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UK seabird colony counts in 2023 following the 2021-22 outbreak of Highly Pathogenic Avian Influenza

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1 Executive Summary

I. The current H5N1 strain of Highly Pathogenic Avian Influenza (HPAI) has affected UK wild bird populations on an unprecedented scale since it was first recorded in the country in Great Skuas in summer 2021, with seabirds and waterfowl particularly affected. The extent of reported mortalities attributed to HPAI in the UK and across Europe in 2022 demonstrated that HPAI had become one of the biggest immediate conservation threats faced by multiple seabird species, including some for which the UK population is of global importance. Many species impacted by HPAI are of conservation concern in the UK, and the outbreak comes on top of widespread declines reported by the latest seabird census, 'Seabirds Count'. Obtaining updated population estimates to help assess the impacts of the disease therefore became a top monitoring priority for seabird conservation.

II. The RSPB HPAI Seabird Surveys Project was established to complement and enhance existing UK seabird count survey effort in 2023, as coordinated by the BTO/JNCC Seabird Monitoring Programme (SMP). The aim of the project was to ensure sufficient survey coverage in 2023 of a set of priority species to allow the comparison of colony counts made in 2023 with pre-HPAI counts and assess the likely population impacts of the 2021-22 HPAI outbreak.

III. Three types of surveys were undertaken: sites counted as part of business-as-usual monitoring; additional surveys coordinated through RSPB and undertaken by others; and additional surveys undertaken by RSPB (the latter two types to fill priority gaps in survey coverage). For the surveys additional to business-as-usual, several criteria were used to prioritise sites and species to provide as representative a sample as possible, as a complete repeat census was not feasible. Species selection criteria were: degree of mortality attributed to HPAI; conservation status; the UK's global responsibility; and the likely accuracy and precision of data achievable. Site selection criteria included consideration of population, geographic and protected site coverage as well as survey logistics and availability of pre-HPAI data.

IV. The prioritised species were: Leach's Storm-petrel; Northern Gannet; Arctic Skua; Great Skua; Black-headed Gull; Lesser Black-backed Gull; Herring Gull; Great Black-backed Gull; Black-legged Kittiwake; Sandwich Tern; Roseate Tern; Common Tern; Arctic Tern; and Common Guillemot[1].

[1] Leach's Storm-petrel *Hydrobates leucorhous;* Northern Gannet *Morus bassanus;* Arctic Skua *Stercorarius parasiticus;* Great Skua *Catharacta skua;* Black-headed Gull *Chroicocephalus ridibundus;* Lesser Black-backed Gull *Larus fuscus*; Herring Gull *Larus argentatus;* Great Blackbacked Gull *Larus marinus*; Black-legged Kittiwake *Rissa tridactyla*; Sandwich Tern *Thalasseus sandvicensis;* Roseate Tern *Sterna dougallii;* Common Tern *Sterna hirundo;* Arctic Tern *Sterna paradisaea;* and Common Guillemot *Uria aalge.*

V. Surveys followed standard seabird monitoring methods and were undertaken from May to July in 2023. Survey data were entered into the SMP database, and the dataset summarised by this report includes counts from all the above-mentioned types of survey.

VI. This report summarises results of the 2023 counts, based on data submitted to the SMP database by 20 November 2023. The 2023 counts (completed largely before further HPAI seabird mortalities occurred that year) are compared to pre-HPAI baseline counts to estimate percent change following the 2021-22 HPAI outbreak. Pre-HPAI baseline counts were largely sourced from 'Seabirds Count', the recently completed fourth census of all breeding seabirds in Britain and Ireland, carried out between 2015-21.

VII. Total survey coverage (i.e., estimated % of the total UK breeding population that was covered by both business-as-usual monitoring and additional surveys in 2023) of >50% was achieved for Roseate Tern (98%), Sandwich Tern (92%), Great Skua (81%), Gannet (75%), Guillemot (52%) and Black-headed Gull (50%), with the lowest coverage for Lesser Black-backed Gull (22% of natural-nesting population).

VIII. Multiple species showed a decrease of >10% in overall counts across all UK sites that were surveyed in 2023: Great Skua (-76% decrease in overall count); Common Tern (-42%); Sandwich Tern (-35%); Arctic Skua (-28%); Gannet (-25%); Lesser Black-backed Gull (-25% of the natural-nesting population); Roseate Tern (-21%); Great Black-backed Gull (-20%); and Black-headed Gull (-11%). The most severe decline was seen in Great Skua, with counts decreasing by >50% at 79% of previously occupied sites surveyed, including important SPA populations.

IX. For many species, decreases were widespread, with a decrease in counts of >10% at over half of sites that were surveyed in 2023 found for: Great Skua (decreased at 88% of 308 previously occupied sites surveyed again in 2023); Common Tern (71% of 52 sites), Lesser Black-backed Gull (62% of 79 natural-nesting sites), Sandwich Tern (57% of 14 sites), Arctic Skua (54% of 145 sites) and Arctic Tern (53% of 47 sites).

X. This report provides important data on how numbers of breeding seabirds of the target species have changed at the surveyed sites since just prior to the outbreak of HPAI. However, care must be taken when interpreting and comparing these data due to differing periods of time since the most recent pre-HPAI baseline count as well as differing levels of coverage. Additionally, seabirds face a range of other concurrent threats in addition to HPAI, so reported declines cannot necessarily be attributable solely to HPAI and need to be interpreted within the context of pre-existing population trends. It is also important to consider that losses of breeding adults may have been buffered somewhat by the recruitment of previous non-breeders into the breeding population.

XI. Further analysis planned by RSPB will use a modelling approach to estimate % change in population of prioritised seabird species across different geographic scales (e.g., region, country), update population estimates for species with sufficient survey coverage, and compare these population estimates with those reported by the Seabirds Count census to help us better understand the scale of the population changes reported here in relation to longer-term background trends.

XII. The further outbreak of HPAI in 2023, which largely occurred after the counts were undertaken, means that impacts of HPAI on the breeding populations of affected species is likely to be worse than indicated here. There is also the potential for ongoing impacts as the disease progresses, so continued enhanced monitoring is essential to quantify any further impacts and to understand how seabird populations will respond over the longer term.

2 Introduction

The current H5N1 strain of Highly Pathogenic Avian Influenza (HPAI) has affected UK wild bird populations on an unprecedented scale since it was first recorded in the country in Great Skuas *Catharacta skua* in summer 2021 (Falchieri et al. 2022), with mass mortalities following in waterfowl, particularly Barnacle Geese *Branta leucopsis*, in winter 2021-22 (NatureScot, 2022). Thousands of seabird mortalities attributed to HPAI were reported across the UK in 2022, with minimum losses of almost 20,000 in Scotland alone (NatureScot, 2023) and by the end of 2022, 17[2] of the 25 UK breeding seabird species had tested positive for HPAI (APHA, 2023). HPAI therefore became one of the biggest immediate conservation threats faced by multiple seabird species, including some for which the UK is responsible for a high proportion of the global population. For example, the UK supports around 55-60% of the global breeding populations of Northern Gannet *Morus bassanus* and Great Skua (Burnell et al., 2023), two species that experienced the most visible mass mortality in 2022. Additionally, many species impacted by HPAI are of conservation concern in the UK, and the outbreak comes on top of widespread declines reported by the latest seabird census, 'Seabirds Count', which found that over half of seabird species had suffered population declines of >10% in the UK over the last two decades (Burnell et al. 2023). Prior to the current HPAI outbreak, UK seabirds were already facing multiple threats including predation from both native and invasive non-native species, changes in food availability, severe weather events, incidental mortality through fisheries bycatch and effects of offshore wind developments (Bolton and Baker, 2023).

The UK's breeding seabirds have been monitored annually since 1986 through the Seabird Monitoring Programme (SMP)[3] as well as through periodic comprehensive censuses, the most recent of which ('Seabirds Count') was conducted between 2015 and 2021 (Burnell et al. 2023), just prior to the HPAI outbreak. A re-survey of seabird populations to help to assess the impacts of HPAI was identified as the highest monitoring priority at a JNCC-BTO convened HPAI workshop held in November 2022 (Pearce-Higgins et al. 2023). The impact of HPAI on seabird species at risk from offshore wind farm (OWF) developments also represented a significant consenting risk to current and future OWFs, resulting in high interest from the OWF industry in obtaining updated population counts.

It was within this context that RSPB established the HPAI Seabird Surveys Project, which aimed to ensure sufficient representative coverage of prioritised breeding seabird species to enable the assessment of the population impacts of HPAI. Achieving this involved three types of survey: sites counted as part of business-as-usual monitoring; additional surveys coordinated through RSPB and undertaken by others; and additional surveys undertaken by RSPB (the latter two to fill priority gaps in survey coverage). While the project was led and coordinated by RSPB, it was a collaborative effort involving the British Trust for

[2] At the time of writing (Nov 2023), this figure had increased to 21 breeding seabird species.

[3] SMP is a partnership funded jointly by the BTO and JNCC, in association with RSPB, with fieldwork conducted by both non-professional and professional surveyors.

Ornithology, the Statutory Nature Conservation Bodies (SNCBs[3]), and many other conservation organisations and individuals.

This report summarises the results of counts undertaken in 2023 and compares these with the most recent pre-HPAI count data to calculate % population change across all surveyed sites for each prioritised species. Total survey coverage and overall population changes are presented at a country and UK scale. This report does not attempt to account for gaps in survey coverage and presents % population change at surveyed sites only. Further analysis planned by RSPB will use a modelling approach to account for incomplete survey coverage to better estimate % change in populations of prioritised seabird species across different geographic scales (e.g., region, country) and compare with previous trends to help us better understand the scale of the population changes reported here in relation to background trends.

[3] NatureScot, Natural England, Natural Resources Wales, Northern Ireland Environment Agency and Joint Nature Conservation Committee.

3 Methods

3.1 Site and species selection

Based on the timing and pattern of observed UK HPAI seabird mortalities in 2022, we expected that HPAI impacts on seabirds would vary between species as well as geographically. As a full seabird census is highly resource intensive and was not logistically feasible to carry out in 2023 (a full census would take several years to complete), we instead aimed to obtain updated colony size estimates for a set of prioritised species, across a sample of sites that was as representative as possible of the UK population throughout its range. This prioritisation was guided by the criteria summarised in Table 1, which were presented at, and informed by, a JNCC-BTO convened HPAI workshop in November 2022 (Pearce-Higgins et al. 2023).

Table 1. Criteria used to guide the selection of species and sites surveyed in 2023.

Criteria	Relevance for prioritising	
	Species	Sites
Conservation Concern		
Degree of HPAI related mortality in 2022	✓	✓
Conservation status[4]	✓	
UK responsibility		
% of global population	✓	
% of UK population		✓
Protected site		✓
Ability to detect an HPAI-related impact		
Likely accuracy and precision of data achievable	✓	
Frequency and recency of previous monitoring		✓
Sufficiency of business-as-usual monitoring		✓
Geographic coverage		✓
Site population size		✓
Feasibility of implementation		
Accessibility and logistics		✓

[4] The assessment of conservation status for each species was based on Birds of Conservation Concern 5 (BoCC5; Stanbury et al. 2021). BoCC5 was completed before the results from Seabirds Count were available (as was our prioritisation process), and so declines shown by Seabirds Count are subsequent to the latest conservation status assessments.

3.1.1 Species selection

The prioritisation process resulted in the categorisation of each of the 25 seabird species that regularly breeds in the UK as high, medium, or low priority (Table 2).

All high and medium priority species were selected for this project, i.e., Northern Gannet *Morus bassanus* (hereafter Gannet), Great Skua *Catharacta skua,* Black-headed Gull *Chroicocephalus ridibundus,* Herring Gull *Larus argentatus,* Great Black-backed Gull *Larus marinus*, Black-legged Kittiwake *Rissa tridactyla* (hereafter Kittiwake), Sandwich Tern *Thalasseus sandvicensis,* Roseate Tern *Sterna dougallii,* Common Tern *Sterna hirundo,* Arctic Tern *Sterna paradisaea,* and Common Guillemot *Uria aalge* (hereafter Guillemot).

In addition, three low priority species were included: Arctic Skua *Stercorarius parasiticus;* Leach's Storm-petrel *Hydrobates leucorhous;* and Lesser Black-backed Gull *Larus fuscus*. Arctic Skua and Leach's Storm-petrel were included as these species are classed as critically endangered in the UK (Stanbury et al. 2021) and have previously been shown to be adversely affected by Great Skuas (Perkins et al. 2018; Miles, 2010), and could therefore potentially benefit by any HPAI-related reduction in the Great Skua population. Though we are unlikely to find such a rapid population response to a reduction in predation pressure, updated population counts can be used in future assessments. Furthermore, no information is available on the potential impact of HPAI on Leach's Storm-petrel, though a large percentage of the UK population of Leach's Storm-petrel occur on St Kilda where HPAI is known to have affected Great Skua and Puffins. Arctic Skuas could easily be counted during Great Skua surveys with minimal extra effort. Though low mortality was recorded for Lesser Black-backed Gull in 2022, the species could relatively easily be counted at the same time as Herring Gulls and was included in case some 'unidentified gull' mortalities were Lesser Black-backed Gulls.

A total of 14 seabird species was therefore prioritised for enhanced survey effort in 2023.

Table 2. Summary of the results of the species prioritisation process for count surveys in 2023. Species were categorised as high, medium, and low priority (dark, medium, and light grey shaded boxes respectively). Species where the UK hosts >10% of the global population are shown with a †. Burrow nesters (where counts have particularly low accuracy and precision) are marked by an asterisk. At the time of assessment there was no official collation of mortality records, therefore mortality levels were judged based on reports from site managers and the public. Species selected for enhanced survey effort in 2023 are shown in bold.

	Birds of Conservation Concern Status		
UK mortality (as of Nov 2022)	Red status	Amber status	Green status
High mortality	**Roseate Tern**	**Great Skua**† **Gannet**† **Guillemot**† **Sandwich Tern** **Arctic Tern** **Common Tern**	
Moderate mortality	**Kittiwake** **Herring Gull**†	**Great Black-backed Gull** **Black-headed Gull**	
Low mortality	Puffin* Shag†	Manx Shearwater*† Fulmar Razorbill† **Lesser Black-backed Gull**†	Cormorant
No mortality recorded	**Leach's Storm-petrel*** **Arctic Skua**	European Storm-petrel* Black Guillemot* Mediterranean Gull Common Gull Little Tern	

3.1.2 Site selection

To select survey sites, we first identified which sites were expected to be surveyed in 2023 under business-as-usual monitoring (such as routine annual surveys carried out by reserve staff or volunteers, and surveys being done under SMP Key Site contracts). This was based on previous SMP database records (sites with annual records 2012-19, prior to Covid restrictions, were assumed to be surveyed in 2023) and communication by RSPB, the SNCBs and National Trust for Scotland (NTS) with site staff and those leading independent initiatives. This process allowed us both to encourage business-as-usual monitoring and submission of data to the SMP database, and to identify sites that would not otherwise be surveyed and that would require additional resource to achieve population counts of prioritised species in 2023. Identifying a list of priority sites to target additional effort was then guided by the site selection criteria (Table 1), aiming for as representative a sample as possible. This list was then used to coordinate with a range of stakeholders including RSPB reserves, SNCBs and other conservation organisations to increase survey effort in 2023 where feasible. Despite this additional effort (see Acknowledgements), significant survey gaps remained, particularly in Scotland and Northern Ireland, so RSPB Conservation Science also undertook targeted counts to fill these remaining gaps[5].

Only natural-nesting populations of Lesser Black-backed Gull and Herring Gull were included in the site prioritisation and selection steps (i.e., sites for urban nesting gulls were excluded) owing to the difficulty in accurately surveying urban gull populations and the uncertainty surrounding existing population trends of urban-nesting gulls. Natural-nesting Lesser Black-backed Gulls and Herring Gulls accounted for approximately 17% and 26%, respectively, of the total population counted during Seabirds Count (i.e., including the urban-nesting population).

3.2 Survey methods

The extent of HPAI mortalities in 2022 showed there could be pronounced spatial variation in mortality within a colony, such that counts from a small number of sample plots may be unrepresentative of the whole colony. Therefore, as far as possible, full colony counts rather than counts for a sample of plots were undertaken (where counts were done by RSPB) or encouraged (where counts were done by others). All sites surveyed in 2023 corresponded to SMP sites (i.e., have SMP site ID numbers and standardised site boundaries). Surveys followed standard methods outlined in the Seabird Monitoring Handbook (Walsh et al. 1995). Within standard seabird monitoring methods, there are different options depending on the characteristics of each site and species. The following provides a summary of the main methods that were used (see Table 3 for count unit definitions):

[5] Some key survey gaps remained – see Section 3.3.1.1.

- For Gannet, counts of ‘Apparently Occupied Site’ (AOS) or, less frequently ‘Apparently Occupied Nest’ (AON) were undertaken either from land, boat or images collected by drone.

- For other cliff nesters (Kittiwake, large gulls at coastal sites, Guillemot), counts of ‘Apparently Occupied Nests’ (AONs) for gulls and of individuals for Guillemots (which do not build nests) were undertaken from land, with boats used in circumstances where not all the nesting areas are visible from land.

- ‘Apparently Occupied Territories’ (AOT) or AONs for ground-nesting species (terns, skuas, Black-headed Gulls, large gulls at inland sites) were usually estimated from transect surveys or vantage point counts, or images collected from drone. At some tern colonies, it was only possible to use flush-counts of individual adults.

- For Leach’s Storm-petrels (nocturnal burrow nesters), transect-based call-playback surveys were used to count the number of adults responding to a recording of their call. Published statistical methods (hierarchical distance sampling) are then used to estimate the proportion of birds responding and therefore the size of the population (following Deakin et al. 2021).

Surveys were undertaken between May and July, depending on the survey species, during optimal weather conditions where possible (Table 3). Optimal weather conditions were characterised by wind speeds of Beaufort force 4 or less, good visibility, and avoidance of heavy or continuous rain. Where surveys were undertaken from a boat, optimal conditions were further characterised by a sea state of force 4 or less. Flush counts and other disturbances were avoided during wet weather to prevent eggs and chicks becoming chilled. Where a choice of appropriate survey methods was available, the method used in the previous count was followed where possible to maximise comparability of counts of seabirds in 2023 with pre-HPAI baseline count data. Good weather across the UK during much of the optimal time window for surveys provided ideal survey conditions, particularly important for exposed sites that required boat access, facilitating high levels of survey coverage.

Table 3. Summary of recommended counting periods and count units. AOS = Apparently Occupied Site; AON = Apparently Occupied Nest; AOT = Apparently Occupied Territory; IND = Individual. Preferred count unit(s) underlined. Adjustments for the conversion of nonpreferred count units to preferred count unit are presented only where used.

Species	**Preferred survey period (buffer period) and time of day**	**Count units and definitions**
Gannet	Jun 1st – Jul 31st (May 14th – Aug 14th) 09:00 – 16:00 BST	**AOS**: A site that appears suitable for breeding, occupied by one or two adult Gannets, or an unattended chick, irrespective of whether any nesting material is present. **AON**: A site occupied by one or two adults, or an unattended chick, with nest material.
Skuas	24th May – 14th Jul, preferably June (None) Day light	**AOT**: Territories are defined by the presence of a nest, egg, chick or brooding or incubating adult, or through recording territorial behaviour (distracting or alarming, or apparent attachment to an area)
Gulls (*Larus spp.*)	May 24th – Jun 7th (May 10th – Jun 21st) Day light (or 08:00 – 18:00 BST for flush counts or vantage point counts)	**AON**: A well-constructed or scrape nest, attended by an adult and capable of holding eggs; or an adult apparently incubating if, e.g., actual nests are obscured by vegetation. **AOT**: estimate based on spacing of birds or pairs viewed from vantage point **IND**: count of individual birds Adjustments used to convert to AON: AON = AOT; AON = IND ÷ 2
Kittiwake	May 24th – Jun 14th (May 17th – Jun 21st) Day light	**AON**: A well-built nest capable of containing eggs or chicks with at least one adult present. Trace nests (those at a lesser stage of construction) are noted separately.
Terns	May 14th – 30th Jun (No buffer period) 08:00 – 16:00 BST	**AON** from VP: apparently incubating adults viewed from vantage point. Repeat counts between mid-May and late June (use peak count) **AON** from foot count: occupied nests with eggs, chicks or nest material viewed from colony. Early to mid-June **IND**: total number of adults when flushed from the colony. Early June Adjustment used to convert to AON: AON = IND ÷ 1.5
Guillemot	Jun 1st – Jun 21st (May 24th – Jun 30th) 08:00 – 16:00 BST	**IND**: All visible birds in the colony, excluding those on intertidal rocks and on the sea. All birds are counted, with no attempt made to judge the breeding status of individual birds.

3.3 Data collation

3.3.1 2023 colony counts

All counts undertaken by RSPB Conservation Science were entered into the SMP database as soon as possible following surveys. Data from RSPB Reserves were bulk uploaded to the SMP database in the autumn. All third parties who were known to have undertaken surveys were encouraged to submit their data to the SMP database by the end of October by the SMP organiser (BTO).

Colony counts in 2023 for all target survey species were downloaded from the SMP database on 20 November 2023. This allowed us to make use of data collected under business-as-usual monitoring as well as the specific targeted surveys undertaken as part of this project. We also requested some count data directly from priority sites that we knew had been counted in 2023 but the data had not been entered to the SMP at the time of the data download (though data from some key sites were not yet available – see 'Key data not available for inclusion in this report'). Data were then screened to ensure that surveys were carried out:

1) during the recommended diurnal time window (Table 3). Counts done outside of the window were excluded from the final dataset, though counts with no associated time data were not excluded to avoid excessive loss of data.
2) during the recommended seasonal survey window. A buffer window was allowed depending on the species, following the Seabirds Count methodology (Table 3).
3) using the preferred count unit. Surveys done using other accepted count units were converted to the preferred count unit following the Seabirds Count methodology (Table 3).
4) using an appropriate method (as per Walsh et al. 1995).

We additionally checked that counts referred to whole colony counts, rather than partial plot counts, and that no duplicate counts were entered for sites. Where more than one count was entered for a site using the same method, we selected the most appropriate based on the criteria listed above (i.e., recommended count unit, date and time, method). In the infrequent event that there were still duplicate counts on the SMP for a site using the same method after the data screening, we chose the higher count. It was not possible to fully screen counts to ensure that surveys were carried out during the recommended time window, as many counts did not have time information uploaded. We report in each species account the proportion of counts known to have been done during the recommended diurnal time window, and the proportion of counts where time information was not available. Counts listed as 'estimates' rather than 'counts' were manually checked, and excluded where appropriate e.g., minimum counts due to disturbance, weather, or incompletion of survey.

3.3.1.1 Key data not available for inclusion in this report

Count data were not available for Leach's Storm-petrel:

- Leach's Storm-petrel were counted in 2023 at two of the four islands in the St Kilda SPA which hold breeding Leach's Storm-petrel, Hirta and Dùn. This covers around 50% of the UK population of Leach's Storm-petrel (around 54% of the St Kilda population, which held 93% of the total UK population counted in the Seabirds Count census (Burnell et al. 2023)). However, analysis of the 2023 counts is still ongoing and results were not available at the time of compiling this report.

It was also not possible to include data in this report from some priority sites for other species known to have been counted in 2023, as counts were not yet available at the time of writing. We hope to include these data in the further analysis to be undertaken in early 2024. Notable gaps include:

- East Caithness Cliffs SPA – Great Black-backed Gull, Guillemot, Kittiwake, Herring Gull. East Caithness Cliffs SPA is an important site for Herring Gull (5% of the natural-nesting population recorded by Seabirds Count); Great Black-backed Gull (3% of UK population), Kittiwake (SPA with largest breeding population in Scotland; 11% of UK population) and Guillemot (SPA with largest breeding population in Scotland; 12% of UK population).
- St Kilda SPA – Gannet. St Kilda held the second largest Gannet colony in Scotland at the time of Seabirds Count (17% of UK population).
- Bowland Fell SPA – Lesser Black-backed Gull. Bowland Fell SPA held the largest Lesser Black-backed Gull colony in England at the time of Seabirds Count (26% of the UK natural-nesting population).
- Isle of May (Forth Islands SPA) – Arctic Tern, Kittiwake, Guillemot. Isle of May is a SMP Key Site, and holds 3%, 1% and 1.5% of the UK population of Arctic Tern, Kittiwake and Guillemot, respectively.
- Skomer (Skomer, Skokholm and the Seas off Pembrokeshire SPA) – Lesser Black-backed Gull, Kittiwake, Guillemot. Skomer is a SMP Key Site, and holds the largest populations in Wales of Lesser Black-backed Gull (15% of natural-nesting UK population), Kittiwake (1% of UK population) and Guillemot (2% of UK population).
- Ribble Estuary (Ribble and Alt Estuaries SPA) – Lesser Black-backed Gull and Herring Gull. Ribble Estuary held 8% and 0.6% of the natural-nesting UK population of Lesser Black-backed Gull and Herring Gull, respectively,

It was not possible to make counts at some prioritised sites in 2023:

- Flamborough and Filey Coast (FFC) SPA – Kittiwake and Guillemot. FFC holds the largest breeding population in England of Kittiwake (21% of UK population recorded by Seabirds Count) and Guillemot (7% UK population). This is a large complex site requiring local knowledge to survey. However,

there was insufficient local staff availability in 2023 to make a full colony count for these species.

- Coquet Island SPA – Common Tern, Arctic Tern, Black-headed Gull, Kittiwake. Coquet Island holds the largest UK colony of Common Tern (14% of UK population) and 4%, 6% and 0.2% of the UK populations of Arctic Tern, Black-headed Gull and Kittiwake, respectively. Access restrictions due to HPAI prevented a count of these species, though a count of Roseate Tern was possible.
- Lower Lough Erne RSPB – Sandwich Tern. Lower Lough Erne held 2% of the UK population of Sandwich Tern recorded by Seabirds Count but was not counted in 2023.

3.3.2 Pre-HPAI baseline counts

Baseline colony counts (i.e., prior to the 2021-22 HPAI outbreak[6]) for sites surveyed in 2023 were collated from the Seabirds Count census dataset, kindly provided by JNCC. We preferred to use the Seabirds Count data where possible as the quality of the data had already been assessed for inclusion in the census. However, some mismatches were present between sites used in the census and those containing 2023 counts in the SMP database (e.g., where boundaries changed, or where sites were grouped together for the census), meaning that counts for some sites surveyed in 2023 were not available in the Seabirds Count dataset. Where a site was surveyed in 2023, but a baseline count was not available from the Seabirds Count dataset, we extracted a baseline count from the SMP dataset instead if available and repeated the quality assessment steps detailed in section 3.3.1.

The Seabirds Count census was carried out between 2015 and 2021. We additionally checked if a more recent pre-HPAI baseline count was available in the SMP database and used the more recent count in comparisons where appropriate, repeating the quality assessment steps detailed in section 3.3.1. Where the more recent count used a non-preferred count unit, or inappropriate survey time, date or method, we used the older baseline count from the census.

The latest year from which we accepted more recent counts was set at 2021, as for all species bar Great Skua, HPAI was not detected in the UK until 2022. However, baseline counts made in 2021 were discounted for Great Skua (i.e., the latest year from which we accepted more recent counts was set at 2020), owing to the detection of HPAI in Great Skua colonies in 2021. This reduced the number of Great Skua sites from 413 to 356, although the number of baseline AOTs covered by these sites reduced very little (from 9,108 to 9,088 AOTs).

For mobile species with low site fidelity (all tern species and Black-headed Gulls), we prescribed a focal year (2021) for more recent counts accepted as the baseline to avoid duplicate counts of the same birds. We prescribed 2021 as the focal year as it was the year with the maximum number of sites surveyed in the UK since

[6] n.b. The baseline count does not relate to the SPA citation population baseline, but rather is the most recent count prior to the HPAI outbreak. Furthermore, pre-HPAI baseline counts are collated for the subset of surveyed sites within the SPA only (there may not be complete survey coverage).

Seabirds Count. The focal year in Seabirds Count for terns and Black-headed Gull in Britain was 2018.

Note that for some sites, including SPAs (see below), these amendments led to differences between the baseline counts presented here and those reported for Seabirds Count in Burnell et al. (2023).

3.3.3 Collation of data for Special Protection Areas (SPA)

To allow us to collate data specifically for SPAs, we annotated the dataset with information on whether SMP sites were within a Special Protected Area (SPA) classified for the target seabird species of interest. This was based on work done by JNCC and RSPB for the Seabirds Count census publication, thus we followed the approach used for Seabirds Count (Burnell et al. 2023).

Breakdowns presented for surveyed SPAs will contain different baseline counts from those presented in Seabirds Count if there was incomplete survey coverage in 2023 of the population held by the SPA (i.e., we present percentage change between counts only for the subset of the sites within each SPA that were surveyed in 2023) and/or if more recent baseline counts were taken from the SMP for some sites within the SPA. Note that there are a small number of differences between the SPA list used in this report and that used in Burnell et al. (2023): this report includes five SPAs for Common Tern (Chichester and Langstone Harbours, Morecambe Bay and Duddon Estuary, Pagham Harbour, Teesmouth and Cleveland Coast and Belfast Lough), and one SPA for Arctic Tern (Belfast Lough) that were unintentionally omitted in the relevant SPA list for these species in Seabirds Count.

3.4 Analysis

We estimated survey coverage for each prioritised species, as the percentage of overall UK population recorded by Seabirds Count that was held in sites surveyed in 2023 (Equation 1A) and the percentage of all SMP sites included in Seabirds Count that were surveyed in 2023 (Equation 1B). Survey coverage calculations included UK populations and sites only (i.e., excluding the Republic of Ireland, Isle of Man and Channel Islands). Survey coverage was calculated for each species (i) overall by country and UK and (ii) for SPAs designated for that species. Site coverage calculations included sites at which zero birds were counted in Seabirds Count and/or 2023.

$$\textit{Eq.1A: \% of UK population surveyed in 2023} = \left(\frac{\text{Seabirds Count total across sites surveyed in UK in 2023}}{\text{Seabirds Count total across all sites surveyed in UK}}\right) x\ 100$$

$$\textit{Eq.1B: \% of sites surveyed in 2023} = \left(\frac{\text{Number of UK SMP sites surveyed in 2023}}{\text{Total number of UK SMP sites listed in Seabirds Count dataset}}\right) x\ 100$$

Counts from the HPAI Seabird Surveys conducted in 2023 were compared to the baseline count (taken from either the Seabirds Count census or SMP database, as described in section 3.3.2), to produce a value of percentage change between counts (Equation 2).

$$\textit{Eq.2: \% change in population} = \left(\frac{\text{2023 count} - \text{baseline count}}{\text{Baseline count}}\right) x\ 100$$

Percentage change between counts was calculated for each species (i) at each site surveyed in 2023, (ii) overall by country and UK and (iii) for SPAs designated for that species. The relevant baseline count totals were compiled from only those sites that were surveyed in 2023.

Note that as the year of the baseline count differs between sites and species, the time period over which the percentage change values apply also varies, therefore the percentage change values are not directly comparable between sites and species.

All data cleaning and analysis steps were carried out in R version 4.2.2, using the tidyverse and janitor packages (Wickham et al. 2019; Firke et al. 2020).

3.5 Mapping

Two maps were produced for each species and are presented in the Species Accounts; one map to show the survey coverage achieved in 2023 (with data available as of 20 November) and a second map to show survey results, showing the 2023 count, and percentage change between the baseline and 2023 counts, at surveyed sites. Survey coverage is mapped with circles representing each site, except for skuas where survey coverage is shown with polygons as the majority of sites are 1km^2 OS grid squares. 1km^2 OS grid squares are also used to survey Great Black-backed Gulls, but we opted to show survey coverage for this species with circles as polygons were difficult to see at the required UK-wide scale. Survey coverage was grouped by county or administrative area, following the Seabirds Count census. On the survey results maps, the count in 2023 is shown by the size of the symbol, with five size categories adjusted for each species. Percentage change is represented by the colour of the symbol, with five change categories: declines in counts of greater than 50%, declines of between 11 and 50%, change of between -10 to 10% (counts remaining stable), increases of between 11 and 50% and increases of greater than 50%.

Maps were produced in ArcGIS Pro (RSPB licence: 100021787, RSPB permit: 60271). SPA spatial information was obtained from the SPAs of Great Britain and Northern Ireland boundary datasets available from the JNCC[7].

[7] https://hub.jncc.gov.uk/assets/20dbc9b4-ceac-4bf2-8763-4ae387fa88c4

4 Species accounts

4.1 High priority species

4.1.1 Gannet

Gannet was a **high priority** target species due to the very high mortalities observed during 2022 throughout the UK, with a minimum loss of 11,175 individuals in Scotland (NatureScot, 2023) and an estimated 5,000 mortalities at RSPB Grassholm in Wales. During 2022, the first UK casualties observed were in Shetland and St Kilda in May. Although there was a lack of information from the remoter north and west Scottish colonies, outbreaks appeared to then follow a clockwise pattern down the east coast of the UK (Troup Head and Bass Rock in May-June) to Grassholm (Wales) in July before arriving at several Irish colonies in August and September (Lane et al. 2023). Gannets are Amber-listed due to their localised breeding distribution (only 20 breeding colonies in the UK) and international importance (Stanbury et al. 2021), with Britain hosting around 58% of the global breeding population (Wanless et al. 2023).

Background trend: Gannet breeding numbers (AOS/AON) had increased by 39% in the UK between the Seabirds 2000 and Seabirds Count censuses (Wanless et al. 2023). The increase was highest in England (240%), followed by Scotland (40%) and Wales (12%). There are no Gannet colonies in Northern Ireland.

4.1.1.1 Survey coverage

Very few Gannet colonies are normally surveyed under business-as-usual monitoring due to the remoteness of many of the colonies, so considerable additional survey effort was required in 2023. Counts from 13 SMP sites in 2023 were available for Gannet for inclusion in this report after screening (Table 4, Figure 1), covering 65% of sites and 75% of the UK breeding population of Gannet as recorded by the Seabirds Count census. Count data were available from sites within eight of the ten SPAs designated for Gannet. The major Gannetry on St Kilda (hosting 17% of the UK population recorded by Seabirds Count) was also counted in 2023 but counts were not available at the time of compiling this report.

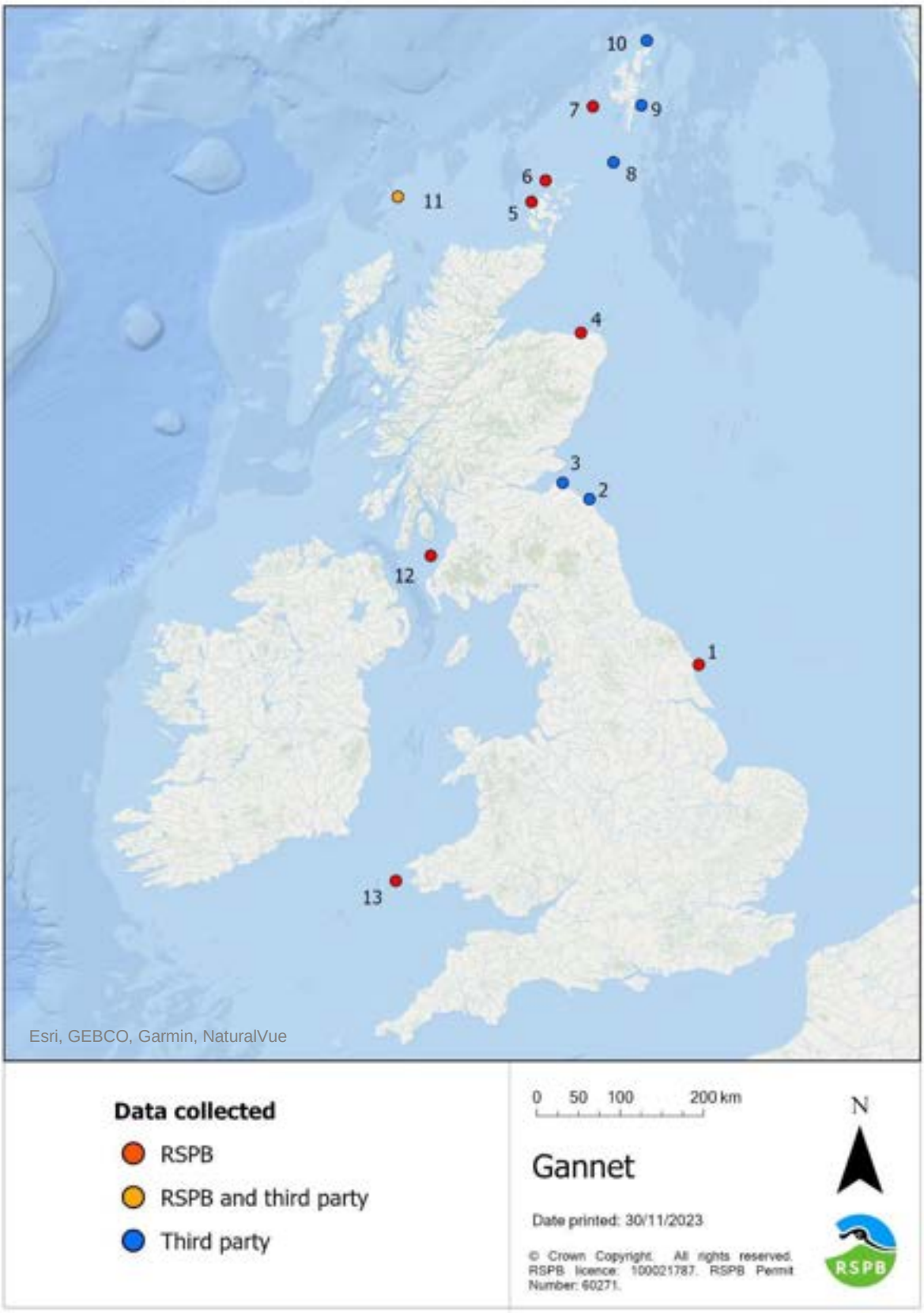
Gannet counts should be made between 09:00 and 16:00, as numbers of nonbreeders ashore are higher outside of this period. Time of survey was available for counts from 38% of sites. However, counts outside these hours are better than none (Walsh et al. 1995), and so no counts were excluded based on time of survey. No count data were excluded based on date.

Baseline data across sites surveyed was collected between 2014 and 2021. All baseline data was obtained from the Seabirds Count dataset.

Table 4. SMP sites surveyed for Gannet in 2023, grouped by county or administrative area. All sites were occupied in Seabirds Count.

Country	County / admin. area	SPA	SMP Site	Map ID
England	Humberside	Flamborough and Filey Coast	Flamborough Head and Bempton Cliffs	1
Scotland	Berwickshire	St Abb's Head to Fast Castle	St Abb's Head NNR	2
	East Lothian	Forth Islands	Bass Rock	3
	Banff and Buchan	Troup, Pennan and Lion's Heads	Troup & Lion's Head RSPB (Coast & Reserve)	4
	Orkney	Marwick Head	Marwick Head	5
		West Westray	Noup Cliffs RSPB (West Westray 2)	6
	Shetland	Foula	Foula	7
		Fair Isle	Fair Isle	8
		Noss	Noss	9
		Hermaness, Saxa Vord and Valla Field	Hermaness	10
	Western Isles - Comhairle nan Eilean	North Rona and Sula Sgeir	Sula Sgeir	11
	Kyle and Carrick	Ailsa Craig	Ailsa Craig	12
Wales	Dyfed	Grassholm	Grassholm	13
	Total number of SMP sites:		**13**	

Figure 1. Survey coverage in 2023 by RSPB and third parties for Gannet across England, Scotland and Wales. There are no Gannet colonies in Northern Ireland. Numbers correspond to site groups listed in Table 4.



4.1.1.2 Observed % change

The total number of Gannet AOS/AON recorded across all sites surveyed in 2023 declined by 25% compared with the pre-HPAI baseline count for these colonies, from 227,129 to 171,048 AOS/AON. Within the eight SPAs designated for Gannet, the total number of Gannet AOS/AON recorded across all sites surveyed in 2023 decreased by 25% compared with the pre-HPAI baseline count for these sites, from 218,457 to 163,076 AOS/AON. The decline was not consistent across the UK however, with counts decreasing at some SPAs and increasing at others (Table 5, Table 6, Figure 2). Note that Table 6 also includes a comparison with predicted population estimates for 2021, produced using colony-specific average annual rates of change since 2003-05 by Wanless et al. (2023).

The number of Gannet AOS/AON decreased by over 10% between the baseline and 2023 at five of the 13 sites surveyed (38% of total sites surveyed; Table 5, Figure 2).

All sites were occupied in both the baseline and 2023 surveys. The number of Gannet AOS/AON increased by over 10% between the baseline and 2023 at three sites (23% of total sites surveyed), though two of these sites were small colonies of <100 AOS/AON which have been recently colonised (St. Abb's Head in 2017 and Marwick Head in 2020). The number of Gannet AOS/AON remained similar, with a change of between -10% and 10%, at five sites (38% of total sites surveyed).

Table 5. Number of sites in each percent change category for Gannet between the baseline and 2023 counts.

% change	Number of sites	% of sites
-51 to -100	1	8
-11 to -50	4	31
-10 to 10	5	38
11 to 50	1	8
51 to 100+	2	15
Total	**13**	

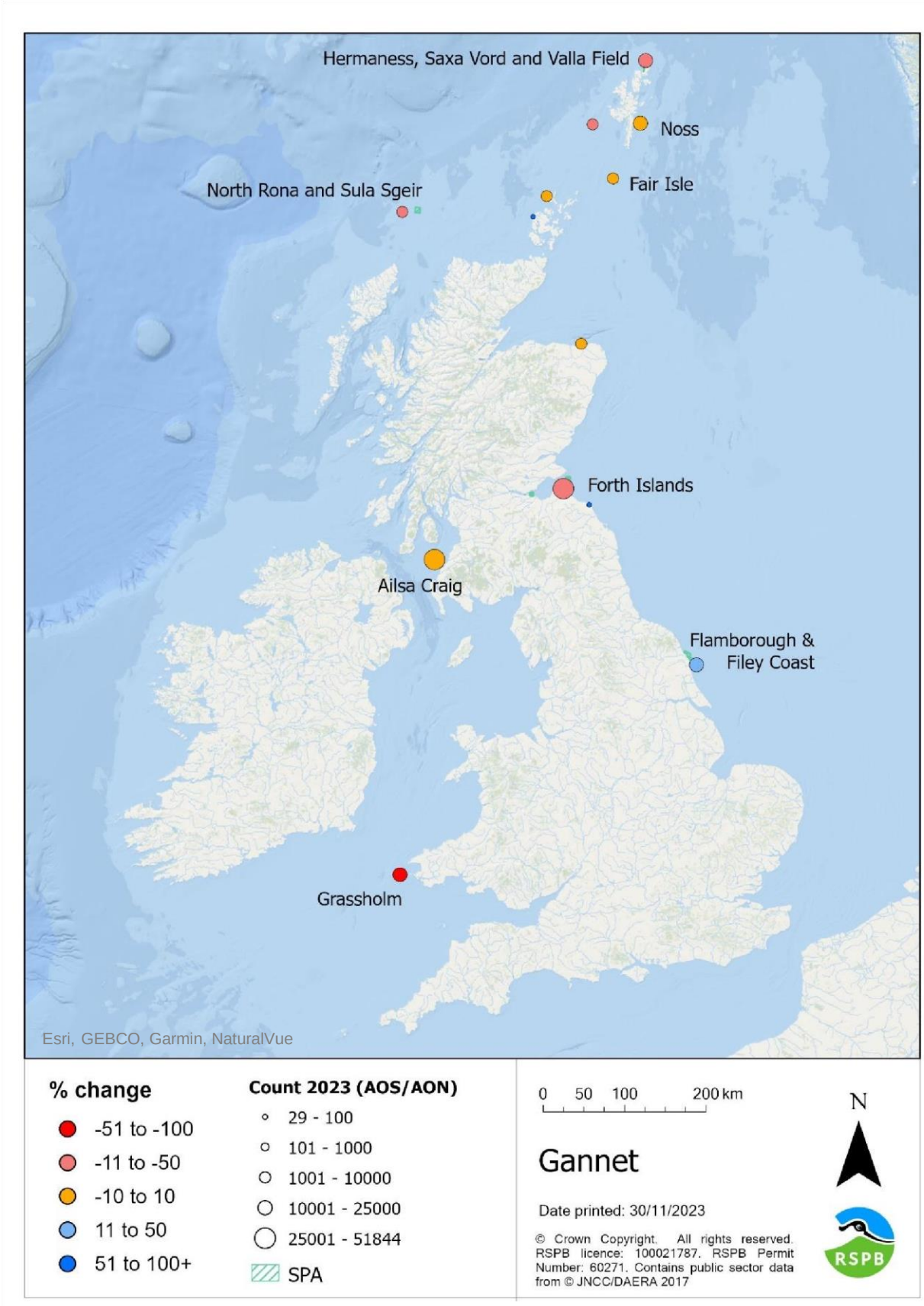
Table 6. Gannet Apparently Occupied Sites (AOS) / Apparently Occupied Nests (AON) recorded in 2023 and by the baseline count within SPAs with Gannet as a qualifying interest. The percentage change is also given in relation to the predicted population estimate for 2021 (based on Wanless et al. 2023).

Country	SPA	Count baseline	Count 2023	Unit	% change	Year of baseline	Predicted 2021 estimate	% change predict'n
England	Flamborough and Filey Coast	13,392	15,233	AOS	+14	2017	19,500	-22
Scotland	Forth Islands	75,259	~55,000[8]	AOS	-27	2014	81,000	-32
	Fair Isle	4,971	4,827	AON	-3	2021	4,971	-3
	Noss	13,765	12,335	AON	-10	2019	14,600	-16
	Hermaness, Saxa Vord and Valla Field	29,562	18,739	AON	-37	2021	29,562	-37
	North Rona and Sula Sgeir	12,271	9,495*	AOS	-23	2017	13,400	-29
	Ailsa Craig	33,226	30,965*	AOS	-7	2014	38,300	-19
Wales	Grassholm	36,011	16,482	AOS	-54	2015	38,300	-57
	Total	**218,457**	**159,920**		**-25**		**239,633**	**-33**

* NB. For some count sections at Sula Sgeir and Ailsa Craig observer variation was particularly high (up to 15% from the mean count) therefore confidence is low for these counts.

[8] This is a preliminary figure released by the Scottish Seabird Centre ahead of the publication of an accurate count produced by Harris et al. 2023.

Figure 2. Gannet counts in 2023 in Scotland, England and Wales. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AON/AOS recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 6 are shown on the map.



4.1.2 Great Skua

Great Skua was the first seabird species in which HPAI was detected in the UK as part of the current outbreak (with the virus first recorded in Shetland, Orkney, St Kilda and the Flannan Isles in summer 2021; Banyard et al. 2022) and was a **high priority** target species due to the very high mortalities subsequently observed during 2022. In 2022, there was a minimum loss of 2,591 individuals in Scotland (NatureScot, 2023), with 1,400 reported from the largest Scottish colony of Foula alone (Camphuysen et al. 2022). Great Skua is Amber-listed due to its localised breeding distribution and international importance (Stanbury et al. 2021), with Britain hosting 55-60% of the global breeding population (Newton & Baker, 2023).

Background trend: Great Skua breeding numbers (AOT) had increased by 14% in Scotland between the Seabirds 2000 and Seabirds Count censuses, with the one site in Northern Ireland newly colonised during this period (Thompson, 2023). Almost all of the UK population is found in Scotland, with two pairs recorded by Seabirds Count in Northern Ireland.

4.1.2.1 Survey coverage

Business-as-usual monitoring provides only limited coverage for Great Skua, therefore significant additional survey effort was required in 2023. Counts from 356 SMP sites in 2023 were available for Great Skua for inclusion in this report after screening (Table 7, Figure 3), covering 38% of occupied sites and 81% of the total UK breeding population of Great Skua recorded by the Seabirds Count census. This includes 65 sites which were unoccupied in Seabirds Count, 51 of which were also unoccupied in 2023. Count data were available from sites within all nine of the SPAs designated for Great Skua, covering 98% of the population held within these SPAs at the time of Seabirds Count.

Most sites surveyed consisted of standardised 1km OS grid squares, covering 301 km^2 across Orkney, Shetland and Western Isles – Comhairle nan Eilean (Table 7). The remaining 55 sites ranged in size, from small colonies of a handful of pairs to whole islands or RSPB reserves with larger colonies (e.g., Fair Isle, Foula, Handa Island, North Hill RSPB).

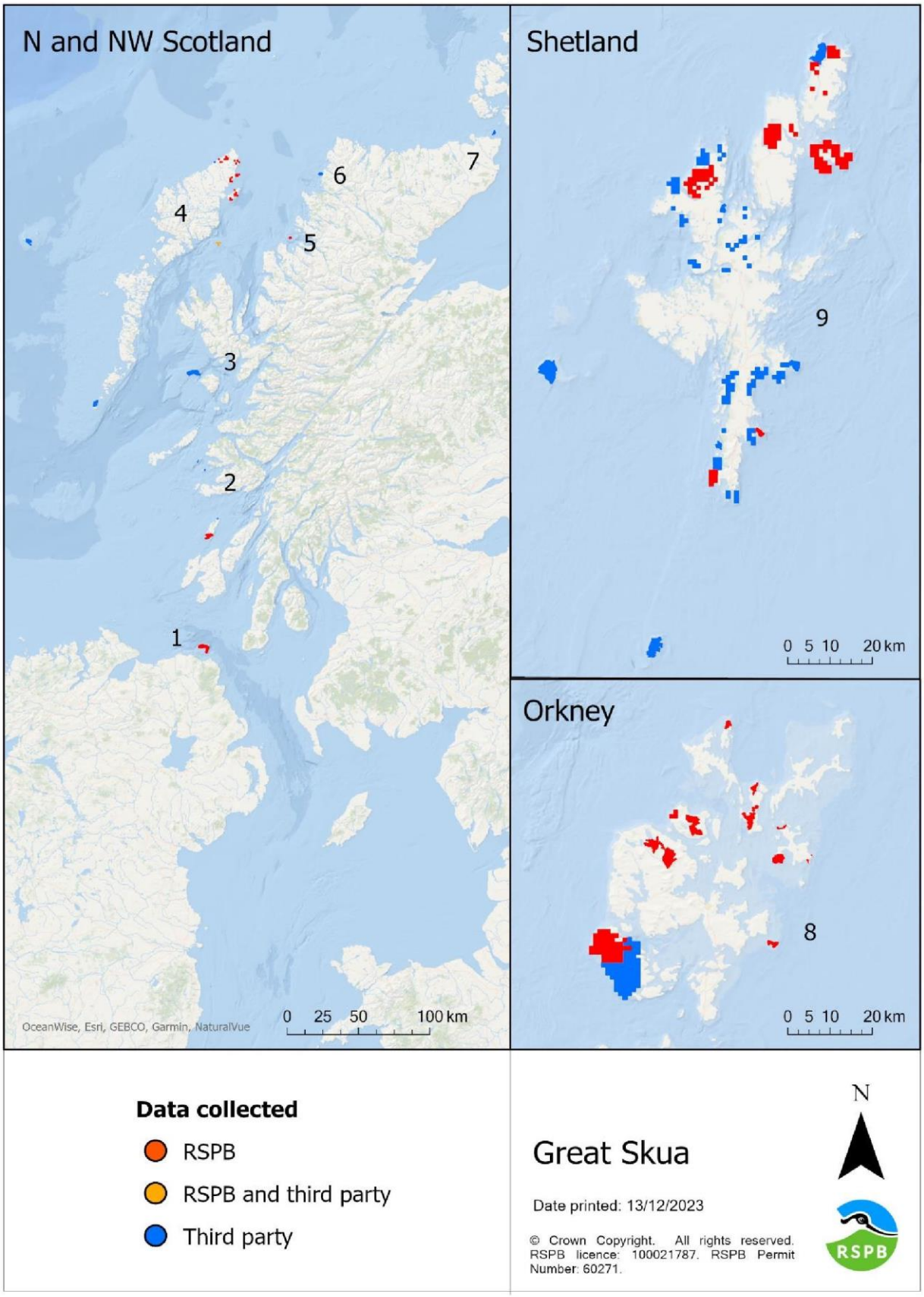
All counts were presumed to be made during the recommended time window of daylight (though 22% of 2023 counts did not include a time of survey).

Baseline data across sites surveyed was collected between 2015 and 2020. Baseline data for 83% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

Table 7. SMP sites surveyed in 2023 for Great Skua, grouped by county or administrative area. Note that for skuas, most SMP sites are 1km OS grid squares. Values in () refer to number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Of which # are 1km^2	Map ID
Northern Ireland	**Total**	**1 (1)**	**0**	
	Antrim	1 (1)	0	1
Scotland	**Total**	**355 (300)**	**301 (250)**	
	Argyll and Bute	3 (3)	0	2
	Lochaber	1 (1)	0	3
	Western Isles – Comhairle nan Eilean	12 (11)	5 (5)	4
	Ross and Cromarty	1 (1)	0	5
	Sutherland	1 (1)	0	6
	Caithness	1 (1)	0	7
	Orkney	145 (135)	122 (114)	8
	Shetland	191 (147)	174 (131)	9
	Total	**356 (301)**	**301 (250)**	

Figure 3. Survey coverage in 2023 by RSPB and third parties for Great Skua across Scotland and Northern Ireland. Numbers correspond to site groups listed in Table 7. See Table 7 for a breakdown of survey effort by site group.



4.1.2.2 Observed % change

The number of Great Skua territories recorded in 2023 across all sites surveyed declined by 76% compared with the pre-HPAI baseline count for these sites, from 9,088 to 2,160 AOTs. Within the nine SPAs designated for Great Skua (all were surveyed), the total number of Great Skua territories recorded across all sites surveyed in 2023 (including sites unoccupied in Seabirds Count) decreased by 77% compared with the pre-HPAI baseline count for these sites, from 6,570 to 1,524 AOTs. The decline was consistent and severe across most areas surveyed (Table 8, Table 9, Figure 4).

The number of Great Skua territories decreased by over 10% between the baseline and 2023 at 271 of 308 sites (88%) that were occupied in the baseline survey, including 95 sites where Great Skua territories were recorded by the baseline count but none were recorded in 2023 (Table 8, Figure 4). The number of Great Skua territories increased by over 10% between the baseline and 2023 at 14 sites (5% of sites occupied in the baseline survey). Seven sites were occupied in 2023 but not in the baseline count, accounting for seven AOTs collectively. The number of Great Skua territories remained similar, with a change of between -10% and 10%, at 16 sites (5% of sites occupied in the baseline survey). Zero Great Skuas were recorded in both 2023 and the baseline count in 48 sites, which presumably contained suitable breeding habitat.

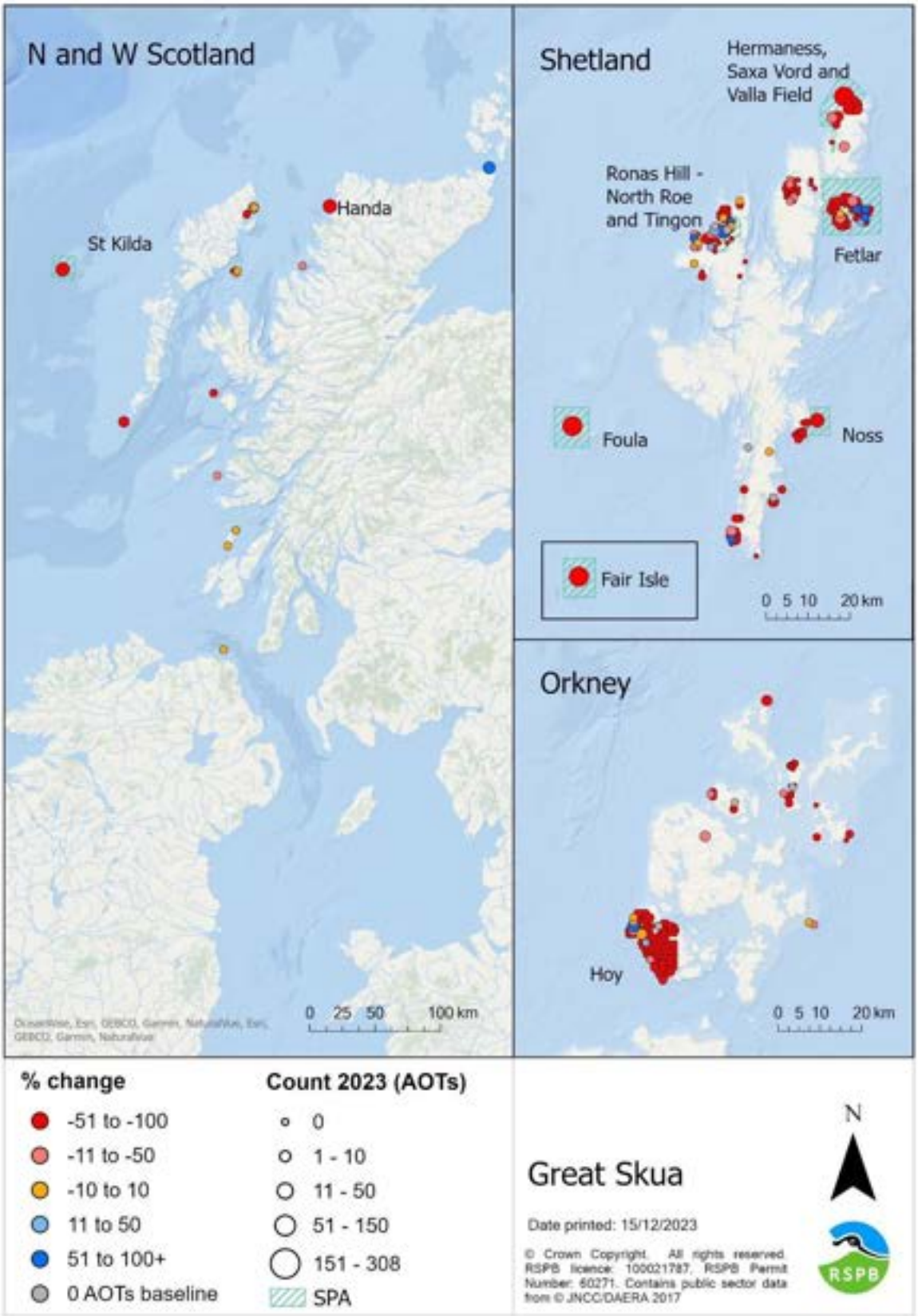
Table 8. Number of sites in each percent change category for Great Skua between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

% change	Number of sites	% of sites
-51 to -100	243	79
-11 to -50	28	9
-10 to 10	16	5
11 to 50	4	1
51 to 100+	10	3
0 count in baseline but occupied in 2023	7	2
Total sites occupied in either survey	308	
0 count in both baseline and 2023	48	NA

Table 9. Great Skua territories (AOTs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs with Great Skua as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the estimated percentage of sites and AOTs surveyed in 2023 that were occupied in Seabirds Count. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Region	SPA	baseline	2023	% change	# sites	% sites	% AOTs
Sutherland	Handa	283	84	-70	1	100	100
Orkney	Hoy	1,404	257	-82	102	99	100
Shetland	Fair Isle	430	153	-64	1	100	100
Shetland	Fetlar	810	253	-69	33	92	95
Shetland	Foula	1,846	308	-83	1	100	100
Shetland	Hermaness, Saxa Vord and Valla Field	975	224	-77	2	67	95
Shetland	Noss	476	69	-86	1	100	100
Shetland	Ronas Hill – North Roe and Tingon	163	97	-40	31	91	96
Western Isles – Comhairle nan Eilean	St Kilda	183	79	-57	1	33	87
	Total	**6,570**	**1,524**	**-77**	**173**	**95**	**98**

Figure 4. Great Skua counts in 2023 in Scotland and Northern Ireland. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AOTs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 9 are shown on the map. Sites that were unoccupied in both 2023 and the baseline are not shown.



4.1.3 Herring Gull

Herring Gull was a **high priority** target species due to moderate levels of observed HPAI mortalities in 2022 and the fact it is Red-listed due to severe declines in the UK breeding and wintering populations, which are both of international importance (Stanbury et al. 2021). Britain, Isle of Man and Channel Isles host 35-40% of the North Atlantic biogeographic breeding population (Newton & Baker, 2023). Over 800 Herring Gull mortalities were recorded across England in 2022, over two thirds of which were adults (Natural England, unpublished data).

Background trend: Natural-nesting Herring Gull breeding numbers (AON) declined by 44% in the UK between the Seabirds 2000 and Seabirds Count censuses (Burnell et al. 2023). The decrease was highest in England (-60%), followed by Scotland (-44%) and Wales (-23%), while numbers increased by 210% in Northern Ireland.

4.1.3.1 Survey coverage

Only natural-nesting populations of Herring Gull were included in the site prioritisation and selection steps owing to the difficulty in accurately surveying urban gull populations. To maximise efficiency, additional survey effort for Herring Gull was largely targeted towards where surveys for other species were being undertaken. Counts from 191 SMP sites in 2023 were available for Herring Gull for inclusion in this report after screening (Table 10, Figure 5), covering 11% of occupied sites and 27% of the natural-nesting UK breeding population of Herring Gull recorded by the Seabirds Count census. This includes 21 sites which were unoccupied in Seabirds Count, three of which were also unoccupied in 2023. Count data were available from sites within eight of the ten SPAs designated for Herring Gull, covering 55% of the natural-nesting population held within these SPAs at the time of Seabirds Count.

All counts were presumed to be made during the recommended time window. All flush counts of individuals and vantage point counts of AOT/AON with time information were made between 08:00 to 18:00, and all other counts were presumed to be done during daylight (though 26% of 2023 counts did not include a time of survey). Fourteen sites were excluded as counts were made outside of the accepted buffer period of May 10 to June 21 indicated in Table 3.

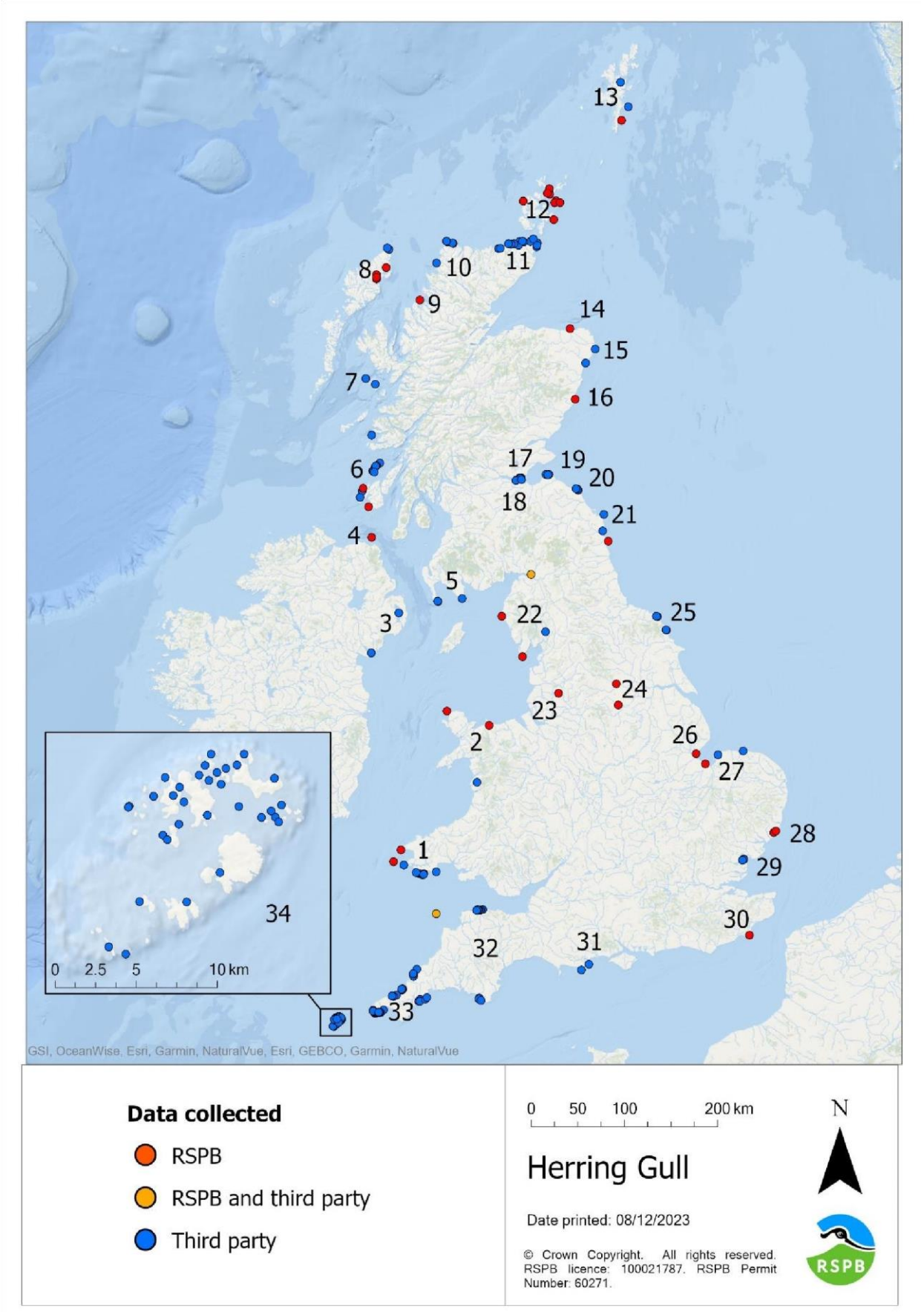
Count units of surveys done in 2023 were adjusted from individuals to AONs for 3 sites (2% of total sites), with a further 37 sites entered as AOTs.

Baseline data across sites surveyed was collected between 2015 and 2021. Baseline data for 79% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

Table 10. SMP sites surveyed for Herring Gull in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Map ID
Wales	**Total**	**15 (13)**	
	Dyfed	12 (11)	1
	Gwynedd	3 (2)	2
Northern Ireland	**Total**	**3 (2)**	
	Down	2 (1)	3
	Antrim	1 (1)	4
Scotland	**Total**	**74 (66)**	
	Wigtown	3 (2)	5
	Argyll and Bute	15 (12)	6
	Lochaber	2 (2)	7
	Western Isles - Comhairle nan Eilean	7 (7)	8
	Ross and Cromarty	1 (1)	9
	Sutherland	6 (5)	10
	Caithness	13 (10)	11
	Orkney	9 (9)	12
	Shetland	3 (3)	13
	Banff and Buchan	2 (2)	14
	Gordon	1 (1)	15
	Kincardine and Deeside	1 (1)	16
	Dunfermline	3 (3)	17
	City of Edinburgh	2 (2)	18
	East Lothian	3 (3)	19
	Berwickshire	3 (3)	20
England	**Total**	**99 (89)**	
	Northumberland	3 (3)	21
	Cumbria	4 (4)	22
	Lancashire	1 (1)	23
	West Yorkshire	2 (1)	24
	North Yorkshire	4 (4)	25
	Lincolnshire	1 (1)	26
	Norfolk	3 (2)	27
	Suffolk	2 (2)	28
	Essex	3 (3)	29
	Kent	1 (0)	30
	Dorset	2 (2)	31
	Devon	11 (10)	32
	Cornwall	30 (28)	33
	Isles of Scilly	32 (28)	34
	Total	**191 (170)**	

Figure 5. Survey coverage in 2023 by RSPB and third parties for Herring Gull across the UK. Numbers correspond to map IDs for site groups listed in Table 10. See Table 10 for breakdown of survey effort by site group.



4.1.3.2 Observed % change

The total number of Herring Gull AONs recorded across all sites surveyed in 2023 decreased by 7% compared with the pre-HPAI baseline count for these sites, from 17,721 to 16,535 AONs. Within the eight surveyed SPAs designated for Herring Gulls, the total number of AONs recorded across all sites surveyed in 2023 (all SPA sites surveyed were occupied in Seabirds Count) decreased by 6% compared with the pre-HPAI baseline count for these sites, from 5,696 to 5,333 AONs. The decline was not consistent across the UK, with counts decreasing at some sites and SPAs increasing at others (Table 11, Table 12, Figure 6).

The number of Herring Gull AONs decreased by over 10% between the baseline and 2023 at 90 of 188 sites (48%) that were occupied in the baseline survey, including eight sites where Herring Gulls were recorded in the baseline count but not in 2023 (Table 11, Figure 6). The number of Herring Gull AONs increased by over 10% between the baseline and 2023 at 60 sites (32% of sites occupied in the baseline survey). Twelve sites were occupied in 2023 but not in the baseline count, accounting for 78 AONs collectively. The number of Herring Gull AONs remained similar, with a change of between -10% and 10%, at 26 sites (14% of sites occupied in the baseline survey). Zero Herring Gulls were recorded by both the baseline and 2023 count at three sites.

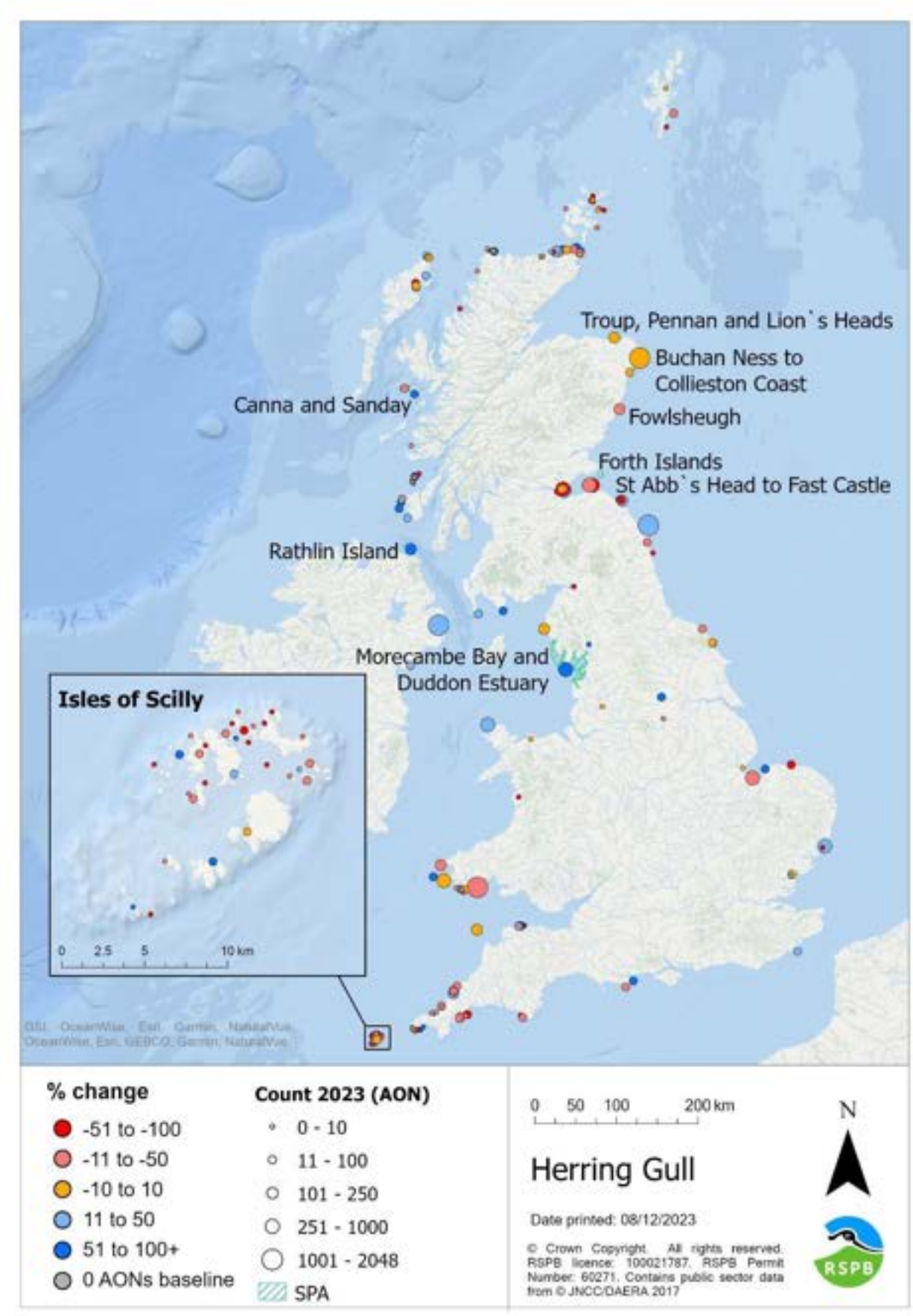
Table 11. Number of sites in each percent change category for Herring Gull between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

% change	Number of sites	% of sites
-51 to -100	39	21
-11 to -50	51	27
-10 to 10	26	14
11 to 50	22	12
51 to 100+	38	20
0 count in baseline but occupied in 2023	12	6
Total sites occupied in either survey	188	
0 count in baseline and 2023	3	NA

Table 12. Herring Gull Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs with Herring Gull as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were occupied in Seabirds Count. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	Baseline	2023	% change	# sites	% sites	% AON
England	Morecambe Bay and Duddon Estuary	263	770	193	1	33	98
Northern Ireland	Rathlin Island	83	174	110	1	100	100
Scotland	Buchan Ness to Collieston Coast	2,077	2,048	-1	1	100	100
Scotland	Canna and Sanday	87	58	-33	1	100	100
Scotland	Forth Islands	2,536	1,679	-34	4	80	42
Scotland	Fowlsheugh	220	164	-25	1	25	21
Scotland	St Abb's Head to Fast Castle	287	293	2	3	75	85
Scotland	Troup, Pennan and Lion's Heads	143	147	3	1	17	26
	Total	**5,696**	**5,333**	**-6**	**13**	**52**	**55**

Figure 6. Herring Gull counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AONs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 12 are shown on the map.



4.1.4 Kittiwake

Kittiwake was a **high priority** target species due to moderate levels of observed HPAI mortalities in 2022 and the fact it is Red-listed due to severe declines in its breeding population and its globally threatened status (Stanbury et al. 2021). A minimum loss of 760 Kittiwake was recorded for Scotland in 2022 (NatureScot, 2023).

Background trend: Kittiwake breeding numbers (AON) declined by 43% in the UK between the Seabirds 2000 and Seabirds Count censuses (Daunt, 2023). The decrease in the Scottish population (-57%) accounted for most of the drop in overall numbers, with the decrease of 34% in Wales covering a much smaller population and a small decrease in England (-3%), while numbers increased in Northern Ireland by 33%.

4.1.4.1 Survey coverage

Kittiwake counts are often only conducted at sample plots under business-as-usual monitoring so considerable additional effort was directed towards whole-colony counts, and to include coverage of larger colonies in 2023. Counts from 91 SMP sites in 2023 were available for Kittiwake for inclusion in this report after screening (Table 13, Figure 7), covering 23% of occupied sites and 38% of the UK breeding population of Kittiwake recorded by the Seabirds Count census. This includes data from five sites where full colony counts were not possible, and counts were made from land only[9]. This also includes four sites which were unoccupied in Seabirds Count, one of which was also unoccupied in 2023. Zero AONs were recorded in both the 2023 and baseline count at one site, which presumably had suitable breeding habitat. Count data were available from sites within 21 of the 33 SPAs designated for Kittiwake, covering 80% of the population held within these SPAs at the time of Seabirds Count.

Survey coverage for Kittiwake for this report was lower than hoped, as count data were not yet available from East Caithness Cliffs SPA, which holds the largest breeding population of Kittiwake in Scotland (11% of UK population recorded by Seabirds Count), and counts could not be made at Flamborough and Filey Coast SPA, which holds the largest breeding population of Kittiwake in England (21% of UK population).

All counts were presumed to be made during the recommended time window of daylight (though 23% of 2023 counts did not include a time of survey). Ten sites were excluded as counts were made outside of the accepted buffer period of May 17 to June 21 indicated in Table 3.

Baseline data across sites surveyed was collected between 2015 and 2021. Baseline data for 53% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP (34%) and provided direct by surveyors (for sites with partial survey coverage in 2023; 13%).

[9] Count data from sites where a full colony count was not possible are not included in calculations of overall survey coverage as percentage of population surveyed, as the census baseline data is only available for whole colony counts. Percentage change in Kittiwake population for these sites was calculated using previous land count data obtained directly from the survey teams.

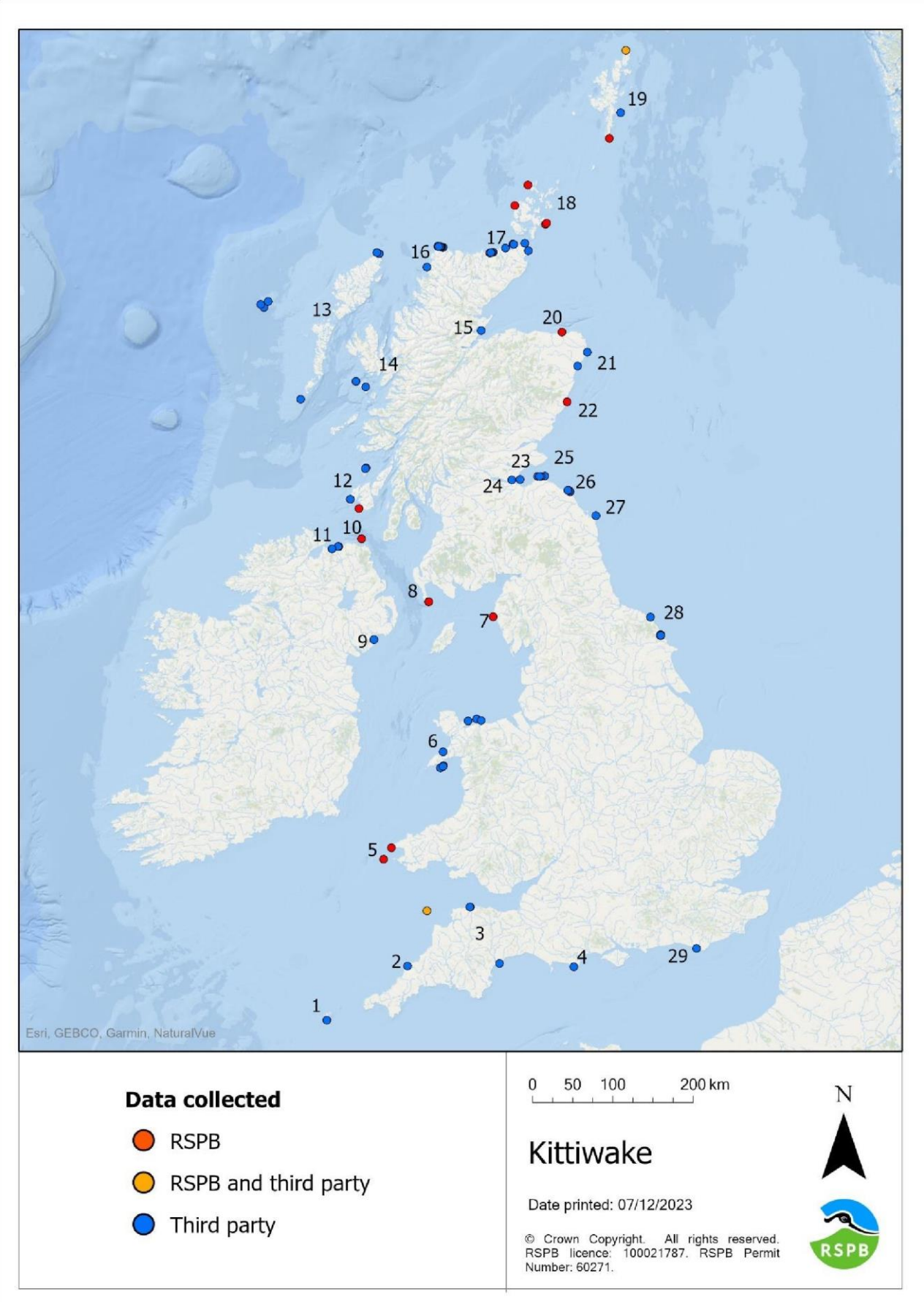
Table 13. SMP sites surveyed for Kittiwake in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

Country	County / admin. Area	Total number of SMP sites	Map ID
England	**Total**	**22 (21)**	
	Isles of Scilly	1 (0)	1
	Cornwall	1 (1)	2
	Devon	4 (4)	3
	Dorset	1 (1)	4
	Cumbria	1 (1)	7
	East Sussex	1 (1)	29
	Northumberland	1 (1)	27
	North Yorkshire	12 (12)	28
Wales	**Total**	**9 (8)**	
	Dyfed	2 (2)	5
	Gwynedd	7 (6)	6
Northern Ireland	**Total**	**5 (4)**	
	Down	1 (1)	9
	Antrim	2 (1)	10
	Londonderry	2 (2)	11
Scotland	**Total**	**55 (54)**	
	Wigtown	2 (2)	8
	Argyll and Bute	6 (6)	12
	Western Isles – Comhairle nan Eilean	7 (7)	13
	Lochaber	2 (2)	14
	Ross and Cromarty	1 (1)	15
	Sutherland	9 (8) [10]	16
	Caithness	8 (8)	17
	Orkney	4 (4)	18
	Shetland	3 (3) [11]	19
	Banff and Buchan	2 (2)	20
	Gordon	1 (1)	21
	Kincardine and Deeside	1 (1)	22
	Kirkcaldy	1 (1)	23
	Dunfermline	1 (1)	24
	East Lothian	4 (4)	25
	Berwickshire	3 (3)	26
	Total	**91 (88)**	

[10] Four sites at Cape Wrath SPA consist of land counts from twelve standardised vantage points, where full colony counts were not feasible. Counts from vantage points within the same SMP site were combined. Baseline data for the vantage points was collected directly from the survey team.

[11] At one site (Hermaness), count data is from land only. Full colony coverage requires boat counts, which were done in 2023 but were not available at the time of the report.

Figure 7. Survey coverage in 2023 by RSPB and third parties for Kittiwake across the UK. Numbers correspond to map IDs for site groups listed in Table 13. See Table 13 for breakdown of survey effort by site group.



4.1.4.2 Observed % change

The total number of Kittiwake AONs recorded across all sites surveyed in 2023 (including partial colony counts) increased by 8% compared with the pre-HPAI baseline count for these sites, from 86,708 to 93,221 AONs. Within the 21 surveyed SPAs designated for Kittiwake (including sites unoccupied in Seabirds Count), the total number of Kittiwake AONs recorded across all sites surveyed in 2023 increased by 10% compared with the pre-HPAI baseline count for these sites, from 75,998 to 83,618 AONs. The increase was not consistent across the UK however, with counts decreasing at some sites and SPAs and increasing at others (Table 14, Table 15, Figure 8).

The number of Kittiwake AONs decreased by over 10% between the baseline and 2023 at 36 of 90 sites (40%) that were occupied in the baseline survey, including three sites where Kittiwake AONs were recorded in the baseline count but none were recorded in 2023 (Table 14, Figure 8). The number of Kittiwake AONs increased by over 10% between the baseline and 2023 at 43 sites (44% of sites occupied in the baseline survey). Two sites were occupied in 2023 but not in the baseline count, accounting for 33 AONs collectively. The number of Kittiwake AONs remained similar, with a change of between -10% and 10%, at nine sites (10% of sites occupied in the baseline survey). Zero Kittiwakes were recorded in both 2023 and the baseline count in one sites, which presumably contained suitable breeding habitat.

Table 14. Number of sites in each percent change category for Kittiwake between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

% change	Number of sites	% of sites
-51 to -100	12	13
-11 to -50	24	27
-10 to 10	9	10
11 to 50	21	23
51 to 100+	22	24
0 count in baseline but occupied in 2023	2	2
Total sites occupied in either survey	90	
0 count in baseline and 2023	1	NA

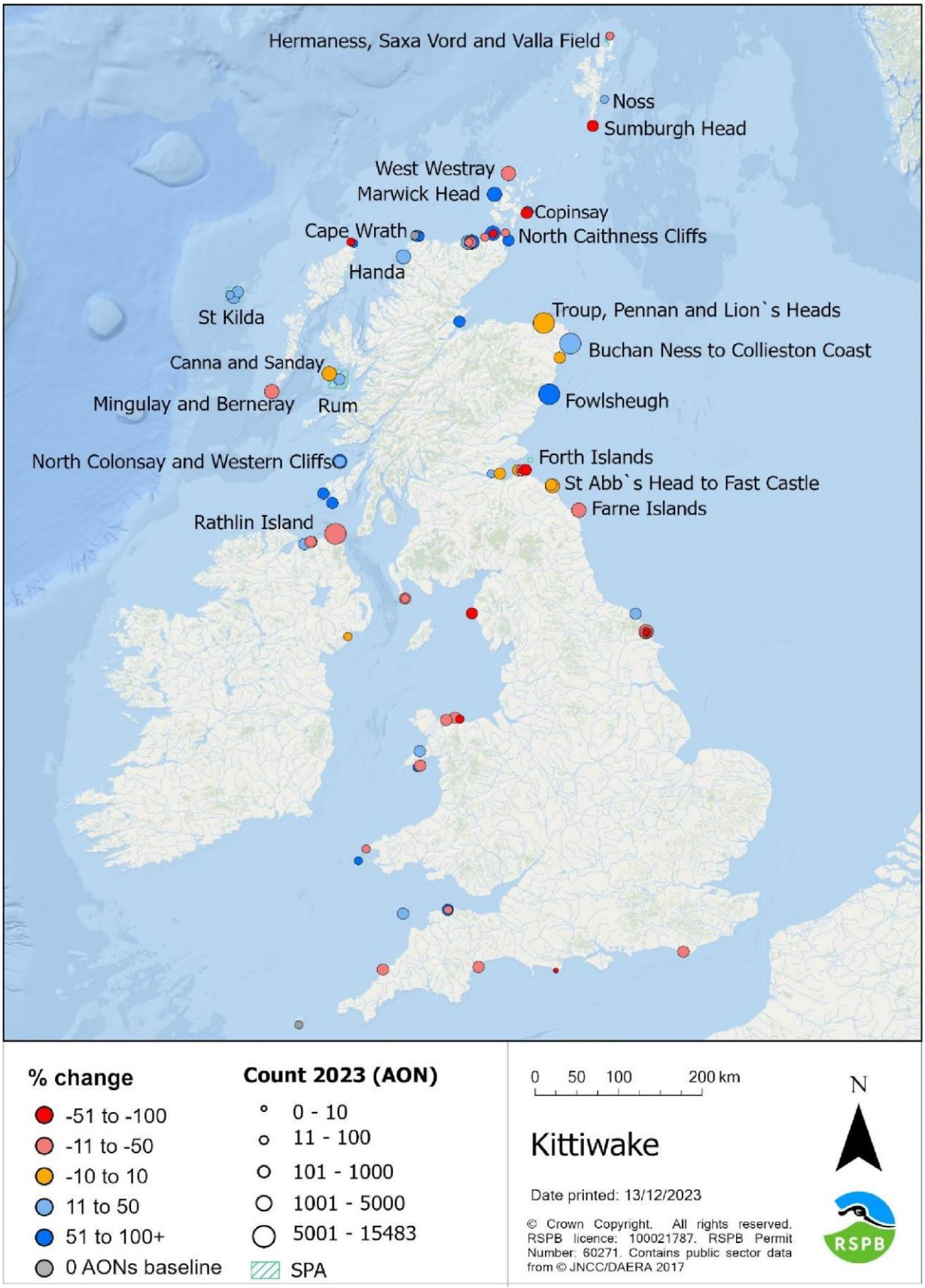
Table 15. Kittiwake Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs with Kittiwake as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were occupied in Seabirds Count. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	baseline	2023	% change	# sites	% sites	% AON
England	Farne Islands	4,304	3,583	-17	1	100	100
N. Ireland	Rathlin Island	13,706	9,629	-30	1	100	100
Scotland	Buchan Ness to Collieston Coast	11,295	13,547	20	1	100	100
Scotland	Canna and Sanday	1,421	1,444	2	1	100	100
Scotland	Cape Wrath[12]	393	1,145	191	5	71	11
Scotland	Copinsay	955	296	-69	1	100	100
Scotland	Forth Islands	2,001	1,429	-29	4	80	45
Scotland	Fowlsheugh	9,444	15,483	64	1	25	67
Scotland	Handa	3,749	4,589	22	1	100	100
Scotland	Hermaness, Saxa Vord and Valla Field [13]	97	77	-21	1	50	NA
Scotland	Marwick Head	906	1,439	59	1	100	100
Scotland	Mingulay and Berneray	1,634	1,294	-21	1	50	64
Scotland	North Caithness Cliffs	5,299	7,481	41	10	77	95
Scotland	North Colonsay and Western Cliffs	2,156	3,581	66	4	33	60
Scotland	Noss	77	86	12	1	100	100
Scotland	Rum	700	820	17	1	100	100
Scotland	St Abb's Head to Fast Castle	5,150	5,602	9	3	75	100
Scotland	St Kilda	420	615	46	4	100	100
Scotland	Sumburgh Head	769	127	-83	1	25	80
Scotland	Troup, Pennan and Lion's Heads	9,700	9,853	2	1	17	64
Scotland	West Westray	1,822	1,486	-18	1	20	66
	Total	**75,998**	**83,618**	**10**	**46**	**62**	**80**

[12] Four SMP sites only partially surveyed (land counts only) but are included in calculation of survey coverage as both % of sites and individuals surveyed, as the year of the baseline count data collated from the survey team was the same as the year of the Seabirds Count survey and it is therefore possible to calculate the percentage of individuals held by the land counts only at the time of Seabirds Count. Counts are also included in the comparison of 2023 and baseline counts.

[13] Hermaness partially surveyed (land counts only) so is not included in calculations of survey coverage. It is not possible to calculate survey coverage of the Kittiwake population at Hermaness as the census count was a combined count including birds from both land and boat surveys.

Figure 8. Kittiwake counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AONs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 15 are shown on the map.



4.1.5 Sandwich Tern

Sandwich Tern was a **high priority** target species due to high levels of observed HPAI mortalities in 2022. It is Amber-listed due to moderate declines in its breeding population and localised breeding (Stanbury et al. 2021). Over 500 dead adult Sandwich Terns were recorded at Coquet Island alone in 2022, along with over 1500 chicks (RSPB, unpublished data), while a minimum of 805 adults and 4000 chicks were recorded at Scolt Head NNR (Natural England, unpublished data).

Background trend: Sandwich Tern breeding numbers (AON) remained stable in the UK (increase of 4%) between the Seabirds 2000 and Seabirds Count censuses (Tyler, 2023). Within-country, numbers increased in Wales (15%) and remained stable in England (5%), Scotland (-5%) and Northern Ireland (-1%).

4.1.5.1 Survey coverage

Most Sandwich Tern colonies are counted regularly under business-as-usual monitoring so little additional survey effort was required in 2023. Counts from 14 SMP sites in 2023 were available for Sandwich Tern for inclusion in this report after screening (Table 16, Figure 9), covering 43% of occupied sites and 92% of the UK breeding population of Sandwich Tern recorded by the Seabirds Count census. This includes two sites which were unoccupied in Seabirds Count, but both of which were occupied in 2023. Count data were available from sites within ten of the 13 SPAs designated for Sandwich Tern, covering 100% of the population held within these SPAs at the time of Seabirds Count.

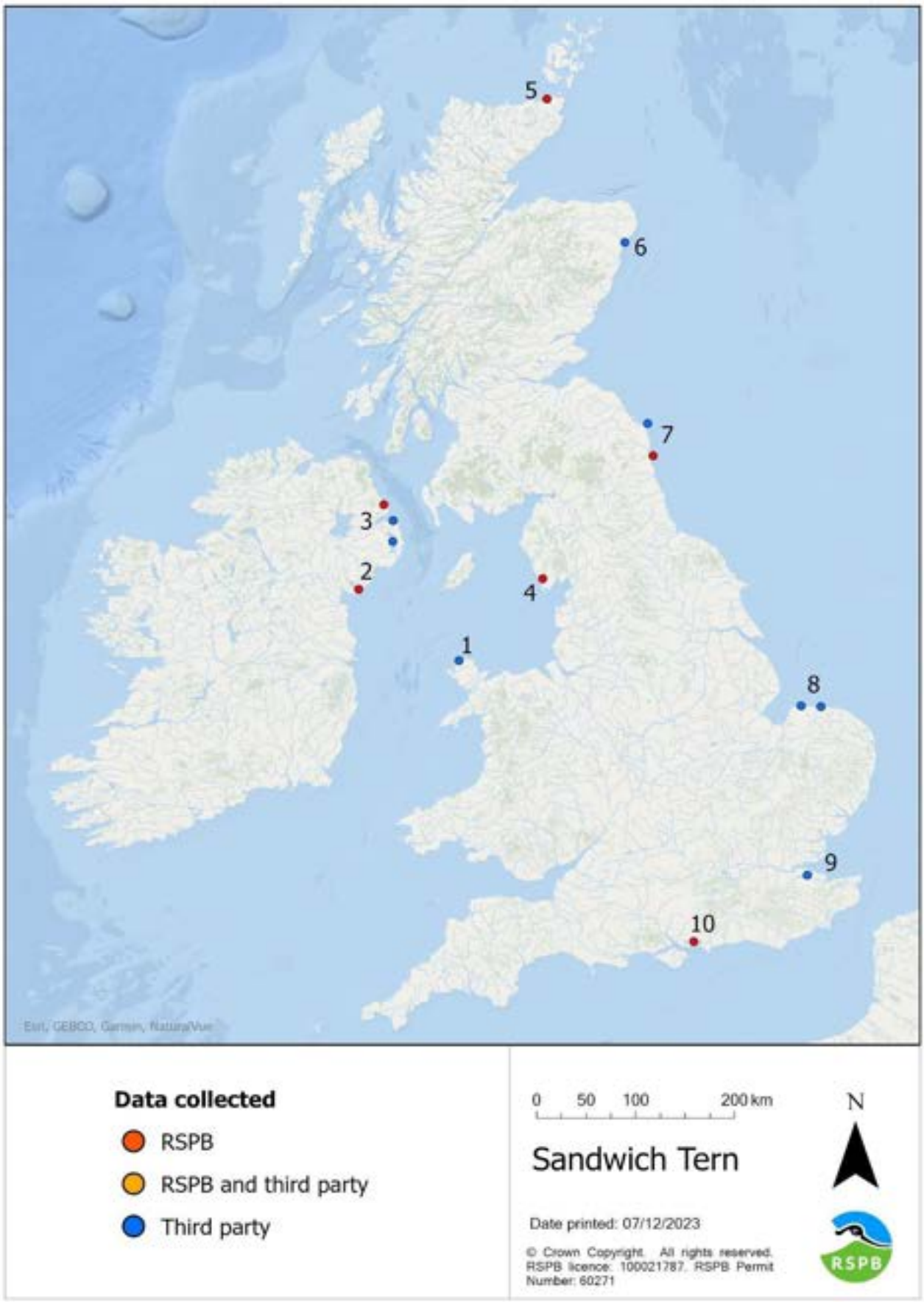
No counts were excluded as being made outside of the recommended time window (though 52% of 2023 counts did not include a time of survey). One site was excluded as being made outside of the accepted survey period indicated in Table 3.

Baseline data for 7% of sites was obtained from the Seabirds Count dataset (i.e., one site, St John's Pool and Loch, baseline year of 2019), with all the remaining counts taken from the SMP (more recent counts from 2021, the prescribed focal year for mobile species for the HPAI Seabird Surveys project).

Table 16. SMP sites surveyed for Sandwich Tern in 2023, grouped by county or administrative area. Values in () refer to number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Map ID
Wales	**Total**	**1 (1)**	
	Gwynedd	1 (1)	1
Northern Ireland	**Total**	**4 (2)**	
	Down	3 (1)	2
	Antrim	1 (1)	3
Scotland	**Total**	**2 (2)**	
	Caithness	1 (1)	5
	Gordon	1 (1)	6
England	**Total**	**7 (7)**	
	Cumbria	1 (1)	4
	Northumberland	2 (2)	7
	Norfolk	2 (2)	8
	Kent	1 (1)	9
	Hampshire	1 (1)	10
All	**Total**	**14 (12)**	

Figure 9. Survey coverage in 2023 by RSPB and third parties for Sandwich Tern across the UK. Numbers correspond to map IDs for site groups listed in Table 16. See Table 16 for breakdown of survey effort by site group.



4.1.5.2 Observed % change

The total number of Sandwich Tern AONs recorded across all sites surveyed in 2023 decreased by 35% compared with the pre-HPAI baseline count for these sites, from 14,705 to 9,560 AONs. Within the ten surveyed SPAs designated for Sandwich Tern (including sites unoccupied in Seabirds Count), the total number of Sandwich Tern AONs recorded across all sites surveyed in 2023 decreased by 36% compared with the pre-HPAI baseline count for these sites, from 14,376 to 9,212 AONs. The decrease was consistent across the UK, with counts decreasing at all SPAs bar Strangford Lough and Chichester and Langstone Harbours (Table 17, Table 18, Figure 10).

The number of Sandwich Tern AONs decreased by over 10% between the baseline and 2023 at eight of the 14 sites surveyed (57% of total sites surveyed; Table 17, Figure 10). All sites were occupied in both the baseline and 2023 surveys. The number of Sandwich Tern AONs increased by over 10% between the baseline and 2023 at three sites (21% of total sites surveyed). The number of Sandwich Tern AONs remained similar, with a change of between -10% and 10%, at three sites (21% of total sites surveyed).

Table 17. Number of sites in each percent change category for Sandwich Tern between the baseline and 2023 counts.

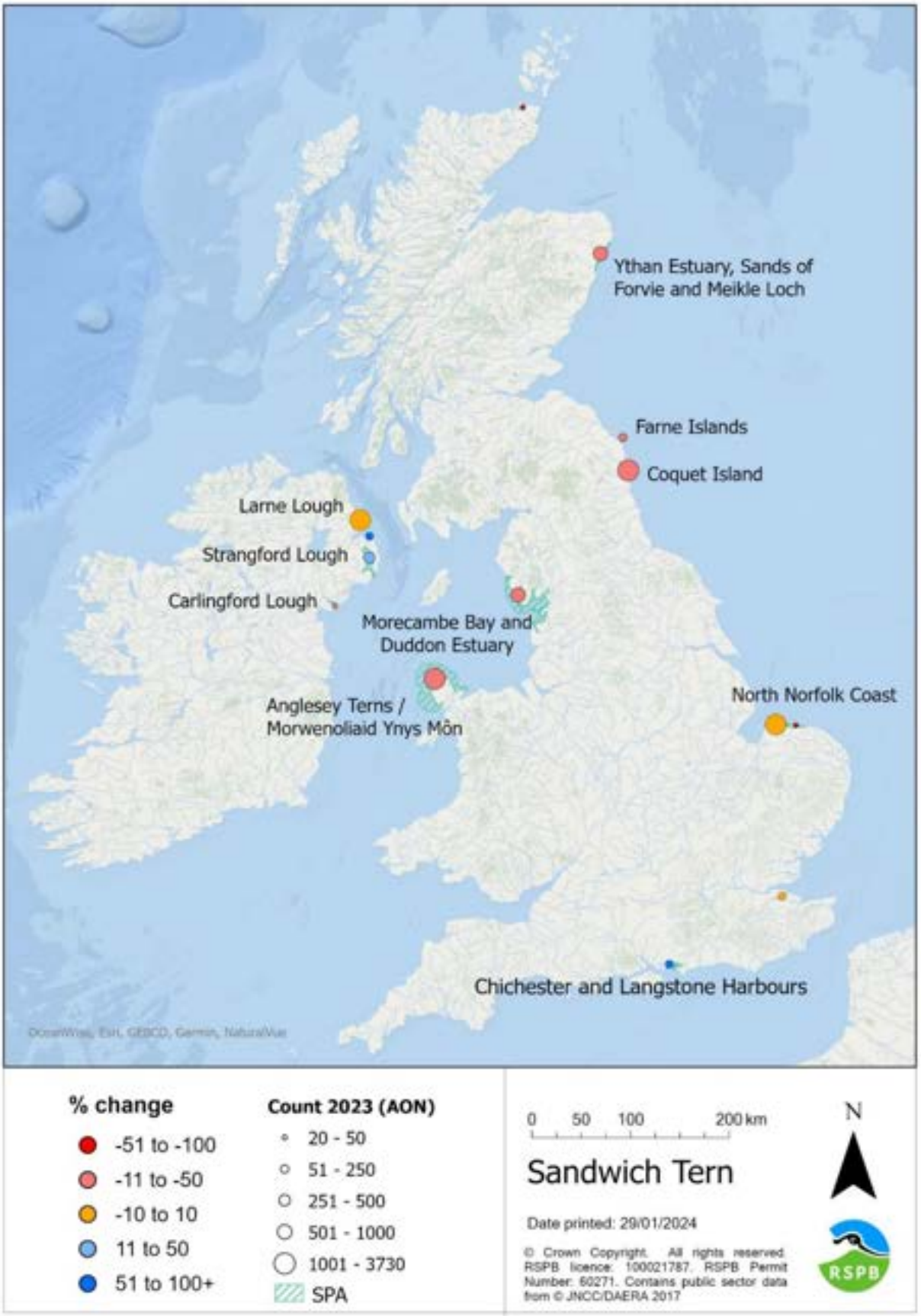
% change	Number of sites	% of sites
-51 to -100	2	14
-11 to -50	6	43
-10 to 10	3	21
11 to 50	1	7
51 to 100+	2	14
Total	14	

Table 18. Sandwich Tern Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs with Sandwich Tern as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were occupied in Seabird Counts. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	Baseline	2023	% change	# sites	% sites	% AON
England	Chichester and Langstone Harbours	5	217	4240	1	100	100
England	Coquet Island	1,919	1,161	-39	1	100	100
England	Farne Islands	285	173	-39	1	100	100
England	Morecambe Bay and Duddon Estuary	765	596	-22	1	100	100
England	North Norfolk Coast	7,044	3,770	-46	2	100	100
Northern Ireland	Carlingford Lough[14]	52	39	-25	1	0	NA
Northern Ireland	Larne Lough	1,113	1,002	-10	1	100	100
Northern Ireland	Strangford Lough	217	251	16	1	100	100
Scotland	Ythan Estuary, Sands of Forvie and Meikle Loch	1,075	903	-16	1	100	100
Wales	Anglesey Terns / Morwenoliaid Ynys Môn	1,901	1,100	-42	1	100	100
	Total	**14,376**	**9,212**	**-36**	**11**	**100**	**100**

[14] There is only one site for Carlingford Lough SPA listed in the census dataset (Carlingford Lough) but the data included here is from a different site within the Carlingford Lough SPA (Green Island).

Figure 10. Sandwich Tern counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AOTs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 18 are named on the map.



4.1.6 Roseate Tern

Roseate Tern was a **high priority** target species due to very high levels of observed HPAI mortalities in 2022. It is the UK's rarest seabird and is Red-listed due to severe declines in its breeding population and range, and its rarity (Stanbury et al. 2021). Ninety adult Roseate Terns out of a total breeding population of 308 pairs died on Coquet Island in 2022, its only currently functional colony in the UK, as well as 170 chicks (RSPB, unpublished data).

Background trend: Roseate Tern breeding numbers (AON) had increased by 114% in the UK between the Seabirds 2000 and Seabirds Count censuses (Newton, 2023), though this was almost entirely attributable to the increase in the colony at Coquet Island.

4.1.6.1 Survey coverage

Roseate Terns were counted at one site in 2023, Coquet Island (regularly monitored under business-as-usual), representing 98% of the UK population, and 33% of occupied sites recorded by the Seabirds Count census. Coquet Island is one of seven SPAs designated for Roseate Tern. A more recent baseline count to that reported by Seabirds Count was provided by the RSPB.

4.1.6.2 Observed % change

The total number of Roseate Tern AONs on Coquet Island declined by 21% from 150 AONs in 2021 to 118 AONs in 2023 (Table 19, Figure 11). The 2023 count was based on a survey made on 5 July, slightly after the preferred monitoring period (mid-May to late-June), as an earlier count was not possible due to HPAI-related access restrictions. HPAI had already affected the colony, so the count may not include nests which had already failed. However, adult birds were less affected by HPAI in 2023 compared to 2022, although chick mortality was high: a mortality check by RSPB on 5 July 2023 gave a total of four adult and 73 chick mortalities.

Table 19. Roseate Tern Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count, within SPAs with Roseate Tern as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were included in the last census.

		Count			Survey coverage		
Country	SPA	2021	2023	% change	# sites	% sites	% AON
England	Coquet Island	150	118	-21	1	100	100
	Total	**150**	**118**	**-21**	**1**	**100**	**100**

Figure 11. Roseate Tern count in 2023 at Coquet Island, with the size of the symbol proportional to the count of AOTs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 19 are named on the map.

4.1.7 Common Tern

Common Tern was a **high priority** target species due to high levels of observed HPAI mortalities in 2022. Common Tern is Amber-listed due to its localised breeding population (Stanbury et al. 2021). Over 700 dead adult Common Terns were recorded at Coquet Island alone in 2022, along with over 600 chicks (RSPB, unpublished data).

Background trend: Common Tern breeding numbers (AON) remained stable in the UK between the Seabirds 2000 and Seabirds Count censuses (Booth, 2023). Within country, numbers increased in Wales (21%), decreased in Scotland (-24%) and remained stable in England (-3%) and Northern Ireland (7%).

4.1.7.1 Survey coverage

Common Tern breeding sites can be unpredictable so most survey coverage relied on those sites that are counted regularly under business-as-usual monitoring, with any additional effort directed to where surveys were being undertaken anyway for other species, to avoid wasting effort travelling to sites that were not occupied in 2023. Counts from 55 SMP sites in 2023 were available for Common Tern for inclusion in this report after screening (Table 20, Figure 12), covering 13% of occupied sites and 40% of the UK breeding population of Common Tern recorded by the Seabirds Count census. This includes nine sites which were unoccupied in Seabirds Count, four of which were also unoccupied in 2023. Count data were available from sites within 16 of the 26 SPAs designated for Common Tern, covering 93% of the population held within these SPAs at the time of Seabirds Count. A key survey coverage gap was Coquet Island SPA, which holds the largest UK breeding population of Common Tern (14% of the UK population recorded by Seabirds Count) and where high mortality was observed in 2022, as counts could not be made as planned due to a further outbreak of HPAI in 2023 restricting staff access to the island.

No counts were excluded as being made outside of the recommended daily time window (though 61% of 2023 counts did not include a time of survey). One site was excluded as being made outside of the accepted survey period indicated in Table 3.

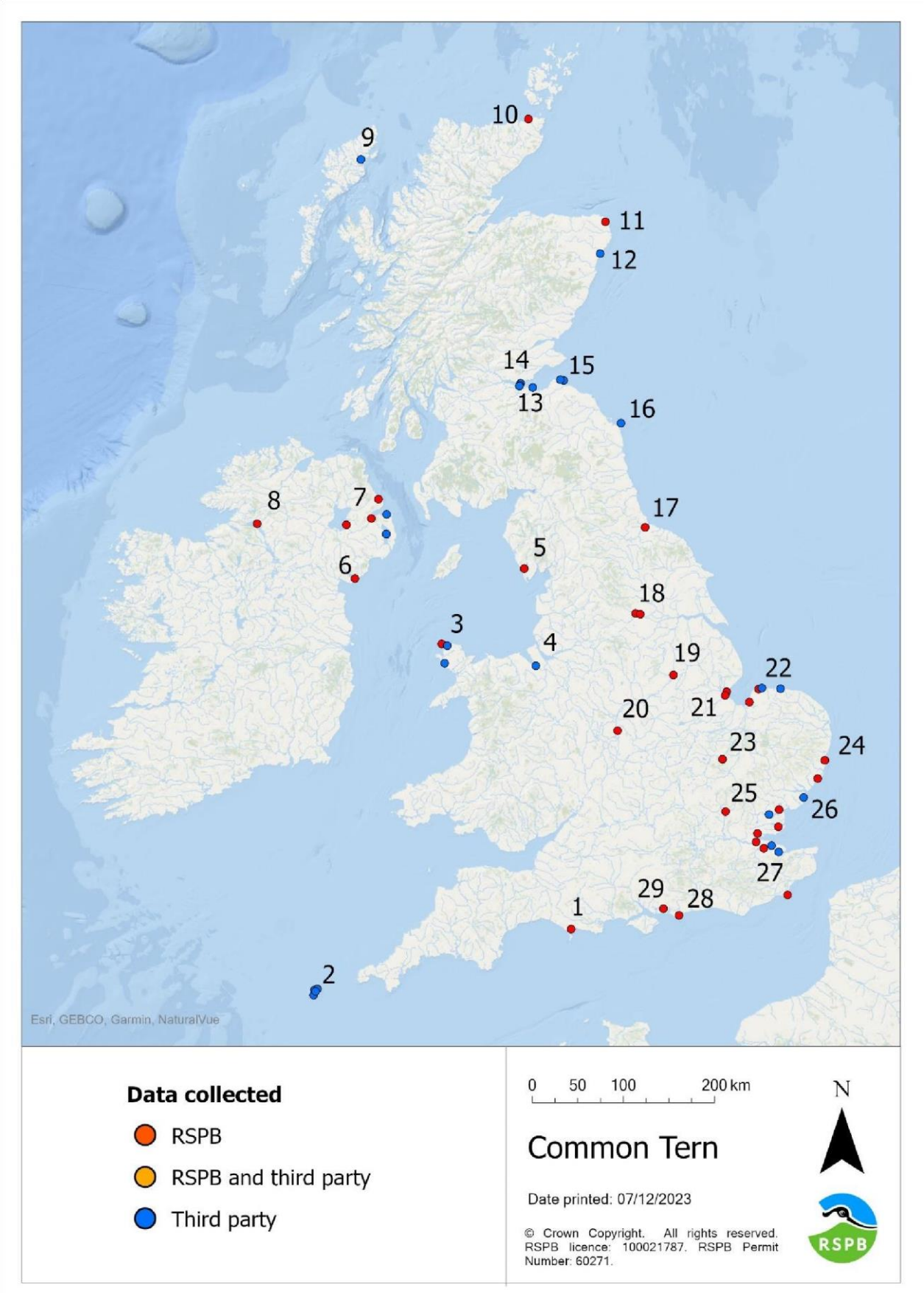
Forty-three of the 55 sites had a baseline count available from 2021 (the prescribed focal year for mobile species for the HPAI Seabird Surveys project), with the remaining baseline counts from 2018 (the prescribed focal year of the Seabirds Count census for mobile species in Britain) for six sites and from a non-focal year for six sites, which held 112 AONs collectively in 2023 (all counts from a non-focal year were taken from the Seabirds Count dataset). Baseline data for 24% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

No adjustments were made to count units, with all SMP data entered as AONs except for two sites using AOS or AOT which are also accepted (Burnell et al. 2023).

Table 20. SMP sites surveyed for Common Tern in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

Country	County / admin. Area	Total number of SMP sites	Map ID
England	**Total**	**34 (26)**	
	Dorset	1 (1)	1
	Isles of Scilly	4 (0)	2
	Cumbria	1 (1)	5
	Northumberland	1 (1)	16
	Cleveland	1 (1)	17
	West Yorkshire	2 (2)	18
	Nottinghamshire	1 (1)	19
	Warwickshire	1 (1)	20
	Lincolnshire	2 (2)	21
	Norfolk	4 (4)	22
	Cambridgeshire	1 (1)	23
	Suffolk	2 (2)	24
	Hertfordshire	1 (1)	25
	Essex	5 (4)	26
	Kent	5 (2)	27
	West Sussex	1 (1)	28
	Hampshire	1 (1)	29
Northern Ireland	**Total**	**7 (6)**	
	Down	3 (2)	6
	Antrim	3 (3)	7
	Fermanagh	1 (1)	8
Scotland	**Total**	**10 (10)**	
	Western Isles – Comhairle nan Eilean	1 (1)	9
	Caithness	1 (1)	10
	Banff and Buchan	1 (1)	11
	Gordon	1 (1)	12
	Dunfermline	2 (2)	13
	City of Edinburgh	2 (2)	14
	East Lothian	2 (2)	15
Wales	**Total**	**4** (4)	
	Gwynedd	3 (3)	3
	Clwyd	1 (1)	4
All	**Total**	**55 (46)**	

Figure 12. Survey coverage in 2023 by RSPB and third parties for Common Tern across the UK. Numbers correspond to map IDs for site groups listed in Table 20. See Table 20 for breakdown of survey effort by site group.



4.1.7.2 Observed % change

The total number of Common Tern AONs recorded across all sites surveyed in 2023 decreased by 42% compared with the pre-HPAI baseline count for these sites, from 4,913 to 2,867 AONs. Within the 16 surveyed SPAs designated for Common Tern, the total number of Common Tern AONs recorded across all sites surveyed in 2023 (all SPA sites surveyed were occupied in Seabirds Count) decreased by 43% compared with the pre-HPAI baseline count for these sites, from 3,490 to 2,000 AONs. The decrease was consistent across the UK, with counts decreasing at all SPAs surveyed bar four (Chichester and Langstone Harbours, Farne Islands, Morecambe Bay and Duddon Estuary, and Ythan Estuary, Sands of Forvie and Meikle Loch SPA; Table 21, Table 22, Figure 13).

The number of Common Tern AONs decreased by over 10% between the baseline and 2023 at 37 of 52 sites (71%) that were occupied in the baseline survey, including three sites where Common Tern AONs were recorded in the baseline count but none were recorded in 2023 (Table 21, Figure 13). The number of Common Tern AONs increased by over 10% between the baseline and 2023 at eight sites (15% of sites occupied in the baseline survey). Three sites were occupied in 2023 but not in the baseline count, accounting for 14 AONs collectively. The number of Common Tern AONs remained similar, with a change of between -10% and 10%, at four sites (8% of sites occupied in the baseline survey). Zero Common Tern were recorded in both 2023 and the baseline count in three sites, which presumably contained suitable breeding habitat.

Table 21. Number of sites in each percent change category for Common Tern between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

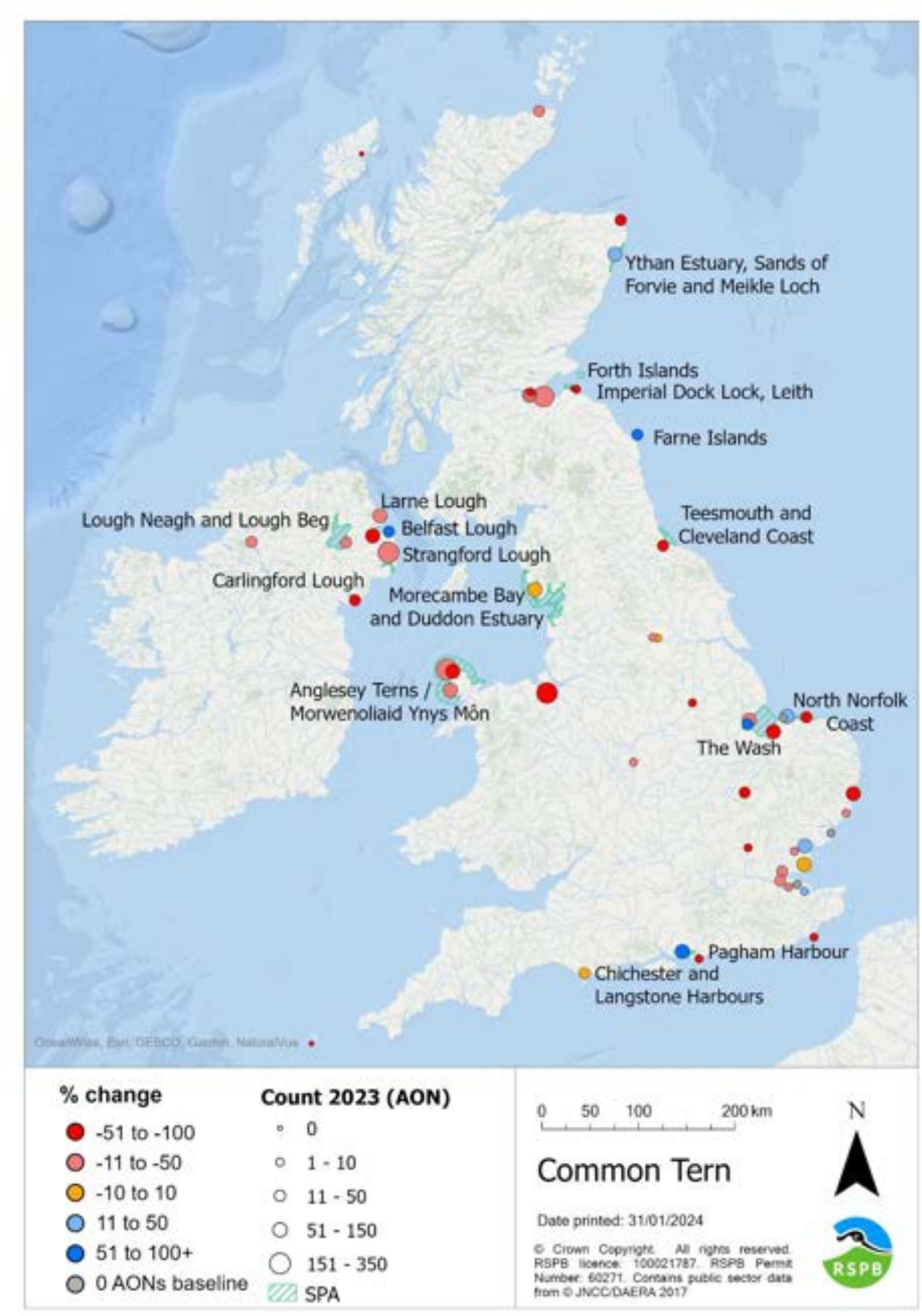
% change	Number of sites	% of sites
-51 to -100	19	37
-11 to -50	18	35
-10 to 10	4	8
11 to 50	4	8
51 to 100+	4	8
0 count in baseline but occupied in 2023	3	6
Total sites occupied in either survey	52	
0 count in baseline and 2023	3	NA

Table 22. Common Tern Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count, within SPAs with Common Tern as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were included in the last census. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	Baseline	2023	% change	# sites	% sites	% AON
England	Chichester and Langstone Harbours	67	88	31	1	50	94
England	Farne Islands	15	38	153	1	100	100
England	Morecambe Bay and Duddon Estuary	52	53	2	1	33	95
England	North Norfolk Coast	391	123	-69	2	50	92
England	Pagham Harbour	7	2	-71	1	100	100
England	Teesmouth and Cleveland Coast	178	34	-81	1	50	92
England	The Wash	148	60	-59	1	100	100
Northern Ireland	Belfast Lough	485	92	-81	1	100	100
Northern Ireland	Carlingford Lough[15]	84	40	-52	1	0	NA
Northern Ireland	Larne Lough	157	114	-27	1	100	100
Northern Ireland	Lough Neagh and Lough Beg	37	23	-38	1	20	32
Northern Ireland	Strangford Lough	312	273	-12	1	100	100
Scotland	Forth Islands	78	49	-37	1	33	70
Scotland	Imperial Dock Lock, Leith	514	350	-32	1	100	100
Scotland	Ythan Estuary, Sands of Forvie and Meikle Loch	103	130	26	1	100	100
Wales	Anglesey Terns / Morwenoliaid Ynys Môn	862	523	-39	3	100	100
	Total	**3,490**	**2,000**	**-43**	**20**	**63**	**93**

[15]There is only one SMP site for Carlingford Lough SPA listed in the census dataset (Carlingford Lough) but the data included here is from a different SMP site in the Carlingford Lough SPA (Green Island).

Figure 13. Common Tern counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AOTs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 22 are named on the map.



4.1.8 Arctic Tern

Arctic Tern was a **high priority** target species due to high levels of observed HPAI mortalities in 2022. Arctic Tern is Amber-listed due to moderate declines in both its breeding population and breeding range (Stanbury et al. 2021). Over 400 adult Arctic Tern mortalities were recorded on Coquet Island alone in 2022 (RSPB, unpublished data).

Background trend: Arctic Tern breeding numbers (AON) decreased by 37% in the UK between the Seabirds 2000 and Seabirds Count censuses (Win, 2023). The overall UK decline was due to a decrease of 54% in the Scottish population, while numbers increased in Wales (133%) and England (69%) and remained stable in Northern Ireland (4%).

4.1.8.1 Survey coverage

Arctic Tern breeding sites can be unpredictable, with birds often moving sites between years, therefore priority was given to ensuring relatively large, stable colonies were counted (these tend to be monitored anyway under business-as-usual). Any additional effort was directed to where surveys were being undertaken anyway for other species, to avoid wasting effort travelling to sites that were not occupied in 2023. Counts from 53 SMP sites in 2023 were available for Arctic Tern for inclusion in this report after screening (Table 23, Figure 14), covering 7% of occupied sites and 31% of the UK breeding population of Arctic Tern recorded by the Seabirds Count census. This includes 13 sites which were unoccupied in Seabirds Count, six of which were also unoccupied in 2023. Count data were available from sites within eight of the 18 SPAs designated for Arctic Tern, covering 94% of the population held within these SPAs at the time of Seabirds Count. A key survey coverage gap was Coquet Island SPA, which held 4% of the UK population recorded by Seabirds Count and where high mortality was observed in 2022, as counts could not be made as planned due to a further outbreak of HPAI in 2023 restricting staff access to the island.

No counts were excluded as being made outside of the recommended daily time window (though 31% of 2023 counts did not include a time of survey) or outside of the accepted survey period indicated in Table 3.

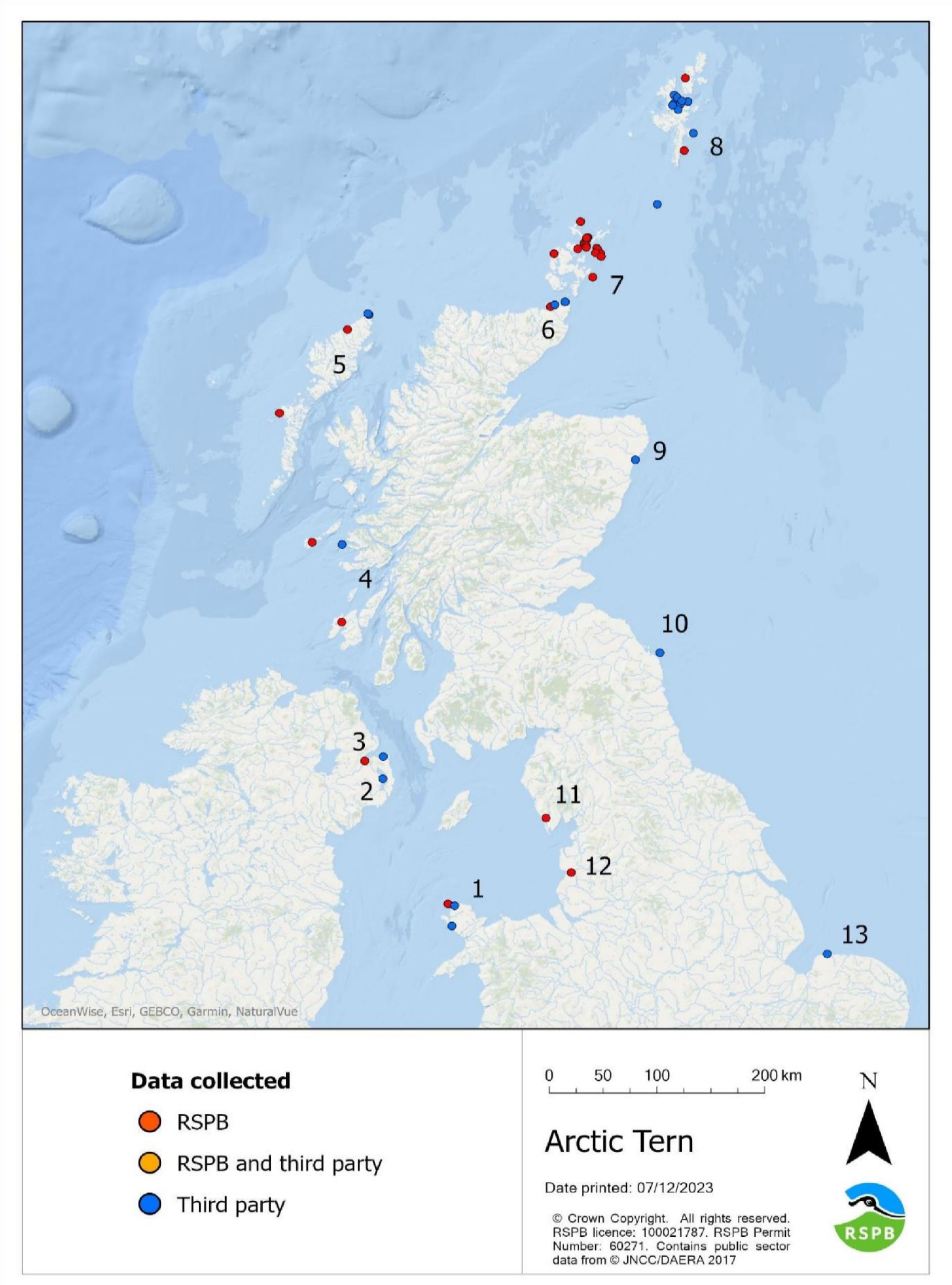
Eighteen of the 53 sites had a baseline count available from 2021 (the prescribed focal year for mobile species the HPAI Seabird Surveys project), while baseline counts for 28 sites were from 2018 (the prescribed focal year of the Seabirds Count census for mobile species in Britain). The baseline count was taken from a non-focal year for seven sites, which held 223 AONs collectively in 2023 (at four sites these counts were obtained from the Seabirds Counts dataset with the remaining three counts taken from the SMP). Baseline data for 59% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

Count units were adjusted at 19 sites where flush counts of individuals were converted to AON counts. All other SMP data was entered as AONs.

Table 23. SMP sites surveyed for Arctic Tern in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Map ID
Wales	**Total**	**3 (3)**	
	Gwynedd	3 (3)	1
Northern Ireland	**Total**	**3 (3)**	
	Down	2 (2)	2
	Antrim	1 (1)	3
Scotland	**Total**	**43 (31)**	
	Argyll and Bute	3 (3)	4
	Western Isles - Comhairle nan Eilean	4 (4)	5
	Caithness	3 (3)	6
	Orkney	19 (10)	7
	Shetland	13 (10)	8
	Gordon	1 (1)	9
England	**Total**	**4 (3)**	
	Northumberland	1 (1)	10
	Cumbria	1 (0)	11
	Lancashire	1 (1)	12
	Norfolk	1 (1)	13
All	**Total**	**53 (40)**	

Figure 14. Survey coverage in 2023 by RSPB and third parties for Arctic Tern across the UK. Numbers correspond to map IDs for site groups listed in Table 23. See Table 23 for breakdown of survey effort by site group.



4.1.8.2 Observed % change

The total number of Arctic Tern AONs recorded across all sites surveyed in 2023 remained similar compared with the pre-HPAI baseline count for these sites, decreasing by 2% from 7,291 to 7,179 AONs. Within the eight surveyed SPAs designated for Arctic Tern, the total number of Arctic Tern AONs recorded across all sites surveyed in 2023 (all SPA sites surveyed were occupied in Seabirds Count) also remained similar, decreasing by 1% compared with the pre-HPAI baseline count for these sites, from 4,826 to 4,797 AONs. The observed population change was highly variable across sites and SPAs, however (Table 24, Table 25, Figure 15).

The number of Arctic Tern AONs decreased by over 10% between the baseline and 2023 at 25 of 47 sites (53%) that were occupied in the baseline survey, including six sites where Arctic Tern AONs were recorded in the baseline count but none were recorded in 2023 (Table 24, Figure 15). The number of Arctic Tern AONs increased by over 10% between the baseline and 2023 at 16 sites (34% of sites occupied in the baseline survey). Four sites were occupied in 2023 but not in the baseline count, accounting for 88 AONs collectively. The number of Arctic Tern AONs remained similar, with a change of between -10% and 10%, at 2 sites (4% of sites occupied in the baseline survey). Zero Arctic Tern were recorded in both 2023 and the baseline count in 6 sites, which presumably contained suitable breeding habitat.

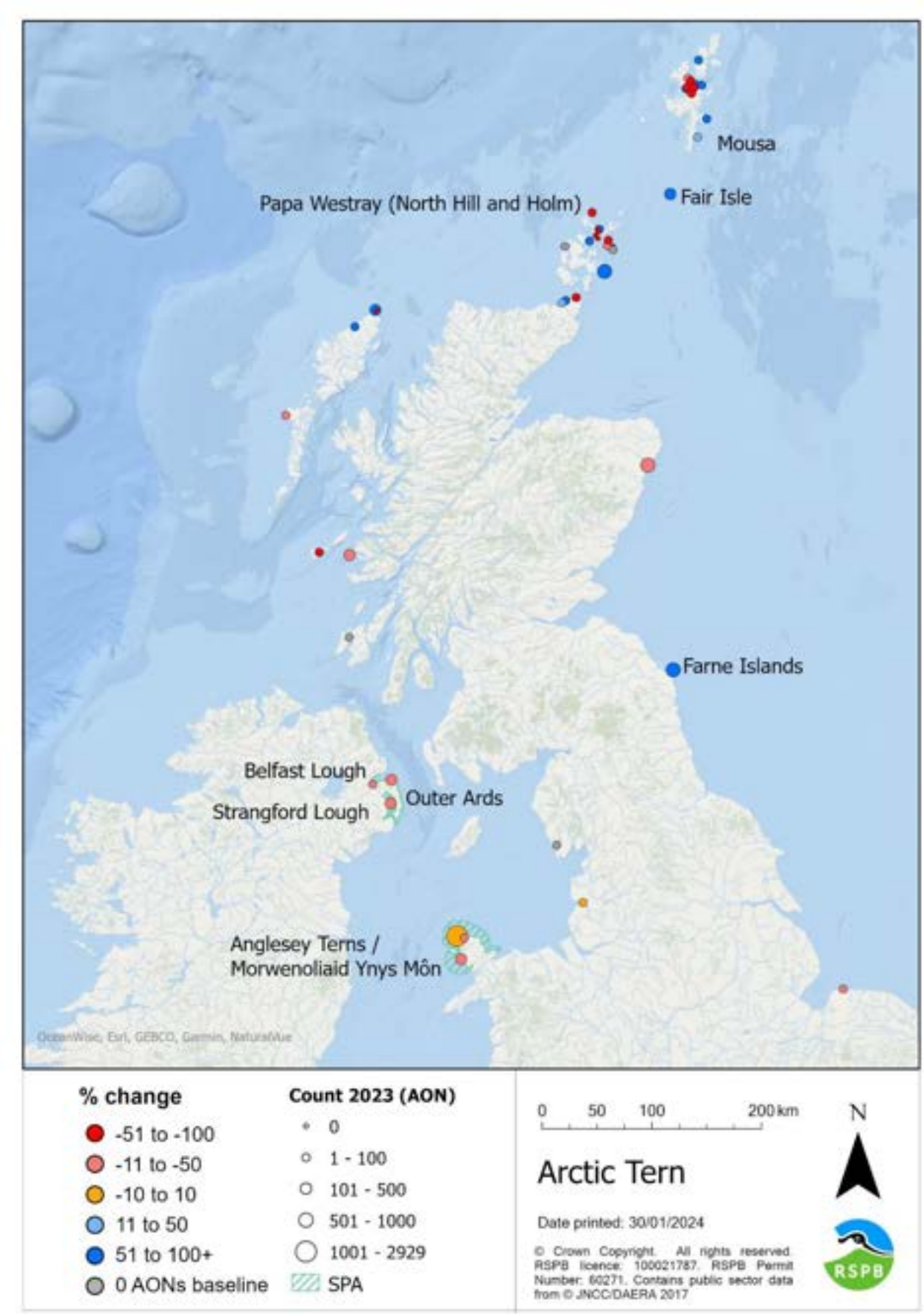
Table 24. Number of sites in each percent change category for Arctic Tern between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

% change	Number of sites	% of sites
-51 to -100	14	30
-11 to -50	11	23
-10 to 10	2	4
11 to 50	2	4
51 to 100+	14	30
0 count in baseline but occupied in 2023	4	9
Total sites occupied in either survey	47	
0 count in baseline and 2023	6	NA

Table 25. Arctic Tern Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count, within SPAs with Arctic Tern as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were included in the last census. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	Baseline	2023	% change	# sites	% sites	% AON
England	Farne Islands	502	834	66	1	100	100
Northern Ireland	Belfast Lough	15	13	-13	1	100	100
Northern Ireland	Outer Ards	216	171	-21	1	33	10
Northern Ireland	Strangford Lough	201	154	-23	1	100	100
Scotland	Fair Isle	190	295	55	1	100	100
Scotland	Mousa	56	68	21	1	100	100
Scotland	Papa Westray (North Hill and Holm)	237	47	-80	1	50	93
Wales	Anglesey Terns / Morwenoliaid Ynys Môn	3,409	3,215	-6	3	100	100
	Total	**4,826**	**4,797**	**-1**	**10**	**77**	**94**

Figure 15. Arctic Tern counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AONs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 25 are named on the map.



4.1.9 Guillemot

Guillemot was a **high priority** target species due to high levels of observed HPAI mortalities in 2022. It is Amber-listed due to its localised and internationally important breeding population (Stanbury et al. 2021). Britain, Isle of Man and Channel Isles host 45-55% of the North Atlantic biogeographic breeding population (Newton & Baker, 2023). A minimum loss of 1908 Guillemot was recorded for Scotland in 2022 (NatureScot, 2023), while 3775 dead Guillemot were recorded in England in 2022, including adults, juveniles and un-aged birds (Natural England, unpublished data).

Background trend: Guillemot breeding numbers (individuals) declined by 11% in the UK between the Seabirds 2000 and Seabirds Count censuses (Bennett, 2023). The overall UK decline was due to a decrease of 31% in the Scottish population, while numbers increased in Northern Ireland (57%), Wales (76%) and England (106%).

4.1.9.1 Survey coverage

Guillemot counts are often only conducted at sample plots under business-as-usual monitoring so considerable additional effort was directed towards whole-colony counts, and to include coverage of larger colonies in 2023. Counts from 99 SMP sites in 2023 were available for Guillemots for inclusion in this report after screening (Table 26, Figure 16), covering 22% of occupied sites and 52% of the UK breeding population of Guillemot recorded by the Seabirds Count census. This includes data from eight sites where full colony counts were not possible, and counts were made from land only[16]. This also includes three sites which were unoccupied in Seabirds Count, one of which was also unoccupied in 2023. Count data were available from sites within 21 of the 34 SPAs designated for Guillemot, covering 83% of the population held within these SPAs at the time of Seabirds Count.

Guillemot counts should be made between 08:00 and 16:00, as numbers of nonbreeders ashore are higher outside of this period. Five sites were excluded as counts were made outside of the recommended time window (in the evening). 84% of sites in the final dataset were known to have been counted during the recommended time window; no time data was available for the remainder. Several sites were also excluded as carried out earlier in May than the accepted buffer window indicated in Table 3.

Baseline data across sites surveyed was collected between 2015 and 2021. Baseline data for 67% of sites was obtained from the Seabirds Count dataset, with remaining counts taken from the SMP (21%) and provided direct by surveyors (for sites with partial survey coverage in 2023; 12%).

[16] Count data from sites where a full colony count was not possible are not included in calculations of overall survey coverage as percentage of population surveyed, as the census baseline data is only available for whole colony counts. Percentage change in Guillemot population for these sites was calculated using previous land count data obtained directly from the survey teams.

Table 26. SMP sites surveyed for Guillemot in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

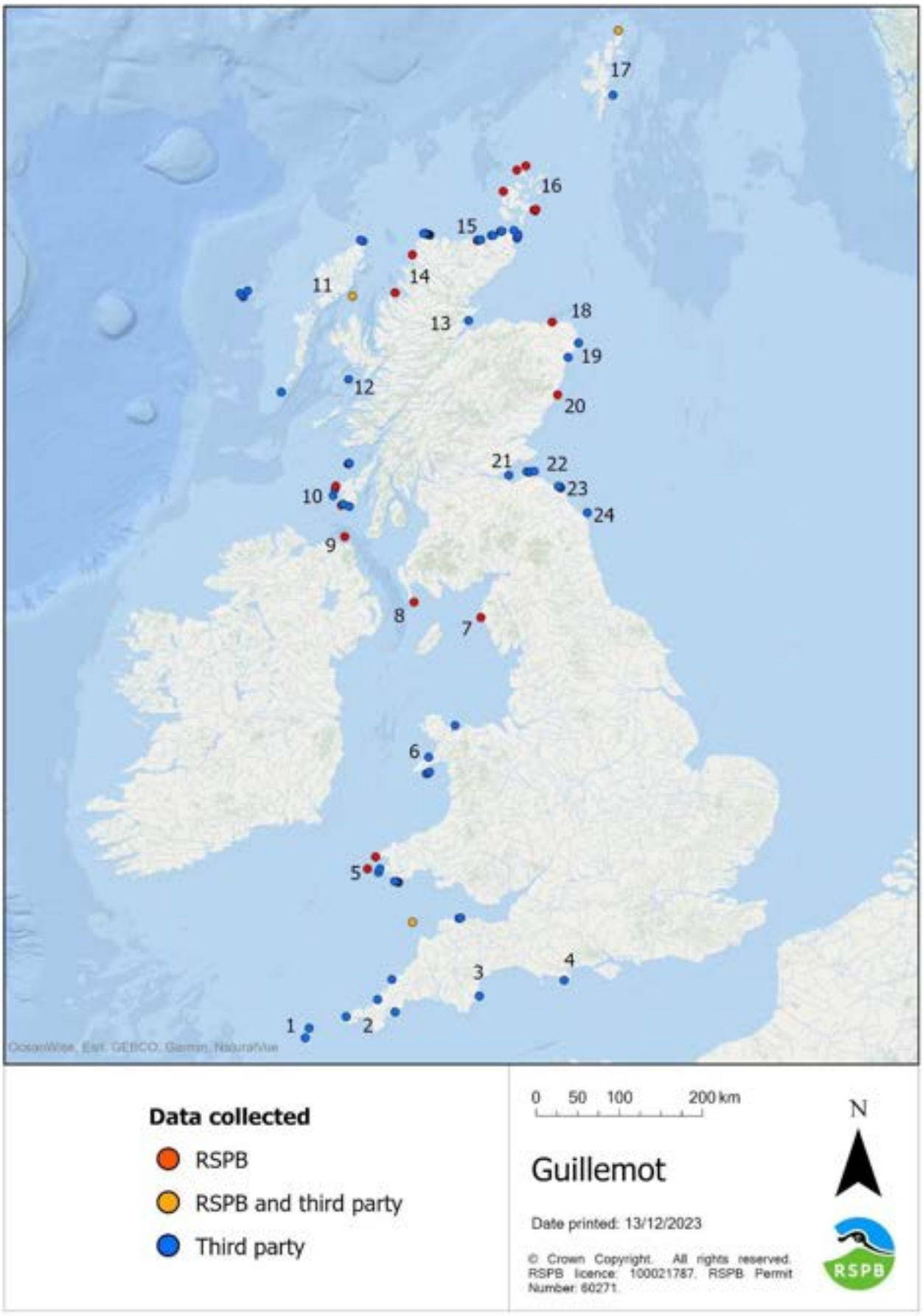
Country	County / admin. area	Total number of SMP sites	Map ID
England	**Total**	**13 (13)**	
	Isles of Scilly	2 (2)	1
	Cornwall	4 (4)	2
	Devon	4 (4)	3
	Cumbria	1 (1)	7
	Dorset	1 (1)	4
	Northumberland	1 (1)	24
Wales	**Total**	**16 (16)**	
	Dyfed	11 (11)	5
	Gwynedd	5 (5)	6
Northern Ireland	**Total**	**1 (1)**	
	Antrim	1 (1)	9
Scotland	**Total**	**69 (66)**	
	Wigtown	2 (2)	8
	Argyll and Bute	12 (11)	10
	Western Isles - Comhairle nan Eilean	10 (10) [17]	11
	Lochaber	1 (1)	12
	Ross and Cromarty	2 (2)	13
	Sutherland	10 (9) [18]	14
	Caithness	12 (11)	15
	Orkney	6 (6)	16
	Shetland	2 (1) [19]	17
	Banff and Buchan	2 (2)	18
	Gordon	1 (1)	19
	Kincardine and Deeside	1 (1)	20
	Kirkcaldy	1 (1)	21
	East Lothian	4 (4)	22
	Berwickshire	3 (3)	23
	Total	**99 (96)**	

[17] Three ‘sites’ are standardised monitoring plots at Shiant Isles SPA, counted from land, where a full colony count was not feasible.

[18] Four sites at Cape Wrath SPA consist of land counts from twelve standardised vantage points, where full colony counts were not feasible. Counts from vantage points within the same SMP site were combined. Baseline data for the vantage points was collected directly from the survey team.

[19] At one site (Hermaness), count data is from land only. Full colony coverage requires boat counts, which were done in 2023 but were not available at the time of the report.

Figure 16. Survey coverage in 2023 by RSPB and third parties for Guillemot across the UK. Numbers shown correspond to site groups listed in Table 26.



4.1.9.2 Observed % change

The total number of Guillemot individuals recorded across all sites surveyed in 2023 (including plots) declined by 6% compared with the pre-HPAI baseline count for these sites, from 694,261 to 650,375 individuals. Within the 21 surveyed SPAs designated for Guillemot (including sites unoccupied in Seabirds Count), the total number of Guillemot individuals recorded across all sites surveyed in 2023 decreased by 7% compared with the pre-HPAI baseline count for these sites, from 626,334 to 582,788 individuals. The decline was not consistent across the UK however, with counts decreasing at some SPAs and increasing at others (Table 27, Table 28, Figure 17).

The number of Guillemot individuals decreased by over 10% between the baseline and 2023 at 38 of 98 sites (39%) that were occupied in the baseline survey, including two sites where Guillemots were recorded in the baseline count but none were recorded in 2023 (Table 27, Figure 17). The number of Guillemot individuals increased by over 10% between the baseline and 2023 at 37 sites (38% of sites occupied in the baseline survey). Two sites were occupied in 2023 but not in the baseline count, accounting for 937 individuals collectively. The number of Guillemot individuals remained similar, with a change of between -10% and 10%, at 21 sites (21% of sites occupied in the baseline survey). Zero Guillemots were recorded in both the 2023 and the baseline counts at one site, presumably with suitable breeding habitat.

Table 27. Number of sites in each percent change category for Guillemot between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

% change	Number of sites	% of sites
-51 to -100	7	7
-11 to -50	31	32
-10 to 10	21	21
11 to 50	19	19
51 to 100+	18	18
0 count in baseline but occupied in 2023	2	2
Total sites occupied in either survey	98	
0 count in baseline and 2023	1	NA

Table 28. Guillemot individuals (IND) recorded in 2023 and by the baseline count within SPAs with Guillemot as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of SMP sites surveyed in 2023, and the percentage of sites and individuals surveyed in 2023 that were included in the last census. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Region	SPA	baseline	2023	% change	# sites	% sites	% IND
England	Farne Islands	62,936	46,332	-26	1	100	100
Northern Ireland	Rathlin Island	149,510	113,504	-24	1	100	100
Scotland	Buchan Ness to Collieston Coast	29,433	30,420	3	1	100	100
Scotland	Cape Wrath[20]	10,084	16,555	64	6	67	26
Scotland	Copinsay	18,472	8,177	-56	2	67	100
Scotland	Forth Islands[21]	7,691	5,244	-32	4	80	29
Scotland	Fowlsheugh	61,416	81,054	32	1	25	88
Scotland	Handa	68,524	57,596	-16	1	100	100
Scotland	Hermaness, Saxa Vord and Valla Field [23]	2,623	2,890	10	1 (1)	NA	NA[22]
Scotland	Marwick Head	11,985	9,552	-20	1	100	100
Scotland	Mingulay and Berneray	19,487	16,542	-15	1	33	51
Scotland	North Caithness Cliffs	36,286	48,290	33	13	87	93
Scotland	North Colonsay and Western Cliffs	13,709	20,189	47	5	36	73
Scotland	Noss	23,733	19,645	-17	1	100	100
Scotland	Rum	1,798	1,384	-23	1	100	100

[20] Four SMP sites only partially surveyed (land counts only) but are included in calculation of survey coverage as both % of sites and individuals surveyed, as the year of the baseline count data collated from the survey team was the same as the year of the Seabirds Count survey and it is therefore possible to calculate the percentage of individuals held by the land counts only at the time of Seabirds Count. Counts are also included in the comparison of 2023 and baseline counts.

[21] Isle of May data not available on SMP at time of report and site is not included in survey coverage.

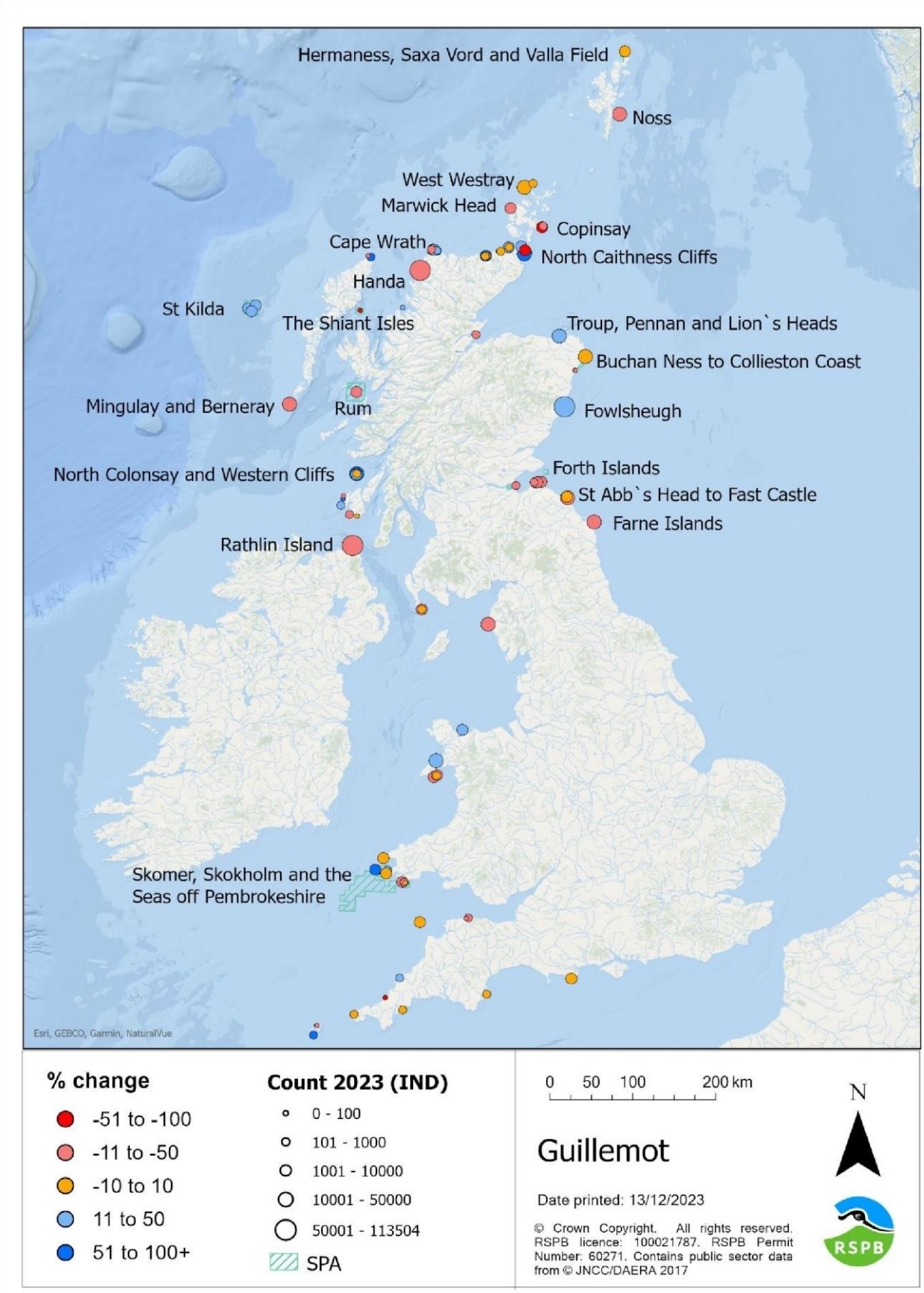
[22] Hermaness partially surveyed (land counts only) so is not included in calculations of survey coverage. It is not possible to calculate survey coverage of the Guillemot population at Hermaness as the census count was a combined count including birds from both land and boat surveys.

Scotland	Shiant Isles	1,233	117	-91	NA	NA	NA[23]
Scotland	St Abb's Head to Fast Castle	44,814	29,472	-34	3	75	98
Scotland	St Kilda	10,303	15,148	47	4	100	100
Scotland	Troup, Pennan and Lion's Heads	24,000	30,663	28	1	20	79
Scotland	West Westray	22,930	24,586	7	1	25	80
Wales	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	5,367	5,428	1	2	67	17
	Total	**626,334**	**582,788**	**-7**	**56**	**62**	**82** [24]

[23] Count data for the Shiant Isles comes from monitoring plots that are counted regularly. These plots do not correspond to SMP sites, so are not included in counts of sites, or in calculations of survey coverage, but numbers and % change are included for information, and contribute to overall values for % change across SPAs designated for Guillemot.

[24] Including numbers of birds counted by partial counts at four Cape Wrath SPA sites but not numbers of birds counted at monitoring plots in the Shiant Isles SPA.

Figure 17. Guillemot counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of individuals recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 28 are named on the map.



4.2 Medium priority species

4.2.1 Black-headed Gull

Black-headed Gull was a **medium priority** target species due to moderate levels of HPAI mortalities in 2022, as well as being Amber-listed due to moderate declines in the UK wintering population, which is of international importance (Stanbury et al. 2021). Nearly 2000 Black-headed Gull mortalities were recorded on RSPB reserves in 2022, including adults, juveniles and un-aged birds (RSPB, unpublished data).

Background trend: Black-headed Gull breeding numbers (AON) declined by 29% in the UK between the Seabirds 2000 and Seabirds Count censuses (Dunn and Daunt, 2023). The decrease was highest in Scotland (-75%), followed by Wales (-16%) and England (12%), while numbers increased by 23% in Northern Ireland.

4.2.1.1 Survey coverage

Many Black-headed Gull colonies are counted regularly under business-as-usual monitoring so relatively little additional survey effort was required to include them as a target species in 2023. Counts from 72 SMP sites in 2023 were available for Black-headed Gull for inclusion in this report after screening (Table 29, Figure 18), covering 13% of occupied sites and 50% of the UK breeding population of Black-headed Gull recorded by the Seabirds Count census. This includes eight sites unoccupied in Seabirds Count, all of which were occupied in 2023. Count data were available from sites within one of the two SPAs designated for Black-headed Gull, covering 95% of the population held within these SPAs at the time of Seabirds Count.

All counts were presumed to be made during the recommended time window of daylight (though 26% of 2023 counts did not include a time of survey). Nine sites were excluded as being made outside of the accepted survey period indicated in Table 3.

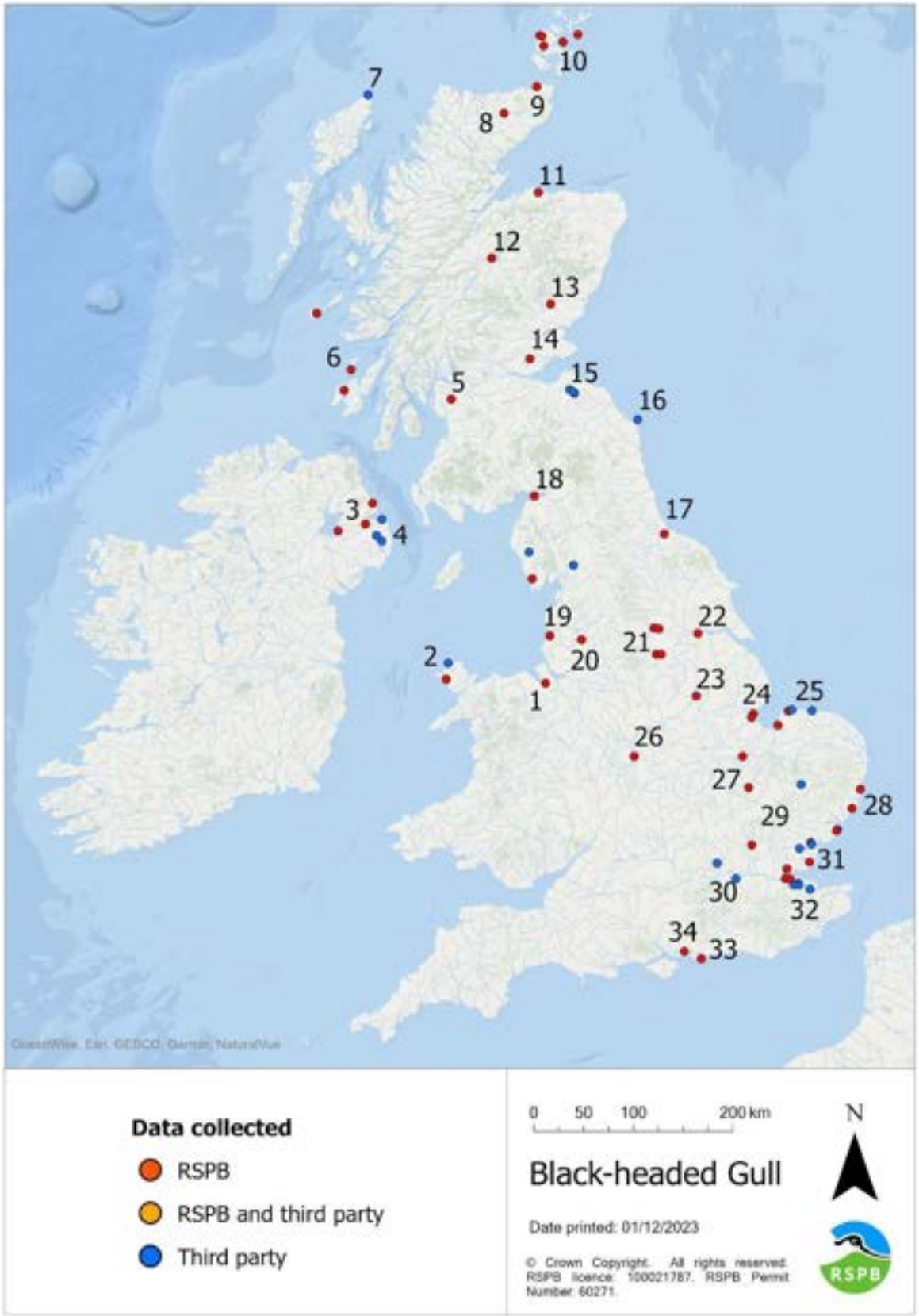
50 of the 72 sites had a baseline count available from 2021, with most of the remaining baseline counts from 2018, the focal year of the Seabirds Count census for mobile species in Britain (15 sites). The baseline count was taken from a non-focal year for seven sites, which held 571 AONs collectively (at three sites these counts were obtained from the Seabirds Counts dataset with the remaining four counts taken from the SMP). Baseline data for 29% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

Count units were adjusted at five sites where flush counts of individuals were converted to AON counts. All other SMP data was entered as AONs except for three sites using AOT which are also accepted (Burnell et al. 2023).

Table 29. SMP sites surveyed for Black-headed Gull in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Map ID
Wales	**Total**	**3 (3)**	
	Clwyd	1 (1)	1
	Gwynedd	2 (2)	2
Northern Ireland	**Total**	**6 (5)**	
	Antrim	3 (3)	3
	Down	3 (2)	4
Scotland	**Total**	**19 (17)**	
	Renfrew	1 (1)	5
	Argyll and Bute	3 (3)	6
	Western Isles - Comhairle nan Eilean	1 (1)	7
	Sutherland	1 (1)	8
	Caithness	1 (1)	9
	Orkney	5 (3)	10
	Moray	1 (1)	11
	Badenoch and Strathspey	1 (1)	12
	Angus	1 (1)	13
	Perth and Kinross	1 (1)	14
	East Lothian	3 (3)	15
England	**Total**	**44 (39)**	
	Northumberland	1 (1)	16
	Cleveland	1 (1)	17
	Cumbria	4 (4)	18
	Merseyside	1 (1)	19
	Lancashire	1 (1)	20
	West Yorkshire	4 (3)	21
	Humberside	1 (1)	22
	Nottinghamshire	1 (0)	23
	Lincolnshire	2 (2)	24
	Norfolk	4 (4)	25
	Warwickshire	1 (1)	26
	Cambridgeshire	2 (2)	27
	Suffolk	3 (2)	28
	Hertfordshire	2 (2)	29
	Greater London	1 (1)	30
	Essex	7 (6)	31
	Kent	6 (5)	32
	West Sussex	1 (1)	33
	Hampshire	1 (1)	34
	Total	**72 (64)**	

Figure 18. Survey coverage in 2023 by RSPB and third parties for Black-headed Gull across the UK. Numbers correspond to map IDs for site groups listed in Table 29. See Table 29 for breakdown of survey effort by site group.



4.2.1.2 Observed % change

The total number of Black-headed Gull AONs recorded in 2023 across all sites surveyed decreased by 11% compared with the pre-HPAI baseline count for these sites, from 49,965 to 44,654 AONs. Within the one surveyed SPA designated for Black-headed Gull (one site surveyed), the total number of Black-headed Gull AONs recorded in 2023 increased by 107% compared with the pre-HPAI baseline count for these sites, from 139 to 288 AONs (Table 31).

The number of Black-headed Gull AONs decreased by over 10% between the baseline and 2023 at 35 of 72 sites (49%) that were occupied in the baseline survey, including two sites where Black-headed Gull AONs were recorded in the baseline count but none were recorded in 2023 (Table 30, Figure 19). The number of Black-headed Gull AONs increased by over 10% between the baseline and 2023 at 26 sites (36% of sites occupied in the baseline survey). Four sites were occupied in 2023 but not in the baseline count, accounting for 146 AONs collectively. The number of Black-headed Gull AONs remained similar, with a change of between 10% and 10%, at 7 sites (10% of sites occupied in the baseline survey).

In 2023, Black-headed Gulls suffered HPAI related mortality at their breeding colonies from March onwards. Based on feedback from surveyors at priority sites, our understanding is that most of the 2023 counts were completed before any large-scale mortalities occurred. Although some counts may have been undertaken after some breeding individuals had died, it should be assumed that overall, HPAI related mortality in 2023 will not be well accounted for in the counts presented here.

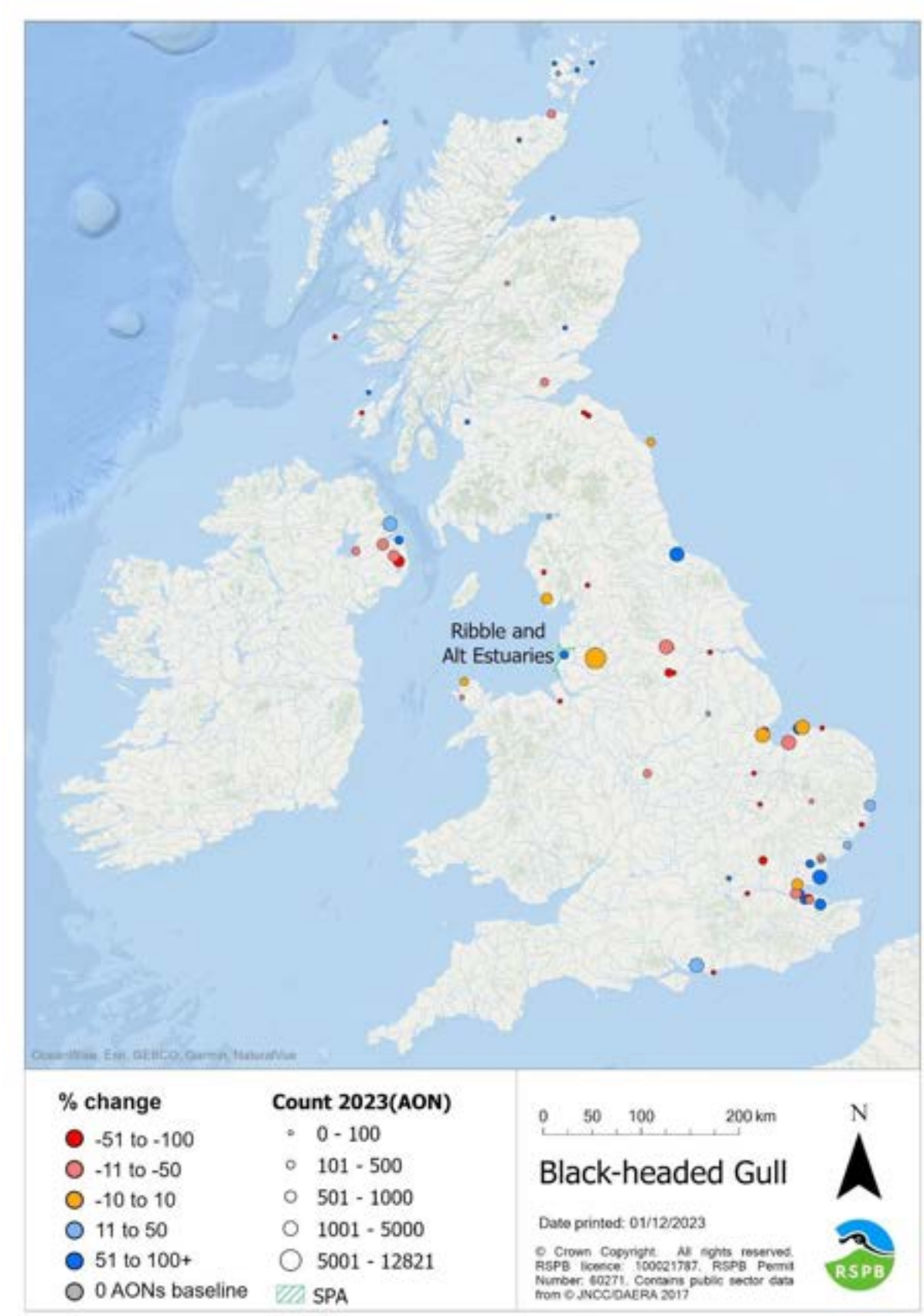
Table 30. Number of sites in each percent change category for Black-headed Gull between the baseline and 2023 counts.

% change	Number of sites	% of sites
-51 to -100	21	29
-11 to -50	14	19
-10 to 10	7	10
11 to 50	5	7
51 to 100+	21	29
0 count in baseline but occupied in 2023	4	6
Total sites occupied in either survey	72	

Table 31. Black-headed Gull Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs with Black-headed Gull as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the estimated percentage of sites and AONs surveyed in 2023 that were occupied in Seabirds Count. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	Baseline	2023	% change	# sites	% sites	% AON
England	Ribble and Alt Estuaries	139	288	107	1	50	95
	Total	**139**	**288**	**107**	**1**	**50**	**95**

Figure 19. Black-headed Gull counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AONs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 31 are shown on the map.



4.2.2 Great Black-backed Gull

Great Black-backed Gull was a **medium priority** target species due to moderate levels of HPAI mortalities in 2022 and being Amber-listed due to moderate declines in breeding and wintering populations (Stanbury et al. 2021).

Background trend: Great Black-backed Gull breeding numbers (AON) declined by 52% in the UK between the Seabirds 2000 and Seabirds Count censuses (Lewis, 2023). The decrease in the Scottish population (-63%) accounted for most of the drop in overall numbers, with a small decrease in England (-3%) but increases in Wales (49%) and Northern Ireland (507%).

4.2.2.1 Survey coverage

To maximise efficiency, survey effort for Great Black-backed Gull was largely based on where their distribution overlapped with sites where surveys for other priority species were being conducted. Counts from 164 SMP sites in 2023 were available for Great Black-backed Gulls for inclusion in this report after screening (Table 32, Figure 20), covering 10% of occupied sites and 25% of the UK breeding population of Great Black-backed Gulls recorded by the Seabirds Count census. This includes 13 sites which were unoccupied in Seabirds Count, all of which were occupied in 2023. Count data were available from sites within three of the six SPAs designated for Great Black-backed Gull, covering 95% of the natural-nesting population held within these SPAs at the time of Seabirds Count.

All counts were presumed to be made during the recommended time window. All flush counts of individuals and vantage point counts of AOT/AON with time information were made between 08:00 to 18:00, and all other counts were presumed to be done during daylight (though 18% of 2023 counts did not include a time of survey). Thirty-eight sites were excluded as counts were made outside of the accepted buffer period of May 10 to June 21 indicated in Table 3.

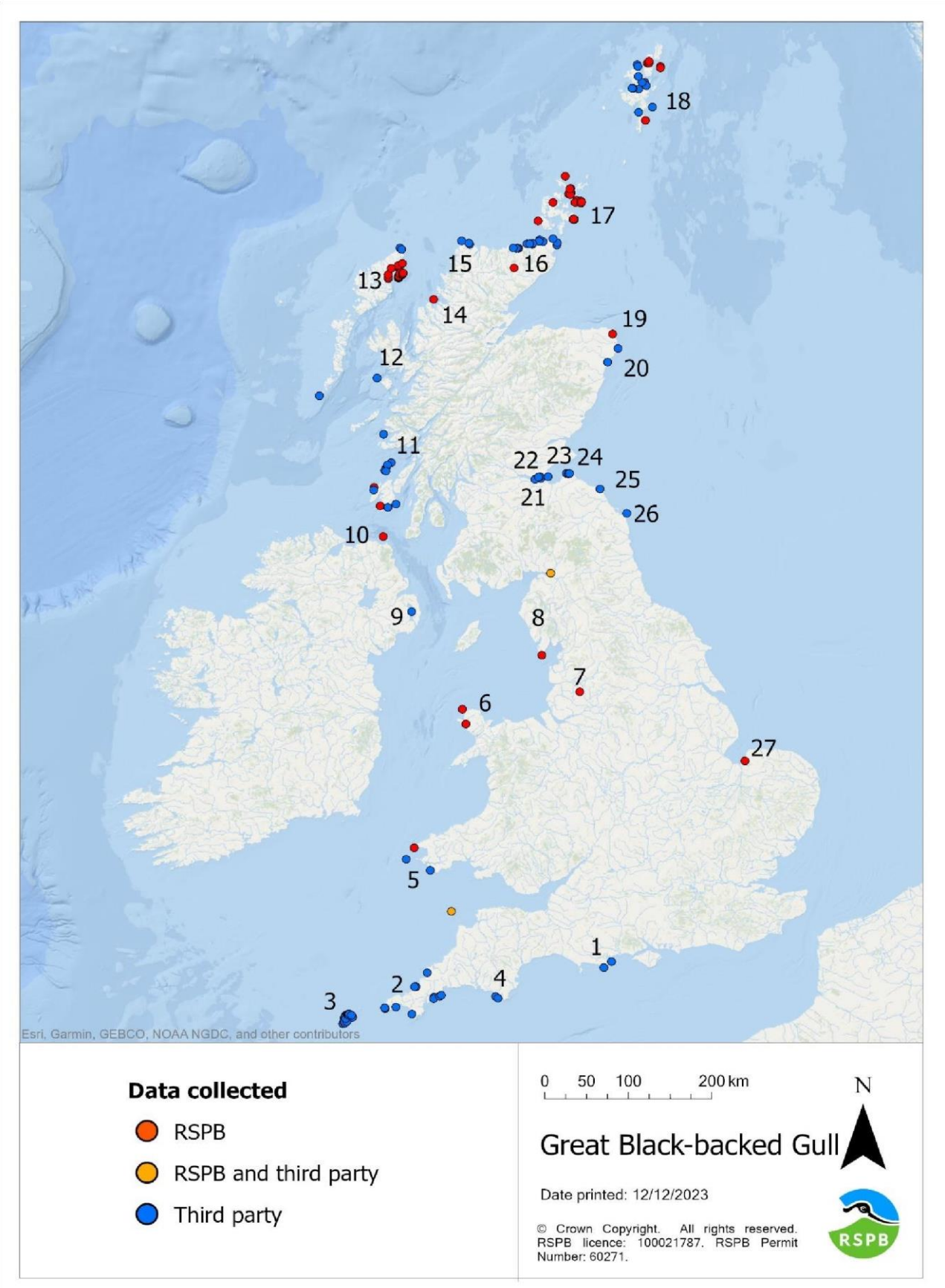
Count units of surveys done in 2023 were adjusted from individuals to AONs for nine sites (5% of total sites), with a further 65 sites entered as AOTs.

Baseline data across sites surveyed was collected between 2015 and 2021. Baseline data for 88% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

Table 32. SMP sites surveyed for Great Black-backed Gull in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Map ID
England	**Total**	**53 (51)**	
	Dorset	2 (2)	1
	Cornwall	11 (9)	2
	Isles of Scilly	32 (32)	3
	Devon	3 (3)	4
	Lancashire	1 (1)	7
	Cumbria	2 (2)	8
	Northumberland	1 (1)	26
	Norfolk	1 (1)	27
Northern Ireland	**Total**	**2 (2)**	
	Down	1 (1)	9
	Rathlin Island	1 (1)	10
Scotland	**Total**	**104 (93)**	
	Argyll and Bute	11 (9)	11
	Lochaber	1 (1)	12
	Western Isles – Comhairle nan Eilean	22 (22)	13
	Ross and Cromarty	1 (1)	14
	Sutherland	6 (3)	15
	Caithness	12 (11)	16
	Orkney	18 (18)	17
	Shetland	20 (16)	18
	Banff and Buchan	2 (2)	19
	Gordon	1 (1)	20
	City of Edinburgh	2 (2)	21
	Dunfermline	3 (3)	22
	Kirkcaldy	1 (1)	23
	East Lothian	3 (3)	24
	Berwickshire	1 (0)	25
Wales	**Total**	**5 (5)**	
	Dyfed	3 (3)	5
	Gwynedd	2 (2)	6
	Total	**164 (151)**	

Figure 20. Survey coverage in 2023 by RSPB and third parties for Great Black-backed Gull across the UK. Numbers correspond to map IDs for site groups listed in Table 32. See Table 32 for breakdown of survey effort by site group.



4.2.2.2 Observed % change

The total number of Great Black-backed Gull AONs recorded across all sites surveyed in 2023 decreased by 20% compared with the pre-HPAI baseline count for these sites, from 2,048 to 1,631 AONs. Within the three surveyed SPAs designated for Great Black-backed Gulls, the total number of AONs recorded across all sites surveyed in 2023 (all SPA sites surveyed were occupied in Seabirds Count) decreased by 32% compared with the pre-HPAI baseline count for these sites, from 862 to 590 AONs. The decline was consistent across SPAs surveyed (Table 34) though not across the UK, with counts decreasing at some sites increasing at others (Table 33, Figure 21).

The number of Great Black-backed Gull AONs decreased by over 10% between the baseline and 2023 at 68 of 164 sites (41%) that were occupied in the baseline survey (Table 33, Figure 21). The number of Great Black-backed Gull AONs increased by over 10% between the baseline and 2023 at 34 sites (21% of sites occupied in the baseline survey). Fourteen sites were occupied in 2023 but not in the baseline count, accounting for 36 AONs collectively. The number of Great Black-backed Gull AONs remained similar, with a change of between -10% and 10%, at 47 sites (29% of sites occupied in the baseline survey).

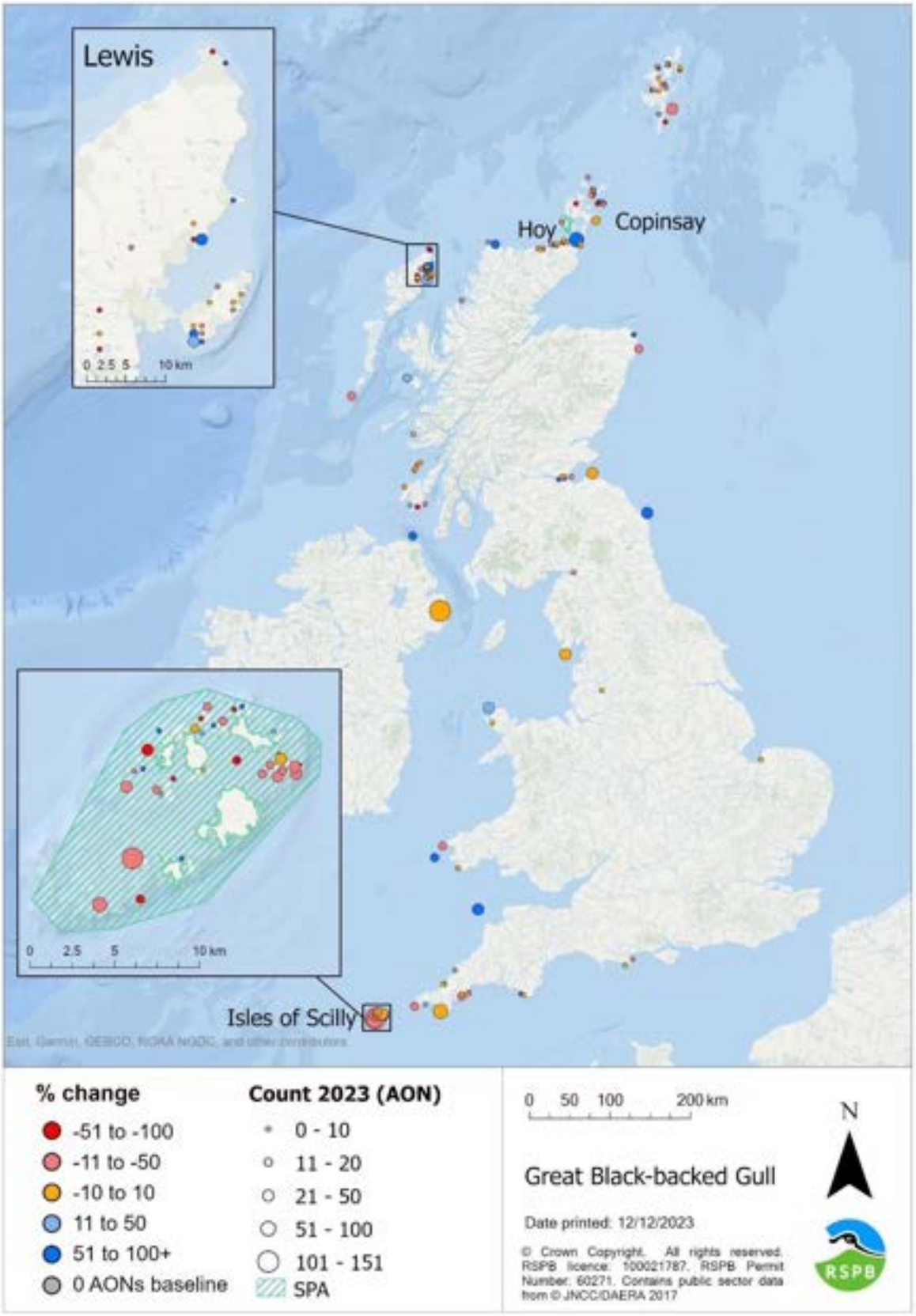
Table 33. Number of sites in each percent change category for Great Black-backed Gull between the baseline and 2023 counts.

% change	Number of sites	% of sites
-51 to -100	20	12
-11 to -50	48	29
-10 to 10	47	29
11 to 50	10	6
51 to 100+	25	15
0 count in baseline but occupied in 2023	14	9
Total sites occupied in either survey	164	

Table 34. Great Black-backed Gull Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs with Great Black-backed Gull as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were occupied in Seabirds Count. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	Baseline	2023	% change	# sites	% sites	% AON
England	Isles of Scilly SPA	786	536	-32	27	82	97
Scotland	Copinsay SPA	67	49	-27	4	100	100
Scotland	Hoy SPA	9	5	-44	1	7	16
	Total	**862**	**590**	**-32**	**32**	**63**	**95**

Figure 21. Great Black-backed Gull counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AONs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 34 are shown on the map.



4.3 Low priority species

4.3.1 Arctic Skua

Arctic Skua was a **low priority** target species as there were no known UK HPAI mortalities in 2021 or 2022 (no Arctic Skuas have yet tested positive for HPAI in the UK, though there were some suspected, but un-tested, cases, and HPAI has been confirmed in the species globally; FAO, 2023). Arctic Skua was included as a target species as it was efficient to count them during surveys of Great Skua, a species they often nest alongside and which in contrast was known to be heavily affected by HPAI. Arctic Skua populations have been shown to be adversely affected by Great Skuas (Perkins et al. 2018) and could therefore potentially benefit from any HPAI-related reduction in the Great Skua population if they do not succumb to the virus themselves. Arctic Skua is Red-listed due to its severe breeding population declines (Stanbury et al. 2021).

Background trend: Arctic Skua breeding numbers (AOT) decreased by 66% in Scotland between the Seabirds 2000 and Seabirds Count censuses (Perkins, 2023). All the UK population is found in Scotland.

4.3.1.1 Survey coverage

Counts from 228 SMP sites in 2023 were available for Arctic Skua for inclusion in this report after screening (Table 35, Figure 22), covering 41% of occupied sites and 48% of the total UK breeding population (AOTs) of Arctic Skua recorded by the Seabirds Count census. This includes 104 sites which were unoccupied in Seabirds Count, 82 of which were also unoccupied in 2023. Count data were available from sites within five of the seven SPAs designated for Arctic Skua, covering 86% of the population held within these SPAs at the time of Seabirds Count. Note that as well as surveying sites specifically prioritised for Arctic Skuas, any other sites that were surveyed for Great Skua (Figure 3) were also checked for Arctic Skua, but these are only included in coverage and count totals if Arctic Skua territories were recorded.

Most sites surveyed consisted of standardised 1km OS grid squares, covering 203 km^2 across Orkney, Shetland and Western Isles - Comhairle nan Eilean (Table 35). The remaining 24 sites ranged in size, from small colonies of a handful of pairs to whole islands or RSPB reserves with larger colonies (e.g. Fair Isle, Handa Island, North Hill RSPB).

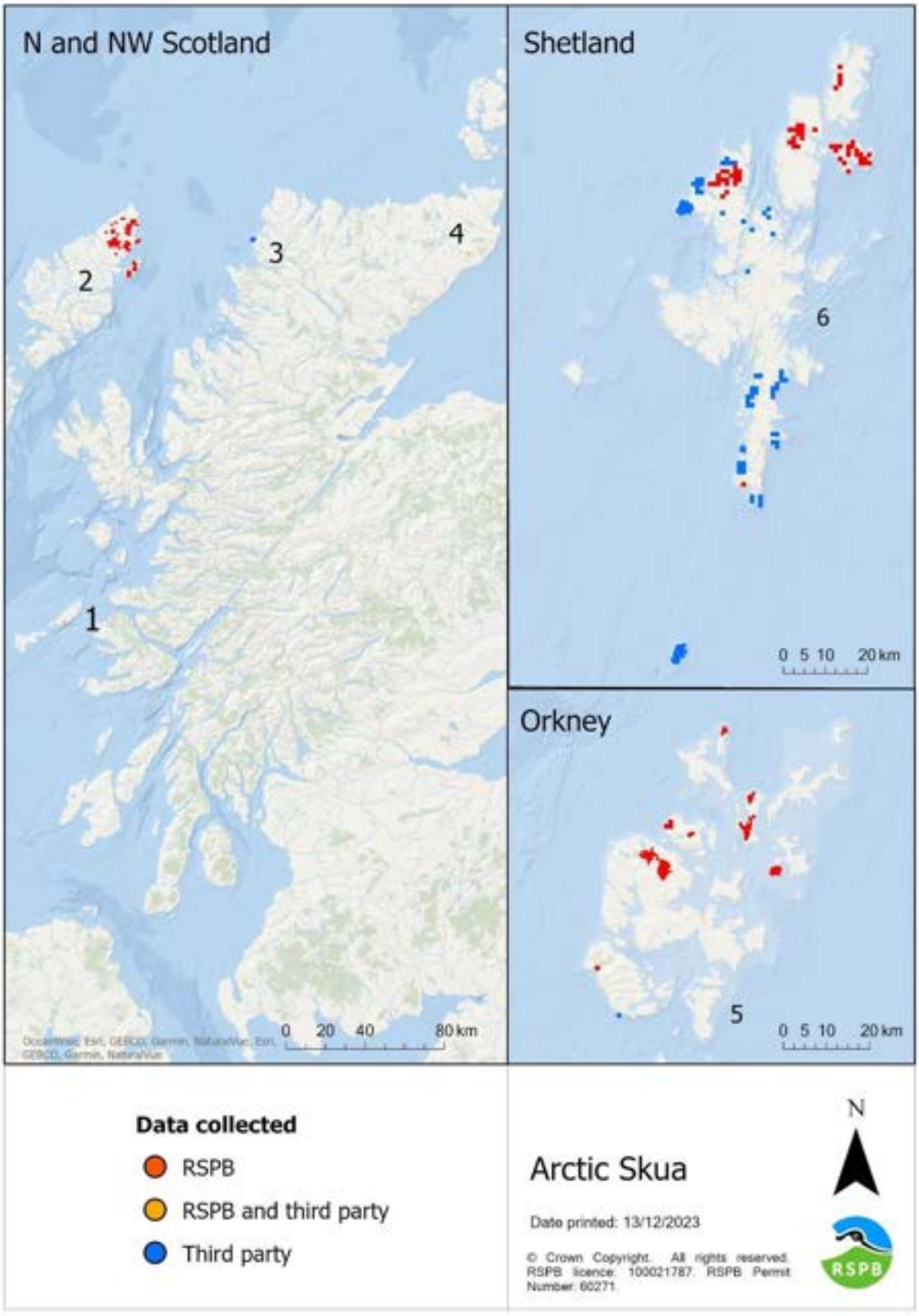
All counts were presumed to be made during the recommended time window of daylight, though 27% of 2023 counts did not include a time of survey.

Baseline data across sites surveyed was collected between 2016 and 2021. Baseline data for 82% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

Table 35. SMP sites surveyed for Arctic Skua in 2023, grouped by county or administrative area. Note that for skuas, most SMP sites are 1km OS grid squares, the total of which is shown in brackets for each site group. Values in () refer to number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Of which # are 1km^2	Map ID
Scotland	Argyll and Bute	1 (0)	0	1
	Western Isles - Comhairle nan Eilean	79 (60)	79 (60)	2
	Sutherland	1 (1)	0	3
	Caithness	1 (0)	0	4
	Orkney	21 (16)	4 (2)	5
	Shetland	125 (47)	120 (45)	6
Total		**228 (124)**	**203 (107)**	

Figure 22. Survey coverage in 2023 by RSPB and third parties for Arctic Skua across Scotland. Numbers correspond to map IDs for site groups listed in Table 35. SMP sites surveyed for Arctic Skua in 2023, grouped by county or administrative area. Note that for skuas, most SMP sites are 1km OS grid squares. See Table 35 for breakdown of survey effort by site group.



4.3.1.2 Observed % change

The total number of Arctic Skua territories recorded across all sites surveyed in 2023 declined by 28% compared with the pre-HPAI baseline count for these sites, from 341 to 247 AOTs. Within the five surveyed SPAs designated for Arctic Skua, the total number of Arctic Skua territories recorded across all sites surveyed in 2023 (including sites unoccupied in Seabirds Count) decreased by 13% compared with the pre-HPAI baseline count for these sites, from 67 to 51 AOTs. Declines were not consistent across all sites however, with some sites and SPAs showing an increase in Arctic Skua territories in 2023 (Table 36, Table 37, Figure 23).

The number of Arctic Skua territories decreased by over 10% between the baseline and 2023 at 78 of 145 sites (54%) that were occupied in the baseline survey, including 55 sites where Arctic Skua territories were recorded in the baseline count but none were recorded in 2023 (Table 36, Figure 23). The number of Arctic Skua territories increased by over 10% between the baseline and 2023 at 18 sites (12% of sites occupied in the baseline survey). Twenty sites were occupied in 2023 but not in the baseline count, accounting for 31 AOTs collectively. The number of Arctic Skua territories remained similar, with a change of between -10% and 10%, at 29 sites (20% of sites occupied in the baseline survey). Zero Arctic Skuas were recorded in both 2023 and the baseline count in 83 sites which presumably contained suitable breeding habitat.

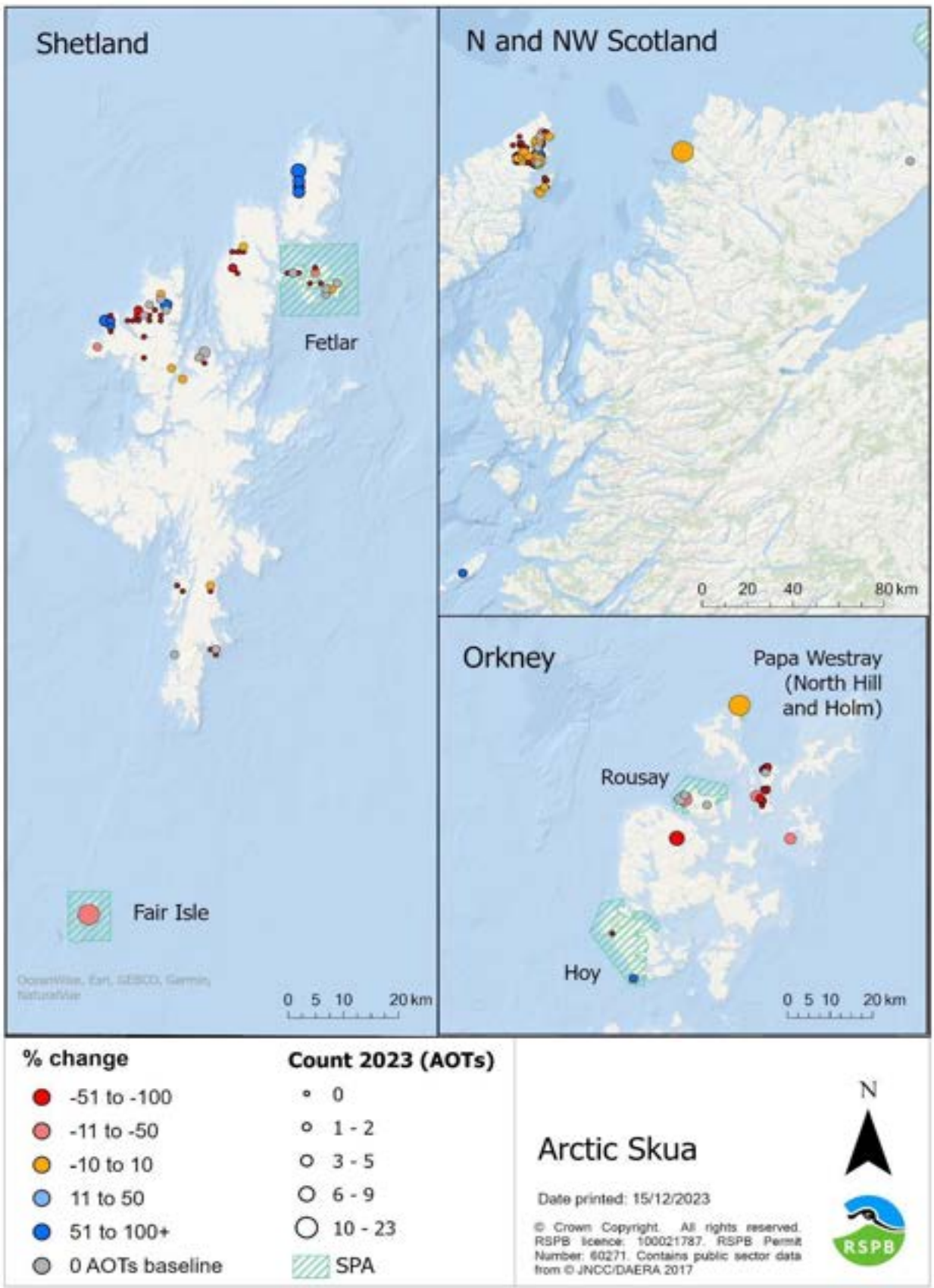
Table 36. Number of sites in each percent change category for Arctic Skua between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

% change	Number of sites	% of sites
-51 to -100	69	48
-11 to -50	9	6
-10 to 10	29	20
11 to 50	1	1
51 to 100+	17	12
0 count in baseline but occupied in 2023	20	14
Total sites occupied in either survey	145	
0 count in baseline and 2023	83	NA

Table 37. Arctic Skua territories (AOTs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs designated for Arctic Skua, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the estimated percentage of sites and AOTs surveyed in 2023 that were occupied in Seabirds Count. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

Region	SPA	Count			Survey coverage		
		baseline	2023	% change	# sites	% sites	% AOTs
Scotland	Fair Isle	27	22	-19	1	100	100
	Fetlar	9	2	-78	6	100	100
	Hoy	2	2	0	2	33	29
	Papa Westray (North Hill and Holm)	18	18	0	1	100	100
	Rousay	11	7	-36	1	33	61
	Total	**67**	**51**	**-24**	**11**	**65**	**86**

Figure 23. Arctic Skua counts in 2023 in Scotland. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AOTs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 37 are shown on the map. Sites that were unoccupied in both 2023 and the baseline are not shown.



4.3.2 Lesser Black-backed Gull

Lesser Black-backed Gull was a **low priority** target species due to low levels of observed HPAI mortalities in 2022. It was included as a target species in case it comprised some of the unidentified gull mortalities, and because it could relatively easily be surveyed alongside Herring Gull which was a high priority. Lesser Black-backed Gull is Amber-listed due to its localised breeding and international importance (Stanbury et al. 2021), with Britain, Isle of Man and Channel Isles hosting 50-55% of the North Atlantic biogeographic breeding population (Newton & Baker, 2023).

Background trend: Natural-nesting Lesser Black-backed Gull breeding numbers (AON) declined by 49% in the UK between the Seabirds 2000 and Seabirds Count censuses (Banks and Murphy, 2023). The decrease was highest in England (-56%), followed by Scotland (-48%) and Wales (-45%), while numbers increased by 152% in Northern Ireland.

4.3.2.1 Survey coverage

Additional survey effort for Lesser Black-backed Gull was largely based on where surveys were being targeted for the higher priority Herring Gull. Only natural-nesting populations of these two gull species were included in the site prioritisation and selection steps owing to the difficulty in accurately surveying urban gull populations. Counts from 80 SMP sites in 2023 were available for Lesser Black-backed Gulls for inclusion in this report after screening (Table 38, Figure 24), covering 16% of occupied sites and 22% of the natural-nesting UK breeding population of Lesser Black-backed Gulls recorded by the Seabirds Count census. This includes eleven sites which were unoccupied in Seabirds Count, one of which was also unoccupied in 2023. Count data were available from sites within six of the ten SPAs designated for Lesser Black-backed Gull, covering 40% of the natural-nesting population held within these SPAs at the time of Seabirds Count.

All counts were presumed to be made during the recommended time window. All flush counts of individuals and vantage point counts of AOT/AON with time information were made between 08:00 to 18:00, and all other counts were presumed to be done during daylight (though 26% of 2023 counts did not include a time of survey). Five sites were excluded as counts were made outside of the accepted buffer period of May 10 to June 21 indicated in Table 3.

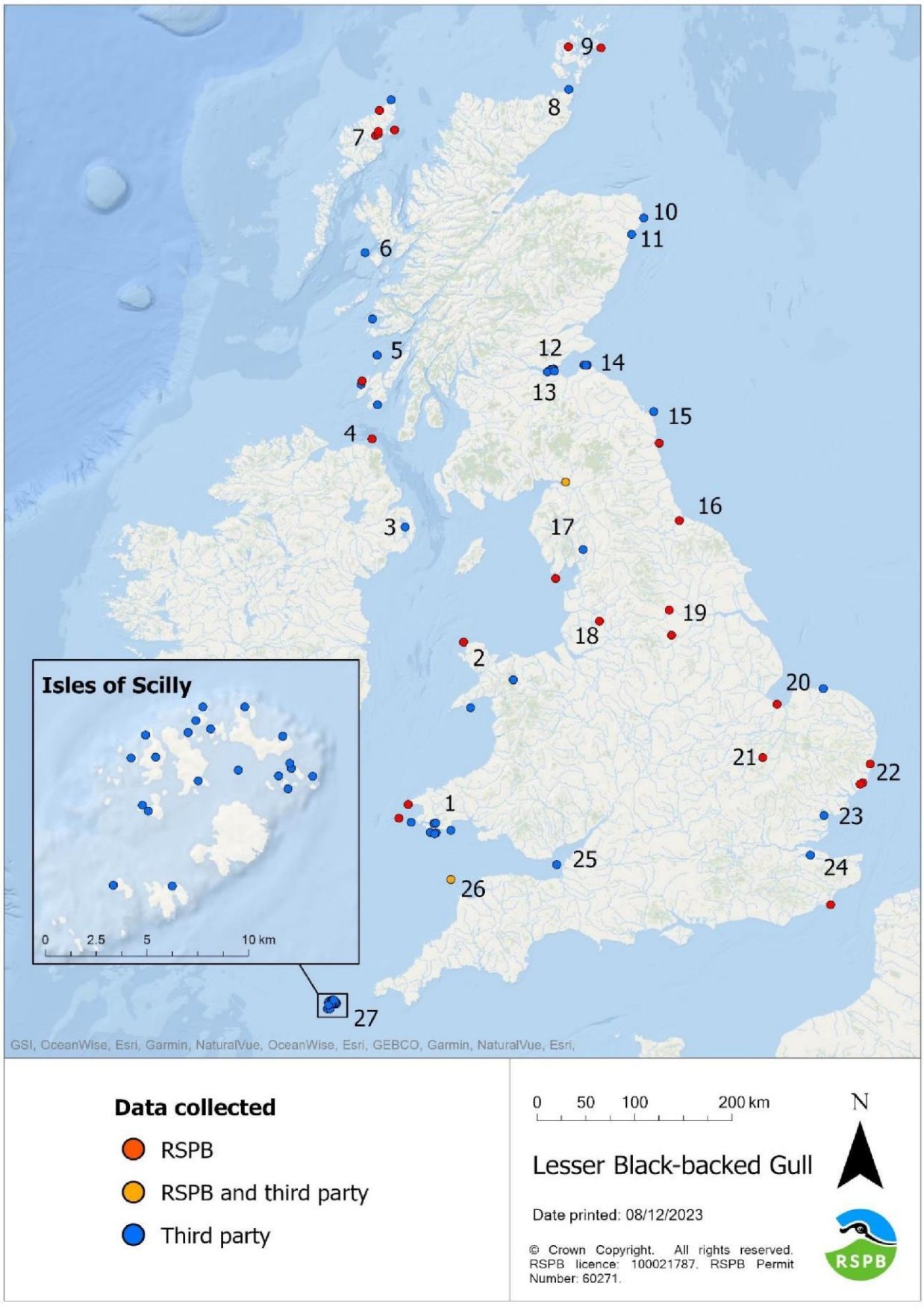
Count units of surveys done in 2023 were adjusted from individuals to AONs for two sites (6% of total sites), with a further 18 sites entered as AOTs.

Baseline data across sites surveyed was collected between 2015 and 2021. Baseline data for 69% of sites was obtained from the Seabirds Count dataset, with the remaining counts taken from the SMP.

Table 38. SMP sites surveyed for Lesser Black-backed Gull in 2023, grouped by county or administrative area. Values in () refer to the number of sites occupied in Seabirds Count.

Country	County / admin. area	Total number of SMP sites	Map ID
Wales	**Total**	**12 (9)**	
	Dyfed	9 (6)	1
	Gwynedd	3 (3)	2
Northern Ireland	**Total**	**2 (2)**	
	Down	1 (1)	3
	Rathlin Island	1 (1)	4
Scotland	**Total**	**26 (21)**	
	Argyll and Bute	6 (4)	5
	Lochaber	1 (1)	6
	Western Isles - Comhairle nan Eilean	6 (5)	7
	Caithness	1 (1)	8
	Orkney	2 (1)	9
	Banff and Buchan	1 (1)	10
	Gordon	1 (0)	11
	Dunfermline	3 (3)	12
	City of Edinburgh	2 (2)	13
	East Lothian	3 (3)	14
England	**Total**	**41 (37)**	
	Northumberland	2 (2)	15
	Cleveland	1 (0)	16
	Cumbria	4 (3)	17
	Lancashire	1 (1)	18
	West Yorkshire	2 (2)	19
	Norfolk	2 (2)	20
	Cambridgeshire	1 (1)	21
	Suffolk	3 (3)	22
	Essex	1 (0)	23
	Kent	2 (1)	24
	Avon	1 (1)	25
	Devon	1 (1)	26
	Isles of Scilly	20 (20)	27
	Total	**80 (69)**	

Figure 24. Survey coverage in 2023 by RSPB and third parties for Lesser Black-backed Gull across the UK. Numbers correspond to map IDs for site groups listed in Table 38. See Table 38 for breakdown of survey effort by site group.



4.3.2.2 Observed % change

The total number of Lesser Black-backed Gull AONs recorded in 2023 across all sites surveyed decreased by 25% compared with the pre-HPAI baseline count for these sites, from 12,412 to 9,369 AONs. Within the six surveyed SPAs designated for Lesser Black-backed Gulls, the total number of AONs recorded across all sites surveyed in 2023 (all SPA sites surveyed were occupied in Seabirds Count) decreased by 12% compared with the pre-HPAI baseline count for these sites, from 5,861 to 5,172 AONs. The decline was not consistent across SPAs surveyed, with counts decreasing at some sites and increasing at others (Table 39, Table 40, Figure 25).

The number of Lesser Black-backed Gull AONs decreased by over 10% between the baseline and 2023 at 49 of 79 sites (62%) that were occupied in the baseline survey, including four sites where Lesser Black-backed Gulls were recorded in the baseline count but not in 2023 (Table 39, Figure 25). The number of Lesser Black-backed Gull AONs increased by over 10% between the baseline and 2023 at 17 sites (22% of sites occupied in the baseline survey). Five sites were occupied in 2023 but not in the baseline count, accounting for 10 AONs collectively. The number of Lesser Black-backed Gull AONs remained similar, with a change of between -10% and 10%, at eight sites (10% of sites occupied in the baseline survey). Zero Lesser Black-backed Gulls were recorded by both the baseline and 2023 count at one site.

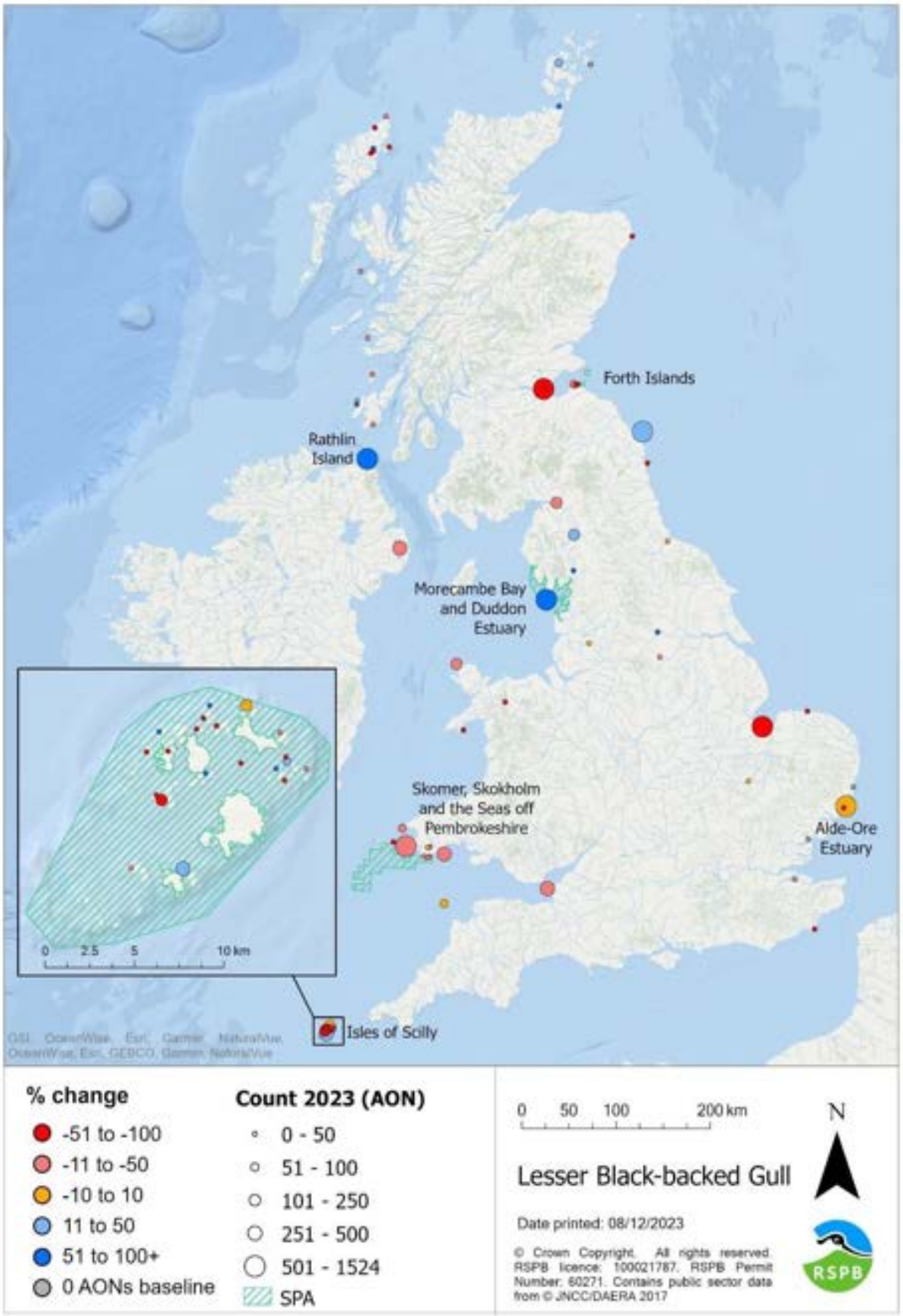
Table 39. Number of sites in each percent change category for Lesser Black-backed Gull between the baseline and 2023 counts. Sites with a zero count in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

% change	Number of sites	% of sites
-51 to -100	27	34
-11 to -50	22	28
-10 to 10	8	10
11 to 50	4	5
51 to 100+	13	16
0 count in baseline but occupied in 2023	5	6
Total sites occupied in either survey	79	
0 count in baseline and 2023	1	NA

Table 40. Lesser Black-backed Gull Apparently Occupied Nests (AONs) recorded in 2023 and by the baseline count at sites occupied in Seabirds Count within SPAs with Lesser Black-backed Gull as a qualifying interest, and the overall percentage change between counts. Survey coverage shows the number of sites surveyed in 2023, and the percentage of sites and AONs surveyed in 2023 that were occupied in Seabirds Count. N.B. Data are presented for the subset of surveyed sites within the SPA only and more recent baseline counts may be used where available, meaning figures may differ from those reported in Seabirds Count.

		Count			Survey coverage		
Country	SPA	Baseline	2023	% change	# sites	% sites	% AON
England	Alde Ore Estuary	1511	1524	1	1	50	95
England	Isles of Scilly	2391	1021	-57	17	77	98
England	Morecambe Bay and Duddon Estuary	186	862	363	1	33	94
Scotland	Forth Islands	319	225	-29	4	80	16
Northern Ireland	Rathlin Island	519	825	59	1	100	100
Wales	Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro	935	715	-24	1	50	11
	Total	**5,861**	**5,172**	**-12**	**25**	**71**	**40**

Figure 25. Lesser Black-backed Gull counts in 2023 across the UK. Counts are shown for all sites surveyed, with the size of the symbol proportional to the count of AONs recorded in 2023, and the colour according to the % change observed between 2023 and the last pre-HPAI count. SPAs listed in Table 40 are shown on the map.



5 Overall species summary

Table 41. Overall species summary, showing survey coverage in 2023 (number of sites and percentage of population recorded by Seabirds Count that was surveyed in 2023), overall % change in counts between the 2023 and baseline count across all sites surveyed in 2023, and number of sites with counts declining, remaining stable (between -10% and 10% change) and increasing. The percentage of total sites surveyed in each change category is shown in brackets[25]. Overall total or country % changes showing >10% decline are coloured red. The population trend between the Seabird 2000 (S2K) and Seabirds Count (SC) censuses is shown for each species as context, with up arrows indicating an increase of >10%, down arrows indicating a decrease of >10% and bidirectional sideways arrows indicating a change of between -10% and 10%.

High priority species	Country	# SMP sites	% of pop. counted	Overall % change	# (%) of sites declining by >50%	# (%) of sites declining by 11-50%	# (%) of sites remaining within 10%	# (%) of sites increasing by >10%	S2K to SC trend
Gannet	England	1	100	14	0	0	0	1 (100)	↑
	Scotland	11	70	-22	0	4 (36)	5 (45)	2 (18)	↑
	Wales	1	100	-54	1 (100)	0	0	0	↑
	UK	**13**	**75**	**-25**	**1 (8)**	**4 (31)**	**5 (38)**	**3 (23)**	↑
Great Skua	Scotland	355	81	-76	243 (79)	28 (9)	15 (5)	14 (5)	↑
	Northern Ireland	1	100	0	0	0	1 (100)	0	↔
	UK	**356**	**81**	**-76**	**243 (79)**	**28 (9)**	**16 (5)**	**14 (5)**	↑
Herring Gull	England	99	40	7	21 (22)	30 (31)	8 (8)	33 (34)	↓
	Scotland	74	18	-24	17 (23)	15 (20)	14 (19)	21 (28)	↓
	Wales	15	34	-6	1 (7)	6 (40)	4 (27)	3 (20)	↓
	Northern Ireland	3	62	42	0	0	0	3 (100)	↑
	UK	**191**	**27**	**-7**	**39 (21)**	**51 (27)**	**26 (14)**	**60 (32)**	↓
Kittiwake[26]	England	22	13	-18	5 (23)	8 (36)	0	8 (36)	↔
	Scotland	55	47	21	6 (11)	10 (18)	7 (13)	31 (56)	↓
	Wales	9	50	-17	1 (12)	4 (50)	0	3 (38)	↓
	Northern Ireland	5	81	-29	0	2 (40)	2 (40)	1 (20)	↑
	UK	**91**	**38**	**8**	**12 (13)**	**24 (27)**	**9 (10)**	**43 (48)**	↓

[25] Sites unoccupied in both the baseline and 2023 surveys are not included in calculation of % of sites within each percent change category.

[26] Overall % of population counted does not include sites where a full colony count was not possible, and only land counts were made. Data from these sites are included in overall % change and the numbers and percentages of sites within each change category.

High priority species	Country	# SMP sites	% of pop. counted	Overall % change	# (%) of sites declining by >50%	# (%) of sites declining by 11-50%	# (%) of sites remaining within 10%	# (%) of sites increasing by >10%	S2K to SC trend
Sandwich Tern	England	7	94	-40	1 (14)	3 (43)	2 (29)	1 (14)	⇔
	Scotland	2	95	-22	1 (50)	1 (50)	0	0	⇔
	Wales	1	100	-42	0	1 (100)	0	0	↑
	Northern Ireland	4	81	2	0	1 (25)	1 (25)	2 (50)	⇔
	UK	**14**	**92**	**-35**	**2 (14)**	**6 (43)**	**3 (21)**	**3 (21)**	⇔
Roseate Tern	England	1	98	-21	0	1 (100)	0	0	↑
	UK	**1**	**98**	**-21**	**0**	**1 (100)**	**0**	**0**	↑
Common Tern	England	34	26	-43	10 (32)	8 (26)	4 (13)	6 (19)	⇔
	Scotland	10	32	-29	5 (50)	4 (40)	0	1 (10)	↓
	Wales	4	98	-44	2 (50)	2 (50)	0	0	↑
	Northern Ireland	7	74	-47	2 (29)	4 (57)	0	1 (14)	⇔
	UK	**55**	**40**	**-42**	**19 (37)**	**18 (35)**	**4 (8)**	**8 (15)**	⇔
Arctic Tern	England	4	28	65	0	1 (25)	1 (25)	1 (25)	↑
	Scotland	43	19	-5	14 (38)	5 (14)	0	15 (41)	↓
	Wales	3	100	-6	0	2 (67)	1 (33)	0	↑
	Northern Ireland	3	28	-22	0	3 (100)	0	0	⇔
	UK	**53**	**31**	**-2**	**14 (30)**	**11 (23)**	**2 (4)**	**16 (34)**	↓
Guillemot[24]	England	13	49	-20	1 (8)	5 (38)	5 (38)	2 (15)	↑
	Scotland	69	47	2	5 (7)	20 (29)	12 (18)	29 (43)	↓
	Wales	16	31	8	1 (6)	5 (31)	4 (25)	6 (38)	↑
	Northern Ireland	1	96	-24	0	1 (100)	0	0	↑
	UK	**99**	**52**	**-6**	**7 (7)**	**31 (32)**	**21 (21)**	**37 (38)**	↓

Medium priority species	Country	# SMP sites	% of pop. counted	Overall % change	# (%) of sites declining by >50%	# (%) of sites declining by 11-50%	# (%) of sites remaining within 10%	# (%) of sites increasing by >10%	S2K to SC trend
Black-headed Gull	England	44	57	-9	14 (32)	7 (16)	6 (14)	15 (34)	↓
	Scotland	19	11	-18	5 (26)	3 (16)	0	9 (47)	↓
	Wales	3	72	-77	1 (33)	1 (33)	1 (33)	0	↓
	Northern Ireland	6	41	-9	1 (17)	3 (50)	0	2 (33)	↑
	UK	**72**	**50**	**-11**	**21 (29)**	**14 (19)**	**7 (10)**	**26 (36)**	↓
Great Black-backed Gull	England	53	75	-27	8 (15)	18 (34)	13 (25)	12 (23)	↔
	Scotland	104	13	-19	12 (12)	29 (28)	31 (30)	20 (19)	↓
	Wales	5	9	5	0	1 (20)	2 (40)	2 (40)	↑
	Northern Ireland	2	27	9	0	0	1 (50)	1 (50)	↑
	UK	**164**	**25**	**-20**	**20 (12)**	**48 (29)**	**47 (29)**	**35 (21)**	↓

Low priority species	Country	# SMP sites	% of pop. counted	Overall % change	# (%) of sites declining by >50%	# (%) of sites declining by 11-50%	# (%) of sites remaining within 10%	# (%) of sites increasing by >10%	S2K to SC trend
Arctic Skua	Scotland	228	48	-28	69 (48)	9 (6)	29 (20)	18 (12)	↓
	UK	**228**	**48**	**-28**	**69 (48)**	**9 (6)**	**29 (20)**	**18 (12)**	↓
Lesser Black-backed Gull	England	40	27	-19	15 (38)	7 (18)	6 (15)	10 (25)	↓
	Scotland	26	17	-58	9 (36)	7 (28)	1 (4)	5 (20)	↓
	Wales	12	13	-24	3 (25)	7 (58)	1 (8)	1 (8)	↓
	Northern Ireland	2	21	16	0	1 (50)	0	1 (50)	↑
	UK	**80**	**22**	**-25**	**27 (34)**	**22 (28)**	**8 (10)**	**17 (22)**	↓

6 Discussion

6.1 Overview of results

Our updated colony counts generally show a highly concerning picture across our target species at sites surveyed in 2023 when compared to pre-HPAI baseline figures, with extensive declines across species and sites. These declines are particularly alarming given that they either come on top of previous declines experienced by some species in the two decades prior to the HPAI outbreak, or have reversed trends of previously increasing populations for those few species which the census showed to be faring better. Nine species showed a decline of >10% in overall numbers counted across all UK sites: Great Skua (-76%); Common Tern (-42%); Sandwich Tern (-35%); Arctic Skua (-28%); Gannet (-25%); Lesser Black-backed Gull (-25%); Roseate Tern (-21%); Great Black-backed Gull (-20%) and Black-headed Gull (-11%); Table 41). Declines were largely consistent across all UK countries (with the exception of: Great Black-backed Gulls in Northern Ireland and Wales, where numbers remained relatively stable; Lesser Black-backed Gulls in Northern Ireland, where numbers increased; and Sandwich Tern in Northern Ireland, where numbers remained relatively stable). Declines were widespread, with seven species showing a decline of >10% at over half of sites surveyed across the UK: Great Skua (declined at 88% of occupied sites surveyed); Common Tern (71%), Lesser Black-backed Gull (62%), Sandwich Tern (57%), Roseate Tern (100%), Arctic Skua (54%) and Arctic Tern (53%). These declines were largely consistent across all UK countries (except for Lesser Black-backed Gull and Sandwich Tern in Northern Ireland and Arctic Tern in England). Kittiwake, Guillemot, Herring Gull and Arctic Tern showed a more mixed picture across the UK, with declines at some sites/countries and increases at others.

6.1.1 High priority species

Gannet suffered large declines between the pre-HPAI baseline and 2023 counts at several important colonies distributed across the UK range (-54% at Grassholm, -37% at Hermaness, -27% at Bass Rock and -23% at Sula Sgeir). However, the declines at most sites are likely to be worse than indicated, owing to the previously increasing population and the length of time since the baseline counts were made. As Gannets are not censused concurrently with the wider seabird census, with the last Gannet census taking place between 2013 and 2014, nearly a decade has elapsed between the baseline count and 2023 at some sites (where no more recent count is available). We therefore also compared 2023 counts with the predicted population estimates for 2021, produced using colony-specific average annual rates of change since 2003-05 by Wanless et al. (2023). At Bempton Cliffs, where a 14% increase was recorded between the pre-HPAI baseline count (made in 2017) and 2023, comparing 2023 counts to the predicted (larger) 2021 estimate instead showed a 22% decline. At all other Gannet SPAs with a baseline year prior to 2021, declines were an additional 3-12% when comparing to the predicted 2021 estimates than when comparing to the pre-HPAI baseline counts (made between 2014 and 2019). For example, for two of the largest colonies - Bass Rock and Grassholm - declines were 32% rather than 27%, and 57% rather than 54%, respectively (although note that the Bass Rock decline is currently based on a preliminary figure for the 2023 count).

Great Skua suffered a particularly severe decline across their range, with counts decreasing by >50% at 79% of sites surveyed, including within all SPAs hosting large populations of over 1,000 breeding pairs (Hoy, Foula, and Hermaness, Saxa Vord and Valla Field SPAs). Great Skua increased in numbers at some sites (14 sites; 5% of total), but these colonies were small, with a maximum of 20 pairs recorded in 2023. Overall numbers declined by 76% - by far the greatest reduction in overall numbers recorded across the target species - which is particularly concerning given the international importance of Scotland's Great Skua population, which accounted for around 55-60% of the global total prior to HPAI (Newton and Baker, 2023). The declines reported here reverse the previous trend of population increase (of 14%) over the last two decades.

Herring Gull numbers remained similar to those recorded pre-HPAI overall despite counts decreasing by >10% at 48% of sites. Within country, Herring Gull counts declined by 24% in Scotland, and increased by 42% in Northern Ireland, with both patterns mirroring those found by Seabirds Count. Numbers remained similar to those recorded pre-HPAI in England and Wales. Survey coverage was low for Herring Gull, with surveyed sites covering 27% of the UK population, excluding urban-nesting gulls which now account for around three quarters of the UK's Herring Gulls.

Kittiwake was the only species for which there was a greater number of sites overall that showed increased counts (44% of sites) than decreased (40% of sites). Kittiwake numbers decreased by 17-29% in England, Wales and Northern Ireland but increased by 21% in Scotland. For Scotland and Northern Ireland, this was the reversal of the trend seen between the last two censuses, which saw numbers decrease by 57% and increase by 33%, respectively. Again, the picture was very varied within country, with increases of over a third seen at several Scottish SPAs (Cape Wrath, Fowlsheugh, Marwick Head, North Caithness Cliffs, North Colonsay and Western Cliffs and St Kilda) while decreases of over a third were seen elsewhere in Scotland and Northern Ireland (Copinsay, Sumburgh Head and Rathlin Island). There was no obvious pattern to changes in abundance, with the variable pattern in observed change upheld at local scales.

Common Tern, **Sandwich Tern** and **Roseate Tern** all suffered large declines across their range in both overall numbers counted (42%, 35% and 21%, respectively) and when considering the proportion of sites where declines of >10% were observed (71%, 57% and 100%, respectively). The only exception was Sandwich Tern in Northern Ireland, where half of surveyed sites had a change of between -10 and 10% and half had increased counts. Numbers of all three tern species were increasing (Roseate Tern) or stable (Common and Sandwich Tern) in all UK countries prior to the HPAI outbreak, except for Common Terns in Scotland which had declined by 24% between censuses. **Arctic Tern** declined at over half of sites surveyed in 2023, but increased at a third of sites, and overall numbers in 2023 remained similar to numbers recorded prior to the HPAI outbreak of 2021-22. Arctic Tern counts increased overall at English sites by 65%, continuing a previous trend of increasing counts reported by Seabirds Count. Counts remained similar to those recorded pre-HPAI at surveyed sites in Scotland, though numbers had already declined substantially (by 54%) in Scotland over the last two decades (Win, 2023). It should also be noted that survey coverage

for Arctic Tern in Scotland, where the majority (59%) of the UK Arctic Tern population is found, was particularly low, with just 19% of the population counted in 2023. Numbers remained similar to pre-HPAI levels in Wales, arresting a previously increasing population trend, and decreased in Northern Ireland by 24%, following a previously stable trend.

Guillemot counts remained similar to those recorded pre-HPAI overall at surveyed sites across the UK (i.e., a change in population of between -10% and 10%), with declines at some sites and increases at others. By country however, overall counts showed decreases of >20% (England, Northern Ireland) or little change (Wales) where previously a strong increase of >50% had been recorded between censuses, and similar counts in Scotland following a large previous decline between censuses (Bennett, 2023). The picture was very varied within country, with e.g., increases of over a third seen at several Scottish SPAs (Cape Wrath, Fowlsheugh, North Caithness Cliffs and St Kilda) while decreases of over a third were seen elsewhere within Scotland (Copinsay, Forth Islands, St. Abb's Head to Fast Castle SPAs).

6.1.2 Medium priority species

Black-headed Gull showed widespread decline across the UK, decreasing at 49% of sites surveyed, and with an overall decline in counts of 11%. The decline was particularly severe in Wales, where counts decreased by 77%. Counts increased at a third of sites across the UK however, including within the Ribble and Alt Estuaries SPA, where counts increased by 107% between 2021 and 2023 (though the colony was previously much reduced following a reduction of 94% between Seabird 2000 and Seabirds Count). Increases appeared to be more concentrated at coastal sites, with inland sites either declining or showing no change in counts. For England and Wales, this was the opposite trend to that reported for Seabirds Count (Dunn & Francis, 2023). These declines come on top of previous widespread declines reported by Seabirds Count, with numbers decreasing by 29% across the UK between Seabird 2000 and Seabirds Count.

Great Black-backed Gull showed widespread decline, with decreases of >10% recorded at 41% of sites, and an overall decline in counts of 20%. This follows an overall decline of 52% over the last two decades reported by Seabirds Count. The overall decline was driven by decreases in England and Scotland, of 27% and 19% respectively, continuing previous declines. Numbers in Wales and Northern Ireland remained similar to those pre-HPAI, arresting a previous trend of population increase. Survey coverage was low for Great Black-backed Gull, covering 25% of the UK population.

6.1.3 Low priority species

Arctic Skua showed widespread declines, with counts decreasing by >50% at 48% of sites surveyed. At 46 sites (32% of sites surveyed) this represented a reduction of one AOT, with a baseline count of one and a 2023 count of zero. However, Arctic Skua was already one of the UK's rarest seabirds and the majority of surveyed sites (68%) that were occupied in the latest (Seabirds Count) census had just one breeding pair,

with the UK population already having fallen by 66% since the Seabird 2000 (1998-2002) census and by 79% since the SCR (1985-88) census (Perkins, 2023).

Lesser Black-backed Gull showed widespread decline, with decreases of >10% recorded at 62% of sites, and an overall decline in counts of 25%. Within country, declines were particularly severe in Scotland (58%), though England and Wales also saw declines, of 19% and 24%, respectively. These declines continue from large previous declines reported by Seabirds Count, which saw numbers of natural-nesters decrease by 49% since Seabirds 2000. Numbers in Northern Ireland increased or remained similar to pre-HPAI counts, largely due to higher counts at Rathlin Island in 2023 compared to 2021 and continuing the previous trend of an increasing population. Survey coverage was lowest for Lesser Black-backed Gull (22%, excluding urban nesting gulls which now account for around three-quarters of the UK's Lesser Black-backed Gull population).

6.2 Interpreting population changes

When interpreting the population changes reported here it is important to take account of several factors:

i. Population changes need to be interpreted within the context of pre-existing population trends. Some species were already declining or increasing at some sites, so there is a need to assess whether the scale of declines/increases are in line with what might have been expected given background trends.

ii. The changes reported here occurred over varying periods of time due to differences in the number of years prior to the HPAI outbreak that a site/species was last surveyed. The number of years since the baseline count was made at each site should be accounted for in any formal comparative analysis between sites or species, (and we plan to do so in further analysis).

iii. The reported population changes are based on a sample of sites. Attention needs to be given to the level and spatial distribution of population coverage achieved, as the results may not be representative for the whole population. This risk decreases as coverage increases so for those species with high coverage there will be more certainty about population changes.

iv. The difficulty associated with accurately quantifying populations from single visit whole-colony census counts varies with species (Walsh et al. 1995) and reported changes in numbers at individual sites should be viewed in this context. Guillemot, which breeds on densely packed cliff ledges, is one species which is particularly difficult to accurately count, owing to substantial variation in daily cliff attendance by non-breeders and 'off-duty' adults (Walsh et al. 1995). Guillemot colonies can contain several thousands of individuals, and changes in reported counts at large colonies (e.g., Fowlsheugh, the largest colony surveyed in Scotland) can have a disproportionate effect on summary totals. Terns and Black-headed Gulls are mobile species with low site fidelity, meaning that the same breeding population may use different breeding sites in different years. For these species, it is important not to focus overly on changes at particular sites therefore, but rather on overall trends.

v. The impact of the 2021-22 HPAI outbreak for many species may be worse than appears from counts at breeding colonies in 2023, as the loss of breeding adults is likely to be somewhat buffered by the recruitment of previous non-breeders to the breeding population. For example, though counts of breeding adult Roseate Terns on Coquet Island in 2023 indicated a decline of 21% since 2021, the 2022 HPAI outbreak was known to have killed at least 29% of breeding adults (RSPB, 2022). In addition, there may be knock-on effects on productivity in subsequent years if there has been large-scale recruitment of inexperienced individuals to breeding populations, though monitoring productivity was beyond the scope of this project.

6.3 Relating population changes to the HPAI outbreak

Notwithstanding these caveats, the situations for Great Skua, Roseate Tern and Gannet are undoubtedly the most clear-cut in terms of relating the recorded population changes to the HPAI outbreak. All three species had previously been increasing in the UK prior to the HPAI outbreak (by 14%, 114% and 39% for Great Skua, Roseate Tern and Gannet, respectively, since the Seabird 2000 census; Burnell et al. 2023). Our results show that these species experienced declines of 76%, 21% and 25%, respectively, across 81%, 98% and 75% of their UK population within a period of just 2-9 years. Combined with the unprecedented scale of mortality reported for these species during the HPAI outbreak in 2022[27] and the number of coincident positive test results[28], there is little doubt that these declines are largely attributable to HPAI. Similarly, Sandwich Tern and Common Tern numbers had previously been stable (i.e., a change in population of between -10% and 10% since the Seabird 2000 census; Burnell et al. 2023), and the 35% and 42% declines that we report here, along with the scale of the mortality reported in 2022[29], also indicate these decreases are likely to be largely driven by HPAI.

However, all our other target species were already undergoing declines across the UK in the two decades prior to the HPAI outbreak (ranging from -11% for Guillemot to -66% for Arctic Skua and -79% for Leach's Storm-petrel; Burnell et al. 2023). Factors driving these declines are unlikely to have abated during the HPAI outbreak of 2021-22. For example, since the completion of the Seabirds Count census, a mass mortality event known as a 'wreck' during the autumn and winter of 2021-22 impacted several species, mainly young Guillemot, with starvation the most common cause of death (Christensen-Dalsgaard, 2022). Therefore, it is more complicated to assess the degree to which HPAI has exacerbated these further declines. Further analysis planned by RSPB will use these data to model population changes across larger geographic

[27] Mortality records from 2022 showed minimum losses equivalent to 11% of the UK breeding population of Great Skua (Falchieri et al. 2022), the loss of at least 90 of the 308 breeding Roseate Terns on Coquet Island (RSPB, 2022) and minimum losses of 11,175 Gannets in Scotland alone (NatureScot, 2023).

[28] https://www.gov.uk/government/publications/avian-influenza-in-wild-birds

[29] Mortality records from 2022 showed losses equivalent to at least 9% of the adult breeding populations of Sandwich Tern and Common Tern in England (Natural England, unpublished data), and minimum losses of 677 each of Common Tern and Sandwich Tern in Scotland (NatureScot, 2023).

scales (e.g., region, country) and compare with previous trends to help us better understand the scale of the population changes reported here in relation to background trends.

The threat from HPAI unfortunately comes on top of a long list of existing threats to the UK's seabirds. This includes predation by invasive non-native species, loss of breeding habitat, effects on forage fish availability through climate change and fishing, mortality from severe weather (e.g., winter storms and heat stress), accidental entanglement in fishing gear, and threats from offshore energy developments such as collision with wind turbine blades and displacement from foraging grounds (Bolton and Baker, 2023). The impacts of such existing threats are already evident from the worrying declines that emerged from the recent Seabirds Count census, which showed that over half of the UK's breeding seabird species had declined over the previous two decades (Burnell et al. 2023).

The more recent, much shorter-term declines reported here (covering a period of between 2 and 9 years depending on species, with a median of 4 years across all sites and species) are therefore particularly alarming given that they either further these existing downwards trends or have reversed trends of previously increasing populations for those few species which were faring better. This includes several species for which the UK hosts an internationally important proportion of the global population (Great Skua, Gannet, Guillemot, Herring Gull and Lesser Black-backed Gull). Furthermore, the declines reported here only take account of HPAI-related mortality that occurred between 2021 and early 2023 and will not reflect further population impacts of the subsequent HPAI mortalities of 2023 which largely occurred after colony counts were completed (see next section).

Seabirds are usually long-lived species, taking several years to mature to breeding age, and most species only rear one or two chicks per year. Given that seabird adult survival rates are normally very high (83-94% for our target species; Horswill and Robinson, 2015), the levels of HPAI-related additional mortality we have witnessed so far, combined with their slow breeding rate, will make it particularly difficult for populations to recover. Although it is promising that there is evidence that some seabirds have showed signs of developing immunity, so far this has only been demonstrated in Gannets (Lane et al. 2023), European Shags *Gulosus aristotelis* (Loeb, 2023) and Sandwich Tern (Knief et al. 2023). It remains unknown what proportion of species and individuals might become immune, how long immunity might last, how specific it is to a particular genotype or what the longer-term impacts might be on survival and productivity.

6.4 Effects of the 2023 HPAI outbreak on colony counts

A further outbreak of HPAI occurred at seabird breeding colonies in 2023, with a different genotype predominantly circulating to that of 2022 (Byrne et al. 2023, EFSA et al. 2023). The 2023 outbreak followed a different pattern of geographical spread to that observed in 2022, with a shift in which species were mainly affected. Mass mortalities in 2023 were observed from March onwards across England, Wales, and Northern Ireland, initially confined to Black-headed Gulls but with significant mortalities also then following among Sandwich, Common and Arctic Terns. In Scotland, the first

positive tests for HPAI in seabirds were not recorded until the last week of June (these were for Black-headed Gulls and Sandwich Terns; APHA, 2023), whereas in 2022 impacts in UK seabirds were first observed in Scotland in the spring (initially in Great Skuas and Gannets). It was not until June, July, and August that the virus started to affect Kittiwakes and Guillemots in their thousands across the UK and unlike in 2022, Great Skuas and Gannets appeared to suffer few mortalities in 2023[30].

This meant that, as far as we are aware, very few surveys were hindered by the 2023 HPAI outbreak in terms of HPAI-related site access restrictions and most were completed before any large-scale HPAI related mortalities occurred during the 2023 breeding season. A notable exception was Coquet Island where access by RSPB staff was restricted, resulting in the anticipated counts of Common Tern, Arctic Tern, Black-headed Gull and Kittiwake not being achieved (though a count of Roseate Tern was completed before restrictions were in place). Additionally, there may be some sites at which counts for some species, particularly Black-headed Gull and terns, may have included some HPAI impacts from 2023 where mortalities occurred early in the season. However, we believe (based on feedback from surveyors at priority sites) that for the most part, the 2023 counts represent the numbers of birds attempting to breed in 2023 prior to any further mortalities caused by HPAI during the 2023 breeding season. Importantly, this also means that impacts of HPAI on the breeding populations of species further affected by the 2023 outbreak are likely to be worse than those indicated here, and as the outbreak is ongoing, there is potential for further impacts in future years.

6.5 Survey coverage

This project considerably enhanced routine seabird count survey effort in 2023. The amount of survey effort additional to business-as-usual monitoring that was required to fill key gaps varied between species and we prioritised ensuring greatest population coverage for the most severely HPAI-affected species in 2022. Thus, the highest survey coverage (in terms of estimated percentage of the UK population surveyed) across our target species were for Great Skua (81%), Gannet (75%), Roseate Tern (98%) and Sandwich Tern (92%). At least fifty percent population coverage was achieved for Guillemot (52%) and Black-headed Gull (50%), while the lowest coverage was for Lesser Black-backed Gull (22% of the natural-nesting UK population, and <5% overall including urban-nesters). These values are based on the percentage of the population hosted at the surveyed sites at the time of the Seabirds Count census. Counts were obtained within 72 SPAs for at least one target species (a total of 255 SPA*species combinations) in 2023. For most species and sites, surveys were completed before any large-scale HPAI related mortalities occurred during the 2023 breeding season.

6.6 Further monitoring

The data presented in this report provide a valuable snapshot of the immediate population changes that have occurred since just prior to the 2021-22 HPAI outbreak for specific species and sites. It is imperative that further counts are undertaken in the

[30] See Defra's interactive dashboard showing detections of Avian Influenza in wild birds.

coming years, both to fill remaining coverage gaps, but also to provide a timeseries of data to help us understand the longer-term impacts of this disease. In 2023, our focus was on obtaining data on breeding abundance as this parameter was considered the most useful to assess the immediate impacts of the large-scale mortalities witnessed in 2022. However, there is an urgent need to also scale-up monitoring of other demographic parameters such as productivity and survival to obtain a more holistic understanding of how seabird populations respond to HPAI and to help guide where conservation actions for aiding resilience-building and population recovery are best focused (see Pearce-Higgins et al. 2023).

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[31] The Offshore Wind Evidence and Change (OWEC) programme is an ambitious strategic research and data-led programme, led by The Crown Estate, in partnership with DESNZ and Defra. Its aim is to facilitate the sustainable and coordinated expansion of offshore wind to help meet the UK's commitments to low carbon energy transition whilst supporting clean, healthy, productive, and biologically diverse seas.

[32] The Scottish Marine Energy Research (ScotMER) programme aims to facilitate collaboration with industry, SNCBs, other government departments, researchers, NGOs, and other interested stakeholders, across Scotland, the UK, and Europe, to conduct research that will aid further understanding of the environmental and socio-economic impacts of offshore renewables developments.

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