

# Purbeck Seabird Survey 2014



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## Summary

In contrast to recent years, 2014 has been a positive season for several species of breeding seabird on the Purbeck coast. Breeding guillemot and razorbill, and also herring gull, reached their highest numbers since monitoring began in the 1960s and 2001 respectively. Numbers of fulmar, cormorant and great black-backed gull also increased, but there was an ongoing decline in the number of breeding shag and kittiwake. Cormorant productivity was high, but kittiwake productivity remained very low. The tiny puffin colony remains stable.

Counts of breeding seabirds have been carried out on the Purbeck coast since the mid 1960s. This report presents data from the 2014 survey, and does so in the context of trends over the last 50 years. For a full discussion of previous Purbeck trends please see Lake *et al.* (2011).

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 only five species currently occur west of St Aldhelm's Head. The guillemot population remains the largest, currently at around 914 individuals, and the puffin population the smallest at probably just two or three breeding pairs. There are just over 168 breeding pairs of herring gulls; all other species have populations within the ranges of about 20-80, except great black-backed gull, which although increased since a low point in 2011, has a population of 14 breeding pairs.

The 2014 monitoring data shows notable increases in the numbers of guillemots and razorbills. For these species the counts were the highest since systematic recording began in the 1960s, following substantial declines in 2013. A smaller upturn was also seen in the number of fulmars, cormorants, herring gulls (which also reached the highest number since systematic recording began in 2013) and great black-backed gulls. These are welcome increases in the context of long-term and often substantial declines (see Lake *et al.* 2013 and Table 1). Kittiwake numbers continued to decline in 2014, and a marked decline was seen in the shag population, which decreased by over 25% to 25 apparently occupied nests. The puffin population appears to be but remains in a precarious state given the lack of sub-adults at the colony.

UK trend data for 2014 are not yet available, although emerging data suggest that seabird numbers have increased at other sites, despite considerable mortality due to storms in early 2014<sup>1</sup>. Population changes in Purbeck are generally in line with national trends, although long-term declines have started sooner or progressed more rapidly. They 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 in contrast to the national trend, which shows more fluctuation. However the shag population in Purbeck show more variability than nationally; having increased to 2000 then declined sharply and fluctuated since. Herring gulls also show greater fluctuations, possibly with less of an overall decline, while greater black-backed gulls show a similar decline but with more fluctuations. Guillemots and razorbills increased in line with national trends, but have fluctuated more widely.

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<sup>1</sup> <http://www.rspb.org.uk/news/details.aspx?id=365357>

Productivity was monitored for cormorants and kittiwakes. Cormorant productivity, which has fluctuating since monitoring began in 2000, again increased to the highest level recorded (but see text for data constraints). Productivity at the kittiwake colony remains very poor, and shows a decline from 2012 and 2013.

**Table 1 Summary of breeding seabird population changes in Purbeck.**

Species	change since 2013	% change since peak (post 1964 - note variable monitoring start dates)	Peak year	Comparable monitoring data available since:	Long term trend
Fulmar	+15 (80%)	-45.2	2001	2001	Colonised in 1940s, peaked in 1980s then declined, small upturn in 2014
Cormorant	+4 (5.5%)	-75.9	1990	1964	Declined to 1960s, increased to 1990, declined again since but slight upturn in 2014
Shag	-9 (26.5%)	-62.1	1992 & 2005	1964, partial	Increased rapidly in 2nd half of C20th, subsequent wide fluctuations suggest overall decline
Herring gull	+19 (12.8%)	N/A	2014	2001	considerable decline 1960s - 1980s, fairly stable since 2001, small upturn in 2014
Great black-backed gull	+2 (16.7%)	-26.3	2006	2001	Fairly steady decline since 2000, small upturn in 2014
Kittiwake	-1 (3.7%)	-91.2	1982	1957	Rapidly increased throughout 1960s & 1970s, equally rapid decline, which slowed in the 2000s but continues
Guillemot	+359 (64.7%)	N/A	2014	1964	Large declines up to mid C20th, increase to peak in 2006, fluctuating since, with peak in 2014 following crash in 2013
Razorbill	+38 (92.7%)	N/A	2014	1964	Large declines up to mid C20th, fluctuating increase to peak in 2006, fluctuating since with peak in 2013
Puffin	+1 (50%)	-0.919	1969	1964	Large declines up to mid C20th which stabilised at current level around 1990

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## **Acknowledgements**

- 1.1 Colin Waters skippered the boat transect, and survey work was carried out by Neil Gartshore, Trev Haysom, Simon Breeze, Ben Wallbridge, and Robin Plowman. Katie Black assisted with the kittiwake monitoring. The work was funded by the National Trust and Durlston Country Park.

## 1. Introduction

- 1.1 This report summarises the latest in a series of surveys (see Lake *et al.* 2011) of the breeding seabirds of the Purbeck Coast (Ballard Down to White Nothe). This stretch of coast is notable along the south coast of the UK 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. Most are amber listed; the herring gull is red listed (Eaton *et al.* 2009).
- 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 ecological interest.

## 2. Methods

### Population census

- 2.1 Two boat trips were carried out on the 28th May and 13th June 2014. On the second trip weather constraints meant it was only possible to go as far as St Aldhelm's Head. Methods follow census methods 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.
- 2.3 Maximum counts are given for Ballard Down to St Aldhelm's Head, for which two counts were possible. The final figures for kittiwakes and the two eastern-most cormorant colonies at Ballard were taken from land-based surveys carried out for productivity monitoring (see sections 2.6 and 2.8).

### Estimates of breeding puffin numbers

- 2.4 The number of puffins on the water and cliff ledges was noted on the boat surveys. However, surveys were undertaken during the day, when puffins 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.
- 2.5 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 birds present, it is possible to estimate the number of likely nest sites.

## Productivity monitoring (guillemots, cormorants and kittiwakes)

### Cormorant productivity

2.6 Cormorant productivity was monitored at three colonies at Ballard which were visible from the cliff top. The sites were visited on 19<sup>th</sup> and 27<sup>th</sup> May and 10<sup>th</sup> June 2014. Although a larger number of monitoring visits are recommended (because cormorant breeding is asynchronous), careful timing of the visits possible meant that we are reasonably confident that all nests and chicks were counted. Viewpoints are described in Table 2 to facilitate relocating them accurately in future years. Note that colony numbering is consecutive and therefore differs from previous years.

**Table 2. Locations of viewpoints for cormorant colonies at Ballard.**

Site	Grid ref. of viewpoint	Description of viewpoint
C1 Pinnacle South Cliff (part)	SZ 05095 81809 (+/-10m)	Tip of headland opposite the Pinnacle (the pointy, westernmost stack below Ballard Cliffs),
C1 Pinnacle South Cliff (part)	SZ 05212 81979 (+/-10m)	After headland opposite the Pinnacle follow coast path past large scrub patch, continue to patch of bracken - viewpoint just beyond where cliff sticks out. Extreme caution needed.
C2 South of Pinnacle	SZ 05095 81809 (+/-10m)	Tip of headland opposite the Pinnacle.

2.7 Methods followed those recommended by Walsh et al. (1995), with the exception that only three visits were possible. On the first visit, each nest was mapped and numbered. The state of the nest, the nest contents, and whether a bird appeared to be incubating was noted. Where present, chicks were recorded as small, medium, large or juvenile. On subsequent visits the number and size of chicks was re-recorded. Well –feathered, healthy young which disappeared between visits were assumed to have fledged. Productivity was calculated as the total number of young fledged divided by the number of nests where birds were definitely or probably incubating.

### Kittiwake productivity monitoring

2.8 Monitoring was carried out from Blackers Quarry as in previous years. Monitoring methods follow those of Walsh et al. 1995. All apparently occupied nests (AONs) observed on 28<sup>th</sup> June 2014 were plotted on a stitched photograph encompassing the whole cave. The photographic record was used on the subsequent visit on 20<sup>th</sup> July 2014 to record the contents of each nest.

## 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. These are largely drawn from the two boat surveys, but are supplemented with records from land-based surveys where appropriate. Summary results are presented in Table 3. All records are maximum counts. Survey sections follow those used historically, and are given in Lake *et al.* 2011.



**Table 3. Breeding seabirds records on the Purbeck Coast, 2014.**

	Fulmar	Cormorant	Shag	Herring gull	Great black-backed gull	Kittiwake	Guillemot	Razorbill	Puffin
Handfast Point – Ballard Down	6	35		20	4				
Durlston Head - Lighthouse	6			9	2		339	26	
Anvil Point - Ragged Rocks	4		2	9	1		45		
Blacker’s Hole - Reforn			2	9	1	26	148	42	
White Ware - Little Hedbury			8	9	1		100	3	2-3 (11 individuals)
Seacombe - Winspit	1		3	55	3				
Crab Hole - Buttery Corner	10		6	11	1		282	8	
Gad Cliff - Worbarrow	1	18	3	8					
Mupe rocks - Fossil Forest				15					
Stair Hole - Scratchy Bottom	6		1	16	1				
Swyre Head - White Nothe	0	24		6					
<b>TOTAL</b>	<b>34</b>	<b>77</b>	<b>25</b>	<b>168</b>	<b>14</b>	<b>26</b>	<b>914</b>	<b>79</b>	<b>2-3</b>

### Estimate of number of breeding puffins

3.2 The maximum number of puffins seen at any one time was eleven. The possible number of breeding pairs was thought to be two (based on the number of birds seen flying into Bird Cove with fish during the boat-based survey) or three (Illy Cooper, 29<sup>th</sup> June). Observations from Scratch Ass quarry above on 7<sup>th</sup> July (Richard Caldow, pers. comm.) suggest that at least six birds had worn brown primaries, which is often seen in breeding birds towards the end of the season (Harris & Wanless 2011).

### Results of productivity monitoring

#### Cormorant productivity

3.3 Results of the cormorant productivity monitoring are presented in Table 4 Results of cormorant productivity monitoring in 2013 at Ballard Down. The cormorant colonies had consolidated at Pinnacle South Cliff and the newer site at South Pinnacle, with only three outlying nests recorded further south. At Pinnacle South Cliff, the number of AONs had risen by four to 16 (of which two nests could not be seen adequately for productivity

monitoring). Thirty-five chicks were hatched from the 14 nests monitored. No nests were abandoned, although no chicks hatched from one nest where the adult continued to incubate throughout all three visits. Twenty-seven chicks fledged or were judged to be near fledging at the time of the last visit. Six chicks were still medium-large at the time of the last visit.

- 3.4 Sixteen pairs nested just south of South Pinnacle (an increase of five pairs), at a site first used in 2012. Twenty-seven chicks were observed from 14 nests (two were partially concealed), and no chicks hatched from one nest. Of these, 26 fledged or were near fledging at the time of the last visit, while one was still medium sized.
- 3.5 One nest was observed south of the fault, in the traditional colony site, and its position meant monitoring was not possible due to poor visibility (although two juvenile birds were seen), as was the case with two more nests farther south.
- 3.6 Overall productivity was 2.04 (2.07 if medium chicks are included), an ongoing increase since 2012, and again the highest since monitoring began in 2000.

**Table 4 Results of cormorant productivity monitoring in 2013 at Ballard Down.**

Colony	No. of nests monitored	Total no. of chicks observed	No. of chicks at or near to fledging (additional medium sized chicks)	Productivity - average no. of chicks per AON (including medium-sized chicks)
C1 Pinnacle South Cliff	14	35	27 (6)	1.93 (2.06)
C2 South of Pinnacle	12	27	27 (1)	2.17 (2.08)

#### Kittiwake productivity

- 3.7 A mid-season survey on 28<sup>th</sup> June found 25 well-built and attended nests, four with visible small chicks (very downy) and one other where the adult birds behaviour suggested a chick might be present. Twenty-four nests remained at the second survey on 20 July, but only two chicks were recorded, one in the next where a chick was thought to be present but not observed, and one in a partially obscured nest where no chick was previously recorded. It is unlikely that any of the chicks seen on 28<sup>th</sup> June would have fledged by this data. Both were thought to be medium/large-sized (although views were poor) and so considered to have a 50% chance of fledging (see Walsh et al. 1995). Overall productivity was therefore very low at 0.04. A dead adult was present on one nest.

**Table 5. Results of kittiwake productivity monitoring in 2013 at Blackers Hole.**

AONs	Total no. chicks observed	Large chicks likely to fledge	Medium chicks (1/2 estimated to fledge)	Productivity (average no. of chicks per AON)
25	6	0	2	0.04

## 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 2014 survey. Please refer to Lake *et al.* 2011 for context on each species, more information on historic records (including data constraints), and discussion of the current status of populations in relation to their historical distribution and size.
- 4.2 The UK indices of abundance (JNCC 2011)<sup>2</sup> used here are slightly different from those used previously. The indices are published each year by JNCC and vary slightly each year as they are refined using data not previously available (Roddy Mavor, pers. comm.). However, the overall trends generally remain the same.

### Fulmar

After colonising Purbeck in the 1940s, fulmars increased to peaks of over 170 individuals in the 1980s. Since then numbers have declined overall despite short-term increases, and the current number of AONs is the lowest recorded. This trend broadly reflects that of the UK overall, which shows a fluctuating decline, but shows a steeper decline.

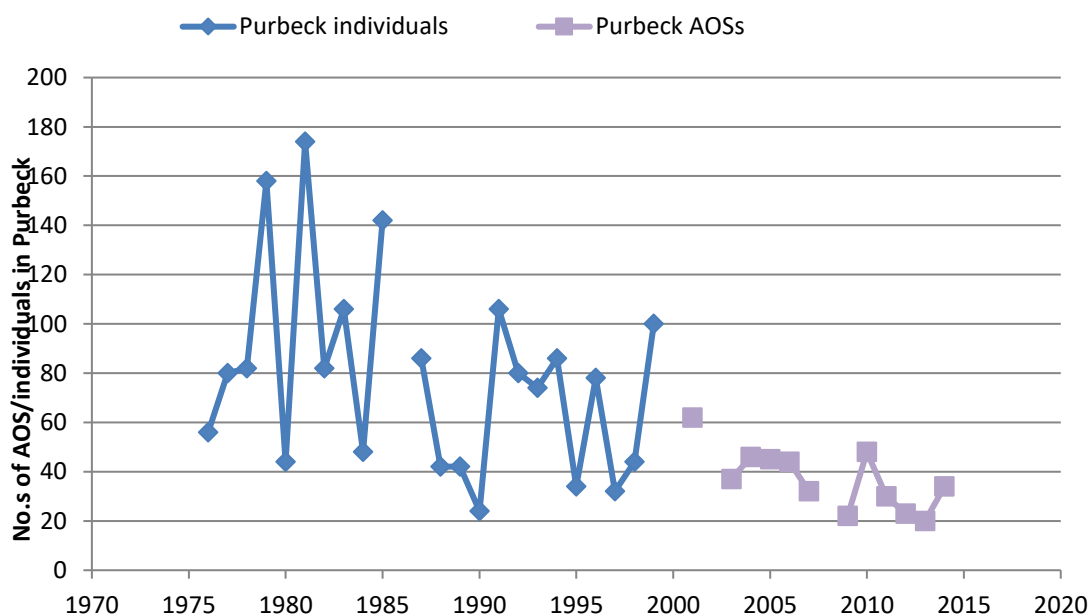
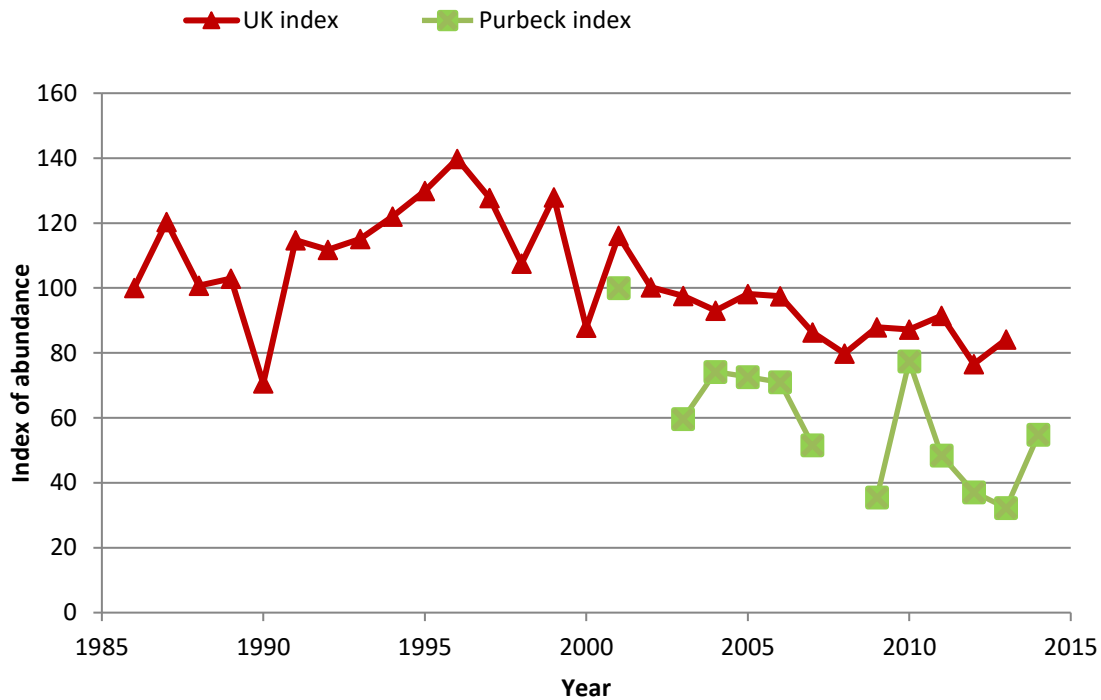


Figure 1. Changes in the numbers of individuals (Durlston Head – Buttery Corner) and, later, the numbers of apparently occupied nest sites (Handfast Point – White Nothe) of fulmar.

<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).

4.3 Since the first record of fulmars on the Purbeck coast in 1943 (Haysom 1977), numbers increased to a peak of 142 individuals in the early 1980s. Since then, the overall trend has been a decline, with peaks and troughs from year to year. An increase was recorded in 2014, after the lowest recorded total in 2013. Numbers increased at Ballard Down, Durlston and Buttery Corner following the low count between 2011-2013.

The Purbeck trend is similar to that of the UK as a whole (see



4.4 Figure 2). 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 are now declining. The decline in Purbeck has been steeper. The UK wide decline has been attributed to a reduction 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.

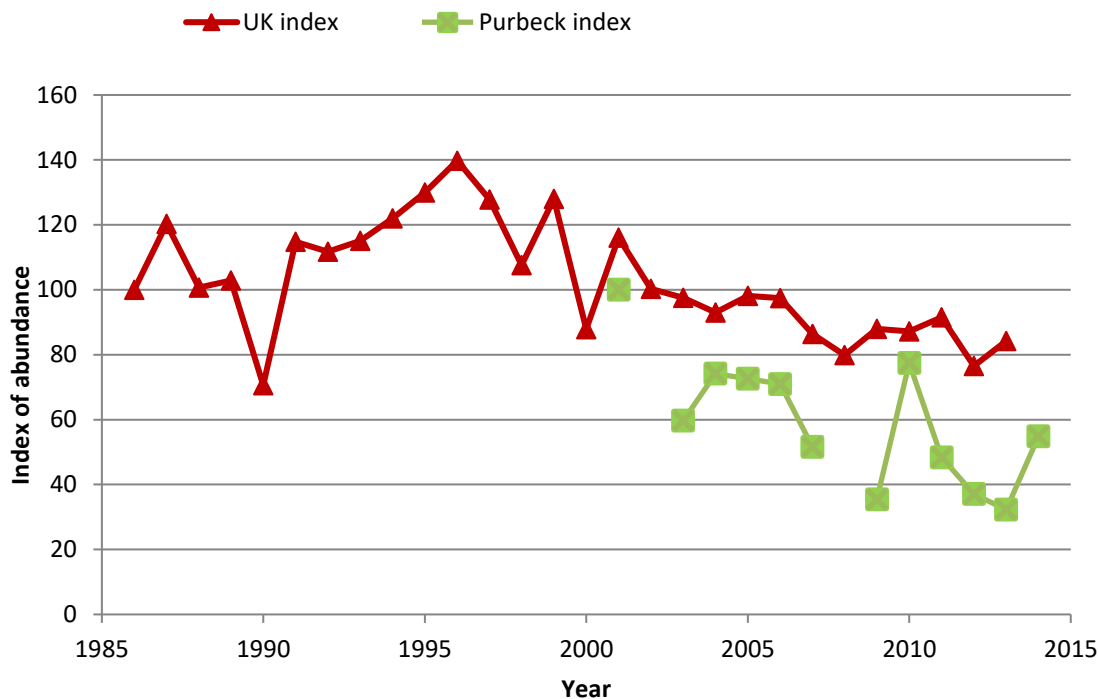


Figure 2. Changes in the UK and Purbeck indices of abundance (note differing start dates).

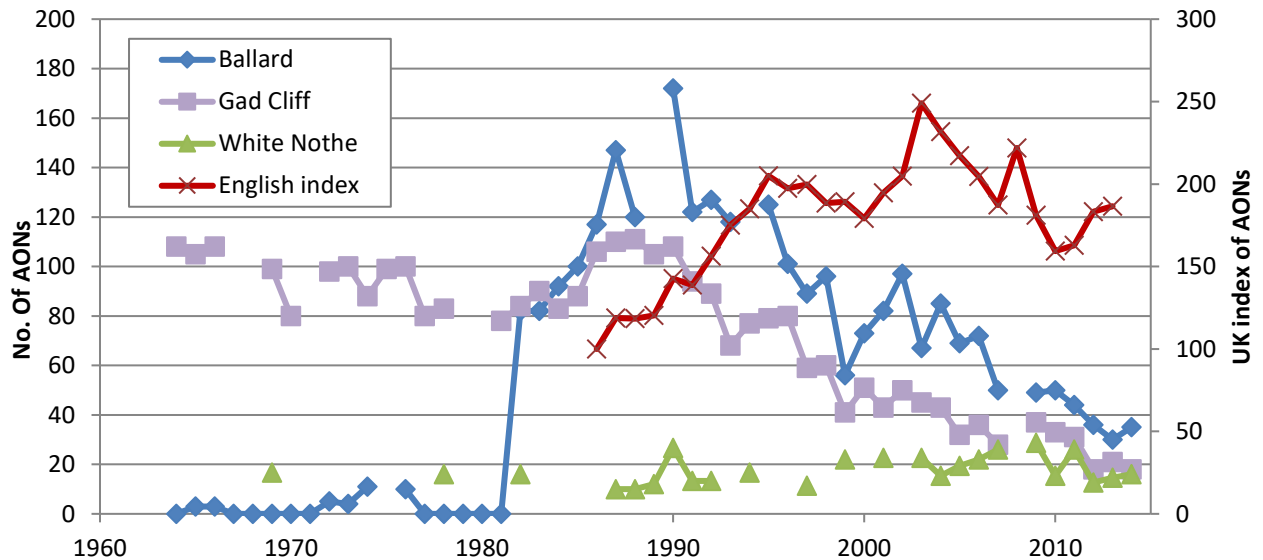
### Cormorant

There are three main colonies of cormorant in Purbeck: Ballard, Gad Cliff and White Nothe. Overall, from the late 1960s numbers increased to a peak in the early 1990s, since when a decrease of 77% has resulted in a total of 73 birds in 2012, the lowest on record. The number remained at this low level in 2013, but increased a little in 2014 to 77. The overall decline is more severe than that seen in England as a whole, and started earlier. Trends in abundance vary between colonies. Until 2012, the White Nothe colony showed more resilience than those at Ballard and Gad Cliff, which have declined steadily. However, both the White Nothe and Gad Cliff colonies declined by almost 50% in 2012, a trend which saw a very small reversal in 2013 with an increase of two or three AONs at each site. Productivity has fluctuated markedly, with a particularly poor year in 2012. Levels then reached the highest level since monitoring began in 2013 (but see data constraints below).

- 4.5 Cormorants declined in Purbeck throughout the 20<sup>th</sup> Century. However, the Gad Cliff colony remained fairly stable (ranging between about 80-110 AONs) until the early 1990s; since then it has declined steadily. Records for the White Nothe population are patchier. A similar peak and decline has been followed by a gradual increase until recently when numbers have fluctuated more widely. Birds appear to switch between the two sub-colonies present (T. Haysom, pers. comm.). In contrast, at Ballard numbers leapt from 11 in 1974 to 127 in 1992, and then have declined steadily, although numbers here are still higher than in the 1970s. The two main colonies near South Pinnacle in Ballard remained

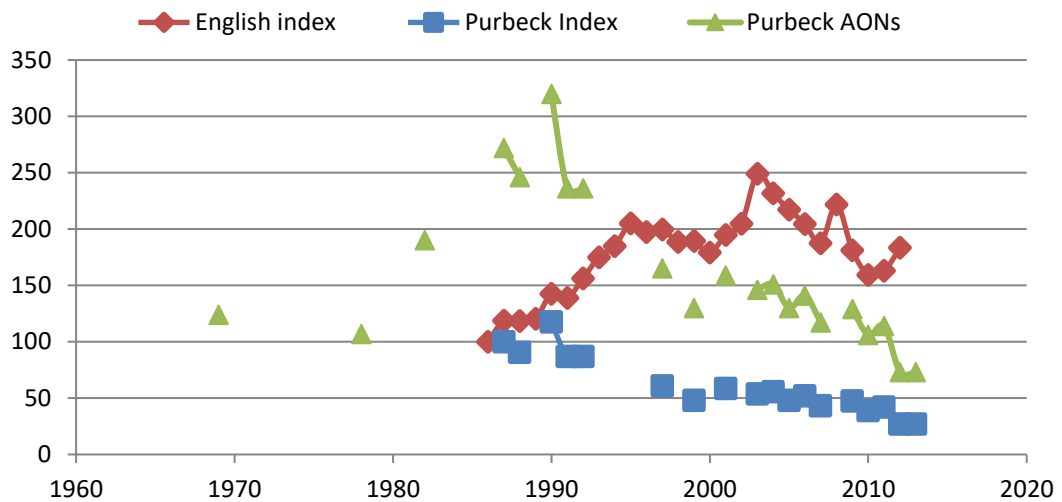
stable in 2014. Although there were three isolated nests in the area of Fault (where a colony existed previously), the additional small colonies seen in 2013 were not present.

- 4.6 After the decline of almost 50% at Gad Cliff in 2012, followed by a slight increase in 2013, numbers remained low. White Nothe had a slight increase of two nests for the second year running, but all birds were at the easternmost of the two sites traditionally used.



**Figure 3. Numbers of apparently occupied cormorant nests at different locations in Purbeck compared to the UK index of abundance.**

- 4.7 In the UK as a whole, the abundance index for cormorants (which includes inland as well coastal breeders – a different subspecies) increased from 1986 to 1995. Since then it has decreased, with a temporary increase in the early 2000s. Because of significant regional variation in the abundance index (declines are particularly severe in Northern Scotland), Figure 3 shows the trend for the total Purbeck population for the years in which these data are available compared to the English index of abundance. The Purbeck population decreased while the English index was still increasing, and has decreased further. The upturn in numbers nationally since 2011 has not been seen in Purbeck.
- 4.8 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 4. Total Purbeck AONs and UK indices of abundance. Only years with full data from Ballard – White Nothe have been included.**

#### Cormorant productivity

4.9 Over the UK as a whole, productivity has declined since 1988, but has increased in the last few years. At Ballard, where productivity has been monitored since 2001, annual variability makes an overall trend less clear - there was a peak in 2004 (which was nonetheless lower than the national average) and another similar peak in 2009 (by which time it was greater than the national average). Productivity then declined to its lowest point in 2012, but rose to its highest level at 1.8 chicks per AON in 2013 and again to 2.04 in 2014. However it should be noted that the small number of visits undertaken meant that chicks which had not yet fledged were included in the productivity calculation, which may therefore be an overestimate. The reasons for the national trends are unknown (JNCC 2011).

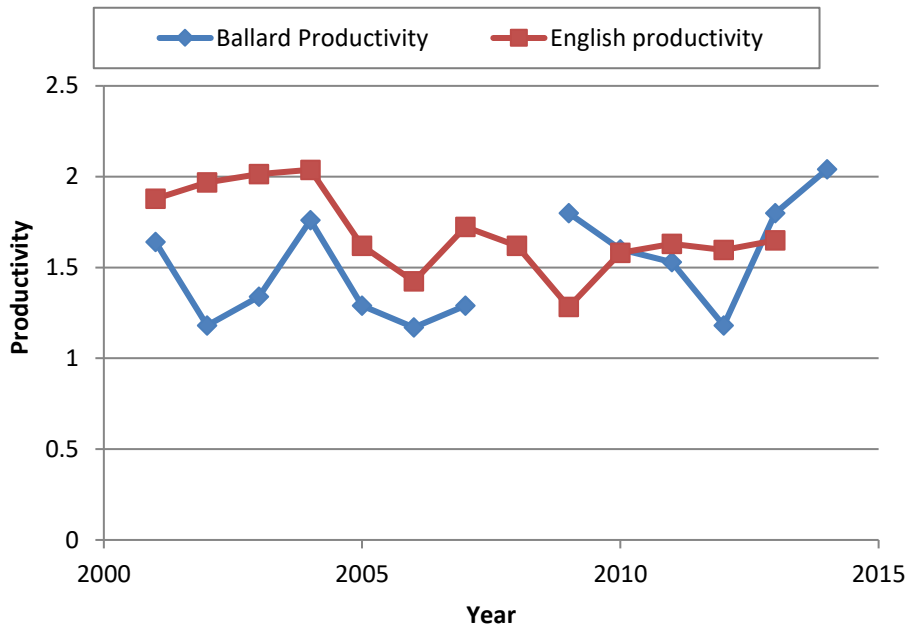


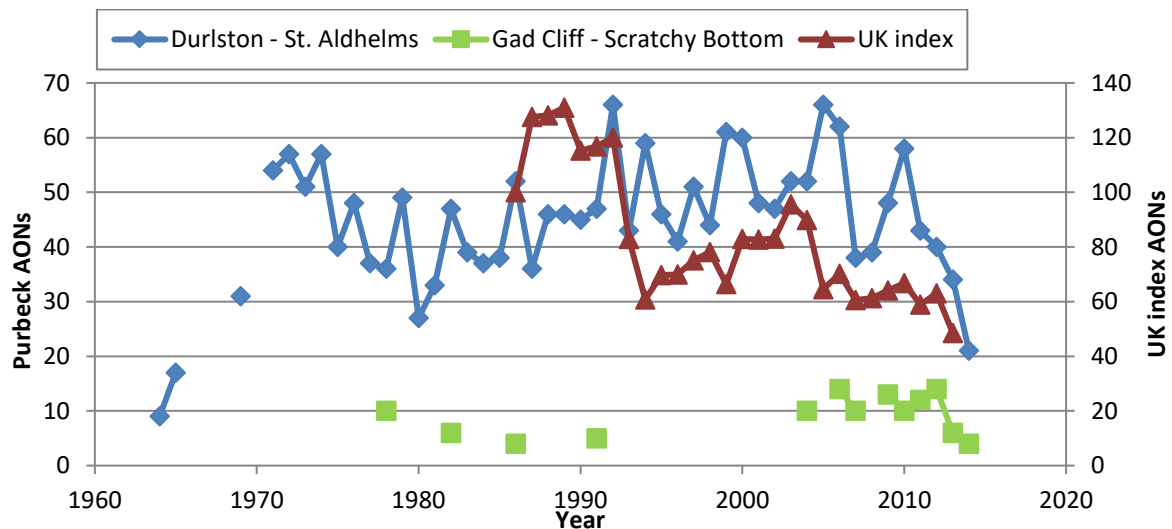
Figure 5. Productivity at Ballard compared to average UK productivity.

### Shag

**The number of breeding shags appears to have increased significantly in the early 20th century until the 1970s, since when the population has remained fairly stable but with significant annual fluctuations. The decline seen over the last three years remains just within the range of this fluctuation, but may indicate the start of a more long-term decline in line with UK trends (although these have been affected by slow recovery from wrecks on the east coast).**

- 4.10 Shag records were sparse in Purbeck until the latter half of the 20<sup>th</sup> century. Since 1965 numbers appeared to have increased rapidly to a peak in the early 1970, as the cliffs between Crab Hole and Buttery Corner were colonised (Haysom 1993). This was followed by decline to a low point in 1980, and a gradual rise (with much variability) to a larger population size in the 1990s and 2000s.
- 4.11 Since 2010 the Purbeck population has declined, and the 2014 count of 24 is the lowest since the increased of the 1970s. The decline was due to decreases between Durlston and St. Aldhelm’s Head until 2013, when a marked decrease was seen also west of St Aldhelm’s Head, where numbers halved.





**Figure 3. Changes in numbers of apparently occupied nests of shag in two stretches of the Purbeck coast compared to the UK index of abundance.**

- 4.12 Overall, the changes in numbers of nesting shags in Purbeck have not reflected national trends, with the population continuing to increase gradually at least until the mid 2000s, then fluctuating widely. 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), and a subsequent slow recovery. (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).
- 4.13 The tendency for adults not to breed every year may be one reason for the variability in the Purbeck population. However recent fluctuations may represent the start of a more long-term decline in line with the UK trend. The shag is amber 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 2009).

### Herring gull

**There was a marked decline in the herring gull population in Purbeck in the second half of the twentieth century, which has been more severe than the UK trend. Since 2000 fluctuations have been similar to the UK trend. Following a sharp decline in 2011, numbers have continued to increase, and reached the highest since systematic recording began in 2001. There has been notable movement of birds between sections of the coastline.**

- 4.14 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, showing an overall rise until about 2000, and a subsequent decline, levelling out after 2001 and mirroring the overall UK trend (see Figure 5). Recovery from the sharp decline seen in 2011 was maintained in 2014, and numbers are now (just) the highest since systematic recording began. As in 2013, 2014 saw various changes in nesting sites along the coast.

4.15 The herring gull is red listed in the UK due to a long-term decline in the population (Eaton *et al.* 2009).

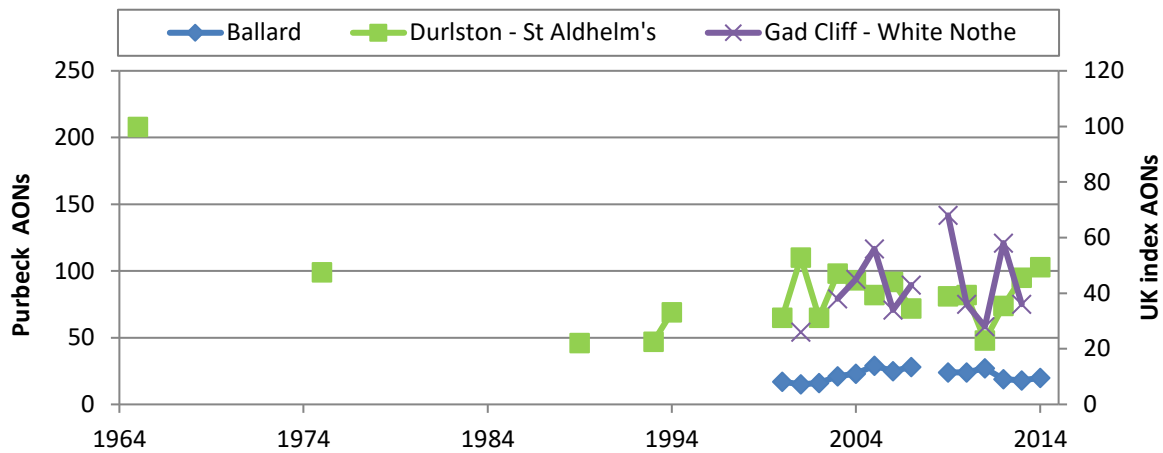


Figure 4. Variation in herring gull numbers in different stretches of the Purbeck coast.

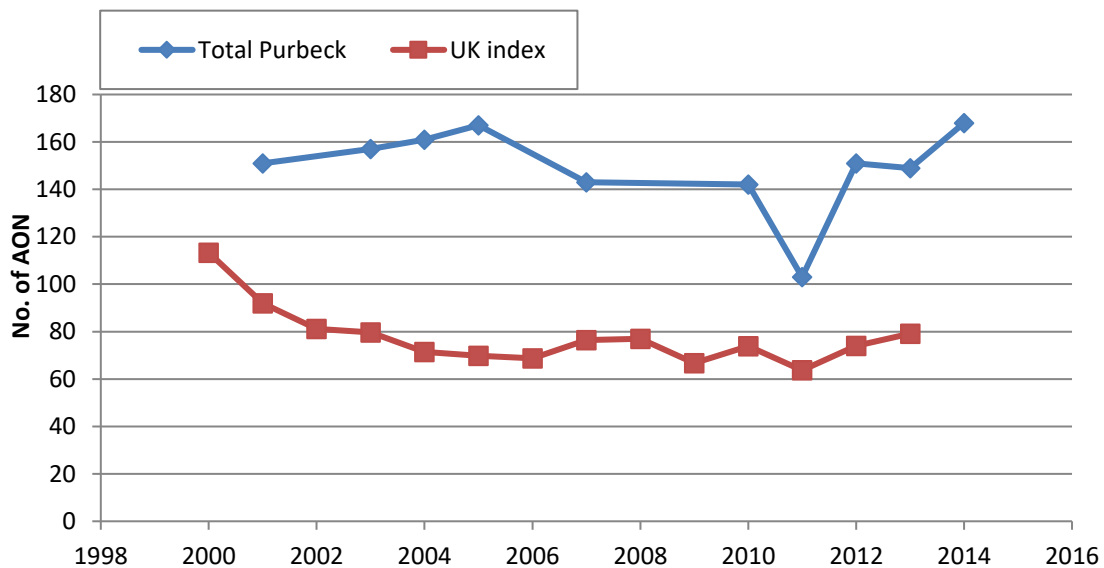


Figure 5. Purbeck and UK indices of abundance. Note the different monitoring start date. Only years with full data from Ballard – White Nothe have been included.

## Great black-backed gull

The great black-backed gull population in Purbeck appeared to remain steady between at least the early 1990s until 2000. Since then an overall decline mirrors that of the UK index of abundance but shows wider fluctuations, although the population has been steady in the last three years. The ongoing decrease at Ballard Down is compensated for by an increase between Durlston and St. Aldhelm's Head.

- 4.16 The small Purbeck population appears to have remained fairly stable to 2011, with between one and six AONs recorded between Durlston and St. Aldhelm's Head, and between eight and twelve AONs at Ballard. A dip to four AONs at Ballard Down in 2011 was followed by an increase back up to nine pairs in 2012 and eight in 2013, but this dipped again in 2014 to four pairs. Patchy records from Gad Cliff – White Nothe suggest a population of one or two pairs, with one in 2014. In 2014, numbers again increased between Durlston and St. Aldhelm's Head, with new nest sites at Ragged Rocks, near Funnel, at Topmast and near Crab Hole compensating for declines mainly at Ballard Down. Note that the large percentage changes seen in Figure 6 involve small numbers of nests.

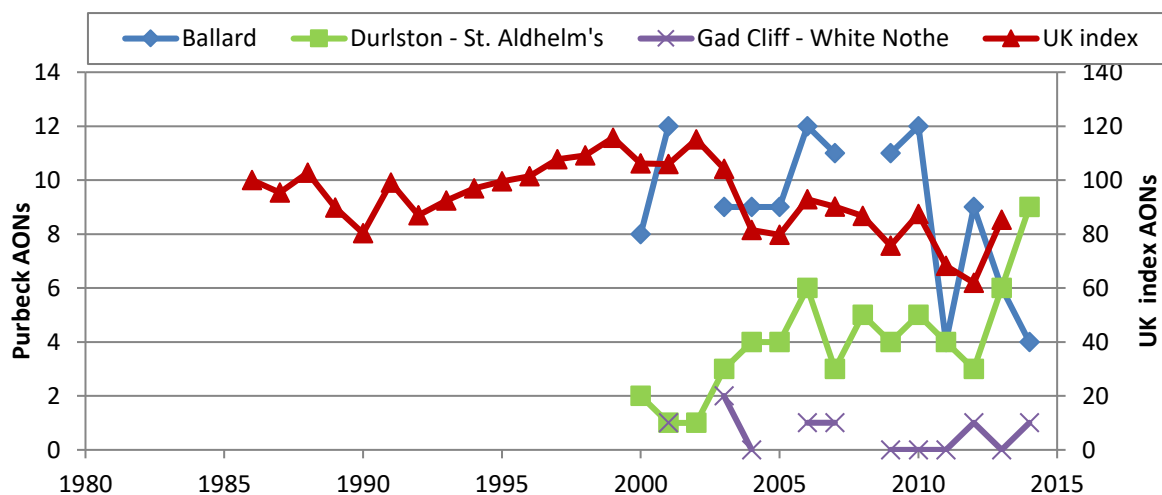
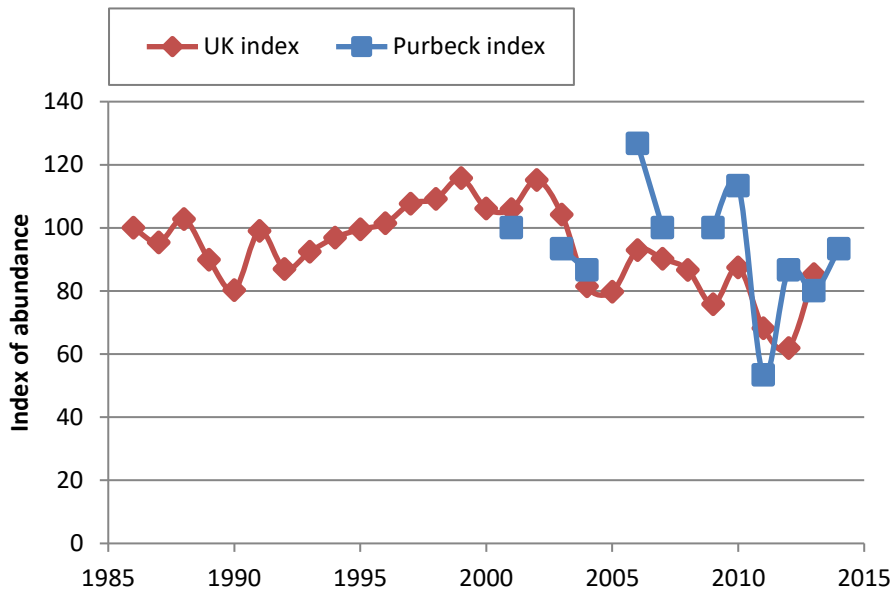


Figure 6. Numbers of apparently occupied nests at three Purbeck survey locations compared to the UK index of abundance. Note the low numbers on the Purbeck AON axis.

- 4.17 The 20<sup>th</sup> 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%.
- 4.18 The Purbeck trend since 2000 (when systematic surveying began) fluctuates more than the UK trend, but the overall downward UK trend appears to be reflected in Purbeck (see Figure 7).



**Figure 7. Purbeck and UK indices of abundance. Note the different monitoring start date. Only years with full data from Ballard – White Nothe have been included**

4.19 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 2009).

### 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 2012 the only remaining colony, at Blackers Hole, reached the smallest since the peak in the 1980s, and has remained very low since. The decline was initially more rapid than the national trend, but after a slight increase in the mid 2000s then mirrored the UK decline. Kittiwake productivity remains very low compared to the national figure. It seems unlikely that the Blackers Hole colony will persist in the longer term unless productivity improves substantially.**

4.20 Kittiwakes are known to have been present around Durlston in the 1880s (see Lake *et al.* 2011). This site remained the only colony until the late 1960s/early 1970s, when Sutton Rock, Bird Rock, Blackers Hole and Crab Hole were colonised and the total numbers of apparently occupied nests reached 139. 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. However it too is in overall decline, despite an increase in the mid-2000s. The future of the colony remains bleak given the poor productivity recorded in recent years.

4.21 Changes in the Purbeck population mirror the UK trend (see Figure 9) although the population may have peaked earlier and the decline occurred more rapidly until it slowed in the 21<sup>st</sup> century. Kittiwakes are amber listed (Eaton et al. 2009) due to the decline and degree of localisation of the breeding population.

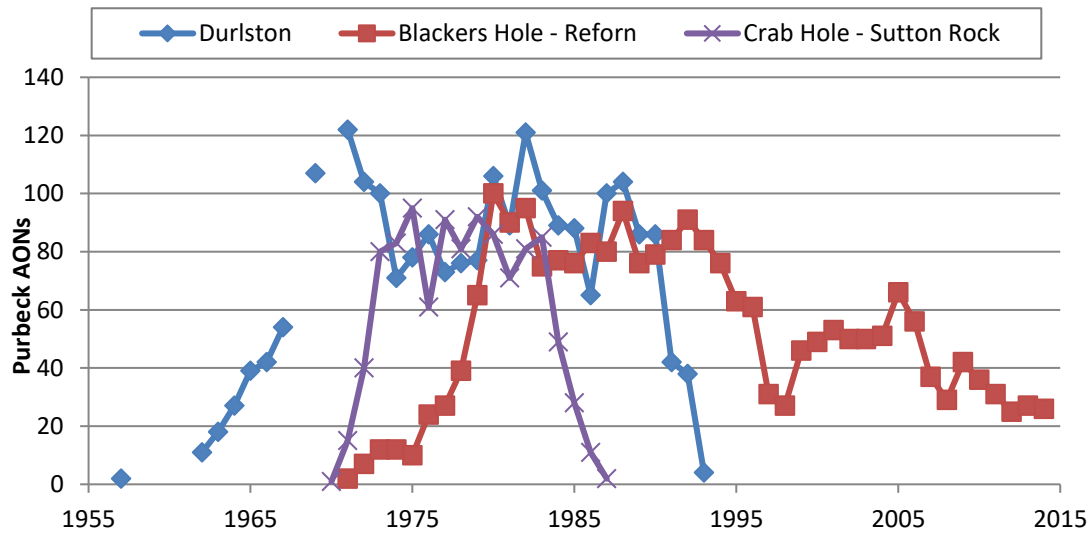


Figure 8. Changes in numbers of apparently occupied nests of kittiwakes in Purbeck

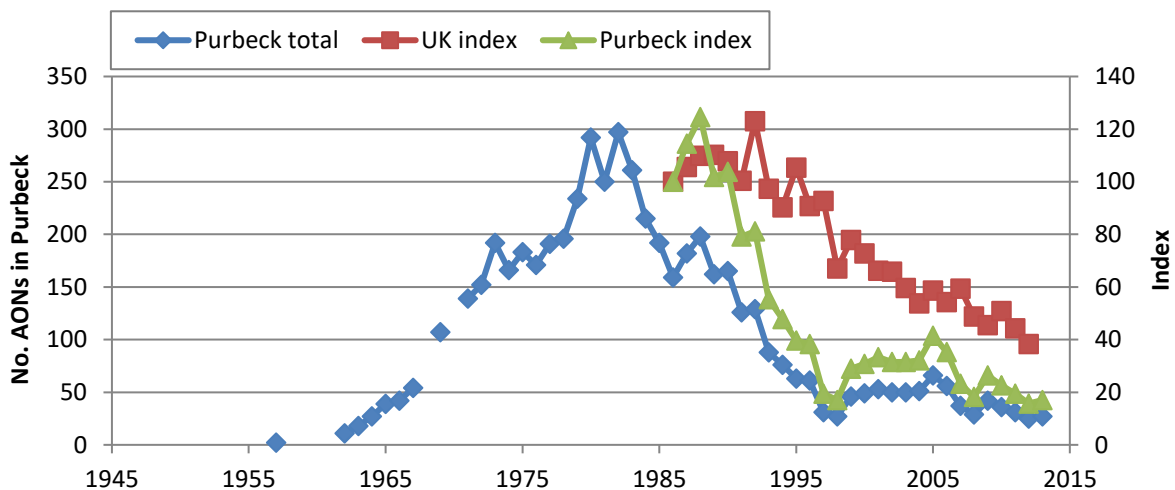


Figure 9. Changes in numbers of apparently occupied nests of kittiwakes in Purbeck and in Purbeck and UK indices of abundance from 1985.

#### Kittiwake productivity at Blackers Hole

Productivity has been monitored at Blackers Hole in most years since 1991 (see Lake et al. 2011 for data sources). Productivity has been variable, increasing to a peak of over 1.2 in the mid 1990s (just after the demise of the two other Purbeck colonies), then following a fluctuating trend that decreased overall. Patchier data from 2004 onwards show a sharp decline until 2011, when productivity was zero. Although it increased in 2012 (in contrast to the national trend), it declined again to 0.09 in 2013 and again to 0.04 in 2014. Productivity in Purbeck was higher than the national average at its peak, but has since declined more rapidly and to a lower level.

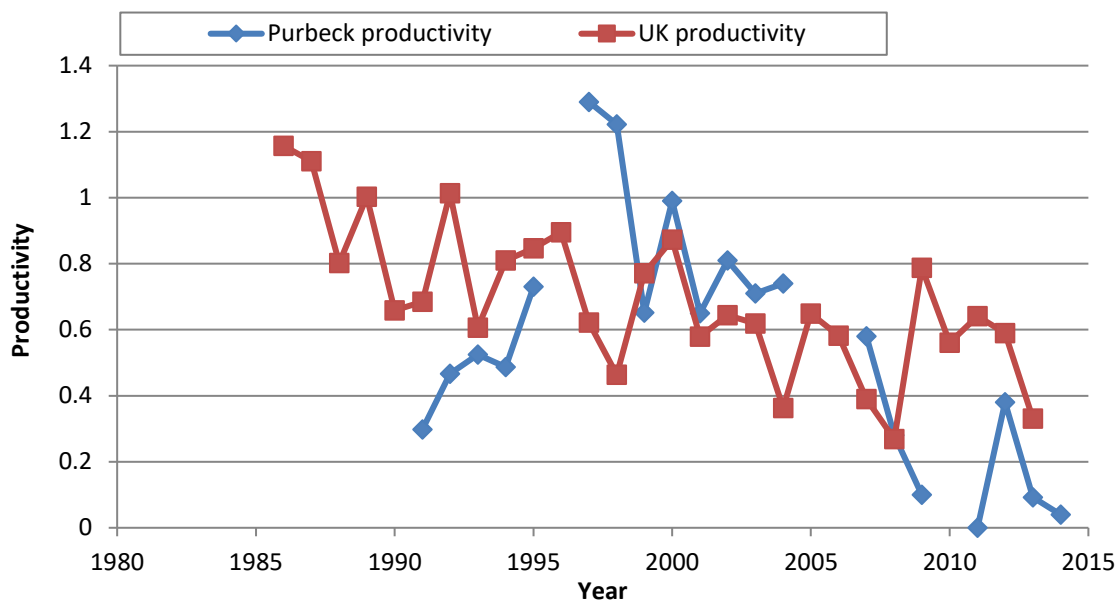


Figure 10. Productivity (expressed as total number of fledglings/total number of AONs) in Purbeck compared to the UK figure.

### 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, peaking in 2006 at around 900. Wide fluctuations mask the overall trend since then. Numbers dropped severely in 2013, mainly due to a substantial decline at the Durlston colony attributed to the presence of breeding raven, however in 2014 number increased again to beyond the 2012 number and reached the highest recorded. UK productivity is decreasing overall, and may lead to future declines.

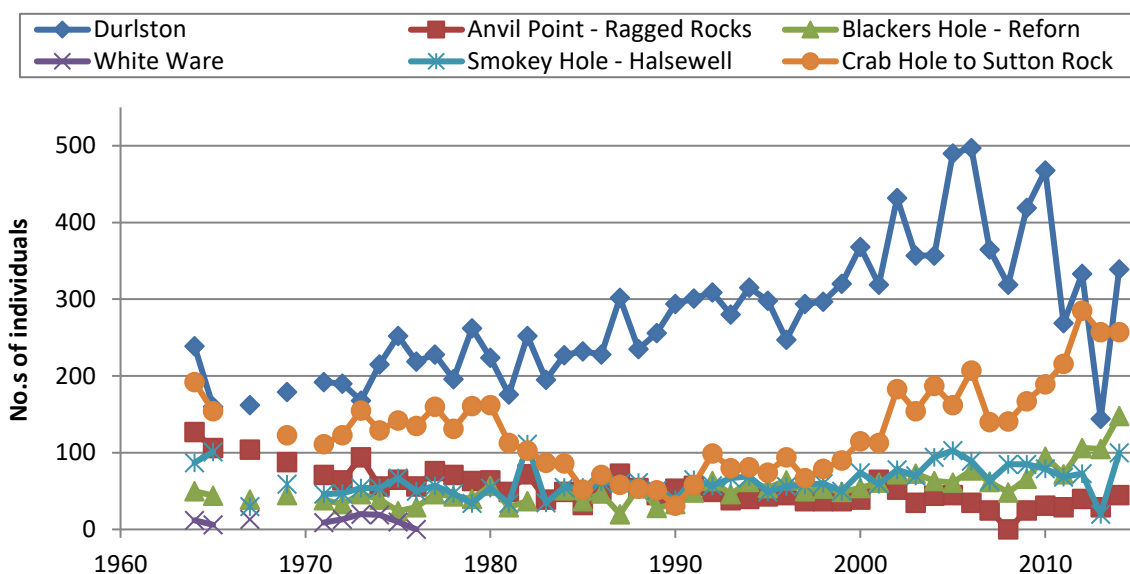
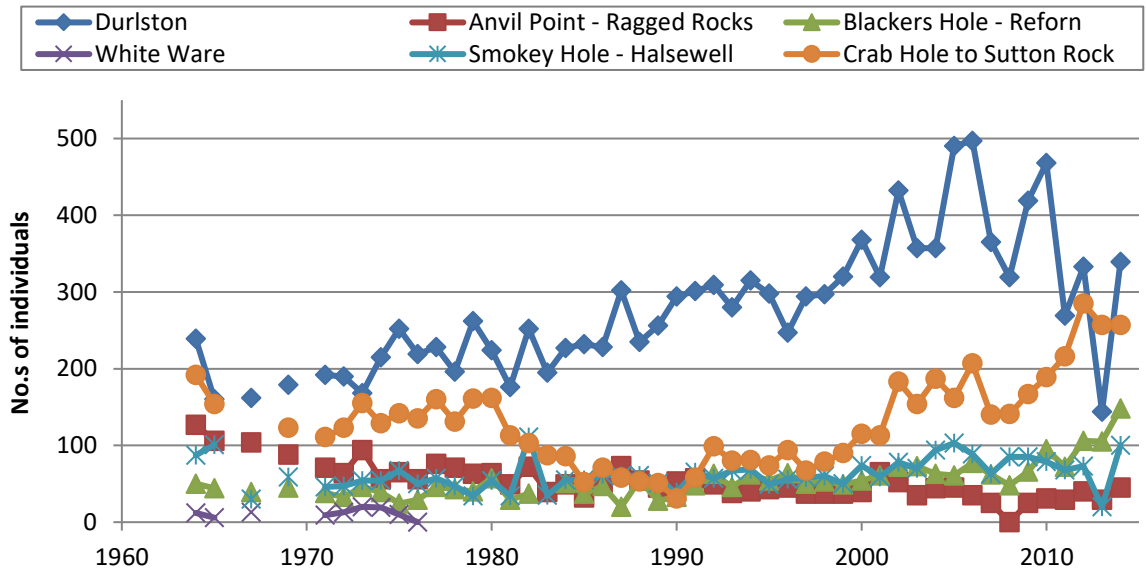


Figure 11. Changes in numbers of guillemot individuals at breeding colonies in Purbeck since 1965.

### Purbeck guillemot population

4.22 The number of guillemots in Purbeck declined from an estimated 2500-3500 in the 1930 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. However, since the mid 2000s, numbers at Durlston have fluctuated widely, with the lowest number ever recorded seen in 2013 (144) despite an increase in 2012 (see



4.23 Figure 11). In 2013 the sub-colony known as “Main Ledge” was entirely deserted possibly due to heavy predation from a pair of resident ravens. In 2014 the Durlston population recovered, and together with an increase in numbers at others sites, notably at Blackers Hole and Bird Cove, the overall population reached the highest level recorded in Purbeck at 914.

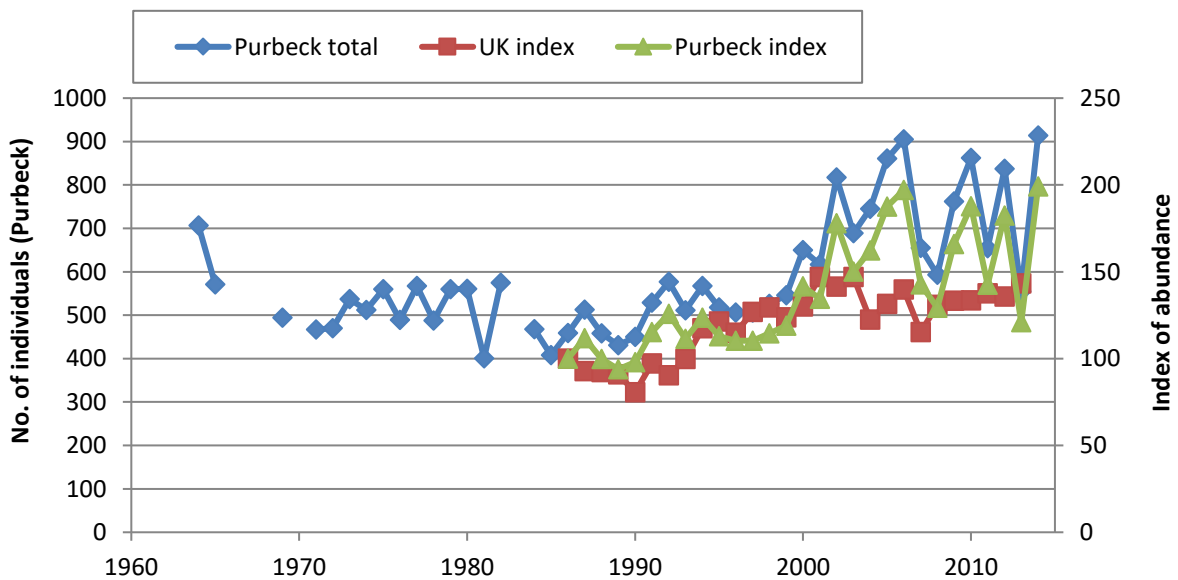


Figure 12. Changes in the total number of individuals recorded at breeding ledges in Purbeck compared to the UK index of abundance.

- 4.24 Changes in the Purbeck population broadly correlated with changes in the national index of abundance, which showed a considerable increase from the mid-1980s, although more recent fluctuations in Purbeck do not correlate with the relatively stable national trend over the last five years. However, observed low UK productivity thought to be due to food shortages combined with low return rates at sampled colonies suggests that 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.* 2009).
- 4.25 Productivity data from the Durlston breeding ledges was not available in 2014.

### 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 then fluctuated 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 numbers exceeded those previously recorded. 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, and the current Purbeck decline may be part of this.**

- 4.26 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 2014 total (79 individuals) is the highest level recorded since systematic recording began. The colonies at Blackers Hole and Reforn in particular have increased, with a small new colony at Topmast.



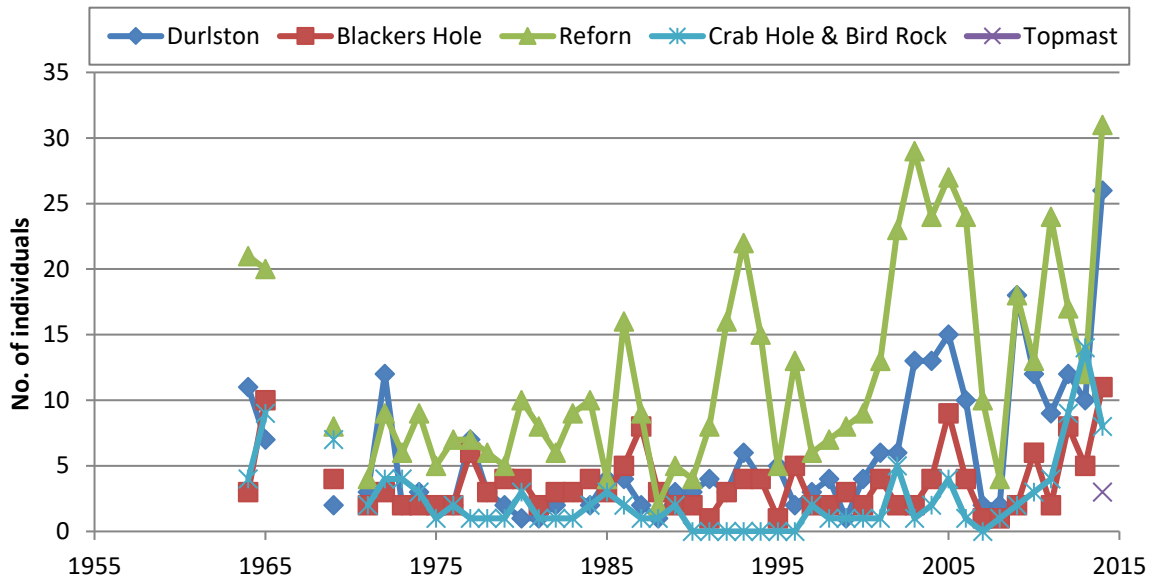


Figure 13. Changes in individual razorbill counts at main colonies between 1965 and 2014.

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 14). These fluctuations can obscure overall trends, but the 2014 figure is the highest since systematic count began in the 1970s, but the 2013 total remains around double that of the 1980s and 1990s, though significantly lower than pre 1960s. The trend is broadly similar to the national trend but with much more exaggerated fluctuations, largely due to the three crashes and subsequent recoveries. 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 is amber listed in Birds of Conservation Concern due to its degree of localisation (Eaton *et al.* 2009).

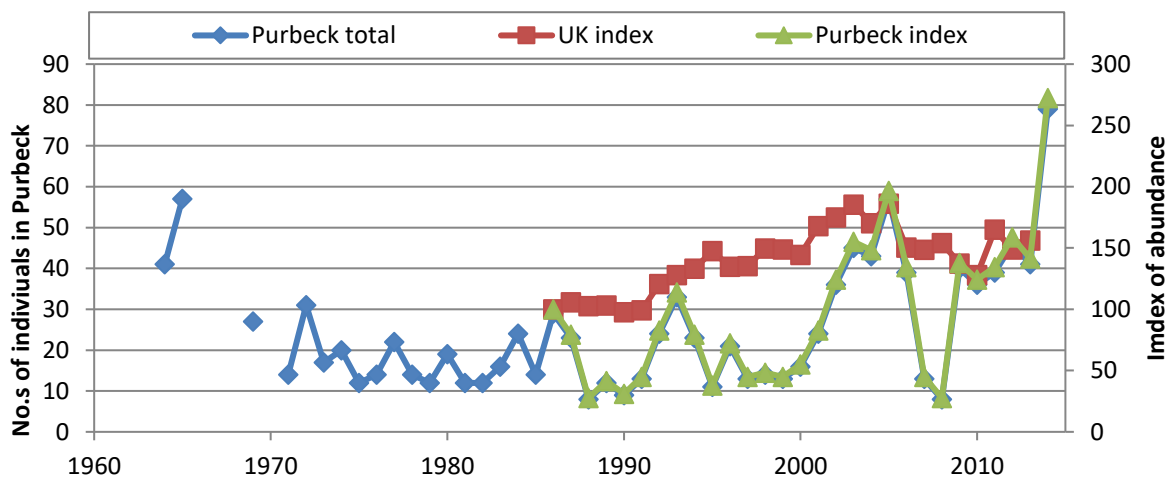


Figure 14. Changes in the counts of individual razorbills and the UK and Purbeck indices of abundance.

## Puffins

The puffin population of Purbeck declined dramatically 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, and remains at about this level. The number of individuals counted has fluctuated markedly between years, but may be declining overall. 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 of a small number of large colonies has shown declines in numbers, survival and productivity.

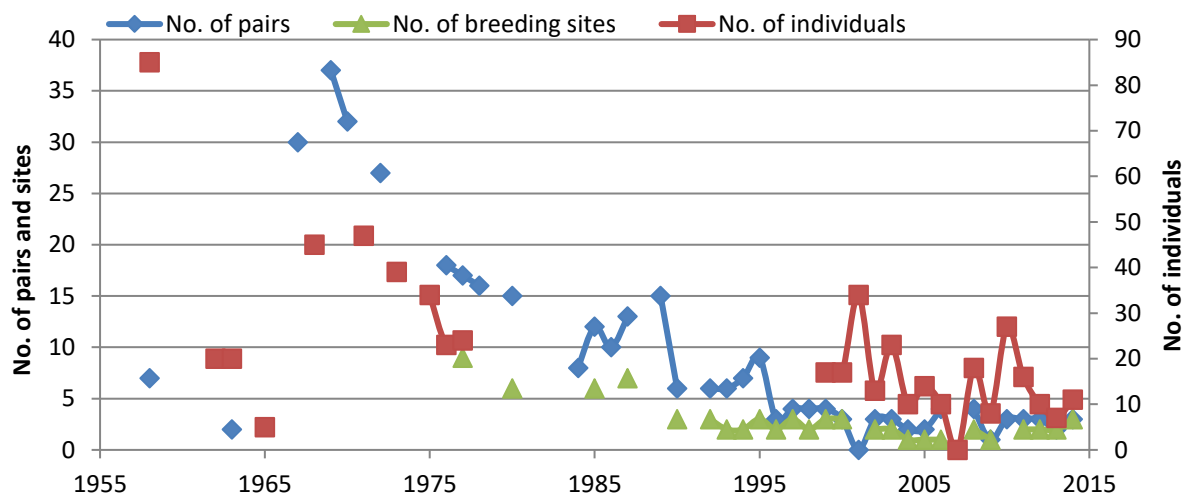


Figure 15. Numbers of individuals, breeding pairs and breeding sites in Purbeck between 1958 and 2013 (note the different scale for no. of individuals).

- 4.28 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, since when it has stabilised at around three breeding pairs. The numbers of breeding sites has correspondingly declined to two (adjacent) sites at Bird Cove and Scratch Ass Cove. No juvenile birds have been observed in recent years and the future of this colony remains precarious.
- 4.29 The downward trend in puffin numbers in Purbeck does not reflect the overall increase suggested by UK census returns between 1969 and 2002. UK-wide data are not available on more recent trends, but monitoring results from two large colonies show subsequent declines. Productivity has fluctuated but appears to have been lower since the 1990s. However, caution should be used in drawing wider geographical conclusions from these data. Puffins are amber listed due to their degree of localisation and categorisation as a species of European Conservation Concern (Easton et al. 2009).

## 5. References

- 5.1 Eaton, M.F., Brown, A.F., Noble, D.G., Musgrove, A.J., Aebischer, N.J., Gibbons, D.W., Evans, A. & Gregory, R.D. (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds*, **102**, 296–341.
- 5.2 Harris, M.P. & Wanless, S. (1996) Differential responses of Guillemot *Uria aalge* and Shag *Phalacrocorax aristotelis* to a late winter wreck. *Bird Study*, **43**, 220–230.
- 5.3 Harris, M.P. & Wanless, S. (2011) *The Puffin*. T & AD Poyser Ltd (A & C Black).
- 5.4 Haysom, W.T. (1977) The status of some Purbeck seabirds. *Dorset Natural History and Archaeological Society*, **1C**, 97–103.
- 5.5 JNCC. (2011) *Seabird Population Trends and Causes of Change: 2011 Report Updated April 2011*. Joint Nature Conservation Committee.
- 5.6 Lake, S., Liley, D., Lane, K., Hopper, N. & Brereton, T. (2011) *Seabird Breeding Success Survey, for Ballard Cliff (Handfast to Ballard Point), Durlston to St. Aldhelms Head and Gad Cliff to White Nothe, South-East Dorset Coast, Dorset*. Footprint Ecology / MARINELife / National Trust.
- 5.7 Lake, S., Wallbridge, B., Breeze, S., Haysom, T.S. & Kershaw, J. (2013) *Purbeck Seabird Survey 2013*. Footprint Ecology/National Trust/Durlston Country Park,/MoD.
- 5.8 Walsh, P.M., Halley, D.J., Harris, M.P., del Nevo, A., Sim, I.M.W. & Tasker, M.L. (1995) *Seabird Monitoring Handbook for Britain and Ireland: A Compilation of Methods for Survey and Monitoring of Breeding Seabirds*.