

# Purbeck Seabird Survey 2016 (Old Harry - St. Aldhelm's)



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## Summary

Counts of breeding seabirds have been carried out on the Purbeck coast since the mid-1960s. This report presents data from the 2016 survey in the context of trends over the last 50 years. However in 2016, counts were only possible for seabirds nesting between Old Harry and St. Aldhelm's. This means that total counts were made for populations of Kittiwake, Guillemot, Razorbill and Puffin, but only partial counts were achieved for Fulmar, Cormorant, Shag, Herring Gull and Great Black-backed Gull, which also nest between St. Aldhelm's and White Nothe. For these last four species, data are presented and analysed in the context of previous data from Old Harry – St. Aldhelm's only, and will appear different from previous years (see Figure 1).

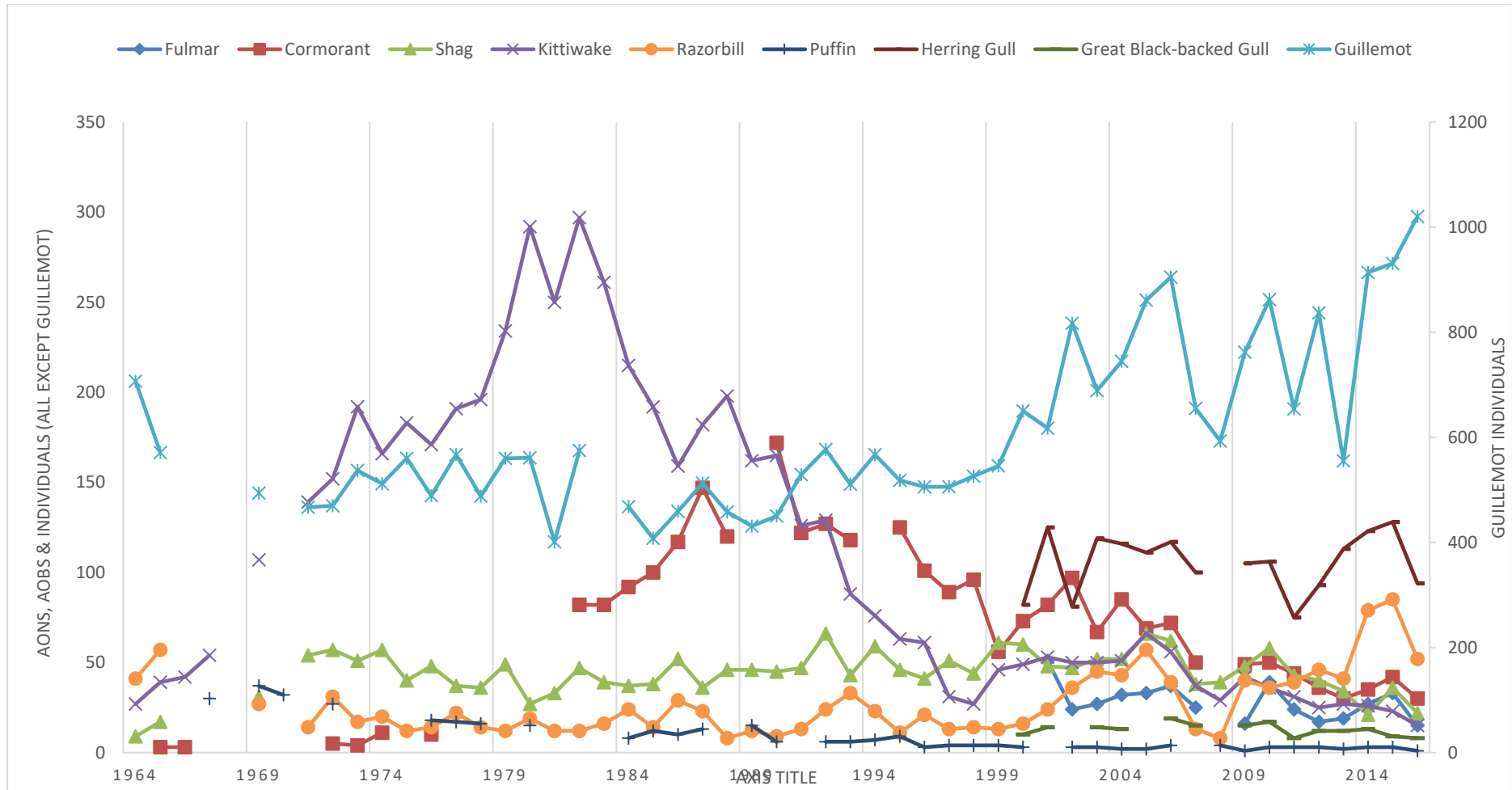
Seabirds breeding on the Purbeck coast include Fulmar, Cormorant, Shag, Herring Gull, Great Black-backed Gull, Kittiwake, Guillemot, Razorbill and Puffin. None of the populations is large, and four species are only found east of St. Aldhelm's Head. The Guillemot population remains the biggest, with 1,020 individuals counted on the breeding ledges in 2016, and the Puffin population is the smallest at just three breeding pairs. There are 90 breeding pairs of Herring gull; all other species have populations within the ranges of about 20-50, except Great Black-backed Gull, which has a population of just eight breeding pairs.

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 20<sup>th</sup> century. For a full discussion of previous Purbeck trends please see Lake *et al.* (2011).

**The 2016 monitoring data shows an ongoing increase in the number of breeding Guillemot and, for the third year running, the count was the highest since systematic recording began in the 1960s, despite substantial declines in 2013. All other species declined between 2015 and 2016, including Razorbill and Herring Gull (for which the highest counts since recording began were made in 2015 – see Table 1) and Cormorant and Shag (whose populations had also increased in 2015).**

**Kittiwake numbers continued to decline in 2016, and the small Great Black-Backed Gull population also declined in numbers to almost its lowest since recording began in 2001. The tiny Puffin population remains in a precarious state with only one breeding pair recorded and no sub-adults at the colony.**

Population changes in Purbeck are generally in line with national trends, although long-term declines have often started sooner or progressed more rapidly (note that UK trends for 2015 and 2016 are not yet available). The Purbeck trends generally show wider fluctuations (which is to some extent expected as the UK trends are averaged over many sites). The declines in the Fulmar and Kittiwake populations have been steeper than those seen nationally. Cormorants have declined steadily overall in contrast to the national trend, which shows more fluctuation. However the Shag population in Purbeck shows more variability than nationally; having increased until 2000 then declined sharply and fluctuated since. Herring Gulls also show greater fluctuations, and may be increasing, in contrast to recent UK-wide data, while Greater Black-backed Gulls show a similar decline, but again with more fluctuations. Guillemots and Razorbills increased in line with national trends, but have fluctuated more widely.



**Figure 1: Summary of breeding seabird population changes in Purbeck. Note that data for Fulmar, Cormorant, Shag, Herring Gull and Great Black-backed Gull comprises a subset of the overall population, while Kittiwake and auks are the entire Purbeck population. Count are of apparently occupied nests/sites for all species except Guillemots and Razorbill (all individuals on breeding ledges) and puffins (breeding pairs).**

Species	2016 total	Change since 2015	Change since peak count	Peak year	Peak count	Comparable monitoring data available since:	Long term trend
*Fulmar	15	-18 (-54.6%)	-36 (-70.6%)	2001	51	2001	Colonised in 1940s, peaked in 1980s followed by an overall decline although with peaks in 2010 & 2015.
*Cormorant	30	-12 (-28.6%)	-142 (-82.6%)	1990	172	1964	Declined to 1960s, increased to 1990, declined again since with slight upturn in 2014/15
*Shag	22	-14 (-38.9%)	-44 (-66.7%)	1992	66	1964, partial	Increased rapidly in 2nd half of C20th, subsequent wide fluctuations suggest overall decline despite upturn in 2015
Kittiwake	15	-8 (-34.8%)	-282 (-95%)	1982	297	1957	Rapidly increase throughout 1960s & 1970s, equally rapid decline since
Guillemot	1,020	89 (9.6%)	N/A	2016	1,020	1964	Large declines up to mid C20th, fluctuating since, with swift increase to peak in 2015 following crash in 2013
Razorbill	52	-32 (-38.1%)	-33 (-38.9%)	2015	84	1964	Large declines up to mid C20th, fluctuating widely since, declines after a peak in 2014 and 2015
Puffin	3	-2 (66.7%)	-36 (-97.2%)	1969	37	1967	Large declines up to mid C20th which stabilised at a low level around 1990, and dropped to 1 pair in 2016
*Herring gull	94	-34 (-26.6%)	-34 (-26.6%)	2015	128	2001	considerable decline 1960s - 1980s, increase since low point in 2010-15, subsequent decline
*Great black-backed gull	8	-1 (-11.2%)	-11 (-57.9%)	2006	19	2001	Fluctuating decline since 2001

**Table 1 Summary of breeding seabird population changes in Purbeck. \* indicates species for which a subset only of the Purbeck population was monitored in 2016.**

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## Acknowledgements

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## 1. Introduction

- 1.1 This report summarises the latest in a series of surveys (see Lake *et al.* 2011; Lake 2015) of the breeding seabirds of the Purbeck Coast (Ballard Down to White Nothe). 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, Greater 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, Greater Black-backed Gull and Fulmar are amber listed (Eaton *et al.* 2015).
- 1.2 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.

## 2. Methods

### Population census

- 2.1 A single boat trip was carried out on June 2<sup>nd</sup> 2016. Access constraints due to MoD activity meant it was only possible to go from Old Harry Rocks by Ballard Down as far as St Aldhelm's Head. Methods follow those recommended by Walsh *et al.* (1995).
- 2.2 All observations of apparently occupied sites/nests of Fulmar, Cormorant, Shag, Kittiwake, Herring Gull and Greater Black-backed Gull were marked on enlarged photographs of the coast. Numbers of auks on known nesting ledges were counted, and records made of loafing birds. Colonies were marked on enlarged photographs as above. No land based surveys were carried out this year as part of the survey.
- 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 view within the breeding crevices. Records from local birders via an online discussion forum and any other records received were therefore also taken into account together with counts undertaken from the land by Trev Haysom (providing continuity with previous years). The number of breeding pairs was estimated as in previous years (see Lake *et al.* 2011) by counting the number of birds seen arriving with fish. From the angle at which any birds carrying fish enter the coves, and given the very limited number of birds present, it is possible to estimate the number of likely nest sites.

### 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 2. Survey sections follow those used historically, and are given in Lake *et al.* 2011.

#### Estimate of number of breeding Puffins

3.2 The possible number of breeding pairs was thought to be three (based on the number of birds seen flying with fish into Bird Cove from the land). Three puffins were seen on the boat survey, the maximum number reported by local birders was five.

**Table 2. Breeding seabirds records on the Purbeck Coast, 2016 (2015 data in brackets for comparison). 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.**

	Fulmar	Cormorant	Shag	Herring gull	Great black-backed gull	Kittiwake	Guillemot	Razorbill	Puffin
Handfast Point – Ballard Down	2 (6)	30 (42)		34 (15)	2 (5)				
Durlston Head - Lighthouse	5 (11)			1 (8)	2 (2)		321 (337)	24 (31)	
Anvil Point - Ragged Rocks	0 (2)		1 (2)	5 (12)	0 (1)		71 (63)		
Blacker's Hole - Reforn			1 (3)	2 (10)	0 (0)	15 (23)	130 (136)	17 (37) <sup>1</sup>	
White Ware - Little Hedbury			9 (11)	12 (15)	1 (0)		95 (107)	0 (0)	3 pairs, 5 individuals (2-3 pairs, 12 individuals)
Seacombe - Winspit	0 (3)		2 (4)	24 (56)	0 (0)				
Crab Hole - Buttery Corner	8 (11)		9 (16)	6 (12)	3 (1)		403 (288)	11 (14)	
TOTAL	15 (33)	30 (42)	22 (36)	94 (128)	8 (9)	15 (23)	1020 (931)	52 (85)	3 (2-3)

<sup>1</sup> 38 in 2015 report, but corrected here.



## 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 2016 survey. The 2016 survey was limited to Old Harry – St. Aldhelm’s. For comparative purposes, data from this stretch of coast only from previous years has been used. The results in this report therefore differ from those in previous years for birds with AONs west of St. Aldhelm’s (Fulmar, Cormorant, Shag, and gulls).
- 4.2 The UK indices of abundance (JNCC 2011)<sup>2</sup> used here include 2014 - results are not currently available for 2015 or 2016. The Purbeck trend includes previous data between Old Harry and St. Aldhelm’s only (see Lake *et al.* 2011 for place names).
- 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 Purbeck in the 1940s, Fulmars increased to a peak in the 1980s. Since then numbers have declined overall (despite short-term increases) and in 2016 the number of AOSs was the lowest ever recorded for the coast between Old Harry and St. Aldhelm’s. This trend broadly reflects that of the UK overall, which shows a fluctuating decline.**

- 4.4 Fulmars breed along the Purbeck coast to White Nothe, therefore the 2016 survey provides data on only a subset of the population.
- 4.5 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. The increase recorded in 2014-15 (mainly around Durlston) was reversed in 2016 with the lowest number of AOSs recorded.
- 4.6 The Old Harry – St. Aldhelm’s Purbeck trend is similar to that of the UK as a whole (see **Error! Reference source not found.**), 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 20<sup>th</sup> century 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.

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<sup>2</sup> 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).

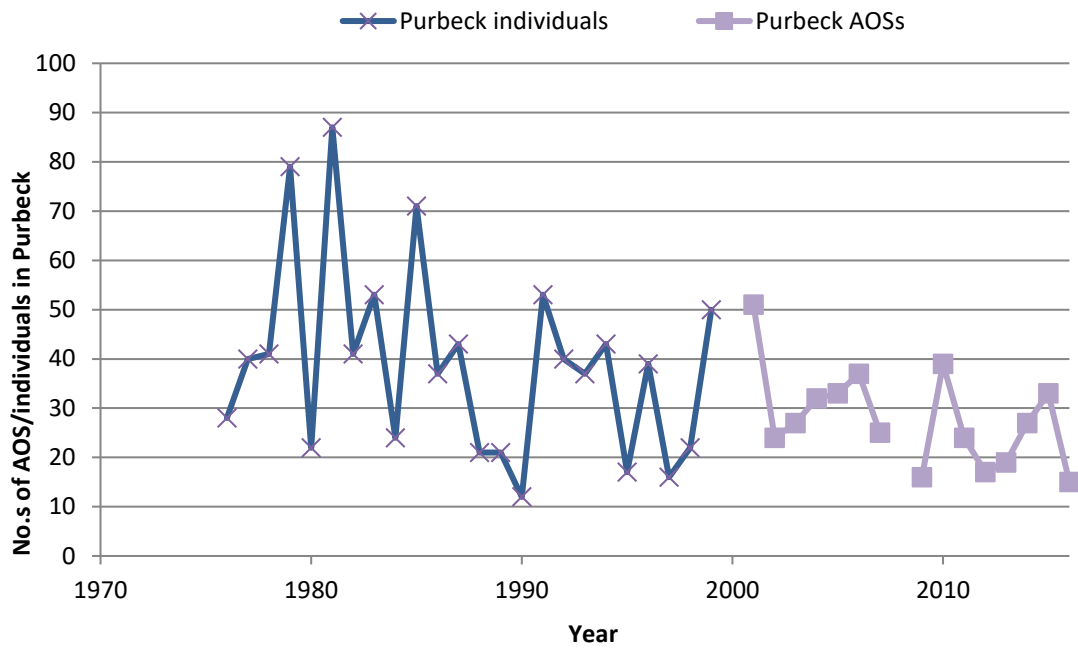


Figure 2. Changes in the numbers of individuals (Durlston Head – Buttery Corner) and, after 2000 when the census unit changed, the numbers of apparently occupied breeding sites (AOSs) for Fulmar.

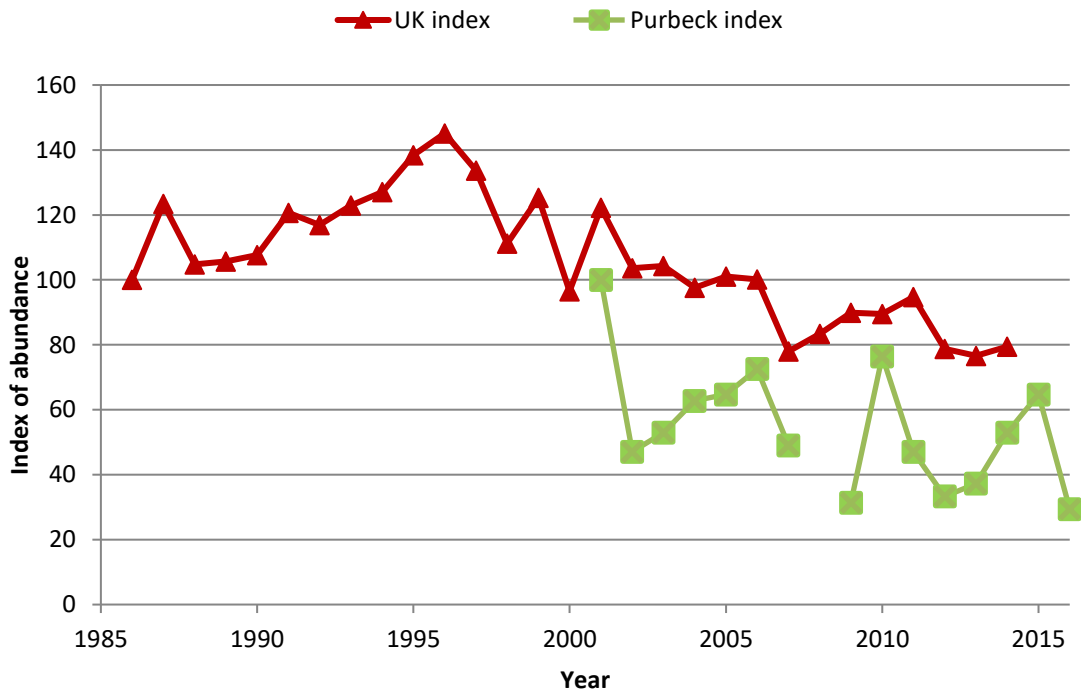


Figure 3. Changes in the UK and Purbeck indices of abundance (note differing start dates).

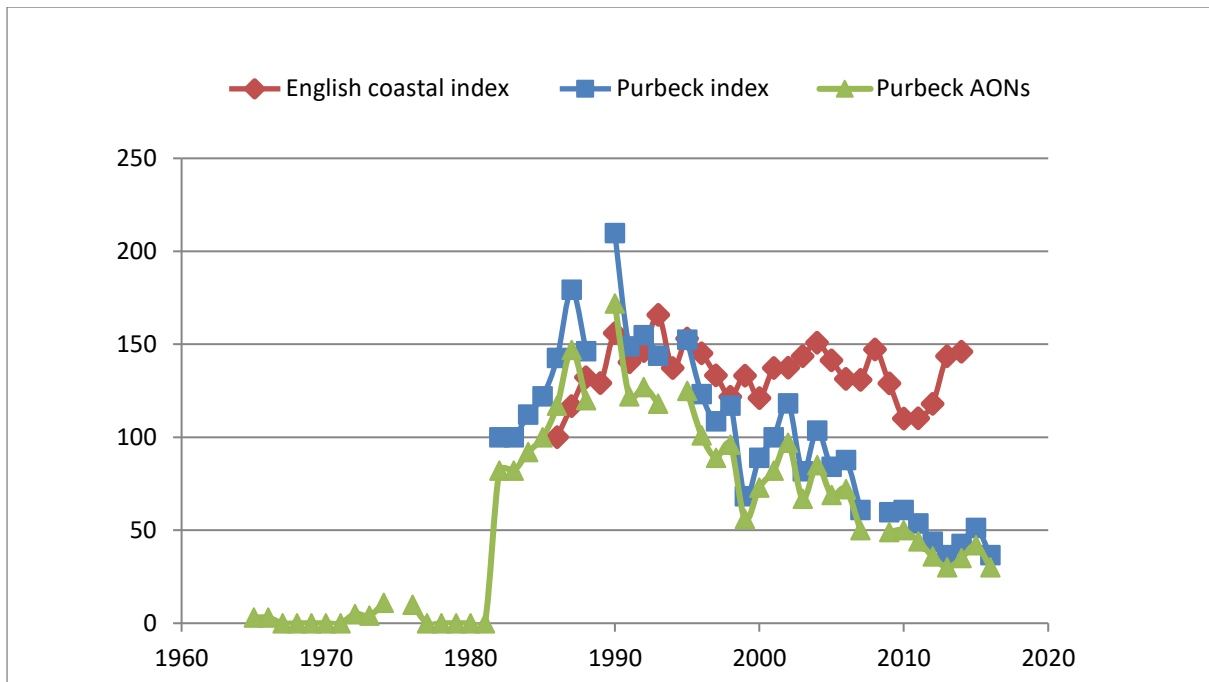
4.7 *The increase in Fulmar numbers in Europe is thought to have been driven by changes in food availability due to changes in temperature in the seas and to commercial fisheries, and to a reduction in human predation (Thompson 2004). Subsequent declines in the UK have been*

*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, possibly 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

**Only one of the three Purbeck cormorant colonies (Ballard Down) was surveyed in 2016. Here numbers increased to a peak in 1990 (172), since when there has been a decrease of 83%. A slight increase in the previous two years was reversed in 2016, and the Ballard Down population returned to 30 breeding pairs. This is the lowest recorded since the 1980s when the population expansion was underway.**

- 4.8 Only the Ballard Down colony was surveyed in 2016. In contrast to Gad Cliff and White Nothe, the number of Cormorants at Ballard Down leapt from 11 in 1974 to 172 in 1990, and then has declined steadily, although numbers here are still higher than in the 1970s before the population expansion. The location of sub-colonies tends to change between years. Typically, three main sites are used are Ballard Down, with small groups sometimes scattered between them. However, in 2016, the bulk of the population was at two of the previously smaller intermediate locations.
- 4.9 Because of significant regional variation in the abundance index (declines are particularly severe in Northern Scotland), Figure 3 shows the trend for the Ballard (Purbeck) population for the years in which these data are available compared to the English index of abundance for coastal cormorants (note that in previous years we have shown the index for the total English population, but subdivided data are now available between inland and coastal populations). The Purbeck population decreased while the English index was still increasing, and has decreased further. The upturn in numbers nationally after 2011 was reflected in Purbeck in 2014-5, but numbers at Ballard dropped again in 2016.



**Figure 4. Total Purbeck AONs (Ballard Down only) and English (coastal populations only) indices of abundance.**

4.10 *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.*

## Shag

**The number of breeding Shags 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 decline, despite an upturn in 2015. There are no longer Shags breeding east of Durlston Lighthouse. UK trends indicate a long term decline (but note that national trends have been affected by slow recovery from wrecks on the east coast).**

4.11 Breeding Shags generally occur along the coast between Durlston and Scratchy Bottom, therefore only a subset of the overall population was surveyed in 2016.

4.12 Shag records were sparse in Purbeck until the latter half of the 20<sup>th</sup> century. Between Durlston and St. Aldhelm's, numbers increased until 1970, and remained relatively stable, although with fluctuations, until 2010. Subsequently the population has declined (in line

with the overall Purbeck population). A considerable upturn in 2015 (mainly in the area between Sutton and Buttery Corner, with smaller increases elsewhere) was not continued in 2016, which saw a return to a very low count.

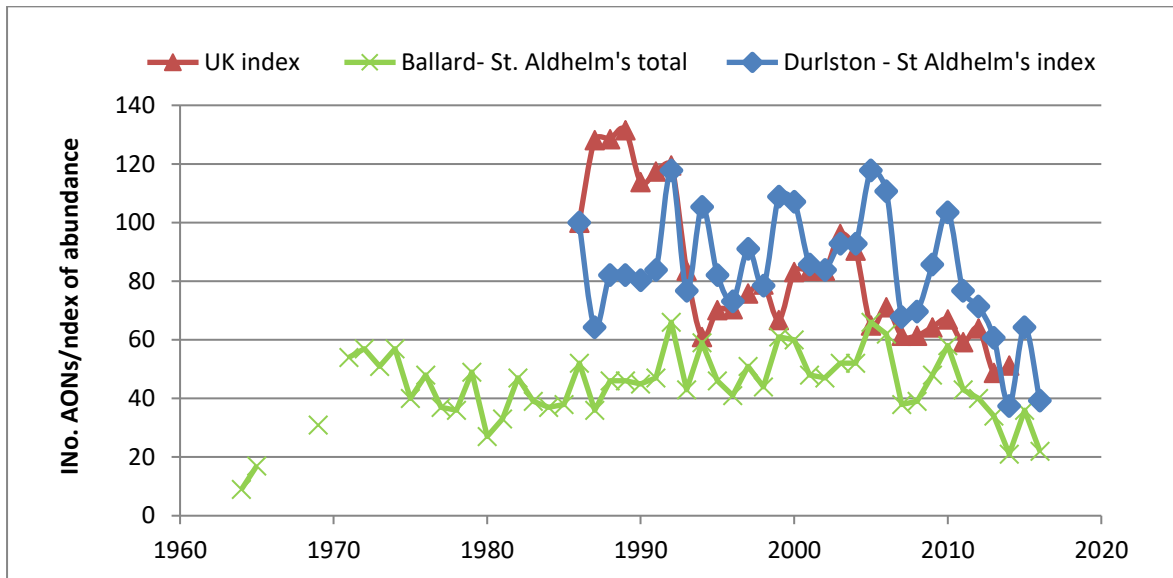


Figure 5. Numbers of apparently occupied nests of Shag and the Purbeck (Ballard – St. Aldhelm’s) index of abundance compared to that for the UK.

4.13 The changes in numbers of nesting Shags in Purbeck have not closely reflected national trends. The tendency for adults not to breed every year may be one reason for the variability in the Purbeck population. It would appear that fluctuations may be masking a long-term decline. 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)) 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 **Error! Reference source not found.** is due to many adults choosing not to breed in 1986, resulting in low numbers at colonies that year).*

### Herring gull

There was a marked decline in the Herring Gull population in Purbeck in the second half of the twentieth century. This decline has been more severe than the UK trend. Since 2000, fluctuations have been broadly similar to the UK trend with both low and relatively high counts. There has been notable movement of birds between sections of the coastline.

4.15 The patchy records available for Purbeck suggest a decline (77% between 1965 and 1989) considerably more severe than the national decline (43% between the late-1960s and mid-1980s). However, after 1985 numbers in Purbeck fluctuated. After more systematic monitoring was introduced in 2000, numbers showed a slow decline, mirroring the overall UK trend (see Figure 6). Fluctuation since has seen both the highest and lowest number recorded since 2000 (note that the highest is still around half of that recorded in 1964). Numbers reduced in 2016. Nest sites tend to vary between years, and 2016 saw numbers more than doubled at Ballard Down (which in previous years has seen a decrease), with a corresponding decrease further west, particularly between Durlston and Blackers Hole

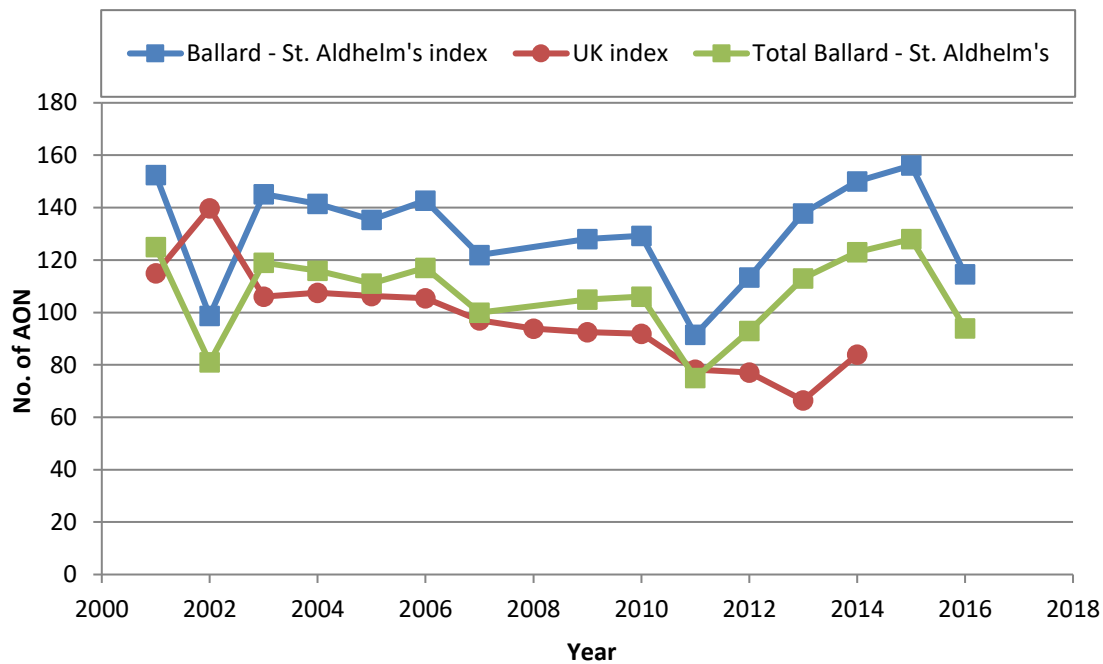


Figure 6. Purbeck and UK indices of abundance (UK monitoring started in 1986). NB UK index is based on coastal populations only.

4.16 *The Herring Gull is red listed in the UK due to a long-term decline in the population Eaton et al. 2015).*

### Great Black-backed Gull

The small Great Black-backed Gull population in Purbeck between Ballard Down and St. Aldhelm's has remained fairly steady since the early 1990s until 2000. The ongoing decrease at Ballard Down contrasts with an overall increase between Durlston and St. Aldhelm's Head. This stretch of the coast appears more resilient than that further west, as data from previous years for the whole Purbeck coast show a fluctuating decline. The UK index also shows a decline.

- 4.17 The small Purbeck population appears to have remained fairly stable to 2016, with between one and six AONs recorded between Durlston and St. Aldhelm's Head, and between six and twelve AONs at Ballard. Note that the large percentage changes seen in Figure 7 involve small numbers of nests. There is some movement of nests between years: 2016 saw the loss of three nest locations from Ballard Down but two new ones at Buttery Corner.
- 4.18 The UK trend shows a decline, particularly between 2000 and 2006 and data from previous years for Ballard Down – White Nothe suggest that this is reflected in Purbeck as a whole. However, the Ballard Down – St. Aldhelm's population appears to be more resilient.

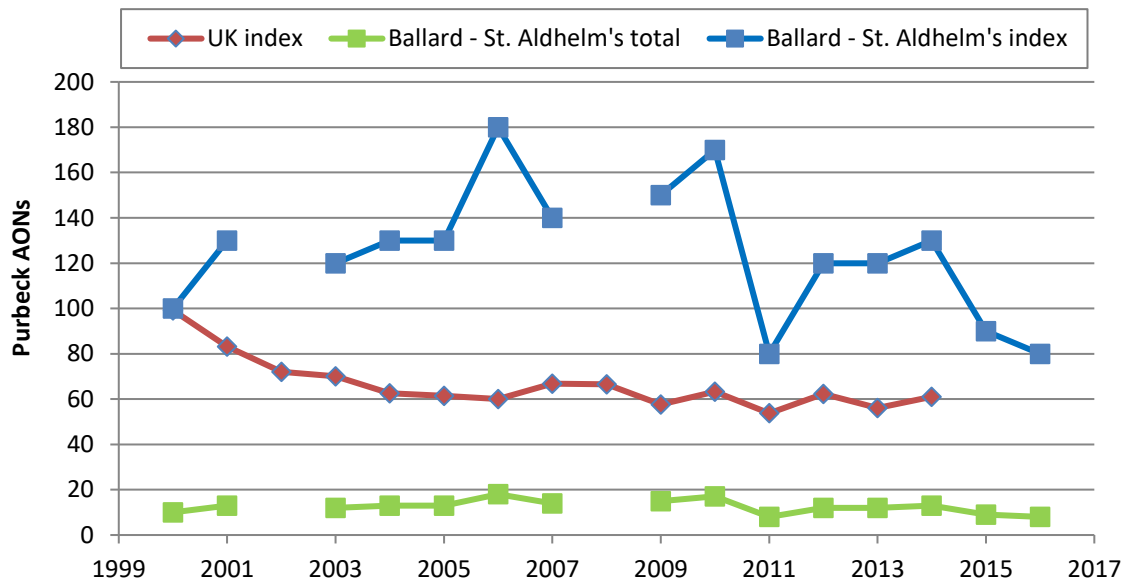


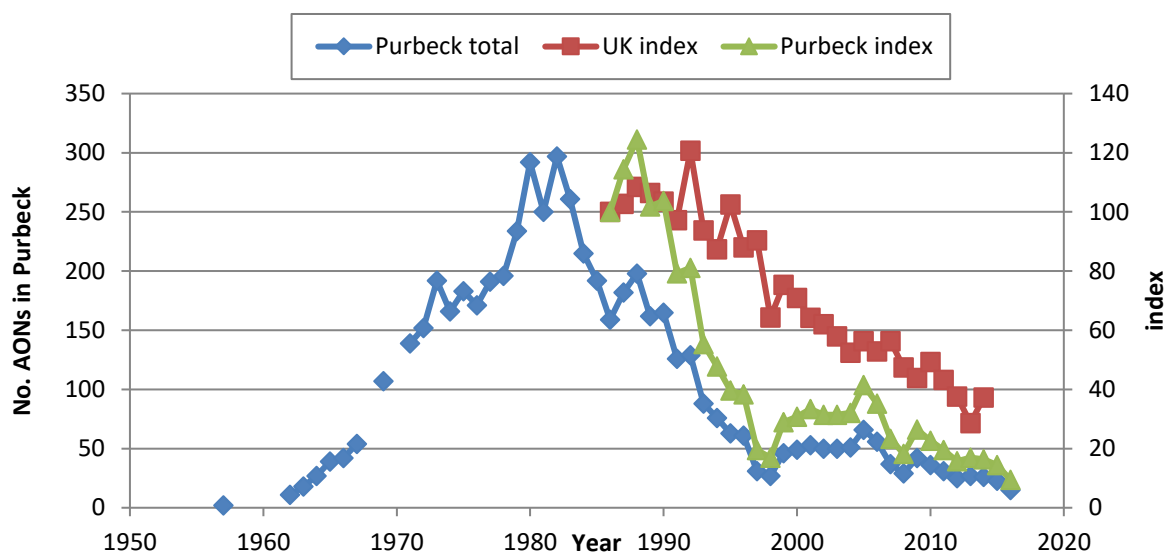
Figure 7. Numbers of apparently occupied nests between Ballard Down and St. Aldhelm's and the UK and local indices of abundance.

- 4.19 *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%.*
- 4.20 *Great Black-backed Gulls are 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 has rapidly declined. Although the rate of decline has slowed in the last 10 years, in 2016 the only remaining colony at (Blackers Hole) was again the smallest it has been since the peak in the 1980s. This decline was initially more rapid than the national trend, but after a slight and short-lived increase in the mid-2000s, the rate of decline slowed a little before speeding up to a 35% decline in 2016. It remains unlikely that the Blackers Hole colony will persist in the longer term unless productivity improves substantially.

- 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 near 300 AONs. After this, all colonies declined rapidly, and since the mid-1990s, only the Blackers Hole colony has persisted.
- 4.22 The Blackers Hole colony is also in decline (despite a brief increase in the mid-2000s) and in 2016 reached its lowest level since 1962 at 15 nests. Trev Haysom recorded a possible 19 nests on 11 June, although just 10 adults were recorded by Ilay Cooper on 15 July (Trev Haysom, pers. comm.) and none by 18<sup>th</sup> July. No chicks were seen. On 11 June, a group of climber were observed traversing the roof of the cavern. Ravens were entering the cavern on more than one occasion (Trev Haysom, pers. comm.)
- 4.23 Changes in the Purbeck population mirror the UK trend (see Figure 8) although the population may have peaked earlier and the decline occurred more rapidly until it slowed in the 21<sup>st</sup> century.



**Figure 8. Changes in numbers of apparently occupied nests of Kittiwakes in Purbeck and Purbeck and UK indices of abundance from 1985.**

- 4.24 *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.*
- 4.25 *Kittiwakes are red listed (Eaton et al. 2015) due to the decline and degree of localisation of the breeding population.*



## Guillemots

After large declines up to the mid-20th century, guillemot numbers in Purbeck stabilised in the 1970s and increased throughout the 1980s and 1990s. The Purbeck colonies have followed a similar trend to that shown by the UK index of abundance, although fluctuating more widely. Although numbers dropped severely in 2013, mainly due to a substantial decline at the Durlston colony attributed to the presence of breeding Raven, subsequent recovery at Durlston and increases at the other Purbeck colonies mean that numbers have been at the highest since the mid-1960 for the past three years. Any population impacts of ongoing predation at Durlston will not be apparent for some years. It is noted that UK productivity is decreasing overall, and may lead to future declines.

- 4.26 All breeding Guillemots in Purbeck are found between Durlston – St. Aldhelms, and were therefore counted in 2016, when the overall population again reached the highest level recorded in Purbeck since 1964 at 1020 birds.
- 4.27 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. Since the mid-2000s, numbers at Durlston have fluctuated widely (see Figure 9). The lowest numbers since 1960 were recorded in 2013 (144), when the sub-colony known as “Main Ledge” was entirely deserted, possibly due to heavy predation from a pair of resident Ravens. However, the numbers at Main Ledge increased again in 2014, 2015 and 2016, despite the ongoing presence of the Ravens. Overall, numbers at Durlston decreased slightly in 2016, similarly at two of the other colonies. Numbers increased slightly at the Ragged Rocks colony, and markedly between Crab Hole and Sutton Rock. This colony has increased fifteen fold since a low point in 1990, with its biggest annual increase in 2016 from 288 to 479.
- 4.28 Any population-level impact of significant predation at Durlston will not be seen for the next two years or so, as Guillemots start breeding at five years of age.

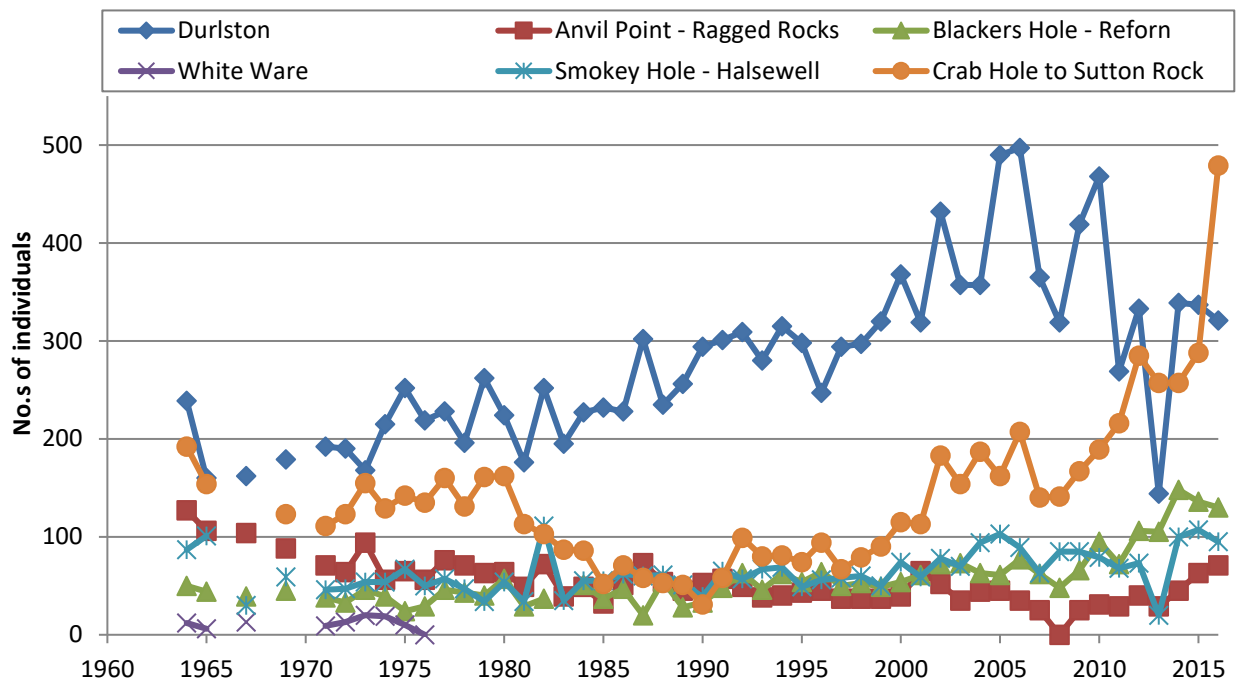


Figure 9. Changes in numbers of Guillemot individuals at breeding colonies in Purbeck since 1965.

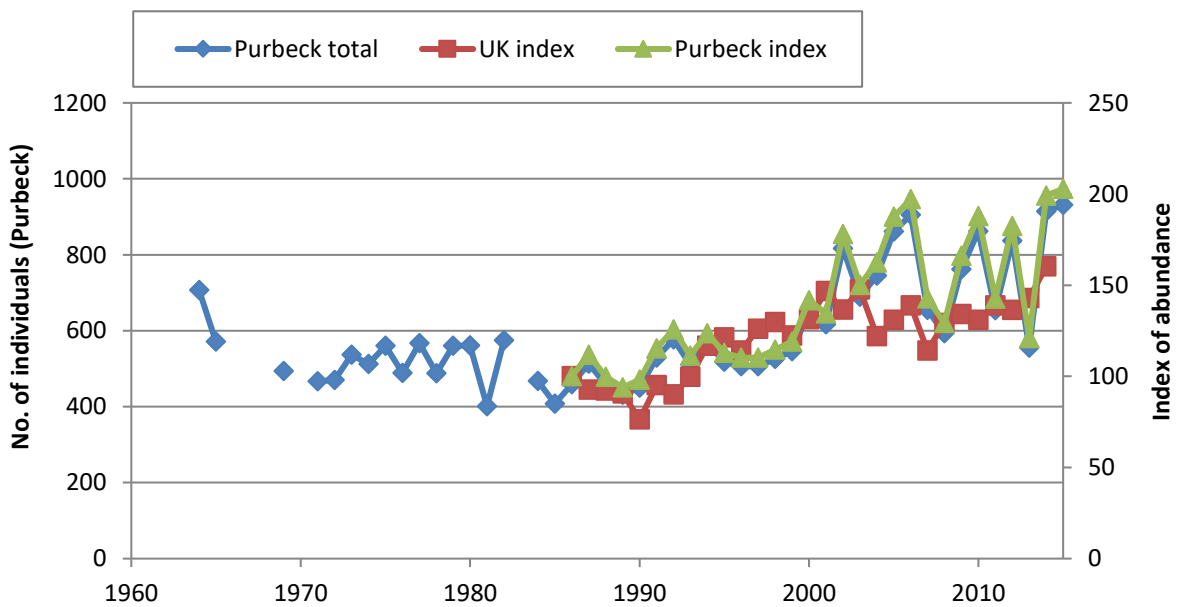


Figure 10. Changes in the total number of individuals recorded at breeding ledges in Purbeck compared to the UK index of abundance.

4.29 Changes in the Purbeck population continue to correlate broadly with changes in the national index of abundance, although showing more fluctuations (see Figure 10).

- 4.30 *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).*

## Razorbills

**Razorbills declined substantially in Purbeck between 1880 and the 1960s, when systematic counts began. The overall population continued to decline, with the loss of several colonies, until the 1970s. The remaining small population then remained fairly steady with fluctuations from the late 1980s, until increases in the 2000s brought it back up to numbers similar to those last recorded in 1965. A population crash followed, but numbers again increased (with fluctuations) until in 2014 and 2015 numbers exceeded those ever previously recorded. A 60% decrease in 2016 possibly indicates another crash, although numbers still remain relatively high. Fluctuations are greater than those seen in the UK index of abundance. A decline in the UK population is expected on the basis of poor UK productivity levels.**

- 4.31 All breeding Razorbills in Purbeck are found between Durlston – St. Aldhelm’s, and were therefore counted in 2016, when numbers dropped by 60% to 56. Razorbills were considered to be breeding on the Purbeck Coast in great numbers (more than Guillemots) in the 1880s (see Lake *et al.* 2011 for more details). By 1932, only 130 birds were recorded which 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 two crashes, roughly a decade apart, were followed by recoveries to higher peaks. The 2015 total (84 individuals) was the highest since systematic recording began in 1964. Although numbers had decreased in 2016, at 52 they were still higher than most counts since systematic recording began.

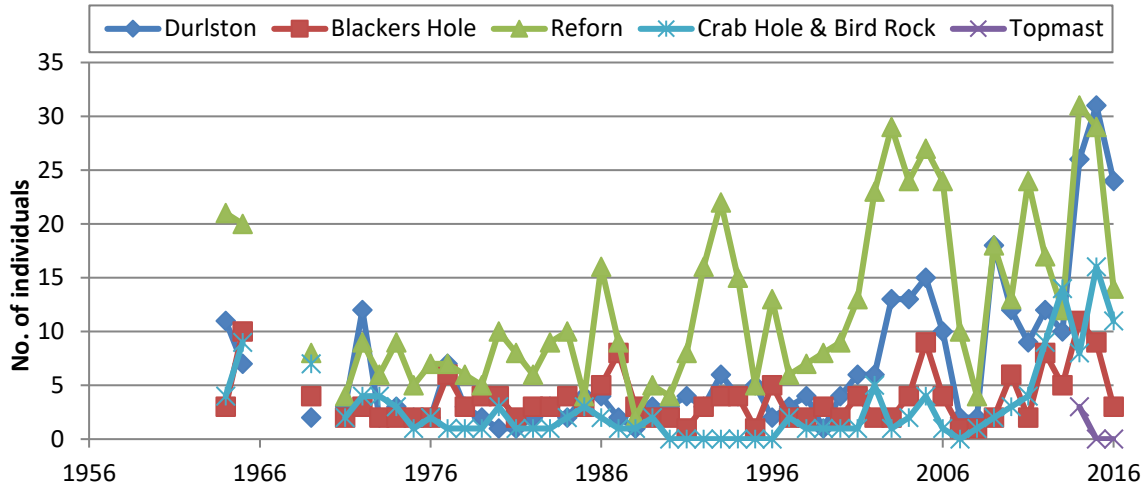


Figure 11. Changes in individual Razorbill counts at main colonies between 1965 and 2014.

4.32 The Purbeck population has shown large fluctuations since the 1950s largely due to the three crashes and subsequent recoveries (although note that the small size of the population means a small change in numbers results in a large percentage change) (see Figure 12). These fluctuations can obscure overall trends, but there appears to be an overall upward trend in line with the fluctuating upward trend in the UK as a whole.

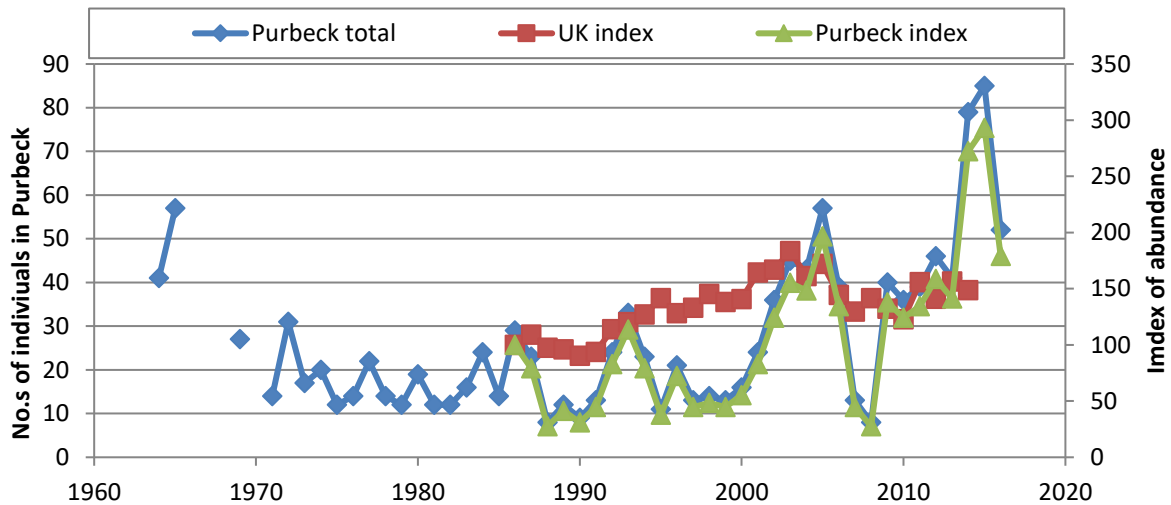


Figure 12. Changes in the counts of individual Razorbills and the UK and Purbeck indices of abundance.

4.33 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).

## Puffins

The puffin population of Purbeck declined severely in the 20<sup>th</sup> century. By the time the population steadied in the 1990s, the estimated number of breeding pairs was about three. Only one breeding pair was recorded in 2016. In contrast, the national trend was of a significant increase in the last quarter of the 20<sup>th</sup> 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.

- 4.34 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; however, fish-bearing adults were observed arriving at only one nest site in 2016 (Trev Haysom, pers. comm.). No juvenile birds have been observed in recent years and the future of this colony remains precarious.

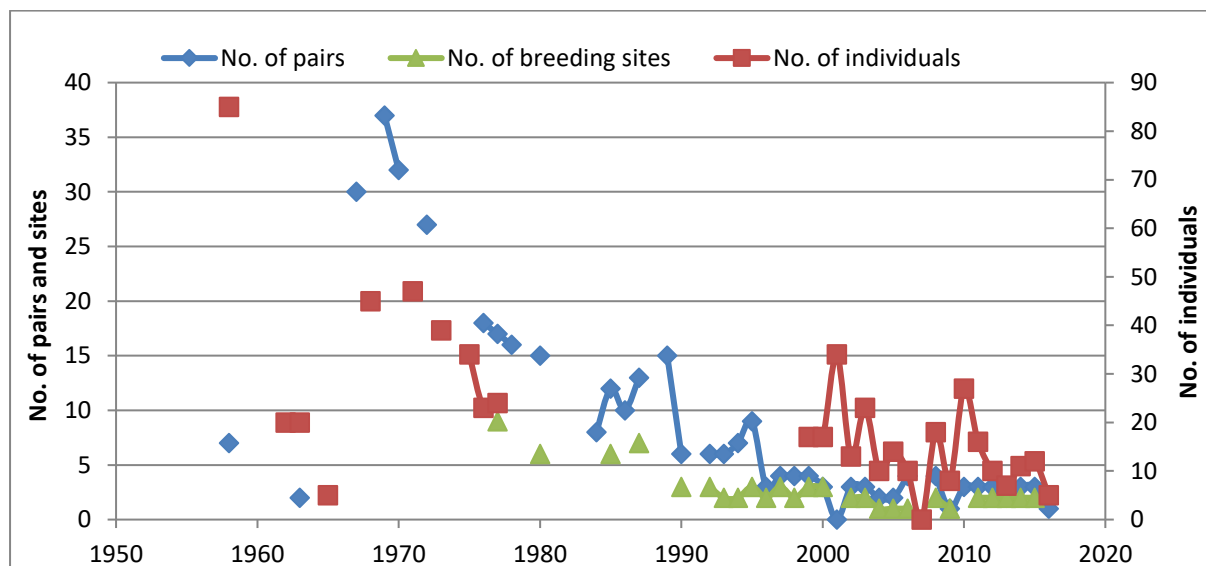


Figure 13. Numbers of individuals, breeding pairs and breeding sites in Purbeck between 1958 and 2015 (note the different scale for no. of individuals).

- 4.35 *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 over 80. Puffins are amber listed due to their degree of localisation and categorisation as a species of European Conservation Concern (Easton et al. 2009).*

## 6. References

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