

The status of seabirds breeding in the Isles of Scilly 2023

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Summary

This report presents the results of a comprehensive breeding survey of all the seabirds breeding in Scilly in 2023. The survey was carried out by the Isles of Scilly Wildlife Trust and principally funded by Natural England, as part of the mNCEA programme, with substantial match-funding through the Isles of Scilly AONB Partnership, along with smaller sums provided directly by IOSWT and the RSPB, including HPAI funding to protect members of staff while working. The main objective was to obtain an accurate estimate of the population sizes and distribution of all the breeding seabirds in Scilly and to compare them with the 2015 Special Protection Area (SPA) count as well as with baseline data for the Isles of Scilly SPA and Sites of Special Scientific Interest (SSSIs). These figures can then be used to assess the condition (population size and variety) of the bird interest features within the SPA and SSSIs and to direct future conservation work in Scilly. In total 6,821 territories of 12 species of seabird were recorded from 50 rocks and islands, achieving complete coverage of all islands (see Map 1 in Appendix 2).

- A total of 6,503 seabird territories were recorded within the Isles of Scilly SPA (with 318 outside of the designated area), and a total of 6,603 seabird territories were recorded within the 26 Isles of Scilly SSSIs (with 218 recorded outside these designated sites).
- The archipelago supports important populations of a number of seabird species:
 - internationally important numbers of storm petrel, shag (one of the largest colonies in the UK), great black-backed gull (fourth largest in UK), and lesser black-backed gull:
 - regionally important numbers of fulmar and puffin.
- The overall number of seabirds breeding within the Isles of Scilly archipelago in 2023 (6,821 pairs) has decreased by 18% in the last eight years. There has been a 27% decline in the SPA population since the SPA baseline (9,378 pairs in 2000) and a 44% decrease in the size of the total seabird population since 1983 (the date of baseline data used for most SSSI notifications on Scilly in 1986) when 12,063 breeding pairs of seabird were recorded (see Figure 1 in section 3).
- The diversity of the seabird assemblage has reduced from 13 to 12 species since 2015, with common terns being lost as a regularly breeding species. Sandwich and roseate terns, only intermittent breeders into the 1990s, have also been lost and 2021 was the first year in living memory that kittiwakes failed to breed in Scilly.
- The numbers of 5 of the 12 main species have shown increases in the last nine years (see Table 4 | Section 3).
- Manx shearwaters have shown a massive increase in numbers across the islands in the last eight years; doubling from 523 pairs in 2015 to 1061 in 2023. This is likely due to increases in regional shearwater populations following removal of rats from Lundy and slightly further afield in Wales as well as an increase in 'home-grown' birds following rat removal on St Agnes and Gugh in 2013/14.
- There continues to be a marked increase in the numbers of all three auk species across the islands, particularly guillemots.

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- In addition to the success stories above, there have been many worrying declines of seabirds, with the other 7 of the 12 species declining since 2015. These include:
 - Five species of seabirds across all the islands have declined in numbers by more than 20% in just the last nine years; lesser black-backed gull (-58%), herring gull (-40%), shag (-36%), great black-backed gull (-38%) and kittiwake (-72%);
 - Huge reductions in lesser black-backed gulls at two of their 3 main breeding sites in Scilly are the most apparent changes with Samson going from 978 pairs in 2015 to just 161 pairs (-84%) in 2023 and St Helen's from 448 to 30 pairs (-93%);
 - Common terns have been lost as a regular breeder (breeding attempts only recorded in one of the last 6 years) and kittiwakes look set to follow, with the first year of no-breeding in Scilly recorded in 2021;
 - In terms of overall numbers, four of the seven SSSIs listed for bird interest have shown declines (see Table 6a in Section 3) in the last 8 years; St Helen's group (-53%), Pentle Bay & Round Island (-18%), Samson Group (-74%) and Norrard Rocks (-15%) mostly relating to the loss of gulls and shags.
- The trends in the numbers of the different species within the assemblage are mostly in line with national trends as based on the latest national survey The Seabirds Count (2015-2021).
- Roseate tern has not been recorded breeding in Scilly since 1995, however Scilly is still considered regionally important because the terns are a target species for re-establishment here.
- Although there is some good news, taken as a whole the 2023 survey provides an alarming assessment of the state of the SPA for seabirds – with significant declines in the overall assemblage, individual species and within certain island groups. In particular, significant declines relate to surface feeding gulls and terns suggesting that food availability is a major issue.
- The causes of decline are many and complex and many relate to wider changes around climate change and fishing policy which will need wider solutions. Further management, in particular continuation of the predator control programme as well as other habitat and people management as necessary is required to reverse these declines.

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Table 2 Summary of changes in SSSI Seabird Interest Features

SSSI notified specifically for seabird interest	SSSI seabird notified features	Breeding pairs 2023	Breeding pairs 2015/16	Breeding pairs 1983	% change since SSSI notification
Annet	Manx shearwater	426	229	123*	+246%; Favourable
	Great black-backed gull	151	235	231	-35%; Unfavourable
	Storm petrel	1053	778	938*	+12%; Favourable
	Puffin	38	31	67	-43%; Unfavourable
	Common tern	0	2	5	Lost; Unfavourable
	Lesser black-backed gull	5	1	898	-99%; Unfavourable
St Helen's (including Men-a-vaur)	Fulmar	11	24	16*	-31%; Unfavourable
	Guillemot	60	110	117*	-49%; Unfavourable
	Razorbill	100	88	101*	-1%; Favourable
Samson	Common tern	0	10	44	Lost; Unfavourable
Pentle Bay & Round Island	Storm petrel	105	172	183*	-43% Unfavourable
	Roseate tern	0	0	0*	Lost; Unfavourable
	Common tern	0	0	39*	Lost Unfavourable
Chapel Down (St Martin's)	Kittiwake	0	0	27*	Lost; Unfavourable
Norrard Rocks	Cormorant	0	0	27	Lost; Unfavourable
Western Rocks	Shag	235	350	466	-50%; Unfavourable

*Figures from Seabird 2000 are used as a proxy for 1983 (prior to 1999 counts could not be separated into component SSSIs or non-comparable methods were used for storm petrel and Manx shearwater)

1 Introduction

The Isles of Scilly comprise five inhabited islands and more than 300 uninhabited islands, islets and rocks, situated 40km west of the south-west tip of mainland Britain. They are the sole European example of a Lusitanian¹ semi-oceanic archipelago (UK Biodiversity Steering Group 1995).

The archipelago supports a greater diversity of seabirds than any other site in England, with nearly 7,000 pairs of 12 species of regularly breeding seabird. It supports internationally important populations of storm petrel, shag and lesser black-backed gull, and nationally important populations of great black-backed gull, all of which are listed as features within the updated SPA designation (Natural England 2020). It is one of only two sites in England where Manx shearwater breed (the other being Lundy) and three for storm petrel (Scilly, Lundy & The Brisons in Cornwall).

Britain and Ireland support more than 95% of the bio-geographical populations of Manx shearwater and 55-60% lesser black-backed gull (*graellsii* subspecies), as well as over 30% of European shag, European storm petrel, herring gull, guillemot and razorbill populations, and so has a particular responsibility for their protection. Changes in the status of these populations and measures to protect them can be of critical importance for their conservation.

Understanding the factors responsible for driving change in seabird populations is vital for informing management actions. Full counts like this one provide a reference to assess the effectiveness of conservation actions and provide an evidence base for building answers to questions such as the impact of the climate crisis on seabird distribution, the impact of non-native predators on abundance and the effects of fisheries practice. This full archipelago survey can also serve as a timely baseline for the impact of expanding offshore marine renewables and the spread of HPAI.

The Isles of Scilly are designated as a Special Protection Area, Ramsar site, Special Area of Conservation, Marine Conservation Zone and contain 26 component Sites of Special Scientific Interest in recognition of this international and national interest.

1.1 Objectives

- To present the results of the 2023 all-islands seabird count.
- To present comment on the status, distribution, population and trends of breeding seabirds in the Isles of Scilly, especially in relation to the condition of the bird interest features of designated sites and wider national trends.
- To help identify key areas of conservation action required to inform the Isles of Scilly Seabird Conservation Strategy.

¹ Denoting flora or fauna characteristically found only in the warm, moist, west-facing coastal regions of Portugal, Spain, France and the west and south-west coasts of Great Britain and Ireland.

2 2023 Isles of Scilly seabirds survey

2.1 Background

It is important to maintain regular all-species population counts across the archipelago to meet both SPA and SSSI condition reporting requirements. The Isles of Scilly Seabird Conservation Strategy 2023-28 (IOSWT, RSPB, NE & IOS IFCA 2022) recommends a complete seabird survey every six years to integrate with national survey cycles. The last full survey was carried out in 2015/16 to fit into the national 'Seabird Count' survey. This 2023 survey was coordinated by the IOSWT and funded by Natural England and the IOS AONB Partnership (now the IOSNL), with match funding provided by the IOSWT and the RSPB.

2.2 Methods

Counting methods, as outlined in Walsh et al. (1995) were followed and the results are therefore directly comparable with those of Seabird 2000 and the 2006 and 2015/16 SPA Surveys. Further details are given in Appendix 3, with special reference to the counting of auks, gulls and burrow-nesting Manx shearwaters and storm petrels. To minimise errors with birds moving between sites, as occurs in Scilly between years, as far as possible all species were covered on all islands during April to July 2023. Unfortunately, we were not able to land on Men-a-vaur at all in 2023 and failed in a second landing on Scilly Rock in July for storm petrels. For these islands we were able to estimate numbers from the water and by looking at previous counts and overall trends (see Appendix 3 for full details). Survey work in Scilly was co-ordinated by the IOSWT and completed by IOSWT, RSPB and NE staff and volunteers.

2.3 Results

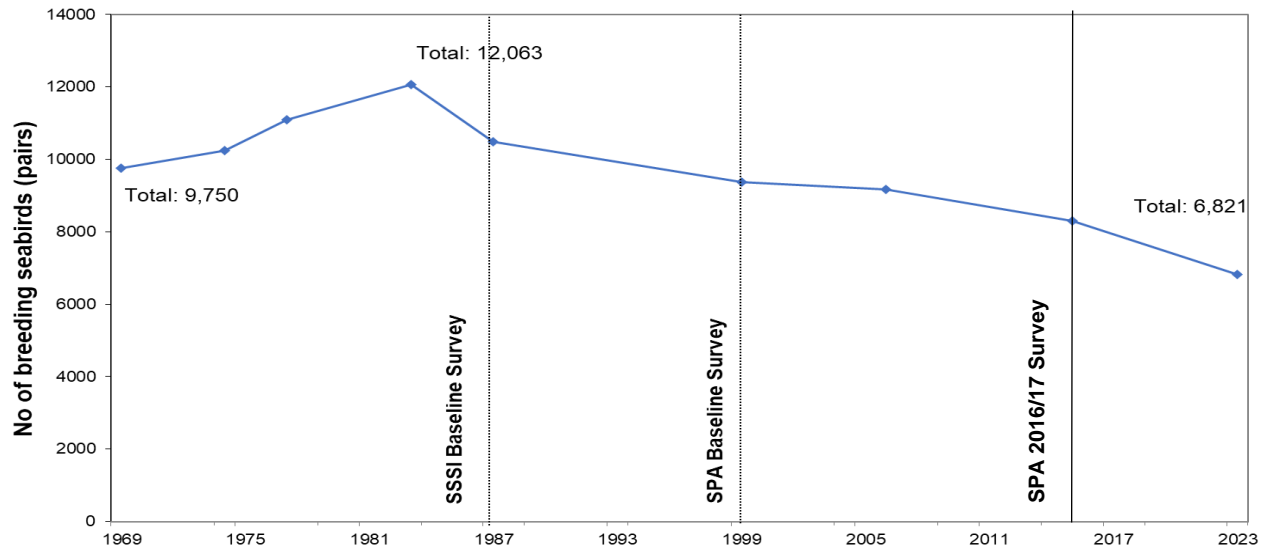
A total of 60 rocks and islands were visited or counted from the sea, achieving complete coverage of all islands believed to be occupied by seabirds in 2023. In total 6,821 territories of 12 species of seabird, were recorded across 51 islands. The full results are presented in Table 1 (Appendix 2) and in the individual species accounts. They are interpreted within the content of historical information and with reference to the qualifying interest of the islands' SPA and SSSIs.

3 Seabird diversity: an overview of seabirds breeding in Scilly

A total of 6,821 pairs of seabirds were recorded breeding in Scilly in 2023. This represents a decrease of 17.5% since the last full count in 2015/16 and 27.3% in the last 25 years. For the Special Protection Area (SPA) the seabird assemblage (see Appendix 6) has declined by 30% since the baseline survey in 1999/2000.

Of the 13 species of seabird that regularly bred in Scilly at the time of the last SPA survey, common tern has become only an intermittent breeder and 7 of the remaining 12 have decreased in numbers in the past nine years (with the largest decreases of 58% and 72% seen in lesser black-backed gull and kittiwake respectively).

Figure 1 Species assemblage total 1969-2023



3.1 Most abundant and most widespread seabird species

Table 3 ranks species according to their distribution and abundance during the 2015/16 all islands seabird survey. The most widespread species is now the great black-backed gull, present on 34 rocks and islands (68% of the 50 seabird occupied islands). In 2015/16 the most widespread species was the herring gull, but in 2023 it was present on 33 islands or rocks – having been lost from 14 others. This pattern of distribution contraction is seen across 7 of the 12 species including the great blacked gull, with only guillemots showing a modest range expansion to a couple of new sites.

Since 2015/16, numbers of storm petrel and Manx shearwater have both overtaken those of lesser back-backed gull, which was previously most abundant species. This is due to the combination of increases in populations of the former and decreases in the latter. The numbers of storm petrel, Manx shearwater, lesser black-backed gull and shag each represent more than 10% of the overall breeding assemblage. Manx shearwaters are new to this list in 2023. The numbers of great black-backed gull have dropped below the 10% threshold in the last 8 years.

Table 3 Abundance and distribution of breeding seabird species in Scilly

ABUNDANCE		DISTRIBUTION		
Species	No. of pairs	Species	No. of islands 2015/16	No. of islands 2023
Storm petrel	1,603	Great black-backed gull	45	34
Manx shearwater	1,061	Herring gull	47	33
Lesser black-backed gull	1,040	Lesser black-backed gull	30	27
Shag	655	Shag	31	26
Great black-backed gull	607	Fulmar	18	16
Razorbill	529	Razorbill	16	16
Guillemot	497	Storm petrel	14	14
Herring gull	336	Manx shearwater	10	10
Fulmar	242	Puffin	10	9
Puffin	187	Guillemot	5	7
Cormorant	43	Cormorant	3	3
Kittiwake	21	Kittiwake	1	1
Common tern	0	Common tern	2	0
Total	6,821	Total seabird islands	55	50

3.2 Important breeding seabird populations

Taking the definition for international or national importance as the population total exceeding 1% of the NW European or UK total respectively, and regional importance as exceeding 10% of the south-west total (based upon the Seabirds Count national surveys covering the counties of Isles of Scilly, Cornwall, Devon, Dorset, Wiltshire, Bristol and Avon and Gloucestershire), Scilly supports important populations of a number of different seabird species:

- internationally important: storm petrel, shag and lesser black-backed gull;
- nationally important: great black-backed gull;
- regionally important: fulmar, common tern and puffin.

3.3 Changes in the seabird breeding community

Fulmars first colonised the islands in 1951 and increased rapidly in line with national trends. After reaching a peak of 286 pairs in 2015, numbers have taken a downturn in line with elsewhere in the south-west and nationally.

This survey represents the fourth quantitative survey for storm petrels and Manx shearwater in Scilly so that we can start to get a good idea of trends in numbers. Both of these burrow-nesting species appear to be increasing, with Manx shearwaters numbers increasing by as much as five-fold since 2000 to 1,061 pairs (15.6% of the total assemblage) and storm petrels increasing from 1,475 to 1,603 pairs in the same time (now 23.5% of the total assemblage). This is in line with wider national trends and strongly influenced by trends at other nearby island populations where rats have been removed (Lundy, Ramsey).

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Numbers of cormorants have remained remarkably similar in Scilly between 40 and 60 pairs since records began in the 1940s. The number of shags breeding in Scilly has shown a general decline since a peak of 1,470 pairs in 1977. This decline has accelerated in the last 8 years with breeding pairs now down to their lowest recorded level at 655 pairs (9.6% of the total assemblage). Nationally cormorants have been increasing, whereas shags have shown large declines.

In line with national trends, all the large gull species increased in Scilly between the 1920s and 1980s and are now widespread throughout the islands. Also in line with national trends, lesser black-backed gulls (for which Scilly is internationally important) have been in decline since a peak of 4,050 pairs in the early 1980s. A rapid acceleration of this trend in the last 8 years brings the current total to just 1,040 pairs (15.2% of the total assemblage).

A sustained decline in the numbers of breeding herring gulls in the last 35 years is also of concern, although this reduction is also in line with national trends. Great black-backed gulls have also been in general decline since the 1970s and despite an apparent upturn in 2015, the current count of 607 pairs is the lowest recorded. Kittiwakes returned to breed in Scilly in 1938 after an absence of nearly 40 years and increased steadily through the 1970s. Since the 1980s though, they have declined steeply, with no breeding recorded at all in 2021 and just 21 pairs nesting at a single site in 2023. This steep decline is mirrored across the region and much of the British range of kittiwake.

Numbers of common terns have decreased steadily since a peak of 210 pairs in the early 1980s. In recent years they have only bred intermittently, attempting nesting only 3 of the last 8 years they can no longer be classed as a regular breeder for Scilly. There have been no recent breeding records for roseate, Sandwich or Arctic terns in Scilly.

In contrast with most other groups, auks in Scilly appear to be doing well. In line with regional trends, the numbers of razorbills have increased steadily in Scilly from the early 1980s as have guillemots with both at their highest recorded levels at 529 and 497 territories respectively in 2023. Although numbers of puffins in Scilly were formerly huge, there were enormous losses between the 1920s and 1950s across the region. Numbers appeared to stabilise in Scilly through the 1970s and 1980s and have remained relatively stable at 170-190 pairs for the last 25 years. Across the region puffins have also increased, in a large part due to uplift on Lundy following rat removal.

There has been a complex pattern of change in the seabird community in Scilly, so detailed accounts are presented here for the individual species. Most species have changed in line with national and regional trends. The reasons for changes in numbers differ between species and relate to regional/global issues as well as more local factors operating on the breeding grounds in Scilly. These are examined in detail in the discussion.

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Table 4 Summary of the status of the seabirds breeding in Scilly 2023

Species	Breeding pairs 2023	% change since 2015	Longer term Population Trends
Overall Assemblage	6,821	Down 18%	Declining since peak of 12,063 pairs of breeding seabirds in 1983. Decline very much driven by falling gull numbers
Storm petrel	1,603	Up 20%	4th full playback survey - numbers increasing and now the most numerous species in assemblage. 66% of total nests are on Annet
Manx shearwater	1,061	Up 101%	Increasing nationally, linked to rat removal projects (Lundy, Ramsey). Numbers on St Agnes & Gugh have increased from 22 pairs before the 2013/14 rat eradication to 200 in 2023. Still 340 pairs attempting to breed at sites within Scilly with rats – including 115 pairs on St Helen's.
Lesser black-backed gull	1,040	Down 58%	Sustained and steep decline since peak of 4050 pairs in 1983. Since 2015 big losses from Samson (978 to 161 pairs) and St Helen's (448 to 30 pairs)
Shag	655	Down 36%	Relatively stable up to 2015, large declines in last 8 years in line with trends in big colonies in Scotland (Foula) and NE (Farnes) Scilly now the biggest colony in UK
Great black-backed Gull	607	Down 38%	Increasing up to 2015, downturn in last 8 years in line with UK trends for decline since 2000. Recently added to SPA designation as >10% of assemblage
Razorbill	529	Up 12%	Massive drop after maximum count of 597 in 1969-70, continuous steady increase and expansion of sites since then up to present
Guillemot	497	Up 71%	Sustained and more recently rapid increase in line with national trends. Gorregan is a particular stronghold – and very difficult to count as a result!
Herring gull	336	Down 40%	Sustained steep decline since peak of 2249 pairs in 1974. Red listed in 2009 for declines UK wide. 20 pairs on rooftops in Hugh Town successful, over whole of islands number of sites contracting with numbers
Fulmar	242	Down 16%	First bred in Scilly 1951, sustained massive increase until 2015, downturn since then in line with national trends. Poor breeding success recorded Menawethan & Daymark
Puffin	187	Up 12%	Current population significantly smaller than historical records of 'puffin town' on Annet in early 1900s, but stable since 2000. Mincarolo has emerged as the most important site in recent years
Cormorant	43	Down 19%	Generally stable at at 50 pairs, just 3 breeding sites Melledgan, White Island and Great Ganinnick
Kittiwake	21	Down 72%	Sustained and steep decline since peak of 861 pairs in 1983. Previously 6 sub colonies reduced to just one site. Repeated breeding failures and 2021 the first year with no recorded breeding attempts

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Common tern	0	Loss	A regular breeder since the 1940s; numbers peaked at 210 in 1983 with steady decline since. Repeated breeding failures, associated with very low or late settlement. No breeding attempts recorded in 4 of the last 6 years.
Sandwich tern	0	Loss	An occasional breeder for much of the time since 1880. No breeding recorded since 2006 (1 pair)
Roseate tern	0	Loss	Last recorded breeding in Scilly 6-8 pairs 1992, no proof of breeding since 1995.

3.4 Changes in the seabird interest features of the SSSIs

Of the 26 SSSIs in the Isles of Scilly, 16 supported breeding seabirds in 2015/16. However, only seven of these have seabirds as part of their qualifying interest – see Table 5.

Table 5 Summary of SSSI seabird notified features and seabird species present breeding

Site of Special Scientific Interest	SSSI seabird notified features	Species present and surveyed in 2023
Annet	Common tern, GBBG, LBBG, Manx shearwater, Puffin, Storm petrel	GBBG, LBBG, Manx shearwater, puffin, storm petrel, razorbill, fulmar, shag, HG (kittiwake, cormorant & roseate tern not present); common tern lost since 2015/16
Chapel Down (St Martin's)	Kittiwake	Fulmar, Manx shearwater, LBBG, GBBG, HG, (Kittiwake not present)
Norrard Rocks	Cormorant	Storm petrel, LGGB, GBBG, Shag, Fulmar, HG, guillemot, razorbill, puffin (cormorant not present)
Pentle Bay, Merrick & Round Island	Common tern, Roseate tern, Storm petrel	Fulmar, Manx shearwater, shag, LBBG, GBBG, HG, storm petrel (common tern, roseate tern not present)
Samson (with Green, White, Puffin & Stony Islands)	Common tern	LBBG, GBBG, shag, fulmar, HG, cormorant, common tern lost since 2015/16
St Helen's (with Norwethel, Men-a-vaur & Peasehopper)	Fulmar, Guillemot, Razorbill	Storm petrel, LBBG, GBBG, shag, Manx shearwater, puffin, HG, fulmar, guillemot, razorbill
Western Rocks	Shag	Storm petrel, LBBG, GBBG, cormorant, fulmar, HG, puffin, razorbill, guillemot, shag
Big Pool & Browarth (St Agnes)	None	HG
Castle Down (Tresco)	None	Manx shearwater
Eastern Isles	None	Fulmar, Manx shearwater, cormorant, shag, LBBG, GBBG, HG, guillemot, razorbill, puffin
Gugh	None	Storm petrel, LBBG, GBBG, Manx shearwater, fulmar, HG
Shipman Head & Down (Bryher)	none	Shag, LBBG, GBBG, Manx shearwater, fulmar, HG, razorbill
Teân (with Pednbrose & Old Man)	none	LBBG, GBBG, HG
White Island (St Martin's)	none	LBBG, GBBG, fulmar, HG
Peninnis Head (St Mary's)	none	Manx shearwater – lost since 2015/16
Wingletang Down (St Agnes)	none	Manx shearwater
Rushy Bay & Heathy Hill (Bryher)	none	LBBG, HG

GBBG = great black-backed gull
 LBBG = lesser black-backed gull
 HG = herring gull

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The changes in seabird numbers (sum of all each species count unit) and diversity (no of species recorded) on these SSSIs over recent years and since their designation in 1986 are summarised in Tables 6a & 6b below. (See Appendix 4 for further individual count breakdowns for each SSSI.)

Table 6a Changes in seabird numbers for SSSIs with a qualifying breeding seabird interest since 2015/16 and SSSI designations

SSSI Name	No. of breeding species 2023	2023 total breeding pairs	% change since 2015/16	% change since SSSI designation ²
Annet	9	1,781	23% increase in overall assemblage; Declines shag, GBBG and fulmar offset by increase in Manx shearwater, storm petrel and puffin	-32%
Chapel Down (St Martin's)	5	86	9% increase in overall assemblage; increase in fulmars at the Daymark	n/a
Norrard Rocks	9	748	15% decrease in overall assemblage; decreases in GBBG, shag and fulmar	n/a
Pentle Bay, Merrick & Round Island	9	259	18% decrease in overall assemblage; Losses of storm petrel on Round Island (rat incursion 2021)	n/a
Samson (with Green, White, Puffin & Stony Islands)	6	343	74% decrease in overall assemblage; Massive decline in LBBG colony from 1027 to 167 pairs in last 8 years, HG, GBBG and shag also declining	-86%
St Helen's (with Norwethel, Men-a-vaur & Peasehopper)	10	451	53% decrease in overall assemblage; Massive decline of LBBG from 553 to 78 pairs, GBBG, HG, shag and fulmar also declining. Manx shearwater large increase.	n/a
Western Rocks	10	1,120	9% increase in overall assemblage; Losses of GBBG, shag and fulmar offset by increases in guillemot and puffin	-6%

² The individual SSSIs were designated in 1986 using 1983 census figures as a baseline. Unfortunately it is not possible to separate the data accurately into the component SSSIs for most of the counts prior to the Seabird 2000 survey. For Annet and the Western Rocks, where comparable counts are not available for storm petrel and Manx shearwater in 1983, numbers are assumed to be the same as in Seabird 2000.

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Table 6b Changes in seabird numbers and assemblage from 1999 to 2015/16 (since SPA designation) for SSSIs not specifically listed for their seabird interest features.

SSSI name	No of breeding species 2023	2023 total pairs	% change since 2015/16	Breeding species lost/gained since 1999
Big Pool & Browarth (St Agnes)	1	1	-97% (from 30)	Lesser black-backed gull & common tern lost
Castle Down (Tresco)	1	115	-73% (from 46)	Common tern, lesser black-backed, herring gull and kittiwake lost; Manx shearwater new
Eastern Isles	9	686	-26% (from 928)	Puffin, guillemot & Manx shearwater new
Gugh	7	637	+27% (from 503)	Storm petrel new
Shipman Head & Down (Bryher)	7	92	-6% (from 98)	Common terns lost; fulmar and razorbill new
Teän (with Pednbrose & Old Man)	3	58	-74% (from 221)	Common tern lost
White Island (St Martin's)	4	118	-9% (from 130)	No change
Peninnis Head (St Mary's)	1	8	New site	Manx shearwater new
Wingletang Down (St Agnes)	1	96	+772% (from 11)	Herring gull gained then lost again
Rushy Bay & Heathy Hill (Bryher)	2	4	-56% (from 9)	Common tern lost; Lesser black-backed & herring gull new

The tables above show that four of the seven SSSIs listed for their bird interest have shown declines in terms of overall numbers of seabird pairs over the last eight years. In particular, Samson and St Helen's have both all but lost their former large lesser black-backed gull colonies. Annet, which has long been recognised as the most important seabird island in Scilly both in terms of numbers and diversity, has shown a 32% decline in numbers since designation in 1983; much of this loss is due to the complete abandonment of the lesser black-backed gull colony here. However, in recent years Annet has seen an increase in Manx shearwater and storm petrel numbers, but this increase has still been less than the loss of gulls and the continuing decline in the shag population on the island.

At Pentle Bay SSSI the decline in breeding pairs comes mainly from a loss of storm petrels on Round Island, which is very likely to result from the incursion of rats discovered here in 2021. Chapel Down shows an overall increase in pairs as a result of a rise in the number of fulmars. At the other SSSIs with seabird interest features – the Norrard and Western Rocks – the changes relate mainly to the loss of great black-backed gull, shag and fulmar. However, on the Western Rocks these losses are offset by large increases in the number of auks. The changes at the individual SSSIs are examined in greater detail in Appendix 4.

4 Species accounts

Species' conservation status is from *Birds of Conservation Concern 5: The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain (2021)*

The BoCC5 qualifying criteria and their values are set out below:

Red-list criteria:

IUCN: Globally Threatened (CR=Critically Endangered, EN=Endangered, VU=Vulnerable).

HD: historical decline in the breeding population.

BDp^{1/2}: severe breeding population decline over 25 years/longer term.

WDp^{1/2}: severe non-breeding population decline over 25 years/longer term.

BDr^{1/2}: severe breeding range decline over 25 years/longer term.

WDr¹: severe non-breeding range decline over 25 years.

Amber-list criteria:

ERLOB: Threatened in Europe (CR=Critically Endangered, EN=Endangered, VU=Vulnerable).

HDrec: historical decline – recovery.

BDMp^{1/2}: moderate breeding population decline over 25 years/longer term.

WDMp^{1/2}: moderate non-breeding population decline over 25 years/longer term.

BDMr^{1/2}: moderate breeding range decline over 25 years/longer term.

WDMr¹: moderate non-breeding range decline over 25 years.

BR/WR: breeding/non-breeding rarity.

BL/WL: breeding/non-breeding localisation.

BI/WI: breeding/non-breeding international importance.

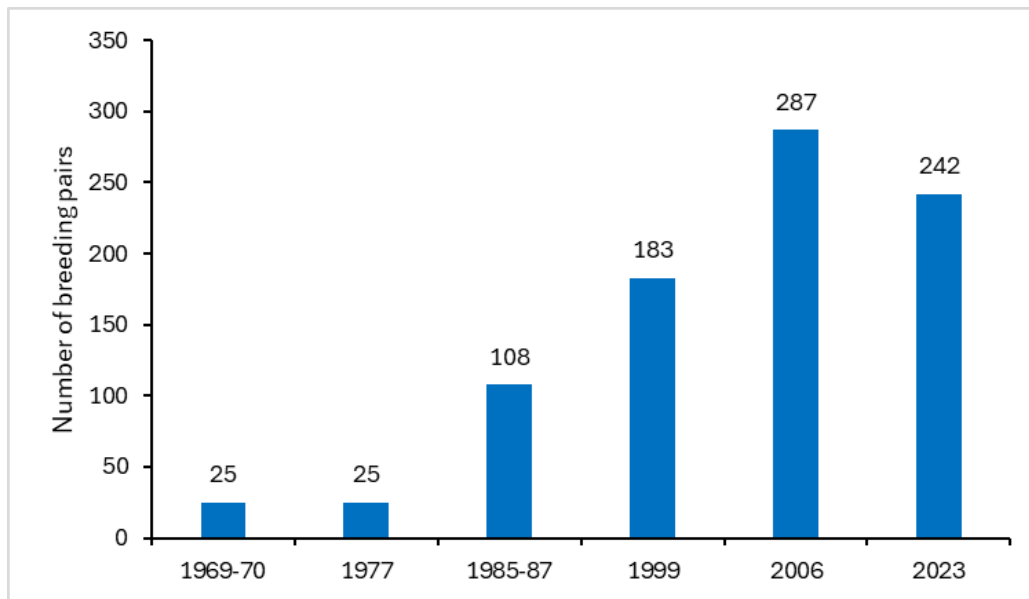
4.1 Northern fulmar *Fulmarus glacialis*

Conservation status: Amber (BoCC 5), ERLOB, BL

Population: 242 Apparently Occupied Sites (= pairs) on 16 islands (see Table 1 and Map 2)

Fulmars first bred in Scilly in 1944 (Penhallurick 1969), but numbers remained low until at least the late 1960s (Robinson 2003). Figure 3 charts the rapid population growth recorded between 1969 and 2006, which has subsequently slowed, leading to a 16% decline in the last 8 years to 242 pairs in 2023. Breeding fulmars are spread fairly evenly through the archipelago with the largest colonies to be found on Menawethan, Annet and the Daymark (see Map 2).

Figure 2 Numbers of breeding fulmar 1969-2023



The spectacular rise previously recorded in the number of fulmars breeding in Scilly is in line with national trends. By 2000, the rate of increase of birds nesting in England as a whole had begun to slow and across the UK numbers have declined by 35% since 2000 (Burnell *et al.* 2023) with many declines related to poor breeding success (e.g. Rathlin Bird Report 2021-22) The 16% decline since the last full count in 2015/16 again mirrors this national trend although to a somewhat lesser extent.

The 2023 total of 242 pairs in Scilly represents less than 1% of the GB total fulmar population (352,995), but 5% of the English total (4,903) and 10% of the south-west population (2,434) (Burnell *et al.* 2023) and is therefore of regional importance.

The status of seabirds breeding in the Isles of Scilly 2023

Table 7 Change in number of breeding pairs of fulmar 2006-2023

Island Group	1999	2006	2015/16	2023	% Change since 2015
Eastern Isles (Great Arthur, Menawethan, Great Innisvouls, Hanjague)	43	77	63	53	-16% declined Great Arthur
Annet	21	37	57	47	-18%
St Martin's (Daymark)	32	46	46	61	+33% Steady increase around the Daymark
Norrard Rocks (Mincarolo, Castle Bryher, Gweal)	28	37	36	23	-36% declined Mincarolo, Castle Bryher
Men-a-vaur	16	20	19	5	-74%
Western Rocks (Gorregan, Rosevean)	2	6	16	3	-81% declined Gorregan
Samson	2	5	15	20	+33% increase at northern beaches
Round Island	32	28	11	10	-9%
White Island (St Martin's)	5	6	8	1	-88% large decline
Shipman Head & Down (Bryher)	0	13	6	9	+50%
St Helen's	0	1	5	6	+20%
Castle Vean (St Agnes)	0	0	4	3	-25%
Kittern Rock (Gugh)	2	3	1	1	No change
Total	183	279	287	242	-16%

4.2 Manx shearwater *Puffinus puffinus*

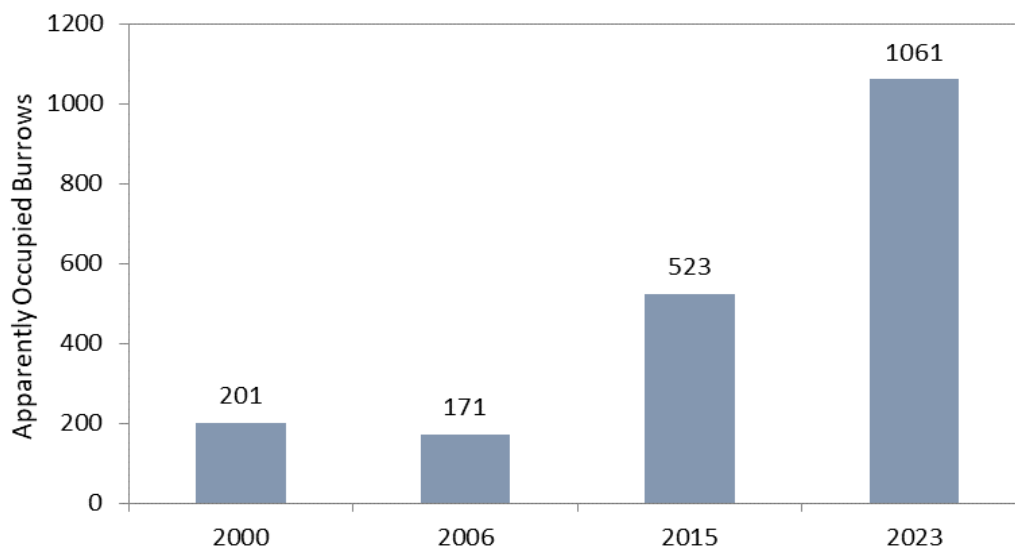
Conservation status: Amber (BoCC5), BDMr², BL, BI

Population: 1061 Apparently Occupied Burrows (= pairs) on 10 islands (see Table 1 and Map 3)

The first comprehensive survey of the distribution and abundance of Manx shearwaters in Scilly using diurnal tape playback was conducted in 2000. This survey represents the fourth comparable count using this method and shows a significant upward trend in numbers. The number of apparently Occupied Burrows across the archipelago trebled from 2006 to 2015 and has further doubled in the last 8 years to the present count of 1061 pairs (see Table 8). In addition to a new site with 47 pairs at Toll's Island being found on St Mary's, the number of pairs and apparent occupancy rate at all the sites where birds had previously been recorded also increased, particularly on St Agnes, Annet, Gugh, St Helen's and Tresco.

Diurnal playback census requires a correction factor to be applied to the number of responses elicited in order to account for the number of incubating birds present which do not reply. This response rate has been shown to vary widely between years and between colony sites, so it is recommended that a survey specific correction factor is used wherever possible. More detail on the methods for calculating correction factors is given in Appendix 3, but in brief it requires daily visits to 50 active burrows over a period of 5-7 days. In previous counts there has not been enough active burrows at accessible enough sites to achieve this and a generic factor of x1.08 has been used (estimating that about 9 of 10 birds reply). This was almost certainly too low. The correction factor recorded in the 2023 was x3.11 suggesting that it was nearer to just 3 in 10 birds that replied on any given day of survey (full details Appendix 3). As this response rate can vary quite a bit between years and sites it is not entirely appropriate to apply it to previous counts. However, even if we did it would still be clear that the number of pairs of Manx shearwater breeding in Scilly has increased significantly in the last 15 years.

Figure 4 Numbers of breeding Manx shearwater 2000-2023



The status of seabirds breeding in the Isles of Scilly 2023

This increase in breeding birds also coincides with record numbers of shearwaters seen rafting on evening trips around St Agnes and Annet (1,000+ birds) in recent years, as well as the records of birds seen in good numbers between St Agnes and St Mary's during the daytime (first recorded in 2015).

The upward trend across Scilly is in line with wider trends showing an increase of 174% in the UK population of shearwaters since Seabird 2000 (Burnell et al. 2023). The only other site in England where Manx shearwater breed is Lundy and this has seen a spectacular increase from fewer than 600 pairs in 2001 to over 25,000 (12,638 pairs) individuals in 2023 (PSP pers comms) following rat removal in 2002-04 (Booker et al. 2019).

The 2023 count for Scilly represents less than 1% of the UK total Manx shearwater population (921,618), but 8% of the English (13,699) and south-west totals and is therefore regarded as regionally important (SMP database 2023).

Table 8 Change in number of breeding pairs of Manx shearwater 2000-2023

Island	2000	2006	2015	2023	% Change since 2015
Annet	123	89	229	426	+86%
Round Island	34	43	78	96	+23%
Castle Down (Tresco)	0	0	46	115	New site in 2015, up 150%
Gugh	22	9	45	84	+87% new burrows particularly in the north of the island
Shipman Head Down	12	13	39	22	-44%
St Helen's	5	9	36	115	+219%
Chapel Down (St Martin's)	0	0	26	22	Recolonised in 2015 (historical site)
St Agnes	5	8	12	115	+858% New sites across Wingletang
St Mary's	0	0	11	63	New to Peninnis (2010), Carn Morval & Giant's Castle (2015); 47 AOBs new to Toll's Island 2023
Great Ganilly	0	0	1	3	New site in 2015
Total	201	171	523	1061	+103% Doubling in numbers in the last 8 years

4.3 European storm petrel *Hydrobates pelagicus*

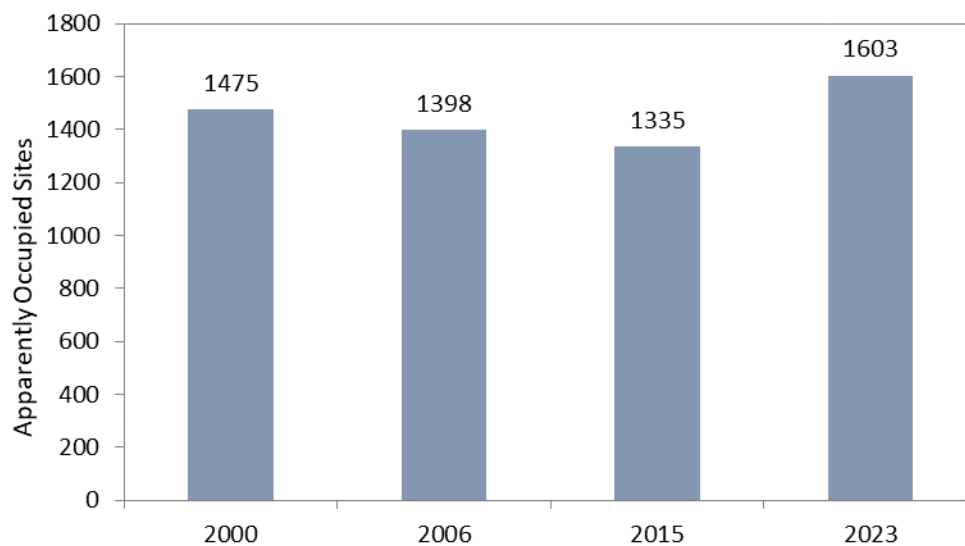
Conservation status: **Amber** (BoCC5), BL

Population: 1,603 Apparently Occupied Sites (= pairs) on 14 islands (see Table 1 and Map 4)

As with Manx shearwater this is now the fourth comparable systematic all islands survey; prior to this estimates of the numbers of storm petrels breeding in Scilly were vague, ranging in the 'thousands' and differences in methods used made it hard to draw any conclusions. As with Manx shearwaters, using diurnal call playback to elicit responses from incubating birds underground, a correction factor is needed to account for those birds which don't respond. As with Manx shearwaters this response rate is known to vary between years and colony sites. Unfortunately, it was not possible to calculate a survey specific response rate and as on the previous 3 surveys a correction factor of x2.86 was used (see Appendix 3 for full details) The 2023 survey gave a total count of 1,603 apparently occupied sites, representing a 20% increase in storm petrel pairs breeding in Scilly in the last 8 years (9% increase since the first count in 2000). This follows a somewhat negative trend in the previous three surveys (see Figure 5).

The count of 1053 pairs breeding on Annet represents 66% of all the storm petrels breeding in Scilly and underlines the importance of this site. Numbers here were reduced and are now appear recovered following a rat incursion in 2004. The same pattern can be seen on Round Island which suffered a rat incursion in 2021/ 2022 and was down from 172 pairs in 2015 to just 11 pairs in the summer of 2022. The rats were cleared before the breeding season in 2022 and this count in 2023 of 105 pairs shows how quickly numbers can recover.

Figure 5 Numbers of breeding storm petrel 2000-2023



This 2023 count of storm petrels represents 4.3% of the UK population (37,655) of this Annex 1 species and is therefore of international importance (Burnell et al. 2023). Before 2006, Scilly was the only known breeding site for storm petrels in England. Following the removal of rats from Lundy 2002-04 storm petrels have established a small but increasing colony, with the first confirmed fledging in 2014 and a current population estimate of 161 AOSs (PSP pers comms).

The status of seabirds breeding in the Isles of Scilly 2023

A small colony was also discovered on a ringing trip to The Brisons off Cape Cornwall in 2016 when two adults were heard singing from beneath a boulder field.

Table 9 Change in number of breeding pairs of storm petrel 2000-2023

Island	2000	2006	2015/16	2023	% Change since 2015
Annet	938	788	778	1,053	+35% (rat incursion 2004)
Round Island	183	251	172	105	-39% (rat incursion 2022)
Rosevear	57	129	112	142	+27%
Melledgan	140	69	97	40	-59%
Gorregan	49	37	32	68	+113%
Rosevean	37	46	26	28	+8%
Scilly Rock	14	23	21	25	+19%
Men-a-vaur	20	20	14	17	+21%
Burnt Island	0	0	11	40	+264%
Mincarlo	17	20	9	14	+56%
Illiswilgig	3	9	52	17	-67% (moved to nearby Castle Bryher?)
Castle Bryher	17	6	3	31	+933%
St Agnes	0	0	6	3	-50% (cat predation see discussion)
Gugh	0	0	2	20	+900%
Total	1,475	1,398	1,335	1,603	+20%

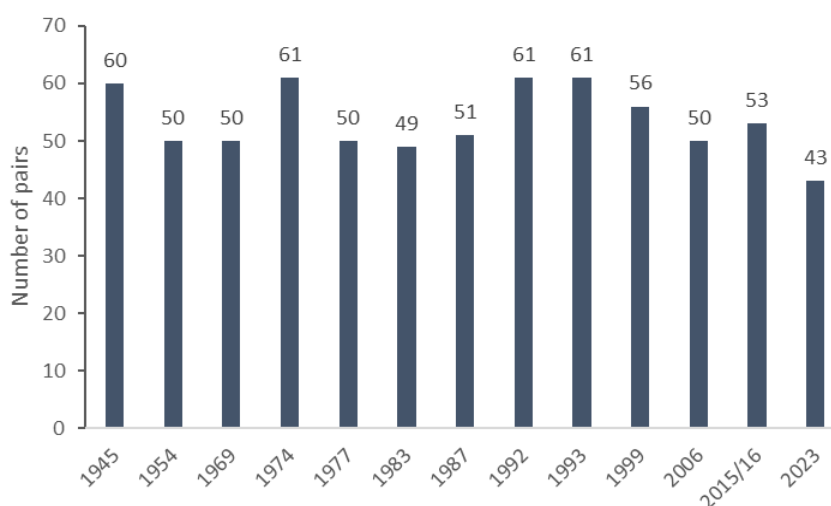
4.4 Great cormorant *Phalacrocorax carbo*

Conservation status: **Green** (BoCC5)

Population: 43 Apparently Occupied Nests (= pairs) on three islands. (see Table 1 and Map 5)

Counts since 1945 suggest that the number of cormorants breeding in Scilly has remained remarkably stable at between 43-61 pairs (see Figure 6). However, the spread of sub-colonies, though traditionally transient in their location with at least eight other islands having supported breeding birds in the past (Robinson 2003), has reduced from five sites in 1999, to four in 2006 and just three from 2015 to the present (White Island Samson, Melledgan and Great Ganinnick). Overall, following an increasing trend in the UK, cormorants have more recently seen a decline of approximately 5% since Seabird 2000 (Burnell *et al.* 2023).

Figure 6 Cormorant breeding pairs 1945-2023



The population of cormorants breeding in England increased by 6%, but in the UK as a whole decreased by 5% since Seabird 2000 (Burnell *et al.* 2023). This 2023 Scilly population count represents less than 1% of the UK (8,829) total. However, at 9.5% of the south-west population (Burnell *et al.* 2023) these numbers could be considered to be of regional importance.

Table 10 Change in number of breeding pairs of cormorant 1999-2023

Island	1999	2006	2015	2023	% change since 2015
White Island (Samson)	1	9	38	27	-29% is likely to be due to previous increase in 2015 as a result of birds relocating from Mincarlo
Melledgan	16	13	10	11	+10%
Great Ganinnick	0	0	5	5	New site in 2015
Mincarlo	25	18	0	0	Site abandoned - last recorded 2013
Ragged Island	12	10	0	0	Site abandoned
Great Innisvouls	2	0	0	0	Site abandoned
Total	56	50	53	43	-19%

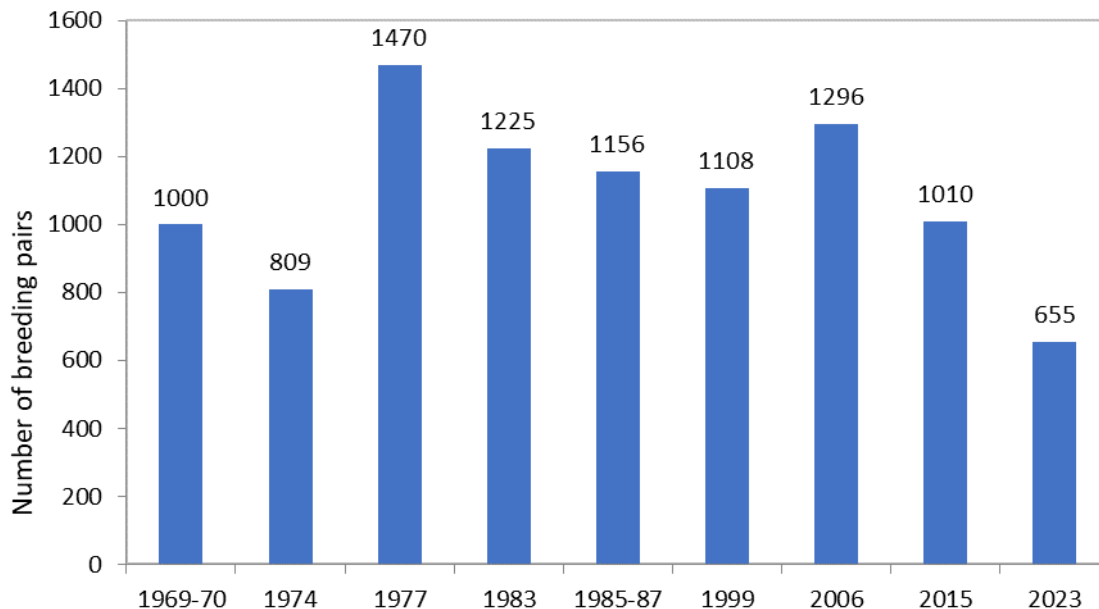
4.5 European shag *Gulosus aristotelis*

Conservation status: **Red** (BoCCC5), BDp¹, BDMp², BI

Population: 655 Apparently Occupied Nests (= pairs) on 26 islands (see Table 1 and Map 6)

The first systematic 'all islands' survey of shags was conducted in 1969 as part of Operation Seafarer. Since then, counts have fluctuated around 1,100 pairs, with a particularly low count in 1974 (see Figure 7). Following a 7% increase in numbers between 1999 and 2006, this latest count represents a continued steep decline in numbers of 50% since 2006 and 35% in the last 8 years in the numbers of breeding shags in Scilly. Losses are spread across a number of sites, notably the Western and Norrard Rocks, the Eastern Isles and Annet. Annual counts of birds nesting on Annet in since 2006 (see Appendix 5) suggest that the decline there has been gradual.

Figure 7 Numbers of breeding shag 1969-2023



The decline in numbers seen in Scilly is in line with trends in the UK as a whole, where the total population has declined by 24% since Seabird 2000 (Burnell *et al.* 2023).

The 2023 total for Scilly represents 3.2% of the UK total (20,209), 26.3% of the English total (2,492) and 33.8% of the south-west population (1,936) (Burnell *et al.* 2023). Taken as a whole the Scilly population of shags is now one of the largest sites in the UK, having overtaken Foula, Shetland 324 pairs, the Farnes 484 pairs and Lambay Island, Co. Dublin 469 pairs. Shag is now a key feature in the SPA designation so a 36% decline since designation in 2015 is of concern but still remains internationally important.

Table 11 Change in number of breeding pairs of shag 1999-2023

Island	1999	2006	2015	2023	% Change since 2015
Western Rocks	331	392	350	235	-33%
Eastern Isles	221	330	276	158	-43%
Norrard Rocks	273	312	188	144	-23%
Annet	209	177	85	53	-38%
St Helen's (incl. Men-a-vaur)	24	38	31	8	-74%
Samson (Incl. White & Puffin Island)	43	35	49	30	-38%
Round Island	2	7	16	9	-44%
St Martin's satellites (Pernagie & Guther's Island)	1	1	11	7	-37%
Shipman Head (Bryher)	4	4	19	11	-42%
Total	1,108	1,296	1,025	655	-36%

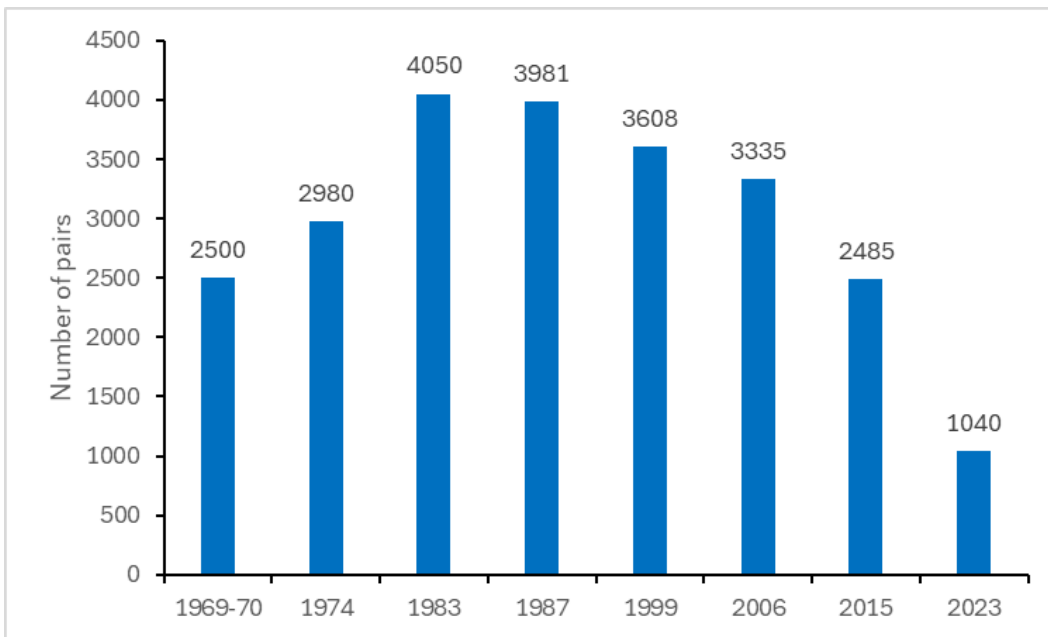
4.6 Lesser black-backed gull *Larus fuscus*

Conservation status: **Amber** (Bocc5), BL, BI

Population: 1,040 Apparently Occupied Nests (= pairs) on 27 islands (see Table 1 and Map 7)

Since the first systematic count in 1969 the number of lesser black-backed gulls nesting in Scilly increased to a peak of 4,050 pairs in 1983 but has been in decline ever since. This latest 2023 count represents a continuation of this trend with a loss of 58% of breeding pairs in the last 8 years. This decline is most evident across two of the three main sub-populations on St Helen's and Samson which have all but disappeared losing 93% and 84% of their breeding pairs respectively since 2015. Outside the main sites lesser black-backed gulls are spread widely across 27 islands and some Eastern Isles may have picked up a small number of the birds lost elsewhere.

Figure 8 Lesser black-backed gull breeding pairs 1969-2023



The decline in breeding numbers found in Scilly in recent years is in line with national trends. Between Seabird 2000 and the Seabird Count (2015-2021) lesser blacked gull populations across the UK as a whole declined by 49% with the vast majority of this loss being seen at costal colony sites (Burnell *et al.* 2023).

The 2023 total for Scilly represents 1.9% of the UK total (55,304), 3.8% of the English total (27,265) and 32.7% of the south-west population (3,179) of lesser black-backed gull (Burnell *et al.* 2023) and is considered of international importance. It is a key species in the SPA designation of the archipelago representing 15% of the total assemblage.

Table 12 Change in number of breeding pairs of lesser black-backed gull 1999-2023

Island	1999	2006	2015	2023	% Change since 2015
Samson (Incl. White & Puffin Is.)	1,197	1,223	1,027	167	-84%
St Helen's (incl. Men-a-vaur, Norwethel & Crow's)	543	722	553	78	-86%
Gugh	1,123	875	419	464	+11%
Eastern Isles				160	Not calculable
Teän (incl. Pednbrose & Old Man)	24	5	136	17	-88%
White Island (St Martin's)	28	187	106	109	+3%
Norrard Rocks	13	6	37	14	-62%
Bryher	50	8	17	14	-18%
Western Rocks	4	1	5	1	-80%
Chapel Down (St Martin's) & Satellites (Guther's)	58	8	8	2	-75%
Annet	517	281	1	5	main sub-colony deserted 2007 onwards
Tresco	29	4	1	3	+200% Gimble Porth abandoned 2014
St Agnes	2	0	14	0	Sub-colony loss
Round Island	1	1	2	6	+200%
Total	3,608	3,335	2,485	1040	-58%

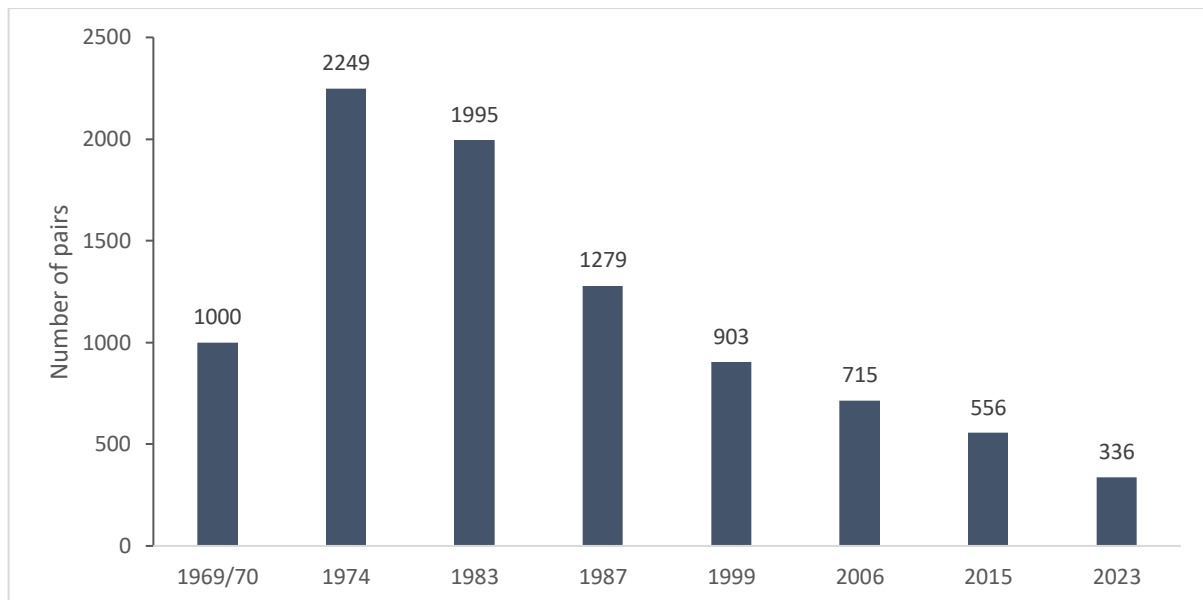
4.7 Herring gull *Larus argentatus*

Conservation status: **Red** (BoCC5), BDp², Dp¹

Population: 336 Apparently Occupied Nests (= pairs) on 33 islands (see Table 1 and Map 8)

Herring gulls are the most widespread breeding seabirds in Scilly, found on 33 islands; however most islands support only a few pairs and this is down from 47 islands in 2015 (see Map 8 and Table 1). Since a peak of 2,249 pairs in 1974 herring gull numbers have been declining steadily to the current count of just 336 pairs in 2023, representing a loss of 40% in the last 8 years and 63% since SPA designation. Nearly all sites showed large losses of breeding pairs in the last 8 years, continuing the downward trend that is clear in Figure 6.

Figure 9 Herring gull breeding pairs 1969-2023



The declines seen in Scilly mirror the national trend; between Seabird 2000 and the Seabird Count (2015-2021) the numbers of herring gull nesting in England decreased by 60%, and there was a decrease in numbers of 44% across the UK as a whole (Burnell et al. 2023).

The 2023 count for Scilly represents 0.6% of the UK (61,077) and 2.9% of the English (11,736) totals of herring gull, and 5.8% of the south-west population (5,768) so is not considered of regional importance (Burnell et al. 2023).

The status of seabirds breeding in the Isles of Scilly 2023

Table 13 Change in number of breeding pairs of herring gull 1999-2023

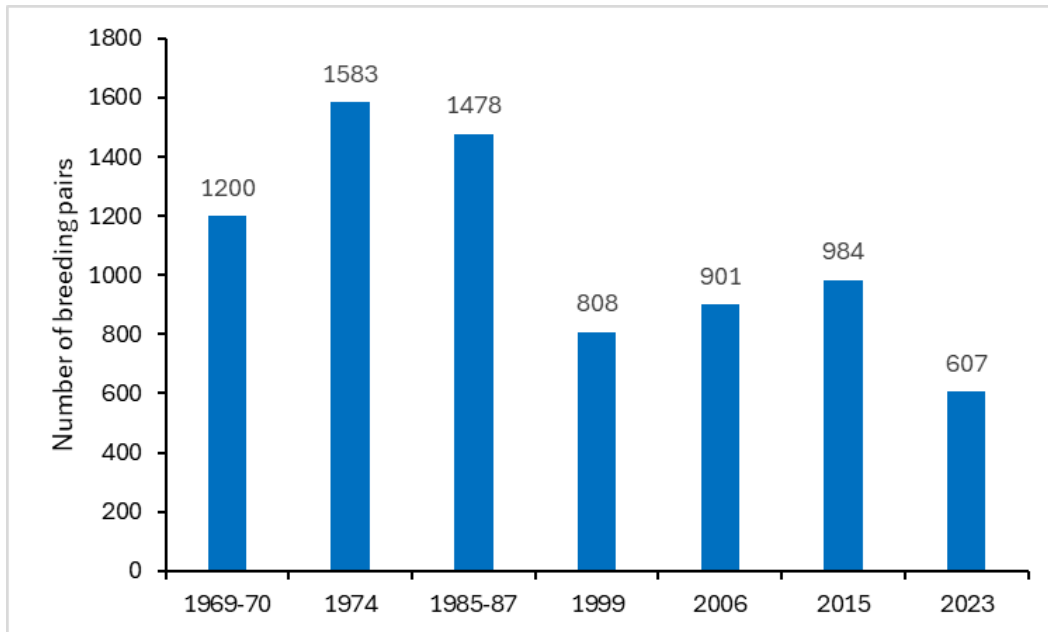
Island	1999	2006	2015	2023	% Change since 2015
Samson (Incl. White & Puffin Is.)	230	189	144	73	-49%
Eastern Isles	49	34	73	48	-34%
St Helen's (incl. Men-a-vaur, Norwethel & Crow's Is.)	82	116	59	29	-51%
Teän (incl. Pednbrose & Old Man)	62	51	57	24	-58%
Bryher	23	25	53	28	-47%
St Martin's & Satellites (incl. Guther's)	42	37	32	15	-53%
Gugh	159	69	30	40	+33%
Tresco	102	87	25	27	+8% Lost from Gimble Porth
Annet	42	24	20	5	-75%
White Island (St Martin's)	34	32	15	5	-67%
Norrard Rocks (incl. Gweal)	41	19	15	18	+20%
St Mary's	2	3	15	18	+20% Hugh Town – cf.3 pairs first recorded breeding here 2006
St Agnes	25	15	11	1	-91%
Western Rocks	2	11	5	4	-20%
Round Island	8	3	2	1	-50%
Total	903	715	556	336	-40%

4.8 Great black-backed gull *Larus marinus*

Conservation status: **Amber** (Bocc5), BDMp², WDMp¹

Population: 607 Apparently Occupied Nests (= pairs) on 34 islands (see Table 1 and Map 9)

Figure 10 Numbers of breeding great black-backed gull 1969-2023



After a peak of 1,583 pairs in 1974, after which a cull was carried out by the Nature Conservancy Council, the number of great black-backed gulls breeding in Scilly has been in steady decline (see Figure 10). Although there was a 9% increase in numbers between 2006 and 2015, this 2023 count represents a 38% reduction in breeding numbers in the last 8 years and continues the overall downward trend since the mid-1970s. The birds are widespread across 34 islands with most holding a few pairs and a few islands supporting larger colonies, notably Annet, Rosevear and the Eastern Isles, however this is down from a spread across 45 islands in 2015.

Between Operation Seafarer (1969-70) and Seabird 2000 (1998-2002) the UK great black-backed gull population declined by approximately 10%. Since then, this decline has accelerated with a further 52% decline recorded in the Seabird Count (2015-2021) for the whole of the UK (Burnell et al. 2023).

The 2023 total for Scilly represents 7.6% of the UK total (8,021), 39.9% of the English total (1,520) and 44.9% of the south-west population (1,352) of great black-backed gull (Burnell et al. 2023) and remains internationally important. As of 2020 as a named feature of the SPA the decline of this species is of particular concern, displaying a 39% decrease since the 2015/16 survey.

Table 14 Change in number of breeding pairs of great black-backed gull 1999-2023

Island	1999	2006	2015	2023	% Change since 2015
Eastern Isles	286	265	310	203	-35% Largest colonies Menawethan, Great Arthur, Ganilly & Innisvouls
Annet	137	187	235	151	-36% Large colony at Carn Irish
Western Rocks	124	157	136	80	-41% Rosevear & Melledgan
Norrard Rocks (incl. Gweal)	101	106	125	66	-47% mostly from Gweal
Samson (Incl. White & Puffin Is.)	46	73	42	26	-38%
St Martin's & Satellites (incl. Guther's & White Is.)	47	46	43	20	-52%
St Helen's (incl. Men-a-vaur, Norwethel & Crow's Island)	30	28	31	19	-39%
Teän (incl. Pednbrose & Old Man)	16	18	28	17	-39%
Round Island	5	9	20	13	-41%
Gugh	3	4	6	7	+17%
Bryher	13	7	5	4	-20%
St Agnes	0	1	2	0	Lost
Tresco	0	0	1	1	No change
Total	808	901	984	607	-38%

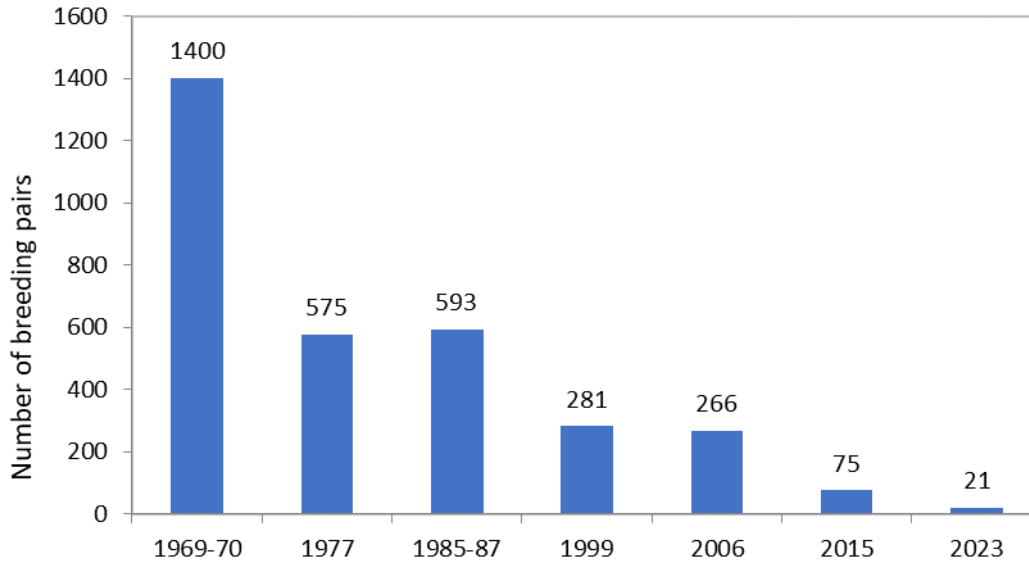
4.9 Black-legged kittiwake *Rissa tridactyla*

Conservation status: **Red** (BoCC5) BDp¹, BDp², ERLOB - VU

Population: 21 Apparently Occupied Sites (= pairs) on one island (see Table 1 and Map 10)

After increasing to a peak of 861 pairs in 1983, the number of kittiwakes breeding in Scilly has declined consistently to the present low of just 21 pairs in 2023. The rate of decrease has accelerated in recent years and the division of birds into a number of sub-colonies has been abandoned as the numbers have fallen. In 2006 the breeding population was spread between 6 sub-colony locations. Since 2015 all pairs have nested at just one location (below the Turk's Head at St Agnes 2014-16 and then on the east side of Gugh 2017 to the present). Although 21 pairs attempted to breed in 2023, 2021 marked the first year in living memory where no kittiwakes bred in Scilly.

Figure 11 Numbers of breeding kittiwake 1969-2023



These population trends seen in Scilly reflect those at a national scale with considerable increases in the first half of the 20th century giving way to large declines. The kittiwake population in the UK declined by as much as 43% and across the south-west by 58% between Seabird 2000 and the latest Seabird Count (Burnell *et al.* 2023).

The 2023 total for Scilly now represents less than 1% of the UK (215,913) and English (72,897) total and just 1.4% of the south-west population (1,460) of kittiwake (Burnell *et al.* 2023). It cannot be considered regionally important.

The status of seabirds breeding in the Isles of Scilly 2023

Table 15 Change in number of breeding pairs of kittiwake 1999-2023

Colony site	1999	2006	2015	2023	% Change since 2015
Turk's Head (St Agnes)	0	0	75	0	Occupied 2009-2016
Daymark (St Martin's)	27	15	0	0	Site abandoned 2014
Gugh	155	131	0	21	Unoccupied 2011-17, currently the only breeding site
Gimble Porth (Tresco)	54	37	0	0	Site abandoned 2010
St Helen's	7	36	0	0	Site abandoned 2011
Samson North Hill	28	25	0	0	Site abandoned 2010
Samson South Hill	10	22	0	0	Site abandoned 2009
Total	281	266	75	21	-72%

4.10 Common tern *Sterna hirundo*

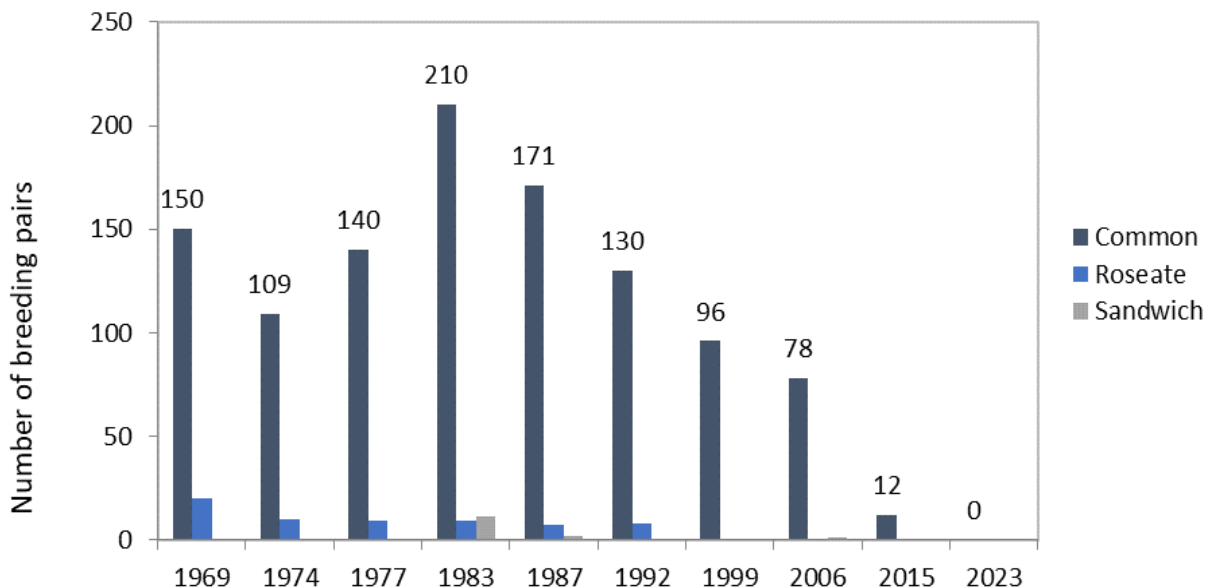
Conservation status: **Amber** (BoCC5), BL

Population: 0 Apparently Occupied Nests (= pairs) (see Table 1)

Numbers of common terns breeding in Scilly have shown a clear and sustained decline since a maximum of count of 210 pairs in 1983 (spread across 12 sites) to the current zero count for 2023 (see Figure 12). In the recent years common terns have been arriving to the islands progressively later and showing low interest in breeding. No breeding attempts at all were recorded in 2010, 2013, 2018-20, 2022 and during this survey of 2023 (Heaney 2022, W Wagstaff pers. comm.).

In the past, up to four species of tern have bred in Scilly, usually all in association with the most numerous species, the common terns. At the periphery of their global range, Sandwich terns are intermittent breeders. A maximum of 18-22 pairs was recorded in 1998, but since then only single pairs have been recorded in 1998 and 2006-8. Roseate terns have also been recorded in small numbers in Scilly, from a maximum of 20 pairs in 1969 to the last recorded nesting attempt in 1995. Arctic terns have also been recorded in Scilly, most recently in 1995. No breeding record of any species of tern was recorded in 2023.

Figure 12 Numbers of breeding terns 1969-2023



In the period between Seabird 2000 and The Seabirds Count (2015-21), the common tern population in the UK declined by 9% and by 3% across England. Across the south-west numbers declined by as much as 25% in this time (Burnell *et al.* 2023). Burnell *et al.* 2023 records a UK population of common tern of 12,219 pairs, an English population of 5,478 pairs and a south-west population of 286 pairs.

Table 16 Change in number of breeding pairs of common tern 1999-2023

Colony site	1999	2006	2015	2023	% Change since 2015
North Hill, Samson	11	3	10	0	Last used 2015
Annet	1	1	2	0	Last used 2015-17 & 2021
Green Island (Samson)	7	56	0	0	Last used 2014
Peasehopper Island	1	13	0	0	Site abandoned
Green Island (Tresco)	1	4	0	0	Site abandoned
Merrick Island (Tresco)	0	1	0	0	Last used 2016
Merrick Island (Bryher)	13	0	0	0	Site abandoned
Appletree Banks, Tresco	39	0	0	0	Site abandoned
Castle Down, Tresco	13	0	0	0	Site abandoned
Great Cheese Rock	5	0	0	0	Site abandoned
Browarth, St Agnes	3	0	0	0	Site abandoned
Colvel Rock, Bryher	1	0	0	0	Site abandoned
Teän	1	0	0	0	Site abandoned
Total	96	78	12	0	Lost as a breeding species

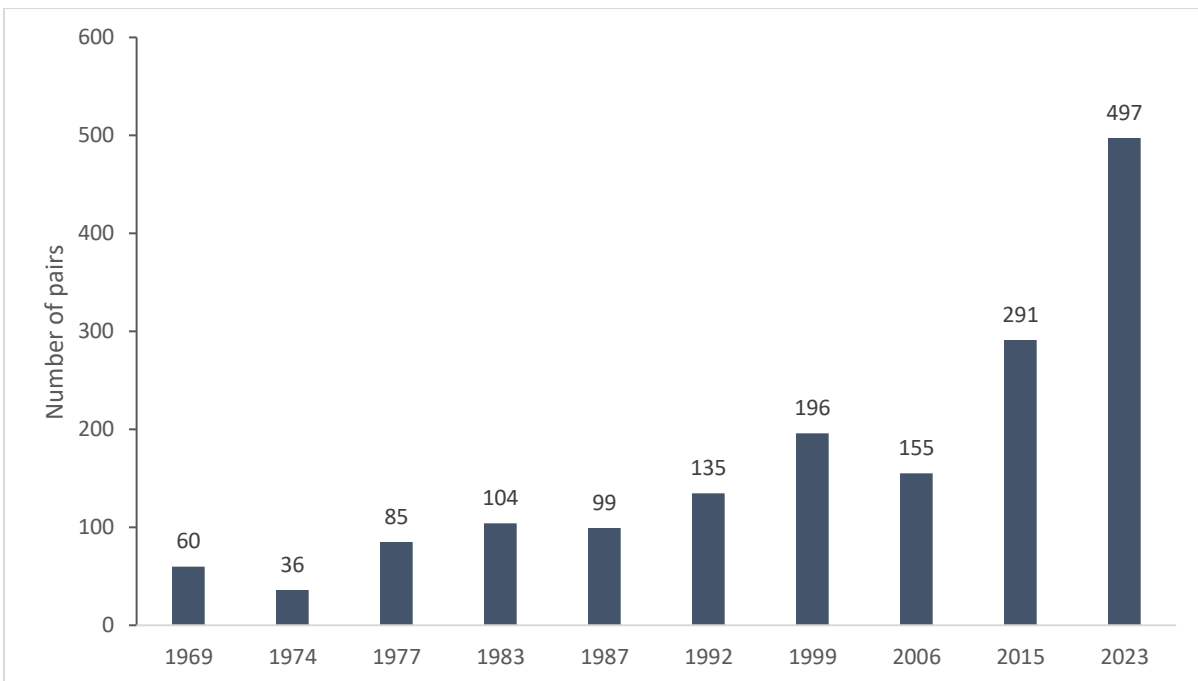
4.11 Common guillemot *Uria aalge*

Conservation status: **Amber** (BoCC5), BL, BI

Population: 497 individuals (= pairs) recorded on 7 islands (see Table 1 and Map 11)

All island counts of breeding guillemot in Scilly since 1969, shown in Figure 10, reveal a steady increase in numbers to the current maximum of 497 pairs. As in previous years the birds were found to be breeding in concealed nest sites under boulders and on ledges in cavities, a trend possibly related to high avian predation pressure (Robinson 1993, Swann 2003) as well as the absence of their preferred cliff ledge sites (Chown & Lock 2002). These boulder colonies are hard to survey accurately and, when coupled with the fact that they are located on the most inaccessible outer rocks (see Map 11), means that precise counts of guillemots and auks in general in Scilly can be difficult to make (see Appendix 3). Nevertheless, this 2023 count demonstrates a definite increase in guillemot numbers in Scilly with the number of pairs at Mincarolo and Gorregan increasing significantly, as well as new pairs at Round Island, Rosevear and Hanjague (see Table 17).

Figure 13 Guillemot breeding pairs 1969-2023



The trends seen in Scilly follow the national pattern with the number of breeding pairs of guillemot in England doubling between Seabird 2000 and The Seabirds Count. However, the trend for the UK as a whole is counter to this with Scottish colonies taken into account, declining by 11% in the same period (Burnell *et al.* 2023).

The 2023 total for Scilly represents less than 1% of the UK (1,265,888) and English (194,616) totals and only 2.3% of the south-west population (21,912) of common guillemot (Burnell *et al.* 2023), so is not of regional importance.

The status of seabirds breeding in the Isles of Scilly 2023

Table 17 Change in number of breeding pairs of guillemot 1999-2023

Colony Site	1999	2006	2015	2023	% Change since 2015
Men-a-vaur	117	95	110	60	-46%
Gorregan	39	31	99	343	+247%
Scilly Rock	39	29	60	1	-98%
Mincarlo	1	0	20	80	+300%
Melledgan	0	0	2	0	Abandoned
Round Island	0	0	0	5	New site
Hanjaque	0	0	0	1	New site
Rosevear	0	0	0	1	New site
Total	196	155	291	497	+71%

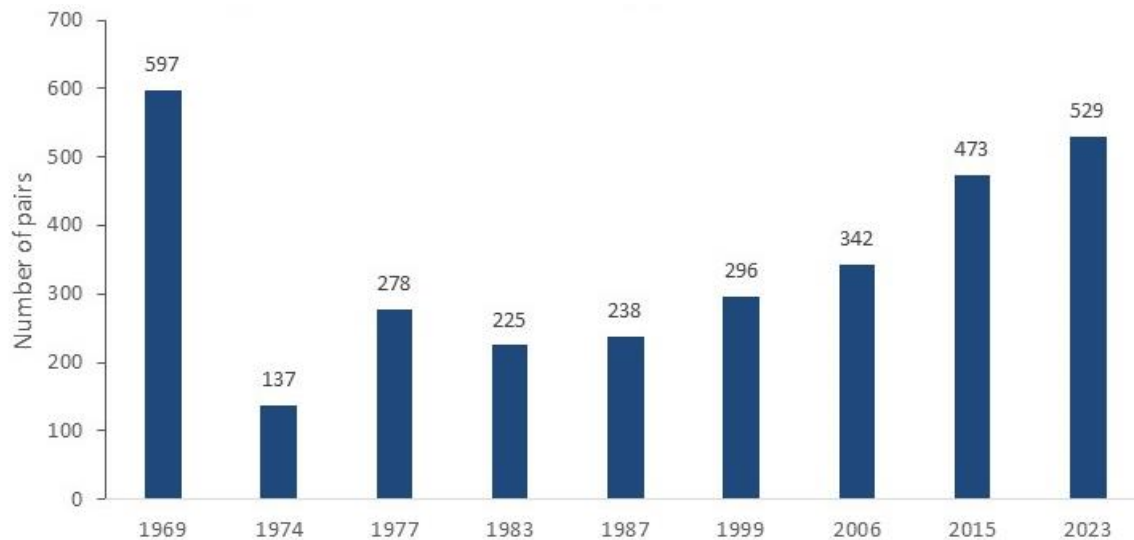
4.12 Razorbill *Alca torda*

Conservation status: **Amber** (BoCC5), BL, BI

Population: 529 individuals (= pairs) recorded at 16 sites (see Table 1 and Map 12)

As with guillemots, razorbills in Scilly nest exclusively under boulders making accurate assessment of breeding numbers and comparison of counts difficult (see Appendix 3). After a low count of 137 pairs in 1974 (possibly as a result of high mortality and low recruitment following the Torrey Canyon oil spill), numbers have shown a sustained and steady increase to the current count of 529. Found at 16 sites, razorbills are the most abundant and widespread of the three auk species found breeding in Scilly (see Map 12). The bulk of pairs nest on three islands; Mincarlo, Men-a-vaur and Gorregan. Over the last nine years the number of pairs breeding in Scilly has increased by 12% with expansions in birds breeding on the Eastern Isles and at Shipman Head, Bryher.

Figure 14 Razorbill breeding pairs 1969-2023



Despite difficulties in comparing methodologies, the number of razorbills across the UK also appeared to increase by approximately 18% between Seabird 2000 and the Seabirds Count, with the population in England over this time more than trebling (Burnell et al. 2023).

The 2023 total for Scilly represents less than 1% of the UK total (225,015), 1.4% of the English total (37,817) and 7.8% of the south-west population (6,784) of razorbill (Burnell et al. 2023).

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Table 18 Change in number of breeding pairs of razorbill 1999-2023

Colony Site	1999	2006	2015	2023	% Change since 2015
Norrard Rocks	103	129	232	226	-3%
Western Rocks	85	107	109	116	+6%
Men-a-vaur	101	90	88	100	+14%
Eastern Isles	3	12	37	51	+38%
Annet	4	4	5	3	-40%
Shipman Head, Bryher	0	0	2	30	1400%
St Agnes	0	0	0	2	New site
Round Island	0	0	0	1	New site
Total	296	342	473	529	+12%

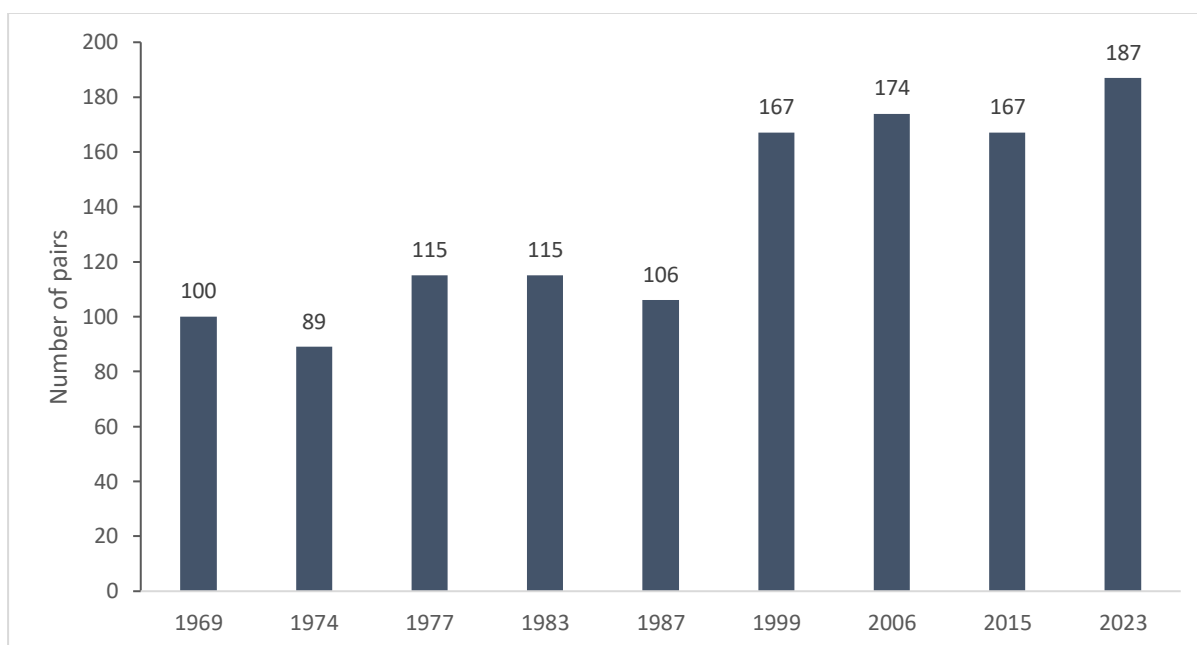
4.13 Atlantic puffin *Fratercula arctica*

Conservation status: **Red** (BoCC5), IUCN – VU, BDMr², ERLOB – EN, BL

Population: 187 individuals (= pairs) recorded at 9 sites (see Table 1 and Map 13)

Although historical records suggest 1000s of pairs of puffins once bred in Scilly, comprehensive counts from 1969 onwards record much lower numbers (see Figure 15). The last four counts show an upturn in numbers, with the current count of 187 pairs a maximum since modern records began. Spread across 9 sites (see Table 19), the last 8 years have seen a decrease in numbers breeding on Scilly Rock, whilst pairs at Mincarlo and Rosevear have increased. As in 2015, a few pairs were recorded breeding in the Eastern Isles, although they appear to have moved from Menawethan to Great Ganilly. This kind of movement of birds between nearby sites has been recorded in other colonies (Breton et al. 2006).

Figure 15 Breeding puffin 1969-2023



Puffins declined significantly across the UK in the first half of the 20th century, with losses occurring first and being most severe in the southernmost colonies. More recent declines on breeding numbers have led to the puffin being red listed in October 2015. The most recent Seabirds Count recorded a UK wide decline of between 14 and 23% of puffins, although trends in England and Wales showed an increase in numbers. In particular, Lundy has seen a large increase in pairs from 13 to 848 AOBs following the removal of brown and black rats in 2004 (Burnell et al. 2023) and 1335 AOBs in 2023 (PSP pers comms 2024).

The 2023 total for Scilly represents less than 1% of the UK (474,679) and English (74,163) totals, but 17% of the south-west (1,098) total so is considered of regional importance (Burnell et al. 2023).

The status of seabirds breeding in the Isles of Scilly 2023

Table 19 Change in number of breeding pairs of puffin 1999-2023

Colony Site	1999	2006	2015	2023	% Change since 2015
Mincarlo	53	38	51	80	+57%
Annet	47	50	31	38	+23%
Scilly Rock	25	36	35	3	-91%
Rosevear	3	14	14	38	+171%
St Helen's	11	13	11	10	-9%
Melledgan	2	13	13	6	-54%
Men-a-vaur	25	6	5	4	-20%
Rosevean	0	4	0	0	Site abandoned
Gorregan	1	0	2	4	+100%
Round Island	0	0	1	0	Site abandoned
Eastern Isles (Menawethan, Great Ganilly)	0	0	4	4	No change
Total	167	174	167	187	+12%

5 Site accounts

The specific objective of this 2023 survey was to assess the status of the Isles of Scilly Special Protection Area and of its constituent Sites of Special Scientific Interest for seabirds. The survey also makes possible an assessment of the status of seabirds on the other SSSIs not specifically designated for seabird interest and across other areas in Scilly that lie outside designations.

5.1 The status of seabirds in the Isles of Scilly SPA

The Isles of Scilly SPA (see maps in Appendix 1) was classified in August 2001 and data from the Seabird 2000 census (collected in 1999 and 2000) were used to support the classification. The site qualified under Article 4.1 of Directive 79/409 for its breeding population of storm petrel (based on 1999 estimate of 5,406-8,798 pairs, some 6.4-10.4% of the GB population) and under Article 4.2 for its breeding population of lesser black-backed gulls (based on 1999 figure of 3,608 pairs, some 2.9% of the race *graellsii*). It also qualified under article 4.2 by supporting a population of at least 20,000 waterbirds, specifically 26,478 seabirds in 1999. In 2020 an extension was applied to include European shag and great black-backed gull as additional features after observing a 39% percent in great black-backed gull population, and a 36% decrease in European shag population across the Isles of Scilly since the 2015/16 survey.

Accurate storm petrel counts using diurnal call playback since 2000 fall short of the 1999 estimate on which SPA designation was based and the total number of seabirds estimated to be breeding in Scilly now falls short of the 20,000 birds threshold for which the SPA was designated. Nevertheless, the 2023 estimate of 1,603 pairs of breeding storm petrel in the Scilly SPA is still of international importance. The 2023 count estimated 6,821 breeding pairs – 13,642 seabirds supported by the archipelago, a fall of 18% in the last 8 years and 43.4% since SPA designation (12,063 pairs). It should be noted that this figure includes the high storm petrel population estimate obtained using methods which are not directly comparable to these obtained since. Using the Seabird 2000 figures including the playback surveys of storm petrel and Manx shearwater (9,378 pairs) the decline in numbers since 1999/2000 is nearer 27.3%, see Figure 1.

The 2023 results show that the islands still support internationally important numbers of storm petrel, shag, lesser black-backed gull and great black-backed gull. Whilst storm petrel are increasing, the declines of shag, lesser black-backed gull and great black-backed gull are of significant concern.

All-island seabird count figures are used in this report because boundary anomalies mean that features of the SPA move in and out of the SPA but still occur within the archipelago. Therefore, it is more meaningful to present the figures for all the islands as more representative of the state of features of the SPA.

Appendix 4 provides an analysis of the numbers of seabirds recorded breeding within and outside the SPA boundary in 2023.

5.2 The status of seabirds in the Isles of Scilly seabird SSSIs

Table 5 gives a summary of the seabird notified features and seabird species present breeding in each of the 26 SSSIs in the Isles of Scilly. Of these, 16 supported breeding seabirds in 2023; however, only seven are notified in whole or part recognition of their qualifying seabird interest. Tables 6a and 6b provide a breakdown of the numbers of each seabird species present in each of the SSSIs in the Scilly archipelago from 1999 to 2023.

Since the designation of SSSIs in 1986 the number of seabirds breeding in two of the seven SSSIs designated for their seabird interest has declined by as much as 30%. (Comparative data are not available for four of these 'seabird' SSSIs, as it is not possible to allocate individual island counts to SSSIs for surveys prior to 1999). Table 2 details the condition of these SSSIs according to the individual seabird interest features and Appendix 4 gives more detail on the changes at each of the individual Scilly SSSIs.

6 Discussion

This report presents the detailed findings of the fourth comprehensive 'all species, all islands' seabird survey in the Isles of Scilly (prior to 2000, methods for counting burrow-nesters varied). It is clear from the survey that, whilst some species have increased – mainly the burrow nesters and auks, many have declined, particularly shags and the surface feeding gulls and terns. There has been a significant and worrying overall decline in the total number of seabirds nesting in the islands, driven in a large part by a large reduction in the number of lesser black-backed gulls which in previous surveys was the most numerous species.

With the data from these four comprehensive surveys as well as data from previous and intervening years both for Scilly and elsewhere, we have a detailed historical and geographical context within which to interpret the changes observed. In addition, the constituent islands of the Isles of Scilly archipelago differ considerably from each other in their size, habitation by man, vegetation and management history, predator populations and recreational use and the numbers of seabirds they support, thus providing an opportunity for further insight into the factors driving change in seabirds in Scilly.

6.1 Recent changes in seabird distribution and numbers in Scilly

6.1.1 The condition of the Isles of Scilly SPA

The qualifying species for the SPA classification in 2020 includes storm petrel, shag, lesser black-backed gull, great black-backed gull and the assemblage of seabirds in the breeding season including storm petrel, shag, lesser black-backed gull and great black-backed gull. Common terns and roseate terns are included on the SPA classification citation as non-qualifying species of interest (both are Annex 1 species).

There have clearly been some significant changes in seabird numbers since classification of the Isles of Scilly SPA. Whilst the numbers of Manx shearwater, storm petrel, guillemot and razorbill have increased, over half the species present have declined in numbers. The most significant concerns with respect to the condition of this international site are:

- An 18% decline in overall seabird numbers in the last 8 years to just 6,821 pairs;
- a 58% decline in the number of lesser black-backed gull pairs since 2015;
- a 36% decline in the number of breeding shag since 2015;
- a 38% decline in the number of great black-backed gull pairs since 2015;
- a 40% decline in the number of herring gull pairs since 2015;
- the continued presence of brown rats on several key nesting islands threatens burrow-nesting birds;
- the complete failure of kittiwakes to raise any young in 2023 as well as a failure to breed at all in 2021 gives further cause for concern about the condition of the SPA.

- also of concern is the complete absence of breeding terns across the islands in 4 of the last 6 years, including 2023.

6.1.2 The condition of the seabird SSSIs in the Isles of Scilly

Of the 26 Scilly SSSIs (see maps in Appendix 1), seven are notified in whole or in part for their seabird interest. The changes in numbers of the seabird notified features is given in Table 2 in the Summary and the most significant concerns with respect to these numbers and the condition of these SSSIs since designation are:

- the loss of common terns as a regular breeding species for Scilly – terns are noted as seabird features for Annet, Pentle Bay and Samson;
- the loss of kittiwake from Chapel Down and Annet, and cormorant from the Norrard Rocks and Annet;
- the almost total loss of lesser black-backed gull colonies on Annet (898 pairs at designation – 99%) and Samson (2,085 pairs at designation – 92%);
- the 43% loss of puffins and 35% loss of great black-backed gull from Annet, the 50% loss of shags from the Western Rocks since designation;
- the 43% loss of storm petrel from the Pentle Bay (Round Island) since designation relating to a rat incursion discovered and subsequently cleared in 2021/22;
- the presence of rats on Samson, Pentle Bay, Chapel Down and St Helen's.

Although not specifically notified for their seabird interest features, we have similar concerns for a number of other SSSIs that support significant numbers of seabirds (and are listed for their breeding seabirds in the wider SPA citation). The most significant concerns are:

- the presence of rats and feral cats at Castle Down and Shipman Head and Down SSSIs, both of which have been found to support relatively large populations of Manx shearwater;
- a decline of 29% of both shags and great black-backed gulls breeding on the Eastern Isles since 1999;
- a decline of 75% herring gulls and 59% lesser black-backed gulls on Gugh since 1999;
- the loss of kittiwakes, herring and lesser black-backed gulls as breeding species on Castle Down since designation (caused by the total abandonment of Gimble Porth by 2013);
- the recent incursions of rats onto Teän and Pednbrose SSSI.

6.2 Factors driving change in seabird numbers in Scilly

In order to look at the factors driving changes in seabird numbers in Scilly, it is important to analyse the trends within a national perspective to see where changes seen in Scilly match and/or differ from those seen at a wider scale. The recent publication of the national Seabirds Count survey results (2015-21) allows us to do this using the latest national figures (Burnell *et al.* 2023).

Table 20 Summary of changes in Scilly in relation to national trends and their causes

Species	2023 numbers & importance	Change since 2015/16 & trend in Scilly	National Trends* Seabird 2000 to Seabirds Count	Main factors thought to affect National Trends
Fulmar	242 Regional	-16% Massive increases since first bred 1951, now declining	Across UK -37% England -22%	Reduction in fisheries discards, increased marine plastics ingestion, fisheries bycatch
Manx shearwater	1,061 Regional	+101% doubled in last 8 years and new sub-colonies found	Across UK +163% England 16-fold (Lundy rat removal 2004)	Predation – introduced rats mainly. <i>Puffinosis</i> and burrow flooding.
Storm petrel	1,603 International	+20% Increasing	Across UK +41% England -8% (breeding Lundy from 2014)	Predation – introduced rats & cats mainly but also native avian predators. Nesting site availability
Cormorant	43	-19% Generally stable at 40-60 pairs since 1940s	Across UK -5% England +6%	Increase in inland tree nesting colonies. Persecution, bycatch
Shag	655 National	-36% Declining since peak of 1,470 pairs 1977	Across UK -24% England -36% Red-listed 2015	Climate change – increased storminess particularly in spring causing mortality/ wrecks, reduced food availability, By-catch.
Lesser black-backed gull	1,040 International	-58% Continued decline – down 74% on peak of 4,050 pairs 1983	Increasing at urban rooftop colonies; coastal colonies declining UK -49%	Reduction in fisheries discards and better waste management. Urban colonies access to year-round food. HPAI
Herring gull	336	-40% Continued steep decline – down 85% on peak of 2,249 pairs 1974	Across UK -44% England -60% Red listed 2009	Reduction in fisheries discards and better waste management, Botulism. HPAI
Great black-backed gull	607 National	-38% overall decline since 1970s	Across UK -52% England -3%	Reduction in fisheries discards and better waste management. Turn to seabird prey under food stress. HPAI

contd

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Species	2023 numbers and importance	Change since 2015/16 & trend in Scilly	National Trends* Seabird 2000 to Seabirds Count	Main factors thought to affect National Trends
Kittiwake	21	-72% Continued steep decline – now just 2% of peak 861 pairs 1983	Across UK -43% England -4% Red-listed 2015	As a specialist inshore surface feeder, particularly vulnerable to climate change induced effects on plankton and sand-eel availability (North Sea studies)
Common tern	0 Regional	Lost as a regularly breeding species (peak of 210 pairs 1983)	Across UK -9% England -3%	Problems with ground predators (e.g. fox – not present in Scilly); flooding; reduced food supply and climate change
Sandwich tern	0	Historical site, max 18-22 pairs 1998, last bred 2008 (1 pair)	Across UK =4% England +5%	Recreational disturbance, climate change
Roseate tern	0 Regional	Historical site, max 20 pairs 1969, last bred 1995	Across UK +114% England +228%	Trapping in wintering grounds, nest predators
Guillemot	497	+71% Increasing – population quadrupled since 1983	Across UK -11% England +106%	By-catch in inshore fixed gill nets; winter wrecks; oil pollution; OWF displacement; HPAI
Razorbill	529	+12% Steady increase – population more than doubled since 1983	Across UK +18% England +240%	By-catch in gill nets; winter wrecks; oil pollution; show some ability to shift foraging strategies to buffer effects of climate change on food; OWF displacement; plastics
Puffin	187 Regional	+12% Stable, fluctuating around 160-90 pairs since 1999	Across UK -14% England -2% Red Listed 2015	Increased storminess & wrecks; by-catch & oil pollution; predation rats

*National trends based on changes between Seabird 2000 (1998-2002) and the Seabirds Count (2015-2021) (Burnell *et al.* 2023).

Rather than run through the details of factors known to be operating at a national level, the following sections deal with the major factors in turn with particular reference to the situation and species assemblage in Scilly.

6.2.1 Mammalian predators

The only species of mammals indigenous to Scilly are the lesser white-toothed shrew and pipistrelle bat, neither of which is known as a threat to seabirds. However, a number of other mammals are also present in Scilly – brown rats, red squirrels (Tresco only), cats and dogs (inhabited islands only), rabbits (all inhabited islands, Annet and Great Ganilly) and hedgehogs (currently St Mary’s only) – all of which to some extent pose a predation risk to seabirds, their eggs and young.

Introduced mammalian predators, and brown rats in particular, are known to be the overriding factor constraining the suitability of offshore islands for seabirds throughout the world (Atkinson 1985, Brown & Grice 2005). Since 1993 an intensive rat control programme has been operated by the Isles of Scilly Wildlife Trust with the support of a number of wildlife conservation organisations (Isles of Scilly Seabird Conservation Strategy 2023-2028). Over the years this has targeted selected island groups for eradication and responded to new incursions which are facilitated by the proximity of the seabird islands to burgeoning rat populations on the larger inhabited islands (Varnham 2004). The small outer rocks and islands of the Western and Norrard Rocks are regularly inundated by winter tides and have never been known to support rats. However, the discovery of established rat population on previously assumed to be ‘rat free’ islands such as Annet in summer 2004 and Round Island in January 2022, emphasize the need to maintain observations at presumed rat-free outer islands.

In the winter of 2013/14 by the Isles of Scilly Seabird Recovery Project (<http://ios-seabirds.org.uk>) effected the complete removal of rats from St Agnes and Gugh. As well as protecting the seabirds breeding on St Agnes and Gugh, this also helps to ensure that Annet is much less vulnerable to another incursion. In the winter of 2021/22 rats were also removed from Round Island.

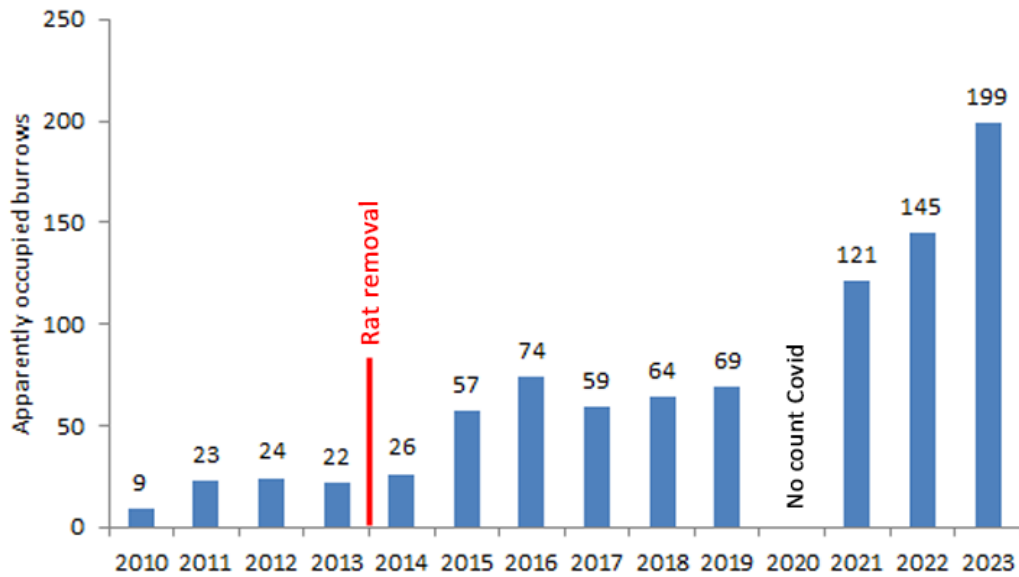
Although to some extent all seabirds are vulnerable to rat predation (Prieto *et al.* 2003, Latorre *et al.* 2013), the biggest effect is to be found on populations of burrow nesters, in particular storm petrels. Their small size and burrow-nesting make them extremely vulnerable to rat predation both of adults, eggs and chicks. Accordingly, by far the biggest influence on storm petrel breeding distribution and success across island groups is the presence or absence of rats (de Leon *et al.* 2006, Ruffino *et al.* 2009). This is also true of Scilly, with storm petrels only breeding on the rat-free outer islands, which by their nature and landing restrictions are rarely visited or disturbed. Just two years after rat removal from St Agnes and Gugh storm petrels were recorded nesting successfully at three new sites there in 2015. Similarly on Round island the impact of rat presence or absence on breeding petrel numbers was seen straight away.

Table 21 Numbers of storm petrels breeding on Round Island

2015	172 pairs
Rat incursion detected Jan 2022 and removed by Apr 2022	
2022	11 pairs
2023	105 pairs

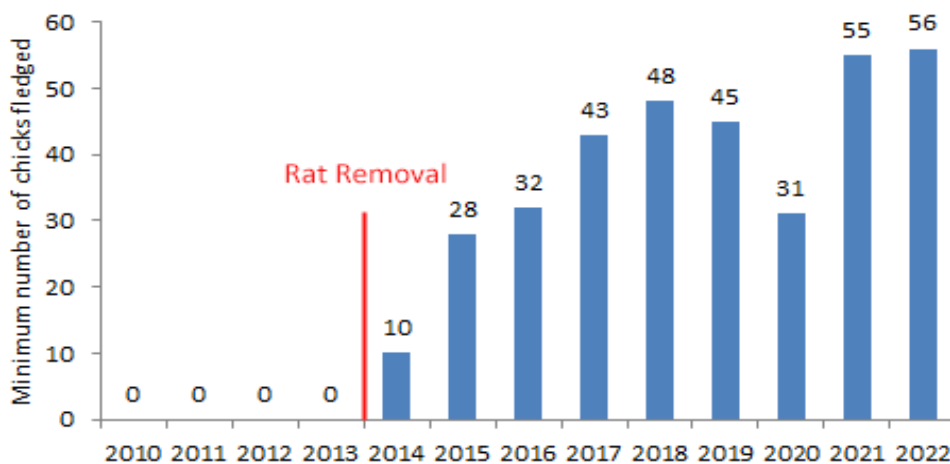
Manx shearwaters, also extremely vulnerable to rat predation, have shown a ninefold increase in breeding numbers since rat removal on St Agnes and Gugh, where numbers have been recorded annually since 2010 and have increased from just 22 pairs in 2013 to nearly 200 in 2023 (see figure 16).

Figure 16 Manx shearwater breeding numbers on St Agnes & Gugh



The removal of rats resulted in the first shearwater chicks successfully fledged from St Agnes and Gugh in living memory in 2015 and in 2022 a total of ‘stargazing’ chicks were recorded here (see figure 17). With Manx shearwaters taking 5 or 6 years to recruit into the breeding population, these results are still too recent to explain the large increase in birds seen at this site and across the archipelago. In other studies of new and rapidly increasing seabird colonies, immigration is found to strongly affect population growth rate with immigrants attracted by local pre-breeders and recruits (Szostek *et al.* 2014). The only other site in England where Manx shearwater breed is Lundy and this has seen a spectacular increase from fewer than 600 pairs in 2001 to over 25,000 individuals following rat removal in 2002-04 (Booker *et al.* 2019). It seems likely that a number of the new breeders to Scilly may have recruited from here, Skomer or Ramsey (where rats were also removed) where the populations have also increased.

Figure 17 Manx shearwater breeding success St Agnes & Gugh



In addition to increasing on St Agnes and Gugh, the numbers of Manx shearwaters have also increased across the islands as a whole (+203% since 2015/16) with expansions in distribution on both islands with rats (Tresco, St Mary’s and St Helen’s) as well as to islands previously cleared of rats (Great Ganilly in the Eastern Isles). Again, this is likely due to recruitment from nearby expanding populations such as Lundy. In 2023 32% of the current population of

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shearwaters in Scilly are attempting to breed at sites such as Tresco and St Helen's with rat presence. Previous attempts to locate 'stargazing' chicks at these sites have been wholly unsuccessful and much nocturnal rat activity has been encountered as well as abundant evidence of predation (see image below). With apparently limited or no breeding success these sites are likely to be acting as a population sink.

Evidence of predation at Manx shearwater burrows on St Helen's in 2018 (feathers discovered under bracken pointing to rat rather than avian predation)



In the winter of 2023/24 with the reforming of the Isles of Scilly Seabird Recovery Project Partnership, clearance of rats is underway on St Helen's.

The aims of this project are three-fold:

- To safeguard the breeding colonies of Manx shearwaters and puffins on St Helen's (115 Manx shearwater pairs and 10 pairs of puffin were recorded breeding in 2023), and to reduce the likelihood of rats swimming back to nearby Round Island (the second most important island for breeding Manx shearwaters and storm petrels on Scilly);
- To act as a pilot project to trial and develop techniques and materials to be used in potential future eradication projects, which would include Bryher, St Martin's, Tresco and uninhabited islands;
- To learn more about carrying out this work in winter on uninhabited islands.

There is a likelihood that rats, over time, will return to St Helen's, swimming from Tresco or St Martin's. It is uncertain what resources will be available to deal with this likelihood. Therefore, this project is not called a rat eradication project (as St Agnes and Gugh was, and as a future larger project would be); it is instead termed a rat clearance project which will have learning outcomes to help future planning.

Visits recorded from puffins, shearwaters and rats to same coastal burrows on St Helen's, June 2023



Cats have been shown to be a serious impact on seabirds on islands worldwide (Ringler *et al.* 2014) with 33 documented bird extinctions worldwide attributed to feral and free-roaming domestic cats (Lever 1994). Feral cats were a problem on Gugh in 2007 taking adult lesser black-backed gulls on a few occasions and since 2019 there has been an issue with free-roaming cat (thought to be domestic cat) predation of adult storm petrels at the three main breeding sites on Kittern Hill Gugh, Burnt Island and at Troytown St Agnes. A large number of adult birds have now been predated across these relatively wide-ranging sites (from wings left behind minimum 38 birds in 2019, 17 in 2021 and 4 in 2022, no wings found in 2023). Some trailcam footage of a tabby was captured in 2019 and 2022 (see below). Efforts to work with St Agnes residents around the issues of responsible cat ownership are ongoing.



Evidence of extensive dog diggings at shearwater burrows has been recorded on both Gugh and Bryher and in the past, adult shearwaters have been dug up and killed by dogs on St

Mary's and on Bryher. The influence of rabbit presence on outer islands in Scilly (Annet and Great Ganilly) should also not be overlooked as a number of studies have shown that they can destroy habitat and compete with hole nesting birds (McChesney & Tershy 1998, Courchamp *et al.* 2000).

6.2.2 Climate change and food availability

Small-bodied inshore surface feeders such as kittiwakes are particularly sensitive to changes in food availability (Furness & Tasker 2000, Daunt *et al.* 2002, Markones, Dierschke & Garthe 2010), and reduced food availability would appear to be a key factor in the decline of kittiwake numbers in Scilly. Since 2006 the productivity of kittiwakes has been studied and includes complete breeding failures in 10 of the last 17 years, with chicks raised per pair ranging from 0.01 to 0.71 in the intervening years (Heaney 2019). Observations of nest failure show that most took place in the critical first week or two of chick life, with chicks failing to grow and then disappearing suggesting an issue with food supply and secondary predation (Suryan *et al.* 2002). This fits with studies that suggest that breeding failure is a non-linear process characterised by a threshold beyond which individuals face an energy trade-off and can no longer sustain high reproductive and self-maintenance efforts (Ponchon *et al.* 2014). This sustained low productivity is probably sufficient to explain the decline in the breeding population before any further effects of stress on adult winter survival is considered (Kitaysky *et al.* 2010). Recent analyses predict that warming seas will result in a northward shift in the thermal boundary critical to sand eels and their copepod prey. Resulting from this, kittiwakes, near the southern limit of their geographical range in Scilly, are likely to contract northwards (Russel *et al.* 2015, Davies *et al.* 2021).

In recent years the terns have been very late to return to the islands and show any interest in breeding, with any hatching observed well into July in 2016, 2017 and 2021. Although in these years a few chicks fledged, numbers were low and the lateness likely to affect post-fledging survival adversely. No breeding was observed in Scilly 2018-2020 and 2022-23. As small bodied surface feeders, like kittiwakes, these trends in terns are likely to be related to climate change impacts on food availability (Mitchell *et al.* 2018b, Sydeman *et al.* 2021) However much of the work relating reduced breeding success to increases in sea surface temperature is recorded from North Sea colonies and the relationship is not always clear (Cook *et al.* 2014, Davies *et al.* 2021) More data is needed for Celtic sea region and a PhD Studentship on 'Mapping Forage Fish and Seabird Interactions on the Isles of Scilly to Maximise Conservation Gains' is planned for 2024.

In addition to increases in temperature affecting foods supply, another prediction of climate change is increased storminess to which island nesting species will be particularly vulnerable (Bonter *et al.* 2014, Newell *et al.* 2015). In Scilly, the seabirds most likely to be impacted by this predicted change in storm frequency and intensity include:

- Shag – partially waterproof feathers and low fat stores mean that these birds are particularly vulnerable to reduced survival in rough winter weather (Frederiksen *et al.* 2008) and that the smaller and lighter females have to work particularly hard to find food in turbulent water (Lewis *et al.* 2015). Although winter beached bird counts recorded high incidences of shags in the winter of 2014/15 (J Askins *pers. Comm.*), annual counts of birds nesting on Annet (see Appendix 5) suggest that the decline there has been gradual, rather than sporadic as could be expected if the declines were due to wrecked birds. The series of storms in October 2023 have had a particularly devastating impact of the shags on the Isle of May (The Guardian 23 Nov 2023);
- Auks – major 'wrecks' in the winter storms of 2013/14 have been linked to a 25% reduction in puffin breeding numbers on Skomer and Skokholm (Wood 2015) as well as reductions at Alderney, Channel Islands (R. Gauvain *pers. Comm.*) As visual predators increased water turbulence makes catching prey more difficult (Harris &

Elkins 2013, Clairbeaux et al. 2021) The frequency and magnitude of wrecks appears to be increasing (Harris et al. 2023) although often it is mostly immature birds that are impacted (Camphuysen et al. 1999);

- Wetter summers could increase the likelihood of burrow flooding for Manx shearwaters. Hotter summers could also increase the prevalence of Botulism in gulls feeding at landfill sites.
- Storms, flooding and sea level rise will all affect all low-lying tern breeding sites (e.g. terns on Green Island) and a general coastal squeeze will lead to a loss of habitat for gulls, terns and storm petrels (e.g. boulder beaches on Annet).

6.2.3 Avian predators

A number of avian predators occur naturally in the Isles of Scilly including raptors, herons, large gulls, corvids and some waders that may opportunistically take eggs. Numbers of most of these species are low and they are unlikely to take seabirds in numbers sufficient to affect seabird population size. Scilly, does, however, support both lesser and great black-backed gulls in large numbers, such that they are considered as of conservation importance in their own right, and are both amongst the interest features of several of the Scillonian SSSIs, the SPA and the Ramsar site designation.

That great black-backed gulls predate other seabirds is not of doubt and the presence of numerous 'feather' pellets and predated carcasses (particularly on Annet) confirm that storm petrels and shearwaters among other birds are taken. The nocturnal breeding activities of storm petrels and shearwaters are likely an adaptation to minimise this predation (Ainley *et al.* 1974).

It does not necessarily follow though that predation by great black-backed gulls in particular will be having a population level effect on their prey:

- predation by gulls on burrow nesters such as petrels and shearwaters tends to focus on prospecting non-breeders and fledglings, with birds being taken in the air or on the ground and breeding adults tending to fly quickly to and from colonies, spending little time on the ground (Brooke 1990)
- predation on other birds tends to be carried out only by a proportion of specialist gulls, so it is behaviour rather than abundance which is important with the size of the colony not directly influencing the levels of predation (Furness 2003, Votier *et al.* 2004, Oro *et al.* 2005);
- Current population levels of great black-backed gull across the archipelago, are decreasing, and are over 60% less than recorded in the 1970s, at a time when detailed studies concluded that levels of predation did not have a significant impact on the populations of shearwater, storm petrel or shag (Allen 1974).

Over the last 20 years in Scilly up to 4 pairs of peregrines have been recorded breeding annually in Scilly. However, in the last 5 years there appears to have been a decline, with traditional sites on Great Ganilly and Puffin Island being abandoned. In 2015 a peregrine nest was found on Annet for the first time and a pair has attempted to breed here in 4 of the years since with varying success. Over this time large numbers of storm petrel and in particular Manx shearwater wings have found in the vicinity of the nesting attempts on Annet and also at a plucking post on the nearby Burnt Island.

That shags in Scilly nest almost exclusively under boulders or in caves at the back of beaches, suggests predation pressure may be a significant issue for these birds also. In the previous SPA survey we found some correlative evidence for a localised effect of great black-backed

gull predation on shag numbers (Heaney & St Pierre 2020). However, the significant declines in both species seen in the last 8 years indicate that these changes are a result of unrelated overall population trends for these species.

Table 22 Population changes in shag and great black-backed gull 2006 to 2015/16

Island	Great black-backed gull numbers		Shag numbers	
	2015/16	2023	2015/16	2023
Annet	235	151 (-64%)	85	53 (-38%)
Gweal	72	26 (-64%)	61	51 (-16%)
Mincarlo	33	29 (-12%)	58	36 (-38%)
Ragged Island	27	28 (+4%)	30	22 (-27%)
Menawethan	66	48 (-27%)	38	4 (-90%)
Great Ganinnick	11	0 (Lost)	10	18 (+80%)
Little Innisvouls	15	4 (-73%)	46	0 (Lost)
Samson	7	9 (+29%)	27	25 (-7%)
White Island	31	16 (-48%)	7	5 (-29%)

Kittiwake numbers have been declining steadily in Scilly since the early 1980s and in recent years have suffered predation of eggs and chicks at their nesting sites. There is some anecdotal evidence that corvids were implicated in the loss of nests at the Daymark and on Gugh (2012-13 and 2009-10 respectively) and in 2015 one pair of great black-backed gulls with chicks was seen to systematically predate nests at the sole Turk's Head colony, and within a period of a week and a half it was deserted. In 2019 a peregrine was recorded on trailcam over one week in mid-July systematically predated all but one of the kittiwake chicks from the 20 pairs that nested on Gugh that year. With the low numbers of kittiwake now breeding in Scilly, they are likely below a critical density needed to collectively fight off unwanted attention. Research at kittiwake colonies at other sites has shown that colonies with fewer nests are more likely to be attacked by gulls and less likely to fledge young (Massaro *et al.* 2001). Coupled with apparent problems with food supply causing lower nest attendance (Chivers *et al.* 2012), avian predation, although significant, is only the proximate cause of failure of the colony.

6.2.4 Habitat change

Changes in grazing management and the introduction of non-native invasive plant species can cause habitat degradation and influence breeding seabirds directly by reducing the amount of suitable nesting habitat or indirectly by providing attractive habitat for predators. Conversely, some edge cover can be useful allowing chicks shelter from inclement weather, aerial predators and conspecific adult attacks (Ellis & Good 2006, Good 2002, Bukacinska & Bukacinska 1993, Brouwer & Spaans 1994, Villanueva-Gomila *et al.* 2009, Colcherc *et al.* 2010).

In a number of areas vegetation cover has become very dense with thick woody bramble and honeysuckle all but obscuring Manx shearwater burrows on islands such as St Helen's and providing a presumably prohibitive barrier to recolonisation should gull numbers increase for example on Samson. Although the relationship is complicated some clearance or grazing would almost certainly benefit these species. In addition the rapid establishment of pittosporum and sour fig for example on islands such as St Helen's is providing additional food resources for rats and this maybe causing elevated population of ground-nesting seabird colonies.

The dramatic increase in breeding numbers of Manx shearwaters on St Agnes and Gugh since rat removal appears to have resulted in competition for nesting sites as the sub-colonies expand. Although shearwaters can dig their own new nest burrow (as has been seen on Gugh in recent years), although in many cases the coastal ram is hard and compacted and they will also take over an existing shearwater, puffin or rabbit burrow. On at least 5 occasions in recent years intact shearwater eggs have been found ousted near the entrance to burrows on St Agnes, Gugh and Round Island. The calibration study conducted in 2021 found that just over 50% of the apparently suitable burrows surveyed on St Agnes and Gugh contained active nests (on Lundy the figure was only 23%, Booker *et al.* 2019.) In an attempt to alleviate this pressure the Homes for Shearwaters Project deployed 35 artificial nesting boxes along the eastern coast of Annet in Feb/ Mar 2022 to try and help reduce competition and potentially facilitate recruitment of our 'home-grown' chicks. In 2023 three of these boxes were discovered to have nesting storm petrels in and it is hoped that in future years the boxes will facilitate monitoring of breeding activity and provisioning, as well as ringing access and potentially live-streaming of burrow and chick activity.

6.2.5 Human disturbance and offshore wind farms

Tourism consists as much as 85% of the local economy in Scilly and focuses in particular on the natural and cultural environment. Local recreational use of the coast is high and many locals own small boats. Although there is a "no landing" policy in place for the most important seabird islands during the summer months, there is evidence that this is not well enough known.

The islands as a whole are currently being marketed as a 'dog friendly' destination where dogs can enjoy the wide-open spaces. Despite an extensive review which suggests that many colonial waterbirds, terns and gulls in particular, can become extremely tolerant of repeated human disturbance (Nisbet 2000), other studies warn of negative effects from disturbance and a trade-off between potential costs and benefits of public access on a site and species-specific basis (Rodgers & Schwikert 2002, Blumstein *et al.* 2003, Watson, Bolton & Monaghan 2014).

In October 2023, thanks to financial support from RSPB and the Isles of Scilly National Landscape, Footprint Ecology commenced a study on the impacts of recreational disturbance in Scilly. The promotion and delivery of the workshops on St Mary's and St Martin's was supported by the Islands' Partnership, IoSWT and RSPB. This represents the start of a process; further consultation has already taken place.

With the effects of climate change in mind, it is important that we meet our green energy targets and move away from fossil fuels. Significant expansion is planned, and construction scheduled, in next 10-20 years in the Celtic Sea for floating offshore windfarms (300MW capacity Llŷr 1 & 2 and White Cross) (The Crown Estate 2023a). A recent JNCC review (O'Brien *et al.* 2021) identified priority species at the greatest risk of negative impact from offshore windfarms as puffin, kittiwake, guillemot, razorbill and lesser and great black-backed gulls.

Potential negative impacts include:

- Direct collision impacts for birds regularly flying at turbine height e.g. storm petrels (Ainley *et al.* 2015) herring and great black-backed gulls (Furness *et al.* 2013) This could be exacerbated by light attraction in storm petrels (Rodriguez *et al.* 2017) and Manx shearwaters (Guilford *et al.* 2019, NatureScot 2020), especially fledglings (Syposz *et al.* 2018);
- Sandbank areas, which are nursery grounds for sand eels, are also favourable places for pile-driving turbine footings (Kenyon & Cooper 2005) this could affect

hydrography and sand eel abundance. This impact does not apply however to floating offshore windfarms;

- Displacement from preferred feeding grounds recorded in guillemots (Furness *et al.* 2012, Peschko *et al.* 2020), razorbills (Furness *et al.* 2013) and puffins (Searle *et al.* 2014). Commercial fishing effort may be similarly displaced and concentrated together in even greater overlap with birds;
- Sublethal 'barrier effects' increasing energetic costs of migration or commuting (Masden *et al.* 2009, 2010).

6.2.6 Changes in fisheries management, agriculture and the management of waste

The Scillonian fishery has never been large, taking mainly shellfish and just one set of towed gear working out of St Martin's. The Scilly MCZ also includes voluntary bans on sand-eel fishing and seaweed harvesting. However, a large fishing fleet is based at Newlyn within foraging range of birds from Scilly and it is possible that changes here (reduced discards etc.) will have influenced numbers in Scilly. These large gull species have a foraging range of +120km so changes to their food availability would need to be assessed to determine any impacts beyond the islands. Reduced availability of fisheries discards has in many cases led gulls to feed more on waste tips increasing the incidence of mortality due to botulism and poisoning. No studies have been conducted into the causes of death in gulls in Scilly and the possible influence of botulism should not be overlooked.

6.2.7 Pollution and fisheries by-catch

Apart from large disasters such as the wreck of the Torrey Canyon oil tanker in 1967, which may have affected auk populations in Scilly, oil pollution and toxins such as organochlorides also do not appear to be a significant ongoing problem for Scilly's breeding seabirds. Signs of oiling peaked in guillemots in the 1980s (Netherlands beached bird surveys) and the RSPB UK Beached Bird Survey reports lower oiling rates for auks and gulls in the last two decades (Kelly 2022).

Anthropogenic floating marine debris is an increasing problem in our seas and surface feeding procellariiforms such as fulmars are highly susceptible to plastic ingestion (Day *et al.* 1985, Provencher *et al.* 2014) Their gizzard morphology and inability to regurgitate hard prey parts mean that they are at greater risk of gastro-intestinal blockage with balloons being the highest risk item, 32x more likely to cause death than hard plastic (Roman *et al.* 2019) The NE Atlantic has a relatively low exposure risk, but this is increased for Manx shearwaters migrating to the South Atlantic.

Inshore fixed gill nets can be a source of considerable mortality for pursuit-diving seabirds, especially if set close to large breeding colonies (Piatt & Nettleship 1987, Regular *et al.* 2010), in addition fulmars have been recorded to experience significant issue with bycatch in the Grand sole area by long liners also reported historically which could also be an issue (Dunn *et al.* 2001). But, as discussed before, the local Scilly fishery is small and unlikely to cause any changes at a population level. Due to the large foraging ranges and seasonal movements of some of the seabirds, bycatch may be an issue for some species in their breeding foraging ranges or non-breeding areas. Recent work by the Cornwall IFCA using looming eyes on buoys (Rouxel *et al.* 2021) found them not to be effective. However the same research found that temporal and spatial measures could potentially significantly reduce bycatch but the socio-economic impacts would need further assessment (Paul St Pierre pers comms).

6.2.8 Disease including HPAI

A number of diseases and natural toxins can affect seabirds. Avian botulism in gulls (Lloyd *et al.* 1976, Neimanis *et al.* 2007), puffinosis in Manx shearwater chicks (Brooke 1990) and red tide toxins in shags and kittiwakes (Potts *et al.* 1980, Coulson & Strowger 1999) can all cause significant mortality. However, none of these have been recorded in Scilly.

H5N1 Highly Pathogenic Avian Influenza virus emerged in farmed geese in Guangdong China 1996 and has been evolving rapidly ever since, leading to H5N1 emerging in the Netherlands in 2020 (EFSA *et al.* 2022a). The winter of 2020-21 then saw the 'largest and most widespread' outbreak of two avian influenza strains ever recorded in wild birds in the UK affecting many species (Duff *et al.* 2021a). In the 2021 breeding season the spread affected mostly skuas, then affected wintering Svalbard Barnacle geese on the Solway Firth in winter 2021/22. More significantly the disease endured into the early 2022 breeding season affecting guillemots, gannets, skuas and gulls on the North and the East islands and coasts (Freath *et al.* 2022) and on into 2023 when inland breeding terns and black-headed gulls were particularly badly hit. Over course of 2022 and the beginning of 2023, a minimum of 40,000 seabird deaths were estimated in Britain and Ireland (Pearce-Higgins *et al.* 2023)

In Scilly through the late summer and early autumn of 2022, the Isles of Scilly saw a large number of dead or dying gannets wash ashore, presumably from the nearest colonies at Grassholm and Alderney (both colonies which were badly affected). There was limited evidence of local spread, with only a small number of large gulls being affected. The IoSWT undertook an extensive collection and disposal of bird corpses in Scilly over this period, in partnership with local authorities, which may have helped limit the spread by reducing availability of infected carrion.

In 2023, there was little sign of HPAI in Scilly. The seabird survey recorded three possible instances of HPAI (including secondhand reports) – a dead lesser black-backed gull on St Agnes on 18th May, a sick Herring Gull on St Agnes on 25th May and a sick juvenile gull on St Mary's on 9th August. With no significant mortality within the breeding seabirds of the Isles of Scilly either prior or during the 2023 breeding bird survey, this survey provides a baseline which can help assess the impacts of any further outbreak in Scilly.

7 Conclusion

There has been a complex pattern of change within the seabird community in Scilly in the last eight years. Different species and islands have shown contrasting patterns. The main aim of this survey was to assess the current state of the Isles of Scilly SPA and constituent SSSIs for seabirds. It is clear that overall numbers and in particular numbers of some species have declined markedly across the SPA as a whole. A number of notified seabird interest features of SSSIs have been lost altogether.

Various management issues need to be addressed if the fortunes of seabirds are to be reversed, as laid out in the Isles of Scilly Seabird Conservation Strategy 2023-28. The removal of rats has been a great success on St Agnes and Gugh. The Isles of Scilly Seabird Recovery Partnership reformed in September 2022 in order to consider the feasibility of rat eradication from all of the off-isles within the archipelago. This feasibility study is now being supported by Natural England (via RSPB) through the Action for Birds in England programme. A robust seabird monitoring programme is essential to inform the success of all conservation actions.

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10 Glossary

AONB – Area of Outstanding Natural Beauty (re-launched as IoSNL in Nov 2023)

COR – Cormorant

COT – Common tern

FUL – Fulmar

GBBG – Great black-backed gull

GUI - Guillemot

HG – Herring gull

HPAI – Highly Pathogenic Avian Influenza (Bird Flu)

IFCA – Inshore Fisheries & Conservation Authority

IoSNL – Isles of Scilly National Landscape (re-launch of the AONB in Nov 2023)

IoSWT – Isles of Scilly wildlife Trust

KIT – Kittiwake

LBBG – Lesser black-backed gull

mNCEA – Marine Natural Capital and Ecosystem Assessment Programme

MX – Manx shearwater

NE – Natural England

OWF – Offshore wind farms

PUF – Puffin

Ramsar – Ramsar Sites are wetlands of international importance designated under the Ramsar Convention on Wetlands

RAZ – Razorbill

RSPB – Royal Society for the Protection of Birds

SAC – Special Area of Conservation

SH – Shag

SP – Storm petrel

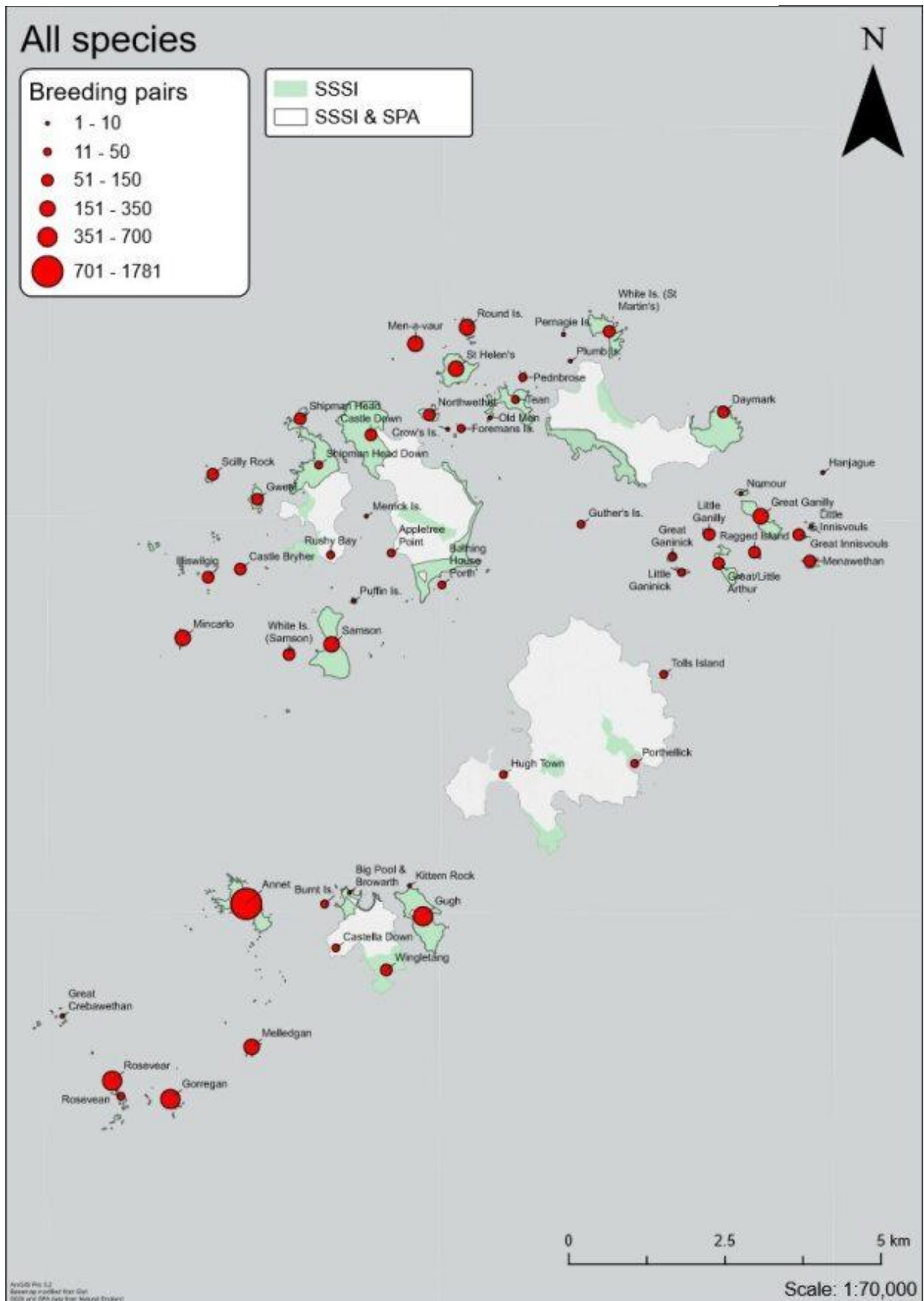
SPA – Special Protection Area

SSSI – Site of Special Scientific Interest

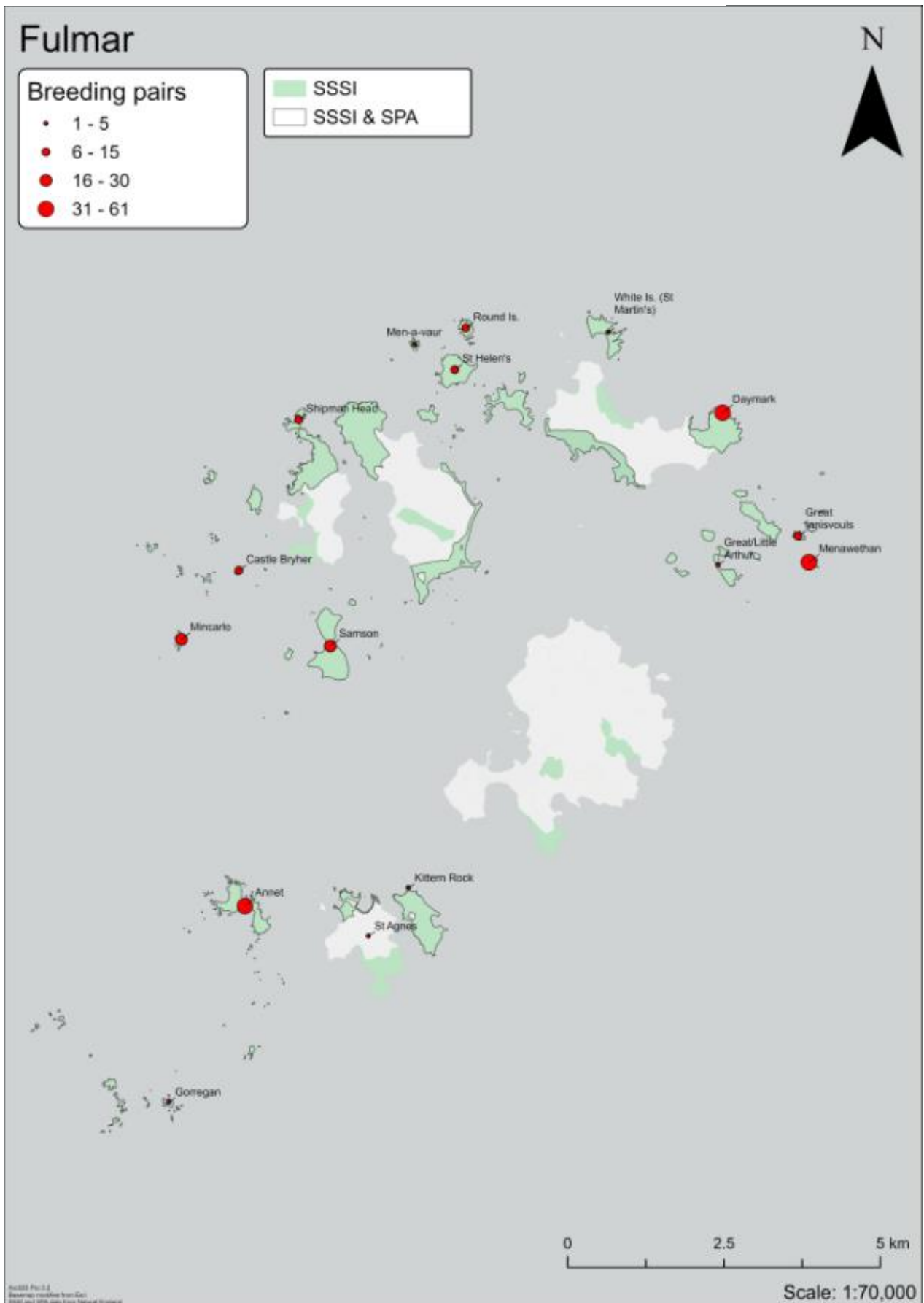
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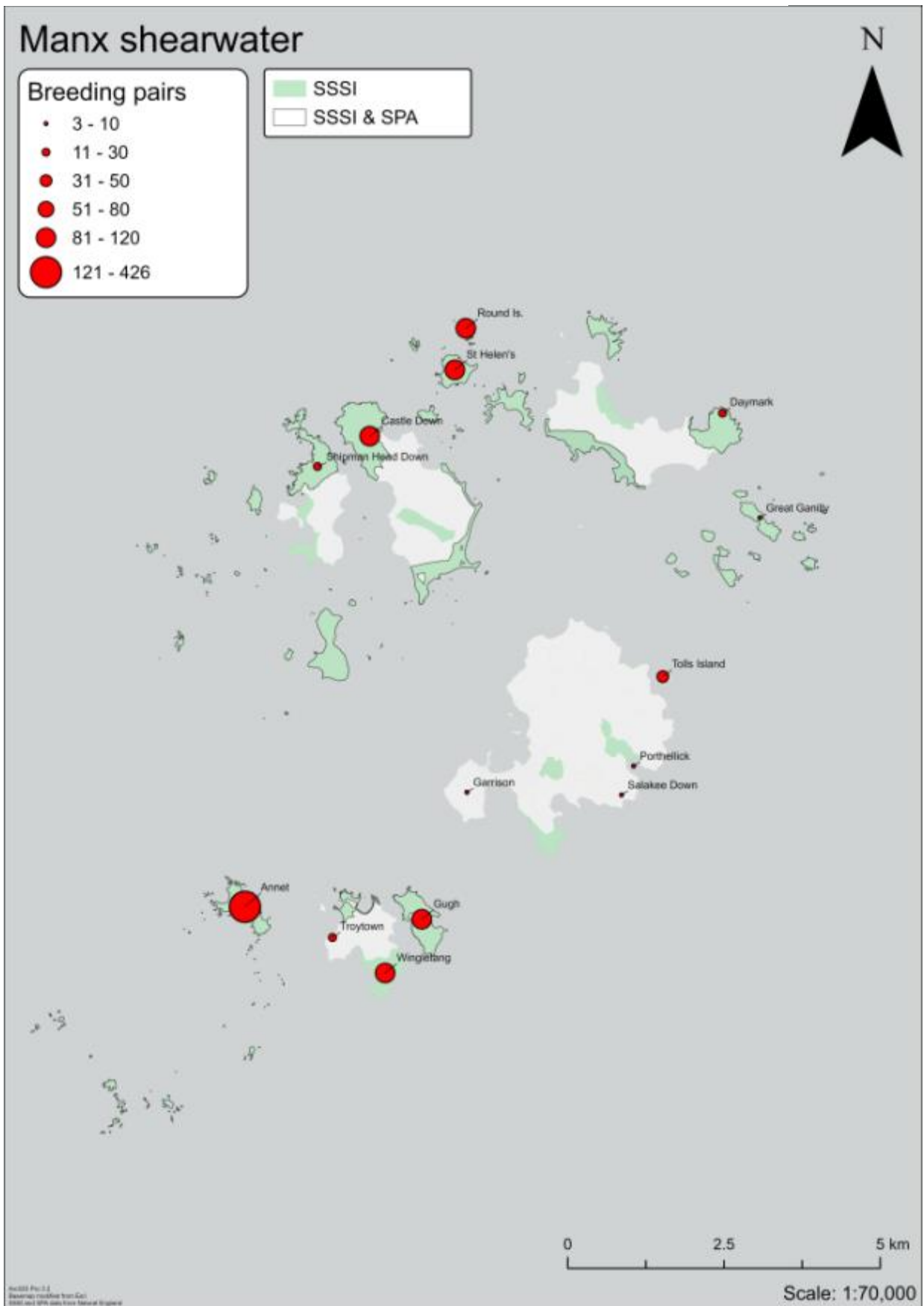
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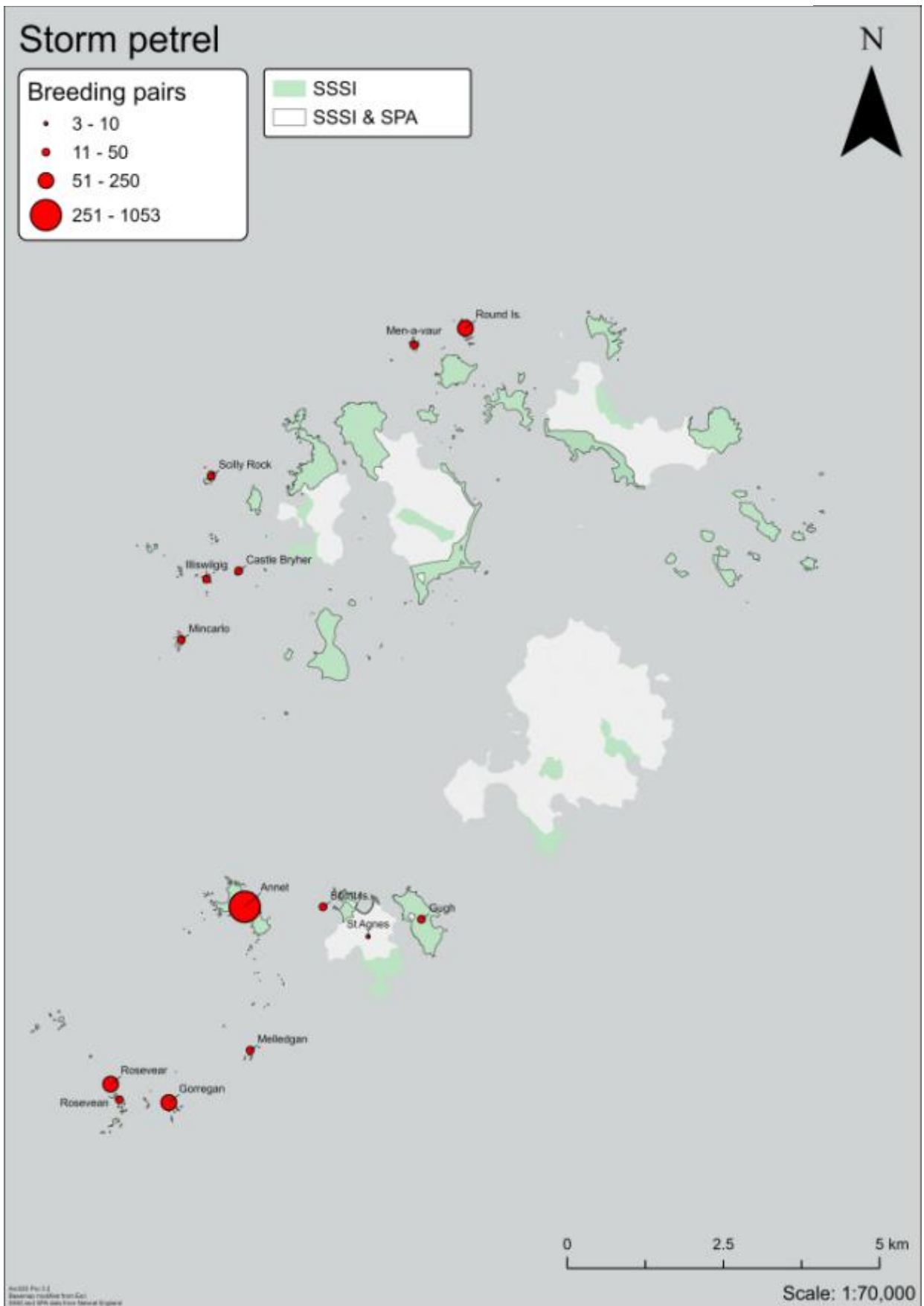
Map 2 Distribution of breeding fulmar 2023



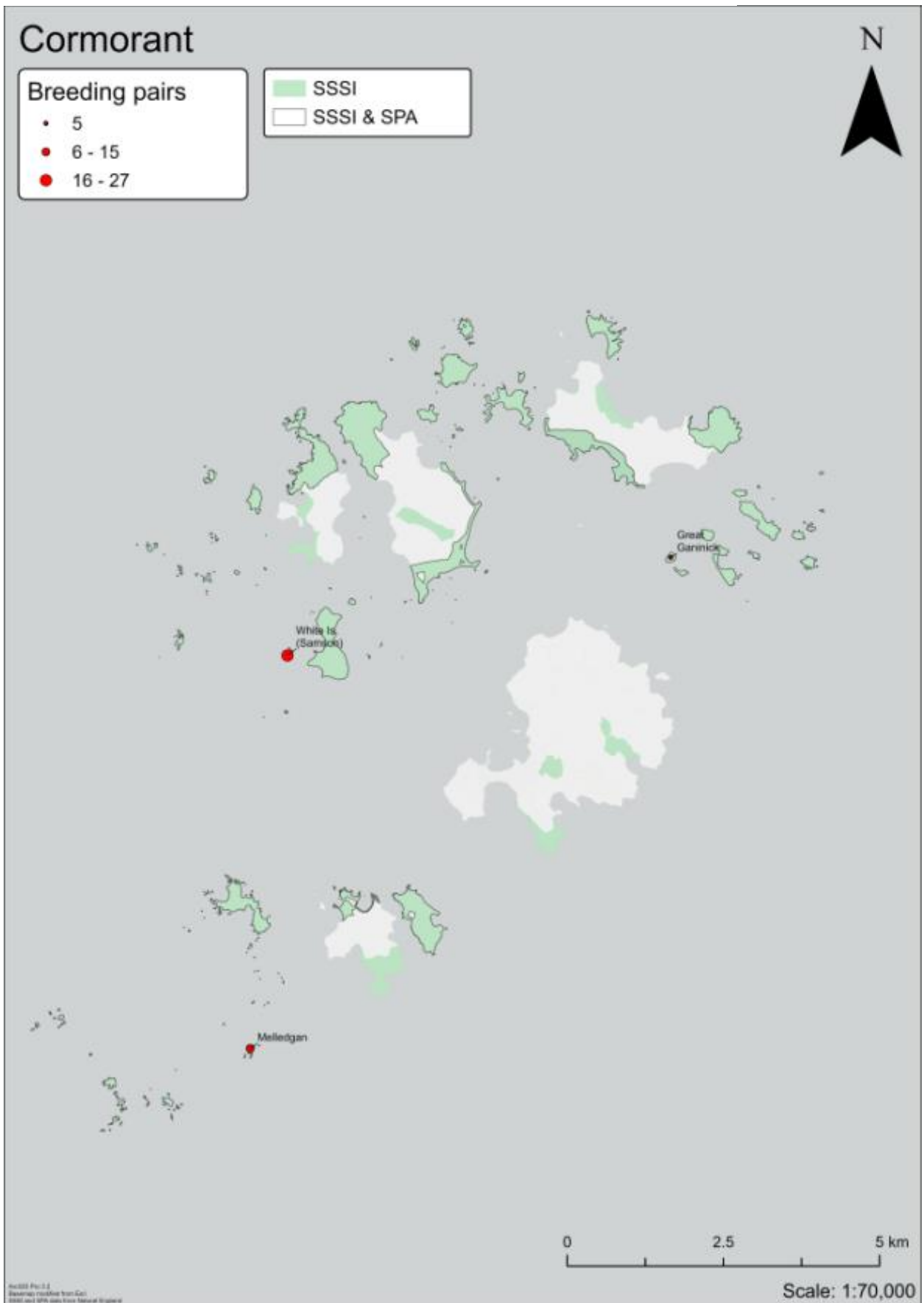
Map 3 Distribution of breeding Manx shearwater 2023



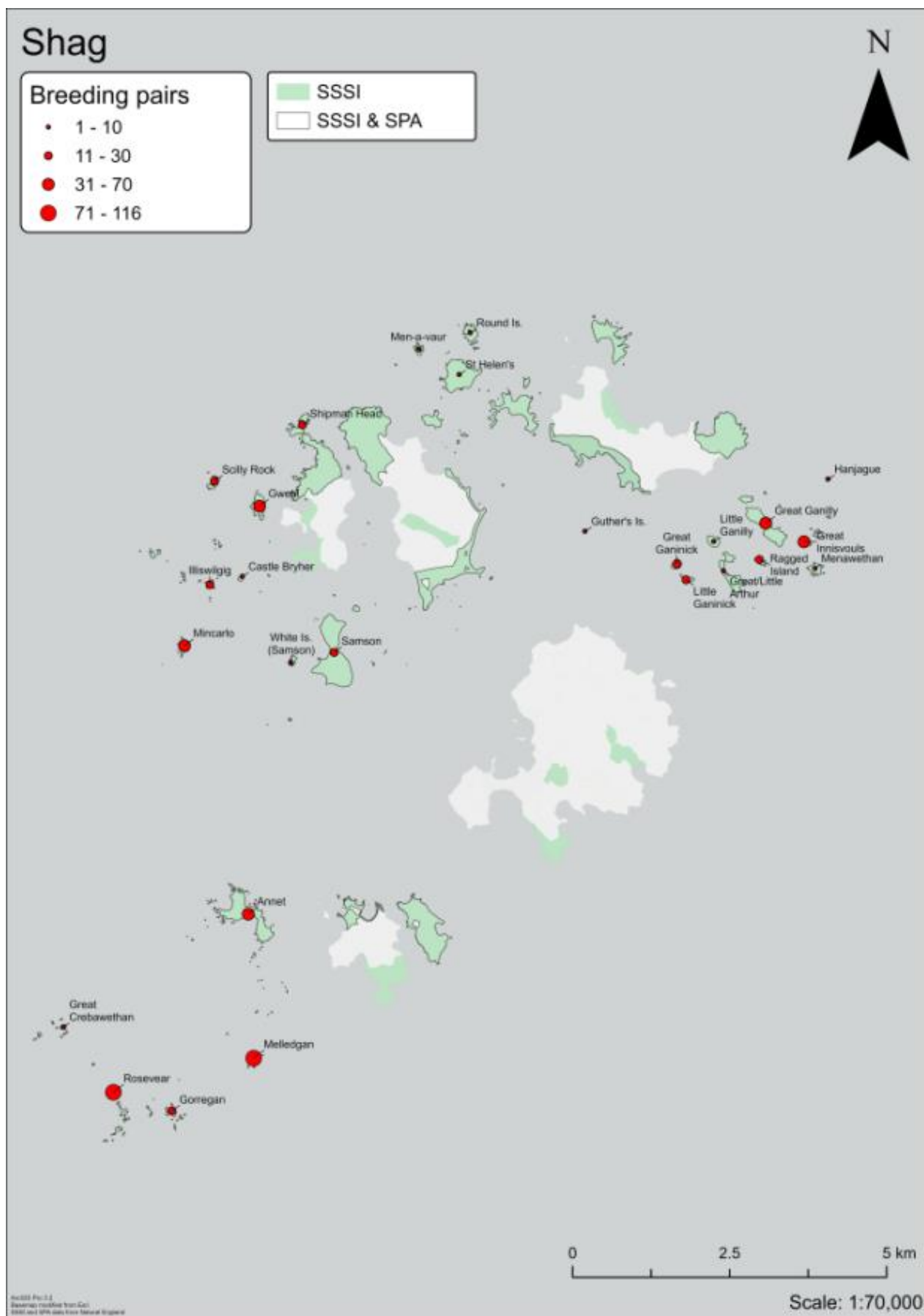
Map 4 Distribution of breeding storm petrel 2023



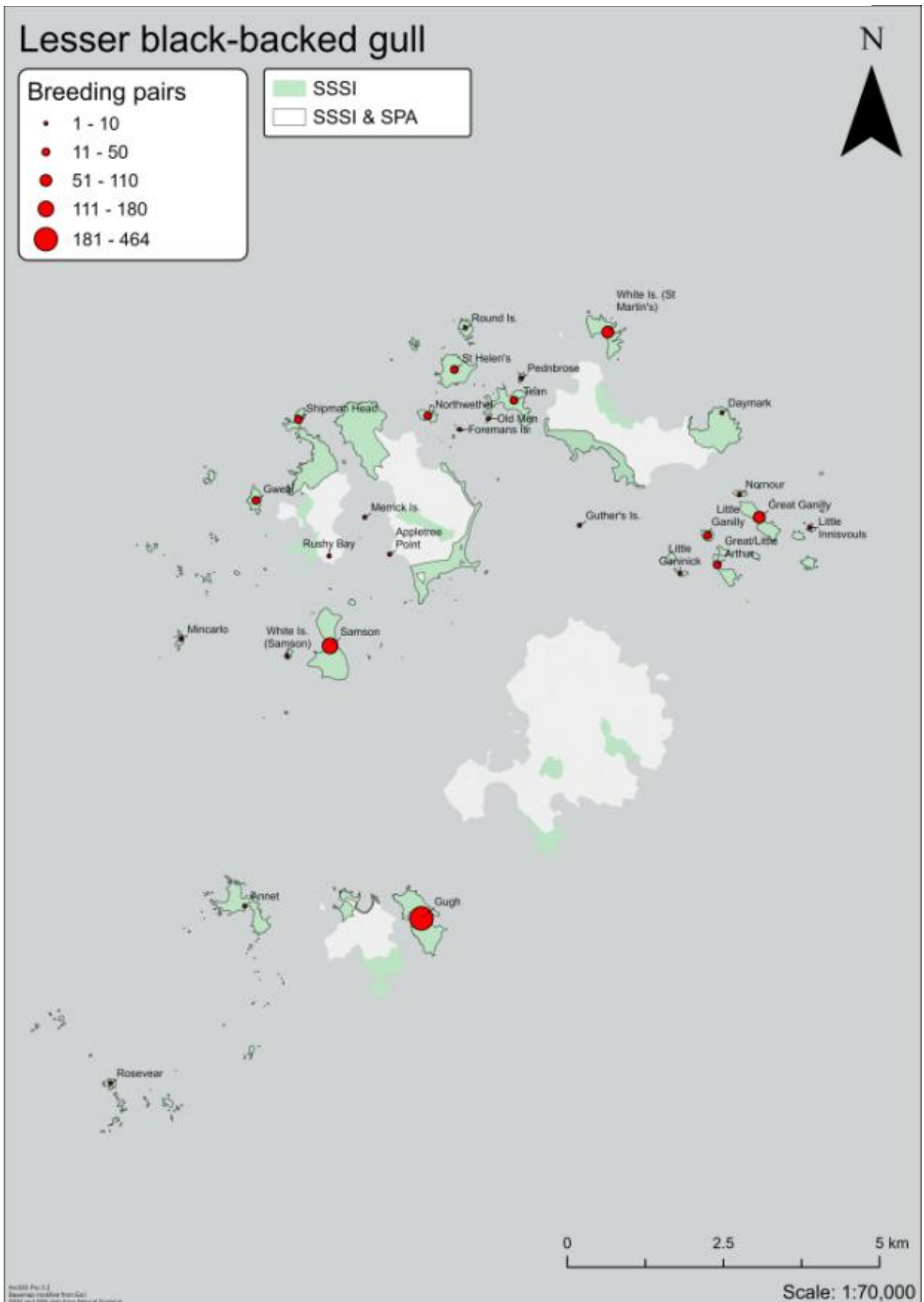
Map 5 Distribution of breeding cormorant 2023



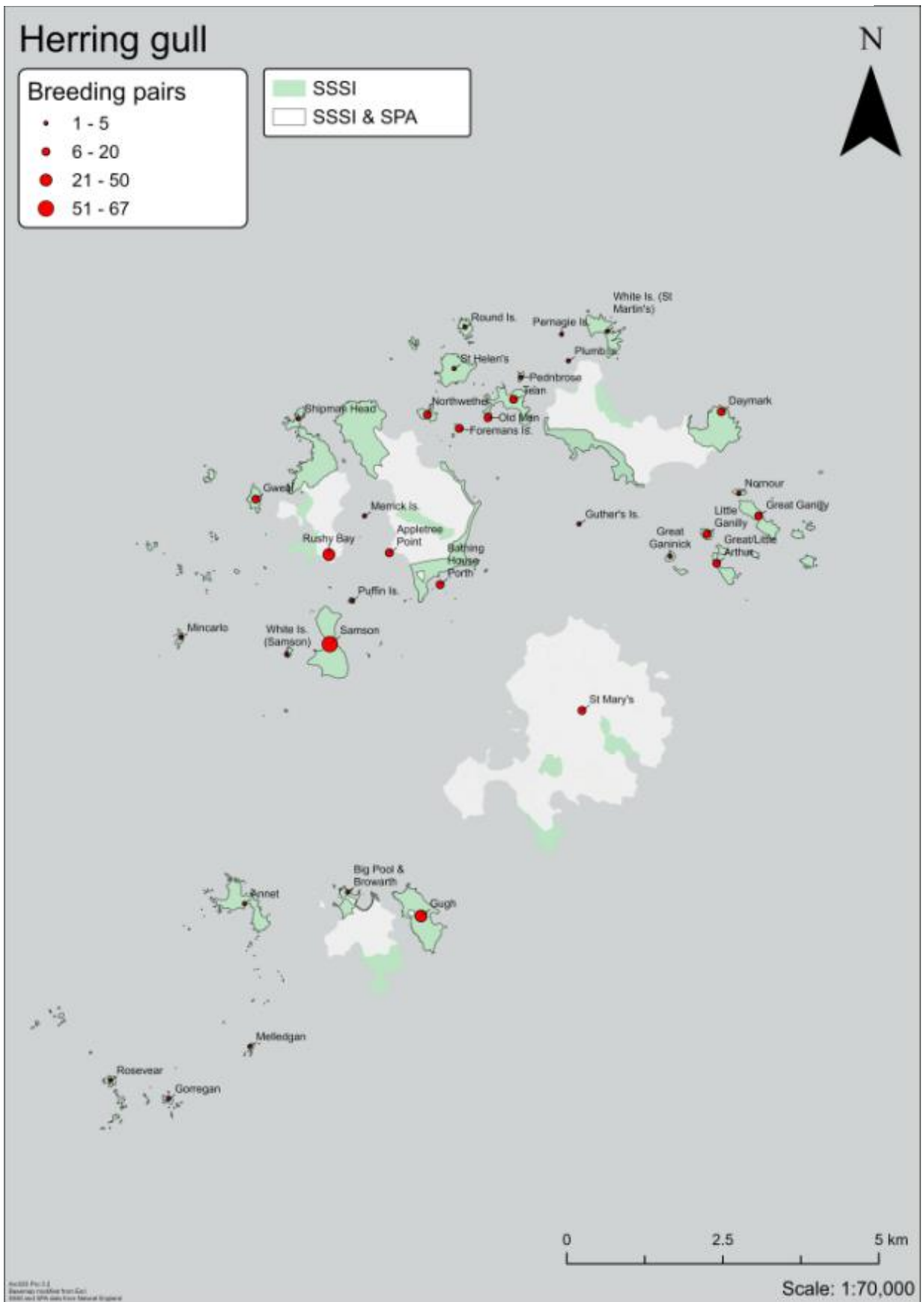
Map 6 Distribution of breeding shag 2023



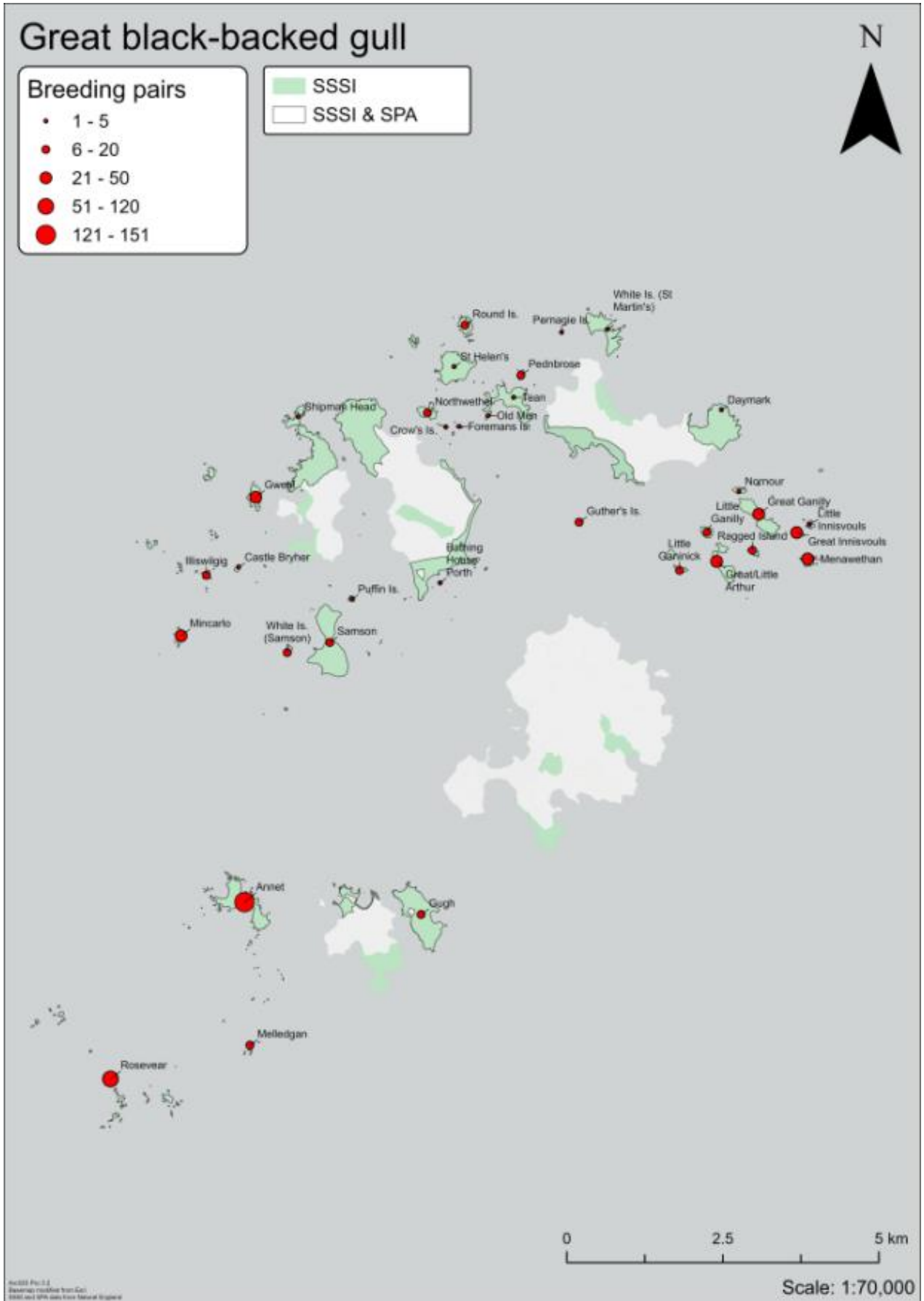
Map 7 Distribution of breeding lesser black-backed gull 2023



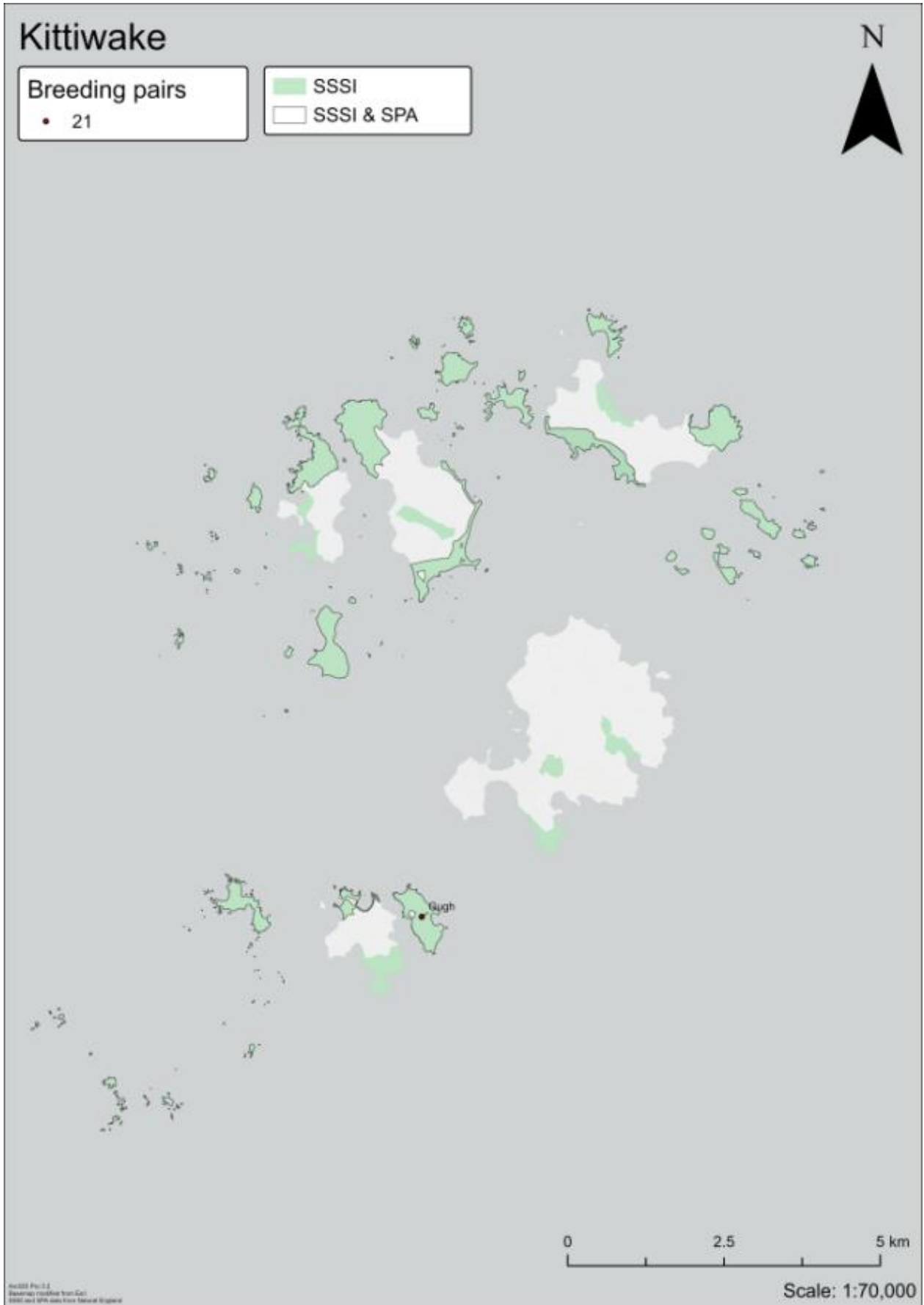
Map 8 Distribution of breeding herring gull 2023



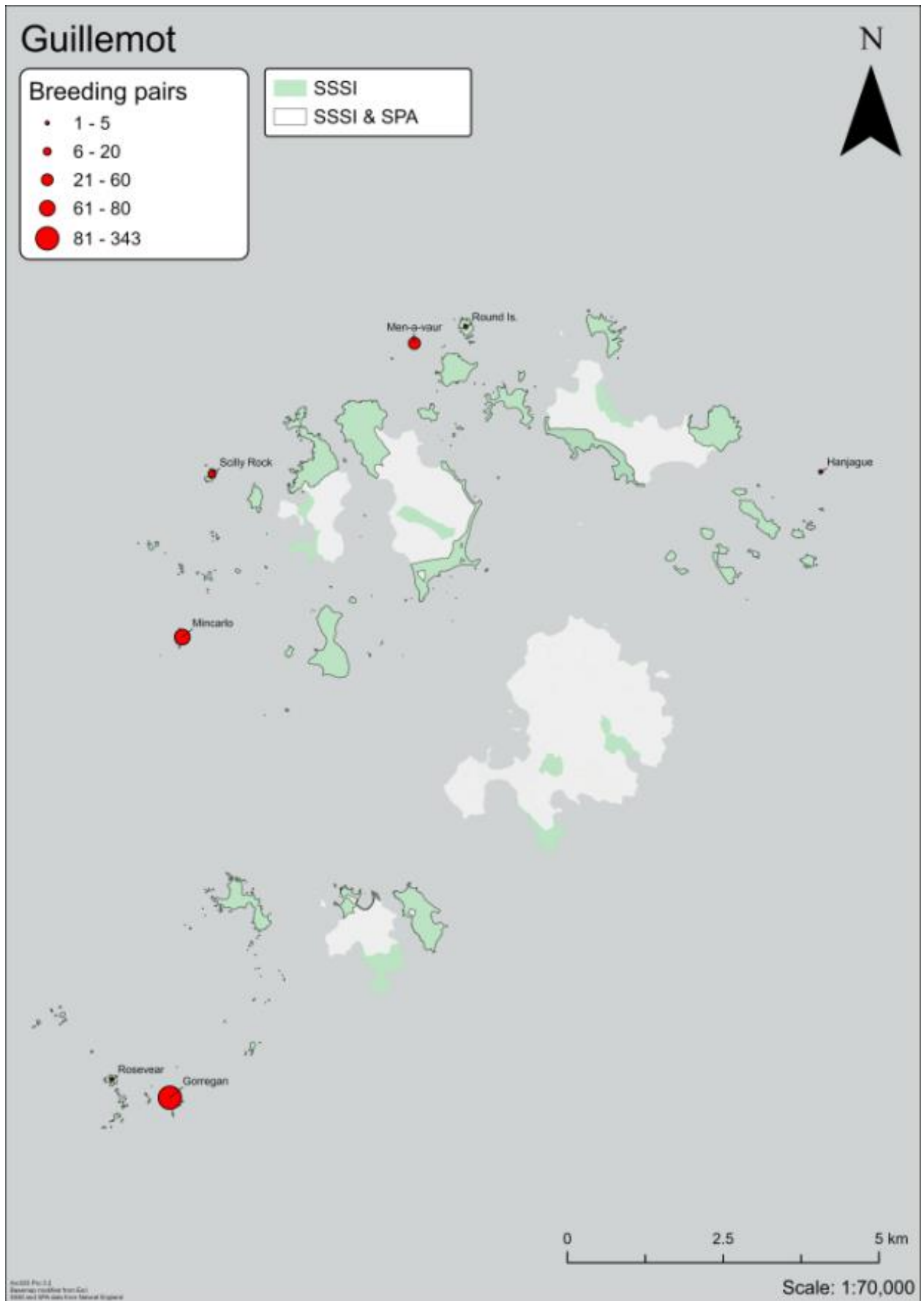
Map 9 Distribution of breeding great black-backed gull 2023



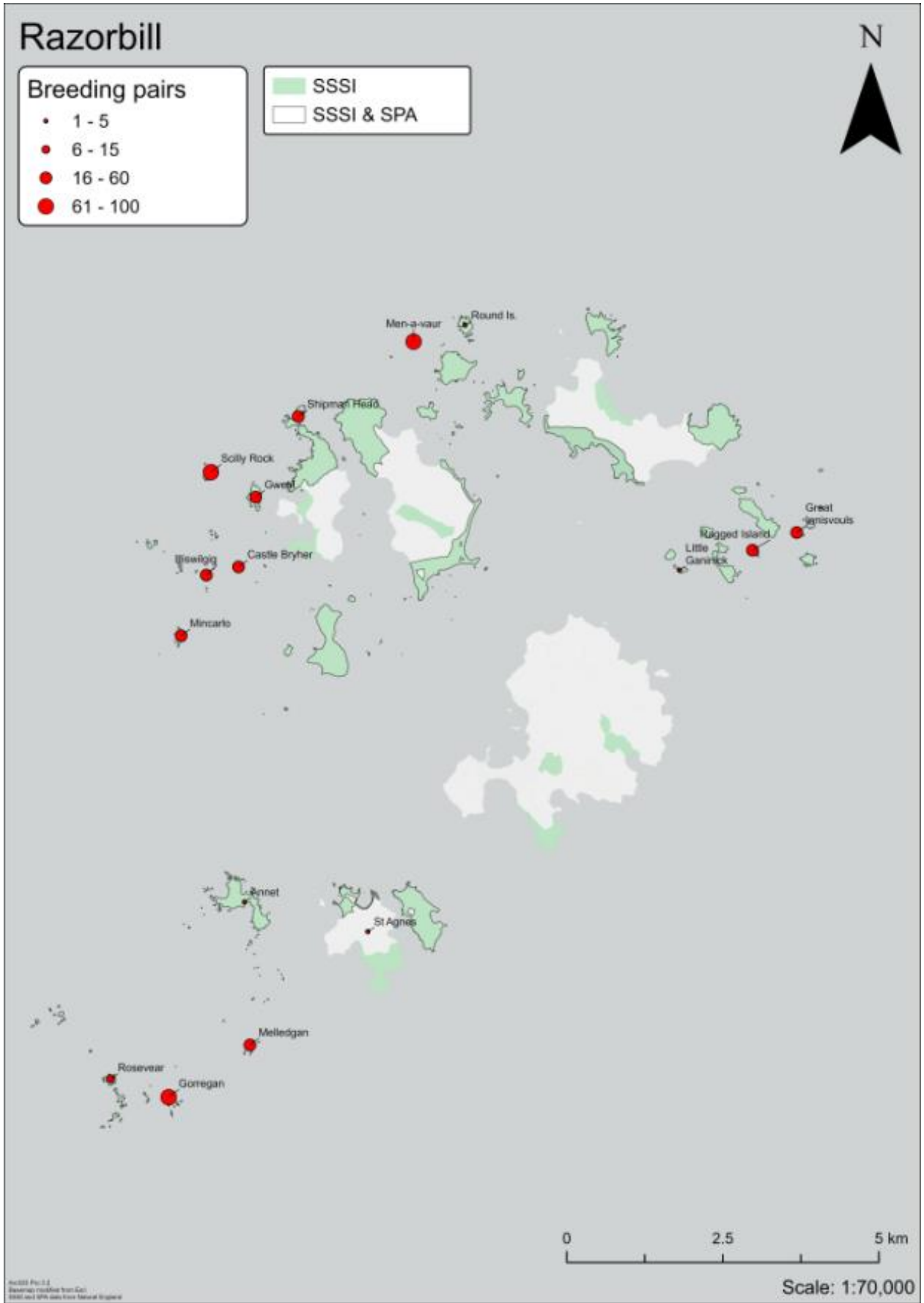
Map 10 Distribution of breeding kittiwake 2023



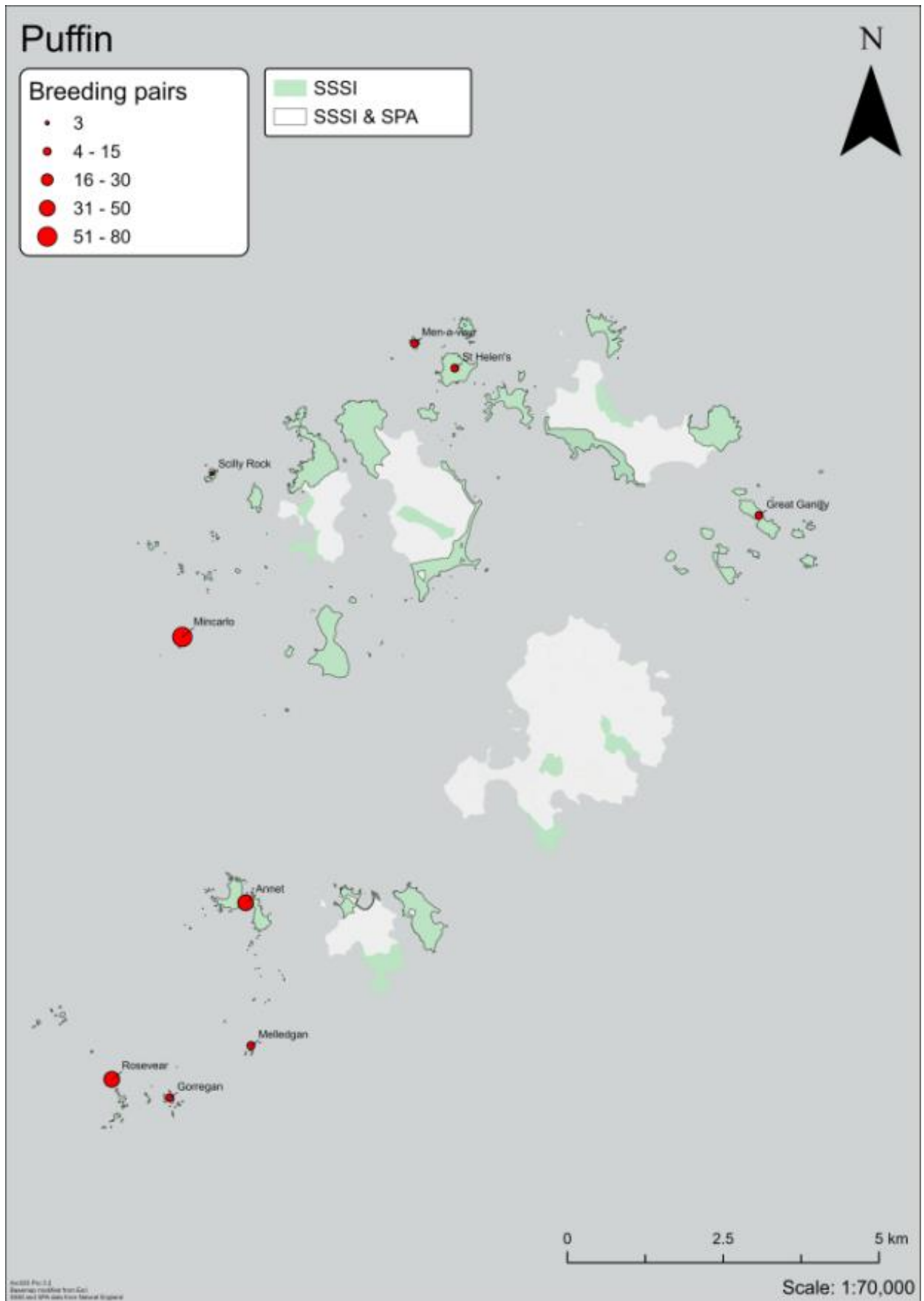
Map 11 Distribution of breeding guillemot 2023



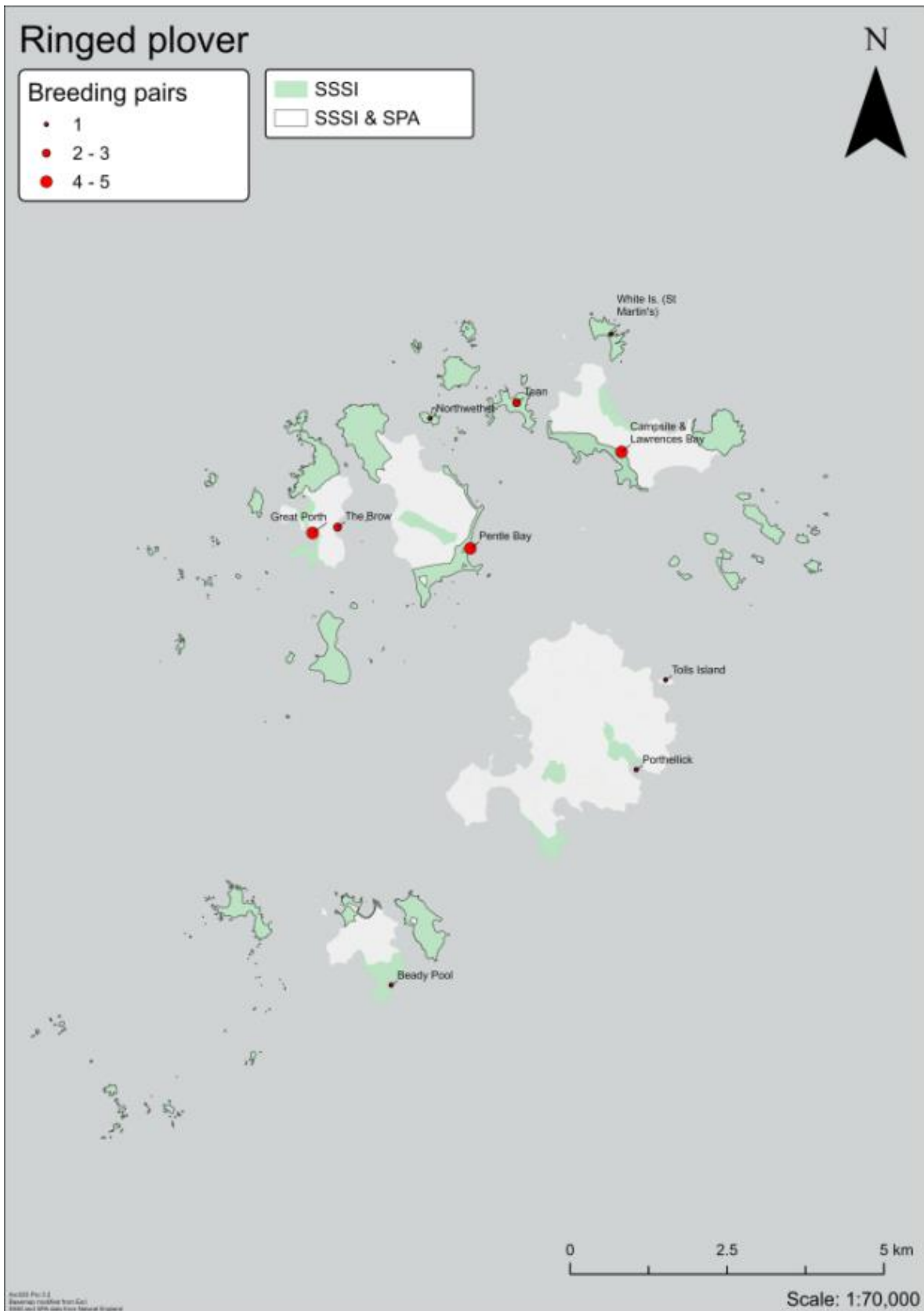
Map 12 Distribution of breeding razorbill 2023



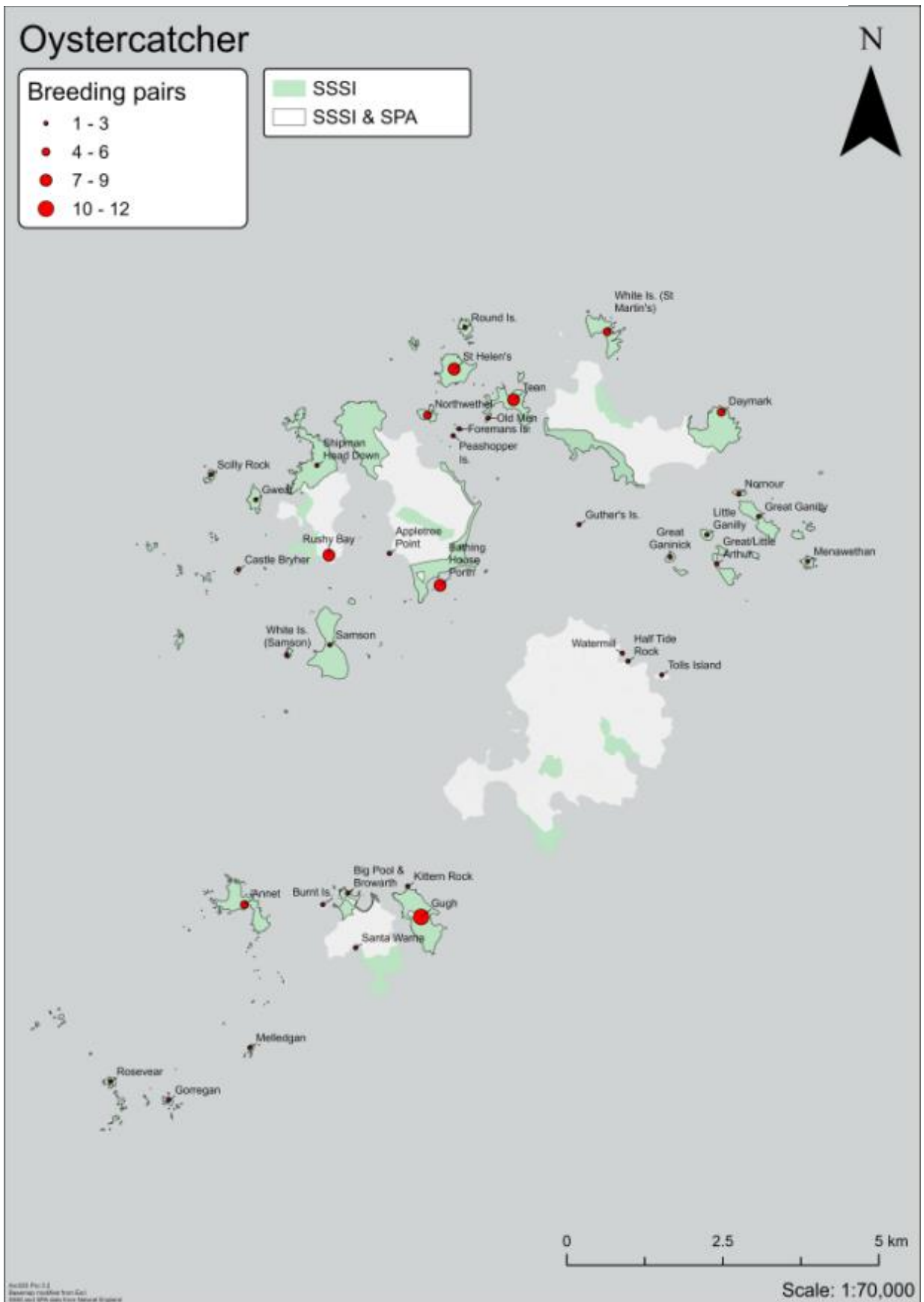
Map 13 Distribution of breeding puffin 2023



Map 14 Distribution of breeding ringed plover 2023



Map 15 Distribution of breeding oystercatcher 2023



Appendix 2: Table 1 Full counts by island 2023

	FUL	MX	SP	COR	SH	LB	HG	GB	KIT	COT	SAT	GUI	RAZ	PUF	Total
Annet	47	426	1053		53	5	5	151					3	38	1781
St Agnes, Big Pool & Browarth SSSI							1								1
St Agnes, Wingletang		96													96
St Agnes, not SSSI	3	19	3										2		27
Burnt Island, St Agnes			40												40
Tins Walbert															0
Gugh		84	20			464	40	7	21						636
Kittern Rock, Gugh	1														1
Tresco, Castle Down		115													115
Tresco, Porth Mellin															0
Tresco, Appletree Point						2	16								18
Tresco, Gimble Porth															0
Tresco, Pentle bay SSSI (includes Blockhouse, Carn Near & Skirt corner)							10	1							11
Merrick Island, Tresco						1	1								2
Green Is (Tresco)															0
Plumb Is, Tresco															0
Round Island	10	96	105		9	6	1	13				5	1	0	246
Gweal					51	12	15	26					24		128
Mincarolo	17		14		36	2	3	29				80	58	80	319
Illiswilgig			17		28			9					35		89
Maiden Bower															0
Castle Bryher	6		31		9			2					28		76
Scilly Rock			25*		20							7	81	3	136
Seal Rock															0
Men-a-vaur	5		17*		1							60	100	4	187
Northwethel						38	19	12							69
Peasehopper Is															0
Crow's Is								3							3
Foreman's Island						10	7	3							20
St Helen's	6	115			7	30	3	1						10	172
Teän						15	14	3							32
Pednbrose						1	4	12							17
Old Men, Teän						1	6	2							9
St Martin's, Daymark	61	22				1	6	4							94
St Martin's, Pernagie Point															0
St Martin's, Campsite and Lawrences Bay															0
Plumb Is, St Martin's							3								3
White Island (St Martin's)	1					109	5	3							118
Guther's Island					7	1	5	12							25
Pernagie Island							1	1							2
Half Tide Rock															0
Hedge Rock															0
Great Cheese Rock															0
Great Ganinick				5	18		5								28
Little Ganinick					14	1		16					1		32
Little Ganilly					4	42	9	17							72

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Great Ganilly		3			41	91	17	38					4	194	
Nornour						1	1	4						6	
Great/Little Arthur	2				9	24	16	28						79	
Ragged Island					22			20				31		73	
Menawethan	42				4			48				0	0	94	
Little Innisvouls						1		4						5	
Great Innisvouls	9				45			28				19		101	
Hanjague					1						1	0		2	
Samson	20				25	161	67	9						282	
Green Island (Samson)														0	
White Island (Samson)				27	5	6	3	16						57	
Puffin Island							3	1						4	
Bryher, Shipman Head Down		22												22	
Bryher, not SSSI							22							22	
Bryher Rushy bay SSSI						1	3							4	
Shipman Head	9				11	13	3	4				30		70	
Hangman's Island														0	
Merrick Island, Bryher Carn of bars														0	
Rosevean			28									0	0	28	
Rosevear			142		116	1	2	63				1	12	38	
Gorregan	3		68		17		1					343	80	4	
Great Crebawethan					2									2	
Melledgan			40	11	100		1	17				24	6	199	
St Mary's, Peninnis														0	
St Mary's, Porthellick														0	
St Mary's, Watermill														0	
St Mary's, Tolls Island		47												47	
St Mary's, other non SSSI		16					18							34	
2023 Totals	242	1061	1603	43	655	1040	336	607	21	0	0	497	529	187	6821

Appendix 3: methodology and protocols

Notes on methodology for individual species and estimated counts

Between April and September 2023, data on seabird breeding distribution and numbers was collected using standard methods as set out in *The Seabird Monitoring Handbook* (Walsh *et al.* 1995) with further details taken from Gilbert, Gibbons and Walsh (1998) and on the SMP website. Further notes on methodology relevant for individual species specifically as part of the Scilly SPA count in 2023 are outlined below.

All the data has been entered into the JNCC Seabird Monitoring Project database according to the count codes in the table below.

Table 23 Summary of methodologies employed

Species or Group	Count Unit	Method Code (SMP)	Survey period
Fulmar	AOS	1.1 sea-based counts 1.2 land based counts	Mid-May to end June
Cormorant	AON	1.2 land-based counts	Early May to late June
Shag	AON	1.2 land-based counts	Late May to mid-June
Gulls (HG, LBBG, GBBG)	AON	1.3 land-based counts 3.5 aerial count using drone	Late May to early June
Kittiwake	AON	1.2 land-based counts	Late May to mid-June
Guillemot & razorbill	IND	1.1 sea-based counts 1.2 land-based counts	Early to mid-June
Puffin	IND/SEA/AIR	2.3 counts of individual attending the colony	April to mid-May optimal
Manx shearwater	AOB	5.2 count of AOBs using tape-playback	May to June
Storm petrel	AOS	5.2 count of AOSs using tape-playback	July

AON – Apparently occupied nest; AOS – apparently occupied site; AOB – apparently occupied burrow; IND – individual adults at colony; SEA – individual adults on adjacent sea; AIR – individuals in the air.

Fulmar

Count Apparently Occupied Sites (AOS) – when a bird appears to be sitting tightly on a reasonably horizontal area judged large enough to hold an egg (exclude birds sitting on/hanging on to sloping section of cliff or vegetation). Two birds on such a site, apparently paired, count as one AOS. Take care not to flush the birds where possible. On steep slopes or ‘cliff’ areas (e.g. Menawethan, The Daymark, Haycocks Annet) these counts will be done from a boat.

June 0900 – 1730 (late May and early July)

Cormorant

Count Apparently Occupied Nests (AON) – birds apparently incubating or brooding; unattended broods of young; or other attended well-built nests including empty ones capable of holding eggs. Nests in a lesser stage of construction not to be counted as an AON but recorded separately and if possible, return later to check.

Early May – Late June

Shag

Count Apparently Occupied Nests – birds apparently incubating or brooding; unattended broods of young; or other attended well-built nests including empty ones capable of holding eggs. Nests in a lesser stage of construction not to be counted as an AON but recorded separately and if possible, return later to check. Shags tend to flee from nest very rapidly if surprised and can kick young or eggs out with them – try not to sneak up on them!

Late May – Late June

Gulls (Lesser Black-backed - LBBG, Black-backed - GBBG, Herring - HG)

Count Apparently Occupied Nests (AON) – well constructed nests, either containing eggs or young (in or near nest), or capable of holding eggs.

In general, in Scilly HG tend to nest on the beaches, with GBBG spaced along vantage points along the beach tops, and LBBG in large colonies inland. Sometimes HG and LBBG are mixed on beaches and eggs too similar so need to check birds attending (keep an eye ahead, overhead and also at birds settling back behind). For GBBG the eggs are noticeably larger and much deeper call of bird overhead.

Census Method 3 to count large LBBG colonies inland, Min team of 4 to walk transects through colonies – where a line of observers a metre or two apart systematically cover all the ground in the colony and count the active nests (fully formed nests with or without eggs), person on outer flank to mark limit of count with bamboos and pick up on swing back. Complete before nests start hatching in first week of June.

Mark each active nest as encountered – add a piece of pasta to the nest, at end of count one observer to recount a sample strip at 90° to original strips to determine proportion of active nests that are marked. In some colonies a few pairs of HG and GBBG nest amongst the LBBG (e.g. Gugh top colony) in this case inspection from a vantage point is needed to check how many pairs and adjust the count accordingly. **Kit needed:** Bamboos with coloured top to mark edge of transects, coloured pasta shapes for marking counted nests, hand clickers.

0900 – 1600 Late May – Early June

Drone counts for LBBG & HG (see protocol)

The traditional ‘walk-through’ count, although effective, is a relatively invasive technique that creates quite a bit of temporary disturbance (and nest predation risk) and there is potential for error with missed or double counted nests.

In 2021 and 2022 the use of drone technology to assist with gull counts was trialled. As well as potentially reducing disturbance the use of UAVs (Unpiloted Aerial Vehicles) or drones offers an advantage for accessing nests found around clear patches or rocks deep within thick brambly vegetation. In 2023 local drone pilot – Gareth Tibbs from Bryher – was again contracted to help with the survey. This overcomes the issues of drone-flying skills and knowledge of regulations (e.g., in Scilly drone use is restricted over much of the islands by the Civil Aviation Authority) that are needed as well as the cost of the drone itself.

Informed by the protocol detailed in Rush et al. (2018) using drones to produce high resolution images for later analysis of lesser black-backed gull colonies on Skokholm Island (1,400 breeding pairs), we again used a Mavic 2 Pro drone as follows:

- A smooth flyover at 40 m above the sub-colony from a take-off site approximately 20m to the side of the sub-colony, allowing the birds to become comfortable with the UAV;

- The altitude of the UAV was lowered to 30m whilst in motion to the side of the sub-colony – this elicited little to no reaction from the breeding birds;
- A transect was flown at a speed of 4mph providing image overlap of approximately 20% over the sub-colony with images captured at 2 second intervals to ensure a similar overlap between images. (As an example, in 2023 the Gugh top colony survey generated 780 high resolution images).

The high-resolution images collected in late May were then uploaded onto Dronedeploy.com which meshed them together to produce an orthomosaic of the sub-colony – effectively a large top-down image of the whole site for analysis. Online software (DroneDeploy and DotDotGoose) was then used to zoom in and click on apparently incubating birds to produce an estimate of breeding pairs. Sarah Dalrymple helped with reducing full orthomosaic size using GDAL to make manipulating the image on DotDotGoose easier.

Ideally counts should be made before 10am when numbers are most consistent (Edney *et al.* 2023) and any shadows from low sun make it easier to identify standing birds. Where a couple of different gull species are nesting together, they can be told apart easily on the images by mantle colour. In 2023 a sub-section of the main Gugh colony containing roughly 100 nests was selected for comparison between the new drone survey and the previous walk-through method. There was a less than 5% difference in the population estimates obtained. Although the top-down drone footage missed some nests tucked under vegetation edges, it was extremely useful in locating outlying nesting pairs and nests further back in the dense bracken and bramble; overall this drone footage is thought to have produced a reliable estimate.

Corregidor-Castro *et al.* 2022 suggest a 0.7 multiplier to convert counts of individuals present at the colony to counts of breeding pairs (removing the need to work out whether birds are standing/ loafing or sitting / incubating). In 2023, applying this to the Gugh colony produced an almost identical estimate of breeding pairs.

Kittiwake

Nest in distinct, localised colonies and construct obvious nests.

Count Apparently Occupied Nests (AON) – a well-built nest capable of containing eggs with at least one adult present. Also make a count of ‘trace’ nests (poorly built nests with adults in attendance) and where possible return later to check if progressed.

Single count early to mid-June, possibly a second count in late June if many trace nests seen on first count

Common Tern

Sensitive to disturbance, do not flush from nests in rain or strong winds.

Counts of Apparently Occupied Nests (AON) – specify if apparently incubating adults or active clutches (plus empty nests with material). Repeated counts mid-May to late June. Incubating birds can be separated from resting off-duty birds by posture – partly hidden because sitting in a scrape and tail pointing upwards at an angle.

Or for small rocky islets that can be visited by boat and counted quickly on foot (observers about 3m apart). No visits in poor or very hot weather, spend no more than 20 mins in colony – several short visits better than one long one.

Late incubation best – early to mid-June.

Guillemot & razorbill

Recommended census unit is Individual Adult on land (above intertidal areas), repeated counts where possible, ideally at least two. Where birds nest among boulders (razorbills particularly) count number of individuals directly and by flushing from crevices.

All the razorbills and guillemots nesting in Scilly occupy concealed nest sites mostly under boulders or in rock crevices. This precludes the usual method employed at most cliff nesting colonies of simply counting the number of visible birds from a suitable vantage point. On Scilly all breeding sites were visited in the first 3 weeks of June, with a count of all visible birds made in addition to a count of the number of birds that flushed from crevices when the breeding area was entered and an estimate of the number of birds that remained concealed. For the densest colonies on Mincarulo, Men-a-vaur and Gorregan this task is aided by having a team member stay on the boat to record the birds that flush, with the team ashore concentrating on the birds that stay put. However, the increased numbers at these sites in 2023 made counting auks using this method extremely challenging and what was arrived at, although comparable between years, is very much a best estimate. Counts from calm evenings in May in the immediate pre-breeding period, when razorbills in particular are known to show themselves near the entrance to concealed nest sites can also help in estimating numbers.

Birds on intertidal rocks and those on the sea were not included in the count. No correction factor (usually 0.67 to estimate the number of apparently occupied nests from a count of individuals, Harris 1989, Lloyd et al. 1991) was applied to the data.

First 3 weeks of June 0800 – 1600 (Evening counts in May)

Puffin

Grubbing (feel inside burrow for chick or egg) and burrow inspection preferred and most accurate method. However, this is not possible in Scilly with most birds nesting under boulders or inaccessible cliff edge burrows. As a result, counts of individuals to estimate the general size of the small colonies must be used. General counts of individuals present above ground, flying around and within 200m of shore are made on as many occasions as possible from early April to get an indication of population size and location. The peak count obtained before mid-May is used as a best estimate of the number of breeding birds present.

Pre-dusk attendance is usually higher than midday and more birds are seen ashore in rain or fog. Difficulty in understanding how surveys of birds rafting at sea relate to actual breeding population at different times of during season; by late spring many birds underground incubating and later counts into June will be inflated with non-breeders. It is also possible that for smaller colonies individuals may spend less time on surface. All leads to very high levels of uncertainty in surveys (Calvert & Robertson 2002).

Wanless *et al.* 1995 suggest a correction factor of 1.5 IND equals 1 AOB for pre-laying surveys (before mid-April), and post-laying 1 IND = 1 AOB. No correction factors have been applied to Scilly counts.

April to mid-May best

Manx Shearwater

Use playback to count Apparently Occupied Sites/ burrows. Avoid wet and windy conditions. Play tape within 0.3m of burrow entrance for 10 sec and then listen for min 15 sec. (Beware of more than one entrance leading to same nest chamber, but also multiple nest chambers sharing the same entrance)

Playback conducted at all suitable habitat across the islands other than Annet (and away from the immediate coastal strip of Tresco, St Martin's, St Mary's and Bryher as well as inhabited areas of St Agnes). The extent of suitable habitat for Manx shearwaters on Annet precludes a full survey of all areas particularly where breeding density was low to zero. The whole of the south end of the island and the entire coastline was surveyed fully up to a depth of between 10 and 30m into the interior, and 12 randomly selected 10x10m quadrats used to survey the remaining areas inland (mostly unsuitable dense bracken). In 2023 no apparently occupied burrows were found inland so no effect on overall count. **Kit needed:** Recording of Seabirds Count standardised digital recording of male and female calls downloaded onto mobile

phones, rope and stakes to mark out 10x10m quadrats (easier to find burrows and know which already played to), hand-held sound meter used to check volume of phones.

Any time during day – late May to early June

Response rate calibration

In the Seabird 2000, 2006 and 2015/16 surveys, the number of responses recorded was multiplied by a factor 1.08 (based on a response rate of 0.93 as recommended in Newton 2004) to correct for the proportion of birds not responding (Heaney *et al.* 2002). However, a quick review of the more recent literature suggests that this response rate is about twice that found in many of the latest UK shearwater surveys. For example, calibration trials on c.100 burrows over 7-10 days on Lundy in 2017 and 2018 obtained correction factors of 2.558 and 2.000 respectively (Booker *et al.* 2019).

Response rates have been shown to vary widely between years and between colony sites, so it is recommended that a survey specific correction factor is used wherever possible. The increase in the number of occupied burrows on St Agnes and Gugh since rat removal, now makes a specific calibration plot survey possible and using the Shiny App developed to automate calculations of response rates for the Seabirds Count (Bolton *et al.* 2019) the response rate estimates below were obtained.

Table 24

Year	No of burrows	No of days	Response rate
2021	63 burrows (32 solicited at least one reply)	5 days early June	0.63
2022	78 burrows (38 solicited at least one reply)	6 days early June	0.49
2023	64 burrows (26 solicited at least one reply)	5 days early June	0.32

The 2023 response rate of 0.32, giving a correction factor of 3.13, was used to convert the number of responses heard during the survey to an estimate of apparently occupied burrows or pairs for the islands. The large variation in response rate between years and sites mean that it is not entirely appropriate to apply this current factor to previous counts (which used a significantly lower correction). However, even if we did it would still be clear that the number of pairs of Manx shearwater breeding in Scilly has increased significantly in the last 15 years.

Storm petrel

Count Apparently Occupied Sites (AOS) – a nest cavity containing a brooding adult that responds to play-back call of male purr song during daylight hours (avoid very windy conditions). No physical disturbance of nest should occur. As with Manx shearwaters, complete surveys of all suitable habitat (including boulder beach, scree or loose rock, cavities in dry stone walls, cracks in rocks, burrows in soil or peat especially by rocks) were undertaken on all rat free islands except for Annet (and inland areas of St Agnes & Gugh), where a combination of full survey and the sampling methods outlined in Heaney *et al.* (2002) were again employed. The entire coastline and up to 20m inland was surveyed fully on Annet and 12 randomly selected 10x10m quadrats used to survey the remaining areas inland (no further responses).

Where no burrow entrances are visible (e.g. boulder beach) lay ropes 2m apart along width of beach and play tapes at 2m intervals along rope (marker pen) and listen for responses. For Annet survey all areas of boulder beach, rocky outcrops and burrows along landward edges. Sample habitat away from boulder beaches using randomly spaced quadrats. **Kit needed:**

recording of Seabirds Count standardised digital recording male purr call (no alarm call) downloaded on mobile phones, ropes marked at 2m intervals.

0800 – 2000 Early to mid-July – In order to ensure that the playback survey coincided with the peak of incubation (which can vary significantly between years), as in previous surveys, data on laying phenology from storm petrel colonies at the Molène archipelago in Brittany was used (B. Cadiou, unpubl. data). These data placed the peak of incubation and therefore nest attendance between the last week of June and the second week of July. Due to constraints with weather, storm petrel playback surveys were completed between 20th June and 21st July in 2023.

In 2023, as in all 3 previous surveys, the number of responses recorded was multiplied by a factor of 2.86 to correct for the proportion of birds not responding (Ratcliffe *et al.* 1998 – response rate recorded by Robinson on Annet 1996 0.35 95% 0.252 LCI 0.448 UCI). Ideally, we would record a season and site-specific response rate but difficulties with consistent landings on Annet make this very difficult as well as major concerns over the accuracy of identifying individual breeding sites between visits at boulder beach sites.

Estimated Counts

Rough weather meant that a couple of the more remote islands with rocky landings could not be accessed safely in 2023 and breeding numbers had to be estimated.

Scilly Rock – A landing in late May allowed a count of shag, fulmar, gulls and auks but a second landing in July was not possible. As a result, an estimate for storm petrel numbers was based on the total for 2015/16 (itself an estimate) multiplied by the average change for this species across the remaining islands from 2015/16 to 2023.

Men-a-vaur – No landings were achieved on Men-a-vaur in 2023. An estimate of breeding numbers for shag, fulmar, gulls and auks was made through observations from the sea in May and June. Low confidence is given to these estimates as many birds nest in crevices and under boulders here and a landing is recommended for surveying these sites. Storm petrel numbers are based on the total for 2015/16 (when a July landing was made) multiplied by the average change across islands 2015/16 to 2023 for this species.

Seal Disturbance Protocol 2023

Context

Grey Seals present on the out-lying rocks and islands on Scilly are not disturbed during the winter months. As boating resumes in this area in the spring these animals are not habituated and will abandon their haul up rest spots, even at the distant sight or sound of approaching vessels. As the season progresses, the seals tolerance for boats and people increases. But until this time, appropriate measures need to be in place to avoid unnecessary disturbance and stress of resting Grey Seal.

Boating and landing

Boat trips to land on uninhabited islands will use a direct route to the landing zone, minimising disturbance of seals at other locations. The boat will then anchor engine off or depart the area, reducing the time frame where any potential disturbance could occur.

Surveying from land on isolated colonies

The same protocol for reducing bird disturbance (see bird disturbance protocol) will be employed to minimise Grey Seal disturbance as surveyors move around the un-inhabited islands completing their counts. This involves staying together as a group and not counting any location twice i.e. not returning to any area that has been counted. Surveyors will also avoid any areas where large aggregations of seals are present – although these are likely to be below the high tide line and therefore not a target area for seabird survey.

We also request that no photos from these sensitive colonies are posted online, with surveys being carried out under strict licence conditions.

Bird Disturbance Protocol 2023

The 2023 survey involves landing on isolated seabird colonies in order to conduct land-based nest counts or playback surveys. As disturbance of breeding birds during these surveys is unavoidable, they will be conducted under strict conditions for weather and methodology.

Weather

During the survey birds will mob the surveyors, leaving their nest with eggs and/or chicks exposed to the elements. Surveys will only be conducted during clement weather where the risk of exposure to cold temperatures, windchill, rain, sun and heat is minimal.

Methods

Watch your feet at all times! Seabird and wader nests are easily concealed and burrows are fragile. The footing on these islands is uneven and unstable, increasing the risk of personal injury or falls onto seabird nests.

No photos on social media. The survey is being conducted under licence with the consent of the relevant bodies on the basis disturbance will be minimum.

At the landing point the survey team will form a line running perpendicular/right angles to the coast and move as a line around each island. This will enable thorough counting along from foreshore to island centre and limit extreme disturbance to only those birds near to the observers, allowing birds the opportunity to get back on their nests as soon as the line has passed.

Spreading out in a line will also reduce footfall pressure as the team moves around the island, reducing trampling of sensitive pioneer plant communities.

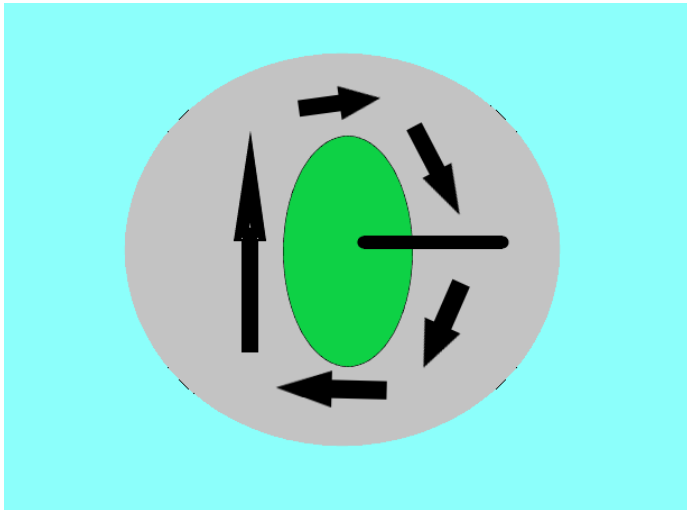


Diagram showing an aerial view of a seabird colony, with the line representing the line of seabird surveyors and the arrows illustrating the survey route to minimise disturbance.

Surveyors are encouraged to communicate constantly to ensure all nests are counted ('have you got that one?' 'Yep!') and to make each other aware of upcoming hazards and sensitive nests.

The team will move constantly, albeit slowly. In the line formation, we will sweep a complete lap around the periphery and island centre, with the exact pattern changing with relative to each islands shape and topography. This will keep disturbance to a minimum by not counting anywhere twice.

The team will finish the survey at the landing point in the intertidal zone, or return to it to rendezvous for pickup.

For large gull colonies such as the Lesser Black-backed Colony on Gugh, St Helen's and Samson the surveys will only be undertaken if the weather conditions and staffing levels are such that they can be done within an allotted timeframe to limit disturbance.

Table 25

Potential Environmental Impact	Mitigation
Disturbance and stress caused to breeding seabirds and their young	<p>Standard approved methods used</p> <p>Utmost care taken when walking in areas where nests are present and full briefing of any volunteers on all disturbance mitigation protocols</p> <p>Time in colony kept to a minimum, with counts of denser sub-colonies (e.g. gulls and Annet) conducted by a team of surveyors</p> <p>Care taken to avoid exposure or over-heating of nest contents (counts not conducted in heavy rain, shags not disturbed in hot sunlight)</p> <p>Where more than one species is being monitored at a single location (e.g. gulls and kittiwakes), counts combined to reduce overall disturbance</p> <p>As much as possible counts conducted before chicks hatch to avoid issues with displacement of mobile chicks</p> <p>Fulmar counts in cliff or sloping areas conducted from the sea to avoid egg rolling by startled adults (Annet, Menawethan, Daymark)</p>
Negative publicity	<p>Liaison with local residents, boatmen and birders about purpose of study and methods employed to minimise disturbance</p> <p>Explain work to any visitors that stop to observe in any areas with public access</p> <p>Awareness of any sensitive local issues and where necessary advice and steer taken from the IOSWT and their Seabird Liaison Group Partners</p>
Habitat damage	<p>Utmost care taken to avoid disturbance of the natural and historic habitat, paths kept to as much as possible. Special care to be taken around areas with burrow-nesting birds.</p>

Drone Protocol 2023

Unpiloted Aerial Vehicles (UAVs, Remotely Piloted Aircraft or Drones) The use of UAVs or drones has increased markedly in ecological studies in the last 10 years, particularly for gulls and terns. The two main advantages they offer are access to colonies where it is harder for fieldworkers to go (e.g. rocky islands in swell) and if used carefully a considerable reduction in the amount of disturbance to breeding birds when compared with more traditional 'walk through' count methods. Site specific protocols for use need to cover altitude and speed as well as take-off and approach relative to the colony and employ test flights to assess variations in response rates which may reflect differences in aerial predation levels.

Site specific protocol to minimise alarm and potential flushing from nests (exposure of contents and potential collision risk with drone):

- Surveying with a two-person team – a pilot concentrating on the drone and survey route/ coverage and an experienced bird researcher to monitor responses of birds to the drone presence.
- A smooth flyover at 50 m above the sub-colony from a take-off site approximately 30m to the side of the sub-colony, allowing the birds to become comfortable with the UAV. The altitude of the UAV may be lowered to 30 m whilst in motion to the side of the sub-colony, whilst still maintaining a minimum of 50m distancing from birds.
- A transect will be flown at a speed of 3–4ms⁻¹ providing image overlap of approximately 20% over the sub-colony with images captured at 2 second intervals to ensure a similar overlap between images.
- During the flight omnidirectional obstacle avoidance will be enabled and the drone flown in cine/slow mode to limit noise and changing pitch of the propellers to reduce attention from wildlife.

In addition, the drone shouldn't be operating any nearer than 50 metres to any seals as stated under the WISE scheme. The height of the drone can be set to operate at the higher altitude as per accompanying bird researcher's guidance. Take off/landing will be done at a minimum distance of 30m away from any persons not directly in contact with the remote pilot and a minimum of 50metres from obvious wildlife.

The drone that will be used will be a DJI Mavic 2. In accordance with CAA regulations all flights will be conducted as per the operational manual of the experienced operator. All permissions will be obtained from St Mary's ATC and Tresco Heliport prior to the commencement of each flight. This is one of the smaller foldable drones.

If any disturbance is caused to birds by the drone then the flight will be cancelled and the drone landed.

Appendix 4: 2023 counts from constituent SSSIs of SPA

Table 26 Numbers of breeding seabirds on Annet SSSI 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% change since 2015	Trend & notes
Manx shearwater	123	89	229	426	+86%	Increasing
Lesser BBG	517	281	1	5	+400%	Loss of 3 sub-colonies
Storm petrel	938	788	778	1053	+35%	Stable/ Increasing
Herring gull	42	24	20	5	-75%	Continued decline
Shag	209	177	85	53	-38%	Sustained decline
Razorbill	4	4	5	3	-40%	Small numbers
Common tern	1	1	2	0	Loss	Small numbers, intermittent breeding
Puffin	47	50	31	38	+23%	Declining
Great BBG	137	187	235	151	-36%	Recent decline
Fulmar	21	37	57	47	-18%	Recent decline
Total	2039	1638	1443	1781	+23%	Recent increase due to burrow nesters

- Seabird notified species: common tern, great black-backed gull, lesser black-backed gull, Manx shearwater, puffin & storm petrel
- Other SPA assemblage species present: razorbill, fulmar, shag & herring gull
- Sustained decline – smaller gulls and shags
- Recent 23% growth in numbers due to increases in storm petrel and Manx shearwaters
- Rat incursion discovered here in 2004 (cleared later the same year)
- See Appendix 5 for further count details

Table 27 Numbers of breeding seabirds at Samson SSSI (including Green, White, Puffin & Stoney Islands) 1999 to 2023

Species	1999/ 2000	2006	2015/16	2023	% Change since 2015	Trend & notes
Herring gull	230	189	144	73	-49%	Continued decrease
Shag	43	35	49	30	-39%	Decreasing
Sandwich tern	0	1	0	0	Lost	Intermittent breeder - last bred Green Island 2006
Lesser BBG	1197	1223	1027	167	-84%	Massive decline
Kittiwake	38	47	0	0	Lost	Last bred N 2009 & S hill 2008
Great BBG	46	73	42	26	-38%	Decreasing White Island
Common tern	18	59	10	0	Lost	Last bred here 2015
Fulmar	2	5	15	20	+33%	Increasing S hill beaches
Cormorant	1	9	38	27	-29%	Decreasing - White Island
Total	1575	1641	1325	343	-74%	Massive loss of gulls

- Common tern (species on SSSI notification) – last bred here (unsuccessfully) 2015
- SPA assemblage species present: lesser black-backed gull, great black-backed gull, herring gull, shag, cormorant, fulmar
- Lesser black-backed gull colony (mostly on South Hill) has declined massively
- Herring gull numbers have halved in last eight years
- All kittiwakes lost by 2008

Table 28 Numbers of breeding seabirds at Western Rocks SSSI (Melledgan, Gorregan, Great Crebawethan, Rosevear & Rosevean) 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Guillemot	39	31	101	344	+241%	Trebled Gorregan
Cormorant	16	13	10	11	+10%	Stable Melledgan
Lesser BBG	4	1	5	1	-80%	Small numbers, decreased
Herring gull	2	11	5	4	-20%	Small numbers, decreased
Storm petrel	283	281	267	278	+4%	Increase Rosevear & Gorregan, decrease Melledgan
Great BBG	124	157	136	80	-41%	Decreasing Rosevear & Melledgan
Razorbill	85	107	109	116	+6%	Stable, increased Gorregan
Puffin	6	31	29	48	+66%	Increasing
Shag	331	392	350	235	-33%	Decreasing, big decline Gorregan, lost from Rosevean
Fulmar	2	6	16	3	-81%	Decline Gorregan
Total	892	1030	1028	1120	+9%	Overall increase due to auks

- SPA assemblage species present: lesser black-backed gull, great black-backed gull, herring gull, shag, storm petrel, cormorant, fulmar, puffin, razorbill, guillemot
- Large increases in guillemots and razorbills, especially on Gorregan
- Declines in great black-backed gull, shag and fulmar

Table 29 Numbers of breeding seabirds at St Helen's SSSI (incl. Norwethel, Peasehopper, Crow's, Foreman's & Men-a-vaur) 1999 to 2023

Species	1999/ 2000	2006	2015/16	2023	% Change since 2015	Trend & notes
Great BBG	30	28	31	19	-39%	Decrease
Puffin	36	19	16	14	-13%	Decreasing St Helen's
Guillemot	117	95	110	60	-46%	Decrease Men-a-vaur (MAV)
Herring gull	82	113	58	29	-50%	Decreasing St Helen's
Razorbill	101	90	88	100	+14%	Stable
LBBG	543	722	553	78	-86%	Massive decrease St Helen's
Manx shearwater	5	9	36	115	+219%	Increasing St Helen's
Storm petrel	20	20	14	17	+21%	Stable
Common tern	1	13	0	0	Lost	Last bred Peasehopper 2008
Kittiwake	7	36	0	0	Lost	Last bred St Helen's 2010
Shag	24	38	31	8	-74%	Decrease MAV
Fulmar	16	21	24	11	-54%	Decrease MAV
Total	982	1204	961	451	-53%	Large decreases of gulls

- SSSI seabird notification species: fulmar, guillemot, razorbill
- SPA assemblage species present: Manx shearwater, lesser black-backed gull, great black-backed gull, herring gull, shag, puffin, storm petrel
- Huge decline of lesser black-backed gulls on St Helen's from 448 to 30 pairs in last 8 years

Table 30 Numbers of breeding seabirds at Norrard Rocks SSSI (Scilly Rock, Castle Bryher, Mincarlo, Illiswilgig, Gweal, Maiden Bower & Seal Rock) 1999 to 2023

Species	1999/ 2000	2006	2015/16	2023	% Change since 2015	Trend & notes
Herring gull	41	19	15	18	+20%	Decrease then stable
Cormorant	25	18	0	0	Lost	Last bred Mincarlo 2013
Guillemot	40	29	80	87	+9%	Increase then stable
Lesser BBG	13	6	37	14	-62%	Decrease Gweal
Puffin	78	74	86	83	-4%	Stable
Storm petrel	51	58	85	87	+2%	Stable, increase Castle Bryher, decrease Illiswilgig
Razorbill	103	129	232	226	-3%	Increase then stable
Great BBG	101	106	125	66	-47%	Decrease Gweal, Mincarlo
Shag	273	312	188	144	-23%	Continued decrease
Fulmar	28	37	36	23	-36%	Decreasing
Total	753	788	884	748	-15%	Decreasing – gulls, fulmar, shags

- SSSI seabird notified species: cormorant
- SPA assemblage species present: storm petrel, lesser black-backed gull, great black-backed gull, shag, herring gull, guillemot, razorbill, puffin & fulmar
- Cormorants lost from Mincarlo by 2013

Table 31 Numbers of breeding seabirds at Pentle Bay SSSI (Pentle Bay & Merrick Tresco, Round Island) 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Manx shearwater	34	43	78	96	+23%	Increasing Round Island
Lesser BBG	1	1	3	7	+133%	Small numbers, increasing
Storm petrel	183	251	172	105	-39%	Declining
Herring gull	30	28	13	12	-8%	Declining
Shag	2	7	16	9	-44%	Increasing
Common tern	39	5	0	0	Lost	Last bred Appletree bank 2003
Puffin	0	0	1	0	Lost	Bred Round Island 2015
Great BBG	5	9	21	14	-33%	Increasing
Fulmar	32	28	11	10	-9%	Declining
Guillemot	0	0	0	5	New	Round Island
Razorbill	0	0	0	1	New	Round Island
Total	326	372	315	259	-15%	Overall decline mostly storm petrels on Round Island

- SSSI seabird notified species: common tern, roseate tern, storm petrel
- SPA assemblage species present: Manx shearwater, lesser black-backed gull, great black-backed gull, herring gull, shag, fulmar, razorbill, guillemot
- Roseate & common terns no longer breed here
- Guillemot and Razorbill new to Round Island, puffin lost
- Rat incursion discovered on Round Island 2021, cleared later that year – large decline in storm petrel seen 2022, just 11 pairs; recovery to 105 pairs in 2023

Chapel Down SSSI, St Martin's

Table 32 Numbers of breeding seabirds at Chapel Down SSSI 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Manx shearwater	0	0	26	22	-15%	New colony 2015
Lesser BBG	58	4	2	1	-50%	Large declines
Herring gull	18	12	9	6	-33%	Declining
Kittiwake	27	15	0	0	Lost	Last bred 2013
Great BBG	3	3	3	4	+33%	Stable, small numbers
Fulmar	32	46	46	61	+33%	Increase now plateaued
Total	138	80	86	94	+9%	Increase due to fulmar numbers

- SSSI seabird notified species: kittiwake
- SPA assemblage species present: lesser black-backed gull, great black-backed gull, fulmar, Manx shearwater, herring gull
- Kittiwake lost between 2006 and 2015.

Table 33 Numbers of breeding seabirds at the Eastern Isles SSSI (Menawethan, Hanjague, Great & Little Ganilly, Great & Little Arthur, Great & Little Ganinnick, Great & Little Innisvouls, Ragged Island, Nornour) 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Herring gull	49	34	73	48	-34%	Fluctuating, recent decline
Lesser BBG	19	14	159	160	+1%	Large Increase now stable
Great BBG	286	265	310	203	-23%	Recent decrease Ganillys & Arthurs
Cormorant	14	10	5	5	No change	Declining, moved from Ragged Island to Great Ganinnick in 2015
Shag	221	330	276	158	-43%	Declining, lost from Little Innisvouls
Razorbill	3	12	37	51	+38%	Increasing
Fulmar	43	77	63	53	-16%	Declining
Manx shearwater	0	0	1	3	+200%	New to Great Ganilly 2015
Puffin	0	0	4	4	No change	Great Ganilly
Guillemot	0	0	0	1	New	Hanjague
Total	635	742	928	686	-26%	Decreasing – gulls, shags, fulmar

- SSSI seabird notified species: None
- SPA assemblage species present: shag, lesser black-backed gull, great black-backed gull, herring gull, cormorant, razorbill, fulmar, Manx shearwater, puffin, guillemot
- Manx shearwater, puffin & guillemot re-colonised in small numbers
- Large declines of shags from Little Ganinnick, Menawethan and total loss from Little Innisvouls (46 pairs in 2015)

Table 34 Numbers of breeding seabirds at Gugh SSSI (including Kittern Rock) 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Lesser BBG	1123	875	419	464	+11%	Stable, increasing
Herring gull	159	69	30	40	+33%	Decrease stabilised
Kittiwake	155	131	0	21	Returned	Returned to eastern cliffs 2017
Manx shearwater	22	9	45	84	+87%	Increasing
Great BBG	3	4	6	7	+17%	Small numbers, increasing
Fulmar	2	3	1	1	No change	Kittern Rock
Storm petrel	0	0	2	20	+900%	New colony 2015, increasing
Total	1464	1090	503	637	+27%	Increasing – gulls and burrow nesters

- SSSI seabird notified species: none
- SPA assemblage species present: storm petrel, lesser black-backed gull, great black-backed gull, herring gull, Manx shearwater, fulmar
- The only significant lesser black-back colony that has not declined recently
- Cleared of rats winter 2013/14
- Storm petrels recolonised and breeding successfully along with Manx shearwaters
- Kittiwakes returned to breed at this former nesting site in 2015 – the only active colony in Scilly since then, although no breeding in 2021

Table 35 Numbers of breeding seabirds at Teän SSSI (including Pednbrose & Old Man) 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
GBBG	16	18	28	17	-39%	Decreasing
Herring gull	62	51	57	24	-58%	Decreasing
LBBG	24	5	136	17	-88%	Large decrease
Common tern	1	0	0	0	Lost	Last bred Teän 2000
Total	103	74	221	58	-74%	Large decrease in gulls

- SSSI seabird notified species: none
- SPA assemblage species present: lesser black-backed gull, great black-backed gull, herring gull
- Lesser black-backed gull decreased from 131 pairs in 2015 to 15 in 2023 on Teän

White Island SSSI, St Martin's

Table 36 Numbers of breeding seabirds at White Island SSSI 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
GBBG	2	6	1	3	+200%	Small numbers
Herring gull	34	32	15	5	-66%	Decreasing
LBBG	28	187	106	109	+3%	Stable
Fulmar	5	6	8	1	-88%	Decreasing
Total	69	231	130	118	-9%	Small loss of herring gulls and fulmar

- SSSI seabird notified species: none
- SPA assemblage species present: lesser black-backed gull, great black-backed gull, herring gull, fulmar

Table 37 Numbers of breeding seabirds at Shipman Head & Down SSSI, Bryher (including Hangman’s Island) 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Lesser BBG	50	8	13	13	No change	Stable
Great BBG	13	6	3	4	+33%	Stable, declining
Common tern	1	0	0	0	Lost	Last bred 2000
Shag	4	4	19	11	-42%	Recent decrease
Herring gull	23	15	16	3	-81%	Decreasing
Manx shearwater	12	13	39	22	-44%	Decreasing
Fulmar	0	13	6	9	+50%	1st pair recorded here in 1987
Razorbill	0	0	2	30	+1400	New colony, increasing
Total	103	59	98	92	-6%	Fluctuating

- SSSI seabird notified species: none
- SPA assemblage species present: Manx shearwater, lesser black-backed gull, great black-backed gull, herring gull, shag, fulmar, razorbill
- New site for razorbill at Shipman Head in 2016, increasing

Castle Down SSSI, Tresco (including Gimble Porth)

Table 38 Numbers of breeding seabirds at Castle Down SSSI 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Manx shearwater	0	0	46	115	+150%	New colony in 2015, increasing
Lesser BBG	29	4	0	0	Lost	Lost from Gimble Porth
Herring gull	74	54	0	0	Lost	Lost from Gimble Porth, last nests 2013
Kittiwake	54	37	0	0	Lost	Lost from Gimble Porth, last bred 2009
Common tern	13	0	0	0	Lost	Lost
Total	170	95	46	115	+150%	Large increase in Manx shearwater

- SSSI seabird notified species: none
- SPA assemblage species present: Manx shearwater

Table 39 Numbers of breeding seabirds at Wingletang Down SSSI, St Agnes 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Herring gull	0	4	1	0	Lost	Lost
Manx shearwater	5	8	10	96	+772%	Large increases since rat removal 2013/14
Total	5	12	11	96	+772%	Manx shearwater

- SSSI seabird notified species: none
- SPA assemblage species present: Manx shearwater only

Rushy Bay & Heathy Hill SSSI, Bryher

Table 40 Numbers of breeding seabirds at Rushy Bay SSSI 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Herring gull	0	0	8	3	-63%	Decrease
LBBG	0	0	1	1	No change	No change
Common tern	1	0	0	0	Lost	Last bred Merrick Island 2016
Total	1	0	9	4	-56%	Decreasing

- SSSI seabird notified species: none
- SPA assemblage species present: lesser black-backed gull, herring gull

Table 41 Numbers of breeding seabirds at Peninnis Head SSSI, St Mary's 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
Manx shearwater	0	0	8	0	Lost	First recorded here 2010; now apparently lost again
Total	0	0	8	0	Lost	No breeding

- SSSI seabird notified species: none
- SPA assemblage species present: none

Table 42 Numbers of breeding seabirds at Big Pool & Browarth SSSI, St Agnes 1999 to 2023

Species	1999/ 2000	2006	2015	2023	% Change since 2015	Trend & notes
LBBG	2	0	0	0	Lost	Lost
Herring gull	25	9	1	1	No change	Large decline
Common tern	3	0	0	0	Lost	Lost
Total	30	9	1	1	No change	Loss of gulls since 2000

- SSSI seabird notified species: none
- SPA assemblage species present: herring gull

Appendix 5: Seabirds breeding outside designations

Table 43 Rocks and islands outside SPA designation supporting breeding seabirds in 2023

	FUL	MX	SP	SH	LB	HG	GB	KIT	RAZ
St Agnes, non SSSI areas	3	19	3						2
Burnt Island, St Agnes			40						
Tresco, Appletree Point					2	16			
Plumb Island St Martin's						3			
Guther's Island				7	1	5	12		
Pernagie Island						1	1		
Bryher, non SSSI areas		22							
St Mary's non SSSI areas		16				18			
Toll's Island, St Mary's		47							
Rushy Bay & Heathy Hill SSSI					1	3			
Wingletang SSSI		96							

Although the majority of SSSIs are included in the SPA designated area, Wingletang Down SSSI (St Agnes) and Rushy Bay & Heathy Hill SSSI (Bryher), both of which supported breeding seabirds in 2023, are not. This gives a total of 318 pairs of seabird breeding outside the SPA, including 218 pairs are outside SSSIs.

Appendix 6: Annual counts for Annet SSSI

Table 44 Annual counts for Annet SSSI 2000 to 2023*

Year	SH	GB	LB	HG	RAZ	FUL	COT	SP	MX	PUF	TOTAL
2000	209**	137	517	42	4	21	1	938	123	47	2039
2002	180	171	215	7	4	-	0	-	-	-	(577)
2003	150	164	18	17	0	45	0	-	-	-	(394)
2004	159	197	7	32	2	44	0	-	-	-	(441)
2006	177	187	281	24	4	37	1	788	89	50	1638
2007	140	88	0	5	1	37	0	-	-	-	(271)
2008	164	47	(5)	4	3	48	0	-	-	-	(261)
2009	154	168	54	7	7	43	0	-	-	-	(433)
2010	198	213	76	11	2	40	0	-	-	-	(540)
2011	115	180	27	5	4	37	0	-	-	-	(368)
2012	107***	177	32	8	2	49	0	-	-	-	(375)
2013	99	208	6	4	1	36	0	-	-	-	(354)
2014	96	205	10	5	1	38	0	-	-	-	(355)
2015	85	235	1	20	5	57	2	778	229	31	1443
2016	86	215	1	16	6	41	14	-	-	-	(379)
2017	74	222	7	12	5	41	27	-	-	-	(388)
2018	81	170	6	19	0	46	0	-	-	43	(365)
2019	103	199	19	10	2	46	0	-	-	42	(421)
2021	106	184	7	8	1	39	18	-	-	45	(408)
2022	98	188	5	17	4	37	0	-	-	36	(385)
2023	53	151	5	5	3	47	0	1053	426	38	1781

* The count for 2000 represents data from 1999 and 2000 combined. No counts were made in 2001, 2005 or 2021.

**This number is a peak – data from the Seabird Colony Register 1976-98 range from 82-163 shag pairs.

*** Very high failure rate in shags 2012. As many as 57% (61 of 107) of shag nests were empty; either deserted or predated, with many nests being found unattended.

Appendix 7: Breeding seabirds in the Isles of Scilly SPA 2023

Table 41 summarises change of the seabird assemblage within the Isles of Scilly Special Protection Area (SPA) since the baseline survey in 1999/2000. Although the majority of SSSIs are included in the SPA designated area, Wingletang Down (St Agnes) and Rushy Bay & Heathy Hill (Bryher) both of which supported seabirds in 2023, are not (see Table 39). This gives a total of 318 pairs of seabird breeding outside of the SPA of which 218 pairs are outside of the SSSIs.

Table 41 Breeding seabirds in the SPA in 2023 and change since classification

SPA Feature (bold) / Species	Breeding pairs 2023	Breeding pairs 2015/16	Breeding pairs 2006	Breeding pairs 2000	% change since classification baseline (2000 figures) and 2023
European storm petrel	1560	1318	1398	1475	5.8% increase
Lesser black-backed gull	1036	2461	3331	3608	71.3% decline
Great black-backed gull	594	941	864	766	22.5% decrease
Seabird assemblage	6503	7969	9065	9285	30% decrease
Fulmar	239	283	279	183	30.6% increase
Manx shearwater	883	500	163	201	339% increase
Great cormorant	43	53	50	56	23.2% decrease
European shag	648	1014	1295	1107	41.5% decrease
Herring gull	268	456	669	871	69.2% decrease
Black-legged kittiwake	21	0	266	281	92.5% decrease
Common tern	0	12	78	78	Loss
Sandwich tern	0	0	1	0	Loss
Roseate tern	0	0	0	0	Loss
Arctic tern	0	0	0	0	Loss
Common guillemot	497	291	155	196	154% increase
Razorbill	527	473	342	296	78% increase
Atlantic puffin	187	167	174	167	12% increase

Seven species of seabirds have declined by more than 20% within the SPA since the baseline in 1999/2000: lesser black-backed gull (-71.3%), great black-backed gull (-22.5%) (both features), kittiwake (-92.5%), herring gull (-69.2%), shag (-41.5%), fulmar (-30.6%) and cormorant (-23.2%) All species of tern have been lost as regular breeders in Scilly in this time also.