b>UWE</b>		2016	Pullus	Farne Islands	2017
<b>FTA</b>		2016	Pullus	Isle of May	2017
<b>IAX</b>		2016	Pullus	Isle of May	2017
<b>HUD</b>		2016	Pullus	Isle of May	2017
<b>LRR</b>		2016	Pullus	Farne Islands	2018, 2021, 2022
<b>TPC</b>	1396622	2009	Adult	Craigleith	2014, 2015, 2016, 2017
<b>RZF</b>		2013	Adult	Farne Islands	2015
<b>PCA</b>		2010	Pullus	Farne Islands	2015, 2016
<b>AUL</b>	1483281	2015	Adult	Isle of May	2016, 2017
<b>BLJ</b>		2017	Adult	Isle of May	2018, 2019
<b>AFP</b>		2014	Pullus	Isle of May	2014, 2019
<b>AUH</b>	1483074	2014	Pullus	Isle of May	2016, 2017, 2018
<b>ADA</b>	1473962	2014	Pullus	Isle of May	2016, 2018+
<b>IPJ</b>		2016	Pullus	Isle of May	2016, 2018
<b>DAP</b>	1472058	2015	Pullus	Isle of May	2017
<b>IDT</b>		2016	Pullus	Isle of May	2017
<b>CUX</b>	1472024	2015	Pullus	Isle of May	2017
<b>HZA</b>		2015	Pullus	Isle of May	2017
<b>EZS</b>		2018	Pullus	Farne Islands	2018
<b>TDI</b>	1716199	2022	Pullus	Isle of May	2023
<b>NDC</b>		2014	Pullus	Isle of May	2014
<b>FTX</b>		2012	Pullus	Isle of May	2014
<b>CTF</b>		2018	Pullus	Isle of May	2018
<b>UDA</b>	1495246	2020	Pullus	Isle of May	2021
<b>AFN</b>	1453306	2011	Pullus	Isle of May	2017

## **RECREATIONAL DISTURBANCE**

### **Yorkshire Marine Nature Partnership**

#### **F&FC SPA Report 2023 - Recreational Disturbance**



Data on recreational activities and wildlife disturbance events has been recorded around the Flamborough and Filey Coast SPA consistently since 2013. The majority of data is collected 'ad-hoc' by volunteers and staff from RSPB Bempton Cliffs and other local organisations. Students from regional universities are also invited to conduct 'intensive surveys' throughout the main seabird breeding season. This information is used to support management of the site and to educate user groups on the sensitivities of the breeding seabird colony, via the Yorkshire Marine Nature Partnership (YMNP).

Over the years this research has helped to identify a number of activities that have the potential to disturb the natural behaviour of the breeding seabird colony. This has led to the development of user-group specific codes of conduct and voluntary agreements, designed to allow activities to continue whilst reducing any negative impacts on the seabirds. These agreements have been bolstered by the recent creation of Operation Seabird, and the active engagement of local Police, RSPCA and the Marine Management Organisation in recreational disturbance issues.

Since the Covid pandemic (2020 – 2021), recreational disturbance reports have been fewer in number compared to pre-Covid figures. The 2023 season did not reverse this trend and reporting is still significantly lower than pre-Covid levels. Furthermore, no students were recruited to gather additional data during the 2023 season.

Overall, 19 seabird disturbance reports were received in 2023, of which all were considered to cause high to moderate disturbance. For comparison, in 2022, 29 disturbance records were collected with 19 observed to cause high to moderate seabird disturbance. This year, motorised boats accounted for the majority of records (9) although a relatively high number of aircraft were also reported (4). Personal watercraft (Jet Skis) and canoes and kayaks were each recorded 3 times.

Information about the recording system has, once again, been shared frequently with partners and the new online reporting facility has improved efficiencies, however the general reduction in reporting continues. The longer-term effects of the Covid pandemic on the economy and evolving visitor preferences may provide some explanation for these changes, as there is a marked contrast between pre- and post-pandemic data (243 disturbance reports were received in 2019). Equally, the reduction in activities often seen as causing significant levels of disturbance could be a result of the high-profile Operation Seabird initiative. This year, partners in the Police and other organisations visited Flamborough, Bridlington and Hornsea as part of Operation Seabird's public engagement activities. Continued monitoring over the next few years will be crucial to understand these fluctuations further and explore whether a lower level of reporting equates to a lower level of disturbance.



## **IMPACT OF HPAI AT BEMPTON CLIFFS AND THE WIDER SPA**

In 2022 a localised but major impact on Gannets was observed in July and August, with c. 80% chick mortality at Staple Newk and there was confirmed HPAI in Kittiwakes from nearby Reighton beach in August. An HPAI monitoring programme was implemented in 2023, as follows:

### **HPAI Monitoring 2023**

- Daily monitoring checks along 2km at Bempton Cliffs for evidence of dead birds
- Repeat full colony Gannet count
- 2 additional Gannet productivity plots at Grandstand and Bartlett Nab viewpoints
- Recording evidence of black-eyed Gannets at the productivity plots.
- Wider evidence from monitoring, anecdotal records and other reports.

### **Summary**

There was a greater impact on **Kittiwakes** at the colony than in 2022, but the effect was mostly seen toward the latter part of the season. The impact appeared to be localised and did not involve large numbers of birds in terms of the SPA population, and productivity was good.

Despite evidence of a small number of **Gannets** infected in May, and a probable effect on a small number of chicks as detected by productivity monitoring and daily checks, the repeat population count recorded an increase in the population since last year. The regular sightings of black-eyed Gannets and the recovery of breeding performance at Staple Newk suggests some level of immunity in the population. On 5<sup>th</sup> October, just as most Gannets were leaving the colony, four dead Gannets were seen on Staple Newk, which increased to seven on the 7<sup>th</sup> October. On the 10<sup>th</sup> October the dead birds were gone, and there were no other reports of Gannet mortality.

Limited mortality was observed in **auks, mainly Guillemots**. Two dead Guillemots tested positive from Filey Bay in August.

### **Daily monitoring of sea and cliffs between viewpoints at Bempton Cliffs**

Daily checks along the 2km section of cliff between Jubilee Corner and Staple Newk viewpoints gave consistent monitoring of evidence of HPAI mortality for a core section of the SPA (Figure 17).

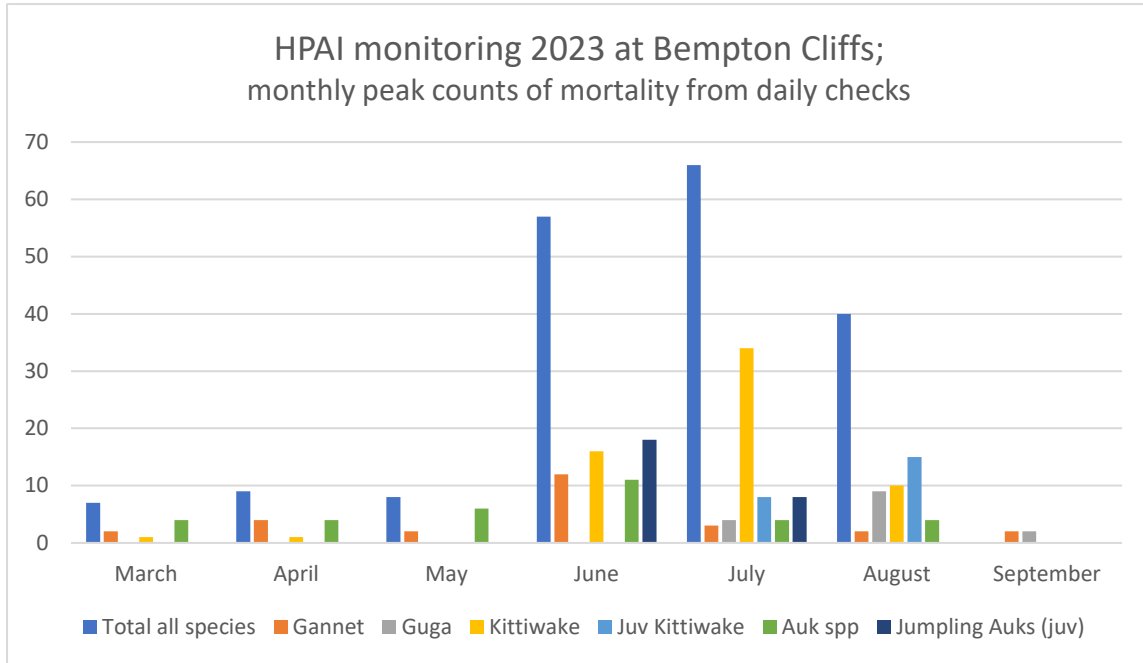


Figure 17. Summary of daily HPAI checks

### Kittiwakes and HPAI

There was a peak of 34 dead Kittiwakes on 17<sup>th</sup> July on the reserve, mostly visible from Grandstand viewpoint, with 9 dead adults on the cliff edge, along with 3 sick adults. The mortality here was linked to muddy patches where Kittiwakes socially gather mud, and likely became transmission points. Reports from Flamborough Head and Thornwick Bay of small numbers of dead birds were likely HPAI, and point to a number of hotspots for disease across the SPA.

The reduced re-sightings at the Kittiwake Survival Study site and small reduction in pairs on the seven population study plots also points to a possible population effect from last year which warrants further attention in 2024.

Productivity plot data across the SPA found localised clusters of higher mortality:

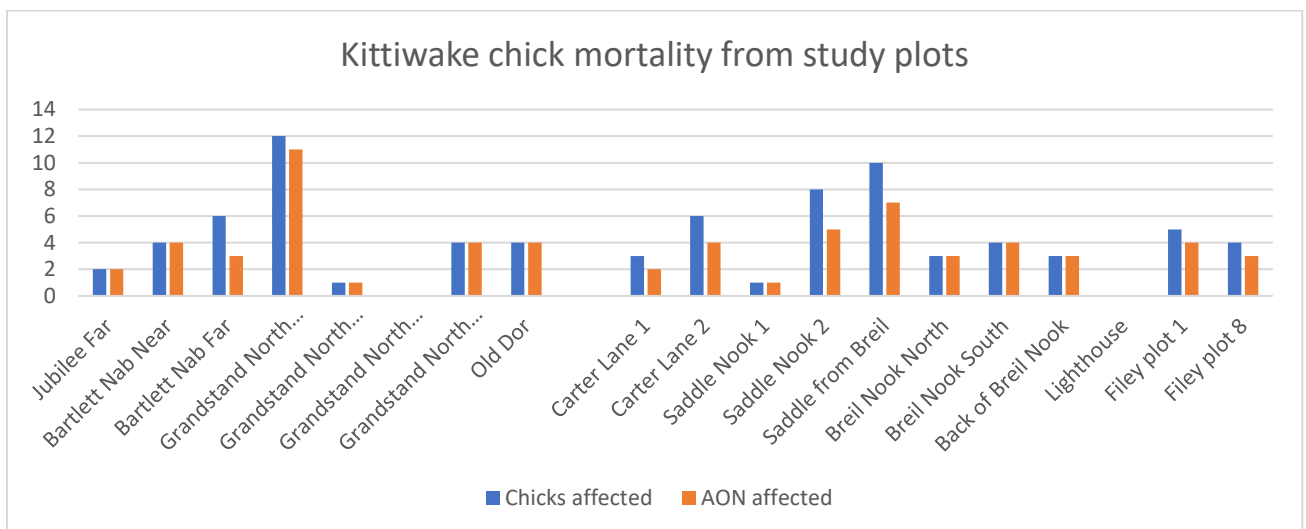


Figure 18. Kittiwake chick mortality from productivity plots

Overall the impact on both Kittiwake adults and chicks appeared relatively small, and very localised (for example, only one of the three productivity plots at Grandstand showed signs). But the hotspots do give some cause for concern, a worrying potential of a more significant effect if transmission had begun earlier in the season.

### Gannets and HPAI

There was evidence of some HPAI mortality in Gannets, from the daily checks and productivity plots.

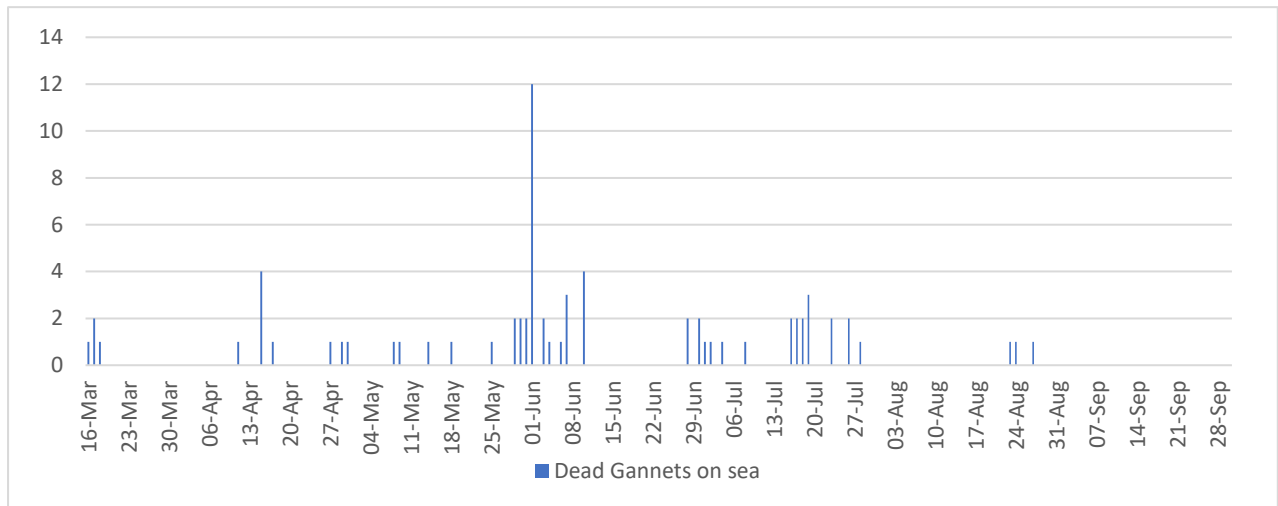


Figure 19. Daily Gannet mortality recorded on the sea (2km between viewpoints)

A single symptomatic dying gannet was on the sea on 9<sup>th</sup> May and there were further records of sick birds in late May. The peak was 12 dead on the sea on the 1<sup>st</sup> June. Thereafter observed mortality returned to occasional one or two with a peak of three dead adults in July.

At Staple Newk where 80% + of Gannet chicks died last year, no HPAI mortality was observed, though productivity was lower than average. There may be a positive story here on resistance, with at least 20% of nests on Staple Newk having a black-eyed adult, and from a small sample black-eyed birds appeared to have similar productivity, if slightly below the long-term average.

A peak of 9 dead Gugas were recorded on the sea in August, again, higher than usual rates of mortality observed, and allied to evidence of reduced productivity across the monitoring plots, it appears there may have been a small but widespread effect of HPAI.

After over two months without any evidence of more than a single dead adult Gannet, the record of four dead Gannets on Staple on the 5<sup>th</sup> October, rising to seven on the 7<sup>th</sup>, was a late reminder of unpredictable nature of HPAI. The dead birds were in two loose groups of three and seven, and had gone, presumably blown off the cliffs, within a couple of days. Virtually all Gannets had left the colony by the 10<sup>th</sup> October, and there were no further sightings of possible HPAI mortality, with the last Guga fledging from monitoring plots on the 19<sup>th</sup> October.

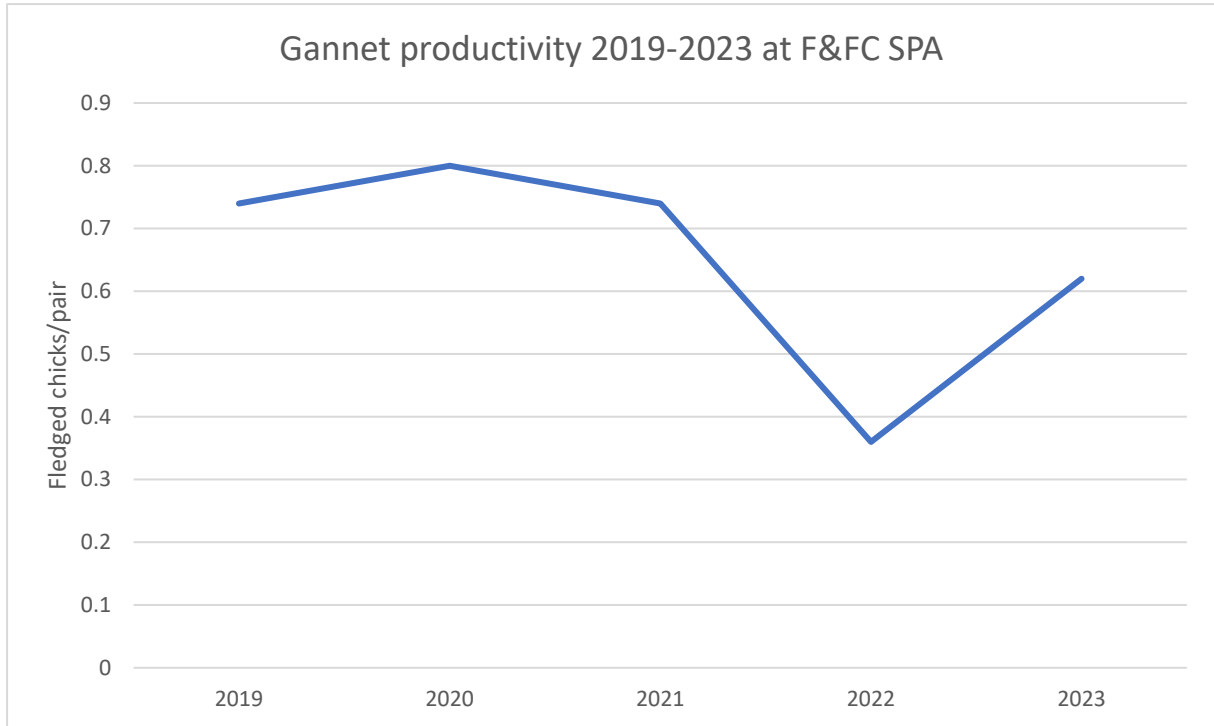


Figure 20. Gannet productivity 2019 – 2023  
 NB Productivity from 5 plots 2019-2022 and 7 plots 2023

### Other species and HPAI in 2023

There has been some adult auk mortality likely caused by HPAI, predominately Guillemot, again peaking at the end of May beginning of June. This didn't involve large numbers of birds, but a peak of 19 dead adult auks on the sea at the end of May, and 18 Jumpling auks (Guillemot and Razorbill chicks at or close to fledging age) in late June is beyond the occasional natural mortality usually observed for either adults or chicks at the colony.

Herring Gulls had a very poor year for productivity, at 0.18 chicks/pair the lowest ever recorded, but is difficult to know if this is partly attributable to HPAI or not.

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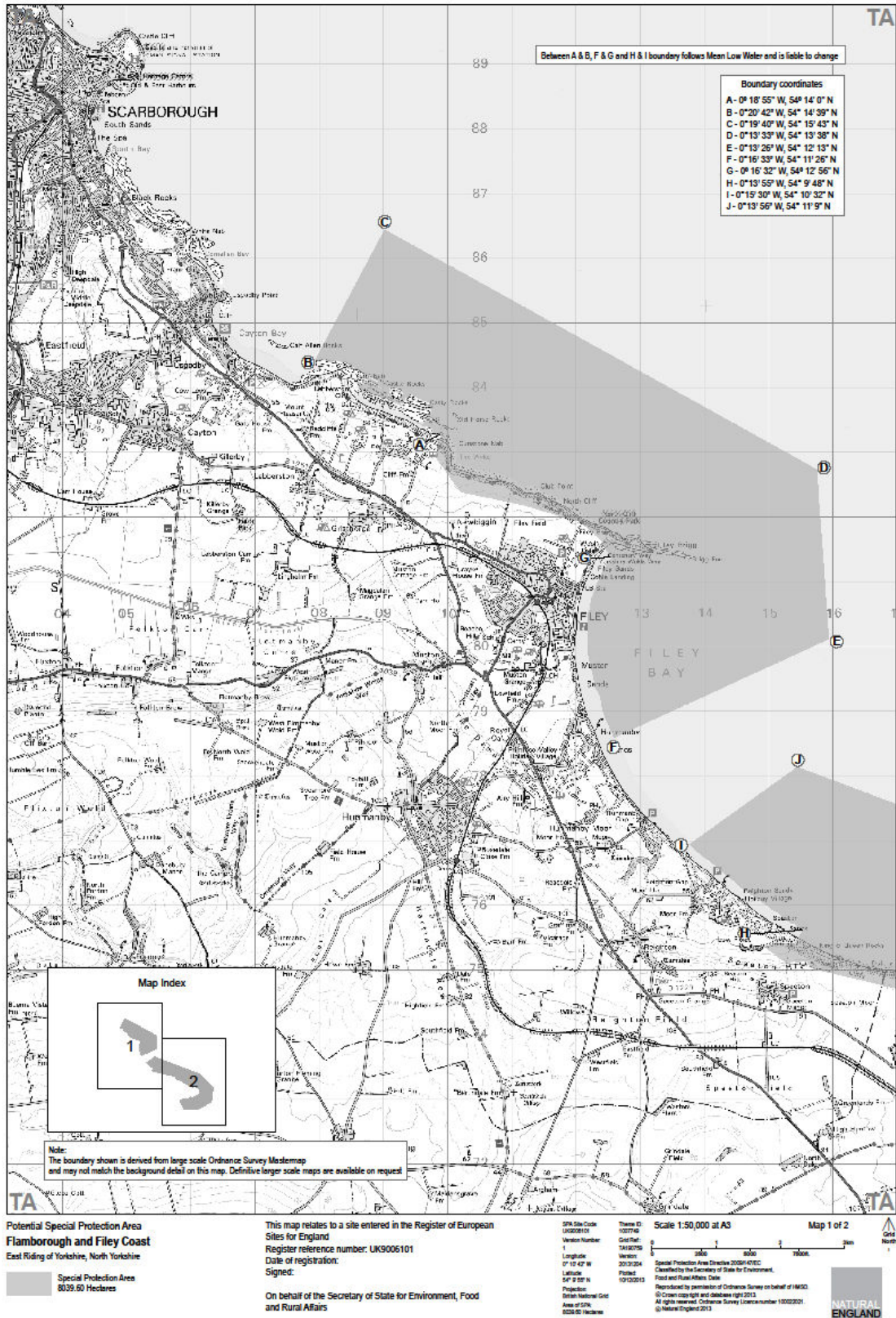
Blue Dolphin Holiday Park at Filey for allowing access to reach important sections of the colony for monitoring works.

And lastly, the owners and management at Thornwick Bay Holiday Village at Flamborough for providing invaluable parking permits for North Landing car park.

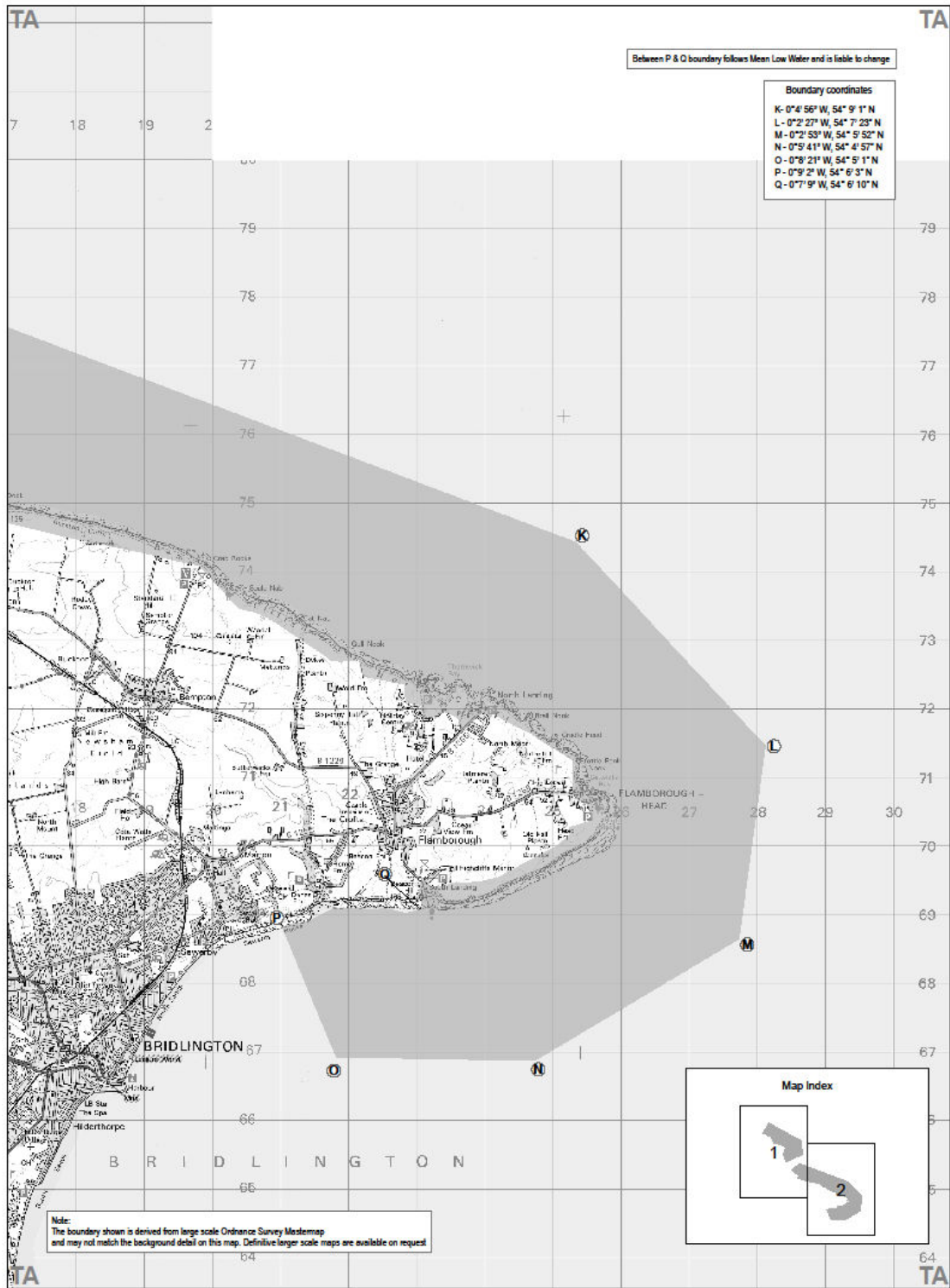
Without all of whom the Flamborough and Filey Coast SPA seabird monitoring programme would not be the success that it is.

# APPENDIX 1: Flamborough and Filey Coast SPA boundary maps

North



South



Potential Special Protection Area  
**Flamborough and Filey Coast**  
 East Riding of Yorkshire, North Yorkshire

Special Protection Area  
 8039.60 Hectares

This map relates to a site entered in the Register of European Sites for England  
 Register reference number: UK9006101  
 Date of registration:  
 Signed:  
 On behalf of the Secretary of State for Environment, Food and Rural Affairs

Scale 1:50,000 at A3  
 Map 2 of 2

SPN Site Code: UK0006101  
 Version Number: 1  
 Longitude: 0° 17' 47" W  
 Latitude: 54° 9' 59" N  
 Projection: British National Grid  
 Area of SPA: 8039.60 Hectares

Theme ID: 1007149  
 Grid Ref: 19428750  
 Version: 2003/204  
 Project: 10132213

Special Protection Area Directive 2004/41/EC  
 Classified by the Secretary of State for Environment, Food and Rural Affairs Date:  
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NATURAL ENGLAND



## APPENDIX 2: Productivity monitoring plot locations

### Northern Fulmar productivity plots – Flamborough Head and Bempton Cliffs



### Northern Fulmar productivity plots – Filey



**Northern Gannet productivity plots**

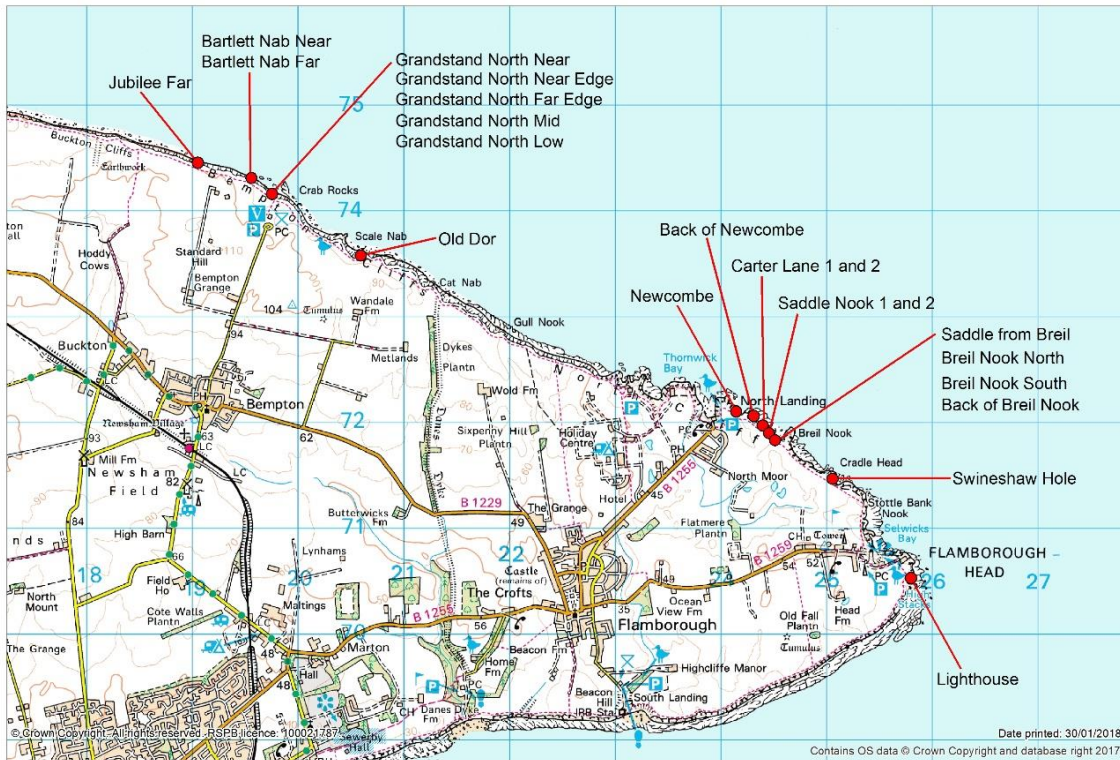


**European Herring Gull productivity plots**





### Black-legged Kittiwake productivity plots – Flamborough Head and Bempton Cliffs



### Black-legged Kittiwake productivity plots – Filey



### Common Guillemot productivity plots



### Razorbill productivity plots





## APPENDIX 3: Study-plot monitoring locations

### Black-legged Kittiwake study-plot locations



### Common Guillemot study-plot locations



### Razorbill study-plot locations

