FOOTPRINT ECOLOGY

Purbeck seabird survey 2021

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Summary

This report presents data from the 2021 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 trends over the last 50 years (up to 2015). The 2021 survey represents the first full survey of the coast since 2018, although full counts were achieved for auks in 2019 (as they only nest east of St. Aldhelm's Head). Two counts were carried out in 2021, one between Old Harry Rocks and White Nothe, the second between Old Harry and St Aldhelm's.

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 is large. The Guillemot population remains the largest, with over 1000 individuals counted on the breeding ledges in 2021, and the Puffin population is the smallest with just 2 birds counted on the survey (although up to 12 were reported). 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 2021 monitoring indicate that:

- **The Guillemot and Razorbill populations remain at a relatively high level, just marginally below the peak count in 2019.**
- **There was again a slight increase in Kittiwake nests. Numbers have doubled since the low point in 2017 but are greatly reduced compared to the 1980s – the population remains highly vulnerable**
- **The 2021 data indicate a continuing decline for Fulmar and Herring Gull, with the lowest counts since population recording began and the complete loss of Herring Gull from some sections of the coast. The partial count for Cormorants also suggests a continuing decline.**
- **Shag numbers show a slight decline and are currently well below the maximum count since systematic recording began, with the second lowest count.**
- **The tiny Puffin population remains in a precarious state, although appears stable (nb the number of breeding pairs is not known for 2021).**

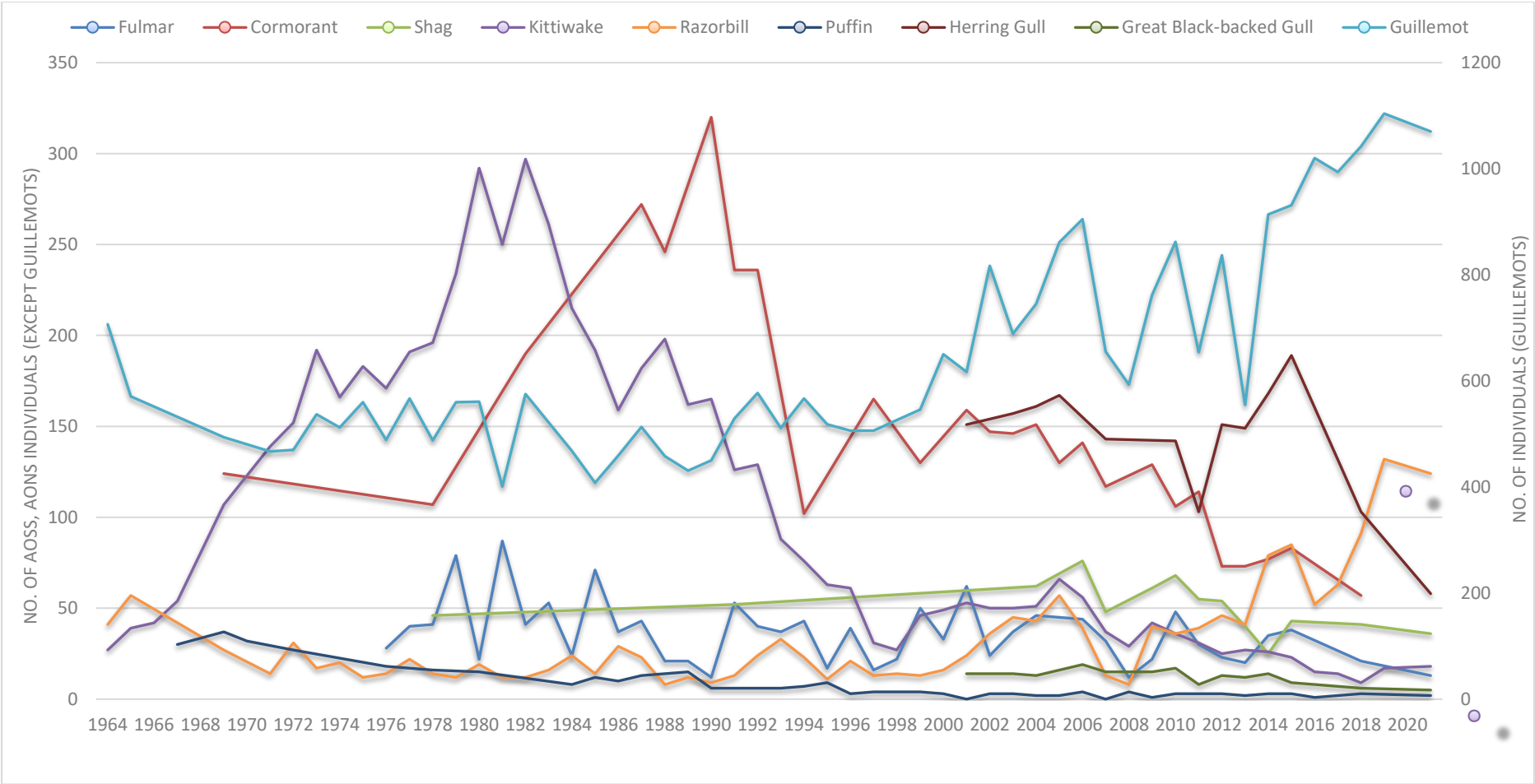

Figure 1: Summary of breeding seabird population changes between Old Harry and St. Aldhelm's Head in Dorset. Counts are of apparently occupied nests/sites for all species except auks (all individuals on breeding ledges). (Note that Fulmar and Shag counts before 2000 may not be complete). A complete count of Cormorant nests was not possible in 2021 – 29 nests were counted at Ballard and White Nothe, and 26 individuals were present at Gad.

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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, 2019) of the breeding seabirds of the Dorset Coast. Surveys are carried out annually, with the exception of 2020, when the survey was cancelled due to Covid 19. However, a count was carried out between Durlston and St. Aldhelm's by Trev Haysom during this period and results are presented in Appendix I.

1.2 This 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 31st May 2021. The second, on 14th June 2021, covered the stretch of coast between Old Harry and St. Aldhelm's Head, but no further 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 31st May it was necessary to count from further offshore than would have been ideal, resulting in difficulties counting Cormorant nests at Gad Cliff.

2.2 Methods generally follow those recommended by Walsh *et al.* (1995). All observations of apparently occupied sites (AOSs) or 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 below are from the May count, when numbers were higher, except for Kittiwakes, where closer observation on 14th June resulted in a higher count of apparently occupied nests.

2.3 The number of Puffins on the water and cliff ledges was noted on 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 local birders were therefore also taken into account together with counts from the evening bird boat trips staffed by Durlston Country Park. 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.

3. Results

Results of boat surveys

3.1 All apparently occupied nests/sites and colonies are marked in 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 Two Puffins were seen on the boat survey on the water and none on the breeding ledge; however, the maximum number seen simultaneously from the seabird boat trips led by staff from Durlston Country Park was 12. It is not known whether any were sub-adults. The number of breeding pairs in 2021 is not known. Trev Haysom report two on the water, one with fish, on 24th June 2020, with 7 seen on the water on 3rd July 2020.

Table 1. Breeding seabird records on the Dorset Coast, 2021 (2018/9 data in brackets for comparison where available, depending on whether species are found along the whole stretch, last surveyed in 2018 or just Old Harry – White Nothe, which was surveyed in 2019). 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 included Ballard Down and White Nothe only, comparisons are made with the same locations.

	2021 total	Change since peak count	Change since last survey	Peak year	Peak count	Comparable data available from:	Comment
Fulmar	13 (21)	-74 (-85.1%)	-8 (-38.1%)	1981	87	2001	Colonised in 1940s, peaked in 1980s then declined, 2021 represents the lowest count.
Cormorant*	29 (partial)	-186 (-86.5%)	17 (-37.0%)	1990	215	1964	Declined to 1960s, increased to 1990, declined again since despite slight upturn of 2014-15, now at lowest count.
Shag	36	-40 (-52.7%)	-5 (-12.2%)	2006	76	1964, partial	Increased rapidly in 2nd half of C20th, subsequent wide fluctuations but overall decline.
Kittiwake	18	-279 (-94%)	1 (5.9%)	1982	297	1957	Rapidly increased throughout 1960s & 1970s, equally rapid decline, which slowed in the 2000s accelerated after 2015 but may have stabilised at a low level.
Guillemot	1070	28 (2.7%)	-34 (-3.1%)	2019	1042	1964	Large declines up to mid C20th, fluctuating since, with swift increase to peak in 2018, with numbers remaining at a similar level since.
Razorbill	124	33 (36.3%)	-8 (-6.1%)	2019	91	1964	Large declines up to mid C20th, fluctuating widely since but peaking in 2019 with a slight decline since.
Puffin (2020)	2	-35 (-94.6%)	-1 (-33.4%)	1969	37	1967	Large declines up to mid C20th which stabilised at current level around 1990.
Herring Gull	58	-131 (-69.4%)	-45 (-43.7%)	2015	189	2001	Considerable decline 1960s - 1980s, increased from low point in 2010 but then declined rapidly since 2015.
Great Black-backed Gull	5	-14 (-73.7%)	-1 (-16.7%)	2006	19	2001	Fluctuating decline since 2001, range retraction.

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 2021 survey between Old Harry and White Nothe Head.

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 Database[2] Data 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.

4.3 Contextual information on UK declines has been retained for readers who have not seen previous years' reports, but 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 2021, the number of AOSs was the lowest ever recorded for Purbeck (despite an upturn in 2014-15). Fulmars are now found at four sites on the Purbeck coast. The decline has broadly reflected that of the UK overall, 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 followed an apparent upturn in 2014-15; number remained at this low level (16) in 2019 and dropped to the lowest recorded in 2021 (13). Breeding Fulmar are now known from 4 sites – Ballard Down, Durlston, Buttery Corner and one pair between Stair Hole and Scratchy Bottom. The most notable recent decrease has been at Buttery Corner.

[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/

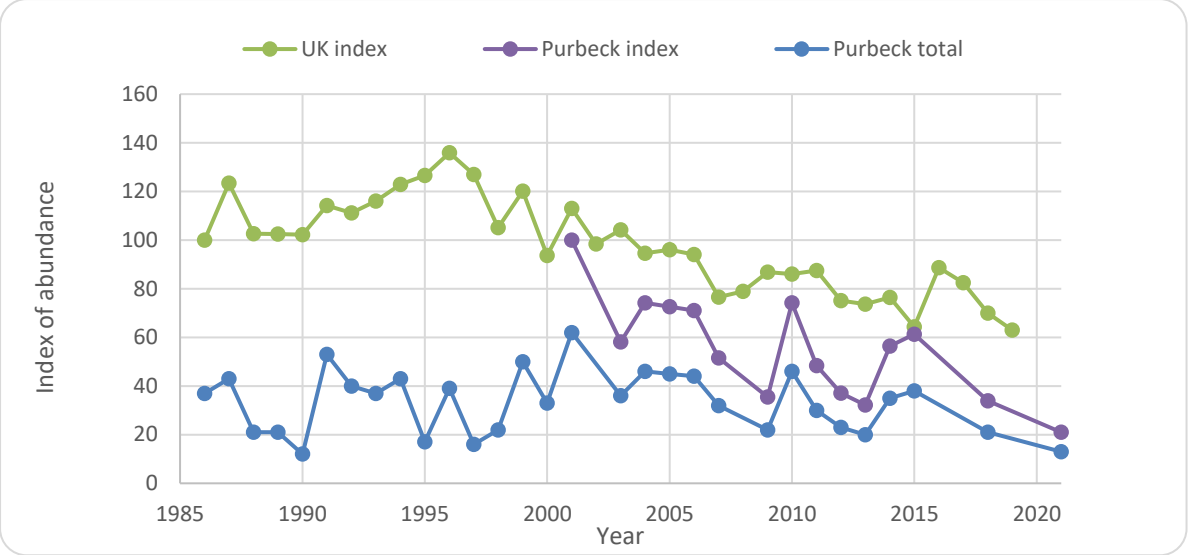

Figure 2. Changes in the numbers of apparently occupied breeding sites (AOSs) for Fulmar together with Dorset and UK indices of abundance (counts before 1985 were of individuals rather than AOS). Counts before 2001 were only between Handfast Point and St Aldhelm's and have not been included in the Purbeck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

4.5 The Dorset Coast trend is similar to that of the UK as a whole (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. In 2021, the White Nothe population halved although the Ballard Down population appears to be declining more slowly. The Gad Cliff population was not successfully counted in 2021.

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%. The decline at Ballard Down was less severe (see Figure 4). At Gad Cliff, 26 individuals were counted, but conditions made it impossible to count the number of AONs (in 2018, 11 nests were counted here). As it is likely that chicks were present, this probably represents a small decline from the 2018 count of 11 nests.

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.

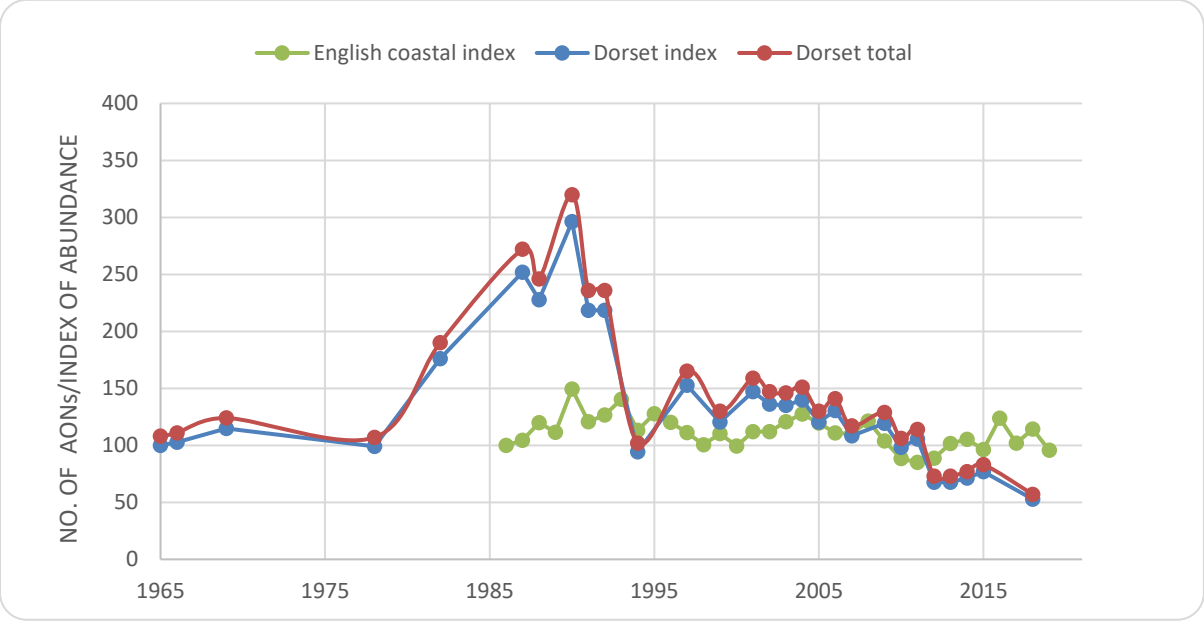

Figure 3. Cormorant AONs between Handfast Point and White Nothe and English (coastal populations only) and Dorset indices of abundance to 2018, when the last full count was achieved.

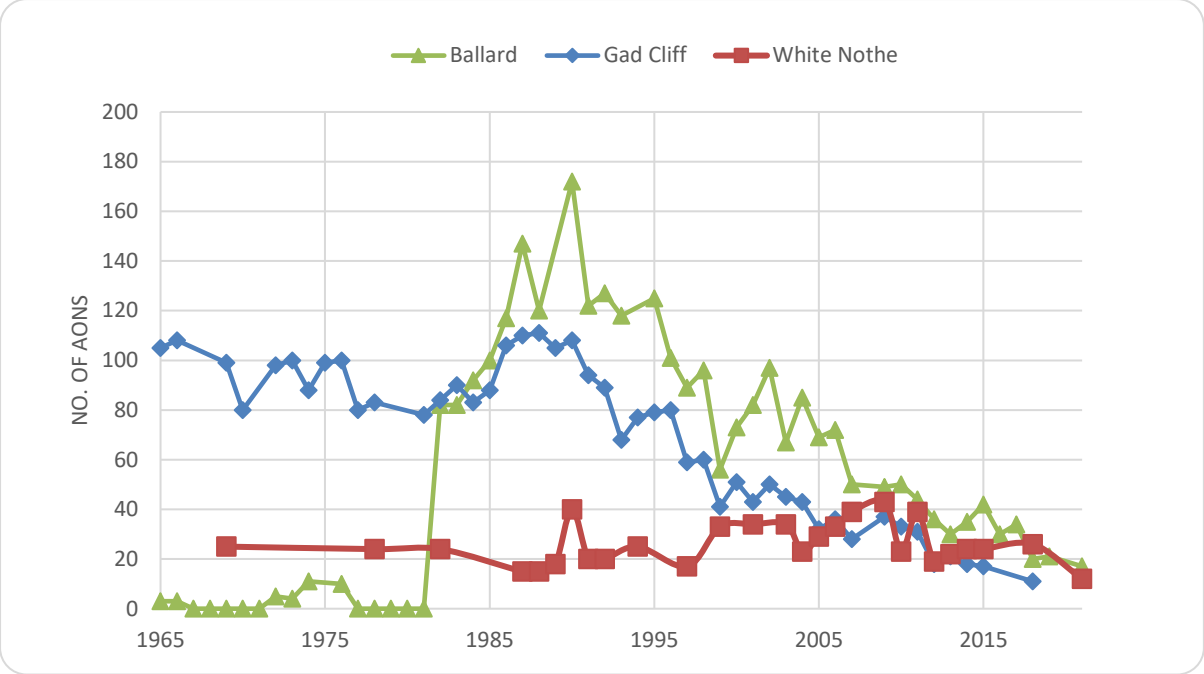

Figure 4. Changes in Dorset Cormorant populations between 1964 and 2021 (no. of AONs was not counted at Gad Cliff in 2021, but 26 individuals were present).

Shag

The number of breeding Shags in Dorset is thought to have increased significantly in the early 20th century until the 1970s. Between the 1970s and 2010 the population remained fairly stable but with significant annual fluctuations. Since then, the overall trend appears to be one of fluctuating decline. UK trends indicate a long-term decline.

4.10 Breeding Shags generally occur scattered along the coast between Ballard Down and St Aldhelm's Head. Shag records were sparse in Dorset until the latter half of the 20th century. Between Durlston and St. Aldhelm's Head (the survey section for which there is the most complete data set), numbers increased rapidly to 57 AONs in 1970, and then fluctuated widely between 27 and 66 AONs until 2010. After 2010 the population declined. In 2019 the count of 21 AONs was the lowest recorded (with notable declines along the stretch of cliffs between Whiteware and Halsewell).

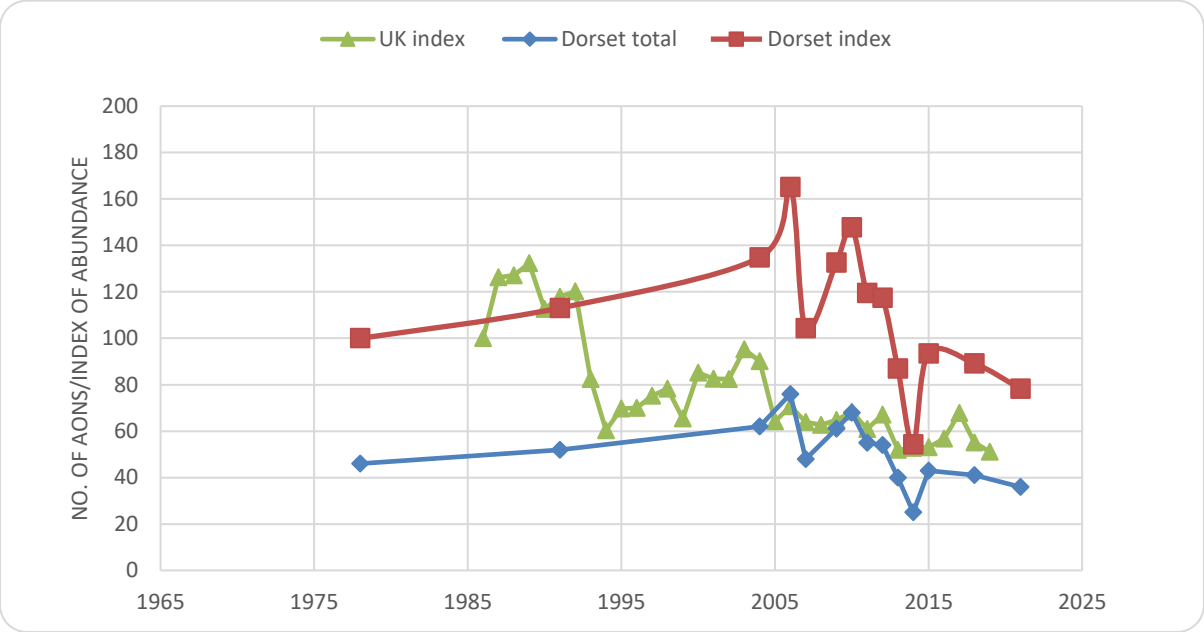

Figure 5: Changes in the numbers of apparently occupied nests (AONs) for Shag together with Dorset and UK indices of abundance. Years when counts were between Durlston and St Aldhelm's only are shown in Figure 5 and are not included in the Dorset trend.

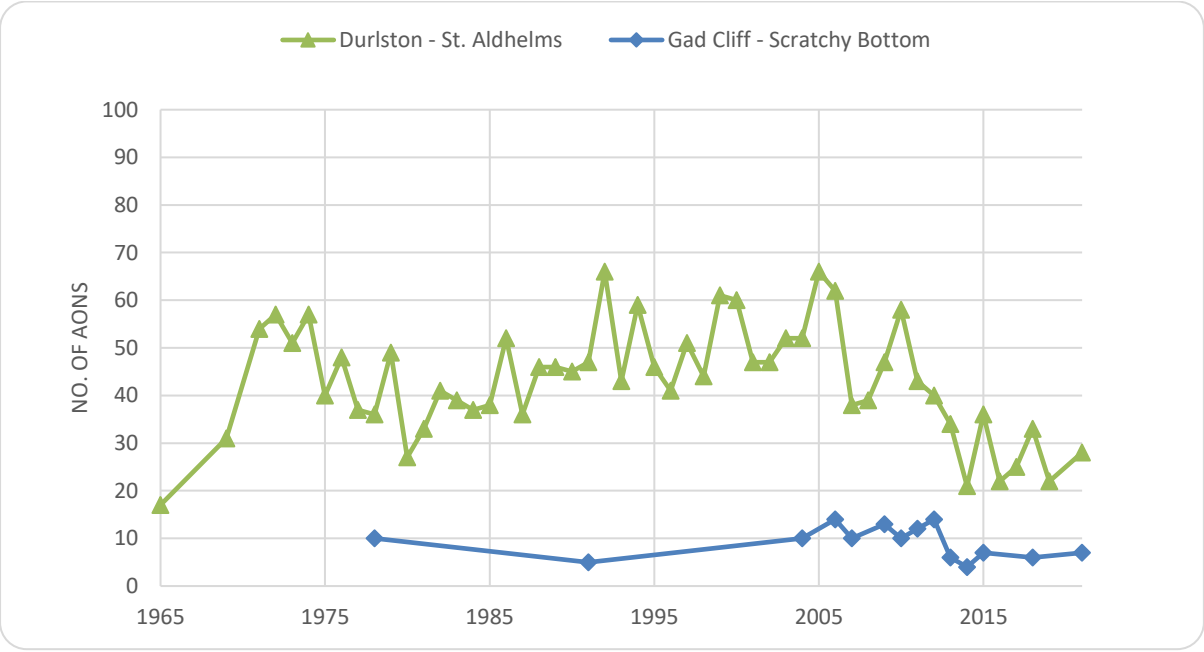

Figure 6: Changes in the numbers of apparently occupied nests (AONs) for Shag Between Durlston and St. Aldhelm's and between Gad Cliff and Scratchy Bottom.

4.11 The changes in numbers of nesting Shags in Dorset have 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 the 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).

4.12 *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)) but 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. Since 2000, The population has fluctuated with a particularly steep decline since 2015, such that numbers are now at the lowest recorded, with the complete loss of nests from some stretches of the coast. The decline appears to be steeper in Dorset than nationally, particularly in recent years.

4.13 Records for the whole survey area are only available from 2000. 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 at the lowest level recorded since systematic recording began in 2001 (or any recording. Significantly, 2021 saw the complete loss of birds at Blackers quarry, Gad Cliff and west of Stair Hole. Any future survey should focus on these areas in case nests were missed due to the distance of the boat from the cliffs during the May survey.

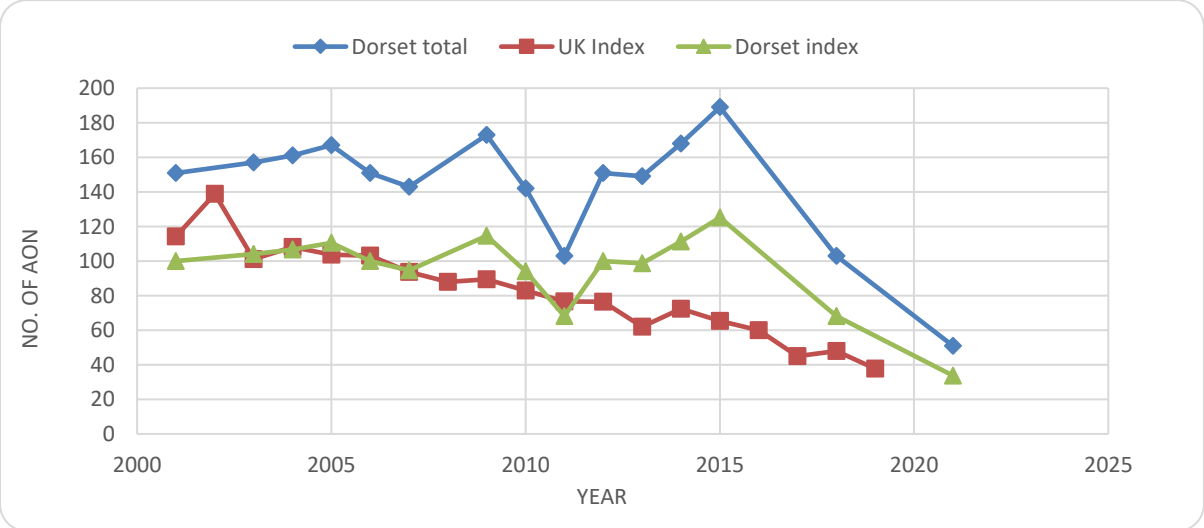

Figure 7: Number of apparently occupied nests of Herring Gull and Dorset and UK indices of abundance (UK monitoring started in 1986 and UK index is based on coastal populations only).

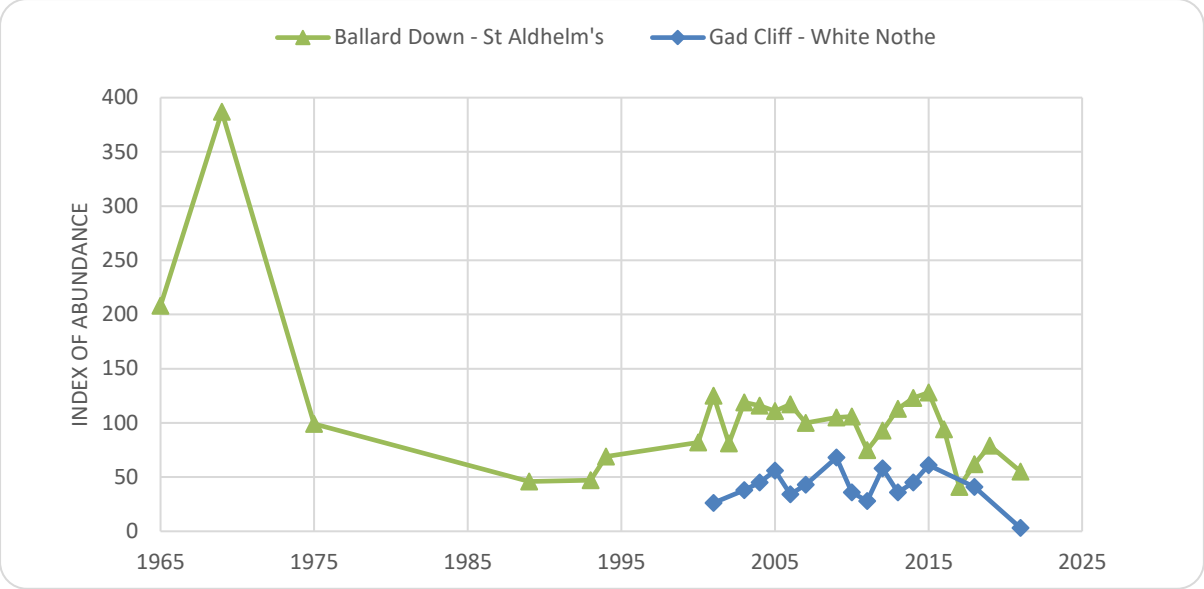

Figure 8: Number of Herring Gull between Ballard Down and St. Aldhelm's, and Gad Cliff to White Nothe

4.14 *The Herring Gull is red listed in the UK due to a long-term decline in the population (Eaton et al., 2009). There is 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. However, 2015 saw the beginning of a decline which has reduced the population from 18 at its peak in 2006 to just five apparently occupied nests in 2021, all of which are between Handfast Point and Durlston.

4.15 Following a period of fluctuation, the population has declined 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. By 2021, nests were only recorded at and east of Durlston.

4.16 The UK trend shows a decline between 2000 and 2006 but a more recent upturn. The Dorset population, although initially more resilient, has since declined faster since 2014.

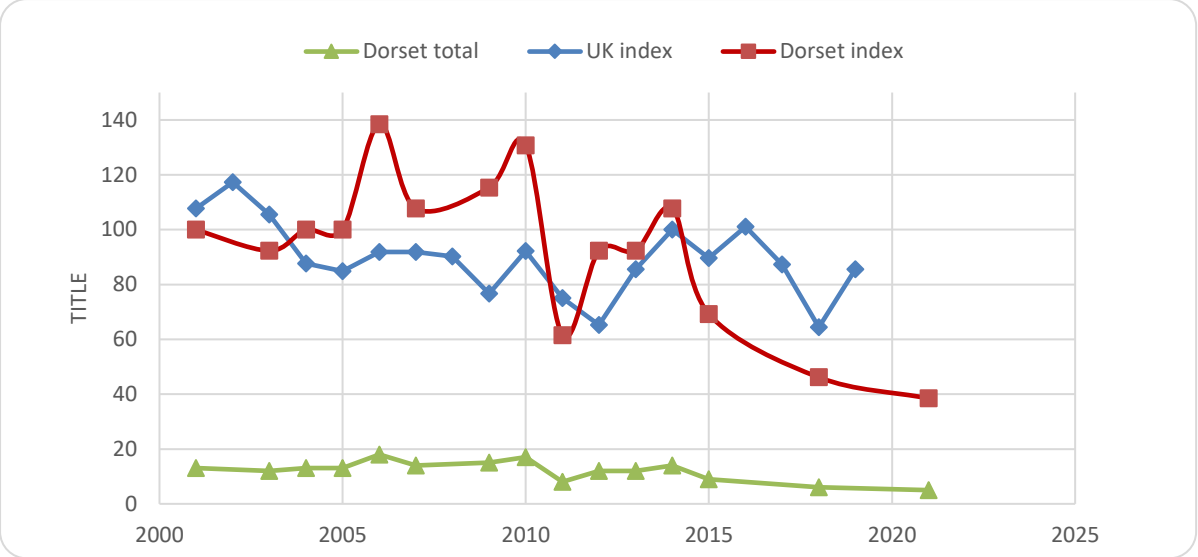

Figure 9: Numbers of apparently occupied nests of Great Black-backed Gull and the UK index of abundance.

4.17 *The 20th century saw widespread expansion of the Great Black-backed Gull breeding range and numbers. The abundance of Great Black-backed Gulls decreased a little between the first census of their numbers 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 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.*

4.18 *Great Black-backed Gull is currently listed as amber in the Birds 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 18 AOS – however, this was an increase from 2018, when the colony was at its lowest since first expanding. This largely reflects UK trends although the decline has been steeper in Purbeck.

4.19 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), however, 2019 saw an increase from 9 to 17 nests (the first upturn for a decade), which has been maintained in 2021.

4.20 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. However, the recent slight upturn is also reflected in Purbeck.

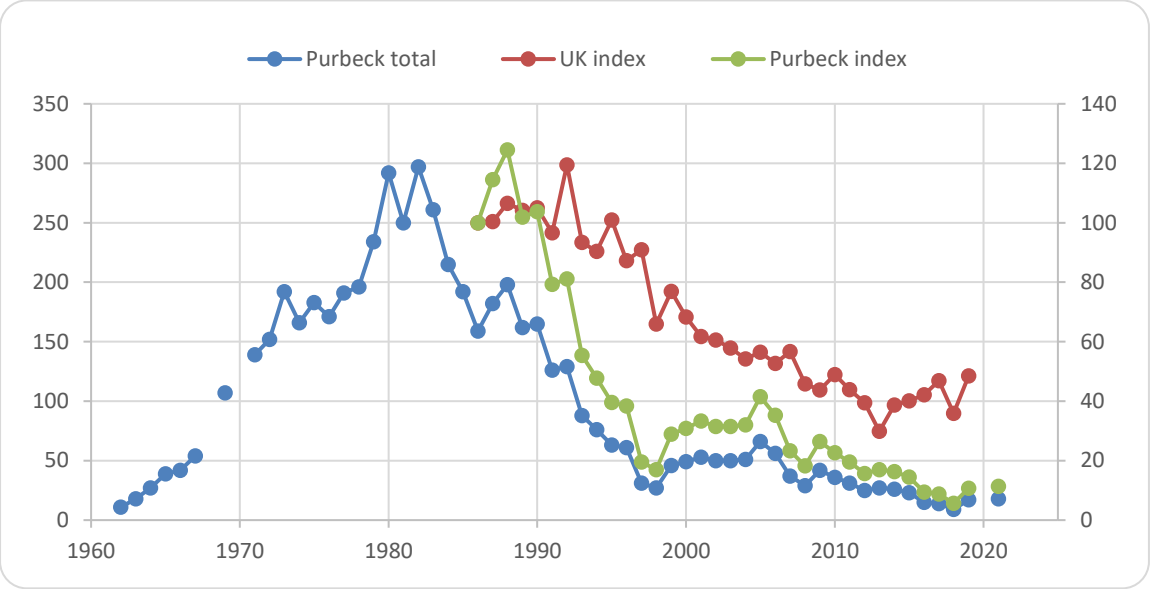

Figure 10: Changes in numbers of apparently occupied nests of Kittiwakes in Purbeck and Purbeck and UK indices of abundance from 1985.

4.21 Nationally, declines in productivity have been related to declines in sand eel abundance and, in some regions, are negatively correlated with surface sea temperature (Frederiksen et al., 2004). Kittiwakes are particularly vulnerable to food shortages as they are surface feeders, and 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 and are now around their highest since the mid-1960 at about one third of the 1930 figure. The Purbeck colonies have followed a similar trend to that shown by the UK index of abundance, although fluctuating more widely.

4.22 The Guillemot population is found between Durlston and St. Aldhelm's. 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 2019 the population reached a peak at 1104, the highest since declines in the mid-20th century (and reversing the small downturn

seen in 2017) and remained high in 2021 with a total count of 1070 birds (1074 individuals were counted in 2020).

4.23 There is considerable variation between colonies. Since the mid-2000s, numbers at Durlston have fluctuated widely (see Figure 11) and following a decline (thought to be due to heavy predation from a pair of resident Ravens) increased substantially in 2019. The recent declines at Durlston have been more than compensated for by increases elsewhere up to particularly between Crab Hole and Sutton Rock and then Blackers Hole/Reforn.

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

4.25 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 amber listed in Birds of Conservation Concern due to its degree of localisation (Eaton et al. 2015).

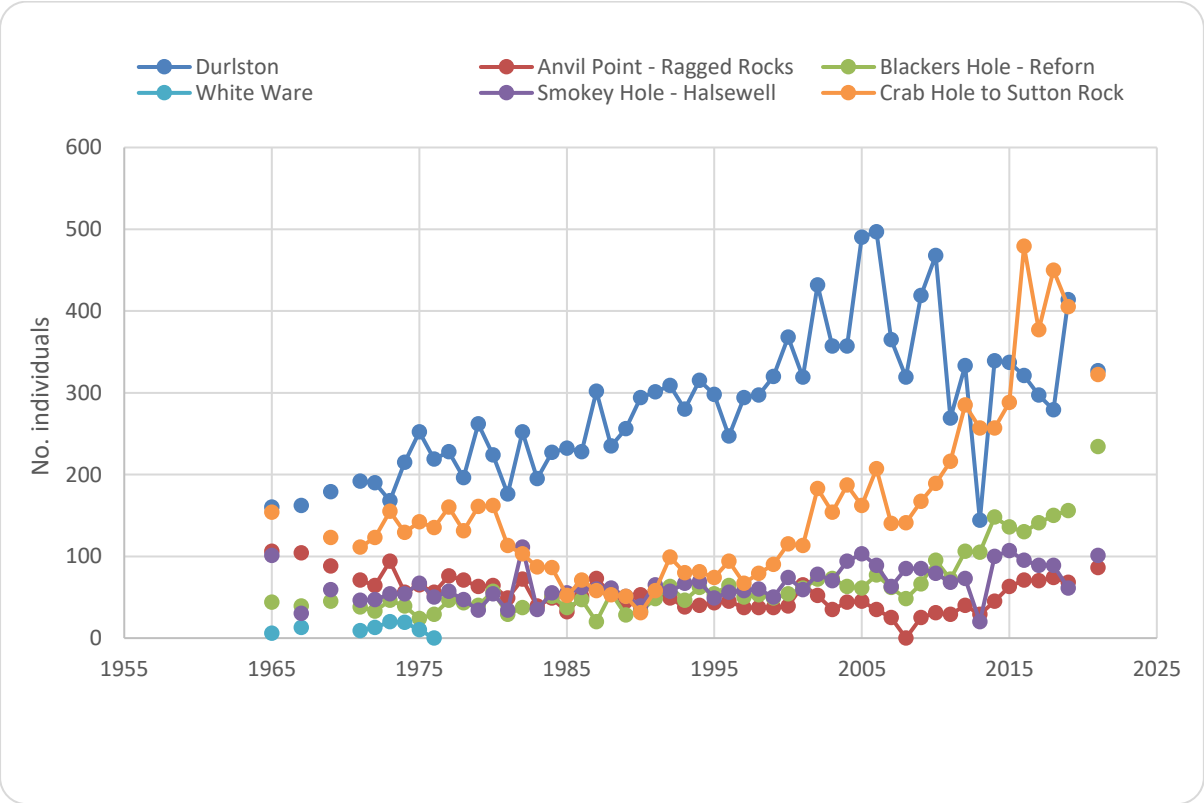

Figure 11: Changes in numbers of Guillemot individuals at breeding colonies in Purbeck since 1965.

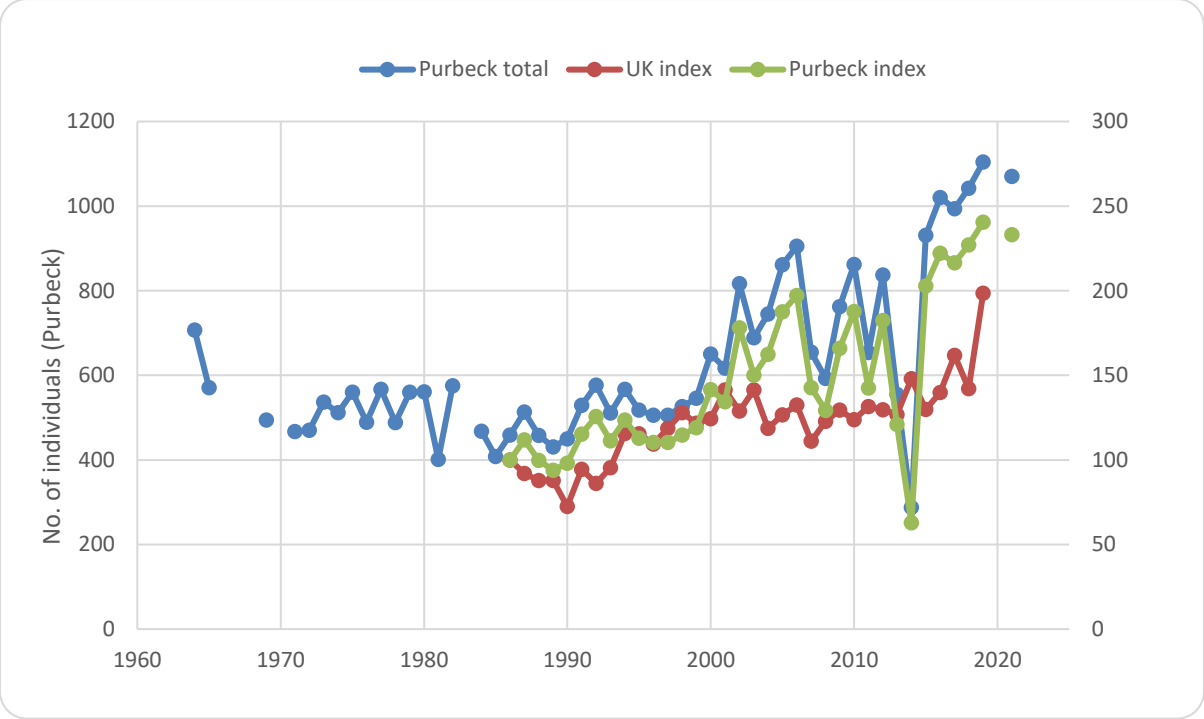

Figure 12: Changes in the total number of individuals recorded at breeding ledges in Purbeck compared to the UK index of abundance.

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 after 2008. In 2019 numbers were at the highest since systematic recording began (132) and although dipping a little, have remained high (124). The trend generally reflects that of the UK as a whole, with larger fluctuations greater than those seen in the UK index of abundance.

4.26 Razorbill breeds between Durlston and St. Aldhelm's. Razorbills were considered to be breeding on the Purbeck Coast in greater numbers than Guillemots in the 1880s (see Lake *et al.* 2011 for more details). However, by 1932, only 130 birds were recorded and this fell further to 58 by 1967 and 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 and 2019 in particular mean that the total count is now nearly at the highest since systematic recording began in 1964.

4.27 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, and a recent small decline.

4.28 In general, changes have been fairly consistent between the larger colonies. However, in 2021, the number of pairs decreased at Durlston and Blackers Hole/Reform, a decline that was not quite compensated for by an increase at Topmast. A pair seen at Ragged Rocks in 2017 has not been recorded in subsequent years.

4.29 *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 amber listed in Birds of Conservation Concern due to its degree of localisation (Eaton et al. 2015).*

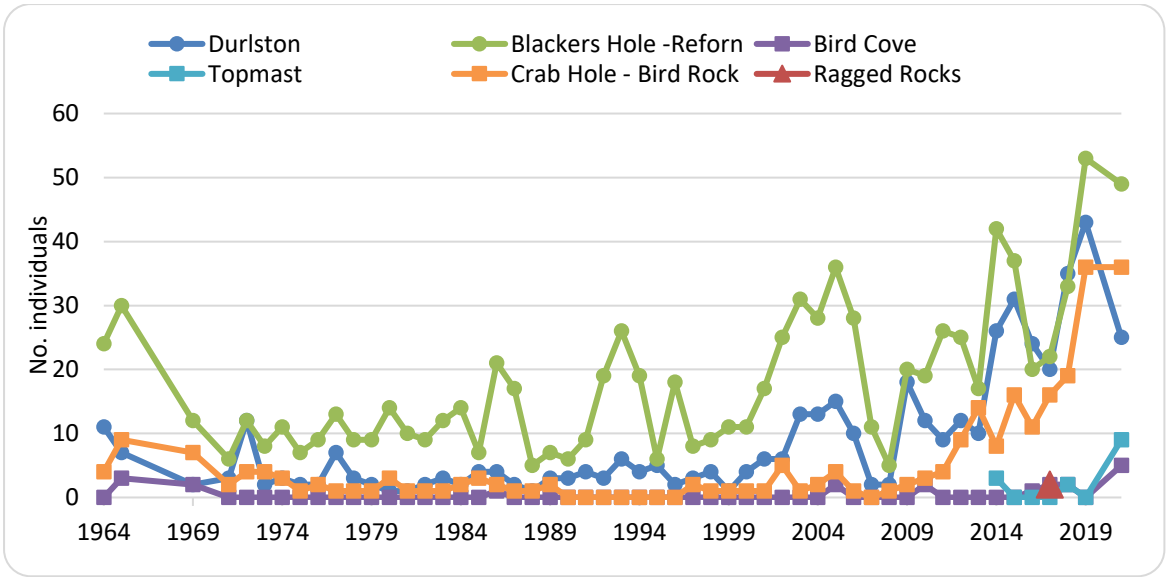

Figure 13: Changes in counts of individual Razorbills at main colonies between 1965 and 2021.

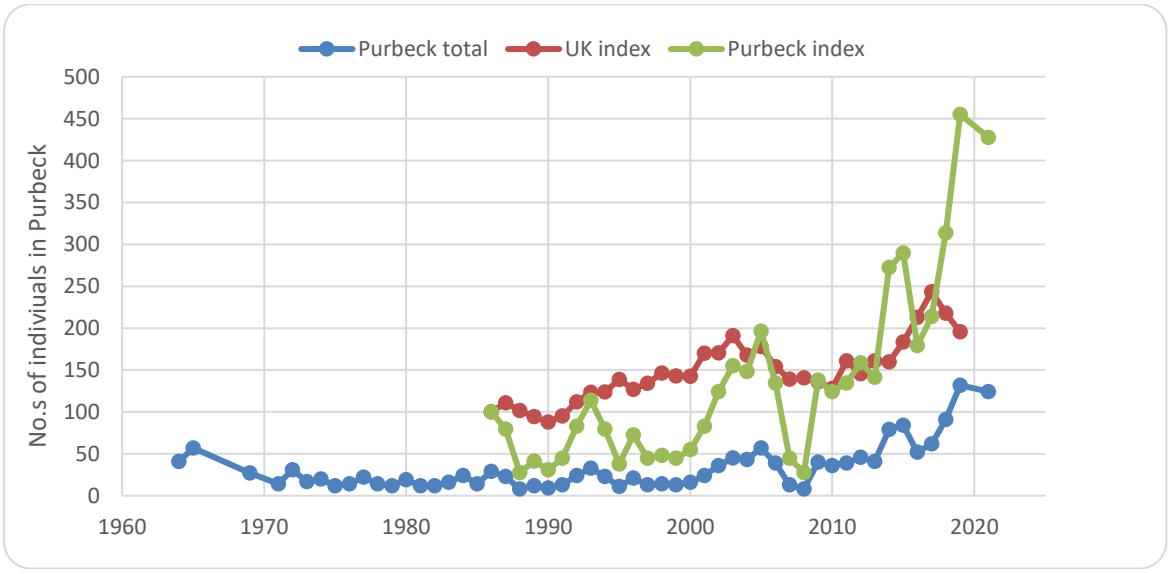

Figure 14: Changes in the counts of individual Razorbills and the UK and Purbeck indices of abundance.

Puffins

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 three and has fluctuated between one and three since then. In contrast, 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. Sixteen individuals were recorded in Purbeck in 2019, although only 5 were recorded on the survey. In 2021, 12 individuals were recorded simultaneously, although only 2 were seen on the survey.

4.30 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 two-three breeding pairs. Adults carrying fish were observed arriving at two, possible three, nesting locations in 2018. No observations of birds arriving with fish were made in 2019, but the number of (volunteer) recording visits was much reduced from previous years, and this is not taken as evidence that no breeding occurred. One bird carrying fish was recorded in 2020 but no observations of adults carrying fish were made in 2021. The total number counted simultaneously in 2021 was 11, with 2 recorded on the survey. The future of this colony remains precarious. Should action be taken to decrease potential egg/chick predations, increased effort should be put into monitoring nesting (and ideally nesting success).

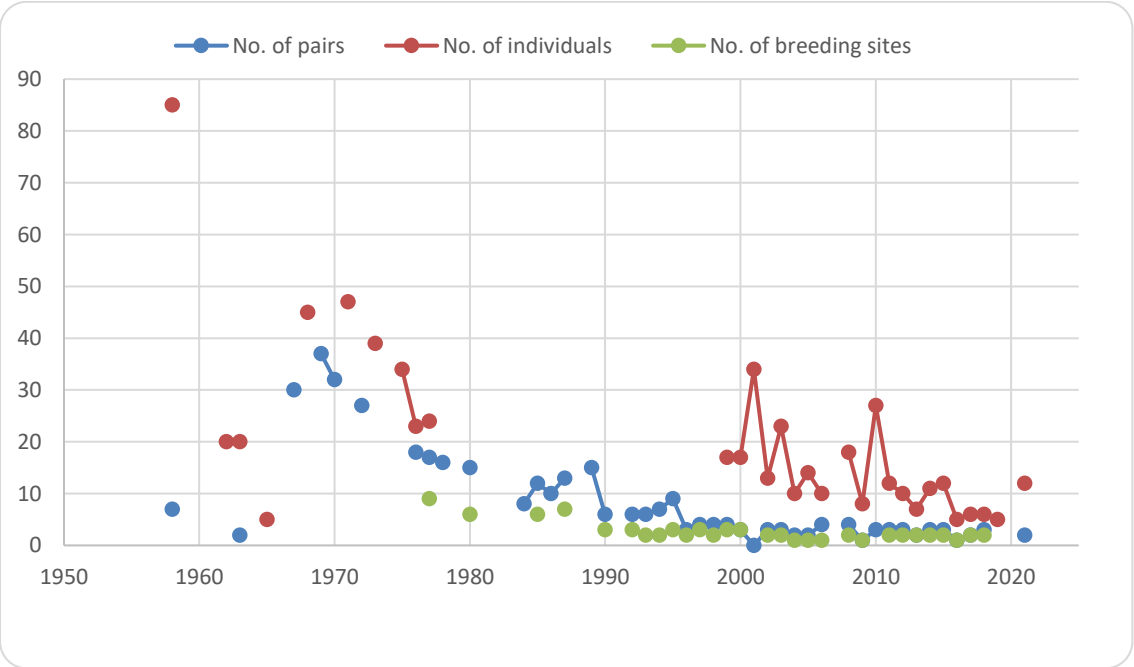

Figure 15: Numbers of individuals, breeding pairs and breeding sites in Purbeck between 1958 and 2019 (note the different scale for no. of individuals).

4.31 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 to 2006 over 300 in 2016. Puffins are amber listed due to their degree of localisation and categorisation as a species of European Conversation Concern (Easton et al. *2009).*

5. Appendix I

5.1 The table below provides a summary of the records kindly shared by Trev Haysom from 2nd June 2020 for the section between Durlston and St. Aldhelm's Head, when he undertook a boat-based count of some species. These figures have been included in the full dataset held by Footprint Ecology, which is broken down by location, but are not included in the annual totals as for most species they represent a subtotal. Counts were not attempted for Herring Gull and Great Black-backed Gull and Cormorant nests outside of the area surveyed. Ilay Cooper also reported 5 Kittiwake nests with chicks on 1st July 2020 and 11 Herring Gull nests with chicks in Blackers Hole on 8th June.

Table 2: Summary of counts by Trev Haysom, 02/06/2020

Species	AONs/individuals
Fulmar	5
Shag	5
Kittiwake	8
Guillemot	1074
Razorbill (not including Durlston)	23
Puffin	2 on water, one with fish

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