



WILDLIFE TRUST OF SOUTH & WEST WALES

SKOMER ISLAND NATIONAL NATURE RESERVE

ANNUAL REPORT 2011 and 2012

Chris Taylor

SKOMER ISLAND NNR ANNUAL REPORT 2011 and 2012

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SUMMARY

The island was inhabited 1st March to c.25th November. Chris Taylor took on the role as Skomer Warden. Sarah Harris was the Assistant Warden for Skomer.

16,859 visitors landed in 2011 – a record year. 2012 was quieter due to bad weather in April and June (total 12,118) The new ticketing system has now settled and is proving popular with day trippers and educational groups.

A repeat survey of the whole island Manx Shearwater census was carried out in 2011 giving a figure of over 300,000 breeding pairs on Skomer. The survey was repeated on Skokholm in 2012 – the results of which are yet to be published. The revised methodology involved a lot less man hours and is therefore easily repeatable.

In general the seabird populations are healthy with good breeding success, with the exception of Razorbill and Kittiwake in 2012. Guillemot population continues to increase year on year with over 22,000 guillemots counted in 2012. Further information can be found in the Seabird report and late in this report. Kittiwake adult survival also seems to be decreasing. Which could be indicators of food shortages, this is not represented in other species on Skomer.

Three Long Term Volunteers were recruited to help throughout both seasons from May through to September.

Rabbit numbers bounced back after the outbreak of myxamotosis over winter 06-07, although some myxamotosis was seen in spring and early summer. The population, in 2010, had returned to its previous high and in 2011/2012 this has continued at a slower rate. As a consequence more bare-earth was recorded on coastal grassland transects in 2011 and 2012.

Table 1 summarises the qualifying SSSI features and attributes that were *not* within acceptable limits in 2012. Kittiwake adult survival managed to return to within acceptable limits in 2012.

Feature	Attribute	Low LAC	2012 level	Notes	Last within limits
Assemblage nationally scarce lichens	% dead A. Maritime	5%	3.87%		2008
Coastal Grassland	% bare earth	15%	4.33%	Increasing and matches rabbit density increase	1998
Razorbill	Breeding success (per active and reg site)	3 consecutive years of <0.55	0.17		2010
Guillemot	Breeding success (per active and reg. site)	3 consecutive years of <0.7	0.63		2011
Herring Gull	Population	3 of 5 consecutive yrs of <500	401	But increasingly good	2010

		pairs		productivity	
Oystercatcher	Population	<80 pairs 3 consecutive years	74	But pop increasing	???
Curlew	Breeding success	<1 per AOT over 3 consecutive years	0.5	Improved last few years	2010
Wheatear	Population (AOT)	2 consecutive years of <15 pairs	18	But sharp increase in 2012	2009
Linnet	Population (AOT)	2 consecutive years of <4 pairs	3		
Rabbit	Pop. In june	Upper 40/ha	41/ha		2010
Chough	Breeding success	3 consecutive years <1.5 chicks per pair	0		2011
Peregrine	Breeding Success	3 consecutive years of <1 chick per pair	0.77		2011
Skylark	Pop (AOT)	3 consecutive years of <20 territories	8		2011

Table 1 Features and attributes outside of Limits of Acceptable change in 2010.

RECORDING I: BIOLOGICAL AND PHYSICAL

The following 'Features' are based on those which qualify the island as a SSSI as specified in the 2001 Re-notification (CCW), and those which are thought additionally important in the NNR Management Plan, currently under review. Removed in the 2001 Re-notification, were Coastal Heathland; Flushes, springs and standing water; Bracken / Acid Grassland; Marshy Grassland; Wet Heath; the lichen *Parmelia tinctoria*; Pintail; Peregrine; and Assemblage of ground nesting birds (Oystercatcher, Lapwing, Curlew, Skylark, Wheatear, Linnet and Reed Bunting).

Black-legged Kittiwake has been elevated from part of the seabird assemblage to a Feature in its own right (2009) in 2010 Razorbill was also elevated.

Features that do not qualify the island as a SSSI but are listed as 'Additional Features' in the current draft of the Management Plan are Assemblage of Ground-nesting Birds (Oystercatcher, Curlew, Skylark, Wheatear, Linnet, Reed Bunting [Lapwing now extinct as a breeding species]), Assemblage of Breeding Ducks, and Bluebell. Additionally, Archaeology, Research, Landscape, Public Use, and Education are also listed as Management Plan Features. At the Islands Advisory Committee on 23/2/07 it was suggested that Heathland be retained as a Management Plan Feature.

The Management Plan identifies targets and limits of acceptable change for the Features of the reserve. The targets and limits define the Favourable Condition of the features. Most of the figures were agreed by committee during the 1997 revision, or else set out in the 'Long Term Vision for the Site and Features' in the CCW SSSI Management Statement (2001). The targets provide a yardstick against which the current status of the features can be measured. This section of the report indicates whether the features are currently thought to be in a favourable condition.

This section also indicates the condition of the operational limits set for various "factors" which may influence the condition of the feature.

1.1 Habitats/communities

Feature habitats

Features/Attributes	2008	2009	2010	2011	2012	Within limits of acceptable change?
Maritime grassland						
- Extent	-	-	-			
- % sward below "ankle height"	51.3	52.5	81.8	89.32	90.44	Yes (LAC = 75%)
- Presense of Thrif, Red Fescue, Sea Campion and Squill	Yes	Yes	Yes	Yes	Yes	Spring Squill not present in sampled areas, other species all present
- % Yorkshire Fog	15	22.6	25.6	23.47	24.65	Yes (upper limit 33%)
- % Bracken and Scrub	4.5	2.89	2.93	3.47	3.47	Yes (upper limit 25%)
- % bare earth	2.39	1.21	1.57	4.05	4.33	NO (LAC 15%)

Maritime cliff						
- Extent						Not mapped but unlikely to have changed
- Diversity						No survey

Notes on Feature Habitats

Maritime grassland extent was not measured. The other attributes were measured through the annual transect monitoring at Wick Basin, Skomer Head and Saunders Fist (sometimes referred to as Bull Hole). Percentage of vegetation below ankle height seems to be on a gradual increase, coinciding with the return of rabbit high rabbit density with associated increase in Yorkshire Fog.

The percentage of bare earth coastal grassland was below the lowest acceptable limit of 15%. Figure 3 shows that the mean extent has been below the LAC since 2001 and has shown an overall decline until 2010 where there has been an increase in bare earth, probably linked to high rabbit numbers.

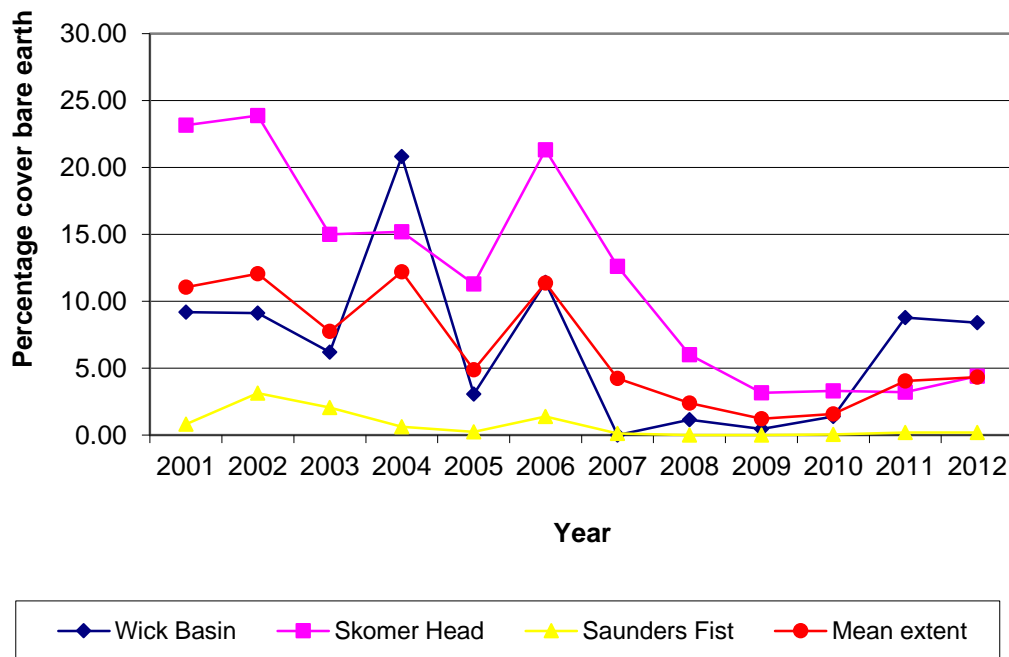


Figure 3 Percentage cover of bare coastal grassland 2001 – 2012.

Heathland (non-qualifying feature)

The monitoring of temporary heathland exclosures continued by the repeated throwing of random quadrats in the autumn 2011 but not 2012.

In 2012 no monitoring was carried out within the exclosures. Heather transects were repeated (last carried out in 2007) and are awaiting analysis.

Looking at the heather exclosures in 2008 - 2011 the average percentage cover for Heather types of heather can be seen in Figure 4. This shows that most of the heather within the exclosures is building and mature stages with little degenerated or either pioneer. It is too early to tell whether the exclosures are encouraging more pioneer plants – thus sustaining the vegetation.

Year	Pioneer	Building	Mature	Degenerate	Dead	Total Heather cover	Bracken
2008	1.95	30.36	14.48	0.97	7.02	54.78	2.86
2009	1.32	22.15	37.30	0.76	0.67	45.62	3.87
2010	0.98	4.74	30.16	6.18	0.96	45.62	7.62
2011	2.59	18.66	19.79	2.69	0.77	44.51	10.38

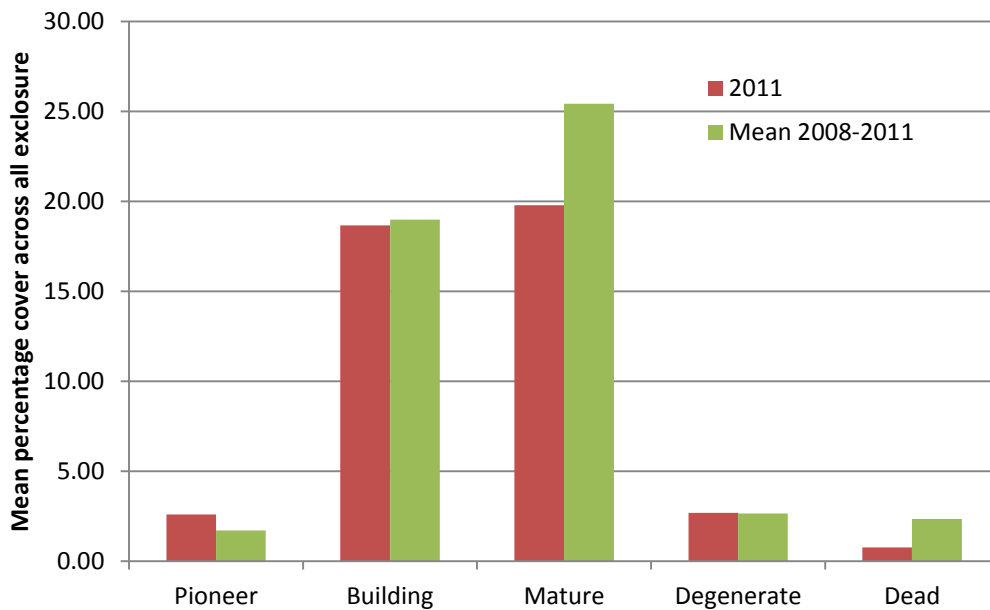


Figure 4: Mean percentage cover of different stages of heather growth within Heather exclosures

1.2 Flora

Features

Features/Attributes	2008	2009	2010	2011	2012
Golden Hair Lichen (<i>T.flavicans</i>)	2008	2009	2010	2011	2012
- Presence	Yes	Yes	Yes	Yes	
- Extent	Casual obs	Photo-monitoring repeated	Yes – extent maintained	Yes – casual observations	Yes – casual observations

Nationally scarce plant assemblage	2008	2009	2010	2011	2012	Limits of acceptable change
Lanceolate spleenwort						
- Extent (m)	12m	11m	9m		8m	YES
- Condition (%dieback)	10%	60%	40%		13%	YES
Portland Spurge						
- NORTH HAVEN	8	1	3		4	YES
- No. plants (small [<10cm], med [10-30cm] and large [>30cm])	small 10 med. 5 large	small 4 med. 2 large	small 3 med. 2 large		small 10 med. 1 large	
- SOUTH CASTLE	22 small 25 med. 3 large					
Rock sea-lavender						
- Presence	Yes	Yes	Yes			YES
- No. flower spikes	148/ 79	116/ 82	120/ 90			YES
Three-lobed Crowsfoot						
- Extent (m)						
- No. flowering	22	18	24		12	YES
Saxicolous lichen assemblage						
- Quality (no. species)						
- Diversity (communities present)						
- Presence of notable species						
Terricolous assemblage						
- Extent of <i>A.maritima</i> >50%	10.7*	3.60*	?			No Below LAC of 5% (*Based on Skomer Head transect. *Based on mean of SH

						and Wick Basin.)
- % dead A.maritima	10.5 +	3.87 +	?			
- %bare coast grassland	2.4	1.2	1.57			No Below lower limit of 15%
Bluebells						
- Extent						
- Area >50% density						Mapped 2001

Feature	Factors (operational limits) for flora, combined. Refer to Management Plan for details.	Notes
<i>R. tripartitus</i> , <i>A. billotii</i> , <i>lichens</i>	Management practises	Hydrology maintained, no bracken spraying in named sensitive areas
<i>Lichen assemblage</i>	Size of seabird assemblage	Mostly within limits, but see 1.4.
<i>All features</i>	Public access	Wardening managed access, but see section 2
<i>Terricolous lichens</i>	Extent of <i>Silene uniflora</i>	

Notes on Flora

All attributes are within limits except for percentage bare coastal grassland.

Three-lobed water crowsfoot flowering spikes were counted on four occasions through March, April, May and June.

Extent of *Armeria* was not mapped in 2011/2012.

Historical Flora was investigated using pollen analysis of peat cores taken within wet areas of Skomer (with minimal disturbance and burrowing) and is reported elsewhere. The general results don't show an extensive coverage of a full woodland on Skomer by Hazel was present.

1.3 Mammals

Features

Feature and Attributes	2008	2009	2010	2011	2012	Within limits?
Skomer Vole - Aug pop -density Grid C (voles/ha) -density Grid E	310/ha 61/ha	238/ha 34/ha	115/ha 14/ha	178/ha 12/ha	190/ha 6/ha	Yes
Grey Seal - Pups born NNR (MNR as whole)	141 (236)	159 (241)	164 (267)	157 (123)	137 (209)	??

Factors (operational limits) for Skomer Vole. Refer to Management Plan.	Notes
Distribution of optimum habitat	See Healing (2004)
Distribution of less favourable habitat	
Bracken distribution	Bracken extent above lower limits.

Notes on Mammals

Voles

The annual vole census of study plots was carried out by Tim Healing in August with the help of various volunteers. Populations in the high density plot were within limits and recovering after a low in 2010. See figure 5.

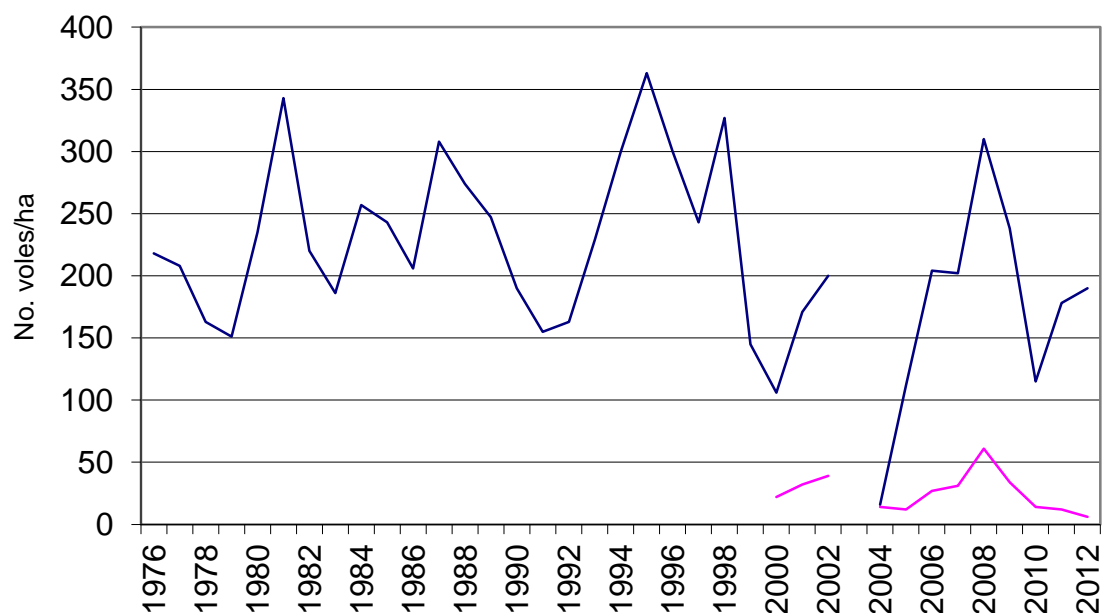


Figure 5 Skomer Vole density 1976 – 2012

Grey Seals

Grey Seal productivity was monitored by WTSWW under CCW contract as an MNR project. Dave Boyle carried out this work, report submitted to CCW (Boyle 2012). Behavioural notes and data on known animals were also part of the project.

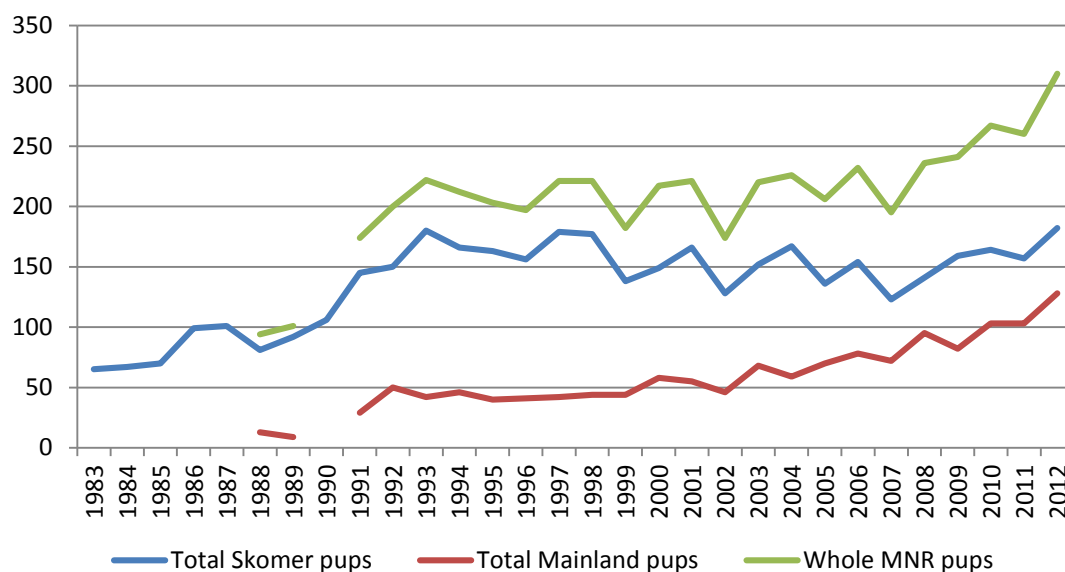


Figure 6 Number of Seal Pups born in Skomer Marine Nature Reserve 1983-2012

182 pups were born on Skomer in 2012, the highest total ever recorded, 180 in 1993 being the previous best. See Figure 6

310 pups were born in Skomer Marine Nature Reserve as a whole in 2012, the highest total ever recorded.

138 pups are known, or assumed to have survived, giving a survival rate of 76%, very slightly below the average for the last 10 years.

The busiest week this year was week 43, between 22-28 October, when 22 pups were born.

The busiest sites this year were Matthew's Wick (40 pups), South Haven (32 pups) and North Haven (26 pups).

The mean age at the onset of moult was 15 days and the mean duration of moult was 6 days. See Section 4.5.

Photo-monitoring continued in 2012 and is starting to show some really good results. 291 seals were photographed in 2012, including 147 (81%) of the pupping cows, and 185 individual seals were positively identified from previous years. See Section 5

The haul-outs were relatively quiet in 2012. See Section 7.

Twenty-five seals were seen in 2012 showing signs of having become entangled in fishing nets at some time in their lives. See section 8.

Non-feature mammals

Rabbits

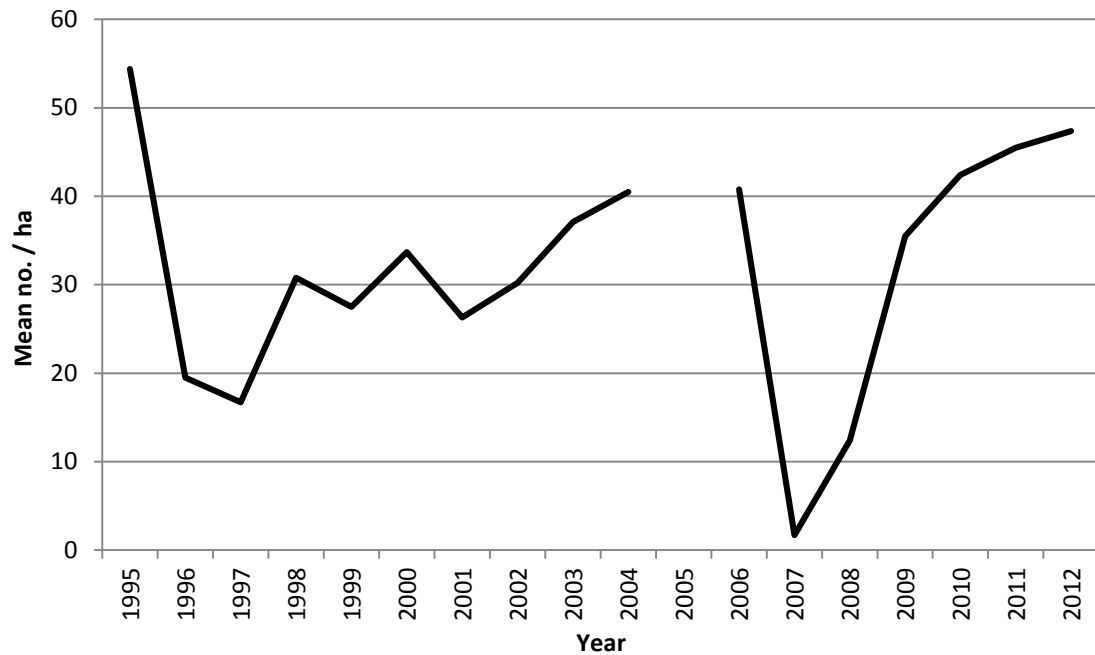


Figure 7 Mean Rabbit Density (nos. / ha) 1995-2012

(N.B. the crash in Rabbit numbers between 1995 and 1997 was due to outbreaks of Rabbit Viral Haemorrhagic Disease. The 1995 figure was based on only two counts [August and September]. Prior to 1999, counts were also made at an additional site near Skomer Head, but this was dropped due to the absence of any photographs delineating the area).

Evening counts of Rabbits at plots at South Plateau, Wick Grassland and Calves Park / Shearing Hays area were carried out monthly.

The mean number of Rabbits per hectare in 2012 was 47.37, this is a continued increase on 2009 which was 35.54. Rabbits seem to have recovered back to pre-myxi outbreak levels. Regular sightings of rabbits with Myxy were seen throughout the season. Particular areas included the Wick. This could be a result of a now “high” population on Skomer. Monitoring will continue in 2013. See Figure 7.

Figure 8 shows the monthly averages of Rabbits/ha in the study plots. Generally the last two years have seen a steady number of rabbits year round.

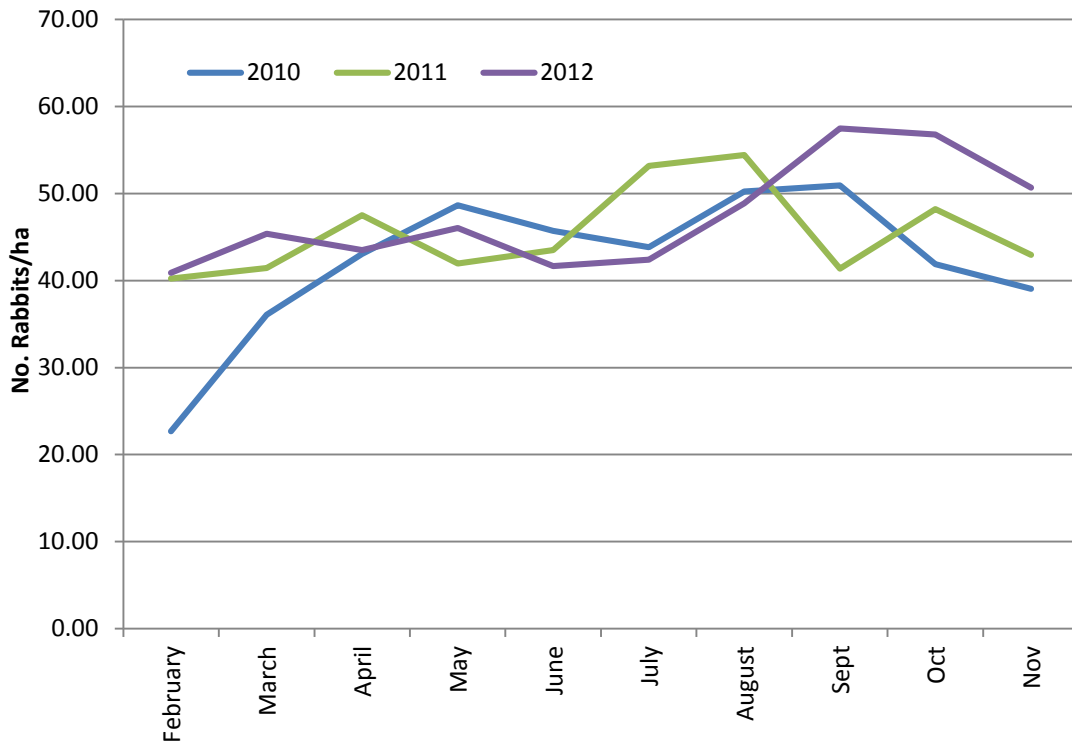


Figure 8 Monthly averages of mean number of rabbits per hectare in 2010, 2011 and 2012

Mice

Mice present throughout the season.

Cetaceans

Daily cetacean records were kept.

Sarah Harris trialled a very successful “click counting” method in 2012 following methodology laid down by Sea Trust / Cliff Benson. The method more easily identifies activity rather than trying to guess how many individuals are in the study area. This data has been submitted to sea trust and kept on file on Skomer. New methodology is also kept in the “Cetacean” folder

Others

No known sightings of otter or mink in 2012

1.4 Birds

Features

Features/Attributes	2008	2009	2010	2011	2012	Within limits?
Manx Shearwater						
- Pop. Study plot (responses)	908	1191	767	1113	1117	?
- Adult Survival rate (%)	81%	76%	72%			YES
- Breeding success (per egg laid)	0.68	0.59	0.70	0.69	0.55	YES
Storm Petrel						
- Breeding pop.	160	-	-			
Peregrine						
- Pop. (AOTs)	4	3	3	3	3	YES
- % Pembs. Pop. (min. Estimate)						
- Breeding success (per AOT)	1	2	1.5	0.77	0.77	NO
Lesser Black-backed Gull						
- Pop. (Pairs)	10419	10219	10249	10238	8643	YES
- Ad. Survival (%)	92%	81%	82%			YES
- Breeding success.	0.04	0.45	0.89	0.3	0.5	YES
Kittiwake						
- Pop. (AONs)	2282	2046	1922	1837	1594	YES
- Ad. Survival (%)	74%	94%	90%			YES
- Breeding success (per AON)	0.39	0.55	0.65	0.52	0.32	YES
Guillemot						
- Pop. (ind.)	17088	19512	19962	21866	22508	YES
- % UK study plots						
- Adult survival rate (%)	76	87	98			YES
- Breeding success (per act+reg. Site)	0.62	0.73	0.69	0.55	0.63	NO
Razorbill						
- Pop. (ind.)	4973	5262	5391	5118	4971	YES
- % UK study plots						
- Adult survival rate (%)	95.68	90%	96%			YES
- Breeding success (per act+reg. Site)	0.22	0.39	0.4	N/A	0.17	NO
Puffin						
- Pop. (ind.)	10487	13508	12577	N/A	11497	YES
- Adult survival (%)	91.87	93%	83%			YES
- Breeding success (per AOT)	0.63	0.77	0.8	0.84	0.85	YES
Short-eared Owl						
- Breeding pop. (AOT)	3	9	4	2	2	YES
- Breeding success (per AOT)	1.3+	2.1	1.75	3	0	YES
Chough						
- Breeding pop. (AOT)	3	5	4	4	4	YES
- % Pembs. Pop (min. Est.)	6.9					

- Breeding success (per AOT)	1.66	1.6	1.5	1	0	NO
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Other Seabird Assemblage	2008	2009	2010	2011	2012	Within limits?
Fulmar						
- Pop. (AON)	565	527	530	474	453	YES
- Breeding success (per AON)	0.26	0.27	0.41	0.33	0.38	YES
Cormorant						
- Pop (AONs)	11	9	3	0	4	YES
Shag						
- Pop. (AONs) Skomer and Middleholm	58	55	55	53	46	YES
- Breeding success (max. fledged per AON)	2.2	2.48	4.42	2.64	1.94	YES
Herring Gull						
- Pop. (AOTs)	412	444	431	420	401	NO
- Ad. Survival (%)	88%	69%	76%			YES
- Breeding success.	0.69	0.68	0.56	0.5	0.86	YES
Greater Black-backed Gull						
- Pop. (AOTs) +middleholm	108	132	147	80	96	YES (Upper 150)
- Breeding success (per AOT)	0.87	1.2	1.03	1.24	0.92	YES

Ground nesting bird assemblage (non-qualifying)	2008	2009	2010	2011	2012	Within limits?
Oystercatcher						
- Pop. (AOT)	52	50	42	38	74	NO
- % Skomer, Skokholm, Ramsey (use min. Figs.)	Nd	Nd	Nd			
- Breeding success (per nest)					??	
Lapwing						
- Pop (AOTs)	0	0	0	0	0	NO
- % Skomer, Skokholm, Ramsey (use min. Figs.)	0	0	0	0	0	
- Breeding success (per nest)	0	0	0	0	0	NO
Curlew						
- Pop. (AOTs)	11	9	6	5	4	YES
- Breeding success (Per AOT)	0.55	0.88	0.22	?	0.5	NO
Skylark						
- Pop. (pairs)	33	23	26	13	8	NO
- % Skomer, Skokholm, Ramsey (use min. Figs.)	Nd	Nd	Nd			
Wheatear						
- Pop. (AOTs)	12	10	10	5	18	NO
- % Skomer, Skokholm, Ramsey (use min. Figs.)	11.2	Nd				
Linnet						
- Pop. (AOTs)	3	2	2	3	3	NO
- % Skomer, Skokholm, Ramsey (use min. Figs.)	Nd	Nd				

Reed Bunting						
- Pop. (AOTs)	8	5	5	5	3	YES
- % Skomer, Skokholm, Ramsey (use min. Figs.)						

Assemblages of Breeding Ducks (non-qualifying)	2008	2009	2010	2011	2012	Within limits?
Shelduck						
- Pop. (nesting pairs)	1	1	1	0	2	
- Breeding success	0	0	0	0	0	
Gadwall						
- Pop. (nesting pairs)	0	0	0	0	0	
- Breeding success	0	0	0	0	0	
Teal						
- Pop.	0	1	1	0	0	
- Breeding success (Per AOT)	1	2	1.5	0	0	
Mallard						
- Pop.	c.6	c.5	5	5	7	
- Breeding success (Per AOT)	0.6	0	0		?	
Pintail						
- Pop. (AOTs)	0	0	0	0	0	
- % UK breeding population	0					
Shoveler						
- Pop. (breeding pairs)	3	0	2	2	2	
- Breeding success	0	0	0	0	0	
Tufted Duck						
- Pop. (breeding pairs)	1	0	0	0	0	
- Breeding success	0	0	0	0	0	

Nd = No data

Notes on Birds

Storm Petrel

No surveys on Skomer have been carried out for European storm-petrel in 2012

A paper recently published by Soanes (2012) compared the response rates of different and manipulated recordings. Then the paper compared different estimation methods for censusing ("Standard" and the "du Feu").

Estimate Number of AOS (95% confidence interval)			
Method (Year of census)	Standard Method (2008)	de Fue Method (2008)	Brown (2003)
Whole Island	101 (91-130)	64 (55-79)	203 (178-239)

The main aim of the study was to test the monitoring method and before using this figure as a population estimate there must be some investigation done into the extent of "searching" for burrows to ensure that this was a true whole island estimate.

References:

Brown, J.G. (2005) *Storm Petrel census on Skomer Island in 2003*. CCW Contract Science Report no 671.

Soanes, L.M., Thomas, R.J. & Bolton, M. (2012) *Evaluation of field and analytical methods for estimating the population size of burrow-nesting seabirds from playback surveys*. *Bird Study*, 59(3), 353-357

Peregrine

Three pairs bred on Skomer this season, with two nests fledging at least one chick each along the North Coast and in South Haven. The first fledgling was seen on the 28th June. The outcome of the pair on the Neck is unknown. Lastly, there was a possible fourth pair which spent most of the season along the west coast and may have attempted to breed there.

Lesser Black-backed Gull

Breeding success has increase for the second year in a row. The population indicated a fairly dramatic decline but this could be an artefact of the correction factor. This must continue to be observed in 2013.

Kittiwake

A mean of 1594 (range 1497-1691) Apparently Occupied Nests were observed in 2012, a decrease of 13.23% on 2011. 2012 breeding success was low and by the time some of the major kittiwake colonies were counted (towards the second week of June) a lot of nests had clearly already been abandoned - probably due to poor weather and/or food availability.

Nest building was first seen on the 7th May. This was the same as in 2011 (see Table 20). The first egg was seen on the 20th of May with the first chick sighted on the 11th of June. There does not appear to be any major change in the timing of breeding over the last 7 years.

Guillemot

The whole-island population of common guillemots in 2012 increased at by 3.75% to 22508

Study plot populations reflect this expansion. 2012 saw a mean productivity of 0.63 fledged birds per active and regularly occupied site, which is an increase of 0.08 from 2011, and is slightly lower than the overall mean of 0.69 (1989 – 2012). Fifty eight percent of chicks 'fledged' between 25th June and 30th June inclusive. The median fledge date was 27th June, 1 day earlier than in 2011.

A study by Jessica Meade and Tim Birkehead reveals that population increase on Skomer is possible without immigration from other colonies. This was based on a model of parameter involved in population expansion (adult survival, etc.). More can be found in Meade, et. al. (2013)

Razorbill

Whole island population showed a 2.8% decrease on 2011 figures and has seen a decline since a recent peak in 2010. The mean productivity per active and regular site was 0.17 (0.21 per active only site), a large decrease from the 2010 productivity figures). 34 % of chicks 'fledged' between 20th of June and 25th of June inclusive. The median fledge date was 5 days earlier than 2010

Puffin

The spring count was slightly down by 8% on 2010 but still showing a increase over the long term (+9.5% on 5 years ago). Productivity was exceptionally good for a

second year in a row at 0.85. Plenty of Sand-eels and Sprats were seen being brought ashore and no Snake pipe-fish were seen. Possibly as a result of increased rabbit numbers meaning greater black backed gulls were less predatory on pufflings.

Short-eared Owl

One pair attempted to breed in North Valley, with wing clapping from the 11th April and mating was seen on the 8th May. Sadly this pair failed, probably due to the weather. A second pair tried to breed in South Valley but they didn't spend enough time in the area to suggest they were successful. The North Valley pair then gave the impression they were trying again, but without success.

Chough

Based on the locations birds were seen throughout the season and their territorial behaviour, between four and five pairs attempted to breed on Skomer. However, no evidence of any success was seen. Family parties were seen on Skomer but could have come over from the mainland.

Seabird Assemblage

All attributes were within limits.

Seabird population counts and breeding success estimates were completed within the specified time periods. Full results and discussion are reported in "Seabird monitoring on Skomer Island in 2011" and "Seabird monitoring on Skomer Island in 2012" (See references sections). Detailed study plot counts (of Guillemot and Razorbill) and breeding success (of these, Fulmar, Herring Gull, Great Black-backed Gull and Kittiwake) were carried out by Richard Kipling for WTSWW, under contract to JNCC, as part of their integrated Seabird Monitoring Programme. Razorbill productivity studies were also carried out.

Breeding seabirds on Middleholm were counted.

Dave Boyle returned for his seventh(?) year as EGI Field Assistant. This work, under Chris Perrins, was also funded by JNCC as part of the SMP, the results of which can be read in the Skomer Seabird report which for the first time has pulled together all SMP surveys carried out on Skomer in one place. Studies were made of the annual survival rates of Herring Gull, Lesser Black-backed Gull, Kittiwake, Razorbill, Manx Shearwater and Puffin. Breeding success of Manx Shearwater, Puffin and Lesser Black-backed Gull were also assessed. A repeat of the Manx Shearwater study plot tape playback census was again carried out by Oxford University MSc students.

Guillemot productivity and adult and immature survival studies were again carried out by Jessica Meade (2011) and Tom Finch (2012) from Sheffield University, under Tim Birkhead, funded by CCW.

Two Phd students, Annette Fayet and Akiko Shoji, carried on the work with the sensor network within Manx Shearwater burrows started by Tim Guildford. They also extended the geolocator work on Manx Shearwaters and Puffins and included Razorbills, Guillemots and Kittiwakes. GPS tracking of Manx Shearwaters was also extended and included concurrent tracking of birds from Lundy and Copeland. Shearwaters on Ramsey were also fitted with Geolocators.

A study was also carried out by Monte Neat-Cleg and XX (Undergraduate with Tim Guildford) to assess the weights of fledging Manx Shearwater chicks. The results of which show that shearwater chicks seem to be fledging at a lower weight than those in the 1960s. This data will prove a useful baseline for future comparisons.

Matt Wood (EGI, Oxford) carried out an investigation into the distribution of 'puffinosed' shearwaters in mid-September.

Ground nesting bird assemblage

Oystercatcher population below lower limit (three consecutive years below 80 pairs), but the lower limit seems rather high as Oystercatchers have not been within limits since 2001. A productivity study was not carried out due to time constraints.

Lapwing – No Lapwing bred on Skomer.

Three broods of Curlews were recorded, with only two young surviving in total.

Linnet remains below lower LAC. The propagation (and protection from Rabbits) of gorse would be likely to increase the population of this species.

Assemblage of Breeding Ducks

A second year in a row attempt by teal to breed is promising. Many young from all duck species are heavily predated. Shelduck possible fledged successfully as the parents and young were spotted on the east side of the Neck. Their fate was unknown.

Feature	Factors (operational limits) for birds, combined. <i>Refer to Management Plan for details</i>	Notes
<i>All bird species</i>	Introduced land mammal predators	No evidence of introductions.
<i>Manx shearwater, puffin, ground nesting birds</i>	Bracken distribution	Bracken mapped 2004 (see above). Fixed-point photography of whole island carried out in August 2006. Dr Matt Wood currently carrying out analysis of old aerial photography.
<i>Manx shearwater, puffin,</i>	Soil erosion	
<i>All features</i>	Public access	Island wardened throughout season, but see Section 2.
<i>Storm petrel</i>	Little Owl population	2 pairs, within limits.
<i>Breeding Ducks</i>	Pond water depth	Ponds retained water, Moorey mere dried up completely on numerous occasions.
<i>LBB gull</i>	LBB gull distribution	
<i>SE Owl</i>	Skomer Vole density	Vole numbers are within usual limits.
<i>SE Owl</i>	Wood Mice presence	Present
<i>Ground nesting birds</i>	Rabbit density - June	43 rabbits per hectare. Above LAC of 5.
<i>Chough</i>	Bare earth within coastal grassland	

Non-feature birds

A daily log of all bird sightings and numbers was kept in digital format. A full list of breeding birds is included in Appendix 1. Bird highlights were regularly published on the Trusts' website. And the blog. A separate Bird Report is being written, and all records will be transcribed to Record Cards. Record cards were digitally photographed as a back-up. All records and descriptions will be submitted to the county bird recorder for inclusion in the Pembrokeshire Bird Report.

1.5 Herptiles

Non-feature herptiles

Regular checks were made of corrugated sheeting around the farm. Slow worms present. In 2012 a more robust method of surveying reptiles with established refugia and repeatable methodology. This was developed by Richard Kipling (Field Assistant) and Ali Quinney (Long Term Volunteer). The results of which are in Appendix XX and have been submitted to the County/National recorder. This should continue.

1.6 Invertebrates

Features

Key invertebrate habitat	2008	2009	2010	2011	2012	Within limits
Clifftop thrif						
- Extent ha						
- % alive	89.4%	96%	90%	96%	N/A	YES
Saxicolous lichens (as Section 1.2)						Survey results currently being analysed
Nest/burrow/carion/dung						
- Rabbit pop, study plots June no.s/ha	9.56	35.22	41	43.50	41.67	NO
- Seabirds (as section 1.4)						
Central fields						
- Size (ha						
- % bare earth	0.06	0.33	0.32	N/A	N/A	NO
- % bracken	1.69	5.37	4.65	N/A	N/A	YES
Seasonal ponds						
- Size						Not recorded
- Water level						Not recorded
Permanent ponds						
- Size						
- Water level						
Important species recorded once every 5 years (<i>G. bilineatus</i> , <i>G. flavipes</i> , <i>M. wetterhali</i> , <i>M. karavajevi</i> , <i>O. ventralisi</i> , <i>O. scabricula</i>)						Not recorded (but no survey attempt made in last five years)

Factors (operational limits) for birds, combined. <i>Refer to Management Plan for details</i>	Notes
Public access	Wardening throughout season, but see Section 2
Introduced mammalian predators	No evidence of introductions
Pollution/rubbish dumping	Minimal amount of litter from day visitors. No incidences of pollution on the island or its shore recorded.

1.7 Non biological features

Feature	Objectives met?
Geology – objective to be set	-
Archaeology – no damage from management	Yes
Research – will not compromise features	Yes
Landscape – comprising biological features of coastal grassland, coastal heathland, maritime cliff veg, Sea Campion, Bluebells and ponds.	Yes, refer to Section 1.1 and 1.2.
Public use – see Section 2	Yes, refer to Section 2.
Education	Yes, refer to Section 2

Seawater temperature was measured at the landing and submitted to CEFAS.

2: RECORDING II: VISITORS, HUMAN IMPACT

2.1 Day visitors.

Table 3 Paying adults visiting Skomer 1993-2012

	Mar/Ap	May	June	July	August	Sept	Oct	TOTAL
1993	733	1748	1565	1396	1311	409	35	7197
1994	260	2333	2002	2132	1458	335	167	8687
1995	896	1897	1867	1698	2058	475	162	9053
1996	499	1136	1753	1674	1439	424	47	6972
1997	828	2475	1177	2191	1380	376	187	8614
1998	327	2402	1682	1619	1706	374	86	8196
1999	744	1955	2375	2588	1675	577	167	10,081
2000	1152	2257	2123	2265	1903	373	65	10,138
2001	632	2614	2177	1573	1303	208	93	8600
2002	729	1567	2916	2219	1237	560	58	9286
2003	1110	2742	2784	2111	1418	477	36	10678
2004	824	2796	3202	2228	1086	357	19	10512
2005	872	2826	3537	2279	1512	452	70	11548
2006	1172	2234	4346	2495	1062	358	79	11746
2007	1403	2449	3445	2155	988	448	179	11067
2008	857	3358	3019	2678	938	325	64	11239
2009	1353	3342	3560	2234	1109	321	122	12041
2010	1290	2592	4065	2616	774	289	77	11703
2011	1853	2646	4051	2762	1008	280	0	12600
2012	716	2769	2894	1668	616	249	77	8989

The total number of paying adults, including concessions, students, FSC and those on National Park walks was 11703 (Table 3), the third highest total ever.

The *Dale Princess* was scheduled to run from 1st April to 31 October. Bad weather caused the boat to cancel sailings on 64 days in 2011 and 80 days in 2012.

	Apr.	May	June	July	August	Sept.	Oct.	Total
2006	4	9	2	3	4	9	18	41
2007	10	7	4	8	9	9	5	52
2008	3	5	6	3	9	9	23	58
2009	9	3	6	7	7	8	13	48
2010	9	7	6	6	9	11	16	64
2011	6	6	3	5	0	17	27	64
2012	14	2	7	3	8	18	28	80

The island was closed for seabird counts 18-20 May, avoiding the busy bank holiday week.

The total number of visitors landing on the island in 2011 was 16859 – the highest on record in 2012 it was 12118 – the lowest figure since 2001. (Figure 10).

27% (2011) and 21%(2012) (24% in 2010) of the paying adults were retired, consistent with the levelling-out of this category over the past few years, following a general increase prior to that.

Educational groups (Field Studies Council, college and school groups) comprised 5.1% (2011) and 5.3% (2012) of the visitor total (6% in 2010, 4.8% in 2009), see figure 9 and table 4.

80 people landed from private boats in 2011 and 66 in 2012.

Table 4 Visitor number, by category, 2005-2012.

	Adults	Retired	Member	Student	Child	Educational groups*	Complimentary	Overnight	Total
2005	7829	2702		603	2039	1197	310	-	14500
2006	8267	2779	186	514	1735	901	184	-	14481
2007	7681	2518	204	438	1595	768	258	674	13884
2008	7375	2769	254	511	1563	553	440	718	14097
2009	8241	2763	233	530	1624	754	482	707	15139
2010	7553	2861	254	382	1410	923	245	717	14325
2011	8727	3370	501	503	1930	876	247	705	16859
2012	6716	1833	561	440	1038	650	200	680	12118

*This includes all individuals on educational groups including FSC Adults, Students and School Children.

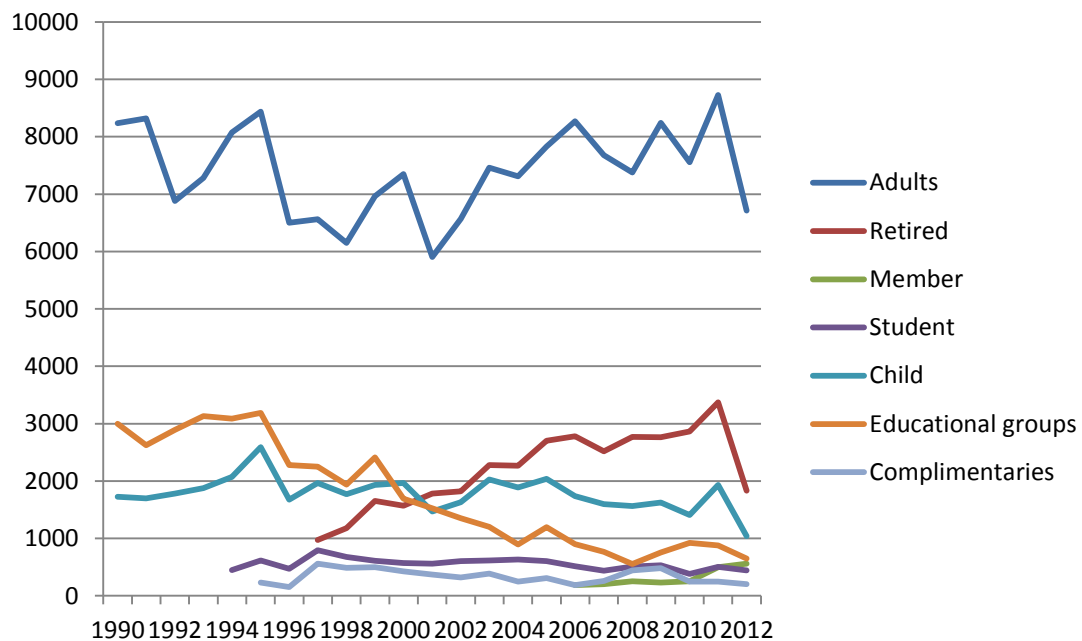


Figure 9 Number of visitors in each category on Skomer 1990 – 2012

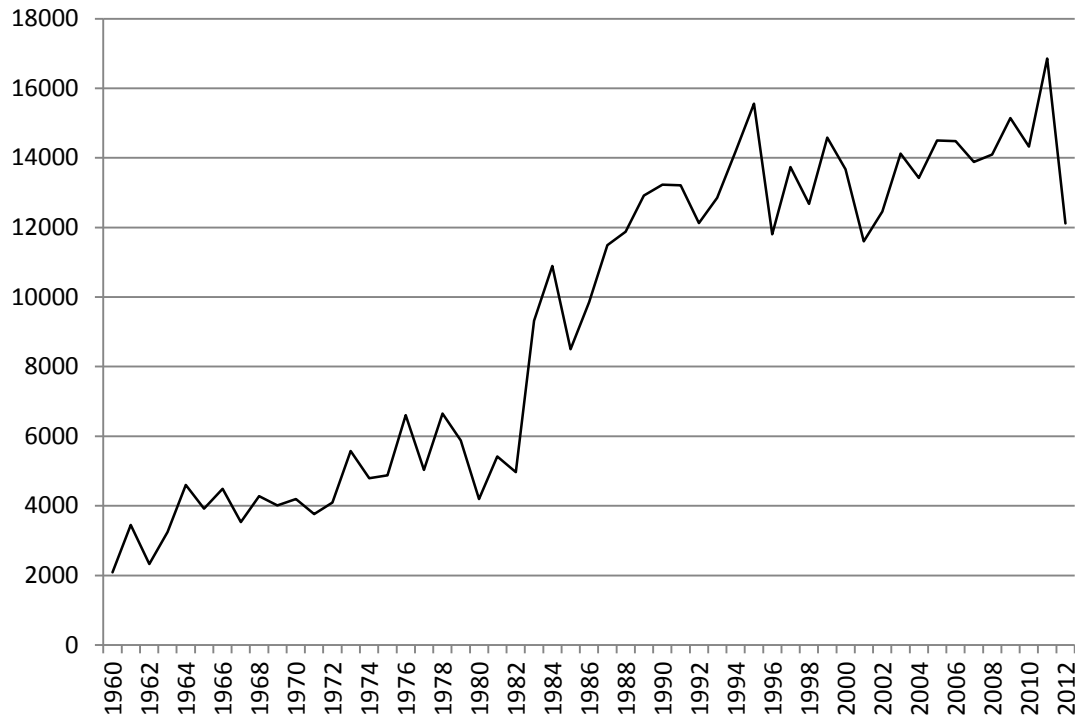


Figure 10 Total visitor numbers on Skomer 1960-2012

2.2 Human impact/disturbance

Visitors

The island was regularly wardened and patrolled – at peak times all volunteers and staff were on duty. All visitors received an introductory talk, emphasising ‘dos and don’ts’ with regards to safety and disturbance of wildlife.

Seaborne Disturbance

All incidents of disturbance to wildlife by boats around the island were recorded on CCW forms and submitted to MNR and pembs marine code co-ordinator.

An ongoing concerns is cruise ships are increasing in number. Cruise ships do not land on the island but often deploy zodiacs to admire the wildlife. Most times the operators are unaware of the byelaws, etc. With more liason with Milford Haven Port Authority and agents for the boats this information is just about getting through. But constant vigilance is recommended for the future.

Pollution

No major pollution incidents were reported in 2011/2012

3. RESERVE ADMINISTRATION

3.1 Finance

Landing fees/overnight accommodation fees

Landing fees in 2011 and 2012 were (£10 adults, £9 retired, £5 student and member, under-16's remained free).

For the 2010 season a seasonal pricing system for overnight accommodation had been introduced. This is to encourage more bookings in our 'quiet' season and to make family visits more affordable in school holidays.

Gift Aid

At the time of writing the total gift aid received has not been calculated.

Sales

The total amount taken at the sales point in 2011 was £7431 and in 2012 was £5847. The amount spent per paying adult (incl VAT) is shown below;

Increased income has been generated by utilising the "Farm Shop" (small stand selling water/guides at the farm). This could be massively developed in the future.

2003	49p
2004	57p
2005	54p
2006	59p
2007	86p
2008	71p
2009	85p
2010	64p
2011	85p
2012	87p

Other income/donations

Binocular hire continued in 2011 and 2012 and figures are included in the above

Other donations included:

3.2 Staff

Sarah Harris was Assistant Warden for Skomer 1st March to 1st December for 2011 and 2012.

Richard Kipling was the Seabird Field Assistant from 13th April to 14th August for 2011 and 2012

Sue Williams was employed as Visitor Services Officer from Mid April to mid August in 2011 and

Dave Boyle returned for a seventh/eighth year as EGI Field Assistant, April – August, and carried out the CCW seal-pupping contract August to the end of November

Long Term volunteers:

2011:

James Roden, Maria Gill.

2012:

Aaron Davies, Jasper Holmes, Ali Quinney

3.3 Volunteers

Up to six Voluntary Assistant Wardens were booked in weekly from late March to October.

In total c.140 different people volunteered.

3.4 Training

Staff and volunteers fully trained in all procedures.

3.5 Health and Safety

All visitors to the island were given a health and safety briefing included in the introductory talk.

All accidents and near misses were entered onto accident forms kept in the Warden's Office and reported to WTSWW using new online system.

Start of season checks of safety kit on boat – lifejackets, flares etc....

UV lamps/Filters in water sterilisation systems replaced.

First aid kits, emergency bag and eye wash stations checked and re-stocked at start of season.

All GAS SAFE tests completed

Annual service of fire extinguishers.

Annual maintenance on fire alarm and emergency lighting system.

Fire Service returned to complete their checks on the buildings. A few recommendations are still outstanding.

Pembrokeshire County Council carried out annual water quality testing (2011).

Recommendations made through a full risk assessment.

3.6 Islands Conservation Advisory Committee

There were four meeting of the IAC in 2011 and 2012

3.7 Trust new member recruitment

3.8 Friends of Skokholm and Skomer

Presentations to be given at the annual reunion in February 2012 and 2013 by Chris Taylor on the Skomer season 2011 and 2012.

Close liaison has been maintained between Wardens and members of the Friends.

3.9 Wildlife Adoption Schemes

Reports completed for the Seal and Puffin adoptions.

4. RESERVE MANAGEMENT

4.1 Education and Interpretation

Talks given to Aberystwyth university (2011) and Cardiff University/WTSWW local group (2012).

Field Courses run by Oxford, Cardiff and Aberystwyth.

New signs were designed and installed by regular volunteer David Gadd.

4.2 Media and publicity

March

April

2012 – Various newspaper/online articles about Skomer Pre-history/Royal Commission for Ancient Scheduled Monuments of Wales.

2012 – BBC Four programme about History of Skomer

May

2012 – The One Show – short piece about Puffins populations on Skomer

2012 – Daily telegraph – Special feature on Island by Sam Llewelyn.

June

2011 – Photography magazine

2011 – Springwatch Live from the island for four nights of the programme.

2011 – Ray Mears – Wild Britain TV Series included a Skomer half hour special

2012 – Radio 4: Saving Species – Article about seabird colonies and Manx Shearwater at night.

2012 – Radio 4: Living World. Interview about Storm Petrels with Chris Sperring.

July

August

2012 – Celebration footage of Tim Birkheads 40th year on Skomer on BBC and ITV. Also in Independent, Gaurdian and various other papers.

September

2011 – BBC Radio 4 – Open Country. Richard Uxbridge explores Pembrokeshire coast.

November

Other –

Blog continues

You Tube pages added too

Skomer Island Revised edition published 2011.

4.3 Liaison

The Marine Nature Reserve

A close relationship between the MNR and NNR continued, with the MNR office continuing to receive some mail and provide support with launching/retrieving boat at start and end of season and maintaining running mooring for island boat.

Daily boat activity was logged, and MNR boat activity and code contravention forms submitted at the end of the season.

The Countryside Council for Wales

Good relations have continued with regional and national staff.

Other Islands

Lift to Middleholm given in inflatable to Steve Sutcliffe *et al.* in June for Shag ringing. Regular contact with Ramsey Warden and start and end of season updates with Lundy Warden.

Dale Sailing Co

Good relations were maintained with the Dale Sailing Co and staff, particularly the crews of the *Dale Princess*. Help with seabird spectacular guiding was given when other guides were not available.

Pembs Coast National Park

Good relations were maintained with Jane Hodges and PCNP guided walk leaders. Some issues over guided walks having to cue to come off the island.

H.M. Coastguard

The Warden continued the role of Auxiliary Coastguard, and close relations were maintained with the Operations Centre at Milford Haven.

4.4 Habitat/species management

Central Fields

Bracken was 'bashed' by volunteers and staff in all of Shearing Hays. In 2011 and all but Gorse Hill in 2012. Bracken was pulled from the Rabbit exclosures at North Valley rise and Bull Hole (2011). Bracken was also controlled in north haven, after the puffins had bred.

Research Paths improved to avoid further damage.

Species management

4.5 Infrastructure 2011/2012

	North Haven	Farm
External infrastructure	Loss of roofing sheets to North face of tower (2012) and NW corner (2011). Loss of Apex sheets (2012).	2011 – end of season large gaps in north facing apex of a/w wing filled with expanding foam and selective silicone sealant to reduce water ingress. 2012 – Fasia boarding on west face of a/w wing extended downwards to reduce water ingress. Hopefully less damp in 2013 season
Broadband/Webcam infrastructure	2011/2012 – Continued issues about connectivity caused headache to wardens/Lockley lodge with poor image quality. Continued loss of broadband signal. Decision taken to replace microwave dishes which (along with a full service of cameras, etc.) resulted in massive improvements and increased in reliability. 2012 season ran well.	
Water supply	2011 – water supply was always very low	2011 – water supply was low in august with the well running almost dry. Water conservation measures meant the season was ok. Well ran fully dry in October (not many people s manageable) 2012 – water water everywhere. New storage tank at the farm rebuilt and currently (March 2013) is holding water.
Plumbing	Water treatment in North Haven intermittent. Water Quality ok so no major issues. Need sorting in 2013.	No major issues in 2011/12 (header tank performing well with no air locks)
Gas boilers	Good	2011/2012 overnight accommodation boiler working 75% of time. Suggest maybe a replacement for 2013. Continued trouble

		finding/fixing doesn't seem to work. Never really got to bottom of the problem. (Tried to increase gas pressure with more bottles on regulator, replaced circuit board twice, cleaned nozzles, etc.)
Gas Fridges	Good	2012 - North Haven (large) warden fridge replaced smaller a/warden fridge due to higher demand at farm.
Gas cookers	Good	Replace research farm cooker
Gas	Good	Good
Solar hot water	2012 pipes to panels rusted and awaiting repair.	2012 – pump failed in North Haven, Farm pump used as a replacement.
Photo-voltaic	Good	Good
Electrical control boxes/batteries	Good -	Good – 2012 contractor re-wired AC/DC inverter to allow for easier and safer changeover from charging to normal use. Safety barrier installed around batteries to avoid chance of electrocution by shorting the terminals/batteries.
Fire Alarm	New Fire censor in tractor shed.	Good
Internal fireplaces		2012 – New stove installed in Assistant Warden Accommodation to replace gas stove (used a lot of gas)

4.6 Machinery and equipment

Tractor	NO Major issues 2011/2012. Serviced annually
Boat	Fine all season, New auxillary engine working well. 2012 reliabilty problems with main engine due to water entering the Carbs. Advise not to leave fuel tanks on the boat overnight. Boat stored in Neyland each winter.
Boat Trailer	No problems
Boat Mooring	Replaced in early 2012 following big storms over 2011 winter
Generators	No problems, used regularly at both the farm and north haven. Only small issues, both generators service. Fuel line on North Haven generator replaced after small leak.
Small machines (brushcutter, etc)	No problems

5. ACKNOWLEDGEMENTS

Thanks to all island staff and volunteers, and mainland Trust and CCW staff, in particular the MNR team. Special thanks to Peter for his mainland support from Lockley Lodge with the tickets. Wendy Barnes-Jones for her administrative support. Thanks too to Dales Sailing and boat crew – John, Kenny, Karl, Peter P, Peter D, Malcolm, and various helpers.

Thanks to all the people who provided data and information for this report, including Jerry Gillham (Skokholm Warden), Steve Sutcliffe (Pembs ringers), Jessica Meade, Tom Finch and Tim Birkhead (Sheffield Uni), Tim Guildford (Oxford Uni), Chris Perrins and Dave Boyle (EGI), Kate Lock (SMNR), Jane Hodges (PCNP), Bob Haycock (NT), Tim Healing, Roddy Mavor (JNCC), Nicola Cornock and Wendy Barnes-Jones (WTSWW)

Finally a massive thank you to my fellow Island staff and resident researchers. Without whose support and company the 2012 season would not have been so much fun.

7.

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APPENDIX 1 Breeding and rare birds on Skomer Island in 2011 and 2012

	Breeding birds 2012	Breeding birds 2011
FULMAR	453 AOS	474 AOS
MANX SHEARWATER	No census in 2012	316,070 (SE \pm 14,688) AOS
STORM PETREL	No census	No census
CORMORANT	4 AON	0 AON
SHAG	5 AON	2 AON
SHELDUCK	2 pairs, unsuccessful	
MALLARD	7 pairs.	
SHOVELER	2 pairs.	
TUFTED DUCK	0	0
TEAL	0	0
MOORHEN	12 pairs.	
CHOUGH	4 to 5 pairs.	4 territories
CANADA GOOSE	18 pairs.	18 pairs 34 young
RAVEN	4 pairs.	3 Pairs fledged 6 young
BUZZARD	3 nests found, up to 6 territories.	4 nests, 4 fledged
PEREGRINE	3 pairs.	3 territories, two fledged.
PHEASANT	Present and bred. Peak count of 15 adults in breeding season.	
OYSTERCATCHER	74 pairs.	38 pairs
CURLEW	4 pairs.	5 pairs (productivity unknown)
LBB GULL	8643 AON	10238 AON
HERRING GULL	401 AON	420 AON
GBB GULL	96 AON	80 AON
KITTIWAKE	1594 AON	1837 AON
GUILLEMOT	22508 IND	21866 IND
RAZORBILL	4971 IND	5118 IND
PUFFIN	11497 IND	No census
WOODPIGEON	6 territories.	
LITTLE OWL	1 pair fledged 3 young, possible second pair,	1 pair, 3 fledged

	outcome unknown.	
SHORT-EARED OWL	2 pairs, unsuccessful.	2 pairs 3 chicks per pair (one had 6)
SKYLARK	8 pairs.	13 territories
SWALLOW	7 pairs. 5 pairs nesting at the farm.	
MEADOW PIPIT	67 pairs.	c.45 territories
ROCK PIPIT	27 pairs mapped but thought to be only half actual population size.	Stable
PIED WAGTAIL	5 pairs.	8 pairs
WREN	85 territories.	29 territories
DUNNOCK	21 territories.	12
WHEATEAR	18 pairs.	5 pairs
BLACKBIRD	6 territories.	
STONECHAT	0	
SEDGE WARBLER	44 territories.	26 territories
WHITETHROAT	20 territories.	10 territories
CHIFFCHAFF	2 pairs.	
JACKDAW	Unknown, tailor made survey method required for this species.	
CARRION CROW	8 pairs.	
MAGPIE	13 pairs.	
LINNET	No proof of breeding.	No proof of breeding.
REED BUNTING	3 pairs.	5 pairs