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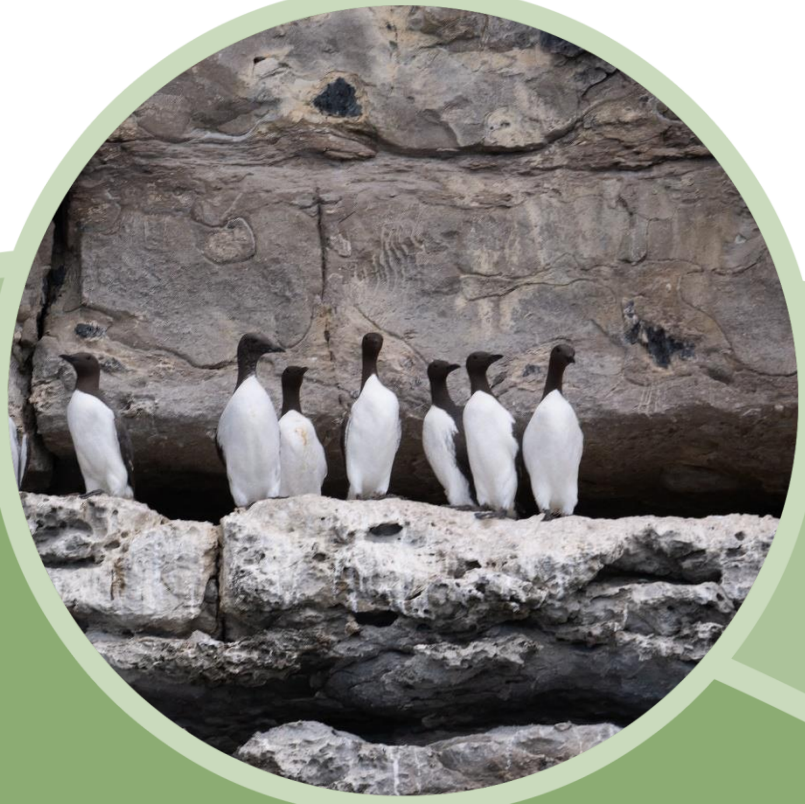

Purbeck seabird survey 2022

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Summary

This report presents data from the 2022 breeding seabird counts between Old Harry Rocks and White Nothe. Counts have been carried out on the Purbeck coast since the mid-1960s and data are presented in the context of local trends over the last 50 years and national trends (up to 2019). Two counts were carried out in 2022, one between Old Harry Rocks and White Nothe, the second between Old Harry and St Aldhelm's Head.

Seabirds breeding on the Purbeck coast include Fulmar, Cormorant, Shag, Herring Gull, Great Black-backed Gull, Kittiwake, Guillemot, Razorbill and Puffin. None of the populations are large. The Guillemot population remains the largest, with over 1,600 individuals counted on the breeding ledges in 2022, and the Puffin population is the smallest with just one bird counted on the survey (although up to 7 were reported on different occasions). Species such as Razorbill, Guillemot, and Puffin are thought to have been considerably more abundant in the first half of the 20th century, while Fulmar colonised, and Kittiwake increased markedly, during the second half of the 20th century before declining. For a full discussion of previous Purbeck trends please see Lake *et al.* (2011).

Results from the 2022 monitoring show that:

- The Guillemot population reached a new peak of 1,652 individual birds, following a large increase since 2021. The most substantial increases were at Durlston and Bird Cove-Sutton Rock.

- The Razorbill population likewise reached a new peak of 194 birds. The most substantial increases were at Durlston, Blackers/Reforn, and Crab Hole-Bird Rock.

- 2022 saw a 40% increase in the number of Herring Gull nests since 2021 (the lowest count since population recording began) and the return of nesting birds to Blackers and west of Stair Hole. The population remains at 43% of the peak count (2015).

- The very small Great Black-backed Gull population increased from its lowest level in 2021 (5 nests) to 11 nests, with a notable increase at Ballard Down and the return of just one nest west of St Aldhelm's Head. This is 58% of the peak count in 2006.

- 2022 saw a marginal increase in Fulmar, although numbers remain low (18% of the peak count in 1981) and this species is now present in just 4 of the 13 sites where it has been recorded previously.

- The partial count for Cormorants suggests an upturn in numbers in 2022 (particularly at Gad Cliff). This is in the context of significant long-term declines that led to the apparent lowest number of nests in 2021.

- Shag numbers showed a slight increase but remain at around 50% of the maximum count in 2006. For the first time, no nests were recorded at Gad Cliff and Blackers Hole.

- There was a decrease in Kittiwake nests to the second lowest count (12), following a slight increase between 2019 and 2021. The population has declined by 96% since a high point in 1982 and remains highly vulnerable.

- The tiny Puffin population remains in a precarious state, with a relatively low number of individuals recorded. Two breeding pairs may still be present.

Weather conditions have been moderately challenging since 2021. This has impacted on counts of Cormorant. Should nest counts be possible in 2023, counts of individuals should also be carried out and could be used to provide estimates for 2023. There are however limitations to this approach due to fluctuating productivity between years and sites.

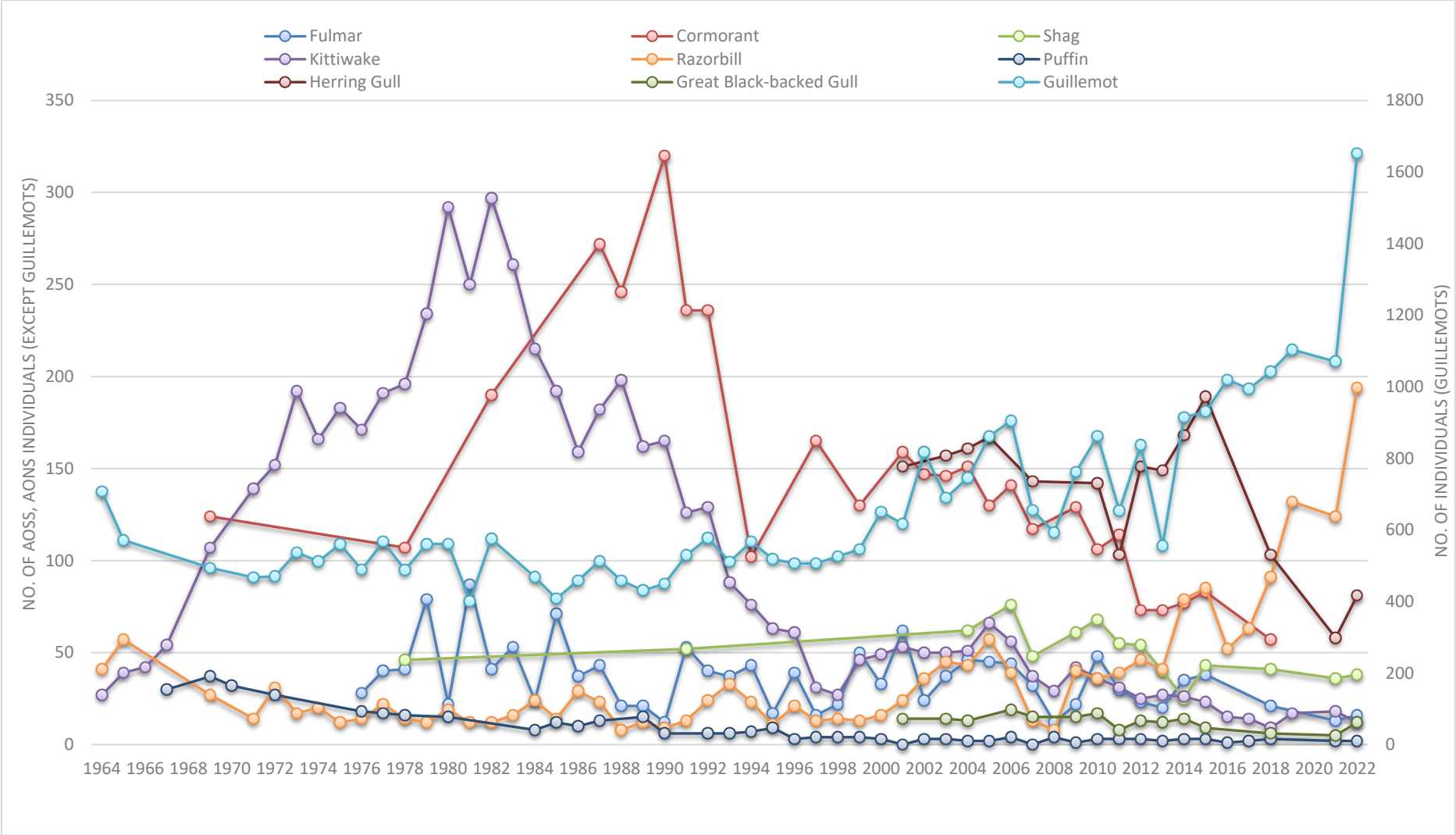

Figure 1: Summary of breeding seabird population changes between Old Harry and St. Aldhelm's Head in Dorset. Counts are of apparently occupied nests/sites for all species except auks (all individuals on breeding ledges). (Note that Fulmar and Shag counts before 2000 may not be complete). A complete count of Cormorant nests was not possible in 2021 and 2022 – see discussion for more detail.

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1. Introduction

1.1 This report summarises the latest in a series of surveys (see Haysom, 1993; Haysom, 1977; Lake et al. 2011; Lake & Caals, 2022) of the breeding seabirds of the Dorset Coast. Surveys have been carried out annually, with the exception of 2020, when the survey was cancelled due to the Covid 19 pandemic. A count was nevertheless carried out between Durlston and St. Aldhelm's Head by Trev Haysom during this period (see Lake & Caals, 2022).

1.2 The stretch of coast is notable along the south coast of England in that it supports nine species of breeding seabird: Fulmar, Kittiwake, Cormorant, Shag, Great Black-backed Gull, Herring Gull, Guillemot, Razorbill, and Puffin. Eight of these species are Birds of Conservation Concern, the only exception being Cormorant. Kittiwake, Puffin, and Shag are now Red Listed, together with Herring Gull, while Guillemot, Razorbill, Great Black-backed Gull, and Fulmar are Amber Listed (Stanbury et al., 2021).

1.3 The South Dorset Coast is designated as a Site of Special Scientific Interest, Special Area of Conservation, and Jurassic Coast World Heritage Site for its wildlife and environmental interest (although breeding seabirds are not a designated feature).

2. Methods

Population census

2.1 Two boat trips were carried out. The first, between Old Harry and White Nothe (the full survey section) was carried out on 30th May 2022. The second, on 13th June 2022, only covered the stretch of coast between Old Harry and St. Aldhelm's Head, due to constraints related to the military Danger Area. Weather conditions on both occasions were fair with good visibility, but a little choppy, and on 30th May it was necessary to count from further offshore than would have been ideal, resulting in difficulties counting Cormorant nests at Gad Cliff and White Nothe.

2.2 Methods generally follow those recommended by Walsh *et al.* (1995). All observations of apparently occupied sites (AOSs) or apparently occupied nests (AONs) of Fulmar, Cormorant, Shag, Kittiwake, Herring Gull, and Great Black-backed Gull were marked on enlarged photographs of the coast. Numbers of auks on known nesting ledges were counted and colonies were marked on enlarged photographs as above. The counts presented in the accompanying images and figures are from the May count, when numbers were higher, except for Guillemot and Razorbill, for which counts on 13th June were (unusually) notable higher.

2.3 The number of Puffins on the water and cliff ledges was also noted during the boat survey. However, the survey was undertaken during the day, when Puffin numbers tend to be at their lowest, as birds are either out at sea or out of sight within the breeding crevices. Records from the Birds of Poole Harbour evening bird boat trips staffed by

Durlston Country Park were therefore used. The number of breeding pairs has in the past been estimated by Trev Haysom using a consistent methodology (see Lake *et al*. 2011) – this was not possible in 2021 or 2022.

3. Results

Results of boat surveys

3.1 All AOS/AON and colonies are marked on the series of photographs supplied in the accompanying photo Annex. Summary results are presented in Table 1. Survey sections follow those used historically and are given in Lake *et al.* 2011.

Estimate of number of breeding Puffins

3.2 One Puffin was seen on the water near Blackers Hole on 30th May. None were observed on the breeding ledge during either boat survey. The maximum number seen simultaneously from the seabird boat trips led by staff from Durlston Country Park was 7, while anecdotal reports from local birders via the Dorset Bird Club were of 2-3 birds at any one time. Two individuals carrying fish were seen simultaneously on the evening of the 27th May from the seabird boat trip, suggesting that there are two breeding pairs.

Table 1. Breeding seabird records on the Dorset Coast, 2022. Counts are of apparently occupied nests or sites (AONs/AOSs) for all species except Guillemot and Razorbill (for which counts are of individuals at breeding sites) and Puffin (which is a count of all individuals seen (i.e. on the water or in flight)). *Cormorant counts are for Ballard Down only due to difficulties observing nests at Gad Cliff and White Nothe – see discussion for more details.

Species	2022 total	Change since peak count	Change since last survey	Peak year	Peak count	Robust records since	Trends
Fulmar	16	-71 (-81.7%)	3 (23.1%)	1981	87	2001	Colonised in 1940s, peaked in 1980s then declined, small upturn since 2021.
Cormorant*	20 (partial count)	-152 (-88.4%)	3 (17.7%)	1990	172	1964	Declined to 1960s, increased to 1990, declined again since despite slight upturn of 2014-15, lowest count in 2021, apparent upturn 2022.
Shag	38	-38 (-50%)	2 (5.6%)	2006	76	1964, partial	Increased rapidly in 2nd half of C20th, subsequent wide fluctuations suggest overall decline, slight upturn in 2022.
Kittiwake	12	-285 (-96%)	-6 (-33.4%)	1982	297	1957	Rapidly increased throughout 1960s & 1970s, equally rapid decline, which slowed in the 2000s accelerated after 2015 but has possibly now stabilised at a low level. Decline in 2022.
Guillemot	1,652	0 (0%)	582 (54.4%)	2022	1,652	1964	Large declines up to mid C20th, overall fluctuating increase since 1964 to peak numbers in 2022.
Razorbill	194	0 (0%)	70 (56.5%)	2022	194	1964	Large declines up to mid C20th, fluctuating increase since to peak in 2022.
Puffin	2	-35 (95%)	0	1969	37	1967	Large declines up to mid C20th which stabilised at current level around 1990.
Herring Gull	81	-108 (-57.2%)	23 (39.7%)	2015	189	2001	Considerable decline 1960s - 1980s, increased from low point in 2010 but then declined rapidly since 2015 to low in 2021, slight upturn in 2022.
Great Black-backed Gull	12	-7 (-36.9%)	7 (140%)	2006	19	2001	Slow, fluctuating decline since 2001 plus range retraction. Upturn in 2022.

4. Discussion – comparison with previous years and UK trends

4.1 Data from 1965 onwards were compiled and discussed in Lake *et al.* 2011. Here we update the dataset with the results of the 2022 survey between Old Harry and White Nothe.

4.2 The UK indices of abundance (JNCC, 2021)[1] show the relative change in population size, assigning a score of 100 to the population at the start date of the monitoring. These data were extracted from the Seabird Monitoring Programme (SMP) Database[2] Data and have been provided to the SMP by the generous contributions of nature conservation and research organisations, and many volunteers throughout Britain and Ireland. Further information can be found in the individual UK trend chapters of the online report[3]. These indices are used to compare with a similar Dorset-based index of change for each species, to examine whether local trends differ from the national picture. Data for 2022 are not yet available.

4.3 Contextual information on UK declines has been retained for readers who have not seen reports from previous years, but are indicated by the use of *grey italics,* enabling readers familiar with the text to skip information repeated between years. Please refer to Lake *et al.* 2011 for further context on each species and more information on historic records (including data constraints).

Fulmar

After colonising Dorset in the 1940s, the number of breeding Fulmar increased to a peak in the 1980s. Since then, numbers have declined overall (despite short-term increases). In 2022, the number of AOSs had increased slightly to 16 from 13 in 2021 (which was the lowest ever number of AOSs recorded in Purbeck). The distribution of Fulmar on the Purbeck coast has become patchier with only 4 of the 13 sites used in the 1980s now in use. The decline in abundance has broadly reflected that of the UK, although with wider fluctuations and a greater decline overall.

4.4 Fulmars breed between Ballard Down and White Nothe. Following the first record of Fulmars breeding on the Purbeck coast in 1943 (Haysom, 1977), numbers increased to a peak in the early 1980s. Since then, the overall trend has been a decline, with peaks and troughs from year to year, including a notable low point in 2013. A decline in 2018

[1] The UK indices of abundance (JNCC, 2011) are compiled as part of the JNCC seabirds monitoring programme and earlier surveys in 1969-70 (Operation Seafarer), 1985-88 (Seabird Colony Register) and 1998-2002 (Seabird 2000).
[2] https://app.bto.org/seabirds
[3] https://jncc.gov.uk/our-work/smp-report-1986-2019/

followed an apparent upturn in 2014-15; numbers remained at this low level (16) in 2019 and dropped to the lowest recorded in 2021 (13) before rising to 16 again in 2022. Breeding Fulmar are now known from 4 out of 13 sites – Ballard Down, Durlston, and Buttery Corner, plus one pair between Stair Hole and Scratchy Bottom. The most notable recent decrease has been at Buttery Corner. Fulmar has not been recorded at Ragged Rocks, between Seacombe and Winspit, and at Crab Hole since 2016, and from Reform since 2001.

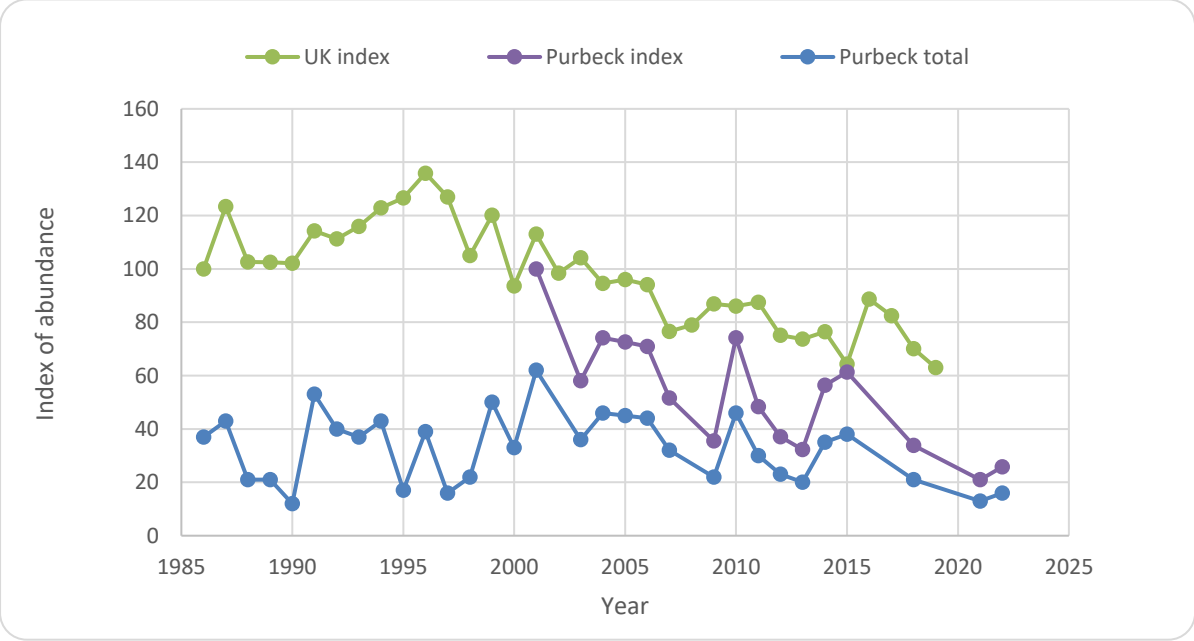

Figure 2. Changes in the numbers of apparently occupied breeding sites (AOSs) for Fulmar together with Dorset and UK indices of abundance (counts before 1985 were of individuals rather than AOS). Counts before 2001 were only between Handfast Point and St Aldhelm's Head and have not been included in the Purbeck trend or minimum/maximum counts given in Table 1.

4.5 *The Dorset Coast trend is similar to that of the UK as a whole to 2019 (see Figure 2), although more variable due to the low counts. A spectacular increase in the number and distribution of Fulmars in the UK and north Atlantic throughout the 20th century (prior to the mid-18th century, they bred in only one or two colonies in Iceland and in St Kilda) ceased in the last 20 years, and numbers then declined, with the suggestion of a small recent upturn. The decline in Purbeck has been steeper.*

4.6 *The increase in Fulmar numbers in Europe is thought to have been driven by changes in food availability due to changes in temperature in the seas and to commercial fisheries, and to a reduction in human predation (Thompson, 2004). Subsequent declines in the UK have been attributed to changes in the North Sea whitefish industry, resulting in a decrease in offal; and declines in sand eel populations in the North Sea and zooplankton in the Atlantic, likely due to climate change. Large numbers are also caught and accidentally killed by long-line fishing in the Norwegian Sea and North Atlantic. The*

Fulmar is Amber Listed due to the decline and degree of localisation of the breeding population.

Cormorant

The Cormorant population declined from a peak in 1990 (320) to less than 20% of this figure in 2018, when the last full count was obtained. The last successful count of AONs at White Nothe in 2021 suggested that the population had halved. The Ballard Down population appears to be declining more slowly and increased slightly to 20 nests in 2022. Based on the number of individuals present, the Gad Cliff population appears to have increased significantly between 2021 and 2022.

4.7 The number of Cormorants in Dorset leapt from just over 100 in 1978 to 320 in 1990, mainly due to a large increase at Ballard Down. Since then, it has declined steadily, and numbers are now much lower than in 1970s, before the population expansion. In 2021, the White Nothe colony, which has in the past been the most stable, had declined by 50% (see Figure 4) (a count of AONs was not achieved in 2022). At Ballard Down, in 2021 the population apparently reached its lowest level since the decline began; however, the number of AONs subsequently increased slightly in 2022. At Gad Cliff, 26 individuals were counted in 2021 and 52 in 2022 - again choppy conditions made it impossible to count the number of AONs. The last count was in 2018, when 11 nests were counted at Gad Cliff. As it is highly likely that the count in 2021 and 2022 included juveniles, this probably represents a small decline between 2018 and 2021, with a subsequent increase in 2022.

4.8 *Because of significant regional variation in the abundance index (declines are particularly severe in northern Scotland),*

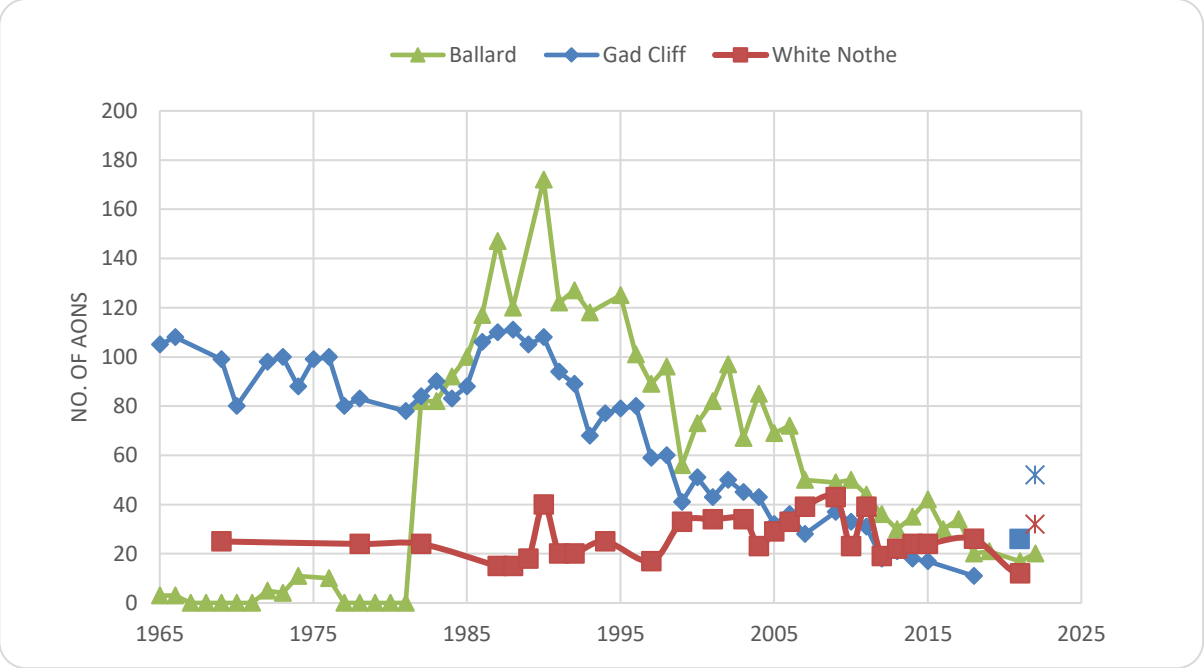

Figure 3 shows the trend for the Dorset population for the years in which these data are

available compared to the English index of abundance for coastal Cormorants. The Dorset index decreased while the English index was still increasing, and the Dorset population has also decreased further. The upturn in numbers nationally after 2011 was reflected in Dorset in 2014-5, but Dorset numbers then dropped again in contrast to the national trend, which appears more or less stable at the moment.

4.9 *Nationally, increases in abundance up to 1995 are likely to have been facilitated by increased legal protection instigated under the Wildlife and Countryside Act 1981. Factors responsible for recent declines are likely to include increased mortality from licensed and unlicensed shooting, as well as possible changes in food availability (JNCC, 2011). Poor weather during the breeding season in 2012 and early in the breeding season in 2013 may have impacted on the Purbeck population, particularly at Ballard Down.*

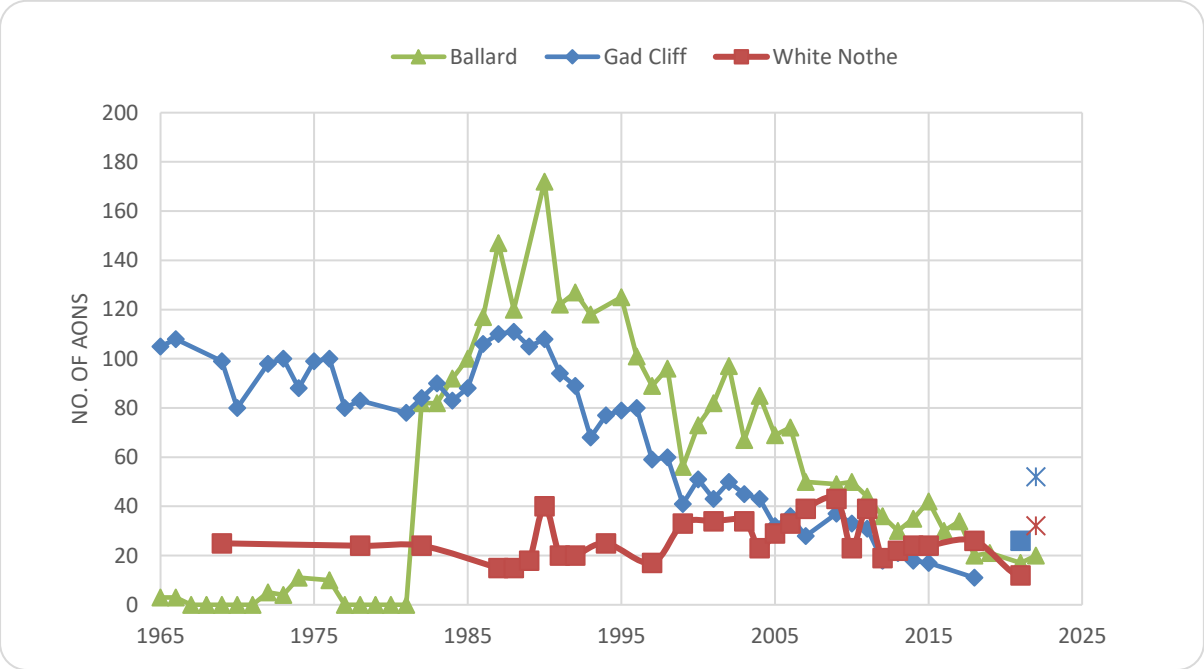

Figure 3. Cormorant AONs between Handfast Point and White Nothe and English indices of abundance (coastal populations only) plus Dorset indices up to 2018, when the last full count was achieved. The barred cross symbols in 2021 and 2022 indicate counts of individuals rather than AONs, which are likely to include juvenile birds and potentially both parents, and are therefore are an over-estimate of the number of breeding pairs.

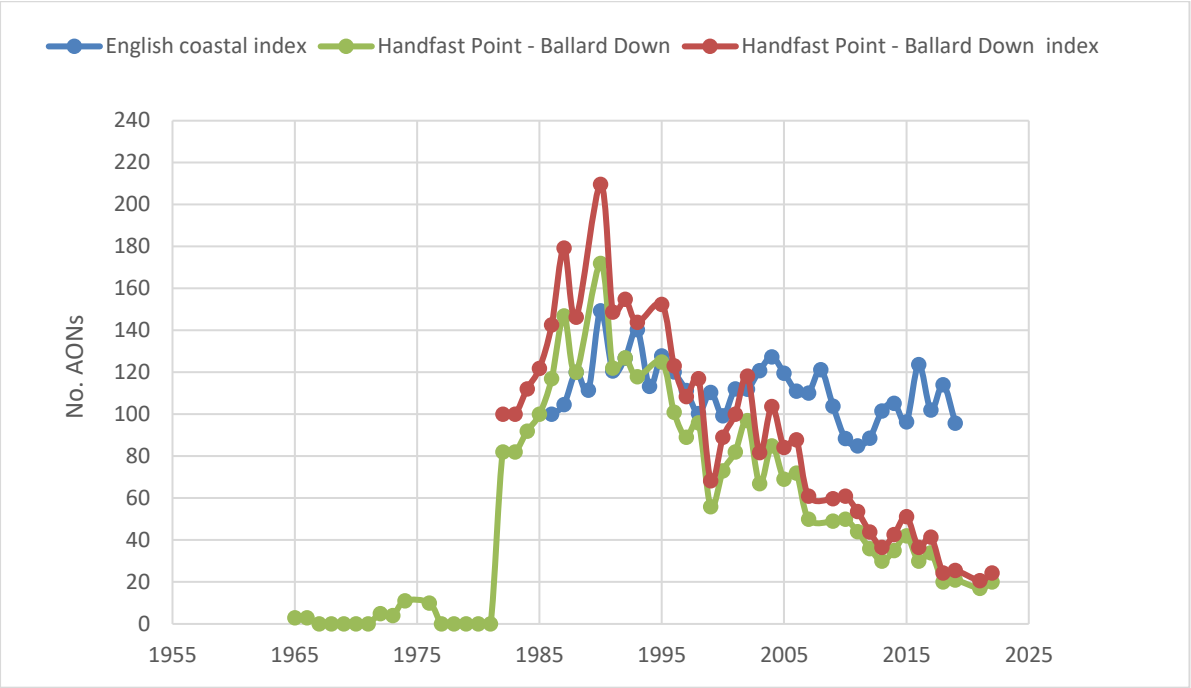

Figure 4. Changes in the Ballard Down Cormorant population between 1964 and 2022 (note that no. of AONs was not counted at Gad Cliff in 2021 and at both Gad Cliff and White Nothe in 2022).

Shag

The number of breeding Shags in Dorset is thought to have increased significantly from the early 20th century until the 1970s. Between the 1970s and 2010 the population remained fairly stable, although there were significant annual fluctuations. Since then, the overall trend appears to be one of fluctuating decline. 2022 saw a small upturn in overall numbers but the complete loss of nests at Gad Cliff and Blackers Hole. UK trends indicate a long-term decline.

4.10 Breeding Shags are generally scattered along the Purbeck coast. Records indicate an increase to a high point of 76 AONs in 2006. Since, then, more regular recording has shown a rapid decline to a low point of 20 birds in 2014. Numbers subsequently partially recovered before declining again more slowly, with a slight upturn in 2022 (see Figure 5).

4.11 Data are most complete for the section between Durlston and St. Aldhelm's Head (see Figure 6). Here, numbers increased rapidly to 57 AONs in 1970, and then fluctuated widely between 27 and 66 AONs until 2010. After 2010 the population declined rapidly to a low point in 2014. Since then, numbers have fluctuated but remain more stable overall, with a slight increase in 2021 and 2022.

4.12 In 2022, no nests were recorded at Blacker's Hole or Gad Cliff for the first time. Losses at Durlston, Seacombe-Halsewell and Fossil Forest were proportionately lowest.

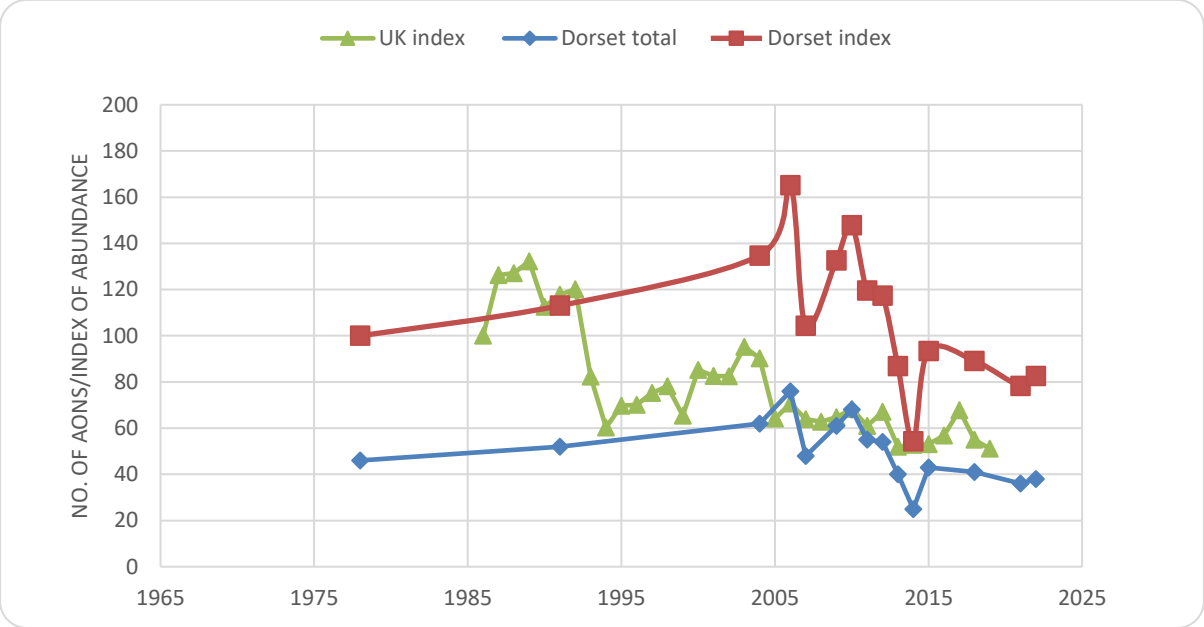

Figure 5: Changes in the numbers of AONs for Shag together with Dorset and UK indices of abundance. Years when counts were made between Durlston and St Aldhelm's Head only are shown in Figure 6 and are not included in the Dorset trend.

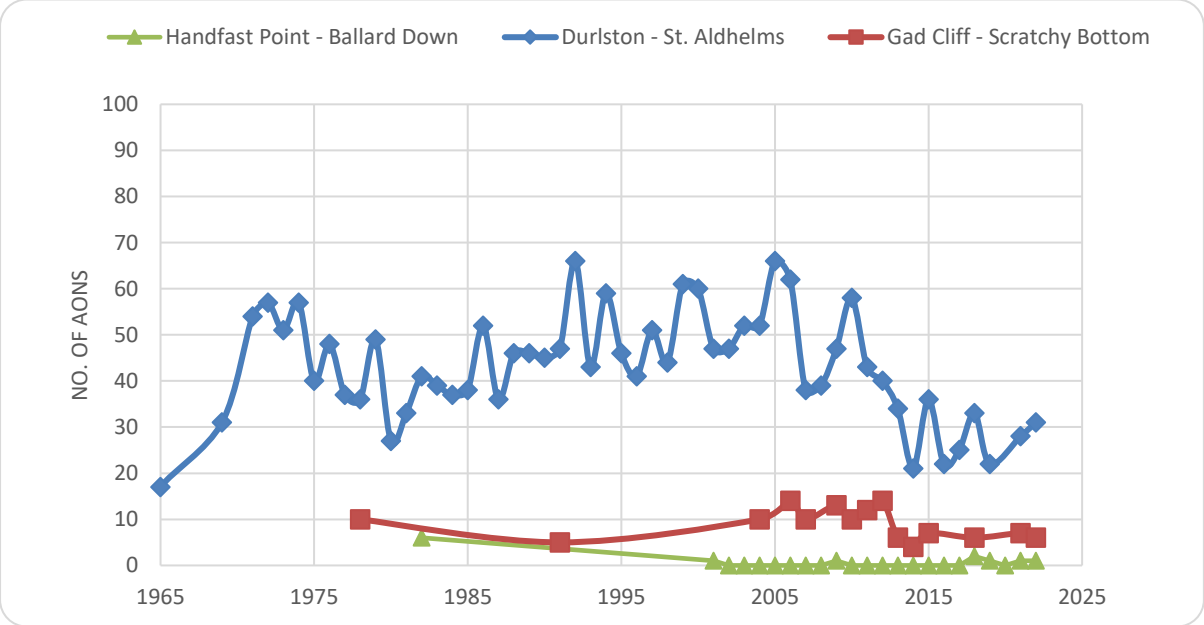

Figure 6: Changes in the numbers of AONs for Shag at Ballard Down, between Durlston and St. Aldhelm's Head, and between Gad Cliff and Scratchy Bottom.

4.13 The change in numbers of nesting Shags in Dorset has not closely reflected national trends, but both show an overall decline with fluctuations. The tendency for adults not to breed every year may be one reason for this variability. The Shag is Red Listed due to

declines in the breeding population, and the international importance of both breeding and non-breeding populations in the UK (Eaton et al. 2015).

4.14 *In the UK overall, the Shag population increased slightly from the late 1960s to the mid-1980s (possibly due to increased legal protection, e.g. under the Wildlife and Countryside Act 1981, and reduced persecution (JNCC 2011)). It then gradually decreased, with an abrupt crash in 1994 and again in 2005 due to a wreck (mass mortality event) caused by food scarcity during a period of prolonged onshore gales on the east coast (Harris & Wanless, 1996). Note the initial steep rise in the index up to 1987 shown in Figure 6 is due to many adults choosing not to breed in 1986, resulting in low numbers at colonies that year.*

Herring Gull

There is thought to have been a marked decline in the Herring Gull population in Dorset in the second half of the twentieth century, which appears to be steeper than the national decline. Since 2000, the population has fluctuated, with a particularly steep decline noted since 2015. However, 2022 saw a notable increase with the return of nesting birds to stretches of the coast where they were absent in 2021 (the year with the lowest count since robust recording began).

4.15 Records for the whole survey area are only available from 2000 (see Figure 7). The patchy records available for Purbeck before this date suggest a decline (77% between 1965 and 1989) that is considerably more severe than the national decline (43% between the late-1960s and mid-1980s). More systematic monitoring was introduced in 2000, by which time the population had recovered a little. However, a slow decline ensued, mirroring the overall UK trend (see Figure 7), until 2012 when numbers started increasing. In 2015, 128 nests were recorded, the most since 2000 (note that the total Dorset count in 2015 was still only around half of the number recorded in 1969). Numbers then reduced rapidly to a low of 58 AONs in 2021 - the lowest level recorded since systematic recording began in 2001 (or any recording). However, 2022 saw a notable overall increase (40%) with a return of nesting birds to Blackers and west of Stair Hole, areas from where the species was apparently absent in 2021. The increase was greatest west of Stair Hole (see Figure 8).

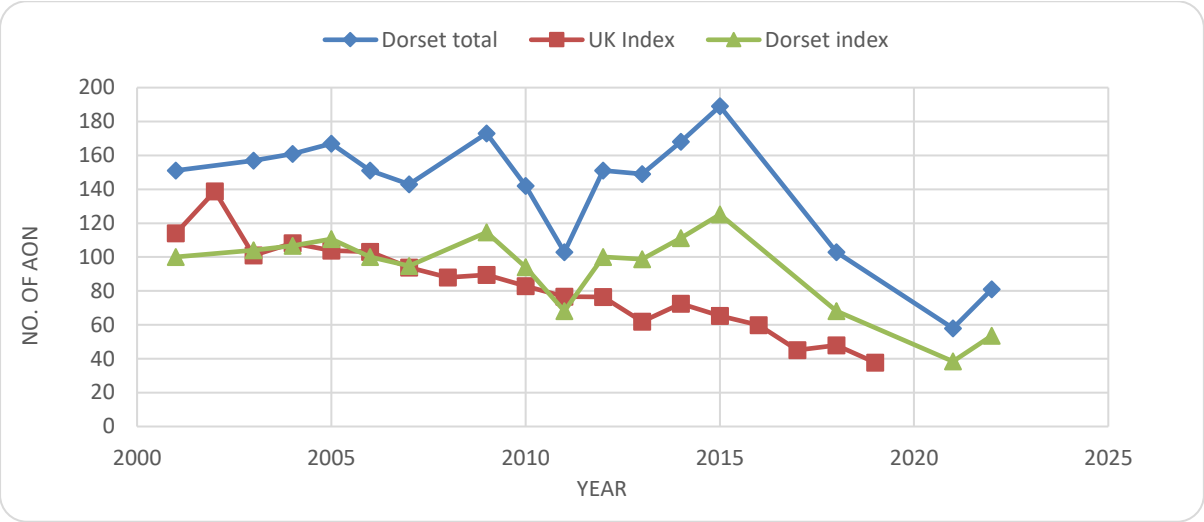

Figure 7: Number of AONs of Herring Gull and the Dorset and UK indices of abundance (UK monitoring started in 1986 and the UK index is based on coastal populations only).

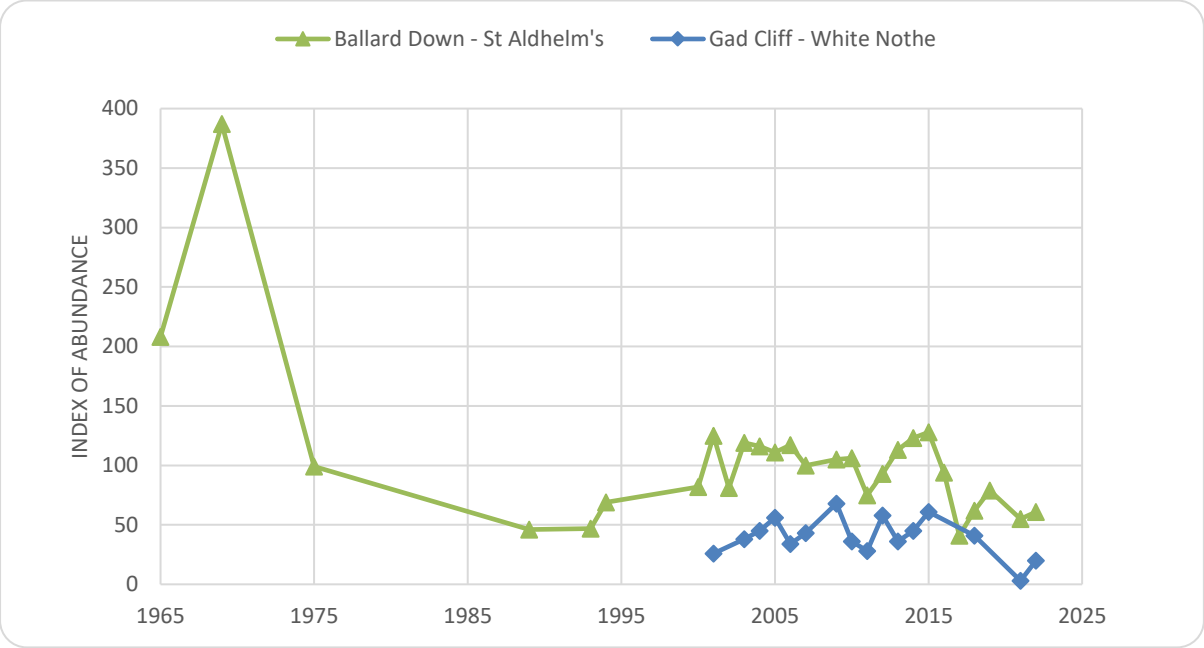

Figure 8: Number of Herring Gull between Ballard Down and St. Aldhelm's Head, and Gad Cliff to White Nothe

4.16 *The Herring Gull is Red Listed in the UK due to a long-term decline in the population (Eaton et al., 2009). There has been a long-term decline in the coastal, natural-nesting, population within the UK. Factors implicated in the decline are botulism (thought to have been a major factor in the decline in the 1970 and 1980s), a decrease in the availability of food scavenged from refuse tips, and reductions in the availability of discards from fishing vessels, while ground predators have had an effect at some colonies.*

Great Black-backed Gull

The very small Great Black-backed Gull population remained fairly steady between 2000 (when systematic recording began) and 2014. 2015 saw the beginning of a decline which reduced the population from 19 at its peak in 2006 to just 5 apparently occupied nests in 2021, and a concomitant reduction in range. However, 2022 saw an increase in the number of nests at Ballard Down and Durlston plus a nest at Gad Cliff resulting in a total of 11 nests.

4.17 The numbers of Great Black-backed Gull nests have remained between 5 and 19 since 2000. 2022 saw an upturn to 11 nests following a steady decline since 2015. There is generally some movement of nest locations between years: 2016 saw the loss of three nest locations from Ballard Down but two new ones at Buttery Corner; 2017 saw birds returning to three nest locations at Ballard, but the loss of all other nests except for one at Durlston and a new nest site at White Ware (east of Dancing Ledge). 2018 saw four nests at Ballard Down, one west of Winspit and one at a new site at St Aldhelm's Head, while 2019 saw 4 remaining at Ballard Down, one returning to Durlston, and the return of a nest to the area around Sutton Rock, west of Winspit and another just west of Seacombe. In 2021, nests were only recorded at, and east of, Durlston but by 2022 there was one at Gad Cliff (the first since 2003) with 9 at Ballard Down and 2 at Durlston.

4.18 The UK trend shows a decline between 2000 and 2006 but a more recent upturn which was reflected in Dorset, where the decline had been steeper, in 2022 (note that the tiny population size means that small changes result in a large proportional change).

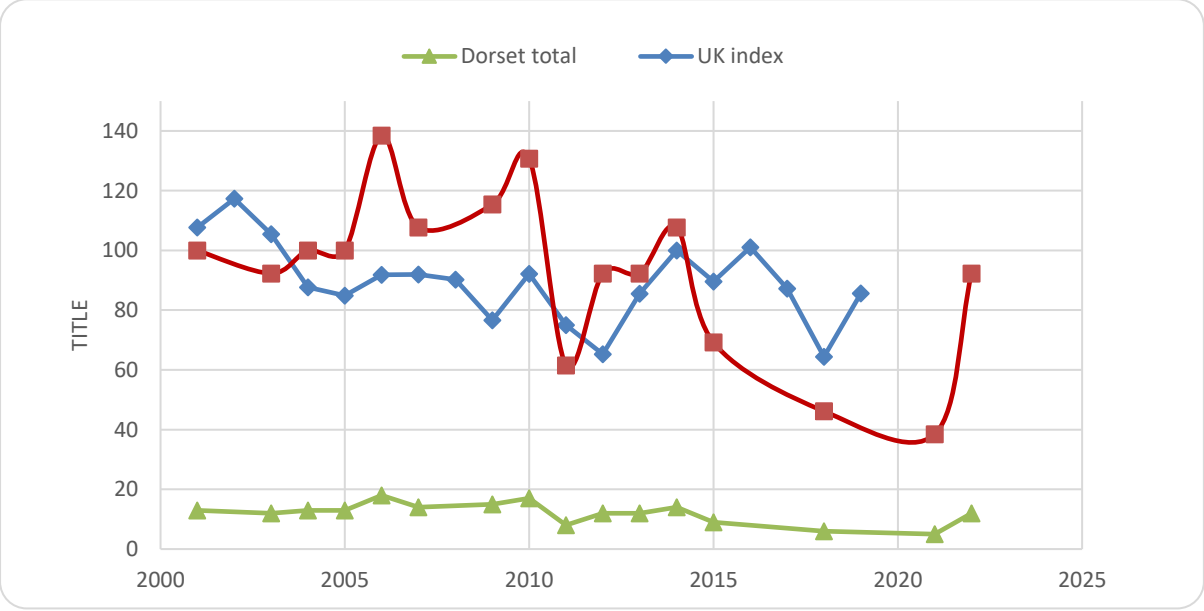

Figure 9: Numbers of AONs of Great Black-backed Gull and the UK index of abundance.

4.19 *The 20th century saw both a widespread expansion of the Great Black-backed Gull breeding range and an increase in numbers. The abundance of Great Black-backed Gulls decreased a little between the first census in 1969/70 and 2000. Between 1986 and 2010, abundance peaked in 1999 at 115% of the 1986 reference level, but has since decreased by around 20%. It is suggested that Great Black-backed Gulls have a competitive advantage over other scavenging seabirds, such as Fulmar and Herring Gull, and are more adaptable, also taking natural prey (such as Rabbits) and that this may explain why, until recently, they have not undergone the declines experienced by other scavengers.*

4.20 *Great Black-backed Gull is currently an Amber Listed Bird of Conservation Concern due to a non-breeding population decline (Eaton et al 2015).*

Kittiwake

Following rapid expansion throughout the 1960s and 1970s, the Kittiwake population in Purbeck declined almost as rapidly. Although the rate of this decline has slowed during the last 10 years, in 2021 the only remaining colony (at Blackers Hole) was again the second smallest it has been since 1962 at just 12 AOS. This largely reflects UK trends, although the decline has been steeper in Purbeck.

4.21 Kittiwakes are known to have been present around Durlston in the 1880s (see Lake *et al.* 2011), but only two were recorded by 1957. This site remained the only colony until the late 1960s/early 1970s, when four more sites were colonised and by 1980 the overall population peaked at nearly 300 AONs. After this, all the colonies declined rapidly, and since the mid-1990s, only the Blackers Hole colony has persisted. The Blackers Hole colony is also in decline (despite a brief increase in the mid-2000s and a slight upturn in 2019 and 2021) and is at its second lowest level since the population expansion in the 1980s.

4.22 Changes in the Purbeck population mirror the UK trend (see Figure 10) although the population may have peaked earlier, and the decline occurred more rapidly until it slowed in the 21st century. The 2019 slight national upturn was reflected in Purbeck, although numbers dropped again in 2022.

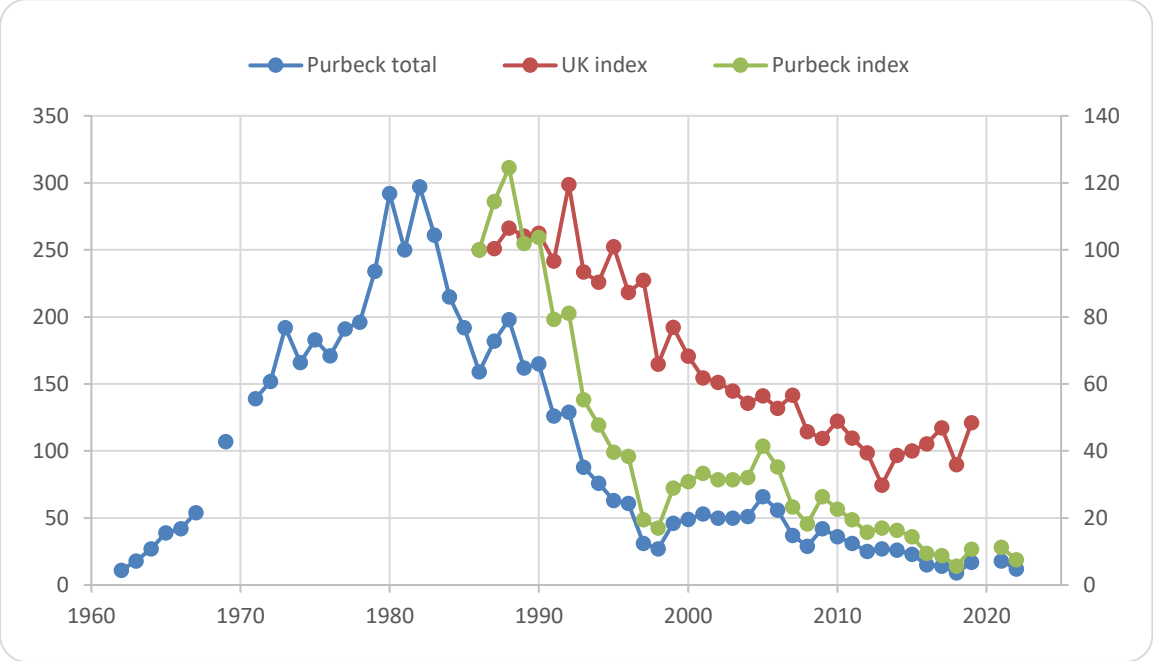

Figure 10: Changes in numbers of AONs of Kittiwakes in Purbeck and the Purbeck and UK indices of abundance from 1985.

4.23 *Nationally, declines in productivity have been related to declines in Sand Eel abundance and are, in some regions, negatively correlated with surface sea temperature (Frederiksen et al., 2004). Kittiwakes are particularly vulnerable to food shortages, as they are surface feeders, and are only able to reach prey on or near the surface. Kittiwakes are Red Listed (Eaton et al. 2015) due to the decline and degree of localisation of the breeding population.*

Guillemot

After large declines up to the mid-20th century, Guillemot numbers in Purbeck stabilised in the 1970s and increased overall throughout the 1990s and 2000s, then more rapidly from 2014 onwards. At 1,652 individuals, the population is now at its highest since the mid-1960s, when systematic recording began, and may have reached 50% of the 1930s population size. The Purbeck colonies have followed a similar trend to that shown by the UK index of abundance, although fluctuating more widely.

4.24 The Guillemot population is found between Durlston and St. Aldhelm's Head. The number of Guillemots in Purbeck declined from an estimated 2,500-3,500 in the 1930s to about one quarter of this (around 700) in the 1970s (see Lake *et al.* 2011 for more details). After this the overall population began to increase, mainly at the Durlston colony, but also between Crab Rock and Sutton Rock from the early 2000s. In 2022 the count increased by over 50%, surpassing the previous peak of 1,074 individual birds in 2019 to reach 1,652.

4.25 Historically there has been variation between the trends at different colonies but in 2022 all colonies increased, most notably at Durlston and at Crab Hole-Sutton Rock, where the population is now almost the same size as that at Durlston. There has also been a substantial increase at Blackers Hole/Reforn since 2019.

4.26 Changes in the Purbeck population correlate broadly with changes in the national index of abundance, although showing more fluctuations (see Figure 12).

4.27 *The reasons for the national increase are not known, although the recent levelling out may be due to density-dependent effects on breeding success (with competition for space and food becoming critical). Observed low UK productivity, thought to be due to food shortages, combined with low return rates at sampled colonies, suggests that, should productivity decline further, future declines may be likely nationally (JNCC 2011). Guillemot is an AmberLlisted Bird of Conservation Concern due to its degree of localisation (Eaton et al. 2015).*

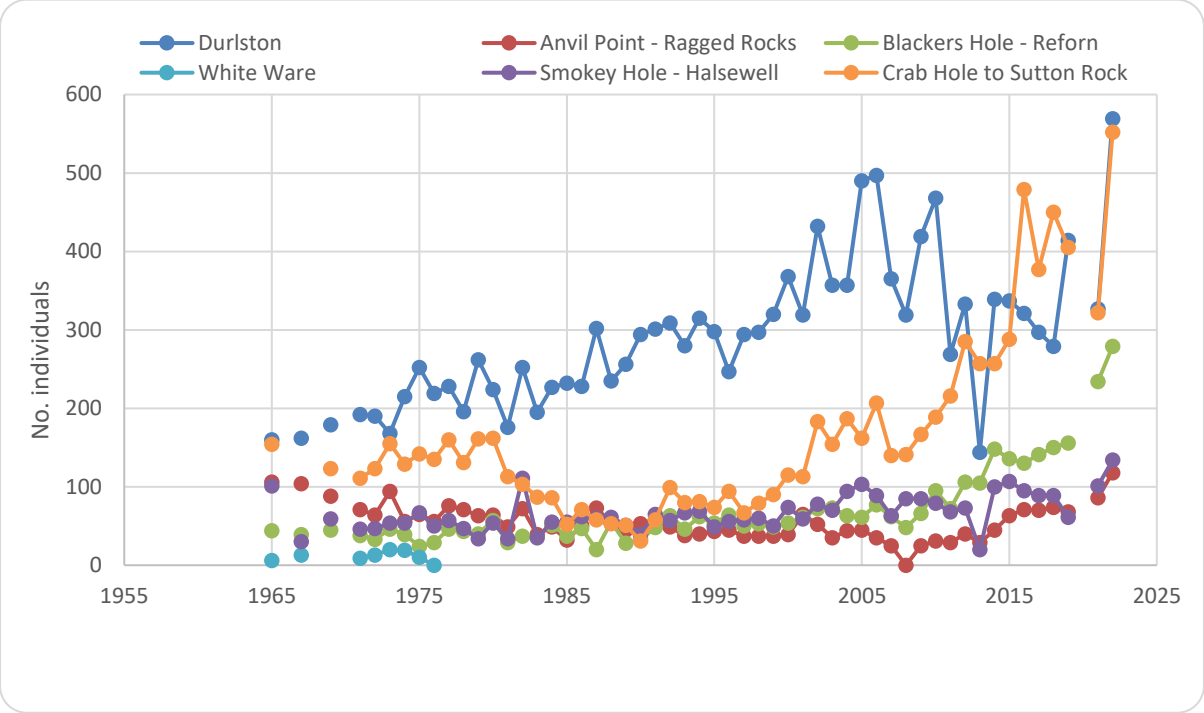

Figure 11: Changes in numbers of Guillemot individuals at breeding colonies in Purbeck since 1965.

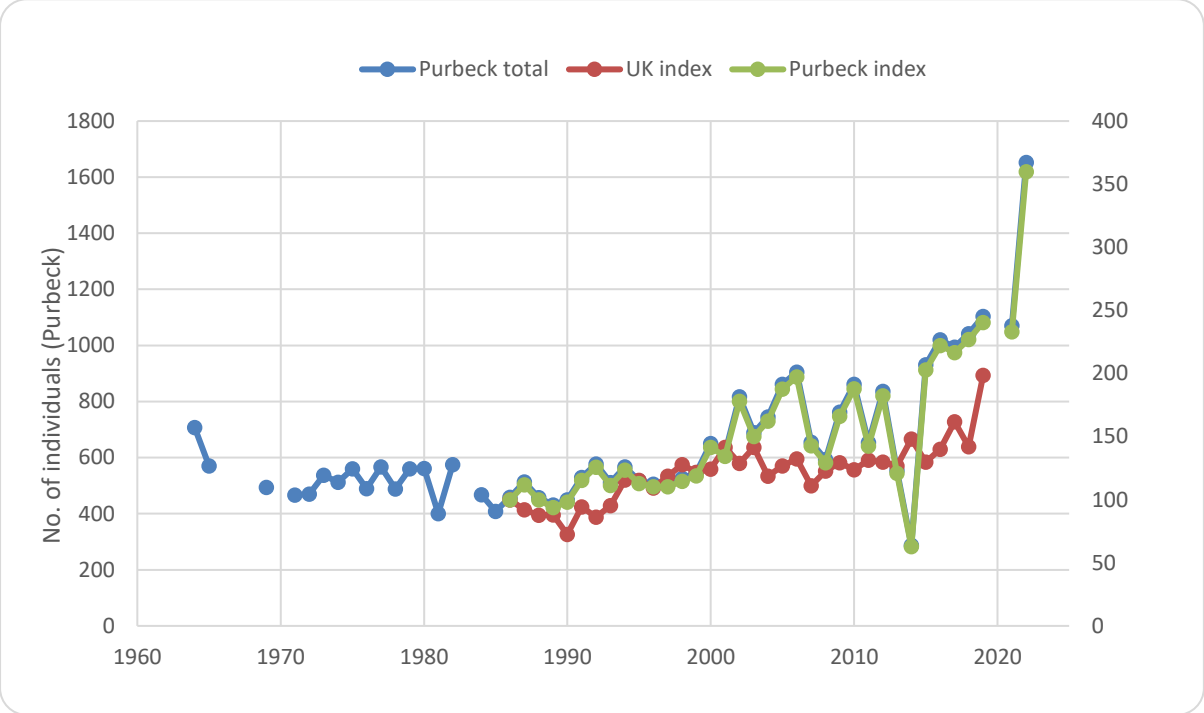

Figure 12: Changes in the total number of Guillemot individuals recorded at breeding ledges in Purbeck compared to the UK index of abundance.

Razorbill

Razorbills declined substantially in Purbeck between 1880 and the early 1960s (when systematic counts began). The overall population continued to decline before stabilising in the 1970s, then fluctuated widely until more steady increases were seen after 2008. By 2022, the number of individual birds (194) was the highest since systematic recording began. The trend generally reflects that of the UK as a whole, with larger fluctuations greater than those seen in the UK index of abundance.

4.28 Razorbills breed between Durlston and St. Aldhelm's Head in Purbeck. Razorbill was considered to breed on the Purbeck Coast in greater numbers than Guillemot in the 1880s (see Lake *et al.* 2011 for more details). However, by 1932, only 130 birds were recorded, and this total fell further to 58 by 1967, and to just 14 by 1970, by which time many colonies had disappeared altogether. The population then fluctuated, but remained steady overall, until the late 1980s, after which three crashes, each roughly a decade apart, were followed by recoveries to higher peaks. Substantial increases in 2014, 2018, 2019 and 2022, in particular, mean that the total count is now the highest since systematic recording began in 1964.

4.29 In general, changes have been fairly consistent between the larger colonies, except in 2021, when the number of individuals decreased at Durlston and Blackers Hole/Reforn but not at Crab Hole-Bird Rock, the third largest colony. This decline was reversed in

2022. A pair seen at Ragged Rocks in 2017 has not been recorded in subsequent years, but the colony at Topmast, first noted in 2014, continues to enlarge.

4.30 *The Purbeck population has shown large fluctuations since the 1950s (although note that the small size of the population means a small change in numbers results in a large percentage change) (see Figure 3). These fluctuations can obscure overall trends, but since 2008 there has been a clear overall upward trend which is steeper than the fluctuating upward trend in the UK as a whole.*

4.31 *As with Guillemots, it has been suggested that the levelling out seen in the UK index in the 2000s may be due to density dependent mechanisms (JNCC 2011). UK Razorbill productivity has declined steadily since 1993 (possibly due to food shortages), and unless this trend reverses, a continuing overall decline is predicted (JNCC 2011). Razorbill remains an Amber Listed Bird of Conservation Concern due to its degree of localisation (Eaton et al. 2015).*

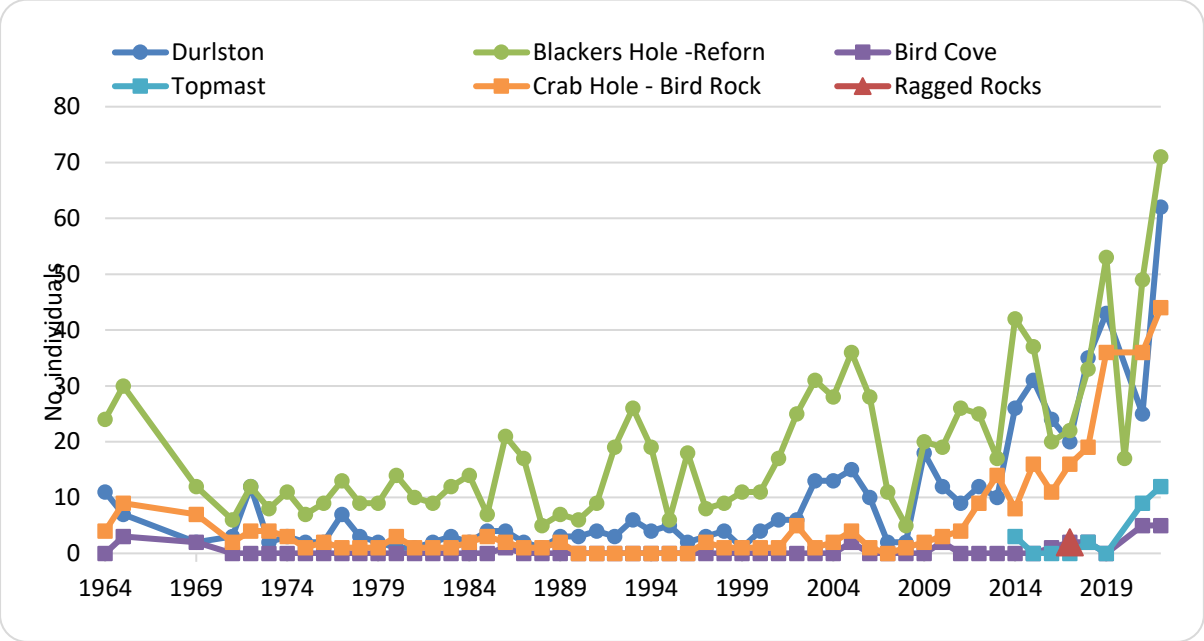

Figure 13: Changes in counts of individual Razorbills at main colonies between 1965 and 2022.

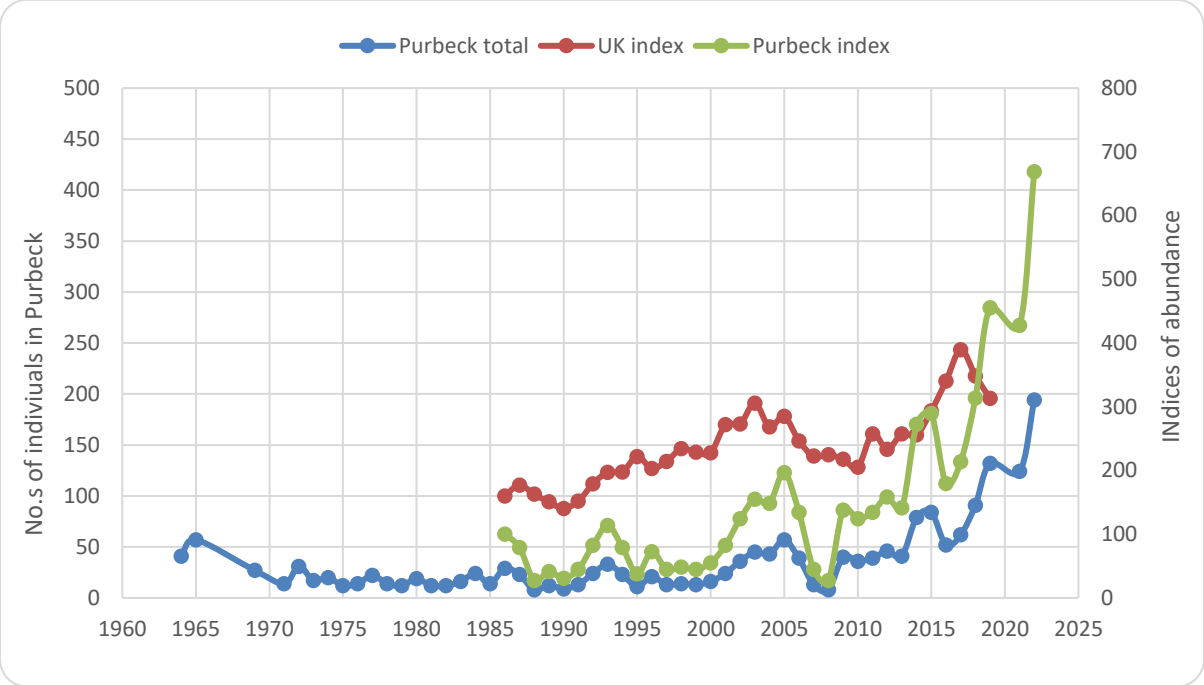

Figure 14: Changes in the counts of individual Razorbills and the UK and Purbeck indices of abundance.

Puffin

The Puffin population of Purbeck declined severely in the 20th century. By the time the population steadied in the 1990s, the estimated number of breeding pairs was about 3 and has fluctuated between 1 and 3 since then. In contrast to Purbeck, the national trend was of a significant increase in the last quarter of the 20th century. More recent national data are not available but monitoring at a small number of large colonies has shown declines in numbers, survival, and productivity.

4.32 Puffins were thought to be abundant in Purbeck at least until 1939 (see Lake et al. 2011) but by 1958 there were only 85 individuals recorded, dropping to 23 in 1975. The population subsequently declined much more slowly until the mid-1990s, after which it stabilised at around 2-3 breeding pairs (see Figure 15).

4.33 Just 1 bird was recorded during the survey, which was away from the breeding ledge. One observation of 2 birds carrying fish was made by Durlston Country Park staff and volunteers on the Birds of Poole Harbour boat trips in 2022. The maximum number counted simultaneously by Durlston Country Park staff in 2022 was 7 (see Appendix), This is in comparison with 2021, when 12 individuals were recorded simultaneously, although only 2 were seen on the survey. The future of this colony remains highly precarious, with no sub-adults seen returning to the site for many years.

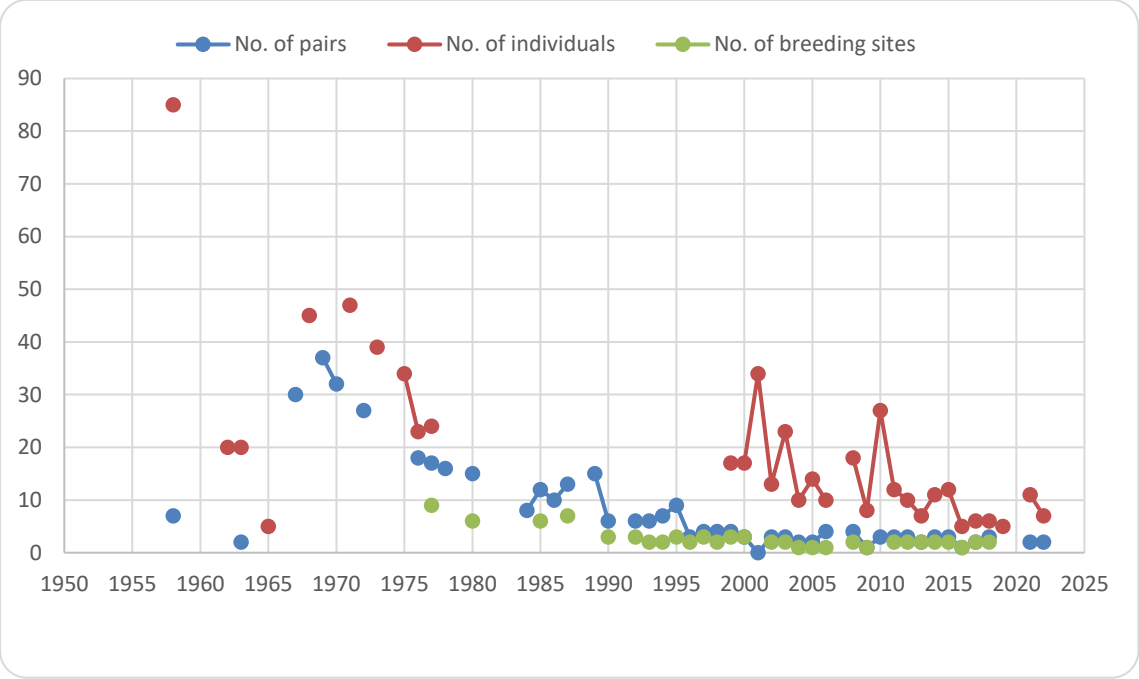

Figure 15: Numbers of individual Puffins, breeding pairs and breeding sites in Purbeck between 1958 and 2022 (no counts of pairs and therefore breeding locations were made in 2021 and 2022).

4.34 *The downward trend in Puffin numbers in Purbeck does not reflect the overall increase suggested by UK census returns between 1969 and 2002. However, although UK-wide data are not available for more recent years, monitoring results from two large colonies show subsequent declines. Productivity has fluctuated but appears to have been lower since the 1990s. Caution should be used in drawing wider geographical conclusions from these data. On Lundy Island, where conditions for Puffins have improved through the eradication of rats, numbers have increased from just five individuals in 2006 to over 300 in 2016. Puffins are Amber Listed due to their degree of localisation and categorisation as a species of European Conservation Concern (Easton* et al. *2009).*

Recommendations for 2023 survey

4.35 Choppy conditions in 2021 and 2022 made counts of Cormorant AONs difficult, although counts of individuals were made. If counts of AONs are possible in 2023, counts of individuals should also be carried out. The proportion of individuals to nests could be used to provide an estimate of AONs in 2021 and 2022.

5. Appendix

5.1 Puffins counted at Dancing Ledge, from Public Evening Boat Trips – approx. 8.30ish (by Katie Black) 2022.

13/5/22: 1 Puffin : at J

27/5/22: 3 in flight, 2 on cliff

3/6/22: 2 on water, 2 on cliff – both at I – Herring Gull looking at nest at J

10/6/22: only got to Blackers – too rough

17/6/22: 7 on ledge : 2 at I, 3 at L&K, 1 at E, 1 at B

27/6/22: 1 on water, 5 on ledge , 2 at 3, 1 at G, 2 at I, possibly a 7th seen.

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