Flamborough & Filey Coast SPA: 2022 seabird colony count and population trends

Clarkson, K., Aitken, D., Cope, R., & O'Hara, D
October 2022

RSPB, The Lodge, Sandy, Bedfordshire SG19 2DL
clarksonkc@icloud.com
david.aitken@rspb.org.uk
dave.ohara@rspb.org.uk
richard.cope@rspb.org.uk

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Executive Summary

In 2022, a land and boat-based seabird colony count was undertaken within the Flamborough and Filey Coast Special Protection Area (F&FC SPA), on Yorkshire's North Sea coast. The count enabled a direct comparison with the baseline count carried out, at the time of designation, in 2017.

Whilst it is not possible to determine longer term population trends for the F&FC SPA, as this was only the second complete count of the SPA, a comparison of past counts of the original Flamborough Head and Bempton Cliffs colony, which forms the largest component of the SPA, and the smaller, Filey Cliffs sub-colony, suggest that the overall health of the breeding seabird assemblage is positive although the population trends of individual species portray a mixed picture.

The 2022 count confirmed that the F&FC SPA is the largest mainland seabird colony in the UK, supporting an estimated 166,576 breeding pairs of seabird, an increase of 17,308 pairs since 2017.

The SPA qualifying species counts were - 13,125 Northern Gannet, hereafter referred to as Gannet, (apparently occupied sites), 44,574 Black-legged Kittiwake, hereafter referred to as Kittiwake, (apparently occupied nests), 45,780 Razorbill (individuals on the cliffs), and 111,925 Common Guillemot, hereafter referred to as Guillemot (individuals on the cliffs).

Guillemot numbers increased by 124% since 2000, at an average rate of 4% per annum. The Razorbill population has undergone a 230% increase since 2000 and the breeding numbers have increased at an average rate of 6% per annum since 1969. Subject to the results of the 'Seabird Counts' UK-wide seabird census (2019-21 in prep) it seems likely that the SPA now supports one of the largest Razorbill colonies in the UK.

The Gannet breeding population has also increased in the last fifty years although numbers have remained stable at around 13,000 breeding pairs since the count in 2017.

In 2017, when the IUCN red-listed the Kittiwake and classed its conservation status as 'vulnerable' due to a greater than 40% decline in the European population, the Flamborough Head and

Bempton Cliffs population was, in contrast to many colonies, relatively stable. However, the result of the 2022 count indicates that since 2017, a small decrease has occurred across the colony. This decline may be driven by the low breeding productivity that has been recorded within the colony in the last 10 years.

Both the European Herring Gull, hereafter referred to as Herring Gull, and Northern Fulmar, hereafter referred to as Fulmar, breeding populations have shown a continued decline since the year 2000 although there has not been any significant decline in the Fulmar population since 2017. It is not known how much the decline in the Herring Gull population is offset by increases in the numbers of urban breeding gulls in the adjacent coastal towns of Bridlington, Filey and Scarborough.

The small breeding population of Great Cormorant, hereafter referred to as Cormorant, (32 breeding pairs in 2022) has recovered from the population crash of 2015, when numbers fell to 14 breeding pairs, as a consequence of severe storm events. The similarly small, European Shag, hereafter referred to as Shag, population (17 pairs in 2022) has declined since 2000.

The Atlantic Puffin, hereafter referred to as Puffin, breeding population, based upon counts of birds which arrive en masse and raft on the sea at the start of the breeding season, suggests that the colony has remained stable since 2016.

A single Black-browed Albatross, which was first seen visiting the colony in 2017, defended a potential nest territory in the heart of the Gannet colony for much of the summer.

In conclusion, the increase in the F&FC SPA colony mirrors trends in many Irish Sea and Welsh Coast colonies but is in sharp contrast to the widespread decline of seabird species reported at many Scottish colonies and elsewhere in the UK and North-West Europe since 2000 (JNCC 2019).

A combination of legal protection and a reduction in marine oil and chemical spillages, together with access to forage fish have played a significant role in enabling the recovery and expansion of the auk and Gannet populations. However, the decline of the North Sea fishing industry and lack

of access to discards may be responsible for the decline in Herring Gull and Northern Fulmar populations.

Concerns are raised about ongoing recreational disturbance issues and the need to better understand and safeguard core foraging and wintering areas. Ongoing tagging work may go some way to addressing this.

Preliminary investigations suggest a significant percentage of birds present in the colony are non-breeders which currently go unrecorded. There is a need to better understand the proportion of the non-breeding population of each species and how it varies through the season.

The analysis of the comparative data once again highlighted the problems associated with sourcing accurate historical data and managing current data to ensure that it is accessible, supported by accurate metadata and, is quality controlled. A record of recent comparable counts and historical count references was created and is included in the appendix.

During the count it became apparent that small numbers of birds were demonstrating the symptoms of, and dying from, highly pathogenic avian influenza (HPAI). The possible impacts of HPAI were most evident in the high-density areas of the Northern Gannet colony where declines in the number of breeding pairs were noted between successive counts and later in breeding productivity monitoring plots.

Introduction

The Flamborough and Filey Coast Special Protection Area (F&FC SPA)

The Flamborough and Filey Coast Special Protection Area (hereafter called the F&FC SPA) was designated in 2018 and regularly supports more than 1% of the biogeographical population of four regularly occurring migratory species (Black-legged Kittiwake *Rissa tridactyla*, hereafter referred to as Kittiwake, Northern Gannet *Morus bassanus*, hereafter referred to as Gannet, Razorbill *Alca torda* and Common Guillemot *Uria aalge*), hereafter referred to as Guillemot (Appendix One). The F&FC SPA also greatly exceeds the minimum qualifying assemblage of more than 20,000 breeding seabirds. The F&FC SPA incorporates both the Flamborough Head and Bempton Cliffs seabird colony, which was originally classified as an SPA in 1993, and the Filey Cliffs colony. The F&FC SPA is also underpinned by the Flamborough Head SSSI and a potential SSSI to include Filey Brigg to Scarborough South Bay.

The F&FC SPA also includes a generic two-kilometre seaward extension for Kittiwake and Gannet; and a one-kilometre seaward extension for Guillemot and Razorbill, vital for ensuring that essential ecological requirements of the breeding seabird populations are met (e.g., preening, bathing, displaying and inshore foraging).

The Location

The F&FC SPA is located on the North Yorkshire coast between Bridlington and Scarborough (Fig.1) and incorporates c19 km of seabird breeding cliffs, including RSPB Bempton Cliffs nature reserve, the Yorkshire Wildlife Trust‘s Flamborough Cliffs nature reserve, the East Riding of Yorkshire Council managed Flamborough Head Local Nature Reserve and Filey Cliffs, partially managed by North Yorkshire County Council.

The Flamborough to Speeton cliffs represent an almost continuous sequence of Cretaceous chalk deposits. The Flamborough Head chalk cliffs have been eroded into a series of bays, arches, pinnacles, and gullies with an extensive system of caves at sea-level. Whilst, to the north, the massive vertical chalk cliffs of Bempton, Buckton and Speeton rise to 135.6 metres. The cliffs from Filey Brigg northwards to Cunstone Nab, comprise a range of Jurassic shales and sandstones.

The cliffs, along the length of the F&FC SPA, are overlaid by varying thickness of glacial till deposited in the last Ice-age.

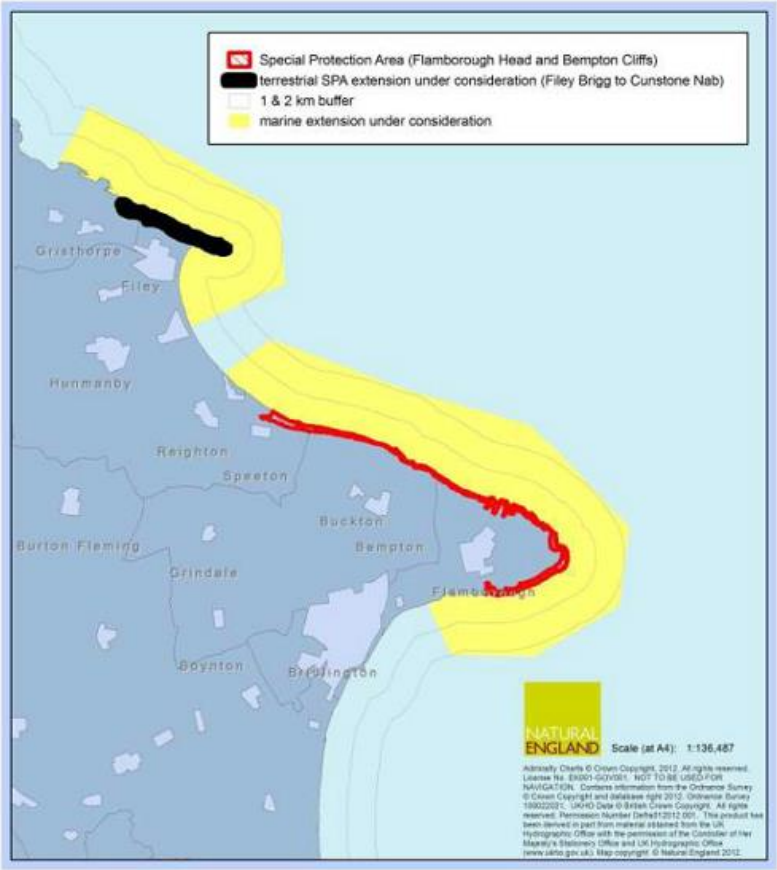

Figure 1. The location of the Flamborough and Filey Coast SPA including the Filey Cliffs and the original Flamborough Head and Bempton Cliffs SPA.

The breeding seabird population counts

Although there are numerous historic references to the status of seabirds at Flamborough Head and Bempton Cliffs, including Wade (1907) and Nelson (1907), the first attempted systematic count wasn't until 1952 (Brownsey and Peakall 1953), followed by Williams and Kermode (1964). A series of UK-wide seabird counts ensured a sequence of counts were carried out in 1969 for Operation Seafarer (Cramp et al 1974), in 1987 for the Seabird Colony Register (Lloyd et al 1991) and in 1999/2000 for Seabird 2000 (Mitchell et al 2004). A further whole colony count of the Flamborough Head and Bempton Cliffs was undertaken, by the RSPB, in 2008 (Clarkson, RSPB

unpublished report), and Gannet and European Herring Gull *Larus argentatus argenteus*, hereafter referred to as Herring Gull, whole colony counts have been undertaken at intervals between 2009 and 2016. A series of annual Filey colony counts were carried out by the RSPB from 2010-2017 (Appendix Two), and were used by Natural England, to inform the designation of the F&FC SPA.

In 2017, the first whole colony count of the newly designated F&FC SPA, was successfully undertaken (Clarkson, Aitken, and Babcock 2017) as part of the latest national 'Seabirds Count' survey, which ran from 2017 until 2019, and was co-ordinated by the Joint Nature Conservation Committee (JNCC). It is anticipated that the results will be published in 2023.

For a more detailed historical record of FH&BC and Filey colony counts see Supplementary Information (contact RSPB Bempton Cliffs).

This paper outlines the results of the second F&FC SPA whole colony count, undertaken in the 2022 breeding season, five years on from the benchmark count in 2017. The count uses the same methodology applied in the 2000, 2008 counts of Flamborough Head and Bempton Cliffs and the 2017 F&FC SPA count to enable direct comparisons to be made between years and population trends to be determined over a twenty-two year period.

Developing a co-ordinated approach to seabird monitoring across the Flamborough and Filey Coast SPA

The breeding seabird assemblage faces the following potential risks including:

- a climate-change driven increase in sea surface temperatures and shifts in frontal systems and marine currents which could fundamentally alter food sources (Frederiksen *et al* 2004 and Carroll *et al* 2015)
- the development of large-scale offshore wind arrays and other industrial scale developments, situated in the North Sea, relatively close to the F&FC SPA
- the impact of existing, and new fishing practices e.g., the Dogger Bank Sandeel fishery which has been shown to negatively impact Kittiwake breeding productivity following high catch years (Carroll et al 2017).

- increased recreational disturbance from a variety of sources including military and light aircraft, paragliders, jet-skis and motorised vessels, angling, coasteering, sea-kayaking, wildlife photography and bird-watching can negatively impact on breeding productivity

In the light of these ongoing and potential developments, Natural England and the Flamborough Head European Marine Site Management Scheme recognise the need to better understand the potential effects of existing and proposed activities and developments on the SPA features. To ensure a coordinated approach to seabird monitoring and conservation in the area, a voluntary F&FC SPA seabird monitoring group has been set up comprising representatives of the organisations listed above as well as the RSPB, SSE Energy Services and Ørsted, to ensure assessments and decisions are based upon accurate and agreed data and evidence. This whole colony count is only possible through the support of this group.

Methods

The report adopts the British Ornithologist Union's ninth British list (December 2017) and the now agreed IOC international English name (see www.worldbirdnames.org) with the exception of Common Murre which is referred to using the English vernacular name, Common Guillemot.

Standard seabird census methods were adopted for each species during the 2022 Seabird colony count as outlined in the Seabird Monitoring Handbook (Walsh et al 1995) and Bird Monitoring Methods (Gilbert et al 1998). The same methodology was also used during the 2000, 2008 and 2017 whole colony counts (Table One).

Table One. A summary of census methodologies used for all species counted during the Flamborough and Filey Coast SPA colony counts in 2000, 2008, 2017 and 2022

Species	Methodology [1]	Timing of count [2]	F&FC specific methodology
Northern Fulmar *Fulmarus glacialis*	Whole–colony census method using Apparently Occupied Sites (AOS)	Late May-early June (ideally June) between 0900h and 1730h – ideally mean of several counts	AOS
Northern Gannet *Morus bassanus*	Census method 1 - AOS and club-birds or AON where non-breeding birds are scattered amongst breeding birds. Counts should ideally be replicated by two observers.	June or July (mid-May/mid-Aug) between 0900h and 1600h ideally repeated several weeks later	AOS and separate count for obviously non-breeding birds
European Shag *Phalacrocorax aristotelis*	Census method – AON plus loafing adults. Repeat counts where possible using highest count.	Late-May – early June	AON
Great Cormorant *Phalacrocorax carbo*	Census method 1 - AON plus number of adult birds' present	May-June	AON

Black-legged Kittiwake *Rissa tridactyla*	The recommended count unit is the AON, defined as a well-built nest capable of holding eggs or young, at which at least one adult is present plus sample counts of AOS (including trace-nests). Where possible repeat several times in breeding season.	Late May to mid-June, ideally early-June	AON including trace nests as not possible to see complete nest structure on high cliffs
European Herring Gull *Larus argentatus argenteus*	Census method 1 – AON plus Apparently occupied territories (AOT) based upon spacing of adults. Ideally repeat visits using highest count.	Late May-early June between 0900h and 1600h	AOS as often not possible to see nest
Common Guillemot *Uria aalge*	Whole-colony census method uses unit of individual adults on land. Ideally repeat counts on five occasions and take mean count and standard deviation as final figure. Where time is limited, a single count may be used.	Late-May to late-June, ideally first three weeks of June (incubation/early nestling period) between 0800h and 1600h	Individuals on land (excluding loafing birds at base of cliff)
Razorbill *Alca torda*	Whole-colony census method uses unit of individual adults on land. Ideally repeat counts on five occasions and take mean count and standard deviation as final figure. Where time is limited, a single count may be used.	Late-May to late-June, ideally first three weeks of June (incubation/early nestling period) between 0800h and 1600h	Individuals on land (excluding loafing birds at base of cliff)

Atlantic Puffin *Fratercula arctica*	AOS or apparently occupied burrow	Late-April to mid-May or between late April and early August. Counts made early in the breeding season, before immatures arrive, are potentially the most useful	Individuals rafting on sea only when virtually no birds on cliffs during initial pre-season gathering (Prof. Mike Harris pers. comm.)

[1 & 2] as recommended in the Seabird Monitoring handbook (Walsh et al 1995)

In preparation for the JNCC co-ordinated 'Seabird 2000' count, Trevor Charlton, then the RSPB Bempton Cliffs Site Manager, divided the Flamborough Head and Bempton Cliffs SPA into 18 named, discrete sections of cliff for use with the national Seabird Monitoring Programme (SMP) (Fig. 2). Each section was photographed and further subdivided into smaller count units creating 178 contiguous sections which together covered the length of the Flamborough and Bempton Cliffs colony (Appendix 3). The four sections between Flamborough Head and South Landing were not used in the 2008 count.

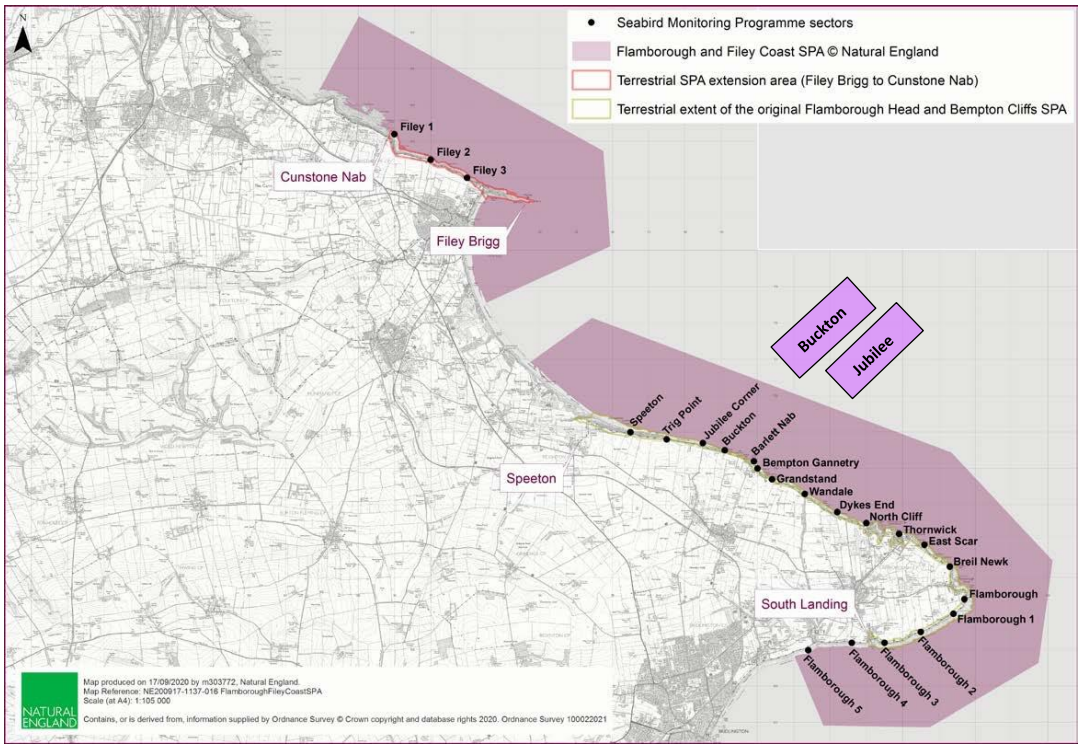

Figure 2. The Flamborough and Filey Coast SPA colony count sub-sections, showing the SMP plots.

The Filey colony was photographed in 2010 and the three SMP sections (Fig. 2) were divided to create 23 plots and these sections were used in subsequent colony counts, including the 2017 survey. The JNCC SMP no longer records these sub-units and therefore evidence of future changes in the spatial shifts in the distribution of breeding populations within the colony may be lost.

The Survey was carried out using a combination of land-based counts, where safe access and viewing is possible from either above or when accessible, below the cliffs (indicated in Appendix Three, Four, Five & Six). All land-based counts in 2022, were carried out by Keith Clarkson.

Sea-based counts of the Flamborough Head and Bempton Cliffs colony were accessed using a licensed fishing boat, a traditional Yorkshire coble, the 'Summer Rose' which is owned by the Emmerson family and is launched out of the North Landing harbour, at Flamborough Head. The coble was skippered by Mike Emmerson who used his intimate knowledge of the seabed and currents around the headland to access all parts of the colony. The Filey cliffs were accessed using the Filey Sailing Club Safety R.I.B., skippered by Dave Warburton. Sailing was only possible when a) the sea-state was Douglas Scale 2 or less with calm or smooth wavelets and a swell of less than 0.5m, b) no rain, c) wind strength less than Beaufort Scale 4 and d) good visibility. The only weather-related hindrance to counting occurred when counting the high cliffs between Bempton and Speeton, in the afternoon, in clear skies, when, typically, the cliffs were in shadow but the glare at the top of the cliffs was so strong that it made the identification of birds nesting at the top of the 100m high cliffs, and assessing their breeding status, challenging. Therefore, wherever possible, counts of the high cliffs were made in the mornings and early afternoon. The combination of land and sea-based counting ensured that all parts of the colony were included in the census.

Photographs of the cliffs and birds were not taken due to the challenges of counting birds from photographs on the high cliffs (Clarkson, Aitken, and Babcock 2017).

The census team was Dave Aitken, Trevor Charlton, Keith Clarkson, Richard Cope, Kirsty Franklin, John MacLaughlin, Dave O'Hara, Amy King, and Saskia Wischnewski. Trevor Charlton was involved in the 2000, 2017 and 2022 counts, Keith Clarkson the 2008, 2017 and 2022 counts and Dave Aitken and Saskia Wischnewski the 2017 count, providing a high level of continuity.

The counts were carried out between 22 May and the 18 June and were dependent upon a suitable weather window for sailing. The early start gave an option, weather permitting, to repeat counts at the end of the period.

It was not possible to carry out multiple counts of each plot due to the limited number of days when sea conditions are likely to be favourable. In the absence of multiple counts, training sessions were carried out prior to the census starting, when team members carried out simultaneous counts of a sample of plots, results were then compared, and counts repeated until the team achieved a consistent approach. Each team member was than allocated a species to count for each plot. At the end of the whole colony count, repeat counts were undertaken of 20 plots, taken at random, to compare results. Where this was done the mean of the two counts was used. Repeat counts were also undertaken of any plot where there was a significant difference from the 2017 count.

In response to reports from Scottish seabird colonies, of the death of large numbers of Gannet and Great Skua *Stercorarius skua* during the early breeding season, all sick or dead birds seen during the count were recorded.

The overall count, including checks and repeat Gannet count, took a total of 327 person hours and 10 days of boat hire.

Results

The individual species counts in 2022, for the F&FC SPA, including the counts for the Flamborough Head and Bempton Cliffs, and Filey Cliffs, are as follows (Table Two):

Table Two. The Flamborough and Filey Coast SPA whole colony count results, 2022

	Flamborough Head and Bempton Cliffs colony	**Filey Cliffs colony**	**Flamborough and Filey Coast SPA**
Northern Fulmar (AOS)	799	417	1216
Northern Gannet (AOS)	13,125	0	13,125
European Shag (AON)	17	0	17
Great Cormorant (AON)	0	32	32
Black-legged Kittiwake (AON)	39,653	4921	44,574
European Herring Gull (AOS)	283	126	409
Common Guillemot (individuals on land)	105,832	6093	111,925
Razorbill (individuals on land)	44,071	1709	45,780
Atlantic Puffin (individual pre-season rafting birds)	2986	94	3080

A detailed plot-by-plot record of the count is provided in Appendix Six.

The 2022 count confirmed that the F&FC SPA supports the largest mainland seabird colony in the UK, with an estimated 166,576 breeding pairs of seabird or 333,152 breeding birds, an increase of 17,308 pairs since 2017. Counts of Guillemot and Razorbill were converted to pairs using a 0.67 conversion factor (Harris 1989).

A comparison with the previous count, five years ago, in 2017, indicates that the Shag, Kittiwake, and Herring Gull populations have declined, whilst Fulmar, Gannet, Cormorant, and Puffin populations have remained stable. Guillemot and Razorbill have undergone a large increase (Table Three).

Table Three. A comparison between the 2017 and 2022 Flamborough and Filey Coast SPA seabird colony counts

Flamborough and Filey Coast SPA	2017	2022	Mean annual rate of population change
Northern Fulmar (AOS)	1,257	1,216	No significant change
Northern Gannet (AOS)	13,392	13,125	No significant change
European Shag (AON)	25	17	-7.5%
Great Cormorant (AON)	27	32	3.2%
Black-legged Kittiwake (AON)	51,535	44,574	-3%
European Herring Gull (AOS)	466	409	-3.95%
Common Guillemot (individuals on land)	90,861	111,925	4.5%
Razorbill (individuals on land)	30,228	45,780	9.5%
Atlantic Puffin (individuals on sea and land)		3,080	

Looking further back in time, the population trend since 2000, for the Flamborough Head and Bempton Cliffs colony, comparing like-with-like count methodologies, also shows:

- an ongoing significant increase in the Guillemot and Razorbill population,
- a recent stabilising of the Gannet population after a period of rapid colony expansion,
- a recent decline in Kittiwake numbers,
- a slowing down in the rate of decline in the Fulmar population and,
- ongoing declines for Shag and Herring Gull populations (Table Four).

Unfortunately, there are no comparable counts of Puffin and Cormorant.

Table Four. Population changes based upon seabird colony count results for the Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs colony only) 2000 - 2022

Species	2000	2008	2017	2022
Northern Fulmar (AOS)	1,360	-	846	799
Northern Gannet (AOS)	2,552*	6,386	13,392	13,125
European Shag (AON)	31	24	25	17
Black-legged Kittiwake (AON)	42,582	-	45,504	39,653
European Herring Gull (AON)	719	-	351	283
Common Guillemot (individuals on land)	47,215	59,817	84,647	105,832
Razorbill (individuals on land)	8,463	14,956	27,967	44,071

* 1999 Northern Gannet count

A breakdown of the individual species counts and population trends for the F&FC SPA, including the Flamborough Head and Bempton Cliffs and the Filey Cliffs colonies, are as follows:

Black-browed Albatross *Thalassarche melanophris*

An adult Black-browed Albatross was first seen at the colony on 30 March and spent a total of 104 days on or around its potential nesting territory on the periphery of the main Gannet colony at Staple Newk. It was last seen on 2 August 2022 (Trevor Charlton, pers. comm). It is likely that this is the same bird that was first seen visiting the reserve in the autumn of 2017.

Northern Fulmar *Fulmaris glacialis*

1,216 AOS were counted across the F&FC SPA, including 799 AOS within the Flamborough Head and Bempton Cliffs colony and an additional 417 AOS within the Filey Cliffs colony. The long-term population trend (Fig. 3) reveals that the Fulmar population, a species that was first reported on the cliffs in the 1920s when c20 pairs were present (Mather 1986), grew rapidly through the 1930s reaching an apparent peak in the year 2000 when 1,360 AOS were counted during the Seabird 2000 census. Since when, the Flamborough Head and Bempton Cliffs Fulmar population has undergone a 41% decline to a low point of 799 AOS in 2022, an average annual population decline of 2.4%.

The Filey Cliffs colony count data suggests a 30% population decline from 597 AOS in 2009 to 417 AOS in 2022. This decline follows a pattern repeated in Fulmar colonies across much of the UK (JNCC 2021).

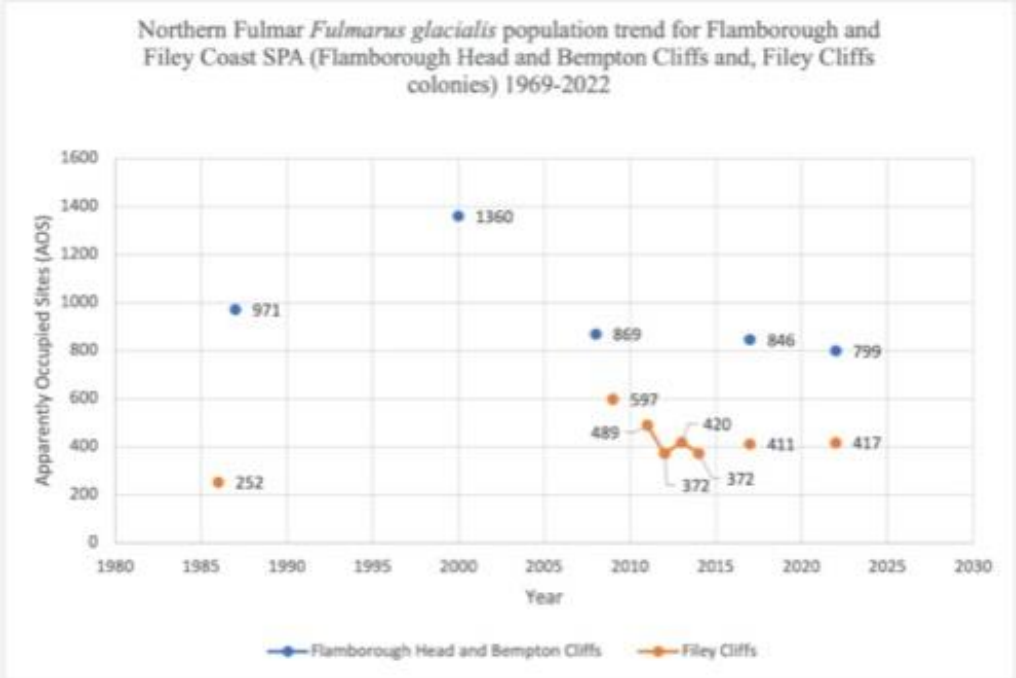

Figure 3. Northern Fulmar F*ulmaris glacialis,* breeding population trend - Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs and Filey Cliffs colonies), 1987-2022

Northern Gannet *Morus bassanus*

13,125 AOS were counted in the Flamborough and Filey Coast SPA. In addition, a minimum of 2,679 non-breeding birds were also present.

Summering Gannets were first reported on the high cliffs by 'climmers' in the 1920s (Mather 1986). After which, the number of breeding pairs remained in single figures until the 1960s, increasing to 21 pairs in 1969, followed by a dramatic increase thereafter (Fig. 4).

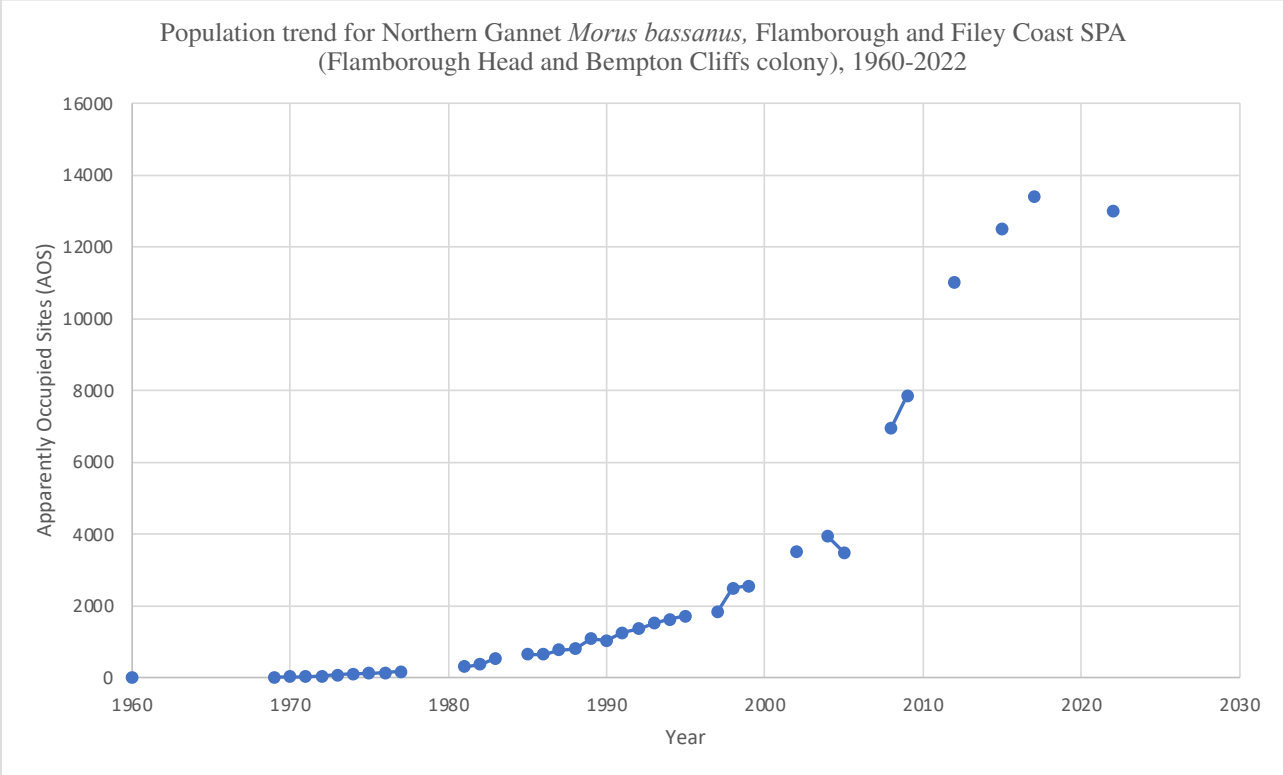

Figure 4. Northern Gannet *Morus bassanus,* breeding population trend - Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs colony) 1960-2022

The mean annual rate of population growth reached a peak of 22.2% per annum between 1969 and 1987 since when the growth rate has fallen, stabilising since 2017 (Table Five).

Table Five. Northern Gannet *Morus bassanus*, average annual population growth rate in the Flamborough and Filey Coast SPA colony, 1960-2022.

Year	Flamborough and Filey Coast Colony Northern Gannet breeding population	Mean annual percentage population growth rate since previous count
1960	9 AON	
1969	21 AON	8.7%
1987	780 AON	22.2%
1999	2552 AOS	11.2%
2008	6386 AOS	11.0%
2017	13,392 AOS	8.6%
2022	13,125 AOS	0.5%

Overall, the F&FC SPA population increased by 509% since 1999 compared to a UK-wide increase of 34% in the period 1998/2000 – 2015 (JNCC 2021).

The area of cliffs occupied by the colony continues to expand, despite the stabilised numbers, with significant extensions to the southern and northern boundaries of the Gannet colony in the last five years (Appendix Nine a & b). Furthermore, several pairs, occupying nest territories in 'non-breeding clubs' at the top of the cliffs, are now breeding successfully in sites that previously would have been considered unsuitable due to predation risk by foxes and other predatory mammals.

The growth in numbers was spread across the colony with many new breeding pairs infilling alongside existing nesting territories or establishing colony extensions in clubs of previously non-breeding birds.

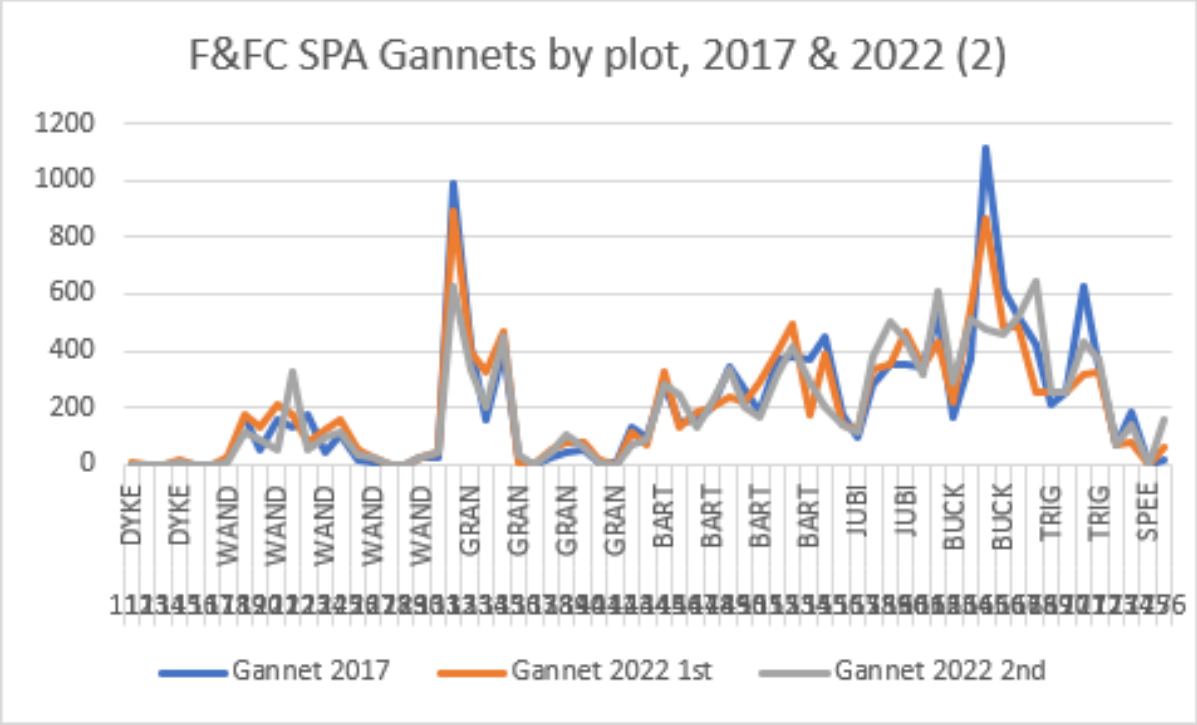

Figure 5. Variation in the distribution of Gannet nest territories across the colony when comparing the 2017, 2022 early season and 2022 mid-season counts.

The repeat count of nesting Gannet enabled a comparison, both between and within year, in the distribution and density of Gannet nests in the colony (Fig. 5).

European Shag *Phalacocorax aristotelis*

The small breeding population of Shag, which has been present since at least the 1950s, continues to be restricted to the Flamborough Head and Bempton Cliffs colony. In 2022, a total of 17 AON were located, a population decline of 45% from a peak of 31 pairs, recorded in 1987 and 2000 (Fig. 6). Similarly, declines have been reported across the UK during this period (JNCC 2021).

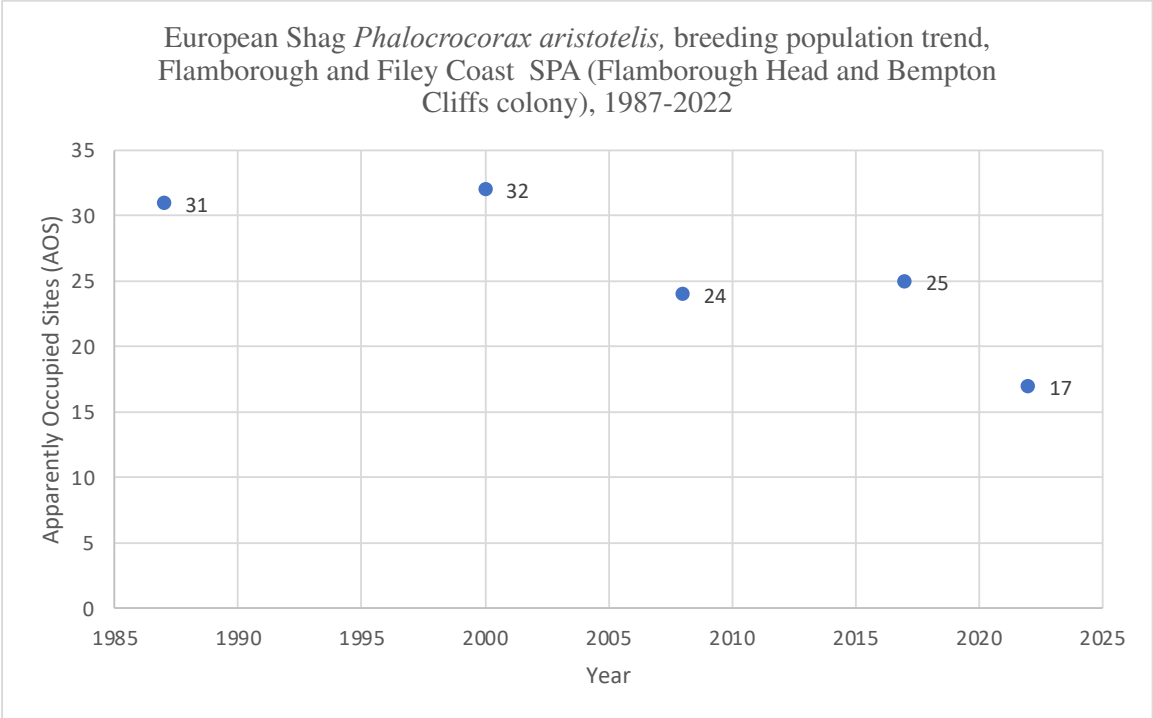

Figure 6. European Shag *Phalacrocorax aristotelis*, breeding population trend, Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs colony), 1987-2022

Observations of colour-marked individuals suggest that at least some breeding and non-breeding birds originated from colonies on the Farne Islands, the Isle of May and the Firth of Forth.

Great Cormorant *Phalacrocorax carbo*

This species was first reported breeding on Filey Cliffs in the late 1880s (Nelson 1907), where a small colony has persisted to present day. A total of 32 AON were counted in 2022, all in the Filey Cliffs colony.

Boat-based counts made within the last forty years suggest that although the number of birds nesting in any one year varies the overall breeding population has remained stable throughout this period at c. 25 pairs. (Fig. 7). The UK population has fluctuated through this period (JNCC 2021).

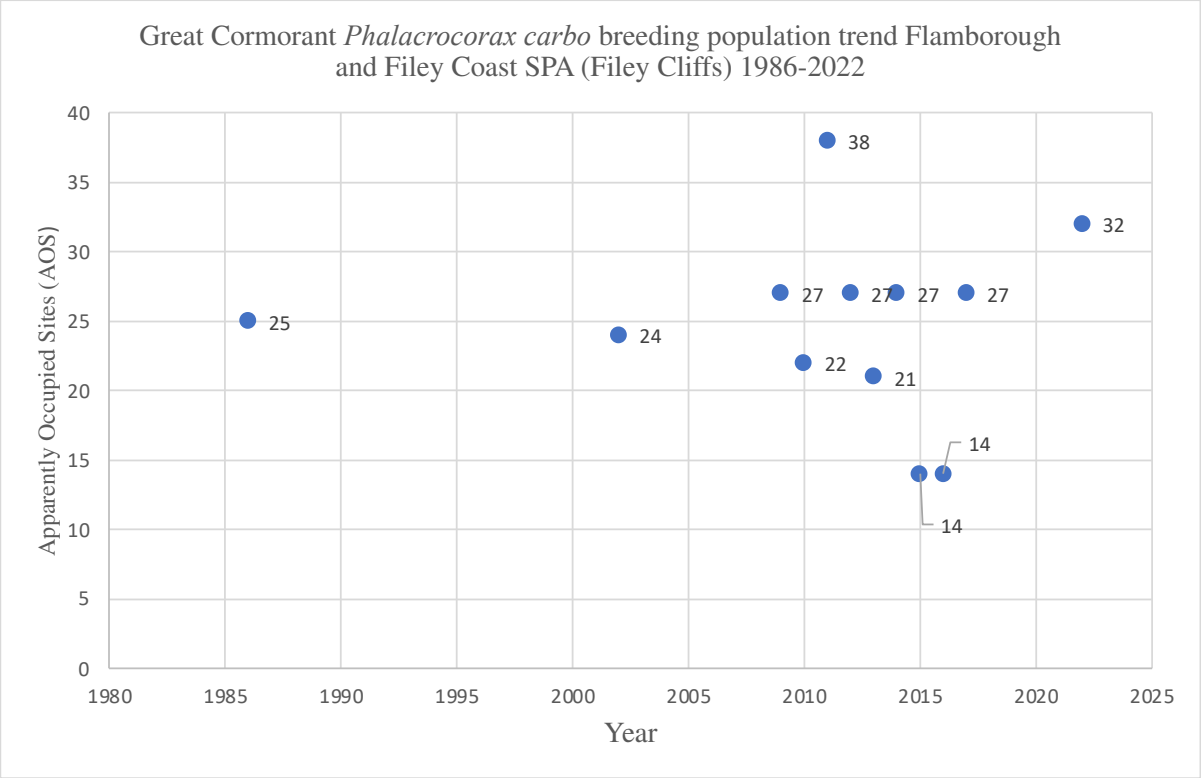

Figure 7. Great Cormorant *Phalacrocorax carbo,* breeding population trend, Flamborough and Filey Coast SPA (Filey Cliffs colony), 1986-2022

Sustained heavy, late winter, storms in 2015 resulted in a major wreck of seabirds along the North Sea coast and almost 50% loss in the breeding population. The number of breeding birds has slowly increased since this date to the present population of 32 pairs.

Black-legged Kittiwake *Rissa tridactyla*

In 2022, the Flamborough and Filey Coast SPA supported 44,574 AON, including 39,653 AON in the Flamborough Head and Bempton Cliffs colony and 4921 AON in the Filey Cliffs colony.

The results of the 2022 colony count suggest that the F&FC SPA breeding Kittiwake population is the largest colony in the UK, supporting c.18% of the UK population, assuming a maximum UK population of 250,000 pairs (JNCC 2021).

Prior to the year 2000, it seems likely that the growth in the Kittiwake population recorded throughout the 1950s-1960s continued into the 1980s and was followed by a decline in the 1990s to the present level (Fig. 8).

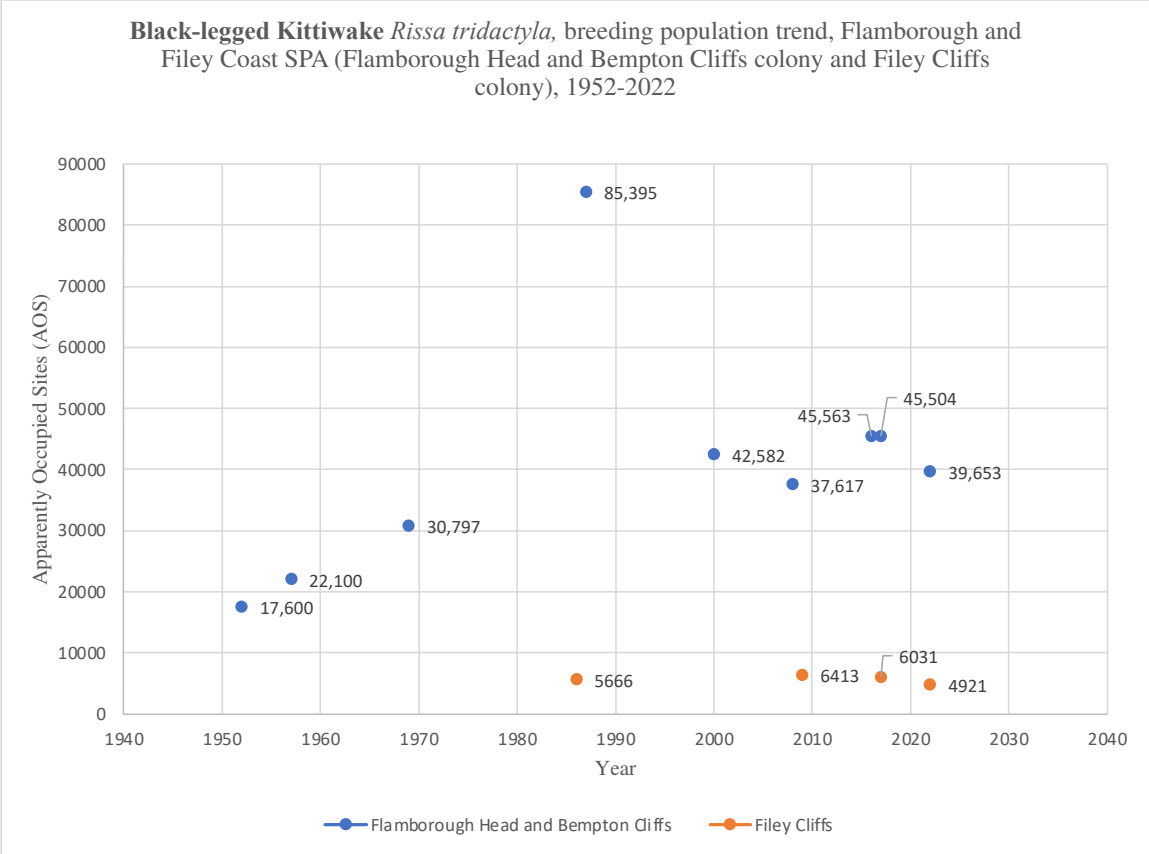

Figure 8. Black-legged Kittiwake *Rissa tridactyla* breeding population trend, Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs and Filey Cliffs colonies), 1952-2017.

Since the year 2000, a period of stability followed although the 2022 count reveals a decline, across the colony, since 2017 (Table Six).

Table Six. Intra-colony variation in breeding population for Black-legged Kittiwake *Rissa tridactyla* within the Flamborough and Filey Coast SPA, 2000-2022.

	Number of Apparently occupied nests (AON) of Black-legged Kittiwake *Rissa tridactyla*				
F&FC SMP plots	2000	2008	2017	2022	decline since 2017
Low southern cliffs (SMP plots HEAD-NORT)	17,707	16,075	17,978	16,777	7%
High northern Cliffs (SMP plots DYKE-SPEE)	24,870	21,542	27,351	22,876	16%
Filey Cliffs	n/c	6413*	6031	4921	18%
TOTAL		44,030	51,360	44,574	13%

* Filey count was in 2009

NB: the Low Southern cliffs excludes HEAD - SOUTH LANDING plot which was not counted in 2008

In 2017 the whole colony count revealed c.5,000 non-breeding Kittiwakes were also in attendance, many on potential nest territories. The number of non-breeding birds was not assessed in the 2022 whole colony count.

European Herring Gull *Larus argentatus argenteus*

409 AOS were counted across the F&FC SPA in 2022. The count was based upon 283 AOS recorded in the Flamborough Head and Bempton Cliffs colony and a further 126 AOS on Filey Cliffs.

At the turn of the 19th Century the number of breeding birds were reported in single figures, undoubtedly due to persecution by the local 'climmers' or egg-collectors (Wade 1907). With reduced persecution in the 20th Century numbers recovered and, by 1969, 1246 pairs of Herring Gull were present on the cliffs. However, counts of the Flamborough Head and Bempton Cliffs colony, excluding Filey Cliffs, undertaken since 1969, reveal a dramatic 71.8% long-term decline in Herring Gull numbers and a 51% decline since year 2000 (Fig. 9). The annual rate of population

decline has increased from a mean of 0.5% per annum in the 1970s and 80s, to an average rate of decline of c.3% per annum in the 1990s and 2000s. The rate of decline accelerated further to a mean average of 10% per annum between 2014 and 2017, after which the rate of decrease slowed down to 4% per annum in the last five years.

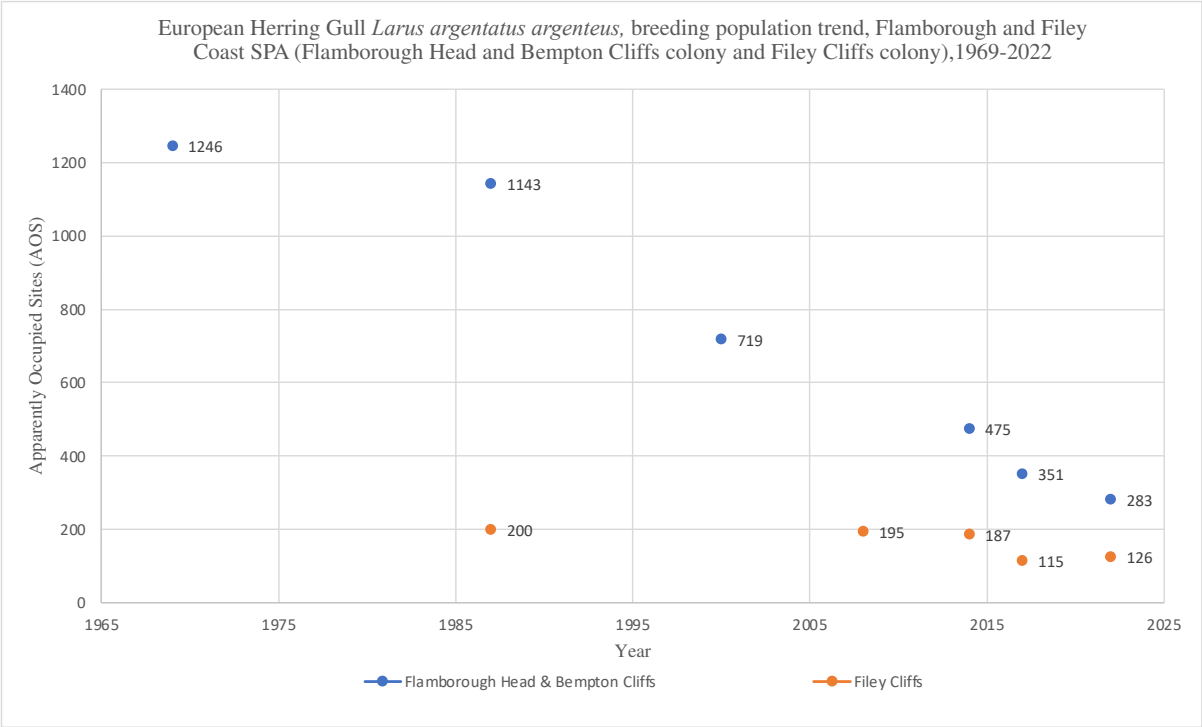

Figure 9. European Herring Gull *Larus argentatus argenteus,* breeding population trend, Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs colony and Filey Cliffs), 1969-2022.

It is not known whether this decline is offset by the significant growth in the number of birds now breeding in adjacent coastal towns of Bridlington, Filey and Scarborough.

Common Guillemot *Uria aalge*

111,925 individuals were counted on the cliffs of the F&FC SPA which, using a correction factor of 0.67 (Birkhead 1978, Harris 1989), suggests a breeding population of c.74,989 pairs. Ideally, the correction factor should be re-calculated to reflect any changes in adult survivorship and attendance patterns specific to this colony (Harris et al 2015). However, in the absence of this data we have used the best available methodology. The results suggest that the F&FC SPA Guillemot

colony is probably the second largest in the UK (JNCC SMP 2021). The count included 105,832 individuals on land in the Flamborough Head and Bempton Cliffs colony and 6,093 individuals on land in the Filey Cliffs colony.

The counts for the Flamborough Head and Bempton Cliffs colony reveal an ongoing and dramatic increase in the breeding Guillemot population since the Operation Seafarer count in 1969 (Fig. 10).

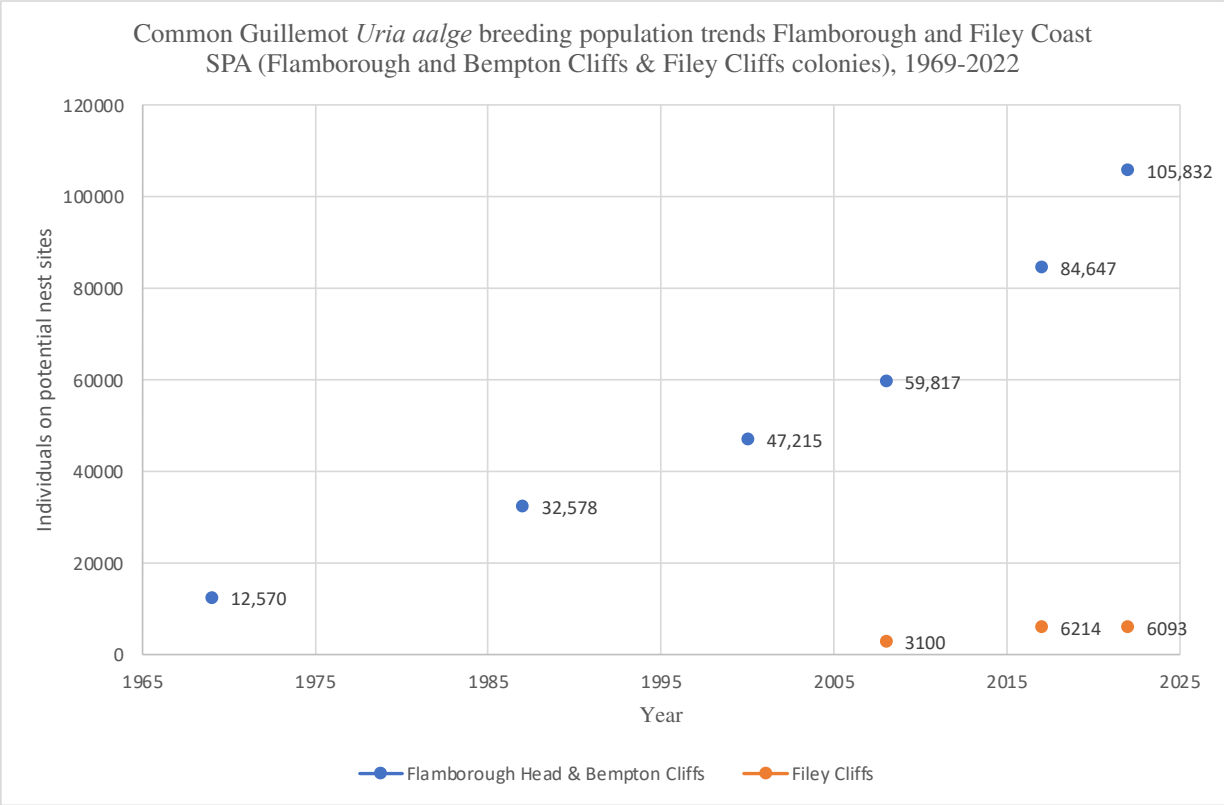

Figure 10. Common Guillemot U*ria aalge,* breeding population trend, Flamborough and Filey Coast SPA (Bempton Cliffs and Flamborough Head colony and Filey Cliffs colony), 1969-2022.

The Flamborough Head and Bempton Cliffs colony has increased by 124% since year 2000, this compares with a UK-wide increase of only 5% in the period 1998/2000 - 2015 (JNCC 2021).

The mean annual population growth rate for the Flamborough Head and Bempton Cliffs colony is 4% per annum although this has fluctuated between counts (Table Seven). These figures compare favourably with Skomer Island where the population increased by 80% between 2000 and 2015,

the Farne Islands, which increased by 70% at a rate of 3.6% per annum in the same period and Rathlin Island, the UK's largest Guillemot colony, which increased by 37% at a rate of 2.7% per annum. All other UK colonies included in the JNCC Seabird Monitoring programme experienced population declines in the same period (JNCC 2015).

Table Seven. Common Guillemot *Uria aalge,* changes in the annual rate of population growth, Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs colony), 1969-2022

Year	Flamborough Head and Bempton Cliffs colony count	Average annual percentage increase in population
1969	12,570	
1987	32,578	5.4%
2000	47,215	2.75%
2008	59,817	3%
2017	84,647	4%
2022	105,832	4.5%

Although there are no known accurate counts of the Filey Cliffs colony prior to 2010, a few pairs were reported on the cliffs in the early 1900s through to the 1970s (YNU 1976), after which there appears to have been a significant increase in the breeding population. The number of birds counted on the cliffs in the Filey Cliffs colony has increased at a very high rate of 9.1% per annum from 3,100 individuals on land in 2010 to 6,214 in 2017, since when the Filey Cliffs colony has remained stable.

There is a growing concern at other colonies in the UK (Murray *et al* 2015 and Murray 2017) that the burgeoning Gannet population may be displacing Guillemot from their traditional nest ledges and that this might be impacting the population. However, displacement by colonising Gannet,

which has been widely reported within the colony, is clearly not having a negative impact on the overall Guillemot breeding population of the SPA.

Razorbill *Alca torda*

45,780 individuals were counted attending potential nest territories within the F&FC SPA, which, using a correction factor to compensate for the pattern of pair attendance, of 0.67 (Birkhead 1978, Harris 1989), translates to 30,673 pairs or 61,345 breeding individuals. The count included 44,071 individuals counted in the Flamborough Head and Bempton Cliffs colony and 1,709 individuals in the Filey Cliffs colony.

There are very few historic references to Razorbill or their status in the colony. At the turn of the 19th Century, it was considered that Guillemots out-numbered Razorbills by 100:1 (Nelson 1907). This situation has changed significantly. The whole colony counts for the original Flamborough Head and Bempton Cliffs colony reveal an ongoing and dramatic increase in the breeding Razorbill population (Fig. 11), with a 230% increase since the year 2000. The mean annual population growth rate is c. 6% per annum since 1969. The F&FC SPA houses one of the largest Razorbill colonies in the UK, supporting c.32% of the UK population of 187,000 individuals (Mitchell *et al* 2004).

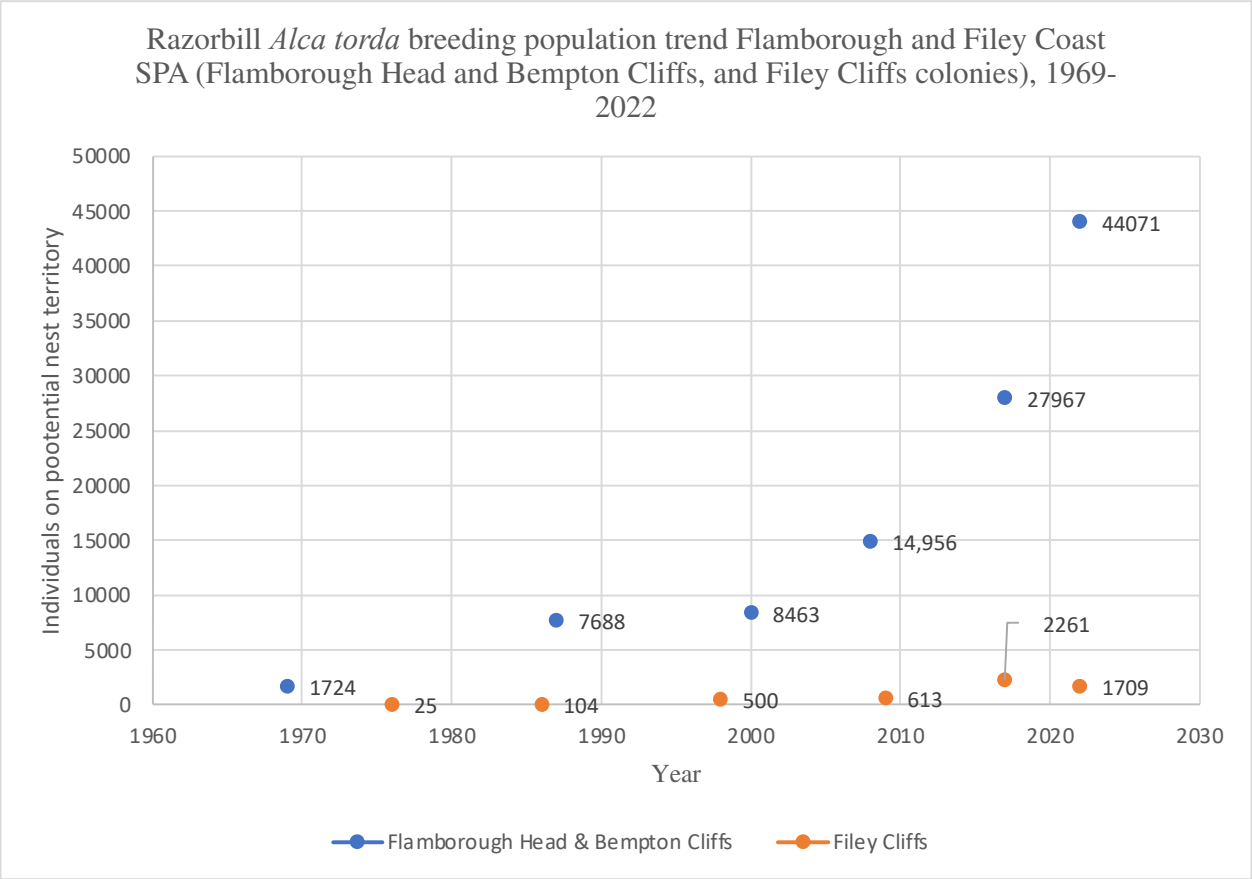

Figure 11. Razorbill *Alca torda,* breeding population trend, Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs colony and Filey Cliffs colony), 1969-2022.

Although there are no known accurate counts of the Filey Cliffs colony prior to 2010, small numbers of birds were known to be breeding on the cliffs since the 1970s (YNU 1984) and had increased to 104 pairs in 1986 (Mather 1986). However, systematic sea-based counts carried out by the RSPB reveal that the number of birds counted on Filey Cliffs has increased from 613 individuals on land in 2009 to 2,261 individuals on land in 2017, an average annual population growth rate of 15.9%. However, in contrast to the Flamborough Head and Bempton Cliffs colony, the 2022 count revealed an unexpected decrease in numbers at Filey Cliffs (Fig. 11).

Atlantic Puffin *Fratercula arctica*

A total of 3,080 individual Puffin were recorded rafting on the sea on 15 March 2022. Of which 2,986 individuals were associated with Flamborough Head and Bempton Cliffs and 94 individuals were on the sea off Filey Cliffs (Table Eight). These pre-nesting season counts of individual

rafting Puffin, undertaken whilst only low numbers are inspecting nest sites, may provide an important baseline population index for the F&FC SPA against which future counts can be compared.

The analysis of historic colony count data, of birds counted on the cliffs and sea, highlighted a lack of consistency and reliability. It is recommended that these historic counts are not used in any systematic comparison used to determine population trends.

Table Eight. Atlantic Puffin *Fratercula arctica*, pre-breeding season count of individual birds rafting on sea Flamborough and Filey Coast SPA (Flamborough Head and Bempton Cliffs colony and Filey Cliffs colony), 2016 - 2022

	Flamborough Head and Bempton Cliffs	Filey Cliffs	TOTAL
22/23 March 2016	2267	No count	n/a
24 March 2017	2636	243	2,879 * minimum count as several 100 birds noted on cliffs but not counted
14 April 2018	4105	174	4279
15 March 2022	2986	94	3080

Highly Pathogenic Avian Influenza

It became apparent as the count progressed that some mortality amongst Gannet, Razorbill and Guillemot was likely to be linked to highly pathogenic avian influenza (HPAI) H5N1. This became more apparent after the count was completed when larger numbers of dead adult and juvenile Gannet, Kittiwake and Herring Gull were noted on local beaches and on and below the cliffs.

A repeat Gannet count was organised at the end of the count period to determine whether Avian Influenza was having any impact on breeding numbers. By comparing the distribution of nest territories across the colony in 2017 and both the first and repeat count in 2022 it is possible to

detect a decline in numbers in the areas of highest nest density (Fig. 5). It is speculated that this may be a density dependent effect of HPAI.

Discussion

The size of F&FC SPA seabird assemblage

The colony count reveals that the F&FC SPA is one of the largest seabird colonies in the UK, supporting a seabird assemblage of at least 333,152 breeding birds. However, the total number of birds present in the colony at the height of the breeding season is substantially higher and in assessing the impact of future potential developments consideration should be given to both the number of young birds fledged and the number of non-breeders in attendance at the colony in the breeding season. For example, using average annual productivity data for each species, based upon the period 2009-2016 (Babcock et al 2017), a minimum of 126,558 birds fledged (excluding Puffin) from the colony in 2022 (Table a).

Table Nine. The number of seabirds estimated to have fledged from the Flamborough and Filey Coast SPA 2022

	Flamborough and Filey Coast SPA count	**Breeding pairs**	**Fledglings (mean productivity 2009-16)***
Northern Fulmar	1216 AOS	1216	669 (0.55)
Northern Gannet	13,125 AOS	13,125	10,894 (0.83)
European Shag	17 AON	17	49 (2.9)
Great Cormorant	32 AON	32	not known
Black-legged Kittiwake	44,574 AON	44,574	36,996 (0.83)
European Herring Gull	409 AOS	409	384 (0.94)
Common Guillemot	111,925 IOL	**74,990	57,742 (0.77)
Razorbill	45,780 IOL	**30,673	19,937 (0.65)
Atlantic Puffin	3080 I	n/a	not known
TOTAL		165,036	126,671

* based upon annual SMP productivity monitoring (RSPB unpublished)
** conversion factor of 0.67 (Birkhead 1978, Harris 1989)

The counts also reveal the presence of large numbers of non-breeding birds which should also be factored into to any assessment of the total numbers of birds present in the colony. However, many of the standard seabird monitoring methodologies exclude the number of non-breeding birds

present in the population. In 2017, a Kittiwake sample count suggested that 9% of apparently occupied sites were occupied by non-breeders. In this year's Gannet count an additional 2,679 immature, non-breeding birds, were present on the cliffs. Anecdotal observations of a Razorbill productivity plot (n=100 pairs) also suggest a minimum of 10% of birds present on the cliff were non-breeders (Clarkson pers. comm.).

The attendance pattern of non-breeding Puffin on the Isle of May are known to change through the season with breeding adults returning in late March and early April, four-year-olds in early April, three-year-olds typically returning at the end of April or beginning of May and two-year-olds in June (Harris 1982). Historic high counts at F&FC SPA, often reported later in the breeding season, are likely to have included a large proportion of non-breeding birds.

Although the data is inconclusive at present there clearly would be great benefit in better understanding the number of non-breeding birds present in the colony.

Population trends

The health of the F&FC SPA breeding seabird assemblage is generally positive although a comparison of individual species population trends reveals a mixed picture.

The Guillemot and Razorbill populations have undergone large increases in the last 48 years. When matched against changes elsewhere in the UK the increase correlates with ongoing growth in the Skomer, Rathlin and the Farne Islands auk populations but elsewhere, and across much of Scotland, the story is one of declines (Miles 2013 and Miles et al 2016). A factor favouring the southern Guillemot colonies is that these colonies coincide with the main range of the Sprat *Sprattus sprattus* (Heesen et al 2015) which provides a valuable alternative food source to sandeels. A study of Guillemot chicks at the F&FC SPA, carried out in 2022 (Fig. 12), reveals that Sprat make up 75% of the diet, with Lesser Sandeel *Ammodytes marinus* (hereafter referred to as 'sandeels') forming only 15% of the diet. A consistent pattern with studies carried out in the colony over a number of years(Porter et al 2010, Aitken et al 2011, Aitken et al 2012, Babcock et al 2014, Babcock et al 2015 and Babcock et al 2016, Mitchell 2022).

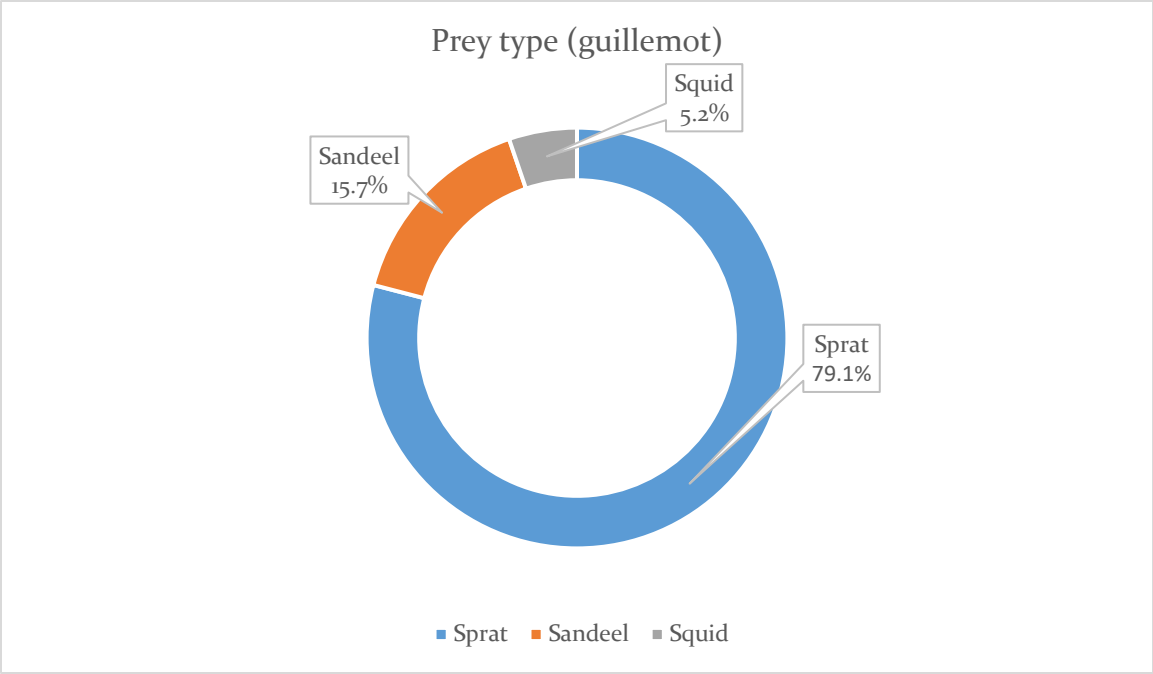

Figure 12. The proportion of Clupeids and Sandeel spp. in the diet of Common Guillemot *Uria aalge* chicks, Flamborough and Filey Coast SPA, 2022 (Mitchell 2022).

Similarly, diet monitoring of Guillemot chicks on Skomer Island since 1973, reveals that the diet of mainly sprats with some sandeels and fewer gadoids has remained consistent for much of the period. However, on Skomer, in the last few years, there has been a noticeable increase in gadoids in the chick diet, which have relatively low calorific value. This shift in diet may signal an important change in the marine environment, possibly linked to climate change, and if it continues, could result in a major change in the Guillemot population (Riordan and Birkhead 2017).

Interestingly the Flamborough Head and Bempton Cliffs auk chick provisioning studies highlight that, in contrast to Guillemot, the Razorbill chick diet consists of up to 98% sandeels (Mitchell 2022). Given the ongoing growth in the Razorbill population it is apparent that sandeel availability is, currently, not limiting breeding success in the F&FC SPA.

Table Ten. Variation in Common Guillemot *Uria aalge* and Razorbill *Alca torda* chick diet at the Flamborough and Filey Coast SPA seabird colony

		Study year			
Auk species	**Prey type**	**2015**	**2018**	**2021**	**2022**
Guillemot	**Sprat**	95.1%	85.8%	95.9%	79.1%
	Sandeel	4.3%	14.2%	Unknown	15.7%
	Other	0.6%	0%	Unknown	5.2%
Razorbill	**Sprat**	10.3%	2.9%	Unknown	1.4%
	Sandeel	89.7%	96.8%	88.7%	98.6%
	Other	0%	0.3%	Unknown	0%

NB: Data source Mitchell 2022

With an average annual growth rate of 6% since 1969, the F&FC SPA now supports c.4% of the global and 21% of the UK Razorbill population (Mitchell et al 2004). The reasons behind such a large increase at this colony are unknown. However, the increases continue to be recorded over a 22-year period during which 4 whole colony counts have been undertaken using almost identical methodologies and involving some of the same experienced observers. The trend is also apparent in the annual study plot counts and from the productivity plots (Cope et al 2021).

The F&FC SPA colony supports approximately 2.1% of the world population of Gannet and has maintained an average annual growth rate of 10% per annum during the period 1999-2008. This rate of growth is substantially higher than the Gannet breeding population in Scotland which has shown an annual rate of increase of 2.9% per annum between 2003/4 and 2013/14 (Murray et al 2015). It is suggested that the lower and slowing rate of growth in many of the Scottish colonies is linked to density-dependent effects. We may now be seeing similar effects at the F&FC SPA colony where, between 2008 and 2017, the annual rate of growth reduced to 7.6%, declining to zero by 2022. Although productivity has remained high throughout the period 2009 – 2021

(Fig.13), there has been a gradual decline to a low point of 0.74 (SE 0.01) chicks fledged per pair in both 2019 and 2021 (Cope et al 2021).

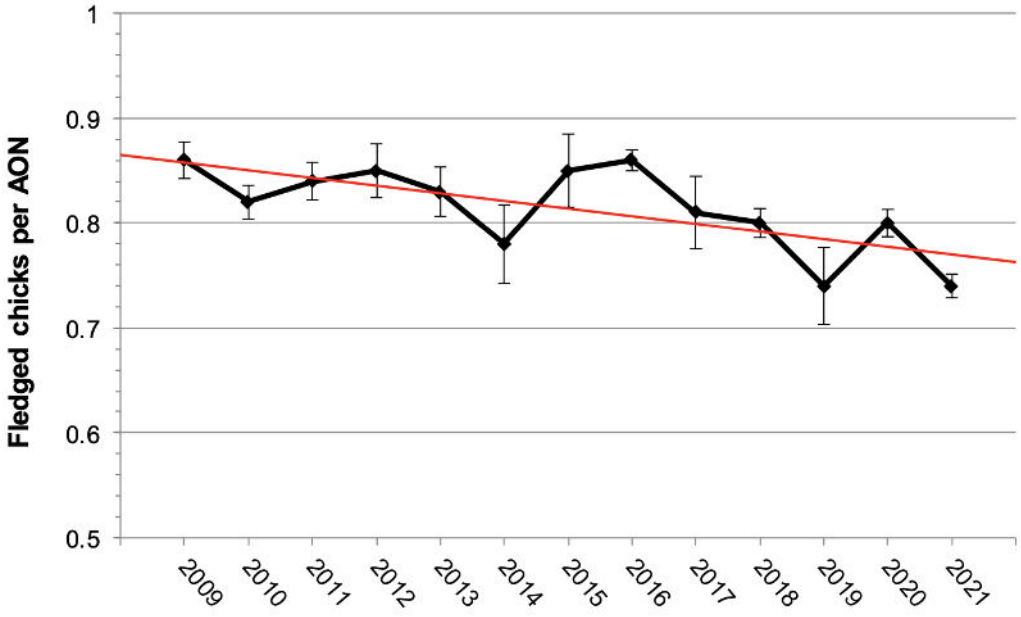

Figure 13. Northern Gannet *Morus bassanus* productivity - Flamborough and Filey Coast SPA, 2009 – 2021 (mean of plot productivity results plus/minus SE).

Gannet have been identified as one of the seabird species most at risk from collision mortality at offshore wind farms (Furness et al. 2013) and may also be impacted by changes in fisheries practice and an end to pelagic and demersal discards, which will remove a major source of prey for scavenging seabirds, including Gannet.

In contrast, significant declines in the breeding population of the Herring Gull and Fulmar were recorded. The Flamborough Head and Bempton Cliffs colony dataset reveals that the Fulmar population, following an ongoing increase between the 1960s and the year 2000, has declined by 41% since 2000. Whilst the Filey Cliffs colony has declined even more steeply, by 31% since 2010. These declines mirror national trends with a 30% decrease noted across Seabird Monitoring Programme colonies between 2000 and 2015 (JNCC 2015). The decline is likely to be linked, at least in part, to the collapse of the North Sea whitefish industry and a corresponding decline in the amount of offal discarded from its fleets - a trend which is likely to continue (Votier et al 2004). Declines in the abundance of natural prey such as sandeels in the North Sea and of certain species

of zooplankton in the North Atlantic, are also likely to have had a detrimental effect on the population (JNCC 2015). Large numbers of Fulmar may also still be caught and killed accidentally by the long-lining fleets in the Norwegian Sea and in the North Atlantic (Dunn & Steel 2001).

The UK coastal populations of Herring Gull decreased by 54% between the 1969-70 (285,900 pairs) and 1998-2002 censuses (130,230 pairs) (JNCC 2015). During the same period the Flamborough Head and Bempton Cliffs colony declined by 42%. The decline continued unabated with a further 51% loss between Seabird 2000 and 2022. Factors influencing the ongoing decline are multiple and thought to include disease, decreases in the availability of food scavenged from refuse tips - associated with changes in refuse management in recent years (Madden & Newton 2004) and reductions in discards from fisheries (Furness et al 1992). Ground predators have also had an effect at some colonies. It is not known whether this decline in breeding numbers in the F&FC SPA is offset by the large increase in nesting Herring Gulls reported in the adjacent urban towns of Bridlington, Filey and Scarborough. There is an urgent, ongoing need for a census of urban nesting gulls not just in local towns but across the UK.

The F&FC SPA supports a Kittiwake population of 44,574 AON, equivalent to 11.7% of the UK population, assuming a maximum population of 378,800 pairs (JNCC 2015) and, as such, is the largest colony in the UK. The status of the Kittiwake was red-listed in the UK Birds of Conservation Concern assessment in 2015 (Eaton et al 2015) and listed as Critically Endangered in the second IUCN Regional Red List assessment of extinction risk for Great Britain (Stanbury et al 2017). This context highlights the significance of the 13% decline in the F&FC SPA breeding colony recorded since 2017.

The fortunes of the Kittiwake colony appear to have fluctuated significantly in the last 200 years. In 1834 Charles Waterton described the ‘Kittiwake’ as being abundant on the cliffs (Mather 1986). However, by the 1860’s the cumulative impact of the annual shooting of thousands of breeding Kittiwakes started to put the species status at risk. This slaughter precipitated the Seabird Preservation Act of 1869 which made the shooting of seabirds, during the breeding season, illegal.

A likely consequence of this persecution is that by the turn of the 19th Century the number of Kittiwakes in the colony was described in hundreds rather than thousands (Wade 1907).

In the 20th century a slow recovery occurred (Mather 1986). In 1952, 17,600 nesting pairs of Kittiwake were counted, from land, between Bridlington and Speeton (Brownsey and Peakall 1953). A similar count methodology produced 22,100 nests between Flamborough Head and Speeton in 1957 (Coulson and White 1958) and 31,195 nests in 1964 (Williams and Kermode 1968). Ten years later, in 1969 the Operation Seafarer census, reportedly carried out from land and sea, produced a similar count 30,800 pairs for the Flamborough Head and Bempton Cliffs colony. Whilst at Filey Cliffs 660 pairs were counted in 1957 (Coulson and White 1958) and 954 nests in 1959 (Coulson 1963).

Reports made over the next twenty years suggested an ongoing increase in numbers reaching an apparent peak in 1987 when over 85,000 pairs of Kittiwake were reported to breed on the cliffs (Mitchell et al. 2004) (Fig. 14).

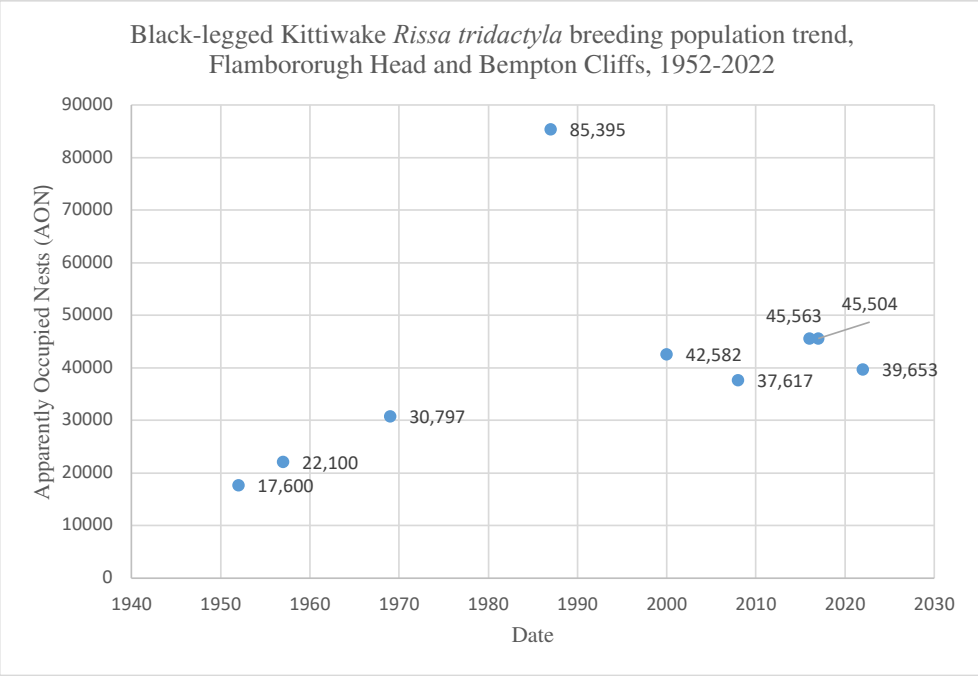

Figure 14. Trend in the Kittiwake *Rissa tridactyla* breeding population - Flamborough Head and Bempton Cliffs SPA colony, 1952-2017.

However, there is much controversy about the accuracy of the counts in the 1970s and 80s (Coulson 2011). Closer examination of the RSPB Bempton Cliffs annual reports reveals that most counts made during this period (Appendix Ten) were land-based with estimates calculated for the sections of cliff that were not visible from land. As large areas of the colony are not visible from land, we believe that these whole colony estimates should be treated with caution. It may be that the maximum numbers will never be confidently known (Coulson 2011). This situation highlights the need for transparent, documented and a comparable count methodology when determining population trends.

In the period 2000 to 2017, the Flamborough Head and Bempton Cliffs breeding population appeared to be fairly stable (Fig. 14), whilst the UK population declined by 44% (JNCC 2015) including losses of more than 95% on some previous strongholds e.g., St Kilda (Miles et al 2016) and losses of over 62% at St Abbs (JNCC 2015). The only other large colonies to show an increase in the UK in the same period are the Firth of Forth colonies, in SE Scotland.

The decline in Kittiwake numbers within the SPA recorded since 2017 may reflect the cumulative impact of a period of declining and low breeding productivity since 2010, although productivity improved in 2022 (Fig. 15).

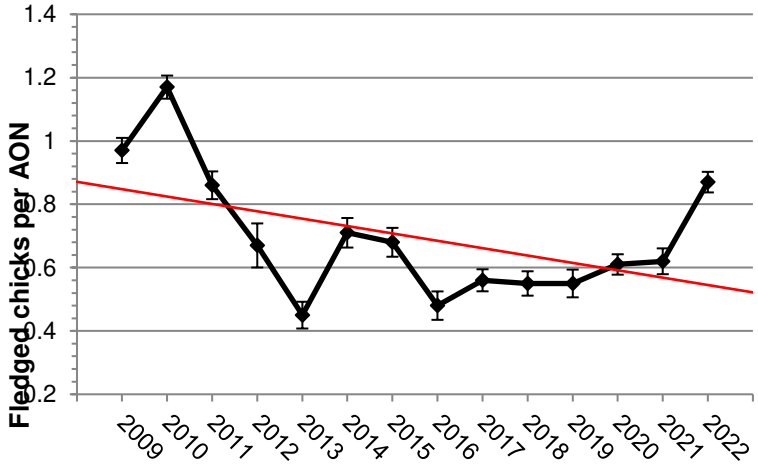

Figure 15. Black-legged Kittiwake *Rissa tridactyla* breeding productivity 2009-2022, Flamborough and Filey Coast SPA (N.B. Data between 2009-2011 are the mean of plots results for Flamborough and Bempton Cliffs, from 2012 onwards the data include Filey Cliffs, +/- SE)

Kittiwake breeding success and survival could be affected by two key factors (Friederiksen et al 2004). Firstly, the availability of sandeels *Ammodytes spp*. for food during the breeding season which may be affected by the impact of the North Sea sandeel fishery, and, secondly, a warming climate which can lead to rising sea surface temperatures and changes to stratification conditions, resulting in shifts in plankton distribution, abundance and availability which combine to reduce sandeel biomass and threaten Kittiwake populations (Carroll *et al* 2015). GPS tracking studies of birds tagged from the F&FC SPA colony, show some adult breeding birds forage in the Dogger Bank and in adjacent, smaller offshore sandeel breeding grounds (Carroll *et al* 2015). An examination of data on fish mortality (level of catch), sandeel stocks, sea surface temperatures, and Kittiwake breeding success found that lower temperatures and lower fishing mortality in the Dogger Bank were positively associated with sandeel biomass, and higher sandeel biomass and lower fishing mortality were positively associated with Kittiwake productivity (Carroll et al 2017). This may provide an early warning that Kittiwake populations of eastern England are not isolated from effects of the fishery operating tens of kilometres from the coast. Considering these associations, and the ongoing decline in Kittiwake breeding productivity there may be a need for a more precautionary approach to sandeel fishery management in which the sandeel stock has a greater opportunity to recover.

The previous 2017 count also revealed that large numbers of non-breeding Kittiwakes were present in the colony, many on potential nest sites. In a small sample count of 16 plots containing 7226 AON, a further 650 AOS, without any nest structure, were occupied by non-breeding birds. These birds were not included in the whole colony count but indicate that a significant proportion of the birds present during the breeding season are non-breeders.

Perhaps the most popular question arising from the colony count, from both the media and the 110,000 visitors to the RSPB's Bempton Cliffs reserve was 'How many 'Puffins' are there, and have they declined?' The answer is always going to be, within the constraints of current available technologies, is that we don't know as Puffin nest sites are invariably hidden in inaccessible cracks or holes in vertical cliffs. Previous whole colony counts have included counts of individuals on land, individuals on land and sea, and have been carried out at differing times in the breeding cycle and will have doubtless been influenced by the presence or absence of much more conspicuous

non-breeding individuals. We therefore took the decision to discount all previous Puffin counts and in 2016 commenced pre-breeding season counts of rafting individuals. The opportunity to count these birds is restricted to the first few days of arrival in mid-March when the breeding birds arrive en-masse, gather on the sea below or close to their nesting sites for 24 hours before commencing nest site inspection. Courtship and mating are often seen during these gatherings. In a situation where it is not possible to count or check nest burrows, due to their inaccessibility, a count, of pre-season rafting birds, carried out from land along the length of the colony, in this brief window, is probably the best index of the breeding population (Prof. Mike Harris pers. comm.). It is hoped that in the future these counts will be carried out annually creating a population index and trend although there is a need to verify the methodology.

It is suggested that the Wild Bird Protection Act 1954 heralded the recovery of the colony, safeguarding the birds from shooting, disturbance and egg collecting. Protection that was enhanced by the Wildlife and Countryside Act 1981 and the designation of the Flamborough Head SSSI, and the Conservation of Habitats and Species Regulations (as amended 2010) and designation of the SPA, SAC and subsequent formation of the European Marine Site, appointment of an EMS Officer and the creation of a Regulating Authorities Management Group. This protection was further enhanced by the creation of the RSPB's Bempton Cliffs nature reserve and Yorkshire Wildlife Trust's Flamborough Cliffs nature reserve. This legislation and protection have helped safeguard the breeding birds and has undoubtedly contributed to the recovery of the colony. However, there is a need to better identify and safeguard the key foraging areas of these internationally important seabird populations.

Until recently, a combination of systematic boat-based and land-based counts has been the only realistic way to count the colony. Earlier attempts to use either land or boat-based counts could only produce broad estimates rather than accurate counts. Similarly, boat-based photographs proved impractical due to the height of the cliffs making it impossible to identify birds nesting towards the top of the high cliffs or nesting in dark cracks or crevices. However, with the advances in digital photography and the potential to harness both aircraft and drone-based photography, the production of more accurate counts and maintenance of the photographic record, should become a reality. The feasibility of using these different technologies and assessing their cost effectiveness

and accuracy was investigated and proved unsuccessful in 2017 but should be reconsidered in the future as drone technology improves.

Accessing and making sense of the historic data has proven to be a logistical challenge and highlighted the problems associated with many seabird monitoring schemes. There is a real need to better manage current data to ensure that it is safely and securely stored, accessible, underpinned by accurate metadata including GPS locations, detailed methodologies, photographs etc. and that the data gathering is quality controlled.

Highly Pathogenic Avian Influenza (HPAI) H5N1

Bird Flu is circulating in wild birds, especially colonial breeding seabirds around our coasts and has caused significant mortality in some species, such as Great Skua and Gannet.

The primary means of HPAI transmission in wild birds is through saliva and nasal secretions (for example through display rituals, preening, fighting, feeding of chicks, etc.). HPAI can also be transmitted by predation of sick birds; from faeces/guano in and around nests and on resting areas close to nests; and possibly via shared freshwater bathing areas. Transmission via consumption of dead birds by scavengers is, however, thought to be very low. HPAI is known to persist in the environment for short periods but is destroyed by high temperatures and UV exposure. Avian influenza is not an air-borne disease (JNCC 25th Aug 2022).

Relatively few dead or sickly birds were noted during the count, less than 30 individuals. However, as the breeding season progressed it became apparent that there was a notable increase in the number of dead adult and juvenile Gannet, Herring Gull and Kittiwake being washed up on the local beaches.

Perhaps the strongest evidence of the impact of HPAI was revealed by the Gannet productivity monitoring ,co-ordinated by the RSPB. The mean number of Gannet chicks fledged per pair (Fig.

16) declined from an average of c. 0.8 fledged chicks per pair to less than 0.36 fledged chicks per pair (Cope et al 2022).

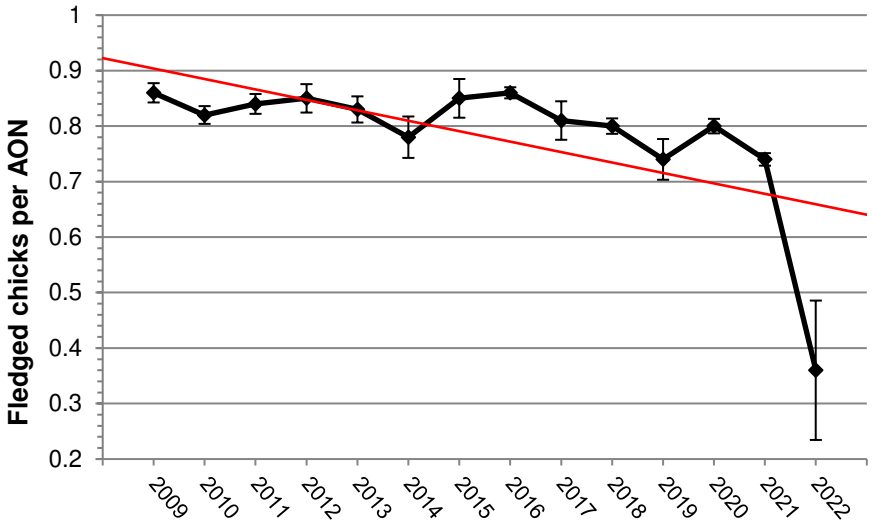

Figure 16. Northern Gannet *Morus bassanus* breeding productivity, Flamborough and Filey Coast SPA, 2009-2022, mean of productivity monitoring plot results +/- SE

More detailed analysis of the productivity monitoring plots suggested that nest failure was significantly higher in areas of high nesting density, whilst productivity in monitoring plots with much lower densities of birds remained high.

There can be little doubt that HPAI is, currently, a significant cause of concern for the conservation of the F&FC SPA.

Recommendations

Recommendations for future census work include:

- original count data and methodologies for each count should be stored securely and made accessible – it is recommended that the JNCC/BTO Seabird Monitoring Programme is the most appropriate current location
- future counts should be verified with photographic evidence, taken simultaneously, to enable quality control and calibration of the accuracy of counts – ideally these photographs should be securely stored with the original data and be made accessible
- the original Seabird Monitoring Programme plot boundaries and distinction between FH&BC and Filey Cliffs should be maintained to enable long-term intra-colony variations in population change and distribution
- the JNCC/BTO SMP database should be checked and amended where necessary to ensure that counts relating to the FH&BC SPA and F&FC SPA are accurately recorded, and that count boundaries and names are correct
- colony attendance levels should be assessed throughout the year and this information used to inform future management
- a repeat whole colony count of the F&FC SPA to be carried out at a every five years
- complete the comparative study of different count methodologies including land and sea-based observer, boat, drone, and aircraft–based photography and determine most cost-effective count methodology for future counts. Use drone to calibrate accuracy of boat and land-based counts.
- undertake a survey of urban nesting gulls in adjacent towns
- develop a methodology to assess impact of HPAI of the F&FC SPA

References

Aitken, D., Kendall, I., Clarkson, K. and Wightman, S., 2011 The Flamborough Head and Bempton Cliffs SPA Seabird Monitoring Programme 2011, RSPB unpublished report.

Aitken, D., Kendall, I., Wightman, S. and Clarkson, K. 2012 The Flamborough Head and Bempton Cliffs SPA Seabird Monitoring Programme 2012, RSPB unpublished report.

Babcock, M., Aitken, D., Jackson, S., and Clarkson, K. 2015 The Flamborough and Filey Coast pSPA Seabird Monitoring Report 2015, RSPB unpublished report.

Babcock, M., Aitken, D., Kite, K. & Clarkson, K. 2016 The Flamborough and Filey Coast pSPA Seabird Monitoring Report 2016, RSPB unpublished report.

Babcock, M., and Aitken, D., (2017) The Flamborough and Filey Coast pSPA Seabird Monitoring Report, RSPB & Natural England unpublished report.

Baker, R., and Duffield, H., (2021) Chick provisioning of the Common Guillemot *Uria aalge* and the Razorbill Alca torda at the Flamborough Head and Bempton Cliffs Seabird Colony in 2018. Unpublished paper.

Birkhead, T.R. 1978 Attendance patterns of Guillemot Uria aalge at breeding colonies on Skomer Island *Ibis*, **120**, 219-229

BirdLife International. 2017. *Rissa tridactyla*. The IUCN Red List of Threatened Species 2017: e.T22694497A118366481. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T22694497A118366481.en.

Brownsey, B.M., & Peakall, D.B., 1953. Breeding seabirds of Flamborough head. *Naturalist*, 149-50

Carroll, M.J. et al. (2015) Effects of sea temperature and stratification changes on seabird breeding success. *Climate Research* 66, 75–89.

Carroll, M. J., Bolton, M., Owen, E., Anderson, G. Q. A., Mackley, E. K., Dunn, E.K. & Furness, R. W. 2017. Kittiwake breeding success in the southern North Sea correlates with prior sandeel fishing mortality. *Aquatic Conserv: Mar Freshw Ecosyst.* 2017;0:1-12. https://doi.org/10.1002/aqc.2780

Clarkson, K., Aitken, D., and Babcock, M. (2017) The Flamborough and Filey Coast pSPA: 2017 Colony Count and Population Trends unpublished RSPB Report

Cope, R., Aitken, D., and O'Hara, D. (2021) Flamborough and Filey Coast SPA Seabird Monitoring Programme 2021, unpublished RSPB Report

Cope, R., Aitken, D., and O'Hara, D. (2022) Flamborough and Filey Coast SPA Seabird Monitoring Programme 2022, unpublished RSPB Report

Coulson, J.C., and White, E. 1958 Observations on the breeding of the Kittiwake, *Bird Study* 5, 74-83.

Coulson, J.C. 1963 The status of the Kittiwake in the British Isles. *Bird Study* 10, 147-149

Coulson, J.C. 2011. The Kittiwake, T. & A.D. Poyser, Calton.

Cramp, S., Bourne, W.R.P. & Saunders, D. 1974. The Seabirds of Britain and Ireland. Collins, London.

Dunn, E. K. and C. Steel. 2001. The impact of long-line fishing on seabirds in the north-east Atlantic: recommendations for reducing mortality. RSPB/JNCC, Sandy, England.

Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. and Gregory, R. (2015) Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man *British Birds* **108**, 708–746.

Frederiksen, M et al. (2004) The role of industrial fisheries and oceanographic change in the decline of North Sea black-legged kittiwakes. *Journal of Applied Ecology* **41**(6), 1129–1139.

Furness, R.W., Ensor, K. and Hudson, A.V., 1992. The use of fishery waste by gull populations around the British Isles. *Ardea* **80**, 105-113.

Furness, R. W. & Tasker, M.L., 2000 seabird fishery interactions: quantifying the sensitivity of seabirds to reductions in Sand-eel abundance, and identification of key areas for sensitive seabirds in the North Sea, *Marine Ecology Progress Series* **202**, 253-264.

Furness, R.W., Wade, H. & Masden, E.A., 2013. Assessing vulnerability of seabird populations to offshore wind farms. *Journal of Environmental Management* **119,** 56-66.
Gilbert, G., Gibbons, D.W. & Evans, J., 1998. *Bird Monitoring methods: A Manual of Techniques for Key UK Species*. RSPB, Sandy.

Harris, M.P., 1989. Variation in the correction factor used for converting counts of individual guillemots into breeding pairs. *Ibis* **131,** 85-93.

Harris, M.P., Heubeck, M., Newell, M.A. and Wanless, S., 2015. The need for year-specific correction factors when converting counts of individual Common Guillemot *Uria aalge* to breeding pairs. *Bird Study* **62**, 276-279.

Heesen, H. J. L., Dann, N. & Ellis, J. R., 2015. *Fish Atlas of the Celtic Sea, North Sea and Baltic Sea*. Wageningen Academic, Netherlands.

JNCC SMP 2015, Seabird Population Trends and Causes of Change: 1986-2015 Report, http://jncc.defra.gov.uk/page-3201.

Lloyd, C.S., Tasker, M.L. & Partridge, K. 1991. *The Status of Seabirds in Britain and Ireland*. T. & A.D. Poyser, Calton.

Mather, J.R. 1986. *The Birds of Yorkshire,* Croom Helm, Kent.

Madden, B. and Newton, S.F. 2004. Herring Gull *Larus argentatus*. In: Mitchell, P.I., Newton, S.F., Ratcliffe, N. and Dunn, T.E. (eds.) 2004. *Seabird Populations of Britain and Ireland:* 242-262. Poyser, London.

Miles, W.T.S. 2013. Long-term declines in Scottish seabird populations. *Scottish Birds*, **33**, 145–152.

Miles, W.T.S., Riddington, R. Moss, J.W. & Sturgeon, J. 2016 A survey of cliff-nesting seabirds on Boreray, Stac an Armin and Stac Li, St Kilda, in 2016. *Scottish Birds*. **37**:2, 126-134.

Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T. I. 2004. *Seabird Populations of Britain and Ireland.* Christopher Helm, London.

Mitchell, S. (2022) Chick provisioning of the Common Guillemot *Uria aalge* and Razorbill *Alca torda* at Flamborough Head and Bempton Cliffs, Unpublished RSPB sabbatical study.

Murray, S., Harris, M.P. & Wanless, S. 2015. The status of the Gannet in Scotland in 2013–14 *Scottish Birds*, **35**, 3-18.

Murray, S., Harris, M. P., Leitch, A.J. & Cowley, D. 2017 An aerial survey of Gannets on Westray, Orkney, in August 2016. *Scottish Birds* **37**:2, 120-125.

Nelson, T.J. 1907. *The Birds of Yorkshire* A. Brown & Sons, Hull.

Porter, R., Kendall, I., Clarkson, K. and Wightman, S., 2010 The Flamborough Head and Bempton Cliffs SPA/SSSI Seabird Monitoring Programme 2010, RSPB unpublished report.

Riordan, J. & Birkhead T.R. 2017. Changes in the diet composition of Common Guillemots Uria aalge chicks on Skomer Island, Wales, between 1973 and 2017. *Ibis.* DOI: 10.1111/ibi.12570.

Searle, K., Mobbs, D., Butler, A., Bogdanova, M., Freeman, S., Wanless, S and Daunt, F. (2014) Population consequences of displacement from proposed offshore wind energy developments for seabirds breeding at Scottish SPAs (CR/2012/03) Final Report to Marine Scotland Science, Marine Scotland, Edinburgh.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win, I. (2021) The Status of our bird populations: the fifth Birds of Conservation Concern in the UK, Channel Isles, and the Isle of Man, plus the second IUCN Red List Assessment of Extinction Risk for GB. British Birds 114: 723-747 https://britishbirds.co.uk/content/status-of-our-bird-populations/

Votier, S. C., Furness, R. W., Bearhop, S., Crane, J. E., Caldow, R. W. G., Catry, P., Ensor, K., Hamer, K. C., Hudson, A. V., Kalmbach, E., Klomp, N. I., Pfeiffer, S., Phillips, R. A., Prieto, I. & Thompson, D. R. 2004. Changes in fisheries discard rates and seabird communities. *Nature* **427**, 727-730.

Wade, E.W. 1907. *Birds of Bempton Cliffs*. Brown & Sons, Hull.

Walsh, P.M., Halley, D.J., Harris, M.P., del Nevo, A., Sim, I.M. & Tasker, M.L. 1995. *Seabird Monitoring Handbook for Britain and Ireland*. JNCC/RSPB/Seabird Group, Peterborough.
Wells, C. 1979. RSPB Bempton Cliffs Annual report, unpublished.

Williams, A.J. & Kermode, D. 1964. A census of the seabird colony at Flamborough 1964, *Seabird Bulletin*, **6**, 15-21.

Acknowledgements

The 2022 whole colony count was funded by SSE Energy Services, through the Dogger Bank Offshore Renewables Ornithological Monitoring Plan, agreed with Natural England.

We are especially grateful to the various landowners including the Yorkshire Wildlife Trust (Flamborough Cliffs Nature Reserve), East Riding of Yorkshire Council (Flamborough Head), Haven Holidays – Thornwick Bay Holiday Village (Thornwick Bay), Mike and John Coultas, Ian, and Julie Rogerson for allowing us to work on their land and use their facilities.

We are indebted to the other members of the count team, to Trevor Charlton, Kirsty Franklin, Amy King, John MacLoughlin, Saskia Wischnewski, and for donating their precious time, for sharing their extraordinary skills and experience, and for being great company – we really couldn't have done it without you.

We would also like to thank the boat crews - the Emmerson family, in particular Joanne and Richard Emmerson, who helped manage the logistics around hiring the boat, helping with sailing times and boarding and disembarking from the boat and, to Mike Emmerson, the skipper of 'Summer Rose', and crew members, Richard, George and Matthew, for their extraordinary patience, for being great company and for sharing their vast knowledge of the area and their love of fishing – it was a joy. We would also like to thank Emma Wilson, Commadore Filey Sailing Club (FSC) for their support and encouragement and for the use of their safety RIB, without which we would not have been able to complete the Filey section of the census. Chris Place, Dave Warburton (skipper) and Mick (support crew) again showed great patience and flexibility guiding us successfully through the beach launch without getting too wet!

This work would not have been possible without the ideas, encouragement, advice and guidance of Professor Tim Birkhead, a constant source of inspiration and insight, and the support of the F&FC European Marine Site (EMS) Regulating Authority members and the wonderful staff and volunteers of Bempton Cliffs – Thank you all.

Appendix

Appendix One: Summary of ornithological interest used by NE to inform the designation of the Flamborough and Filey Coast SPA

	Count (period)	% of subspecies or population (pairs)	Interest type
Original classification:			
Black-legged Kittiwake *Rissa tridactyla*	83,700 pairs (1987)	4% Western European	Migratory
Revised proposal:			
Black-legged Kittiwake *Rissa tridactyla*	44,520 pairs[1] 89,041 breeding adults[2] (2008-2011)	2% North Atlantic[3]	Migratory
Northern Gannet *Morus bassanus*	8,469 pairs[4] 16,938 breeding adults (2008-2012)	2.6% North Atlantic[5]	Migratory
Common Guillemot *Uria aalge*	41,607 pairs[6] 83,214 breeding adults (2008-2011)	15.6% (Uria aalge albionis)[7]	Migratory
Razorbill *Alca torda*	10,570 pairs[8] 21,140 breeding adults (2008-2011)	2.3% *(Alca torda islandica)*[9]	Migratory

	Count period	Average number of individuals
Seabird Assemblage	2008-2012	215,75010

1 Data from: Seabird Monitoring Programme (SMP) for original SPA (2008); RSPB counts for terrestrial extension (2009-2011), unpublished; black-legged Kittiwakes are counted as "apparently occupied nests" (AONs); 1 AON equates to 1 breeding pair.

2 Pairs multiplied by 2 to arrive at breeding adults; this rule applies to all species listed within the table.

3 Data from: AEWA (2012); 6,600,000 Ind. translated to pairs by dividing by 3 and compared to pairs reported for the revised SPA to derive % population.

4 Data from: SMP for original SPA (2008, 2009); RSPB counts for original SPA (2012), (Aitken et al. 2012); Northern Gannets are counted as AOSs; 1 AOS equates to 1 breeding pair.

5 Data from: AEWA (2012); 967,000 Ind. translated to pairs by dividing by 3 and compared to pairs reported for the revised SPA to derive % population.

6 Data from: SMP for original SPA (2008); RSPB counts for terrestrial extension (2009-2011), unpublished; Common Guillemots are counted as "individuals on land" (62,100 individuals on land (mean of counts 2008-2011)); individuals on land are multiplied by a correction factor of 0.67 (Harris 1989) to translate to breeding pairs.

7 Data from: AEWA (2012); 800,000 Ind. translated to pairs by dividing by 3 and compared to pairs reported for the revised SPA to derive % population.

8 Data from: SMP for original SPA (2008); RSPB counts for terrestrial extension (2009-2011), unpublished; Razorbills are counted as "individuals on land" (15,776 individuals on land (mean of counts 2008-2011)); individuals on land are multiplied by a correction factor of 0.67 (Harris 1989) to translate to breeding pairs.

9 Data from: AEWA (2012); 1,380,000 Ind. translated to pairs by dividing by 3 and compared to pairs reported for the revised SPA to derive % population.

Appendix Two: Filey Cliffs (Filey Brigg-Cunstone Nab SSSI) whole colony counts 2010-2017

	YEAR	Northern Fulmar (AOS)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (individs)	Razorbill (individs)	Atlantic Puffin (individuals rafting on sea)	Breeding seabird assemblage
actual count	21-May-10	597	20	6420	195	3100	814	nc	
calculated no. of individuals	21-May-10	1194	40	12840	390	4154	1091	nc	19709
actual count	03-Jun-11	554	38	7877	198	3007	1120	nc	
calculated no. of individuals	03-Jun-11	1108	76	15754	396	4029	1501	nc	22864
actual count	18-Jun-12	386	28	6837	115	2568	1315	nc	
calculated no. of individuals	18-Jun-12	772	56	13674	230	3441	1762	nc	19981
actual count	03-Jun-13	420	21	6935	186	3064	1403	nc	
calculated no. of individuals	03-Jun-13	840	42	13870	372	4106	1880	nc	21,121
actual count	31-May-14	372	27	nc	187	4257	1120	nc	nc
calculated no. of individuals	31-May-14	744	54		374	8514	2240		nc
actual count	12-Jun-15	nc	14	6546	nc	nc	nc	nc	nc
calculated no. of individuals	12-Jun-15		28	13092					nc
actual count	22-Jun-16	nc	13	5723	nc	nc	nc	nc	nc
calculated no. of individuals	22-Jun-16		26	11446					nc
	24-Mar-17							243	
actual count	10-Jun-17	411	27	6031	115	6214	2261	nc	
calculated no. of individuals	10-Jun-17	822	54	12062	230	8327	3030	243	24,768
% change since 2010		-31%	35%	-6%	-41%	100%	178%		
Mean total population of breeding seabird assemblage (no. of individuals)									**21689**

Appendix Three: Seabird 2000 - Flamborough Head and Bempton Cliffs whole colony count - Plot data - 1

Plot No	SMP plot name	Northern Fulmar (AOS)	Northern Gannet (AOS)	European Shag (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (Individuals on land)	Razorbill (Individuals on land)	Atlantic Puffin (Individuals on land)	Date	Timed count	Observers	Location
High Stacks - South Landing		61	0	0	115	14	0	0	0				
1	HEAD	0	0	0	0	0	0	0	0	12-Jun-00	853	TDC & DC	sea
2	HEAD	2	0	0	63	11	0	2	17	12-Jun-00	0857-0902	TDC & DC	sea
3	HEAD	0	0	0	150	2	0	0	0	12-Jun-00	0906-0908	TDC & DC	sea
4	HEAD	0	0	0	110	0	0	0	0	12-Jun-00	0908h	TDC & DC	sea
5	HEAD	1	0	0	190	0	47	3	29	12-Jun-00	0908-0916	TDC & DC	sea
6	HEAD	0	0	0	170	0	8	23	8	12-Jun-00	0916-21	TDC & DC	sea
7	HEAD	5	0	0	140	2	110	59	6	31-May-00	1510-1525	TDC & DC	sea
8	HEAD	1	0	0	5	12	0	0	0	31-May-00	1525-1530	TDC & DC	sea
9	HEAD	0	0	0	0	1	0	0	0	31-May-00	1555h	TDC & DC	sea
10	HEAD	0	0	0	50	2	0	0	0	31-May-00	1555-1600	TDC & DC	sea
11	HEAD	0	0	0	110	0	15	12	0	31-May-00	1602-1610	TDC & DC	sea
12	HEAD	2	0	0	240	1	30	9	1	31-May-00	1610-1615	TDC & DC	sea
13	HEAD	1	0	0	30	1	24	22	10	31-May-00	1615-1620	TDC & DC	sea
14	HEAD	18	0	0	780	0	670	98	24	31-May-00	1622-1640	TDC & DC	sea
15	HEAD	2	0	0	130	0	850	23	2	12-Jun-00	0942-0948	TDC & DC	sea
16	HEAD	8	0	0	190	0	510	34	3	12-Jun-00	0948-0954	TDC & DC	sea
17	HEAD	3	0	0	110	0	450	22	8	12-Jun-00	0954-0958	TDC & DC	sea
18	HEAD	2	0	2	140	0	350	4	4	12-Jun-00	0958-1002	TDC & DC	sea
19	HEAD	7	0	0	150	0	270	24	3	12-Jun-00	1002-1010	TDC & DC	sea
20	HEAD	5	0	0	120	1	480	33	4	12-Jun-00	1014-1017	TDC & DC	sea
21	HEAD	13	0	0	160	0	280	43	13	12-Jun-00	1040-1050	TDC & DC	sea
22	HEAD	11	0	0	72	2	220	84	24	12-Jun-00	1025-30	TDC & DC	sea
23	HEAD	5	0	0	102	1	37	21	9	12-Jun-00	1030-1035	TDC & DC	sea
24	HEAD	8	0	0	128	5	70	40	7	01-Jun-00	0955-1010	TDC & DC	sea
25	HEAD	13	0	0	350	0	440	67	20	01-Jun-00	0905-0950	TDC & DC	sea
26	HEAD	12	0	1	130	0	410	74	10	02-Jun-00	1140-1200	TDC & DC	sea
27	HEAD	23	0	3	260	0	610	200	14	02-Jun-00	1020-1038	TDC & DC	sea
28	HEAD	5	0	0	48	1	134	66	2	02-Jun-00	0958-1005	TDC & DC	sea
29	HEAD	8	0	1	60	8	21	61	0	02-Jun-00	0950-0955	TDC & DC	sea
30	BREIL	6	0	0	13	12	0	12	1	02-Jun-00	1040-1045	TDC & DC	sea
31	BREIL	3	0	2	10	0	0	1	7	12-Jun-00	1041-1042	TDC & DC	sea
32	BREIL	15	0	0	140	1	193	25	6	02-Jun-00	1120-1129	TDC & DC	sea
33	BREIL	4	0	0	120	1	35	24	0	02-Jun-00	1057-1101	TDC & DC	sea
34	BREIL	7	0	0	190	1	110	13	0	02-Jun-00	1045-1053	TDC & DC	sea
35	BREIL	1	0	0	230	1	110	11	0	02-Jun-00	0930-0940	TDC & DC	sea
36	BREIL	5	0	0	490	2	108	35	9	02-Jun-00	0917-0925	TDC & DC	sea
37	BREIL	8	0	0	190	1	215	35	2	02-Jun-00	1205-1210	TDC & DC	sea
38	BREIL	3	0	0	240	0	270	8	1	02-Jun-00	0900-0910	TDC & DC	sea
39	BREIL	1	0	3	950	5	940	32	3	02-Jun-00	0845-0900	TDC & DC	sea
40	BREIL	3	0	2	220	0	110	19	9	12-Jun-08	1052-1100	TDC & DC	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = red highlight

Appendix Three: Seabird 2000 - Flamborough Head and Bempton Cliffs SPA whole colony count - Plot data – 2

41	BREIL	1	0	4	430	0	440	20	2	12-Jun-08	0835-0845	TDC & DC	sea
42	BREIL	1	0	0	54	0	86	19	0	12-Jun-08	1105-1107	TDC & DC	sea
43	SCAR	2	0	0	210	1	420	46	6	01-Jun-08	1335-1345	TDC & DC	sea
44	SCAR	9	0	2	680	3	950	48	5	01-Jun-08	1355-1415	TDC & DC	sea
45	SCAR	17	0	0	1550	19	290	55	2	01-Jun-08	1420-1440	TDC & DC	sea
46	SCAR	3	0	0	1340	13	0	48	6	01-Jun-08	1450-1505	TDC & DC	land
47	SCAR	1	0	0	41	0	0	7	0	02-Jun-08	1220h	TDC & DC	land
48	SCAR	8	0	1	830	12	31	58	7	01-Jun-08	1522-1535	TDC & DC	sea
49	SCAR	0	0	0	290	16	0	22	7	01-Jun-08	1510-1517	TDC & DC	land
50	SCAR	0	0	0	23	0	13	15	0	02-Jun-08	1225h	TDC & DC	sea
51	SCAR	6	0	0	330	3	208	38	5	01-Jun-08	1547-1553	TDC & DC	land
52	SCAR	0	0	2	35	0	0	2	9	12-Jun-08	1115-1117	TDC & DC	sea
53	SCAR	3	0	0	34	0	0	16	2	01-Jun-08	1531-1540	TDC & DC	land
54	SCAR	9	0	0	250	3	169	38	7	02-Jun-08	1235-1245	TDC & DC	sea
55	SCAR	4	0	0	122	3	0	31	4	02-Jun-08	1330-1335	TDC & DC	sea
56	SCAR	3	0	0	130	0	0	4	2	12-Jun-08	1118-1121	TDC & DC	sea
57	SCAR	3	0	0	49	2	13	5	0	02-Jun-08	1303-1307	TDC & DC	sea
58	SCAR	0	0	0	80	0	32	17	0	12-Jun-08	1122-1125	TDC & DC	sea
59	SCAR	1	0	0	240	0	143	19	0	02-Jun-08	1307h	TDC & DC	sea
60	SCAR	5	0	0	28	1	26	15	4	02-Jun-08	1126-1128	TDC & DC	sea
61	SCAR	7	0	0	246	2	70	34	3	12-Jun-08	1130-1137	TDC & DC	sea
62	SCAR	5	0	0	270	3	0	21	5	01-Jun-08	1255-1300	TDC & DC	sea
63	SCAR	3	0	0	17	2	0	9	2	12-Jun-08	1138-1140	TDC & DC	sea
64	SCAR	11	0	0	184	9	0	40	16	12-Jun-08	1120-1225	TDC & DC	sea
65	SCAR	0	0	0	126	2	0	0	7	12-Jun-08	1225-1230	TDC & DC	sea
66	SCAR	0	0	0	33	6	0	0	15	12-Jun-08	1245-1250	TDC & DC	sea
67	SCAR	0	0	0	43	9	0	0	3	12-Jun-08	1345-1350	TDC & DC	sea
68	SCAR	5	0	0	60	4	42	7	22	12-Jun-08	1143-1147	TDC & DC	sea
69	SCAR	6	0	0	40	1	0	8	14	12-Jun-08	1215-1220	TDC & DC	sea
70	SCAR	4	0	2	23	8	18	25	26	12-Jun-08	1148-1151	TDC & DC	sea
71	SCAR	17	0	0	15	0	0	13	24	01-Jun-08	1155-1200	TDC & DC	sea
72	SCAR	10	0	0	80	1	15	12	3	01-Jun-08	1153h	TDC & DC	sea
73	SCAR	4	0	0	44	0	0	8	7	05-Jun-08	1205-1210	TDC & DC	sea
74	SCAR	5	0	0	130	2	37	3	0	12-Jun-08	1158-1202	TDC & DC	sea
75	SCAR									12-Jun-08		TDC & DC	sea
76	SCAR	4	0	0	140	0	0	12	6	12-Jun-08	1205-1208	TDC & DC	sea
77	SCAR	1	0	0	130	0	190	59	3	05-Jun-08	0850h	TDC & DC	sea
78	SCAR	18	0	0	190	5	11	60	5	05-Jun-08	0825-0835	TDC & DC	sea
79	THOR	0	0	0	0	0	0	0	0	05-Jun-08		TDC & DC	sea
80	THOR	4	0	0	112	3	0	4	0	01-Jun-08	1122-1132	TDC & DC	sea
81	THOR	9	0	0	88	0	0	0	4	01-Jun-08	1133-1137	TDC & DC	sea
82	THOR	5	0	0	120	1	0	4	0	01-Jun-08	1140-1145	TDC & DC	sea
83	THOR	1	0	0	0	1	0	0	0	12-Jun-08	1215h	TDC & DC	sea
84	THOR	2	0	0	60	0	40	30	0	12-Jun-08	1218-1224	TDC & DC	sea
85	THOR	9	0	0	17	4	28	42	3	05-Jun-08	0950-0958	TDC & DC	sea
86	THOR	9	0	0	0	2	0	3	5	05-Jun-08	0958-1002	TDC & DC	sea
87	THOR	0	0	0	0	0	0	0	0	05-Jun-08		TDC & DC	sea
88	THOR	0	0	0	0	2	0	0	0	05-Jun-08		TDC & DC	sea
89	NORT	0	0	0	0	14	0	0	0	05-Jun-08	1015-1030	TDC & DC	sea
90	NORT	1	0	0	23	0	14	1	0	05-Jun-08	0930-0932	TDC & DC	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = red highlight

Appendix Three: Seabird 2000 - Flamborough Head and Bempton Cliffs SPA whole colony count - Plot data – 3

Plot No		Fulmar	Gannet	Shag	Kittiwake	Herring Gull	Guillemot	Razorbill	Puffin	Date	Timed count	Observers	Location
91	NORT	4	0	0	121	1	7	49	23	05-Jun-08	1130-1137	TDC & DC	sea
92	NORT	15	0	0	143	3	114	66	14	05-Jun-08	1117-1124	TDC & DC	sea
93	NORT	11	0	0	130	3	60	51	7	05-Jun-08	1035-1042	TDC & DC	sea
94	NORT	19	0	0	210	4	590	49	11	05-Jun-08	1050-1058	TDC & DC	sea
95	NORT	4	0	0	40	1	91	53	3	05-Jun-08	1237-1241	TDC & DC	sea
96	NORT	2	0	0	15	0	170	31	12	05-Jun-08	1058-1102	TDC & DC	sea
97	NORT	3	0	0	190	0	390	41	11	12-Jun-08	1312-1320	TDC & DC	sea
98	NORT	17	0	0	190	1	130	37	9	12-Jun-08	1320-1327	TDC & DC	sea
99	NORT	8	0	0	70	2	100	27	14	12-Jun-08	1330-1337	TDC & DC	sea
100	NORT	14	0	0	90	2	190	18	9	12-Jun-08	1337-1341	TDC & DC	sea
101	NORT	5	0	0	60	0	110	21	9	12-Jun-08	1341-1344	TDC & DC	sea
102	NORT	15	0	0	260	8	110	42	14	12-Jun-08	1351-1400	TDC & DC	sea
103	NORT	10	0	0	40	12	90	24	11	12-Jun-08	1400-1407	TDC & DC	sea
104	NORT	12	0	0	120	7	130	14	5	12-Jun-08	1407-1412	TDC & DC	sea
105	NORT	8	0	0	120	6	130	48	15	12-Jun-08	1417-1423	TDC & DC	sea
106	DYKE	8	0	0	80	0	280	29	11	12-Jun-08	1423-1429	TDC & DC	sea
107	DYKE	12	0	0	250	2	150	38	7	12-Jun-08	1435-1441	TDC & DC	sea
108	DYKE	9	0	0	180	3	330	73	7	12-Jun-08	1441-1447	TDC & DC	sea
109	DYKE	12	0	0	170	10	130	18	15	12-Jun-08	1450-1456	TDC & DC	sea
110	DYKE	12	0	0	190	15	170	36	12	12-Jun-08	1505-1511	TDC & DC	sea
111	DYKE	4	0	0	310	6	240	31	5	12-Jun-08	1511-1520	TDC & DC	sea
112	DYKE	12	0	0	200	1	80	25	7	12-Jun-08	1530-1537	TDC & DC	sea
113	DYKE	7	0	0	250	12	630	29	10	12-Jun-08	1537-1542	TDC & DC	sea
114	DYKE	7	0	0	130	11	210	12	3	12-Jun-08	1542-1555	TDC & DC	sea
115	DYKE	5	0	0	210	5	410	28	10	12-Jun-08	1555-1600	TDC & DC	sea
116	DYKE	8	0	0	110	1	280	32	7	12-Jun-08	1600-1603	TDC & DC	sea
117	DYKE	10	0	0	370	8	490	64	18	13-Jun-08	0843-0854	TDC & DC	sea
118	WAND	11	0	1	490	27	630	52	7	13-Jun-08	0854-0902	TDC & DC	sea
119	WAND	4	0	0	110	27	50	20	2	13-Jun-08	0905-0911	TDC & DC	sea
120	WAND	5	0	0	260	4	680	54	3	13-Jun-08	0924-0933	TDC & DC	sea
121	WAND	5	0	0	330	0	930	57	8	13-Jun-08	0933-0947	TDC & DC	sea
122	WAND	5	0	0	360	3	840	156	23	13-Jun-08	0947-1001	TDC & DC	sea
123	WAND	3	0	0	210	3	280	62	10	13-Jun-08	1001-1009	TDC & DC	sea
124	WAND	6	0	0	340	15	220	45	25	13-Jun-08	1019-1026	TDC & DC	sea
125	WAND	6	0	0	280	14	340	126	62	31-May-08	0840-0855	TDC & DC	sea
126	WAND	16	0	0	380	1	380	121	94	31-May-08	0855-0925	TDC & DC	sea
127	WAND	13	0	0	340	16	760	50	22	31-May-08	0925-1000	TDC & DC	sea
128	WAND	6	0	0	320	6	420	50	5	13-Jun-08	1039-1050	TDC & DC	sea
129	WAND	12	0	0	560	3	340	58	22	30-May-08	1330-1345	TDC & DC	sea
130	WAND	8	0	0	490	1	180	46	14	30-May-08	1315-1330	TDC & DC	sea
131	WAND	5	0	0	310	2	320	24	39	30-May-08	1300-1315	TDC & DC	sea
132	WAND	19		1	1140	4	840	130	104	30-May-08	1230-`1300	TDC & DC	sea
133	GRAN	1		0	36	0	50	15	0	13-Jun-08	1055-1057	TDC & DC	sea
134	GRAN	22		0	210	4	710	470	156	26-May-08	1230-1400	TDC & DC	land
135	GRAN	14		0	670	3	1440	401	117	26-May-08	1405-1515	TDC & DC	land
136	GRAN	31		0	260	3	360	186	39	26-May-08	1525-1600	TDC & DC	land
137	GRAN	7		0	17	3	0	5	1	30-May-08	1055-1105	TDC & DC	sea
138	GRAN	11		0	54	4	460	109	41	30-May-08	1105-1245	TDC & DC	sea
139	GRAN	7		0	620	12	650	48	34	13-Jun-08	1107-1114	TDC & DC	sea
140	GRAN	8		0	390	6	1260	124	34	13-Jun-08	1114-1129	TDC & DC	sea
141	GRAN	5		0	1030	6	1030	77	22	13-Jun-08	1145-1200	TDC & DC	sea
142	GRAN	5		0	430	3	520	31	14	13-Jun-08	1200-1208	TDC & DC	sea
143	BART	17		0	550	4	580	50	13	13-Jun-08	1200-1234	TDC & DC	sea
144	BART	4		0	350	1	740	57	15	13-Jun-08	1355-1410	TDC & DC	sea
145	BART	0		0	460	2	460	44	19	05-Jun-08	1435-1445	TDC & DC	land
146	BART	6		0	370	2	510	19	6	13-Jun-08	1250-1255	TDC & DC	sea
147	BART	8		0	1030	1	1720	139	38	16-Jun-08	0845-0900	TDC & DC	sea
148	BART	4		0	520	3	400	61	18	05-Jun-08	1445-1455	TDC & DC	land
149	BART	7		0	820	4	560	112	13	16-Jun-08	0900-0915	TDC & DC	sea
150	BART	6		0	510	4	700	82	8	16-Jun-08	0928-0940	TDC & DC	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Three: Seabird 2000 - Flamborough Head and Bempton Cliffs SPA whole colony count - Plot data – 4

Plot No		Fulmar	Gannet	Shag	Kittiwake	Herring Gull	Guillemot	Razorbill	Puffin	Date	Timed count	Observers	Location
151	BART	2		1	250	1	590	36	9	16-Jun-08	0944-0950	TDC & DC	sea
152	BART	7		1	370	0	870	64	21	16-Jun-08	0952-1005	TDC & DC	sea
153	BART	7		0	720	6	610	84	38	16-Jun-08	1010-1019	TDC & DC	sea
154	BART	8		0	340	3	420	76	34	16-Jun-08	1022-1028	TDC & DC	sea
155	JUBI	5		0	480	3	410	68	14	16-Jun-08	1030-1036	TDC & DC	sea
156	JUBI	18		2	570	4	940	293	24	16-Jun-08	1050-1104	TDC & DC	sea
157	JUBI	5		0	240	3	130	53	6	16-Jun-08	1105-1108	TDC & DC	sea
158	JUBI	13		0	230	3	510	112	68	16-Jun-08	1117-1125	TDC & DC	sea
159	JUBI	12		0	240	10	410	115	61	16-Jun-08	1127-1136	TDC & DC	sea
160	JUBI	19		0	550	6	520	91	42	16-Jun-08	1140-1151	TDC & DC	sea
161	BUCK	11		0	310	6	590	84	40	16-Jun-08	1152-1159	TDC & DC	sea
162	BUCK	7		0	250	3	430	88	22	16-Jun-08	1201-1208	TDC & DC	sea
163	BUCK	9		0	230	3	260	53	66	16-Jun-08	1219-1227	TDC & DC	sea
164	BUCK	13		0	310	5	640	91	28	16-Jun-08	1229-1237	TDC & DC	sea
165	BUCK	15		0	230	2	800	145	60	16-Jun-08	1257-1308	TDC & DC	sea
166	BUCK	3		0	120	0	240	79	38	16-Jun-08	1313-1320	TDC & DC	sea
167	TRIG	9		0	270	0	280	71	52	16-Jun-08	1330-1336	TDC & DC	sea
168	TRIG	12		0	120	2	440	77	40	16-Jun-08	1337-1344	TDC & DC	sea
169	TRIG	4		0	140	1	350	119	25	16-Jun-08	1345-1350	TDC & DC	sea
170	TRIG	9		0	380	7	320	131	72	16-Jun-08	1400-1409	TDC & DC	sea
171	TRIG	8		0	300	4	420	92	34	16-Jun-08	1412-1420	TDC & DC	sea
172	TRIG	9		0	350	3	340	83	20	16-Jun-08	1421-1425	TDC & DC	sea
173	TRIG	5		0	70	1	10	11	2	16-Jun-08	1425-1430	TDC & DC	sea
174	TRIG	1		0	130	3	40	22	6	16-Jun-08	1445-1452	TDC & DC	sea
175	SPEE	39		0	280	34	20	40	2	16-Jun-08	1452-1502	TDC & DC	sea
176	SPEE	36		0	540	14	40	61	1	16-Jun-08	1505-1520	TDC & DC	sea
177	SPEE	33		0	33	14	0	0	0	16-Jun-08	1523-1530	TDC & DC	sea
178	SPEE	13		0	0	18	0	0	0	16-Jun-08	1533-1536	TDC & DC	sea
Flamborough and Filey Coast pSPA Whole colony		Northern Fulmar (AOS)	Northern Gannet (AOS) 1999	European Shag (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (Individuals on land)	Razorbill (Individuals on land)	Atlantic Puffin (Individuals on land)				
FH&BC exc High Stacks - South Landing		1299	2552	31	42467	705	47215	8463	2629				
FH&BC		1360	2552	31	42582	719	47215	8463	2629				

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Four: 2008 Flamborough Head and Bempton Cliffs SPA whole colony count Plot data – 1:

Plot No	SMP Plot name	Northern Fulmar (AOS)	Northern Gannet (AOS)	European Shag (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (Individuals on land)	Razorbill (Individuals on land)	Date	Timed count	Observers	Location
High Stacks - South Landing		n/c	n/c	n/c	n/c	n/c	n/c	n/c				
1	HEAD	0	0	0	0	0	0	0	05-Jun-08	1640	KC	sea
2	HEAD	1	0	0	132	15	5	10	05-Jun-08	1640-1645	KC	sea
3	HEAD	0	0	0	225	1	0	3	05-Jun-08	1650-1655	KC	sea
4	HEAD	0	0	0	153	1	1	17	05-Jun-08	1655	KC	sea
5	HEAD	2	0	0	242	0	1	10	05-Jun-08	1655-1700	KC	sea
6	HEAD	1	0	0	174	1	0	30	05-Jun-08	1700-1710	KC	sea
7	HEAD	2	0	0	61	1	60	23	05-Jun-08	1710-1715	KC	sea
8	HEAD	4	0	0	8	16	0	0	05-Jun-08	1715-1720	KC	sea
9	HEAD	0	0	0	0	0	0	0	05-Jun-08	1720	KC	sea
10	HEAD	0	0	0	50	0	0	6	05-Jun-08	1720	KC	sea
11	HEAD	0	0	0	173	1	0	40	05-Jun-08	1725	KC	sea
12	HEAD	1	0	0	430	4	15	29	05-Jun-08	1725-35	KC	sea
13	HEAD	1	0	0	210	0	55	36	05-Jun-08	1725-40	KC	sea
14	HEAD	4	0	0	918	1	555	92	08-Jun-08	1720-1750	KC & WD	sea
15	HEAD	2	0	1	45	0	850	37	08-Jun-08	1710-1720	KC & WD	sea
16	HEAD	5	0	0	115	0	420	102	08-Jun-08	1700-1710	KC & WD	sea
17	HEAD	1	0	0	75	0	560	60	08-Jun-08	1655-1700	KC & WD	sea
18	HEAD	1	0	0	127	0	145	56	08-Jun-08	1650-55	KC & WD	sea
19	HEAD	3	0	1	117	0	370	109	08-Jun-08	1645-1650	KC & WD	sea
20	HEAD	7	0	0	425	0	700	95	08-Jun-08	1630-1645	KC & WD	sea
21	HEAD	7	0	0	115	0	720	77	08-Jun-08	1610-1630	KC & WD	sea
22	HEAD	9	0	0	140	1	725	175	08-Jun-08	1550-1610	KC & WD	sea
23	HEAD	2	0	0	55	0	225	138	08-Jun-08	1545-1550	KC & WD	sea
24	HEAD	5	0	0	125	0	225	123	08-Jun-08	1530-1545	KC & WD	sea
25	HEAD	5	0	0	340	1	965	142	08-Jun-08	1515-1530	KC & WD	sea
26	HEAD	7	0	0	161	1	970	295	08-Jun-08	1450-1515	KC & WD	sea
27	HEAD	4	0	0	75	0	530	200	08-Jun-08	1430-1450	KC & WD	sea
28	HEAD	9	0	0	65	0	195	175	08-Jun-08	1410-1430	KC & WD	sea
29	HEAD	4	0	0	157	5	56	196	04-Jun-08	1340-1355h	KC	
30	BREIL	3	0	1	23	1	0	14	04-Jun-08	1405-1410	KC	
31	BREIL	2	0	0	12	1	0	18		1400-1405	KC	
32	BREIL	3	0	1	130	4	345	127	09-Jun-08	0910-0920	KC	sea
33	BREIL	4	0	0	116	2	65	32	09-Jun-08	0920-0925	KC	sea
34	BREIL	0	0	0	155	1	52	14	09-Jun-08	0925-0930	KC	sea
35	BREIL	6	0	0	42	0	661	102	04-Jun	1430-1505	KC	sea
36	BREIL	3	0	0	405	2	180	108	09-Jun-08	0930-0950	KC	sea
37	BREIL	0	0	0	145	0	80	30	09-Jun-08	0950-1000	KC	sea
38	BREIL	0	0	0	452	0	245	11	09-Jun-08	1005-1010	KC	sea
39	BREIL	1	0	1	943	1	1119	35	08-Jun-08	1330-1410	KC&WD	sea
40	BREIL	0	0	0	159	0	175	76	08-Jun-08	1325-1330	KC&WD	sea
41	BREIL	2	0	5	343	0	345	40	08-Jun-08	1310-1325	KC&WD	sea
42	BREIL	0	0	0	110	0	200	12	08-Jun-08	1300-1310	KC&WD	sea
43	SCAR	0	0	0	87	0	485	43	08-Jun-08	1250-1300	KC&WD	sea
44	SCAR	7	0	2	666	1	1850	231	08-Jun-08	1230-1250	KC&WD	sea
45	SCAR	9	0	0	1031	14	264	192	02-Jun	1600-1645	KC	land
46	SCAR	7	0	0	1258	19	0	211	10-Jun-08	1700-1720	KC&WD	land
47	SCAR	0	0	0	45	0	1	11	09-Jun-08	1045	KC	sea
48	SCAR	6	0	1	435	8	72	197	02-Jun	1645-1700	KC	land
49	SCAR	2	0	2	204	24	19	64	02-Jun	1530-1600	KC	land
50	SCAR	0	0	0	9	2	50	7	09-Jun-08	1050-1055	KC	sea
51	SCAR	9	0	0	176	2	430	100	05-Jun-08	1150-1200	KC	land
52	SCAR	0	0	2	135	1	25	59	09-Jun-08	1055-1105	KC	sea
53	SCAR	1	0	0	61	1	15	24	09-Jun-08	1105-1110	KC	sea
54	SCAR	2	0	0	93	2	185	35	09-Jun-08	1110-1115	KC	sea
55	SCAR	3	0	0	55	1	0	42	05-Jun-08	1140-1145	KC	sea
56	SCAR	1	0	0	52	0	0	34	09-Jun-08	1120	KC	sea
57	SCAR	2	0	0	44	1	20	23	09-Jun-08	1115-1120	KC	sea
58	SCAR	1	0	0	6	0	45	8	09-Jun-08	1120-1125	KC	sea
59	SCAR	0	0	0	135	0	85	9	09-Jun-08	1125-1120	KC	sea
60	SCAR	1	0	0	42	1	70	86	09-Jun-08	1140	KC	sea
61	SCAR	5	0	0	435	1	10	98	09-Jun-08	1140	KC	sea
62	SCAR	1	0	0	100	1	0	20	06-Jun-08	1125-30	KC	land
63	SCAR	6	0	0	36	1	35	44	06-Jun-08	1135-40	KC	land
64	SCAR	10	0	0	131	3	76	170	06-Jun-08	1050-1100	KC	land
65	SCAR	0	0	0	55	0	0	0	06-Jun-08	1045-50	KC	land
66	SCAR	0	0	0	14	0	0	0	06-Jun-08	1050	KC	land
67	SCAR	0	0	0	0	7	0	0	06-Jun-08	1115-20	KC	land
68	SCAR	6	0	0	0	5	0	6	05-Jun-08	1625	KC	sea
69	SCAR	2	0	2	117	2	45	85	05-Jun-08	1615-25	KC	sea
70	SCAR	3	0	0	112	4	0	30	05-Jun-08	1605-15	KC	sea
71	SCAR	10	0	0	12	1	55	71	05-Jun-08	1030-35	KC	land
72	SCAR	7	0	0	92	1	125	44	05-Jun-08	1600-05	KC	sea
73	SCAR	1	0	0	0	0	0	0	05-Jun-08	1555	KC	sea
74	SCAR	5	0	0	70	0	10	26	05-Jun-08	1550-55	KC	sea
75	SCAR	0	0	0	0	0	0	0				

Appendix Four: 2008 Flamborough Head and Bempton Cliffs SPA whole colony count Plot data – 2

76	SCAR	2	0	0	188	0	0	77	05-Jun-08	1540-50	KC	sea
77	SCAR	1	0	0	109	1	247	120	05-Jun-08	1530-40	KC	sea
78	SCAR	1	0	0	87	1	35	31	05-Jun-08	1525-1530	KC	sea
79	THOR	3	0	0	23	1	0	29	16-Jun-08	0800-0815	KC	land
80	THOR	4	0	0	246	2	13	0	04-Jun-08		KC	sea
81	THOR	9	0	0	96	0	0	9	04-Jun-08		KC	sea
82	THOR	5	0	0	180	0	0	25	04-Jun-08		KC	sea
83	THOR	1	0	0	0	0	0	4	04-Jun-08		KC	sea
84	THOR	0	0	0	62	0	153	154	04-Jun-08		KC	sea
85	THOR	6	0	0	41	0	72	163	04-Jun-08		KC	sea
86	THOR	1	0	0	0	1	0	7	04-Jun-08		KC	sea
87	THOR	0	0	0	0	0	0	0	05-Jun-08	1310	KC	sea
88	THOR	0	0	0	0	0	0	0	05-Jun-08	1310	KC	sea
89	NORT	2	0	0	1	9	0	7	05-Jun-08	1310	KC	sea
90	NORT	2	0	0	45	1	20	23	05-Jun-08	1505-10	KC	sea
91	NORT	2	0	0	165	1	0	34	05-Jun-08	1500-1505	KC	sea
92	NORT	8	0	0	69	1	55	69	05-Jun-08	1450-1500	KC	sea
93	NORT	4	0	0	101	2	115	56	05-Jun-08	1440-50	KC	sea
94	NORT	18	0	0	166	3	645	93	05-Jun-08	1425-40	KC	sea
95	NORT	11	0	0	33	1	155	28	05-Jun-08	1420-25	KC	sea
96	NORT	1	0	0	2	1	290	21	05-Jun-08	1410-1420	KC	sea
97	NORT	3	0	0	146	1	815	145	05-Jun-08	1355-1410	KC	sea
98	NORT	14	0	0	165	2	445	140	05-Jun-08	1345-55	KC	sea
99	NORT	14	0	0	75	2	280	110	05-Jun-08	1335-45	KC	sea
100	NORT	10	0	0	105	2	650	90	05-Jun-08	1315-1335	KC	sea
101	NORT	3	0	0	0	0	0	143	04-Jun-08	1425-1430h	KC	sea
102	NORT	3	0	0	14	3	65	24	09-Jun-08	1238-43	KC	sea
103	NORT	14	0	0	147	10	510	105	09-Jun-08	1245-1300	KC	sea
104	NORT	4	0	0	73	10	370	90	09-Jun-08	1300-1307	KC	sea
105	NORT	6	0	0	80	8	450	96	09-Jun-08	1307-1317	KC	sea
106	DYKE	4	0	0	55	1	605	90	09-Jun-08	1317-1330	KC	sea
107	DYKE	5	0	0	66	3	475	114	09-Jun-08	1330-1345	KC	sea
108	DYKE	5	0	0	88	6	285	140	09-Jun-08	1345-1400	KC	sea
109	DYKE	6	0	0	63	19	115	64	09-Jun-08	1400-1410	KC	sea
110	DYKE	4	0	0	32	27	285	111	09-Jun-08	1415-1422	KC	sea
111	DYKE	0	0	0	132	5	725	86	09-Jun-08	1422-1438	KC	sea
112	DYKE	2	0	0	235	2	1045	162	09-Jun-08	1445-1500	KC	sea
113	DYKE	4	0	0	331	2	660	185	09-Jun-08	1500-1510	KC	sea
114	DYKE	6	0	0	166	7	375	118	17-Jun-08	1330-1345	KC, WD & MF	sea
115	DYKE	6	0	0	182	3	489	148	17-Jun-08	1345-1400	KC, WD & MF	sea
116	DYKE	5	0	0	131	1	920	114	17-Jun-08	1400-1410	KC, WD & MF	sea
117	DYKE	4	0	0	163	8	586	113	17-Jun-08	1410-1425	KC, WD & MF	sea
118	WAND	14	0	1	381	26	1325	188	17-Jun-08	1425-1440	KC & WD	sea
119	WAND	1	0	0	66	6	65	51	17-Jun-08	1440-1450	MF	sea
120	WAND	1	0	0	375	6	1050	111	17-Jun-08	1450-1515	KC, WD & MF	sea
121	WAND	1	28	0	220	1	830	69	17-Jun-08	1450-1515	KC, WD & MF	sea
122	WAND	3	27	0	245	0	690	135	17-Jun-08	1515-1530	WD & MF	sea
123	WAND	7	0	0	108	1	90	79	17-Jun-08	1515-1530	KC	sea
124	WAND	5	0	0	64	14	260	93	17-Jun-08	1535-1550	KC, WD & MF	sea
125	WAND	6	0	0	371	23	675	219	17-Jun-08	1535-1550	KC, WD & MF	sea
126	WAND	20	1	0	208	10	370	147	17-Jun-08	1015-1025	KC, WD & MF	land & sea
127	WAND	6	0	1	307	6	705	167	17-Jun-08	1555-1610	KC, WD & MF	sea
128	WAND	2	0	0	181	13	485	21	19-Jun-08	1130-1200	KC, IK & CT	sea
129	WAND	4	0	0	230	5	150	12	19-Jun-08	1200-1220	KC, IK & CT	sea
130	WAND	10	0	0	850	3	570	50	19-Jun-08	0800-0830	KC	land
131	WAND	3	0	0	600	3	280	72	17-Jun-08	1130-1215	KC & WD	land
132	WAND	6	374	1	600	2	690	100	17-Jun-08	1045-1120	KC & WD	land
133	GRAN	6	170	0	107	0	205	60	19-Jun-08	0900-0910	KC & CT	land & sea
134	GRAN	7	97	0	135	1	145	120	19-Jun-08	0915-0930	KC	land
135	GRAN	8	134	0	550	3	1050	230	19-Jun-08	1000-1020	KC	land
136	GRAN	10	0	0	110	4	205	96	19-Jun-08	1020-1040	KC	land & sea
137	GRAN	0	0	0	71	3	110	93	19-Jun-08	1220-1240	KC & CT	sea
138	GRAN	4	0	0	495	5	790	127	19-Jun-08	1240-1310	KC & CT	sea
139	GRAN	2	0	0	315	1	850	240	19-Jun-08	1310-1330	KC & CT	sea
140	GRAN	7	0	0	470	3	1445	190	20-Jun-08	1115-1135	KC & WD	sea
141	GRAN	6	0	0	648	0	900	68	20-Jun-08	1140-1150	KC & WD	sea
142	GRAN	9	0	0	710	4	1565	129	20-Jun-08	1145-1200	KC & WD	sea
143	BART	11	0	0	440	0	810	104	20-Jun-08	1200-1215	KC & WD	sea
144	BART	3	0	0	505	0	535	42	20-Jun-08	1220-1230	KC & WD	sea
145	BART	8	146	0	685	0	1440	141	20-Jun-08	1245-1300	KC & WD	sea
146	BART	8	34	0	435	0	765	118	20-Jun-08	1305-1330	KC & WD	sea
147	BART	5	66	0	810	0	840	123	20-Jun-08	1330-1345	KC & WD	sea
148	BART	4	97	0	100	1	690	136	20-Jun-08	1345-1400	KC & WD	sea
149	BART	3	204	0	440	0	320	84	20-Jun-08	1400-1420	KC & WD	sea
150	BART	2	105	2	350	0	665	175	20-Jun-08	1420-1440	KC & WD	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Four: 2008 Flamborough Head and Bempton Cliffs SPA whole colony count Plot data – 3

Plot No		Fulmar	Gannet	Shag	Kittiwake	Herring Gul	Guillemot	Razorbill	Date	Timed count	Observers	Location
151	BART	3	109	0	301	1	795	74	20-Jun-08	1450-1515	KC&WD	sea
152	BART	10	254	0	670	2	840	134	20-Jun-08	1525-1545	KC&WD	sea
153	BART	8	380	0	1060	3	500	147	20-Jun-08	1550-1610	KC&WD	sea
154	BART	6	222	0	740	0	615	132	20-Jun-08	1615-1630	KC&WD	sea
155	JUBI	1	290	0	775	4	595	137	20-Jun-08	1640-1655	KC&WD	sea
156	JUBI	1	58	0	140	1	120	143	20-Jun-08	1700-1720	KC&WD	sea
157	JUBI	5	26	0	275	5	500	140	20-Jun-08	1720-1735	KC&WD	sea
158	JUBI	16	211	0	300	2	420	182	20-Jun-08	1745-1800	KC&WD	sea
159	JUBI	0	516	0	274	0	215	83	20-Jun-08	1810-1825	KC&WD	sea
160	JUBI	13	102	0	465	0	580	210	20-Jun-08	1825-1845	KC&WD	sea
161	BUCK	16	131	0	336	5	1075	148	25-Jun-08	1245-1310	KC&WD	sea
162	BUCK	13	285	0	233	1	700	93	25-Jun-08	1310-1330	KC&WD	sea
163	BUCK	13	19	0	190	2	285	61	25-Jun-08	1330-1350	KC&WD	sea
164	BUCK	7	180	0	169	1	595	53	25-Jun-08	1350-1415	KC&WD	sea
165	BUCK	4	501	0	169	1	660	116	25-Jun-08	1415-1445	KC&WD	sea
166	BUCK	0	574	0	149	0	164	78	25-Jun-08	1445-1515	KC&WD	sea
167	TRIG	3	390	0	200	0	301	79	25-Jun-08	1515-1535	KC&WD	sea
168	TRIG	12	140	0	116	4	315	106	25-Jun-08	1535-1555	KC&WD	sea
169	TRIG	2	115	0	135	0	410	103	25-Jun-08	1555-1630	KC&WD	sea
170	TRIG	8	23	0	105	4	250	83	25-Jun-08	1630-1655	KC&WD	sea
171	TRIG	10	151	0	179	2	180	155	17-Jun-08	1730-1745	KC, WD & MF	sea
172	TRIG	4	226	0	261	0	161	132	17-Jun-08	1720-1730	KC, WD & MF	sea
173	TRIG	3	0	0	39	1	35	50	17-Jun-08	1715-1720	KC, WD & MF	sea
174	TRIG	9	0	0	102	13	99	138	17-Jun-08	1705-1715	KC, WD & MF	sea
175	SPEE	28	0	0	38	20	55	40	17-Jun-08	1700-1705	KC, WD & MF	sea
176	SPEE	34	0	0	295	11	50	146	17-Jun-08	1640	KC, WD & MF	sea
177	SPEE	15	0	0	0	1	0	0	17-Jun-08	1635	KC, WD & MF	sea
178	SPEE	12	0	0	0	2	0	0	17-Jun-08	1635	KC, WD & MF	sea
TOTAL		**869**	**6386**	**24**	**37617**	**541**	**59817**	**14956**				
Flamborough Head and Bempton Cliffs exc High Stacks-South landing 2008 Count		**Northern Fulmar (AOS)**	**Northern Gannet (AOS)**	**European Shag (AON)**	**Black-legged Kittiwake (AON)**	**European Herring Gull (AON)**	**Common Guillemot (Individuals on land)**	**Razorbill (Individuals on land)**				
		869	**6,386**	**24**	**37,617**	**541**	**59,817**	**14,956**				

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Five: 2017 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data - 1

Plot No	SMP Plot Name	Northern Fulmar (AOS)	Northern Gannet (AOS)	European Shag (AON)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (IND)	Razorbill (IND)	Atlantic Puffin (IND)	Date	Timed count	Observers	Plot No
South Landing to Plot One		56	0	0		175	24	0	0	0	30-May-17	1330h-1500h	KC	South Landing to Plot One
1	HEAD	0	0	0	0	0	0	0	0	0	30-May-17	1500h	KC	1
2	HEAD	0	0	0	0	170	11	7	11	1	30-May-17	1505h	KC	2
3	HEAD	0	0	0	0	285	1	0	2	0	30-May-17	1510h	KC	3
4	HEAD	0	0	0	0	107	0	15	35	0	30-May-17	1520h	KC	4
5	HEAD	0	0	0	0	357	0	91	45	1	18-May-17	1330h	KC, DA, MB, DF, SP & SW	5
6	HEAD	1	0	0	0	134	1	88	63	0	18-May-17	1345h	KC, DA, MB, DF, SP & SW	6
7	HEAD	4	0	0	0	23	0	53	71	5	18-May-17	1400h	KC, DA, MB, DF, SP & SW	7
8	HEAD	1	0	0	0	0	14	0	0	0	30-May-17	1630h	KC	8
9	HEAD	0	0	0	0	0	0	0	0	0	30-May-17	1640h	KC	9
10	HEAD	0	0	0	0	114	0	0	9	0	30-May-17	1650h	KC	10
11	HEAD	0	0	0	0	185	1	2	6	0	30-May-17	1710h	KC	11
12	HEAD	7	0	0	0	577	4	27	32	0	30-May-17	1730h	KC	12
13	HEAD	2	0	0	0	64	0	38	29	0	30-May-17	1630h	KC	13
14	HEAD	12	0	0	0	1185	2	938	148	29	05-Jun-17	0800h	KC	14
15	HEAD	0	0	0	0	35	0	785	78	3	13-Jun-17	0830h	KC and MB	15
16	HEAD	0	0	0	0	150	0	900	172	0	18-May-17	1415h	KC, DA, MB, DF, SP & SW	16
17	HEAD	3	0	0	0	115	0	450	72	1	18-May-17	1430h	KC, DA, MB, DF, SP & SW	17
18	HEAD	1	0	0	0	115	0	152	52	2	18-May-17	1445h	KC, DA, MB, DF, SP & SW	18
19	HEAD	7	0	0	0	173	1	720	85	1	18-May-17	1500h	KC, DA, MB, DF, SP & SW	19
20	HEAD	4	0	0	0	135	0	962	143	6	18-May-17	1500h	KC, DA, MB, DF, SP & SW	20
21	HEAD	7	0	0	0	110	0	490	163	5	18-May-17	1515h	KC, DA, MB, DF, SP & SW	21
22	HEAD	6	0	0	0	23	0	146	86	3	18-May-17	1530h	KC, DA, MB, DF, SP & SW	22
23	HEAD	4	0	0	0	46	0	340	132	5	18-May-17	1545h	KC, DA, MB, DF, SP & SW	23
24	HEAD	11	0	0	0	140	3	453	225	8	18-May-17	1600h	KC, DA, MB, DF, SP & SW	24
25	HEAD	23	0	0	0	428	1	1354	314	16	01-Jun-17	1100h	KC	25
26	HEAD	3	0	0	0	136	0	1695	302	8	18-May-17	1630h	KC, DA, MB, DF, SP & SW	26
27	HEAD	3	0	0	0	128	0	915	306	3	18-May-17	1700h	KC, DA, MB, DF, SP & SW	27
28	HEAD	5	0	0	0	85	0	408	248	5	18-May-17	1730h	KC, DA, MB, DF, SP & SW	28
29	HEAD	11	0	0	0	166	2	371	277	1	21-May-17	1130h	KC, DA, DF, SW	29
30	BREIL	5	0	0	0	9	2	1	80	2	21-May-17	1200h	KC, DA, DF, SW	30
31	BREIL	6	0	1	0	19	2	0	56	0	21-May-17	1145h	KC, DA, DF, SW	sea
32	BREIL	8	0	0	0	76	1	306	314	2	21-May-17	1215h	KC, DA, DF, SW	sea
33	BREIL	8	0	0	0	202	0	179	168	0	21-May-17	1215h	KC, DA, DF, SW	sea
34	BREIL	0	0	0	0	169	2	106	74	1	21-May-17	1230h	KC, DA, DF, SW	sea
35	BREIL	4	0	0	0	430	2	364	155	1	21-May-17	1330h	KC, DA, DF, SW	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Five: 2017 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data - 2

Plot No	SMP Plot Name	Northern Fulmar (AOS)	Northern Gannet (AOS)	European Shag (AON)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (IND)	Razorbill (IND)	Atlantic Puffin (IND)	Date	Timed count	Observers	Plot No
36	BREIL	0	0	0	0	739	0	421	290	2	21-May-17	1345h	KC, DA, DF, SW	sea
37	BREIL	2	0	0	0	207	0	253	147	1	21-May-17	1400h	KC, DA, DF, SW	sea
38	BREIL	2	0	1	0	560	0	539	75	1	21-May-17	1400h	KC, DA, DF, SW	sea
39	BREIL	0	0	2	0	895	0	2289	84	1	21-May-17	1415h	KC, DA, DF, SW	sea
40	BREIL	0	0	0	0	195	0	171	68	0	21-May-17	1430h	KC, DA, DF, SW	sea
41	BREIL				0						21-May-17	1430h	KC, DA, DF, SW	sea
42	BREIL	4	0	5	0	510	0	1043	99	1	21-May-17	1445h	KC, DA, DF, SW	sea
43	SCAR	3	0	0	0	321	0	970	223	0	21-May-17	1500h	KC, DA, DF, SW	sea
44	SCAR	11	0	1	0	358	1	3233	490	16	24-May-17	1445h	KC	land
45	SCAR	10	0	6	0	1124	18	621	427	17	24-May-17	1345h	KC	land
46	SCAR	14	0	2	0	1555	8	127	464	21	24-May-17	1545h	KC	land
47	SCAR	0	0	0	0	48	0	27	24	0	21-May-17	1515h	KC, DA, DF, SW	sea
48	SCAR	3	0	0	0	448	4	147	399	7	20-May-17	1300h	KC	land
49	SCAR	3	0	0	0	188	26	51	93	1	20-May-17	1330h	KC	land
50	SCAR	0	0	0	0	12	0	127	58	1	21-May-17	1530h	KC, DA, DF, SW	sea
51	SCAR	0	0	0	0	159	2	575	269	3	20-May-17	1200h	KC	land
52	SCAR	1	0	0	0	118	0	97	76	0	06-Jun-17	1000h	KC	only patially viewable from land
53	SCAR	6	0	0	0	145	3	65	170	4	06-Jun-17	1030h	KC	land
54	SCAR	3	0	0	0	186	0	413	129	0	21-May-17	1545h	KC, DA, DF, SW	sea
55	SCAR	2	0	0	0	84	0	27	152	3	20-May-17	1115h	KC	land
56	SCAR	1	0	0	0	11	0	0	32	0	21-May-17	1600h	KC, DA, DF, SW	sea
57	SCAR	1	0	0	0	50	1	36	84	0	21-May-17	1615h	KC, DA, DF, SW	sea
58	SCAR										21-May-17	1615h	KC, DA, DF, SW	sea
59	SCAR	1	0	1	0	249	0	220	136	0	21-May-17	1630h	KC, DA, DF, SW	sea
60	SCAR													
61	SCAR	8	0	0	0	583	2	236	383	2	20-May-17	1050h	KC et al	land (61B) 21 may and sea 22 may
62	SCAR	2	0	0	0	14	0	0	34	3	22-May-17	1145h	KC,DA, MB, TDC, SP & Nia	land
63	SCAR	2	0	0	0	30	0	95	76	6	22-May-17	1200h	KC,DA, MB, TDC, SP & Nia	sea
64	SCAR	7	0	0	0	193	5	169	203	5	16-May-17	1600h	KC	land
65	SCAR	0	0	0	0	58	3	0	3	1	16-May-17	1615h	KC	land
66	SCAR	0	0	0	0	25	0	0	10	5	16-May-17	1620h	KC	land
67	SCAR	0	0	0	0	1	5	0	4	0	16-May-17	1625h	KC	land
68	SCAR	2	0	0	0	0	5	0	60	14	22-May-17	1215h	KC,DA, MB, TDC, SP & Nia	sea
69	SCAR	0	0	0	0	125	1	163	102	20	22-May-17	1230h	KC,DA, MB, TDC, SP & Nia	sea
70	SCAR	6	0	0	0	116	1	134	63	29	22-May-17	1245h	KC,DA, MB, TDC, SP & Nia	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Five: 2017 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data – 3

Plot No	SMP Plot Name	Northern Fulmar (AOS)	Northern Gannet (AOS)	European Shag (AON)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (IND)	Razorbill (IND)	Atlantic Puffin (IND)	Date	Timed count	Observers	Plot No
71	SCAR	8	0	0	0	25	0	181	88	23	20-May-17	1015h	KC	land
72	SCAR	9	0	0	0	215	1	232	65	8	22-May-17	1300h	KC,DA, MB, TDC, SP & Nia	sea
73	SCAR	0	0	0	0	0		2	14	1	22-May-17	1315h	KC,DA, MB, TDC, SP & Nia	sea
74	SCAR	4	0	0	0	100	0	15	66	4	22-May-17	1330h	KC,DA, MB, TDC, SP & Nia	sea
75	SCAR				0						22-May-17	1345h	KC,DA, MB, TDC, SP & Nia	sea
76	SCAR	3	0	0	0	261	0	25	103	5	22-May-17	1400h	KC,DA, MB, TDC, SP & Nia	sea
77	SCAR	1	0	0	0	138	0	355	226	6	22-May-17	1415h	KC,DA, MB, TDC, SP & Nia	sea
78	SCAR	7	0	0	0	236	1	181	165	17	22-May-17	1430h	KC,DA, MB, TDC, SP & Nia	sea
79	THOR	5	0	0	0	141	0	0	113	5	05-Jun-17	0830h	KC	land
80	THOR	8	0	0	0	0	0	27	59	0	20-May-17	0930h	KC	land
81	THOR	13	0	0	0	89	0	0	33	0	20-May-17	0945h	KC	land
82	THOR	7	0	0	0	102	0	50	62	0	20-May-17	0955h	KC	land
83	THOR	0	0	0	0	1		0	56	1	22-May-17	1500h	KC,DA, MB, TDC, SP & Nia	sea
84	THOR	0	0	0	0	36	0	241	184	2	22-May-17	1500h	KC,DA, MB, TDC, SP & Nia	sea
85	THOR	7	0	0	0	26	1	229	373	7	22-May-17	1515h	KC,DA, MB, TDC, SP & Nia	sea
86	THOR	1	0	0	0	0	1	0	20	7	22-May-17	1515h	KC,DA, MB, TDC, SP & Nia	sea
87	THOR	0	0	0	0	0	0	0	0	0	22-May-17	1515h	KC,DA, MB, TDC, SP & Nia	sea
88	THOR	0	0	0	0	0	1	0	3	0	22-May-17	1515h	KC,DA, MB, TDC, SP & Nia	sea
89	NORT	7	0	0	0	0	7	0	70	0	22-May-17	1515h	KC,DA, MB, TDC, SP & Nia	sea
90	NORT	0	0	0	0	51	0	85	75	1	22-May-17	1530h	KC,DA, MB, TDC, SP & Nia	sea
91	NORT	4	0	0	0	175	0	55	118	14	22-May-17	1545h	KC,DA, MB, TDC, SP & Nia	sea
92	NORT	7	0	0	0	65	1	91	121	4	22-May-17	1600h	KC,DA, MB, TDC, SP & Nia	sea
93	NORT	8	0	0	0	52	3	125	111	3	22-May-17	1615h	KC,DA, MB, TDC, SP & Nia	sea
94	NORT	20	0	0	0	240	1	860	201	1	22-May-17	1630h	KC,DA, MB, TDC, SP & Nia	sea
95	NORT	17	0	0	0	29	1	137	130	1	22-May-17	1645h	KC,DA, MB, TDC, SP & Nia	sea
96	NORT	0	0	0	0	86	0	750	187	1	22-May-17	1700h	KC,DA, MB, TDC, SP & Nia	sea
97	NORT	3	0	0	0	98	0	770	234	4	25-May-17		KC, TC, DF & SW	sea
98	NORT	9	0	0	0	146	2	870	192	0	25-May-17		KC, TC, DF & SW	sea
99	NORT	4	0	0	0	18	2	340	58	2	25-May-17		KC, TC, DF & SW	sea
100	NORT	17	0	0	0	67	3	524		1	25-May-17		KC, TC, DF & SW	sea
101	NORT	2	0	0	0	46	0	512	180	0	25-May-17		KC, TC, DF & SW	sea
102	NORT	11	0	0	0	59	3	310	153	1	25-May-17		KC, TC, DF & SW	sea
103	NORT	6	0	0	0	37	6	485	179	20	25-May-17		KC, TC, DF & SW	sea
104	NORT	4	0	0	0	29	7	230	115	9	25-May-17		KC, TC, DF & SW	sea
105	NORT	1	0	0	0	12	5	249	65	2	25-May-17		KC, TC, DF & SW	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Five: 2017 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data - 4

Plot No	SMP Plot Name	Northern Fulmar (AOS)	Northern Gannet (AOS)	European Shag (AON)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (IND)	Razorbill (IND)	Atlantic Puffin (IND)	Date	Timed count	Observers	Plot No
106	DYKE	4	0	0	0	55	2	746	183	6	25-May-17		KC, TC, DF & SW	sea
107	DYKE	4	0	0	0	45	0	286	160	8	25-May-17		KC, TC, DF & SW	sea
108	DYKE	7	0	0	0	106	1	420	135	2	25-May-17		KC, TC, DF & SW	sea
109	DYKE	6	0	0	0	134		285	135	4	25-May-17		KC, TC, DF & SW	sea
110	DYKE	5	0	0	0	132	30	360	235	14	25-May-17		KC, TC, DF & SW	LAND-SLIP SINCE 2008
111	DYKE	2	0	0	0	361	1	746	80	2	25-May-17		KC, TC, DF & SW	sea
112	DYKE	4	0	0	0	265	1	878	173	13	25-May-17		KC, TC, DF & SW	sea
113	DYKE	3	0	0	0	282	2	612	179	4	25-May-17		KC, TC, DF & SW	sea
114	DYKE	3	0	0	0	239	4	550	112	6	25-May-17		KC, TC, DF & SW	sea
115	DYKE	4	0	0	0	238	1	1020	225	9	25-May-17		KC, TC, DF & SW	sea
116	DYKE	3	0	0	0	225	1	865	154	2	25-May-17		KC, TC, DF & SW	sea
117	DYKE	4	0	0	0	202	10	830	234	1	25-May-17		KC, TC, DF & SW	sea
118	WAND	4	0	0	0	662	14	1649	525	8	25-May-17		KC, TC, DF & SW	sea
119	WAND	2	168	0	0	112	3	106	33	0	25-May-17		KC, TC, DF & SW	sea
120	WAND	2	52	0	0	365	0	808	104	1	25-May-17		KC, TC, DF & SW	sea
121	WAND	1	156	0	0	478	0	556	138	0	25-May-17		KC, TC, DF & SW	sea
122	WAND	0	127	0	0	279	0	653	417	0	25-May-17		KC, TC, DF & SW	sea
123	WAND	1	175	0	0	387	0	497	196	2	25-May-17		KC, TC, DF & SW	sea
124	WAND	6	39	0	0	193	4	640	268	8	25-May-17		KC, TC, DF & SW	sea
125	WAND	5	103	0	0	635	8	1635	335	5	25-May-17		KC, TC, DF & SW	sea
126	WAND	5	15	1	0	942	1	597	691	5	25-May-17		KC, TC, DF & SW	sea
127	WAND	14	7	0	0	386	3	1325	448	10	25-May-17		KC, TC, DF & SW	sea
128	WAND	5	0	0	0	97	4	115	98	3	01-Jun-17	1330h	KC, DA, MB & TC	sea
129	WAND	5	0	0	0	425	3	585	226	17	01-Jun-17	1350h	KC, DA, MB & TC	sea
130	WAND	9	20	0	0	415	5	490	290	15	13-Jun-17	1400	KC	land
131	WAND	11	22	1	0	755	1	463	239	22	01-Jun-17	1410h	KC, DA, MB & TC	sea and land
132	WAND	8	992	2	0	1010	1	1155	338	32	06-Jun-17	1230h	KC	land
133	GRAN	5	414	1	0	155	0	360	209	14	01-Jun-17	1330h	KC, DA, MB & TC	sea
134	GRAN	4	158	0	0	150	0	311	274	33	01-Jun-17	1350h	KC, DA, MB & TC	sea
135	GRAN	6	405	0	0	517	0	1242	616	42	07-Jun-17	0935h	KC	land
136	GRAN	5	24	0	0	147	2	692	329	15	01-Jun-17	1410h	KC, DA, MB & TC	sea and land
137	GRAN	1	0	0	0	63	1	478	270	9	01-Jun-17	1430h	KC, DA, MB & TC	sea
138	GRAN	5	23	0	0	413	0	1320	366	29	01-Jun-17	1450h	KC, DA, MB & TC	sea
139	GRAN	3	44	0	0	470	1	1610	72	17	01-Jun-17	1510h	KC, DA, MB & TC	sea
140	GRAN	1	48	0	0	540	0	2650	166	20	01-Jun-17	1530h	KC, DA, MB & TC	sea
141	GRAN	2	2	0	0	604	1	1009	90	4	01-Jun-17	1550h	KC, DA, MB & TC	sea
142	GRAN	4	3	0	0	668	1	1955	322	5	01-Jun-17	1610h	KC, DA, MB & TC	sea
143	BART	5	130	0	0	545	1	1180	249	3	01-Jun-17	1630h	KC, DA, MB & TC	sea
144	BART	1	97	0	0	520	0	690	140	3	01-Jun-17	1650h	KC, DA, MB & TC	sea
145	BART	6	278	0	0	1006	0	1606	177	15	02-Jun-17	0750h	KC, DA, MB & TC	sea

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Five: 2017 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data – 5

Plot No	SMP Plot Name	Northern Fulmar (AOS)	Northern Gannet (AOS)	European Shag (AON)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (IND)	Razorbill (IND)	Atlantic Puffin (IND)	Date	Timed count	Observers	Plot No
146	BART	4	147	0	0	490	0	1295	89	8	02-Jun-17	0810h	KC, DA, MB & TC	sea
147	BART	6	153	1	0	1118	1	1280	120	10	02-Jun-17	0830h	KC, DA, MB & TC	sea
148	BART	3	203	0	0	212	0	315	183	6	02-Jun-17	0900h	KC, DA, MB & TC	sea
149	BART	1	343	0	0	582	1	322	100	1	02-Jun-17	0920h	KC, DA, MB & TC	sea
150	BART	2	261	0	0	483	0	520	185	5	02-Jun-17	0940h	KC, DA, MB & TC	sea
151	BART	1	184	0	0	376	0	445	40	0	02-Jun-17	1000h	KC, DA, MB & TC	sea
152	BART	4	365	0	0	622	0	1405	62	5	02-Jun-17	1020h	KC, DA, MB & TC	sea
153	BART	2	377	0	0	802	0	750	105	4	02-Jun-17	1040h	KC, DA, MB & TC	sea
154	BART	6	365	0	0	676	0	675	175	6	02-Jun-17	1100h	KC, DA, MB & TC	sea
155	JUBI	6	449	0	0	830	1	730	120	4	02-Jun-17	1120h	KC, DA, MB & TC	sea
156	JUBI	3	170	0	0	333	1	760	159	7	02-Jun-17	1140h	KC, DA, MB & TC	sea
157	JUBI	7	92	0	0	467	0	1100	126	10	02-Jun-17	1300h	KC, DA, MB & TC	sea
158	JUBI	2	282	0	0	304	1	485	127	2	02-Jun-17	1320h	KC, DA, MB & TC	sea
159	JUBI	0	354	0	0	290	0	205	96	2	02-Jun-17	1340h	KC, DA, MB & TC	sea
160	JUBI	10	355	0	0	603	1	555	238	2	02-Jun-17	1400h	KC, DA, MB & TC	sea
161	BUCK	9	342	0	0	640	1	860	231	8	02-Jun-17	1420h	KC, DA, MB & TC	sea
162	BUCK	3	532	0	0	314	0	630	162	0	02-Jun-17	1440h	KC, DA, MB & TC	sea
163	BUCK	3	163	0	0	225	0	666	172	6	04-Jun-17	1315h	KC, DA, MB, SW	sea
164	BUCK	4	373	0	0	230	1	825	191	6	04-Jun-17	1335h	KC, DA, MB, SW	sea
165	BUCK	1	1117	0	0	498	1	885	390	10	04-Jun-17	1355h	KC, DA, MB, SW	sea
166	BUCK	2	617	0	0	242	0	320	219	8	04-Jun-17	1415h	KC, DA, MB, SW	sea
167	TRIG	0	523	0	0	357	0	731	267	10	04-Jun-17	1435h	KC, DA, MB, SW	sea
168	TRIG	2	422	0	0	232	1	729	207	8	04-Jun-17	1455h	KC, DA, MB, SW	sea
169	TRIG	1	211	0	0	144	0	285	281	2	04-Jun-17	1515h	KC, DA, MB, SW	sea
170	TRIG	7	251	0	0	221	2	390	493	6	04-Jun-17	1535h	KC, DA, MB, SW	sea
171	TRIG	11	626	0	0	368	2	380	381	3	04-Jun-17	1555h	KC, DA, MB, SW	sea
172	TRIG	4	346	0	0	161	0	246	174	2	04-Jun-17	1615h	KC, DA, MB, SW	sea
173	TRIG	10	67	0	0	45	0	144	120	2	04-Jun-17	1635h	KC, DA, MB, SW	sea
174	TRIG	10	184	0	0	113	2	93	212	6	04-Jun-17	1655h	KC, DA, MB, SW	sea
175	SPEE	32	0	0	0	14	17	44	102	0	04-Jun-17	1705h	KC, DA, MB, SW	sea
176	SPEE	13	16	0	0	136	5	66	104	0	01-Jun-17	1430h	DF	sea or land
177	SPEE	9	0	0	0	0	1	0	6	0	01-Jun-17	1500h	DF	sea or land
178	SPEE	4	0	0	0	0	0	0	0	0	01-Jun-17	1530h	DF	sea or land
Total exc High Stacks - South landing		**790**	**13392**	**25**	**0**	**45329**	**327**	**84647**	**27967**					
FH&BC SPA		**846**	**13,392**	**25**	**0**	**45,504**	**351**	**84,647**	**27,967**					
Filey Cliffs		**411**	**0**	**0**	**27**	**6,031**	**115**	**6,214**	**2,261**					
F&FC pSPA		**1,257**	**13,392**	**25**	**27**	**51,535**	**466**	**90,861**	**30,228**	**2,879**				
F&FC pSPA number of breeding pairs (c.)	**149,271**	**1,257**	**13,392**	**25**	**27**	**51,535**	**466**	**60,877**	**20,253**	**1440**				
F&FC pSPA number of breeding birds	**298,542**	**2,514**	**26,784**	**50**	**54**	**103,070**	**932**	**121,754**	**40,506**	**2,879**				

NB: RSPB Bempton Cliffs = Yellow highlight, YWT Flamborough Cliffs = orange highlight

Appendix Six: 2022 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data – one,

South Landing to F		23	0	0	0		0	0	0	8	0	19-Jun-22	1400-1600h	KC	land
Plot No		Fulmar (aos)	Shag (aon)	Cormoran t (aon)	Gannet (aos)	Gannet (aos) 3 July 22	Guillemot (ind)	Razorbill (ind)	Kittiwake (aon)	Herring Gull (aon)	Black-browed Albatross	Date	Timed count	Observers	location
1	HEAD	0	0	0	0	0	0	0	0	1	0	12-Jun-22	1500h	KC, TDC, RC, AK	sea
2	HEAD	0	0	0	0	0	24	51	167	16	0	12-Jun-22	1510h	KC, TDC, RC, AK	sea
3	HEAD	0	0	0	0	0	0	1	321	0	0	12-Jun-22	1520h	KC, TDC, RC, AK	sea
4	HEAD	0	0	0	0	0	31	33	151	1	0	12-Jun-22		KC, TDC, RC, AK	sea
5	HEAD	2	0	0	0	0	175	95	467	0	0	22-May-22	1030	DA, KC, RC, DO'H & SW	sea
6	HEAD	0	0	0	0	0	104	142	115	1	0	22-May-22	1045	DA, KC, RC, DO'H & SW	sea
7	HEAD	2	0	0	0	0	82	154	31	3	0	22-May-22	1100	DA, KC, RC, DO'H & SW	sea
8	HEAD	1	0	0	0	0	0	0	0	8	0	01-Jun-22	1100h	KC	land
9	HEAD	0	0	0	0	0	0	0	9	0	0	01-Jun-22	1100	KC	land
10	HEAD	0	0	0	0	0	0	12	114	0	0	01-Jun-22	1115	KC	land
11	HEAD	0	0	0	0	0	6	35	156	0	0	01-Jun-22	1130	KC	land
12	HEAD	4	0	0	0	0	73	46	569	2	0	01-Jun-22	1200	KC	land
13	HEAD	0	0	0	0	0	46	31	48	0	0	01-Jun-22	1230	KC	land
14	HEAD	9	0	0	0	0	361	116	1105	0	0	01-Jun-22	1330	KC	land
15	HEAD	2	0	0	0	0	1540	296	29	0	0	22-May-22	1130	DA, KC, RC, DO'H & SW	sea
16	HEAD	4	1	0	0	0	1323	140	139	0	0	22-May-22	1150	DA, KC, RC, DO'H & SW	sea
17	HEAD	1	0	0	0	0	1052	196	127	0	0	22-May-22	1215	DA, KC, RC, DO'H & SW	sea
18	HEAD	3	1	0	0	0	269	113	150	0	0	22-May-22	1230	DA, KC, RC, DO'H & SW	sea
19	HEAD	2	1	0	0	0	1191	159	140	0	0	22-May-22	1300	DA, KC, RC, DO'H & SW	sea
20	HEAD	2	1	0	0	0	1384	229	109	0	0	22-May-22	1330	DA, KC, RC, DO'H & SW	sea
21	HEAD	6	0	0	0	0	1059	288	110	0	0	22-May-22	1400	DA, KC, RC, DO'H & SW	sea
22	HEAD	2	0	0	0	0	532	196	135	0	0	22-May-22	1415	DA, KC, RC, DO'H & SW	sea
23	HEAD	7	0	0	0	0	348	335	73	1	0	10-Jun-22	1245h	KC	land
24	HEAD	9	0	0	0	0	770	405	202	2	0	10-Jun-22	1315h	KC	land
25	HEAD	15	0	0	0	0	1745	240	436	0	0	10-Jun-22	1410h	KC	land
26	HEAD	2	0	0	0	0	1877	409	135	0	0	22-May-22	1430	DA, KC, RC, DO'H & SW	sea
27	HEAD	2	0	0	0	0	1308	540	120	0	0	22-May-22	1445	DA, KC, RC, DO'H & SW	sea
28	HEAD	4	0	0	0	0	769	418	66	0	0	22-May-22	1515	DA, KC, RC, DO'H & SW	sea
29	HEAD	8	0	0	0	0	802	594	147	2	0	22-May-22	1530	DA, KC, RC, DO'H & SW	sea
30	BREIL	1	0	0	0	0	4	7	19	0	0	22-May-22	1545	DA, KC, RC, DO'H & SW	sea
31	BREIL	0	0	0	0	0	0	68	15	0	0	22-May-22	1600	DA, KC, RC, DO'H & SW	sea
32	BREIL	3	0	0	0	0	305	292	56	1	0	23-May-22	0830h	KC, TDC, RC, DO'H & Jmac	sea
33	BREIL	0	0	0	0	0	340	158	157	0	0	23-May-22	0845h	KC, TDC, RC, DO'H & Jmac	sea
34	BREIL	4	0	0	0	0	211	131	182	1	0	23-May-22	0900h	KC, TDC, RC, DO'H & Jmac	sea
35	BREIL	4	0	0	0	0	340	206	382	1	0	23-May-22	0915h	KC, TDC, RC, DO'H & Jmac	sea
36	BREIL	0	0	0	0	0	669	310	563	1	0	23-May-22	0930h	KC, TDC, RC, DO'H & Jmac	sea
37	BREIL	1	0	0	0	0	83	124	156	0	0	23-May-22	0945h	KC, TDC, RC, DO'H & Jmac	sea
38	BREIL	1	0	0	0	0	850	178	567	1	0	23-May-22	1000h	KC, TDC, RC, DO'H & Jmac	sea
39	BREIL	0	1	0	0	0	2172	44	695	0	0	23-May-22	1015h	KC, TDC, RC, DO'H & Jmac	sea
40	BREIL	5	0	0	0	0	763	136	371	0	0	23-May-22	1030h	KC, TDC, RC, DO'H & Jmac	sea
41	BREIL					0					0				
42	BREIL	2	0	0	0	0	1548	101	509	0	0	23-May-22	1045h	KC, TDC, RC, DO'H & Jmac	sea
43	SCAR	3	0	0	0	0	842	211	215	0	0	23-May-22	1130h	KC, TDC, RC, DO'H & Jmac	sea
44	SCAR	4	0	0	0	0	2823	461	468	1	0	23-May-22	1150h	KC, TDC, RC, DO'H & Jmac	sea
45	SCAR	9	1	0	0	0	883	911	1094	8	0	03-Jun-22	1100h	KC	land
46	SCAR	9	0	0	0	0	337	924	1330	13	0	03-Jun-22	1100h	KC	land
47	SCAR	0	0	0	0	0	29	54	34	0	0	23-May-22	1200h	KC, TDC, RC, DO'H & Jmac	sea
48	SCAR	2	0	0	0	0	332	801	364	3	0	03-Jun-22	1000h	KC	land
49	SCAR	3	0	0	0	0	143	385	236	28	0	03-Jun-22	1100h	KC	land
50	SCAR	0	0	0	0	0	292	105	35	0	0	23-May-22	1215h	KC, TDC, RC, DO'H & Jmac	sea
51	SCAR	9	0	0	0	0	911	437	145	0	0	23-May-22	1225h	KC, TDC, RC, DO'H & Jmac	land
52	SCAR	0	0	0	0	0	2	87	95	0	0	23-May-22	1240h	KC, TDC, RC, DO'H & Jmac	sea
53	SCAR	1	0	0	0	0	122	257	74	1	0	23-May-22	1250h	KC, TDC, RC, DO'H & Jmac	land
54	SCAR	0	1	0	0	0	643	175	191	0	0	23-May-22	1300h	KC, TDC, RC, DO'H & Jmac	sea
55	SCAR	0	0	0	0	0	96	259	90	1	0	23-May-22	1320h	KC, TDC, RC, DO'H & Jmac	land
56	SCAR	0	0	0	0	0	0	101	16	0	0	23-May-22	1330h	KC, TDC, RC, DO'H & Jmac	sea
57	SCAR	1	0	0	0	0	26	91	44	1	0	23-May-22	1335h	KC, TDC, RC, DO'H & Jmac	sea
58	SCAR	2	0	0	0	0	62	80	65	0	0	23-May-22	1340h	KC, TDC, RC, DO'H & Jmac	sea
59	SCAR	0	0	0	0	0	224	89	138	0	0	23-May-22	1345h	KC, TDC, RC, DO'H & Jmac	sea
60	SCAR	3	0	0	0	0	158	154	53	0	0	23-May-22	1400h	KC, TDC, RC, DO'H & Jmac	sea
61	SCAR	2	1	0	0	0	132	92	94	0	0	23-May-22	1415h	KC, TDC, RC, DO'H & Jmac	sea
62	SCAR	5	1	0	0	0	163	226	252	0	0	23-May-22	1430h	KC, TDC, RC, DO'H & Jmac	land
63	SCAR	1	0	0	0	0	125	101	25	0	0	12-Jun-22	1550h	KC, TDC, RC, AK	sea
64	SCAR	8	0	0	0	0	219	430	158	4	0	02-Jun-22	0900h	KC	land
65	SCAR	0	0	0	0	0	0	81	38	1	0	03-Jun-22	1030	KC	land
66	SCAR	0	0	0	0	0	0	27	6	5	0	03-Jun-22	1030	KC	land
67	SCAR	0	0	0	0	0	0	0	8	1	0	10-Jun-22	1355h	KC	land
68	SCAR	1	0	0	0	0	2	51	1	0	0	15-Jun-22	0850h	KC, TDC, RC, DO'H & AK	sea
69	SCAR	2	0	0	0	0	181	104	96	0	0	15-Jun-22	0900h	KC, TDC, RC, DO'H & AK	sea
70	SCAR	1	0	0	0	0	45	160	155	1	0	15-Jun-22	0840h	KC, TDC, RC, DO'H & AK	sea
71	SCAR	4	0	0	0	0	307	134	23	0	0	03-Jun-22	0845h	KC	land
72	SCAR	2	0	0	0	0	265	41	110	1	0	15-Jun-22	0825h	KC, TDC, RC, DO'H & AK	sea
73	SCAR	1	0	0	0	0	13	45	46	0	0	15-Jun-22	0820h	KC, TDC, RC, DO'H & AK	sea
74	SCAR	2	0	0	0	0	7	65	100	1	0	15-Jun-22	0815h	KC, TDC, RC, DO'H & AK	sea
75	SCAR					0					0				
76	SCAR	0	0	0	0	0	81	115	198	0	0	15-Jun-22	0750h	KC, TDC, RC, DO'H & AK	sea
77	SCAR	0	0	0	0	0	356	198	119	0	0	15-Jun-22	0800h	KC, TDC, RC, DO'H & AK	sea
78	SCAR	2	0	0	0	0	259	198	243	1	0	15-Jun-22	0805h	KC, TDC, RC, DO'H & AK	sea
79	THOR	2	0	0	0	0	19	288	119	1	0	15-Jun-22	0810h	KC, TDC, RC, DO'H & AK	sea
80	THOR	9	0	0	0	0	33	111	9	1	0	03-Jun-22	0800h	KC	land
81	THOR	11	0	0	0	0	8	92	67	0	0	03-Jun-22	0800h	KC	land
82	THOR	4	0	0	0	0	82	110	63	0	0	03-Jun-22	0800h	KC	land
83	THOR	1	0	0	0	0	10	24	0	0	0	23-May-22	1450h	KC, TDC, RC, DO'H & Jmac	sea
84	THOR	1	0	0	0	0	347	347	24	0	0	23-May-22	1500h	KC, TDC, RC, DO'H & Jmac	sea
85	THOR	5	0	0	0	0	221	344	13	0	0	12-Jun-22	1430h	KC, TDC, RC, AK	sea

Appendix Six continued- 2022 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data – part two

86	THOR	0	0	0	0	0	0	61	0	1	0	12-Jun-22	1435h	KC, TDC, RC, AK	sea
87	THOR	0	0	0	0	0	0	0	0	0	0	12-Jun-22	1440h	KC, TDC, RC, AK	sea
88	THOR	0	0	0	0	0	0	15	0	1	0	12-Jun-22	1450h	KC, TDC, RC, AK	sea
89	NORT	2	0	0	0	0	0	110	2	7	0	23-May-22	1505	KC, TDC, RC, DO'H & Jmac	land
90	NORT	0	0	0	0	0	74	64	24	0	0	23-May-22	1510	KC, TDC, RC, DO'H & Jmac	sea
91	NORT	7	0	0	0	0	5	206	112	0	0	23-May-22	1515	KC, TDC, RC, DO'H & Jmac	sea
92	NORT	7	0	0	0	0	74	179	40	1	0	23-May-22	1525h	KC, TDC, RC, DO'H & Jmac	sea
93	NORT	12	0	0	0	0	150	128	42	2	0	23-May-22	1535	KC, TDC, RC, DO'H & Jmac	sea
94	NORT	17	0	0	0	0	994	191	197	1	0	23-May-22	1545	KC, TDC, RC, DO'H & Jmac	sea
95	NORT	6	0	0	0	0	185	113	14	0	0	23-May-22	1550	KC, TDC, RC, DO'H & Jmac	sea
96	NORT	0	0	0	0	0	576	93	24	0	0	23-May-22	1555	KC, TDC, RC, DO'H & Jmac	sea
97	NORT	1	0	0	0	0	670	376	167	0	0	25-May-22	1200	KC,DA, TDC, DO'H, AK & KF	sea
98	NORT	6	0	0	0	0	1050	473	132	1	0	25-May-22	1215	KC,DA, TDC, DO'H, AK & KF	sea
99	NORT	1	0	0	0	0	430	198	14	0	0	25-May-22	1230	KC,DA, TDC, DO'H, AK & KF	sea
100	NORT	24	0	0	0	0	655	362	78	1	0	25-May-22	1245	KC,DA, TDC, DO'H, AK & KF	sea
101	NORT	1	0	0	0	0	826	445	89	0	0	25-May-22	1300	KC,DA, TDC, DO'H, AK & KF	sea
102	NORT	4	0	0	0	0	361	495	55	3	0	25-May-22	1315	KC,DA, TDC, DO'H, AK & KF	sea
103	NORT	7	0	0	0	0	665	593	32	3	0	25-May-22	1340h	KC,DA, TDC, DO'H, AK & KF	sea
104	NORT	2	0	0	0	0	648	473	32	6	0	25-May-22	1400h	KC,DA, TDC, DO'H, AK & KF	sea
105	NORT	4	0	0	0	0	479	396	26	6	0	25-May-22	1420	KC,DA, TDC, DO'H, AK & KF	sea
106	DYKE	7	0	0	0	0	660	433	26	1	0	25-May-22	1435	KC,DA, TDC, DO'H, AK & KF	sea
107	DYKE	13	0	0	0	0	843	545	11	1	0	25-May-22	1450	KC,DA, TDC, DO'H, AK & KF	sea
108	DYKE	9	0	0	0	0	504	450	49	1	0	25-May-22	1500	KC,DA, TDC, DO'H, AK & KF	sea
109	DYKE	5	0	0	0	0	368	524	95	17	0	25-May-22	1530	KC,DA, TDC, DO'H, AK & KF	sea
110	DYKE	2	0	0	0	0	305	338	59	1	0	25-May-22	1550h	KC,DA, TDC, DO'H, AK & KF	sea
111	DYKE	2	0	0	0	0	1590	345	415	1	0	26-May-22	0800h	KC, TDC, RC, & AK	sea
112	DYKE	7	0	0	3	0	1485	488	255	1	0	26-May-22	0815h	KC, TDC, RC, & AK	sea
113	DYKE	7	0	0	1	1	1553	592	433	3	0	26-May-22	0830h	KC, TDC, RC, & AK	sea
114	DYKE	9	0	0	0	0	785	265	155	3	0	26-May-22	0845h	KC, TDC, RC, & AK	sea
115	DYKE	6	0	0	12	6	1250	487	249	1	0	26-May-22	0905h	KC, TDC, RC, & AK	sea
116	DYKE	7	0	0	0	0	935	316	147	1	0	26-May-22	0925h	KC, TDC, RC, & AK	sea
117	DYKE	9	0	0	0	0	1265	411	127	7	0	26-May-22	0950h	KC, TDC, RC, & AK	sea
118	WAND	10	0	0	22	8	2135	655	402	7	0	26-May-22	1015h	KC, TDC, RC, & AK	sea
119	WAND	5	0	0	175	111	72	163	46	1	0	26-May-22	1045h	KC, TDC, RC, & AK	sea
120	WAND	3	0	0	130	86	935	159	268	0	0	26-May-22	1105h	KC, TDC, RC, & AK	sea
121	WAND	1	0	0	211	51	745	334	193	0	0	26-May-22	1120h	KC, TDC, RC, & AK	sea
122	WAND	2	0	0	173	325	860	356	247	0	0	26-May-22	1135h	KC, TDC, RC, & AK	sea
123	WAND	5	0	0	75	54	674	394	195	0	0	26-May-22	1150h	KC, TDC, RC, & AK	sea
124	WAND	7	0	0	124	97	670	435	96	2	0	26-May-22	1205h	KC, TDC, RC, & AK	sea
125	WAND	12	0	0	159	112	1280	622	255	3	0	26-May-22	1220h	KC, TDC, RC, & AK	sea
126	WAND	3	0	0	49	29	1125	687	210	1	0	26-May-22	1300h	KC, TDC, RC, & AK	sea
127	WAND	9	0	0	26	19	1585	389	439	0	0	26-May-22	1330h	KC, TDC, RC, & AK	sea
128	WAND	8	0	0	0	0	110	181	79	5	0	11-Jun-22	1100h	KC, TDC, RC, DA, JMac, SW	sea
129	WAND	0	0	0	0	0	913	472	423	3	0	11-Jun-22	1130h	KC, TDC, RC, DA, JMac, SW	sea
130	WAND	12	0	0	22	27	945	410	742	7	0	09-Jun-22	1230h	KC	land

131	WAND	11	1	0	41	42	381	233	611	0	0	11-Jun-22	1200h	KC, TDC, RC, DA, JMac, SW	sea
132	WAND	2	1	0	894	622	1250	208	800	1	0	09-Jun-22	1130h	KC	land
133	GRAN	8	1	0	400	336	255	192	125	0	1	26-May-22	1400h	KC, TDC, RC, & AK	sea
134	GRAN	2	0	0	326	203	437	490	153	0	0	26-May-22	1430h	KC, TDC, RC, & AK	sea
135	GRAN	9	0	0	466	450	1830	880	493	0	0	02-Jun-22	1045h	KC, TDC, RC, DO'H	sea
136	GRAN	3	0	0	2	36	490	379	92	1	0	02-Jun-22	1115h	KC, TDC, RC, DO'H	sea
137	GRAN	6	0	0	0	0	881	451	283	1	0	11-Jun-22	1230h	KC, TDC, RC, DA, JMac, SW	sea
138	GRAN	1	0	0	46	42	1810	457	436	4	0	11-Jun-22	1300h	KC, TDC, RC, DA, JMac, SW	sea
139	GRAN	5	0	0	80	102	1877	251	725	0	0	11-Jun-22	1330h	KC, TDC, RC, DA, JMac, SW	sea
140	GRAN	2	0	0	80	55	2305	510	598	1	0	11-Jun-22	1400h	KC, TDC, RC, DA, JMac, SW	sea
141	GRAN	3	0	0	14	9	1384	242	636	0	0	11-Jun-22	1430h	KC, TDC, RC, DA, JMac, SW	sea
142	GRAN	3	0	0	0	0	1655	361	934	0	0	11-Jun-22	1430h	KC, TDC, RC, DA, JMac, SW	sea
143	BART	0	0	0	111	64	1315	366	454	1	0	11-Jun-22	1500h	KC, TDC, RC, DA, JMac, SW	sea
144	BART	1	0	0	69	87	884	187	720	1	0	11-Jun-22	1530h	KC, TDC, RC, DA, JMac, SW	sea
145	BART	11	0	0	322	278	1553	556	1065	0	0	11-Jun-22	1600h	KC, TDC, RC, DA, JMac, SW	sea
146	BART	4	0	0	134	245	1365	331	395	0	0	11-Jun-22	1630h	KC, TDC, RC, DA, JMac, SW	sea
147	BART	10	1	0	179	134	1454	173	857	0	0	15-Jun-22	1430h	KC,TDC, RC, SW	sea
148	BART	1	0	0	198	217	1288	238	139	0	0	02-Jun-22	1200h	KC, TDC, RC & DO'H	sea
149	BART	0	0	0	235	338	766	174	382	0	0	02-Jun-22	1230h	KC, TDC, RC & DO'H	sea
150	BART	4	3	0	215	205	855	89	213	0	0	15-Jun-22	1345h	KC, TDC, RC, SW	sea
151	BART	1	1	0	291	164	490	110	242	1	0	15-Jun-22	1325h	KC, TDC, RC, SW	sea
152	BART	5	0	0	396	319	990	225	598	0	0	15-Jun-22	1310h	KC, TDC, RC, SW	sea
153	BART	4	0	0	496	417	1995	355	754	0	0	15-Jun-22	1245h	KC, TDC, RC, SW	sea
154	BART	4	0	0	170	293	595	243	358	0	0	15-Jun-22	1230h	KC, TDC, RC, SW	sea
155	JUBI	6	0	0	390	205	895	252	650	0	0	15-Jun-22	1210h	KC, TDC, RC, SW	sea
156	JUBI	9	0	0	135	135	550	282	367	0	0	15-Jun-22	1150h	KC, TDC, RC, SW	sea
157	JUBI	9	0	0	121	115	1095	241	340	1	0	15-Jun-22	1130h	KC, TDC, RC, SW	sea
158	JUBI	2	0	0	330	376	685	229	503	1	0	15-Jun-22	1120h	KC, TDC, RC, SW	sea
159	JUBI	3	0	0	349	506	455	137	92	0	0	15-Jun-22	1110h	KC, TDC, RC, SW	sea
160	JUBI	8	0	0	470	436	835	441	247	1	0	15-Jun-22	1025h	KC, TDC, RC, SW	sea
161	BUCK	9	0	0	340	318	1540	467	326	0	0	15-Jun-22	1005h	KC, TDC, RC, SW	sea
162	BUCK	2	0	0	435	609	975	463	185	1	0	15-Jun-22	0950h	KC, TDC, RC, SW	sea
163	BUCK	7	0	0	222	289	445	209	146	3	0	15-Jun-22	0935h	KC, TDC, RC, SW	sea
164	BUCK	6	0	0	543	513	541	319	275	0	0	15-Jun-22	0910h	KC, TDC, RC, SW	sea
165	BUCK	4	0	0	863	474	807	443	272	0	0	12-Jun-22	1210h	KC, TDC, RC, AK	sea
166	BUCK	1	0	0	487	459	370	279	222	0	0	12-Jun-22	1150h	KC, TDC, RC, AK	sea
167	TRIG	1	0	0	481	517	454	353	299	1	0	12-Jun-22	1130h	KC, TDC, RC, AK	sea
168	TRIG	6	0	0	254	644	485	141	194	1	0	12-Jun-22	1110h	KC, TDC, RC, AK	sea
169	TRIG											12-Jun-22	1050h	KC, TDC, RC, AK	sea
170	TRIG	6	0	0	509	512	484	357	396	1	0	12-Jun-22	1030h	KC, TDC, RC, AK	sea

Appendix Six continued - 2022 Flamborough Head and Bempton Cliffs SPA whole colony count – plot data – part three

Plot No		Fulmar (aos)	Shag (aon)	Cormorant (aon)	Gannet (aos)	Gannet (aos) 3 July 22	Guillemot (ind)	Razorbill (ind)	Kittiwake (aon)	Herring Gull (aon)	Black-browed Albatross	Date	Timed count	Observers	location
171	TRIG	6	0	0	319	433	358	95	272	1	0	12-Jun-22	1010h	KC, TDC, RC, AK	sea
172	TRIG	6	0	0	326	370	52	27	76	0	0	12-Jun-22	0945h	KC, TDC, RC, AK	sea
173	TRIG	8	0	0	66	72	98	36	54	2	0	12-Jun-22	0930h	KC, TDC, RC, AK	sea
174	TRIG	21	0	0	78	136	32	55	74	4	0	12-Jun-22	0915h	KC, TDC, RC, AK	sea
175	SPEE	23	0	0	0	0	97	50	22	13	0	12-Jun-22	0900h	KC, TDC, RC, AK	sea
176	SPEE	19	0	0	60	152	86	77	185	12	0	12-Jun-22	0835h	KC, TDC, RC, AK	sea
177	SPEE	20	0	0	0	0	0	0	0	6	0	12-Jun-22	0825h	KC, TDC, RC, AK	sea
178	SPEE	15	0	0	0	0	0	0	0	1	0	18-Jun-22	1600h	KC	land
Total exc High Stacks - South landing		**776**	**17**	**0**	**13125**	**12855**	**105832**	**44071**	**39653**	**275**	**1**				
High Stacks - South landing		**23**	**0**	**0**	**0**		**0**	**0**	**0**	**8**	**0**				
Filey Cliffs		**417**	**0**	**32**	**0**		**6,093**	**1,709**	**4,921**	**126**	**0**				
F&FC pSPA		**1,216**	**17**	**32**			**111,925**	**45,780**	**44,574**	**409**	**1**				
F&FC pSPA number of breeding pairs (c.)	**151,910**	**1,216**	**17**	**32**			**74,990**	**30,673**	**44,574**	**409**	**0**				
F&FC pSPA number of breeding birds	**303,821**	**2,432**	**34**	**64**			**149,980**	**61,345**	**89,148**	**818**	**0**				

Appendix Seven: 2017 - Filey Cliffs (Filey Brigg – Cunstone Nab proposed SSSI) whole colony - plot counts

9 June 2017, 1300h-1730h, Keith Clarkson and Mike Babcock, Filey Sailing Club RIB

SMP Plot	Northern Fulmar (AOS)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (individuals on land)	Razorbill (individuals on land)	Atlantic Puffin (rafting individuals)
Filey 3: plot 1	1	0	0	0	0	0	0
Filey 3: plot 2	17	0	168	1	3	33	0
Filey 3: plot 3	0	0	0	0	0	0	0
Filey 3: plot 4	0	0	0	0	0	0	0
Filey 3: plot 5	5	0	60	2	250	146	0
Filey 3: plot 6	3	0	69	0	1265	252	0
Filey 3: plot 7	5	0	59	4	320	142	0
Filey 3: plot 8							0
Filey 3: plot 9	10	0	382	0	2285	416	0
Filey 3: plot 10	19	0	663	2	663	234	0
Filey 3: plot 11	35	0	656	9	245	123	0
Filey 3: plot 12	6	0	0	7	0	0	0
Filey 2: plot1	44	0	786	10	425	105	0
Filey 2: plot 2	16	0	660	12	353	112	0
Filey 2: plot 3	32	4	1366	11	267	270	0
Filey 2: plot 4	17	8	372	1	56	63	0
Filey 1: plot 1	22	13	274	6	0	15	0
Filey 1: plot 2	25	0	0	8	0	3	0
Filey 1: plot 3	14	2	129	11	0	34	0
Filey 1: plot 4	12	0	23	8	0	0	0
Filey 1: plot 5	28	0	131	21	71	216	0
Filey 1: plot 6	90	0	219	2	11	97	0
Filey 1: plot 7	10	0	14	0	0	0	0
TOTAL	**411**	**27**	**6031**	**115**	**6214**	**2261**	**243**

Appendix eight: 2022 – Filey Cliffs (Filey Brigg-Cunstone Nab) Whole colony - plot counts

14 June 2022,

SMP Plot	Northern Fulmar (AOS)	Great Cormorant (AON)	Black-legged Kittiwake (AON)	European Herring Gull (AON)	Common Guillemot (individs)	Razorbill (individs)	Atlantic Puffin (rafting birds) 15 March 22
Filey 3: plot 1	0	0	0	0	0	0	
Filey 3: plot 2	14	0	220	1	47	57	
Filey 3: plot 3	1	0	0	1	0	15	
Filey 3: plot 4	5	0	0	0	0	1	
Filey 3: plot 5	4	0	49	4	334	215	
Filey 3: plot 6	1	0	64	1	1045	122	
Filey 3: plot 7	0	0	53	0	404	73	
Filey 3: plot 8	2	0	115	0	1308	167	
Filey 3: plot 9	2	0	239	1	755	112	
Filey 3: plot 10	10	0	538	1	428	127	
Filey 3: plot 11	19	0	575	5	179	38	
Filey 3: plot 12	10	0	3	8	0	1	
Filey 2: plot1	6	0	223	3	40	25	
Filey 2: plot 2	61	1	922	17	729	164	
Filey 2: plot 3	29	0	685	7	460	190	
Filey 2: plot 4	33	10	865	14	261	84	
Filey 1: plot 1	31	6	237	10	0	32	
Filey 1: plot 2	32	9	33	9	0	10	
Filey 1: plot 3	16	5	51	10	0	23	
Filey 1: plot 4	8	0	0	8	0	0	
Filey 1: plot 5	39	1	47	25	81	152	
Filey 1: plot 6			2	1			
Filey 1: plot 7	94	0			22	101	
TOTAL	**417**	32	4921	126	6093	1709	94

Appendix Nine a: Changes in distribution of nesting Northern Gannet in the Flamborough and Filey Coast pSPA - a comparison between years 2008-2022 (southern part of colony)

Plot No.	SMP plot name	2008	2009	2012	2015	2017	2022	Repeat Count 03/07/2022
110	Dyke	0	0	0	0	0	0	0
111	Dyke	0	0	0	0	0	0	0
112	Dyke	0	0	0	0	0	3	0
113	Dyke	0	0	0	0	0	1	1
114	Dyke	0	0	0	0	0	0	0
115	Dyke	0	0	0	0	0	12	6
116	Dyke	0	0	0	0	0	0	0
117	Dyke	0	0	0	0	0	0	0
118	Wandale	0	0	0	0	0	22	8
119	Wandale	0	0	0	30	168	175	111
120	Wandale	4	6	59	63	52	130	86
121	Wandale	31	49	103	126	156	211	51
122	Wandale	34	88	130	160	127	173	325
123	Wandale	0	0	5	10	175	75	54
124	Wandale	0	0	4	34	39	124	97
125	Wandale	0	6	69	85	103	159	112
126	Wandale	0	0	0	5	15	49	29
127	Wandale	0	0	0	0	7	26	19
128	Wandale	0	0	0	0	0	0	0
129	Wandale	0	0	0	0	0	0	0
130	Wandale	0	0	0	12	20	22	27
131	Wandale	0	0	0	4	22	41	42
132	Wandale	517	430	538	585	992	894	622
133	Grandstand	198	275	335	335	414	400	336
134	Grandstand	68	80	146	148	158	326	203
135	Grandstand	115	150	291	384	405	466	450
136	Grandstand	0	0	0	0	24	2	36
137	Grandstand	0	0	0	0	0	0	0
138	Grandstand	0	0	0	0	23	46	42
139	Grandstand	0	0	0	0	44	80	102
140	Grandstand	0	0	0	0	48	80	55
141	Grandstand	0	0	0	0	2	14	9
142	Grandstand	0	0	0	2	3	0	0

Appendix Nine b: Changes in distribution of nesting Northern Gannet in the Flamborough and Filey Coast pSPA - a comparison between years 2008-2022 (Northern part of colony)

Plot No.	SMP plot name	2008	2009	2012	2015	2017	2022	Repeat Count 03/07/2022
143	Bartlett	0	0	0	6	130	111	64
144	Bartlett	3	6	51	66	97	69	87
145	Bartlett	192	202	269	287	278	322	278
146	Bartlett	42	94	90	89	147	134	245
147	Bartlett	43	75	76	117	153	179	134
148	Bartlett	66	92	192	178	203	198	217
149	Bartlett	244	220	233	246	343	235	338
150	Bartlett	179	194	195	268	261	215	205
151	Bartlett	131	173	214	266	184	291	164
152	Bartlett	248	271	347	373	365	396	319
153	Bartlett	369	306	447	435	377	496	417
154	Bartlett	251	237	350	412	365	170	293
155	Jubilee	281	226	485	383	449	390	205
156	Jubilee	63	85	131	151	170	135	135
157	Jubilee	72	39	63	49	92	121	115
158	Jubilee	298	180	285	290	282	330	376
159	Jubilee	440	540	520	412	354	349	506
160	Jubilee	263	280	447	515	355	470	436
161	Buckton	155	125	360	307	342	340	318
162	Buckton	311	405	458	546	532	435	609
163	Buckton	38	50	56	143	163	222	289
164	Buckton	187	246	396	480	373	543	513
165	Buckton	455	606	871	1030	1117	863	474
166	Buckton	386	445	564	677	617	487	459
167	Trig Point	386	550	519	784	523	481	517
168	Trig Point	206	230	444	400	422	254	644
169	Trig Point	145	250	285	215	211		
170	Trig Point	55	28	128	280	251	509	512
171	Trig Point	258	290	412	433	626	319	433
172	Trig Point	219	330	433	584	346	326	370
173	Trig Point	1	0	24	23	67	66	72
174	Trig Point	0	0	36	66	184	78	136
175	Speeton	0	0	0	0	0	0	0
176	Speeton	0	0	0	0	16	60	152
177	Speeton	0	0	0	0	0	0	0
178	Speeton	0	0	0	0	0	0	0
	TOTAL	6954	7859	11061	12494	13392	13125	12855

Appendix Ten: Flamborough Head and Bempton Cliffs – Historic record of known Black-legged Kittiwake counts pre-2000

Year	Count/Unit	Source/Methods/Comments
1952	17,600 (birds)	Brownsey and Peakall (1953). A three-day land based count done 21 -23 June 1952; "the count was conducted along the cliffs from Bridlington Bay to Speeton Bay and the method employed was that of counting from one buttress the number of birds on the face of the opposite buttress species by species. Due to the fact that not all of the cliff face could be seen, the length of the hidden cliff face was recorded and it was found that this amounted to only 3.5%. No checking was carried out as it was found that the whole of the three days was required to carry out the count over six or so miles of cliff." Counts were increased by 3.5% to reflect the above. "The figures obtained represent the 'apparent' breeding population of each species. This 'apparent' breeding population would equal the actual breeding population if the only birds on the cliff were breeding birds, and if only one bird of each breeding pair was present. The number of birds on the cliff would then be the actual number of breeding pairs present, but in practice such ideal conditions do not exist and other birds, both breeding and non-breeding, will be included in the count. Thus the figure obtained is larger than the actual breeding population ... " *Comment: From personal experience we consider that much more than 3.5% of the cliffs from Bridlington to Speeton are not visible from the cliff tops – this count is therefore likely to be understated. Three days is a short period to count 7 species over the full length of the colony including walking from vantage point to vantage point. It is difficult to compare a count of birds present on cliff with counts of either apparently occupied nests or sites.*
1964	31,195 (nests)	Williams and Kermode (1968). A count of the cliffs between Sewerby and "Redcliff" at Speeton. "The census was taken between the 5th and 14th of June 1964. The method used was to count from each buttress the birds on the opposite cliff face, species by species. There were two observers and each counted each species separately, recounts being made when there was a disagreement."... "As with Brownsey & Peakall, between three and four percent of the cliff was found impossible to count from the cliff top." *Comment: From personal experience we consider that much more than 3.5% of the cliffs from Bridlington to Speeton are not visible from the cliff tops – this count is therefore likely to be understated. The time taken seems to us more realistic for a full colony count.*
1969	30,800 (pairs)	Operation Seafarer; reported in Lloyd et. al., 1991. *Comment: In Cramp et. al. 1974 (p.137) reference is made to counting nests from land or sea; we have not been able to locate any details of how counts were conducted at Bempton/Flamborough.*
1975	52,710 (nests)	RSPB Bempton Cliffs Annual Report 1975. "A census was made this year. The vast numbers had been a stumbling block but after unsuccessful attempts in the past 2 seasons I arrived at a figure of 52,710 nests by a series of sample counts and in-between estimates by the methods outlined in another section of this report on seabird census methods. The area surveyed was the same as for the auk census, i.e. from Dulcey Dock to Lang Ness" *[Speeton Cliffs to north of Thornwick Bay]* "The most numerous seabird at Bempton is the Kittiwake, which is increasing tremendously and the sheer numbers and density made it a hard bird to census. I tried to count them but photography from a boat but the white chalk cliffs did not highlight the birds and this was a failure. The method of counting the kittiwakes was relatively crude, but at least we now have an idea of the size of the populations: a series of sample faces of approximately the same size were sketched in a note book and counted nest by nest, usually with a second observer present who counted at the same time, an average figure was then obtained when it was realised that the density was fairly even on suitable faces. The rest of the intervening sections of cliff were then measured crudely and the number of sites estimated from the number of samples. Any unsuitable or less densely populated sections were subtracted or counted separately and a final figure of 52,710 nests arrived at." *Comment: We have not been able to locate any records of the actual counts, cliff section measurements, calculations or adjustments so we have no way of testing how accurate they were.*
1977	60,000 to 65,000 (est)	RSPB Bempton Cliffs Annual Report 1977. "No accurate census was attempted this year. However whilst counting the auk species a rough estimation was made of this species. I arrived at a figure of between 60,000 and 65,000 pairs. If the areas of cliff outside the reserve are taken into account the

	(pairs)	total number for the Flamborough headland must be in the region of 100,000 pairs and from previous counts it seems as if the Kittiwake is enjoying a healthy and stable existence. However in terms Of the reserve itself we must reach a saturation point before long and perhaps we already have". *Comment: No information given on how the estimates for the reserve and the larger headland were arrived at.*
1979	80,180 (pairs)	RSPB Bempton Cliffs Annual Report 1979. "A full census was carried out for the reserve length and also the cliffs North of Cmpt 1 to Speeton Gap. The results were sent to Dr. J. Coulson of Durham University - the organiser for the 1979 B.T.O. Kittiwake Survey. The Flamborough Head Seawatchers (P.A. Lassey et al) counted from the reserve boundary at Compartment 20 and then covered the whole headland. A total of c16,000 pairs were counted and estimated. This, plus my counts and estimates for the reserve length of 64,180 pairs, make the counts for the whole headland a grand total of c80,180 pairs, which is possibly one of the biggest colonies in Great Britain. This is considerably more than the last census carried out by Steve Madge in 1975, and gives an increase of c13,970 pairs during a four year period, for the reserve. This compares well with the rapid increase of this species over the rest of Britain and Ireland during the recent years. Last year Steve Rooke estimated the population for the whole headland in the region of c100,000 pairs. But this is way above the counts and estimates made by the Flamborough watchers and myself and should be looked at with some reservation." *Comment: The1979 Annual Report includes a breakdown by reserve compartment but we have not been able to locate any further details of the methods used (land or sea) or of what, if any proportion of this figure was estimated and how any such estimates were arrived at.*
1986	50,000 to 70,000 (est) (pairs)	Copy Seabird Colony Register Data Sheet – Speeton Cliffs (TA153750) to Gull Nook (TA222727). "Kittiwake – Not counted, nor really assessed in '86: figure is from previous colony estimates." "Large parts of colony only visible from boat. Cliff edge often dangerous and loose: slumping of cliff top clay and rock falls are common. Unprotected counter can see about 40 -60% of cliff from top." *Comment: No information available about how the estimate was arrived at. This assessment of the extent of the cliffs visible from the cliff tops feels, from personal experience, far more accurate at least for the section from Danes Dyke to Speeton Cliffs.*
1987	85,000	RSPB Bempton Cliffs Annual Report 1987. "The 1986 annual report indicates that that the counts conducted for 'seabird colony register' were less than adequate. I therefore determined to repeat the counts in an attempt to achieve greater precision. The counts were limited to the reserve recording area – Speeton Heights to Gull Nook – as the area outside of this was being counted by Mike Higgins of the Bridlington members group. Counts were made from the clifftops and from boats. The clifftop counts stared in late May and continued until mid-July. The auk species being counted first (in order that Guillemots and Razorbills were counted during their optimum counting period). These were followed by the Kittiwakes from mid-June; Fulmar, Herring Gull and Shag during late June … [*some non KI text omitted*] I enlisted the help of two competent volunteers to assist with the clifftop count. We each counted a section of cliff, then swapped over, so that each section was counted at least twice by independent observers. Where our results differed by greater than 5% the section was recounted together. This proved quite acceptable (with only a few sections having to be recounted), except in the case of the Puffin where the apparent numbers on the cliff could change substantially in less than an hour. Five boat based counts were undertaken, two concentrating on Gannets whilst the other three concentrated on the remaining species. Assistance was received on two of these boat based counts. [*some non KI text omitted*] The Kittiwake and auk counts proved acceptable but yielded up to 20% lower figures than the clifftop counts. This was taken into consideration when estimating the number on the sections of the cliff which could not be counted from the clifftops. @ Kittiwake……(occupied nests)…… 75000 @ = An accuracy of the order of 10% is believed to have been achieved. The accuracy of the clifftop counts were of the order of 5% but the boat based counts would have reduced this accuracy." *Comment : No breakdown of which sections were counted from land and which from sea – or which were estimated and of how such estimates were made. If 2 of 5 boat days were spent on Gannets only 3 were available for other species.*