

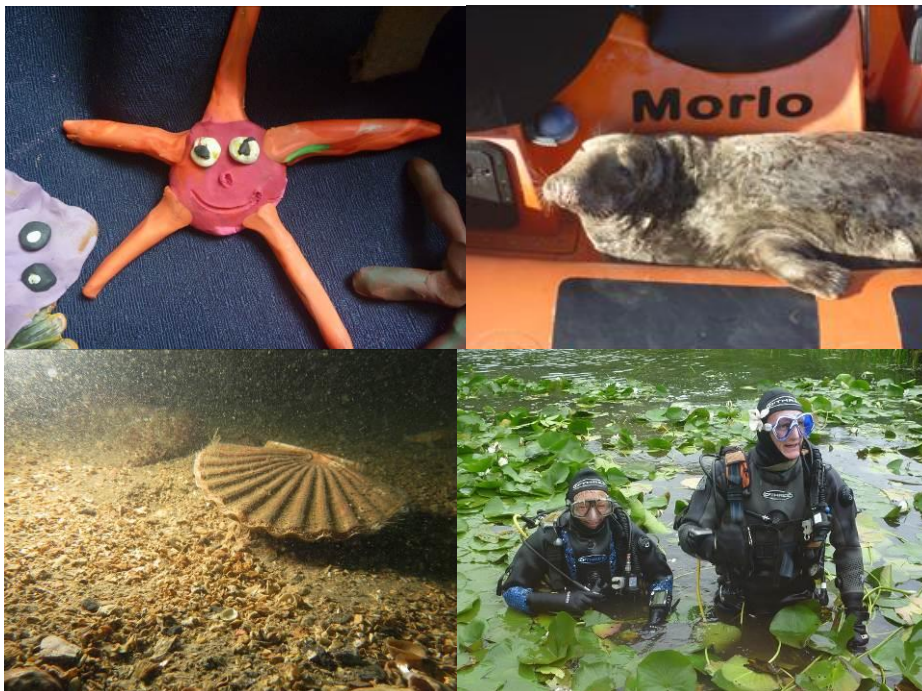


**Cyfoeth  
Naturiol  
Cymru  
Natural  
Resources  
Wales**

# Skomer Marine Conservation Zone Annual Report 2016

Phil Newman, Kate Lock, Mark Burton, Jen Jones

NRW Evidence Report 198



## About Natural Resources Wales

Natural Resources Wales is the organisation responsible for the work carried out by the three former organisations, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales. It is also responsible for some functions previously undertaken by Welsh Government.

Our purpose is to ensure that the natural resources of Wales are sustainably maintained, used and enhanced, now and in the future.

We work for the communities of Wales to protect people and their homes as much as possible from environmental incidents like flooding and pollution. We provide opportunities for people to learn, use and benefit from Wales' natural resources.

We work to support Wales' economy by enabling the sustainable use of natural resources to support jobs and enterprise. We help businesses and developers to understand and consider environmental limits when they make important decisions.

We work to maintain and improve the quality of the environment for everyone and we work towards making the environment and our natural resources more resilient to climate change and other pressures.

## Evidence at Natural Resources Wales

Natural Resources Wales is an evidence based organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;
- Having a well resourced proactive programme of evidence work;
- Continuing to review and add to our evidence to ensure it is fit for the challenges facing us; and
- Communicating our evidence in an open and transparent way.

This Evidence Report series serves as a record of work carried out or commissioned by Natural Resources Wales. It also helps us to share and promote use of our evidence by others and develop future collaborations. However, the views and recommendations presented in this report are not necessarily those of NRW and should, therefore, not be attributed to NRW.

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## 1. Crynodeb Gweithredol

Dyma Adroddiad Blynyddol Parth Cadwraeth Morol Sgomer (GNFS) i'w Phwyllgor Ymgynghorol. Mae'r Pwyllgor Ymgynghorol yn cynnwys sefydliadau ac unigolion sydd â diddordeb yn yr ardal y mae GNFS yn ymdrin â hi.

Fe fydd yr adroddiad yn crynhoi pob agwedd ar waith GNFS, gan gynnwys dadansoddiad o amser gwaith maes y staff, gwaith stad, y defnydd a wneir o'r warchodfa wrth hamddena, digwyddiadau, gwaith cydgysylltu, wardenio, patrolio, monitro a gwaith ymchwil. Hefyd, mae canlyniadau rhai prosiectau monitro a rhai o grynodedau adroddiadau sydd wedi eu cyhoeddi, wedi eu cynnwys yma.



## 2. Executive Summary

This is the Skomer Marine Conservation Zone Annual Report to its Advisory Committee. The Advisory Committee is made up of organisations and individuals with an interest in the area covered by the MCZ.

The report summarises all aspects of the work of the MCZ including a breakdown of staff fieldwork, estate work, recreational use of the reserve, incidents, liaison, wardening, patrol, monitoring and research. Also included are results of some monitoring projects and summaries of published reports.

### 3. Introduction and Foreword

Our work this year has been a mixture of the routine and the ridiculous:

Routine monitoring has progressed well this year although combinations of poor weather and lack of good spring tides in August meant that one of our intertidal sites was missed out.

We took advantage of better than expected weather later in the year and some extra funding to carry out our 4-yearly sediment sampling a year early. At the same time we were able to help our NRW colleagues in the Specialist Monitoring Team with one of their SAC projects by taking grab samples from stations across St Bride's Bay. Because of our proximity to the site all 80 St Bride's stations and our own 12 were completed in less than 7 days. The biodiversity and physical make-up of the samples will now be analysed by specialist contractors.



Two weekends were dedicated to the scallop survey this year with over 30 volunteer divers taking part and more than 2500 scallops collected. Early indications are that the Marine Conservation Zone (MCZ) scallop population increase is beginning to level off.

Less encouraging, in fact downright alarming, are the results of the sea fan monitoring, which revealed that we lost, or confirmed as lost, a record number in



2016, some of them during the course of the relatively calm summer.

These losses include nearly a third of all the sea fans at one site alone and means that sea fans are disappearing from our monitoring sites about twice as fast as new ones are growing. No specific cause is evident for the disappearances, but what remains of the sea fans show signs of having been knocked or broken off.



On the rather more positive (if sometimes farcical) side MCZ staff were involved in helping our reserve management colleagues to sample the rare stonewort growing in Bosherton Lily ponds, and the recovery of a distinctly non-native lobster from the MCZ! MCZ staff also had to deal with the eviction of a particularly stubborn “invader” from our boat.

2016 has been a year for making new friends and welcoming old ones, with collaborative work continuing with workers from Swansea University on seals and on eelgrass. We have hosted a variety of people from inside and outside NRW and a number have helped us with our work. Staff from the Field Studies Centre at Dale Fort helped supervise the measuring and ageing of scallops and Skomer Island volunteers helped with grab sampling and intertidal surveys.



Contact with the outside world has also been improved with a Skomer MCZ Facebook page set up and the posting of reports and other documents on NRW's website.



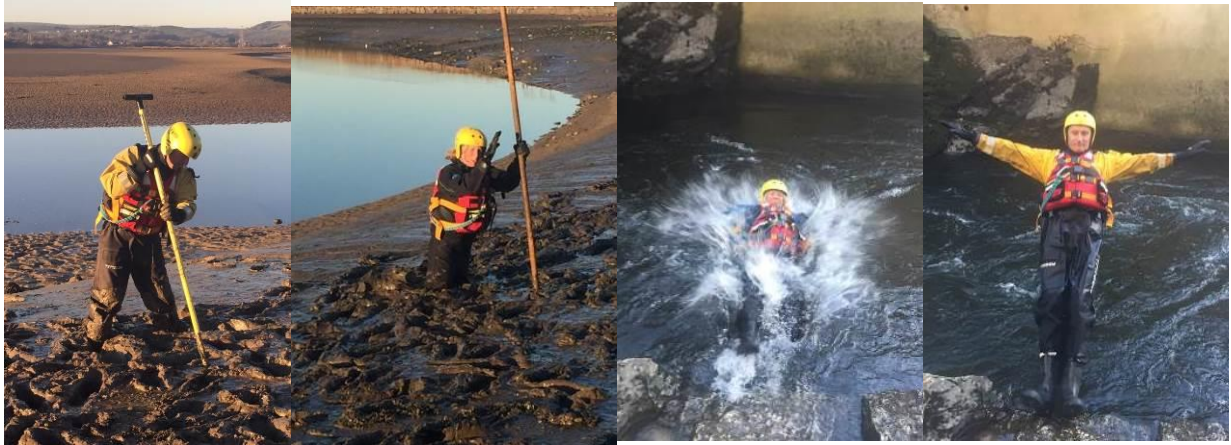
Skomer MCZ Marine Day provided a welcome distraction for holidaying children and parents in 2016, introducing both to some of the marine wildlife secrets of Martins Haven.



## 4. Staff

### 4.1. Staffing

The staff complement at Skomer MCZ has remained the same: Phil Newman, Kate Lock, Mark Burton and Jen Jones make up the NRW team based at Martins Haven. This despite NRW's efforts to "downsize" us through thinly-veiled (so-called safety training) attempts at drowning or burying in mud.



Fortunately Phil's new-found levitation skills saved the day.

### 4.2. Volunteers

2016 was notable for the number of NRW colleagues who came out with us for a variety of fieldwork: Our Marine Team Leader, Charlotte Gjerlov, accompanied us during some of the scallop surveys we conducted just outside the boundary of the MCZ and Lloyd Herbert, who



normally works at the NRW analytical laboratory in Llanelli helped with grab sampling. Sarah Jones also came out on weekend patrol with us.



We also had great support from Skomer Island: Staff/volunteers, Alice Brooke and Cerren Richards, keen to "see how the other half live", helping out with intertidal and other monitoring and with grab sampling.

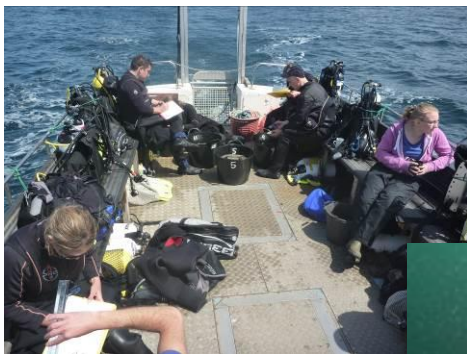


Skomer MCZ was able to host another placement student in 2016 in conjunction with reserve management colleagues: Katie Jones joined us for weekend patrol work.

Weekend patrol work also attracted a number of other volunteers, including our former colleague Rob Gibbs and Jack Davies, from Aberystwyth University.

Volunteer divers helped with core monitoring projects again in 2016, particularly when we were short of numbers needed to make up a legal diving team. These volunteers included Blaise Bullimore, Rob Spray and John Archer Thomson.

The scallop survey of 2016 would not have been possible without our volunteer diver teams, who worked particularly hard, collecting and measuring scallops (see Chapter 7) and who were helped by Stephanie Hogg and Jake Taylor-Bruce from Dale Fort.



The old system of paying honoraria has now been replaced by the Cyfle system based on actual expenses. This has meant that we have had to “retire” some of our Honorary Wardens who helped maintain a watching brief over the MCZ of our behalf. Those who served in 2016 were:

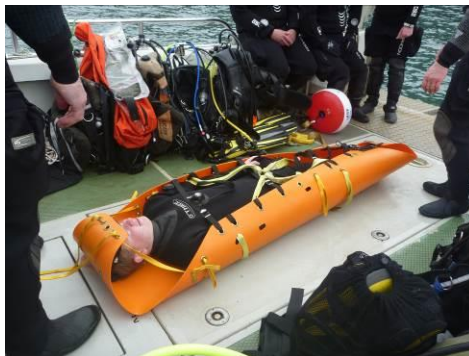
- Sue Burton;
- Dr Robin Crump;
- Brian Dilly, SOAS Charter boats;
- Carl Wonnacot, *Dale Princess*;
- Jane Hodges, MBE;
- Ivor Johnson, Old Mill Diving Services;
- Bruce Jones, West Wales Dive School.



Special mention and thanks should go to Ken Gainfort, skipper of the *Dale Princess*, who retired in 2016. His support and vigilance over the years have been invaluable and he will be very much missed.

### 4.3. Training

Skomer MCZ held a dive safety refresher training event in April 2016. The day involved diving emergency scenarios and first aid refresher training overseen by instructors from West Wales Dive Company and provided an opportunity for NRW staff and volunteers to use and remain familiar with safety procedures and equipment aboard *Skalmey*.



All MCZ staff attended water safety training, including self-rescue techniques in fast-flowing water and from mud.



Phil also attended health and safety risk management and incident investigation training and completed a first aid refresher course.

### 4.4. Health and Safety

MCZ staff continue to maintain health and safety documentation linked to diving and boat operations as well as more routine office-based safety elements.

Mark qualified as the official Martins Haven “Unused outlet flushing responsible person” and was “thrilled to take on this new level of responsibility”, adding that he had “been looking for a way to further my career for



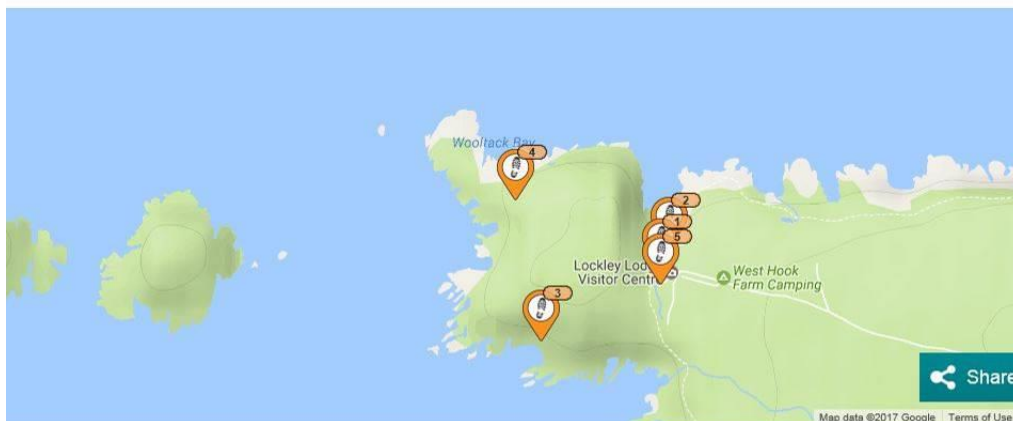
some time now”. It goes without saying that we are all very happy for him.



One near-miss incident was recorded in 2016 when *Skalmey* got a rope caught in the jet, causing the engine to stall. MCZ staff on board were able to make the vessel safe and, with the help of Skomer Island staff and the use of *Morlo*, get *Skalmey* back to Martins Haven, where the rope was removed.

To improve safety during seal work a personal satellite tracking device has been purchased allowing staff in the office to locate and receive emergency calls from staff working along the south Marloes peninsula cliffs, where mobile phone reception is unreliable. Sometimes having Big Brother watching can be a good thing.

Getting Started My Devices My Locations Share Settings & Billing



#### 4.5. Diving operations

Diving operations at Skomer MCZ continue to operate under the Scientific and Archaeological Diving Agreed Code of Practice, with staff assuming the legal responsibilities associated with the role of diving supervisor and Phil acting as NRW's Diving Project Manager.

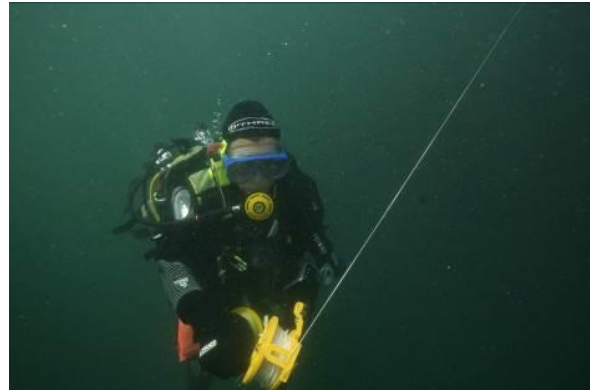


Table 4.2 Summary of MCZ Diving Activity 2016

	MCZ STAFF	CONTRACT & VOLUNTEER DIVERS	TOTAL
Dives	188	31	219
Dive time (min)	6205	1140	7345
Dive time (hrs)	103.42	19.00	122.42
Average dive time (mins)	33	37	33.54
Diving days			41

Figure 4.1 Summary of MCZ Diving Activity 2016

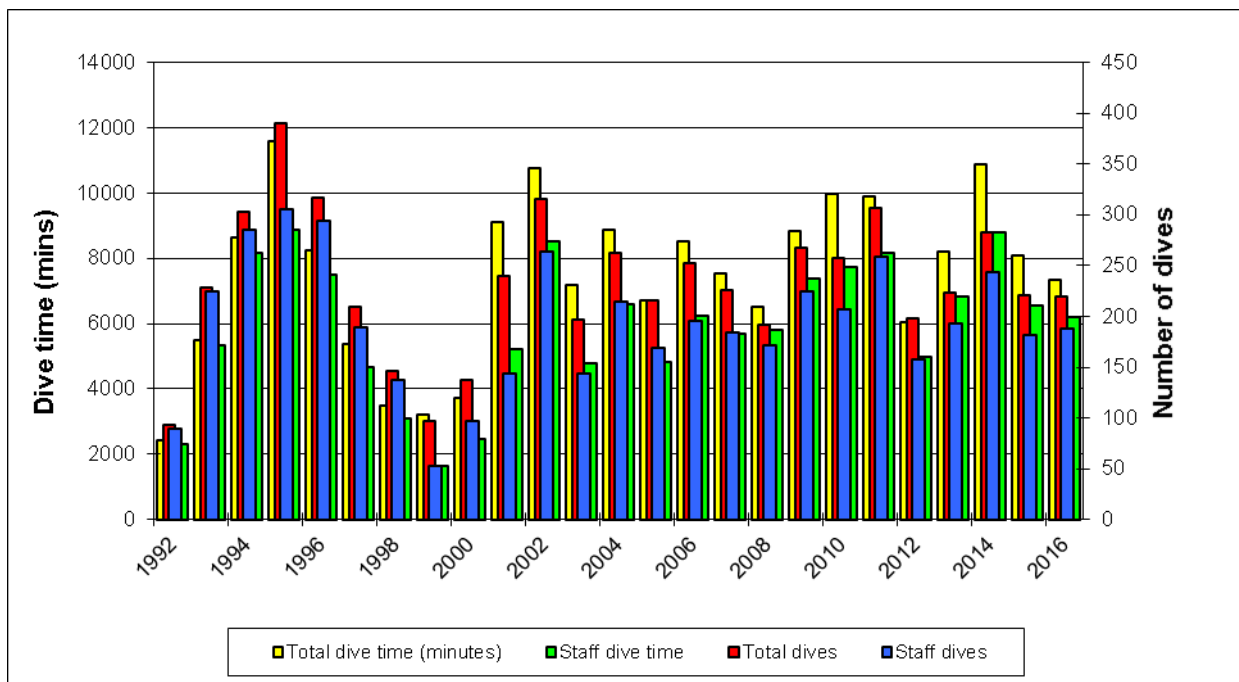
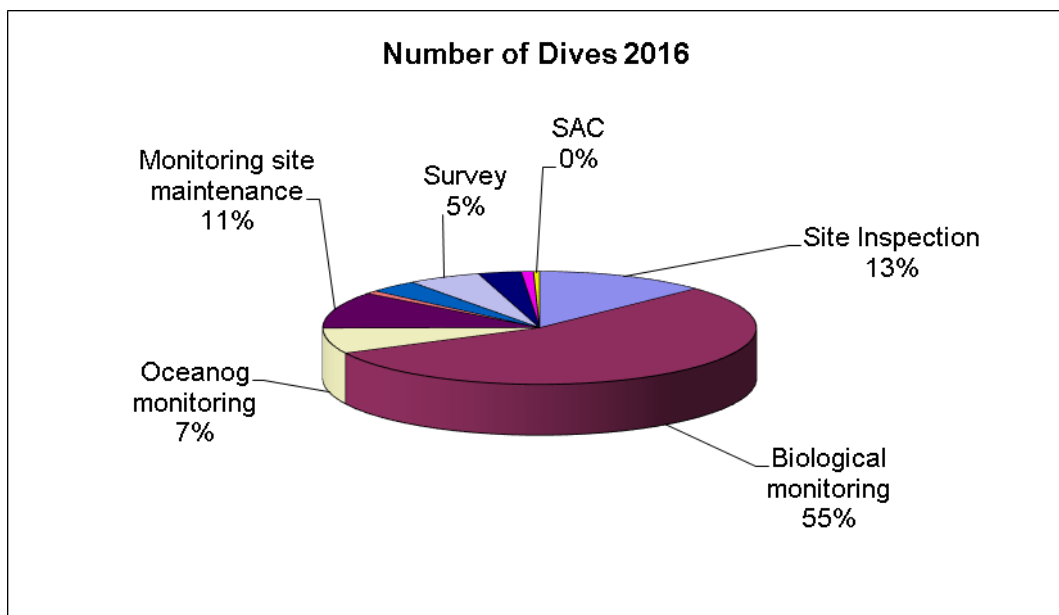
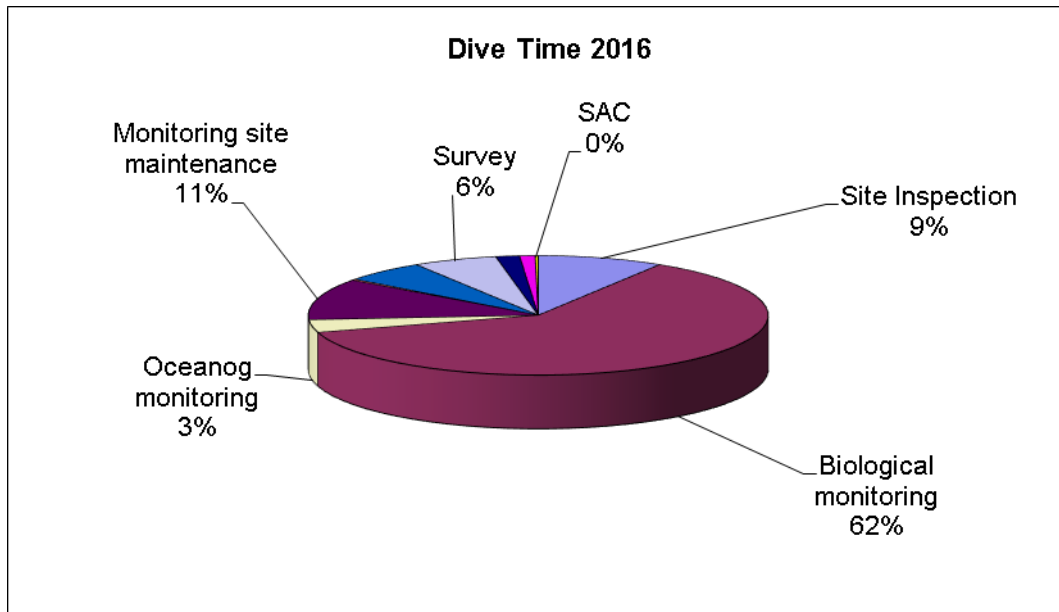




Figure 4.2 Skomer MCZ Diving Operations 2016



## 5. Estate

### 5.1. Buildings

Following National Trust's decision not to renew the lease on the storage barn in order to facilitate development of the Runwayskiln site, MCZ staff have been carrying out a search for a new storage facility for boats, trailers and non-perishable items of equipment. A new building has been found locally and it is hoped to complete the move there in early 2017.

The MCZ office and exhibition are maintained by contractors and all waste handling, use of consumables and energy are monitored in accordance with ISO14001. The next environmental audit is in 2017.

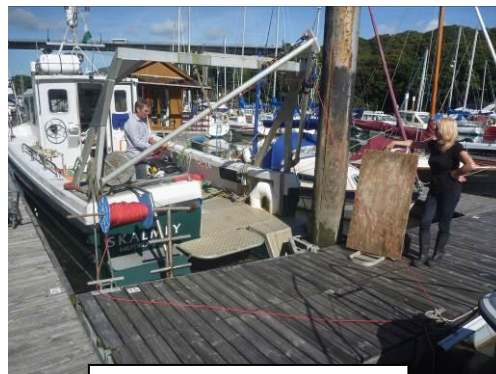
### 5.2. Boats

*Skalmey* spent 69 days at sea in 2016 and logged 237 engine hours.

*Skalmey* was used mainly as the MCZ dive support vessel, but also carried out grab sampling work inside and outside the MCZ (see Sections 9.1.15 and 9.4).



Refuelling at Martins Haven



Loading winch gear

The MCZ rigid hull inflatable *Morlo* spent 34 days at sea and logged 105 engine hours in 2016.

*Morlo* was mainly used for intertidal monitoring, seal work and weekend patrols.

MCZ staff were able to help out our Water Framework Directive sampling team colleagues when a fault developed with their survey vessel *SalarVie* and a replacement could not be sourced in time to complete their survey in Milford Haven.

Due to its proximity the Skomer MCZ team were able to loan *Morlo* at very short notice and prevent the survey being delayed or even cancelled.



Post seal visit cleaning!

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Days at sea</b>																			
Skalmey	9	23	42	48	73	77	52	48	58	72	58	61	69	99	95	65	70	73	69
SkalmeyII/Morlo	71	39	38	31	37	32	40	43	40	38	36	38	48	36	35	30	43	32	34
Total	<b>80</b>	<b>62</b>	<b>80</b>	<b>79</b>	<b>110</b>	<b>109</b>	<b>92</b>	<b>91</b>	<b>98</b>	<b>110</b>	<b>94</b>	<b>99</b>	<b>117</b>	<b>135</b>	<b>130</b>	<b>95</b>	<b>113</b>	<b>105</b>	<b>103</b>
<b>MCZ Staff seatime (hrs)</b>																			
Skalmey	70	195	492.5	622	883	777	640	618	621	933	685	747	718	942	743	684	815	743	753
SkalmeyII/Morlo	514	219	254	226	277.4	279	461	405	331	339	278	278	295	313	234	188	288	188	219
Total	<b>584</b>	<b>414</b>	<b>746</b>	<b>847</b>	<b>1160</b>	<b>1056</b>	<b>1101</b>	<b>1023</b>	<b>952</b>	<b>1272</b>	<b>962</b>	<b>1025</b>	<b>1013</b>	<b>1255</b>	<b>977</b>	<b>872</b>	<b>1103</b>	<b>931</b>	<b>972</b>
<b>MCZ Staff days at sea</b>																			
Skalmey	14	42	96	129	225	205	154	158	165	202	170	189	183	279	253	178	211	193	198
SkalmeyII/Morlo	149	62	60	58	80	70	104	99	86	84	73	73	93	76	75	65	89	60	72
Total	<b>163</b>	<b>104</b>	<b>156</b>	<b>187</b>	<b>305</b>	<b>275</b>	<b>254</b>	<b>257</b>	<b>251</b>	<b>286</b>	<b>243</b>	<b>262</b>	<b>276</b>	<b>355</b>	<b>328</b>	<b>243</b>	<b>300</b>	<b>253</b>	<b>270</b>
<b>Other Staff seatime (hours)</b>																			
Skalmey	n/a	n/a	274	197	204	88	76.7	75.25	233	257	107	225	390.4	220	279	140	220	150	220
SkalmeyII/Morlo	n/a	n/a	106	89	89.7	69	107	88	142.5	77	113	77.5	157	51	50	39	100	89	118
Total			<b>379</b>	<b>286</b>	<b>293</b>	<b>157</b>	<b>184</b>	<b>163</b>	<b>376</b>	<b>334</b>	<b>220</b>	<b>303</b>	<b>547</b>	<b>271</b>	<b>329</b>	<b>179</b>	<b>320</b>	<b>239</b>	<b>338</b>
<b>Other Staff days at sea</b>																			
Skalmey	n/a	n/a	40	36	23	21	15	18	30	26	26	57	94	48	83	35	57	50	58
SkalmeyII/Morlo	n/a	n/a	17	19	22	15	21	17	22	12	29	18	35	11	14	9	24	28	36
Total			<b>57</b>	<b>55</b>	<b>45</b>	<b>36</b>	<b>36</b>	<b>35</b>	<b>52</b>	<b>38</b>	<b>55</b>	<b>75</b>	<b>129</b>	<b>59</b>	<b>97</b>	<b>44</b>	<b>81</b>	<b>78</b>	<b>94</b>
<b>Total Staff seatime (hrs)</b>																			
Skalmey	n/a	n/a	766	819	1087	865	717	693	854	1190	791	973	1109	1162	1022	825	1034	893	973

SkalmeyII/Morlo	n/a	n/a	360	315	367	348	568	493	473	416	392	355	452	313	284	227	388	277	337
<b>Total</b>			<b>1126</b>	<b>1134</b>	<b>1454</b>	<b>1213</b>	<b>1285</b>	<b>1186</b>	<b>1328</b>	<b>1606</b>	<b>1183</b>	<b>1328</b>	<b>1561</b>	<b>1475</b>	<b>1634</b>	<b>1051</b>	<b>1422</b>	<b>1170</b>	<b>1310</b>
<b>Total Staff days at sea</b>																			
Skalmey	n/a	n/a	213	242	248	226	169	176	195	228	196	246	277	327	336	213	268	243	256
Morlo	n/a	n/a	77	77	102	85	125	116	108	96	102	91	128	87	89	74	113	88	108
<b>Total</b>			<b>213</b>	<b>319</b>	<b>329</b>	<b>311</b>	<b>294</b>	<b>292</b>	<b>303</b>	<b>324</b>	<b>298</b>	<b>337</b>	<b>405</b>	<b>414</b>	<b>425</b>	<b>287</b>	<b>381</b>	<b>331</b>	<b>364</b>
<b>Engine hours</b>																			
Skalmey	27.5	83.47	188.03	181.1	245.3	284.54	171.07	150.16	169	244.38	168.62	224	241	322	266	222	249	284	237
SkalmeyII/Morlo	161	100.5	142	99	118	96	162.7	160	141.25	120.5	144.67	139	157	118	110	139	137	98	105
<b>Total</b>	<b>188.75</b>	<b>184</b>	<b>330</b>	<b>280.1</b>	<b>363.3</b>	<b>380.54</b>	<b>333.8</b>	<b>310.2</b>	<b>310.25</b>	<b>364.9</b>	<b>313.3</b>	<b>363</b>	<b>398</b>	<b>440</b>	<b>376</b>	<b>361</b>	<b>386</b>	<b>382</b>	<b>342</b>

MCZ Staff = Philip Newman, Kate Lock, Mark Burton, Jen Jones

Other Staff = NRW Staff and Volunteers

Staff days at sea = total days on which each member of staff went out in a boat.

Staff seatime = total of each member of staff's seatime.

Boat days at sea = number of times the boat left its moorings.

### 5.3. Equipment

#### 5.3.1. Safety, diving and protective equipment

All safety-critical, diving or protective equipment is serviced and maintained to regulatory or manufacturer's requirements. See Section 4.4 for developments in safety equipment.

#### 5.3.2. Optical, photographic and scientific

Photographic equipment continues to be serviced by contractor on an annual basis with routine maintenance carried out by MCZ staff.

Scientific equipment is serviced and calibrated according to manufacturer recommendations with minor maintenance (battery replacement, etc.) carried out by MCZ staff.



Of course I can fix it...

#### 5.4. Marine estate work

Strong and persistent northerly winds during the winter of 2015/16 gave all our moorings a thorough rattling, including the heavy ground chains that rarely move from one year to the next. This had the effect of shaking loose any rust disguising the true condition of the chain and shackles, which was discovered during pre-season checks in 2016.



As a result much of the ground tackle, especially of the visitor moorings was renewed.



The “no-anchoring” buoys came under the normal annual scrutiny of Trinity house as they are officially navigation buoys.



## 6. Management

### 6.1. Wardening and Patrol

Skomer MCZ staff carried out boat patrols on 22 Sundays and Bank Holiday weekend days between May and September 2016. During these patrols mapping of fishing effort (see Section 7.1) and sampling for water quality and plankton monitoring (see Sections 9.2 and 9.3) were carried out.

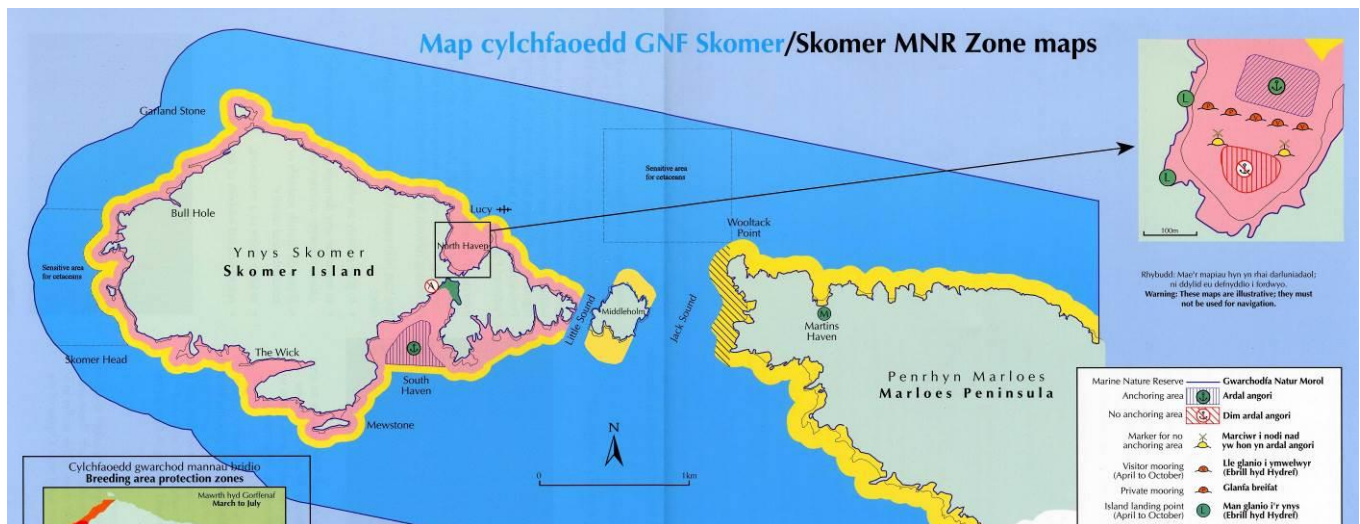
Only two Sundays were missed as staff were engaged in the scallop surveys, but staff were still able to make more limited observations of visiting recreational and commercial users from aboard the survey support vessels.

A high profile presence and watching brief was also maintained during other fieldwork within the MCZ.

Data for all observations of visitors and use of the MCZ are presented in Section 7.

### 6.2. Information

Development of the Skomer MCZ pages on the NRW website has meant that visitor information, including the zone map, byelaws and safety information are now available electronically. The zone map itself has been brought up to date on the website to reflect changes to the North Haven no-anchoring buoys and visitor moorings and to outline sensitive areas for cetaceans. MCZ staff have been working closely with Pembrokeshire Marine Code staff to ensure consistency between the Marine Code maps and MCZ zone map.



Existing copies of the old format waterproof zone map leaflet will continue to be issued to boating visitors until stocks are used up.

The Skomer MCZ booklet continues to be dispensed to visitors via the Martins Haven exhibition as it acts as a written supplement to the visual display.

### 6.3. Management Issues

#### 6.3.1. Dredging/beam trawling

In November 2016 MCZ staff were alerted to an incident of suspected illegal scallop fishing within the MCZ. Welsh Government Marine Enforcement staff were informed, but details were insufficient for an investigation.

#### 6.3.2. Potting

Commercial fishing vessels operating in the MCZ are listed in Section 7.1 and fishing effort records are presented in Figures 7.1 and 7.2.

As mentioned in the introduction 2016 has been the worst on record for losses of sea fans, especially at the Bull Hole site. Although no fishing gear was seen near the damaged fans at the time the losses were recorded, the nature of the damage and the lack of any recorded anchoring activity in the area (it is not an area in any case associated with anchoring due to strong currents), MCZ staff suspect potting as the most likely source of mechanical damage.

Ironically overall fishing effort within the MCZ during 2016 has been lower than many previous years, perhaps as a result of an observed increase in whelk potting in the wider St Brides Bay area and the outer areas of the MCZ.

#### 6.3.3. Tangle and gill netting

No tangle or gill netting was observed in 2016.

#### 6.3.4. Collection of shellfish by divers

No collection of shellfish by divers was observed in 2016.

#### 6.3.5. Collection of curios

No collection of curios was observed in 2016.

#### 6.3.6. Collection of specimens for education and research

Skomer MCZ staff assisted workers from Swansea University to take small samples of eelgrass to assess respiration rates.



#### 6.3.7. Disturbance or entanglement of seals

In 2016 26 animals (22 females, 3 males and one immature) were photographed by Skomer Island staff with obvious signs of being entangled in nets at some time in their lives, most commonly a deep scar around their necks, often with netting still embedded.



No disturbance to seals at mainland sites was observed and seal watching leaflets and information was given to the visiting public during the seal pup season. Seal disturbance on Skomer Island was recorded on a number of occasions by Island Wardens. The incidents were mostly low impact, but there were a number where recreational and commercial vessels were inside the seasonal “no-access” areas and may have contributed to the abandonment of pups.

#### 6.3.8. Disturbance to cliff-nesting birds

Several incidents of disturbance to birds were recorded during 2016, including a group of kayakers who disturbed birds at High Cliff and were spoken to by Skomer Island staff when they came ashore at the landing beach in North Haven, and a group of personal water craft (jet-skis) were seen entering a number of inlets at high speed (see Section 6.3.12 below).

#### 6.3.9. Spear-fishing

One spearfisherman was encountered at Martins Haven before he went into the water. After being made aware of the status of the area he readily agreed to go elsewhere to pursue his hobby.

#### 6.3.10. Angling

See Section 7.2 for records of visiting anglers. Neptune’s Army of Rubbish Collectors (NARC) have continued to target sites within the MCZ for their seabed litter collection activities, and their leaflets advising anglers how best to avoid snagging and losing tackle in the Martins Haven area have been well-received.



#### 6.3.11. Mooring and anchoring

Recreational and commercial vessels have cooperated well with the no-anchoring code of conduct and restricted anchoring to permitted areas of North and South Haven. Even visiting cruise ships have limited anchoring to outside the MCZ, thanks to the efforts of Pembrokeshire Marine SAC officer, Milford Haven Port Authority and local shipping agents in bringing the MCZ codes of conduct to their attention.

The visitor moorings in North Haven continue to be popular with all visiting vessels.



#### 6.3.12. General boating

Personal watercraft were a feature of 2016 with several encounters recorded by MCZ staff – some more pleasant than others! In two cases the people aboard were happy to speak to MCZ staff and adhere to the conditions set out in the zone map. However, another group, who had been seen speeding in and out of a number of sensitive sites, had to be more or less cornered on one of the Deer Park beaches so that MCZ staff could issue them with leaflets and warn them that there was a speed limit.

Rather more encouraging is that local cruise ship agents continue to promulgate Skomer MCZ codes of conduct to crews visiting Skomer and compliance with speed controls and no-access areas has been good (see Section 6.3.11).

#### 6.3.13. Wrecks

The wreck of the Lucy continues to be popular with visiting divers although during 2016 the marker buoy was lost and had to be replaced by MCZ staff.

#### 6.3.14. Oil pollution

No oil pollution was recorded at Skomer MCZ during 2016, however in August Skomer MCZ staff were called in to help evaluate oil coming ashore at Lindsay Bay, Milford Haven and advise on the proposed clean-up. Small amounts of oil were found and subsequently cleaned up by workers from Valero.



#### 6.3.15. Water quality

No water quality issues were identified from the results of routine tests carried out by Pembrokeshire County Council.

## 7. Visitors and Use of the MCZ

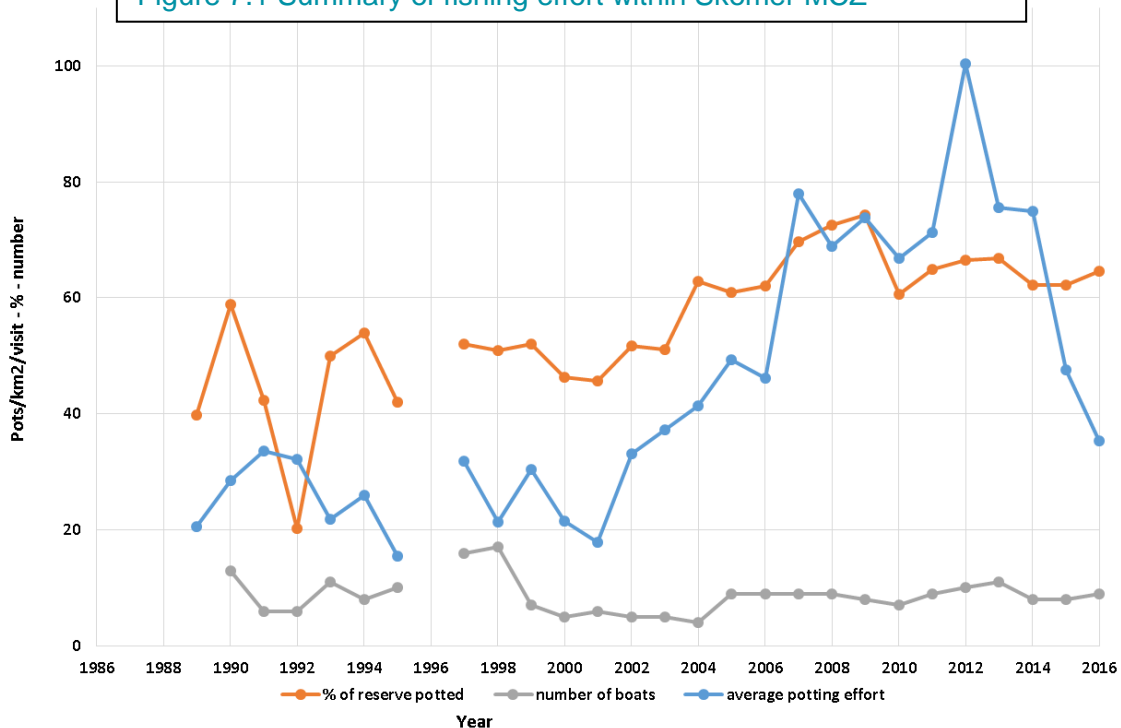
### 7.1. Commercial use

Fishing vessels recorded operating within Skomer MCZ during 2016 included BD122, BD217, *Warren Edwards* (M15), *Evara* (M150), KTJ (M38), M59, *Danny Boy* (M77), *Atlanta II* (M82), *Harvester* (M999), and *Storm Child* (M83).



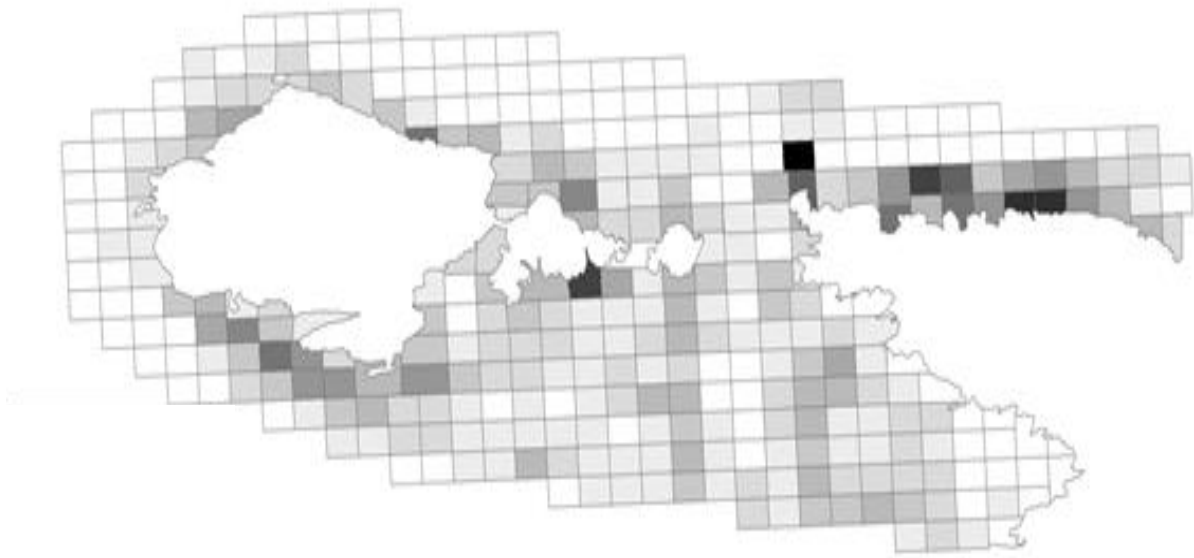
Skomer MCZ staff were saddened to learn of the tragic loss of *Harvester* and her crew in 2016.

Figure 7.1 Summary of fishing effort within Skomer MCZ

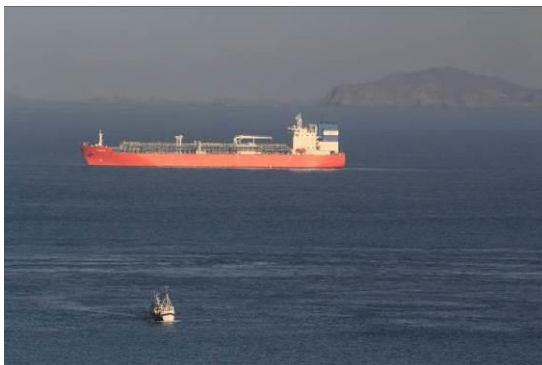


Fishing effort with regard to potting is now at the lowest level seen for many years, although the numbers of boats involved and the proportion of the MCZ area fished remain fairly constant. Local observations indicate that increases in whelk fishing activity outside the MCZ and in the outermost areas of the MCZ may have contributed to this decrease as some of the boats operating in the MCZ diversify some of their effort into the whelk fishery.

Figure 7.2 Pot fishing intensity at Skomer MCZ



Other commercial boating activity includes sightseeing boats and commercial charters. These are not usually recorded unless diving, angling, anchoring or mooring, but do include boats from Dale Sailing Company, Thousand Islands, Voyages of Discovery and other Milford Haven-based operators.



Although not within Skomer MCZ tanker movements within St Brides Bay are also logged to record use of the anchorage that lies within Pembrokeshire Marine Special Area of Conservation.



Figure 7.4 Recorded Recreational Use Skomer MCZ

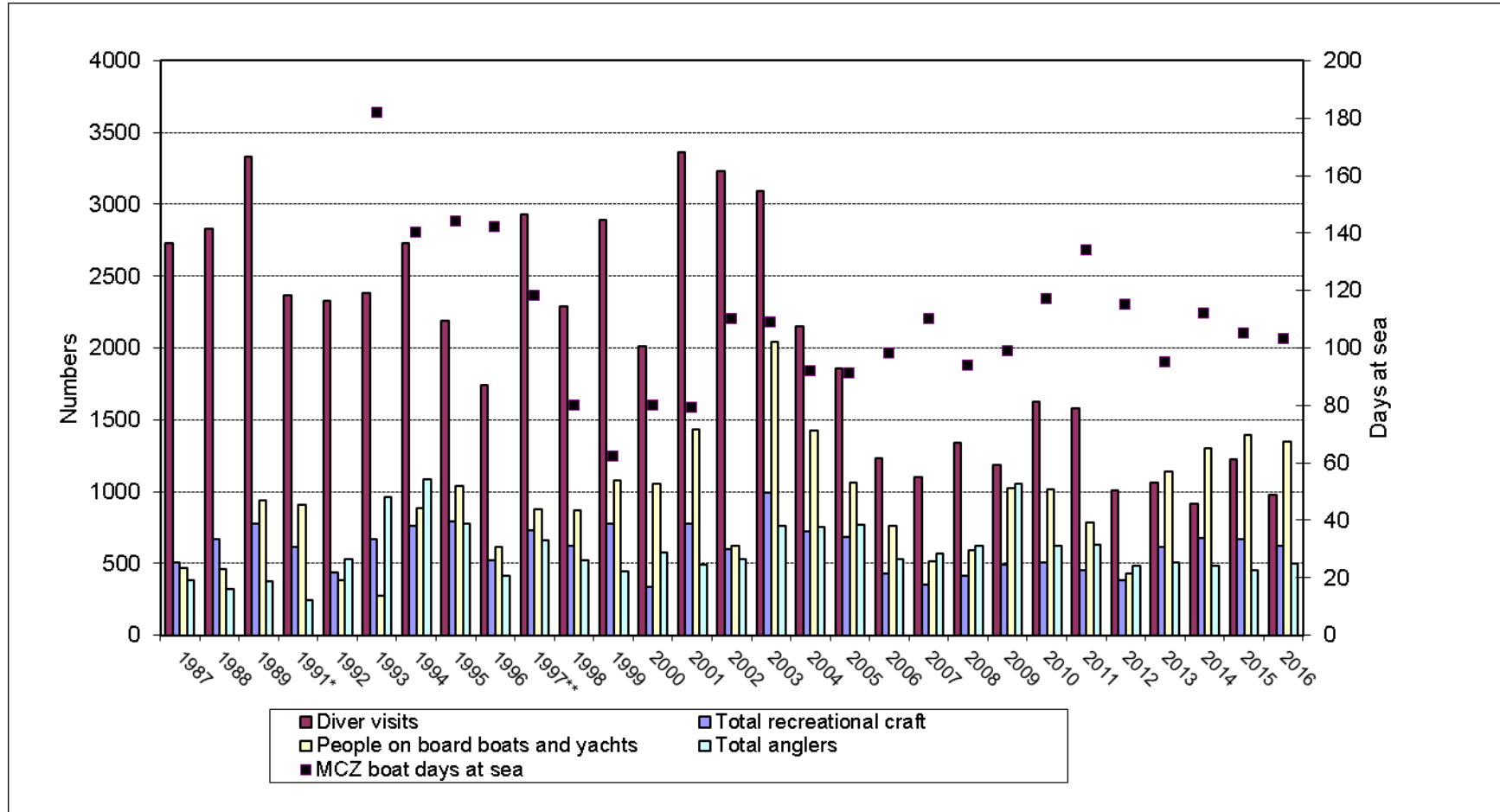


Table 7.1 Recorded Recreational Use Skomer MCZ

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Diver visits (diver days)	2379	2730	2192	1745	2934	2287	2893	2008	3360	3234	3089	2154	1854	1230	1102	1342	1189	1629	1579	1008	1059	912	1228	980
Shore dives @ Martins Haven	678	848	537	482	814	817	500	537	537	539	522	666	458	470	411	468	293	428	368	347	242	291	237	313
Dive boat visits	325	394	354	247	361	254	378	278	349	367	350	224	257	97	127	138	106	107	144	75	89	70	134	90
Total yachts	155	213	299	173	218	183	221	232	266	121	338	218	163	128	92	120	115	140	146	118	248	237	194	190
Total motor boats	95	129	65	39	70	87	95	93	153	70	225	187	155	102	65	87	89	93	43	47	188	148	151	130
Canoes	91	27	74	62	84	98	79	63	48	38	80	108	110	101	68	68	184	163	121	140	176	221	193	210
Total recreational craft	666	763	792	521	733	622	773	333	779	596	993	721	685	428	352	413	494	503	454	380	612	676	672	620
Total people on board boats	273	883	1041	612	874	868	1075	1051	1435	626	2041	1424	1059	764	512	591	1022	1013	784	428	1140	1300	1391	1347
Shore anglers	766	735	600	331	630	433	386	501	396	458	519	556	569	378	398	333	752	313	308	192	160	223	219	264
Boat anglers	199	347	173	81	30	89	60	72	55	70	243	199	210	150	168	290	306	309	322	291	346	263	231	233
Total anglers	965	1082	773	412	660	522	446	573	494	528	762	755	769	528	566	623	1058	622	630	483	506	486	450	497

\*\* Figures are for Jan 97 to end of March 98 All subsequent figures are for financial year April to end of March

Figure 7.5 Skomer MCZ 2016 Anglers

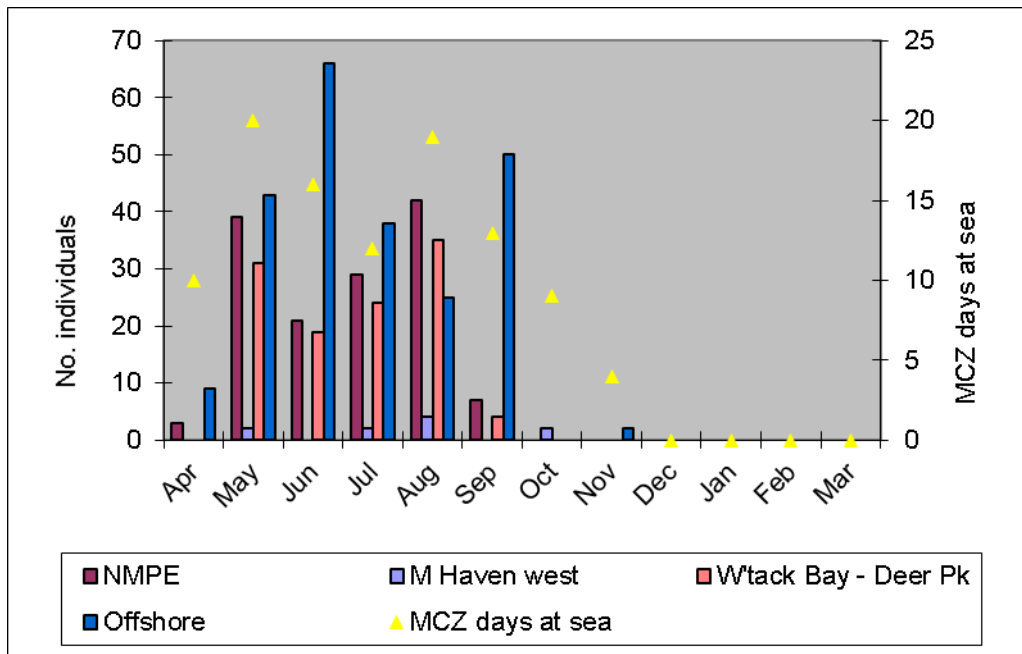


Figure 7.6 Skomer MCZ 2016 SCUBA divers

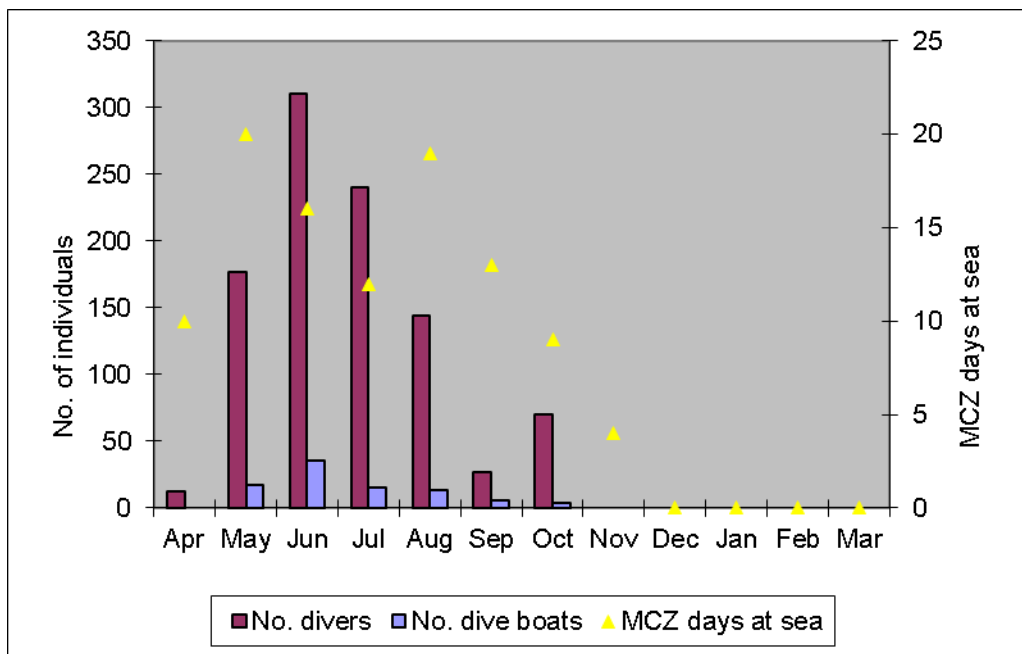
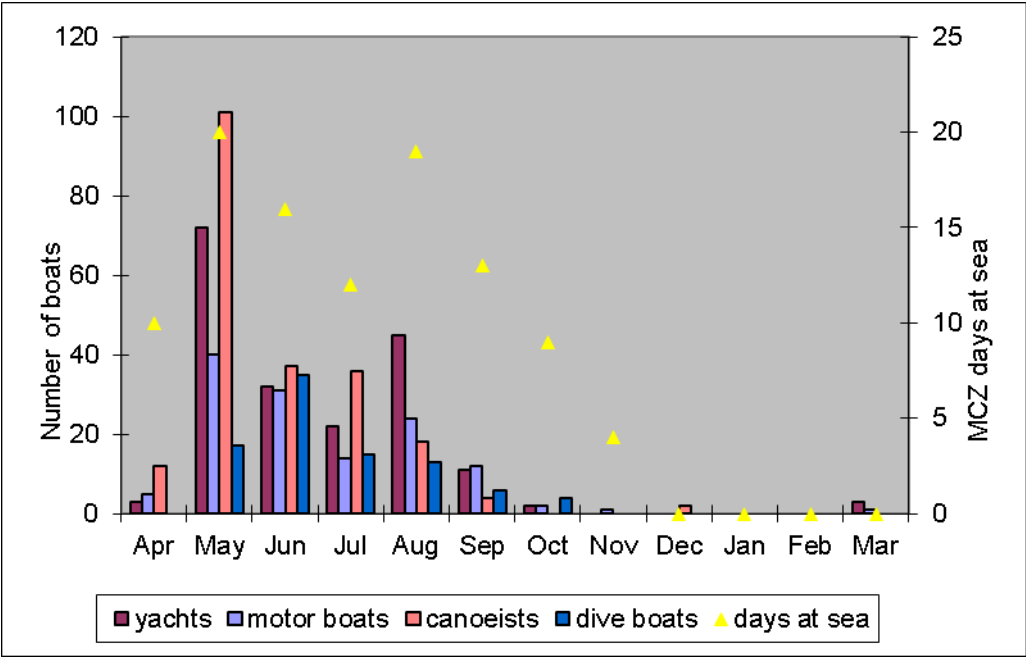


Figure 7.7 Skomer MCZ 2016 Recreational Craft





## 8. Liaison and Advisory Committees

### 8.1. Advisory Committee

Skomer MCZ Advisory Committee meeting was held in April 2016, chaired by Dr Robin Crump. 18 members attended together with 4 MCZ staff. Updates were given on various aspects of MCZ work, including liaison and monitoring efforts. The ladies of Dale and Marloes WI made sure that those attending were suitably fortified with cake and hot drinks.

At the meeting Dr Crump agreed to write to the newly appointed Cabinet Secretary for Environment and Rural Affairs, Lesley Griffiths, to voice concerns about the future of Skomer MCZ (see Appendix 2 for the text of the letter and the response).

### 8.2. Wildlife Trust South and West Wales

Skomer MCZ staff continue to work closely with Skomer Island NNR Wardens Bee Büche and Eddie Stubbings, collaborating on issues such as dealing with disturbance incidents and the seal monitoring contract, amongst other things. Island staff also came to the rescue when *Skalmey* fouled a floating rope (see Section 4.4) and had to be towed back to Martins Haven – and this despite having to evict a bull seal from their boat to be able to respond! Skomer MCZ staff have reciprocated with help during launching and recovery of the island inflatable at Martins Haven.



Skomer Island staff also very kindly played host to NRW's Marine Team during its outing to the island for a team meeting.

Island staff have also kept MCZ on their toes by getting us to identify obscure objects found inside seabirds:



These turned out to be (on the left) a "buckler" from a thornback ray and (on the right) pharyngeal teeth from a fish, possibly one of the wrasse species. Said to be in the form of a cross, and if worn to protect a fisherman from

drowning, according to our font of fishy knowledge, Douglas Herdson, formerly of Plymouth Marine Aquarium.

Wildlife Trust South and West Wales continued to be the contractor for the annual seal pup monitoring contract (see Section 9.1 and Appendix 1).

### 8.3. Welsh Government Marine Enforcement

As mentioned in 6.3.1 MCZ staff were alerted to a suspected case of illegal scallop fishing in the MCZ in 2016. Details, albeit very sketchy, were passed to local Welsh Government Marine Enforcement officers, who responded promptly, but without any great hope of finding out any more details.

Skomer MCZ staff continue to liaise with officers on fishery matters and the department is represented on the Advisory Committee.

### 8.4. Pembrokeshire Coast National Park

Skomer MCZ staff continue to liaise with Pembrokeshire Coast National Park (PCNPA) staff locally and via the Advisory Committee.

### 8.5. National Trust

Liaison with National Trust staff continues through the Advisory Committee and National Trust staff, including Matt Thompson, local Ranger, and Mark Underhill, who took over from Andrew Tuddenham early in 2017.

MCZ staff collaborated with Phil Sadler from National Trust and Paul Renfro of Pembrokeshire Coastal Forum in agreeing alterations to the Pembrokeshire Marine Code and Skomer MCZ zone map to better protect the wildlife on the National Trust property of Middleholm.

### 8.6. Academia



Skomer MCZ staff continue to maintain close working relationships with a number of academic institutions:

As mentioned in Section 6.3.6. workers from Swansea University were assisted with fieldwork during their studies of eelgrass.

Collaboration work with Swansea University also included work by researchers Dr Jim Bull and Dr Luca Borger studying Skomer MCZ's long-term seal pup data from the Marloes Peninsula (1992-2014) to look at temporal trends and phenology in grey seal pups. A report is currently being produced for NRW. The same

team are now using statistical models to look at the long term data sets (1985-

2015) for the Skomer Island sites. In January 2016 a new PhD student, William Kay, co-supervised between Swansea University and NRW began research on seal movements in the Irish Sea in relation to marine renewables. The research has begun by mapping the historical Pembrokeshire seal ringing/tagging data collected between the 1950s and the 1970s including many seal pups from Skomer.

Natural History Museum staff enlisted our support when they wanted to gather specimens for an exhibit featuring seaweeds, visiting on a particularly wet and miserable day and bringing along a film crew from the museum (see also Section 10.4).



Skomer MCZ staff continue to work with Dr Joanne Preston, University of Portsmouth, who carried out microbial community profiling of samples of healthy, fouled and diseased (so-called “Black Death”) boring sponge (*Cliona celata*). Her research results are being presented at the World Sponge Conference in 2017.

Samples of other sponge species taken during the 2015 survey were also supplied to Dr Preston for DNA research. This ongoing work and the results will contribute towards the National Gen-bank. Samples have also been supplied to the Natural History Museum, London, to be stored as part of the national sponge collection.

The Marine Biological Association contacted MCZ staff to enquire about the management of visitor moorings at Skomer.

Phil gave a talk to the marine science summer camp at Dale Fort Field Studies Centre in July.

Photographic records of Skomer sea fans were provided for a Cardiff University undergraduate student Kathryn Whittey. She used the images to study the effects of fouling on the growth rates of sea fans (see Appendix 3 for the project abstract).

MCZ staff were also contacted by Professor Nigel Nayling of the School of Archaeology, History and Anthropology, University of Wales Trinity Saint David in Lampeter. His team of qualified divers were looking for projects to carry out underwater to help maintain their diving skills when not surveying underwater archaeological projects. We look forward to working with them in 2017.

Bristol University kindly supplied all their diving records to MCZ staff for their visit in June.

## 8.7. Other organisations and individuals

Skomer MCZ staff assisted NRW colleagues to get Google Trekker equipment to Skomer, where the walk around the island was recorded to feature on Google Street View alongside other special “off road” sites. Unfortunately sea conditions were too rough to allow the planned recording of a boat trip around Skomer.



Keith Hiscock, long-term collaborator with Skomer MNR and now MCZ, is currently writing a book about the natural history of seabed habitats entitled “Exploring Britain’s Hidden World” and MCZ staff have been helping by checking facts and reading drafts, especially with sections reflecting on the work done at Skomer.

MCZ staff attended a liaison meeting arranged between local WFA and NRW officers.

2016 has seen a number of visits from NRW colleagues including the NRW Waste regulation team visit during the 2016 seal pupping season, a number of individuals who came out as volunteers (see Section 4.2) and more senior management colleagues acquainting themselves with how the MCZ fits into NRW’s business.



MCZ staff have contributed images to the Welsh Government photo library so that our underwater photos can be used to support Welsh Government documents or for the revamp of their marine website.

Liaison with the local community and neighbours has continued through informal contacts and via the Advisory Committee. MCZ staff are grateful for the support of the local community and their help in safeguarding the MCZ – it was members of the local community, for instance, who alerted MCZ staff to the suspected illegal scallop fishing mentioned in Sections 6.3.1 and 8.3.





The MCZ has also been the recipient of the kindness of strangers: The leader of a group of kayakers from Leamington Spa noticed that we were struggling with one broken oar blade for our tender dinghy. Soon after their visit we received a parcel from the Leam Boat Centre with a shiny new oar blade – could this be our first corporate sponsorship deal?

Other organisations and individuals that Skomer MCZ staff have worked with include National Coastwatch Institution, who maintain watches at the former Coastguard lookout on the Deer Park, Trinity House, who inspect our “no-anchoring” buoys, Natural England’s contractors looking at evidence and management for marine recreational activities, Pembrokeshire Coastal Forum, and Endurance Life who organise the Coastal Trail running event.

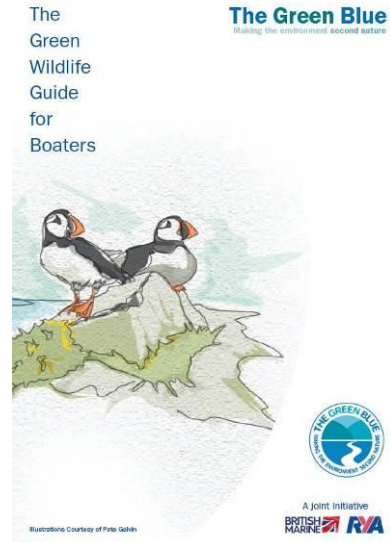
#### 8.8. Wider marine environmental initiatives

As part of a joint initiative between West Wales Shell Fisherman’s Association, Pembrokeshire Marine SAC and Neptune’s Army of Rubbish Collectors (NARC) to promote and test ideas to make fishing more sustainable MCZ staff have been helping with experiments to test the longevity of different materials/weak links used to close escape hatches in pots and testing degradable hook closure methods. 21 fishermen have signed up to take part in the Pembrokeshire Sustainable Shellfish Initiative, which is supported by the Pembrokeshire CNPA Sustainable Development Fund.



Skomer MCZ has also contributed a Welsh Government Marine Biodiversity Restoration and Enhancement project with information about sea fan propagation, historic *maerl* records and records of the ocean quahog (*Arctica islandica*).

A number of projects involving codes of conduct for sea users have involved Skomer MCZ staff during 2016. Mention has already been made of modifications to the MCZ zone map and Pembrokeshire Marine Code maps (see Sections 6.2 and 8.5), but there is now an initiative to extend existing marine codes to the whole coast of Wales being led by NRW. MCZ staff were also asked to comment on drafts of the new RYA “Green Wildlife Guide for Boaters”.



Kate has continued to ensure that seal identification photographs are collated for Pembrokeshire and included in the NRW seal photo identification database.

Kate is also the local coordinator for the Marine Conservation Society Seasearch volunteer diving surveys and MCZ staff helped to establish and monitor one of the Capturing the Coast (CoCoast) sites at Dale for which MCS is one of the partner organisations. Data on the invasive seaweed *Sargassum muticum* is collected and passed to workers at the Marine Biological Association in Plymouth, who are also involved in the project.



MCZ staff also assisted during a visit of the Welsh Government Climate Change, Environment and Rural Affairs Committee to the Gann estuary hosted by the Pembrokeshire Marine SAC Relevant Authority Group. The group was visiting the site to see how the voluntary controls on bait digging were working and some of the effects of bait digging on the shore environment.



Kate and Jen assisted with the annual Snorkel Safari planned as part of Pembrokeshire Fish Week. Pupils from Broad Haven School were introduced to the marine environment in a project involving West Wales Dive Company, Dale Fort Field Studies Centre and Pembrokeshire Marine SAC.

## 9. Science

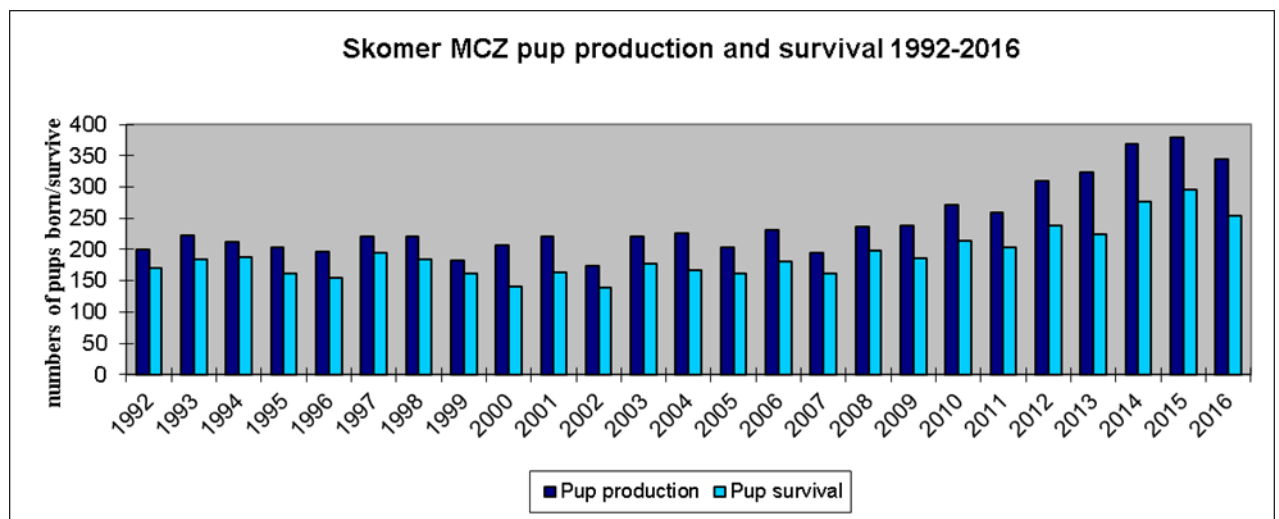
All the following projects are reported on in greater detail in the Skomer MCZ Project Status Report 2016/2017 (NRW evidence Report number 197), which is available via the NRW website.

### 9.1. Biology

#### 9.1.1. Project code: RA03/01 Seals

Grey seal monitoring was carried out for Skomer Island sites by Wildlife Trust of South and West Wales workers under contract to NRW (see Appendix 1 for the contract report executive summary). Sites on the mainland within the MCZ were monitored by the NRW Skomer MCZ team.

In 2016 202 pups were born at island sites and 143 pups at mainland sites giving a total 345 pups born in the MCZ with a recorded combined survival of 73.3% through to moult.

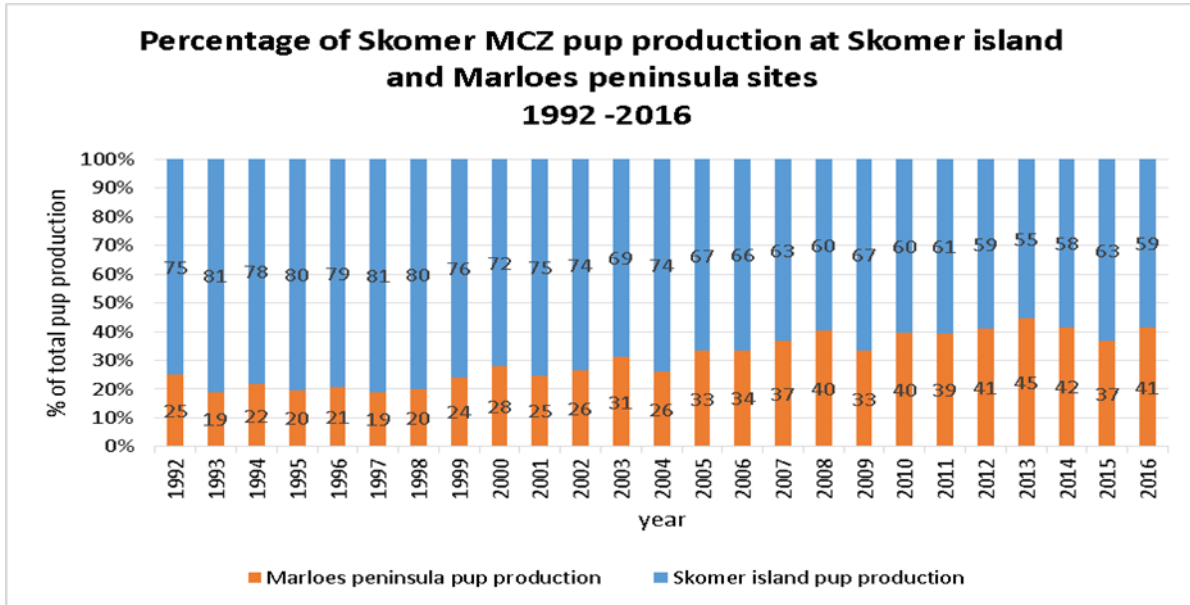


Pup production in the Skomer MCZ for the past 5 years has shown the highest totals recorded for the area with average production for 2012-16 at 345 pups. The pup production from 1992 to 2008 remained fairly consistent, within the expected natural fluctuations, with an average of 208 pups. Since 2009 there has been a steady increase in pup production, the greatest increase has been seen at the mainland sites, but there has also been increases at the island sites from 2012 with a slight dip in production observed in 2016.

From 1992 to 2002 Marloes peninsula contributed an average of 22% of total production, this has gradually increased to a peak of 45% in 2013 and the average over the last five years is 41% of total production.



Pup production at the Marloes peninsula sites versus the Skomer island sites expressed as a percentage of the total pup production for the Skomer MCZ is shown in the graph below.



### 9.1.2. Project code: RM53/01 Scallops (*Pecten maximus*)

Over two weekends in summer 2016 the seven established scallop survey sites were re-surveyed along with the St Brides Bay site outside the MCZ boundary. Visibility was good and the volunteer team completed 60 transects covering 8620 m<sup>2</sup> and collecting 2534 scallops.

The average density of scallops in the Skomer MCZ can be calculated in different ways, these are:

Simple mean: Total number of scallops / total area surveyed.

Simple site density mean: total number of scallops at each site / total area surveyed at each site. Then average these to get an annual average.

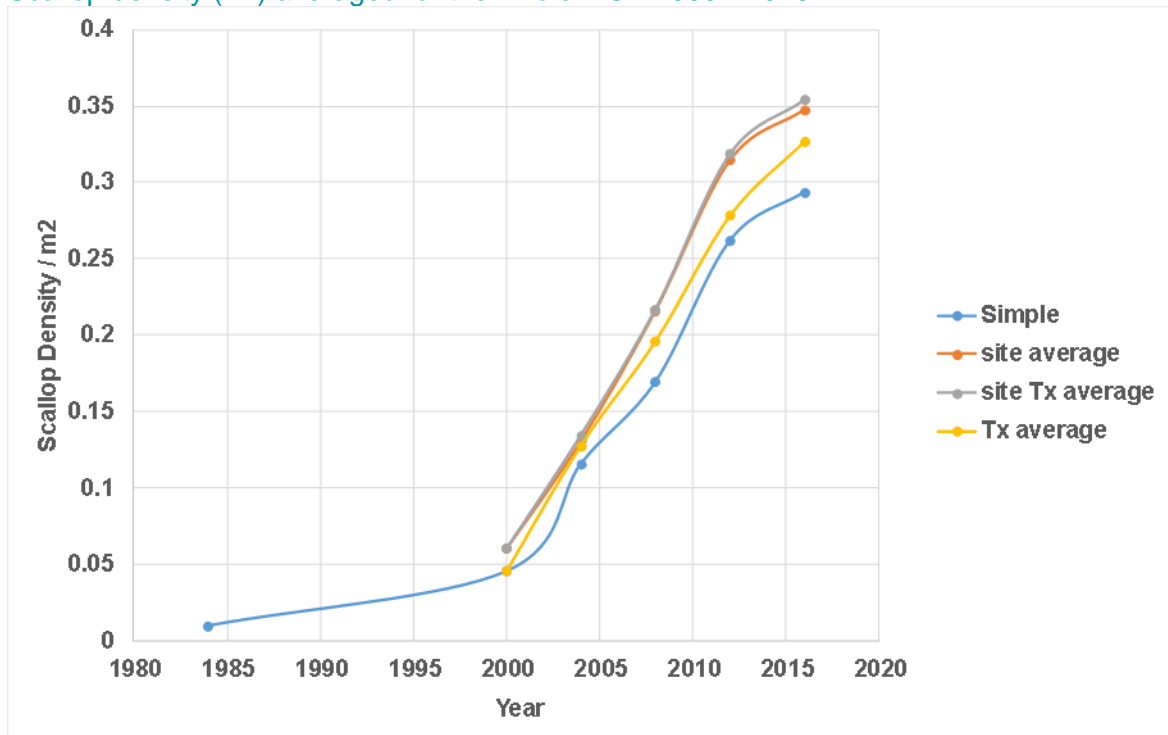
Site transect density mean: calculate a density for each transect at each site then average these densities. Then average the 7 site densities to get an annual average

Transect average: calculate densities for all the transects completed that year and then average these.





### Scallop density (m<sup>2</sup>) averaged for the whole MCZ 1985 - 2016



The trend is the same with each calculation method used showing a steep increase in density since 2000 with the indication of a plateau in 2016.

Density results are very variable between sites and years suggesting a very clumped distribution of scallops across the MCZ. Density does not change uniformly across all of the sites surveyed in the MCZ. This suggests that certain sites have a habitat more suited to the settlement and growth of scallops than others.

All scallops were measured and age estimates made from growth rings.

Age class 4 is very well-represented in the population, suggesting good recruitment in 2012. Older scallops are very difficult to age by counting the age rings as beyond the 8th age ring it is very hard to differentiate the rings on the shell.



### 9.1.3. Project code: RM44/01 Record commercial crustacean populations

Crawfish *Palinurus elephas* became a national Biodiversity Action Plan species in 2008, and is now an Environment Act (Wales) 2016, Section 7 species. Between 2009 and 2016 it has been recorded in low numbers in the MCZ by MCZ staff and volunteers. These records have been entered into the online recording scheme that has been set up on the Seasearch website with the aim of gaining better knowledge of the historical and current status of this species in the UK.



*Homarus plasticus*  
*var. inflatabile?*

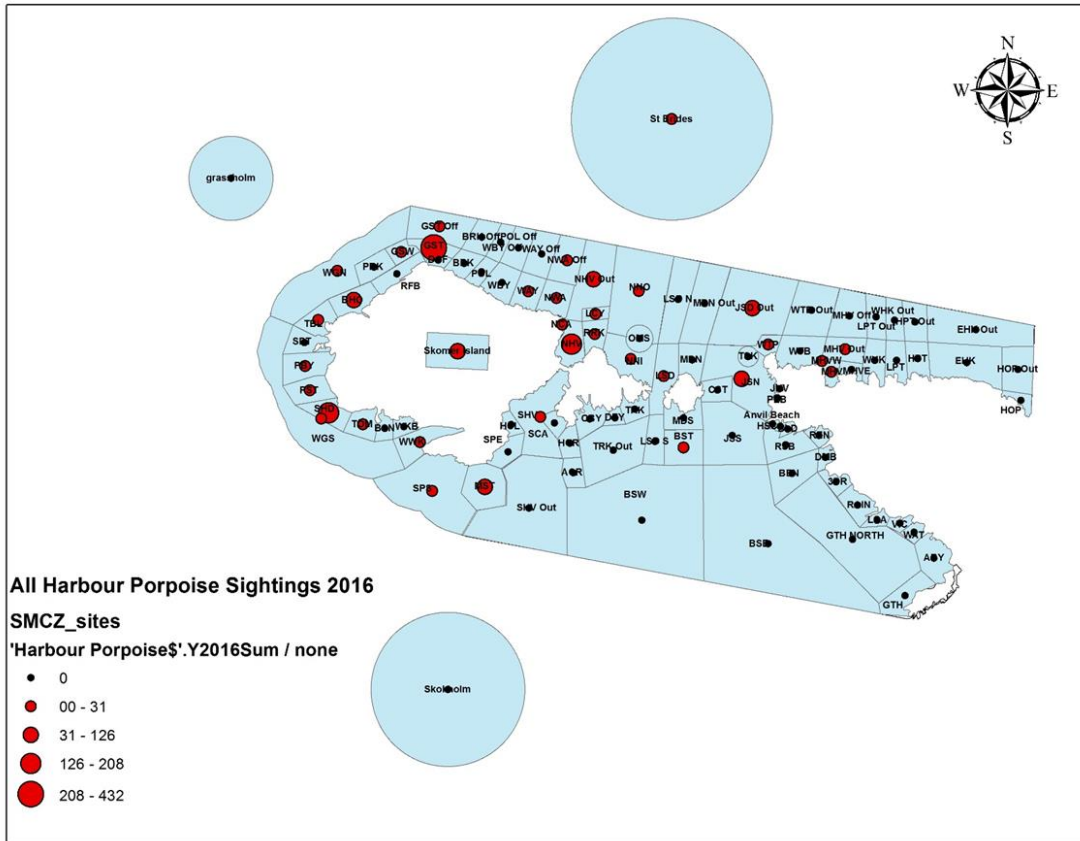
Other commercial crustacean species are not routinely recorded in the MCZ, however one particular specimen caught off Gateholm in 2016 has been baffling MCZ staff and may be an invasive species.

### 9.1.4. Project code: RA01/01 Record Cetaceans

All sightings of cetaceans collected by NNR staff, MCZ staff and *Dale Princess* crew have been collated for the period between 2001 and 2016. There are no records in years 2003, 2007, 2010 & 2011 and effort is variable not just between years but also during the season, which makes the data difficult to effort correct.

In 2016 a standard set of site names and recording system was used for all the data collected by the MCZ and the Skomer NNR staff.

Total number of Harbour porpoise sightings 2016 is displayed below. These data are not effort corrected, but are useful in showing areas that harbour porpoise frequent. All vagrant and mobile species records are now recorded using this site code format.



### 9.1.5. Project code: RB01/01 Record Vagrant & Alien Species

Vagrant and alien species were recorded by MCZ staff and the crew of the Dale Princess. Vagrant species recorded in 2016 included sunfish (*Mola mola*).

Alien or invasive non-native species (INNS) recorded in 2016 included the American slipper limpet (*Crepidula fornicata*). Recording of this species is now integrated into the scallop monitoring project since the first two specimens were found on scallop shells during the 2008 survey.

In 2016 a total of 68 *C. fornicata* were found attached to scallops shells either as individuals or in stacks. The sampling effort involved in the survey is high with 2534 scallops inspected and the density of *C. fornicata* low. However the numbers have slowly increased from previous records and it is notable that in 2016 they were found at both sites along the north Marloes peninsula and also from a site on the north side of Skomer Island.



### Numbers and % of scallops found with *Crepidula fornicata* 2012 & 2016

Site	Scallops with <i>C.fornicata</i>		2016	%
	2012	%		
1	0	0	13	2.73
2	2	0.9	19	3.20
3	0	0.0	5	6.49
4	0	0.0	0	0.00
5	1	0.6	5	1.27
6	2	1.2	10	2.07
7	0	0.0	6	2.60
St Brides	1	0.6	1	1.16
Total	<b>6</b>		<b>59</b>	
MCZ average %		<b>0.4</b>		<b>2.6</b>

2016 saw an increase in the number of sites where *C. fornicata* was found and an increase in the percentage of scallops found with *C. fornicata*.

The records have been entered into I-record for access onto the National Biodiversity Network.

#### 9.1.6. Project code: RB03/01 Monitor Littoral Habitats / Communities

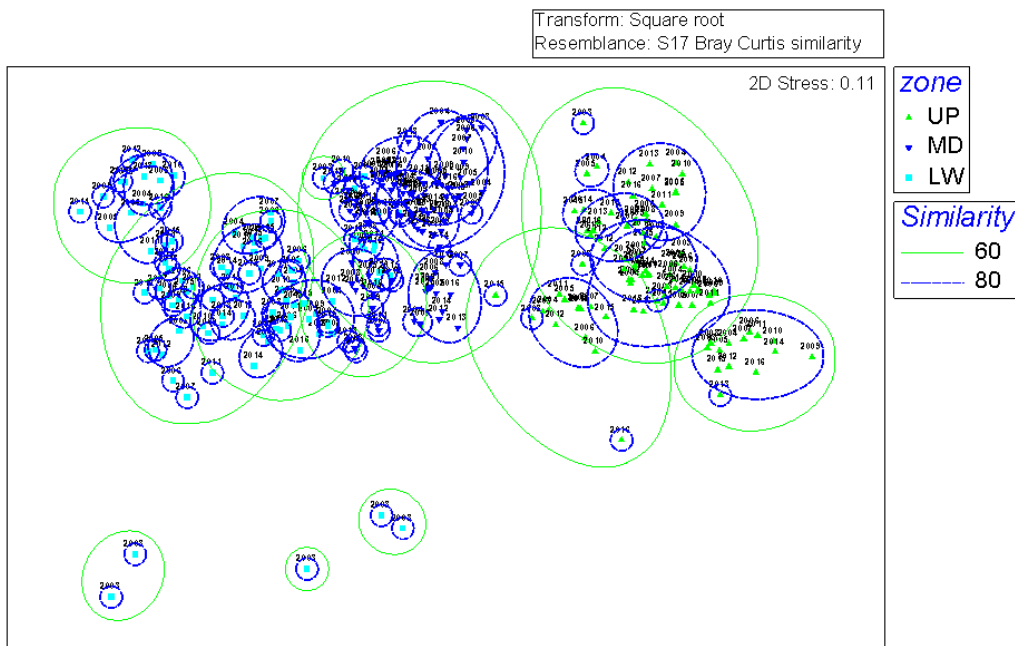
Viewpoint photographs of shore communities were taken for all sites except the south of Skomer sites normally photographed from the boat.

All sites at which permanent quadrats were established were surveyed in 2016 except for Pig Stone, where rough seas prevented landing.



All data from 2003 to 2016 is displayed on an MDS plot below, which represents how similar sites are to each other for each year.

## MDS Plot of All Littoral Community Data 2003 – 2016



In summary:

- Upper shores group neatly on the right.
- Lower shore sites are much more disparate and grouped on the left.
- Middle shore sites sit in between with some overlap (60%) with the lower shores.
- Some sites form distinct clusters e.g. MHV Upper, MHV Lower.
- Some sites are very variable from year to year e.g. PST Lower & WTK Lower

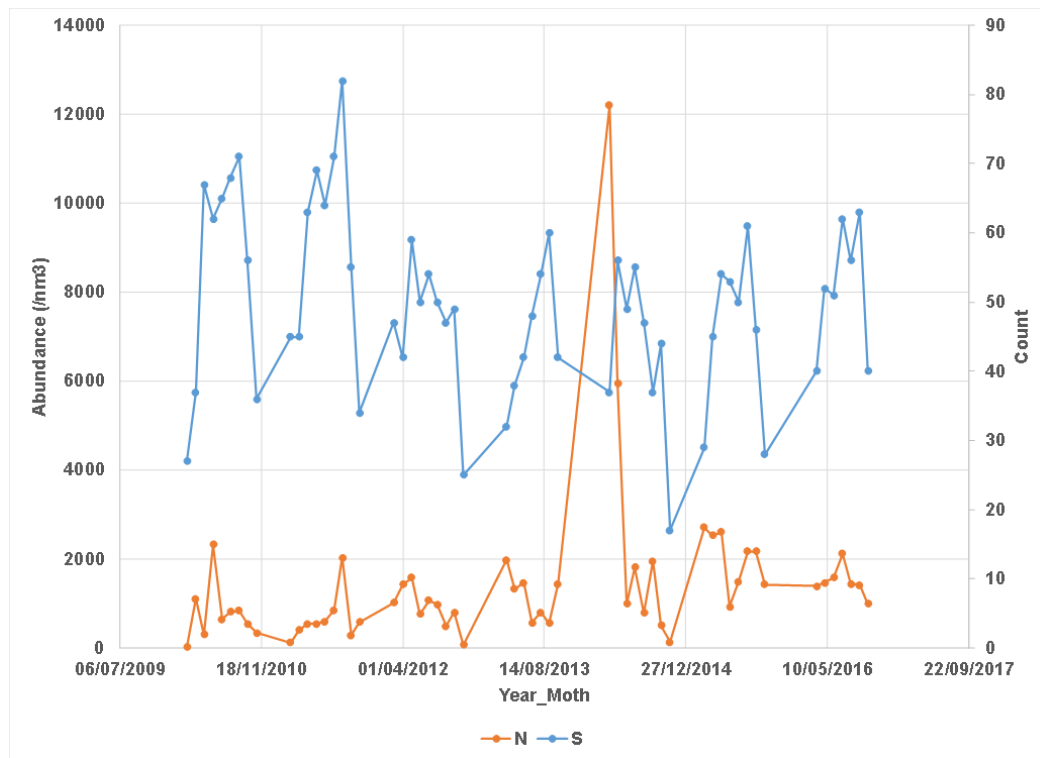
2016 did not show any major variations from the overall trends seen since 2004.



### 9.1.7. Project code: RB04/01 Plankton Recording

Zooplankton samples continued to be taken at Skomer MCZ in 2016 using methods recommended following a review by Plymouth Marine Laboratory in 2014.

#### Average Species richness (S) and total number of individuals (N) 2009- 2016



### 9.1.8. Project code:RB06/01 Maintain species list

Opportunistic records were made of species other than those that are the focus of specific monitoring projects. Notable for 2016 were records of the butterfly blenny (*Blennius ocellaris*), found with eggs inside a scallop shell, and the records of the ocean quahog (*Arctica islandica*) made during the scallop surveys of offshore sites. The quahog is a very long-lived bivalve listed under Section 7 of the Environment Act (Wales) 2016.



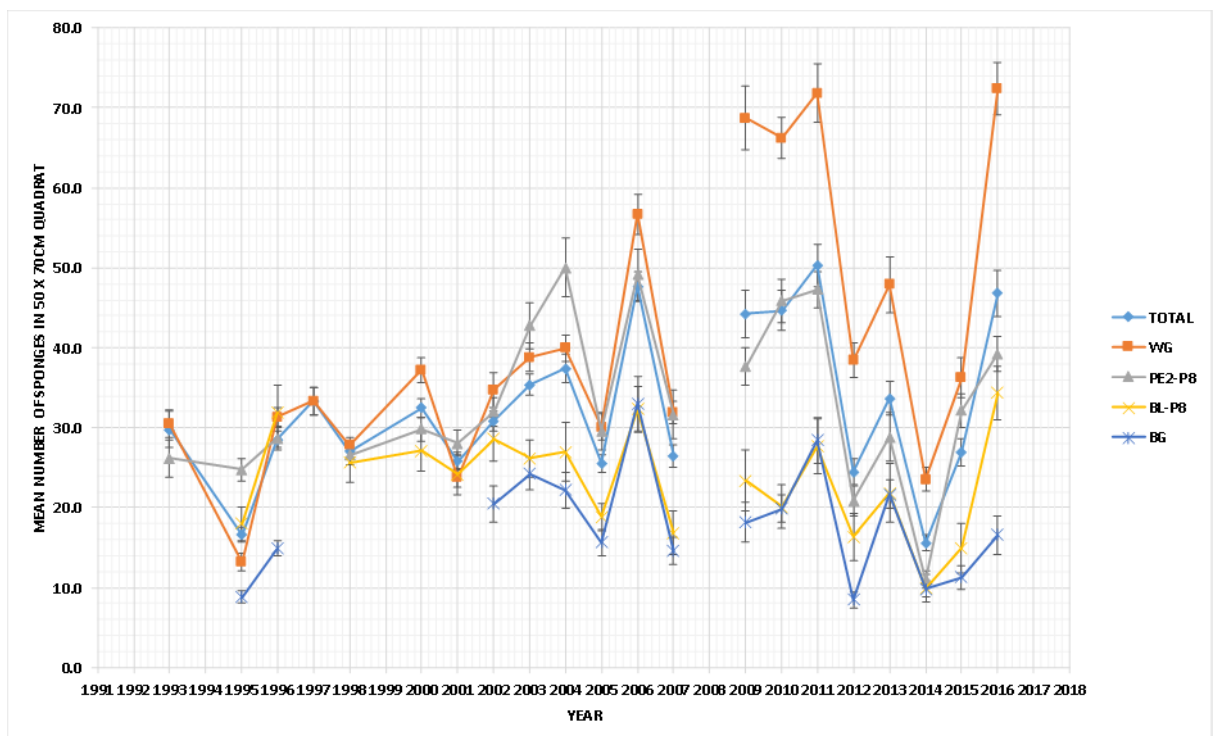
### 9.1.9. Project code: RM13/01 Monitor Sponge Populations

In 2016 quadrats at all sponge monitoring transects were photographed.



The improvement in the image quality & resolution has meant that more sponge entities have been recorded from 2009 onwards than in previous years. However in 2012 & 2014 there was a noticeable drop in the numbers of sponges across all transects. In 2013 & 2015 all transects showed an increase in abundance of visible sponges and this increase continued in 2016. This variability will in part be due to the image quality. “Wafting” the surface sediment away would improve consistency but would also compromise the comparability of the time series.

Mean number of sponges counted in each quadrat at 4 sites –Thorn Rock 1993-2016

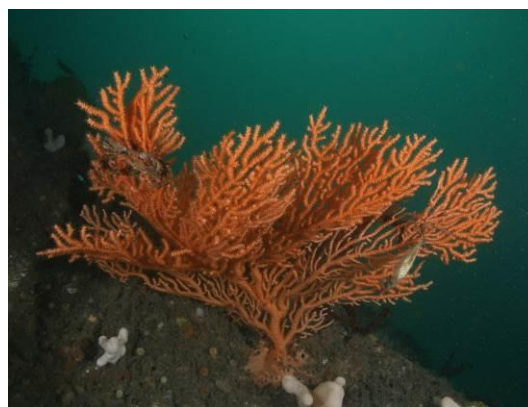


Statistical analysis of what types of sponge (based on their morphology) make up the communities at Skomer shows similar results to previous years.

The report on the 2015 survey of sponge species has now been published: Jones J, Burton M, Lock K, & Newman P (2016) Skomer Marine Conservation Zone Sponge Diversity Survey 2015. NRW Evidence Report No. 159.

### 9.1.10. Project code: RM23/01 Monitor Pink sea fan Population

All sea fan monitoring sites and individual colonies were visited and photographed in 2016, with some sites getting a second visit in September.



Survey visits found that a worrying number of sea fans had been lost: Five sea fans were confirmed as lost from 2015 and an additional 10 sea fans were missing in 2016 (5 definite losses and 5 to be confirmed in the 2017 survey). The definite losses all occurred at the Bull Hole site and could immediately be confirmed, as the remains of the colony “stalk” or base were found in each case.

#### Survey results 1994 -2016:

year	Sites surveyed	Total fans recorded	Total natural fans	Total attached fans	New recruits (babies)	Natural fan Losses (confirmed)	Attached fan losses	Missing (to be confirmed)
1994	4	34	34					
1995	4	33	33			1		
1996	4	33	33					
1997	5	39	39					
1998	5	39	39					
1999	0							
2000	5	54	54					
2001	5	55	55			1		
2002	9	86	86			1		
2003	9	99	99		1			
2004	9	101	100					
2005	10	114	111	3	1	1		
2006	10	119	116	3	7			
2007	10	121	118	3	1	2		
2008	10	126	122	4		1		
2009	10	128	121	7				
2010	10	126	120	6		3	1	
2011	10	126	122	4			2	
2012	10	126	121	5		1		
2013	10	127	122	5				
2014	9	123	119	4				
2015	10	123	121	2		3	2	
2016	10	116	113	3	1	5		5
<b>totals</b>					11	19	5	5



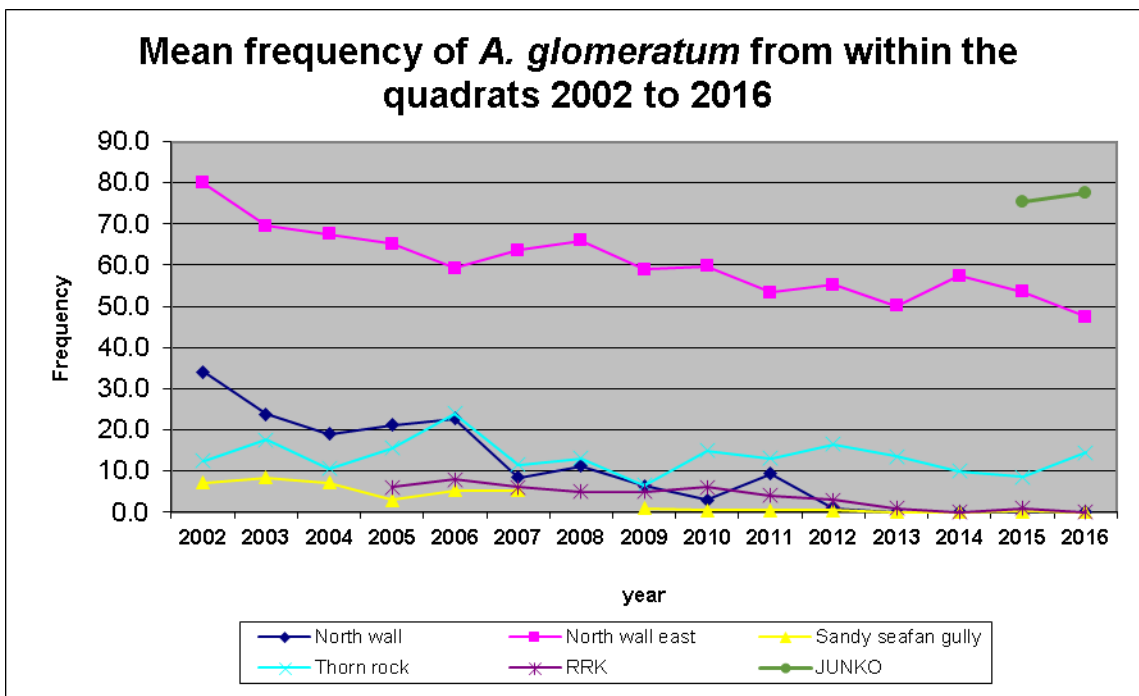
Only one new sea fan colony was found in 2016.

In 2016 one sea fan sea slug (*Tritonia nilsodhneri*) with its eggs was recorded at North Wall east.

In terms of sea fan condition, necrosis occurrence was found in 49% of the sea fans, which is the average recorded for the last 15 years. Epibiota was recorded on 80% of the sea fans; this is above the average of 64% recorded for the last 15 years.

9.1.11. Project code: RM23/03 Monitor *Alcyonium glomeratum* Population

Red sea fingers (*A. glomeratum*) continues to decline at monitoring sites: North Wall East and Junko's reef still have sizable colonies of *A. glomeratum*, but North Wall main, Rye Rocks and Sandy sea fan gully now have no visible colonies.

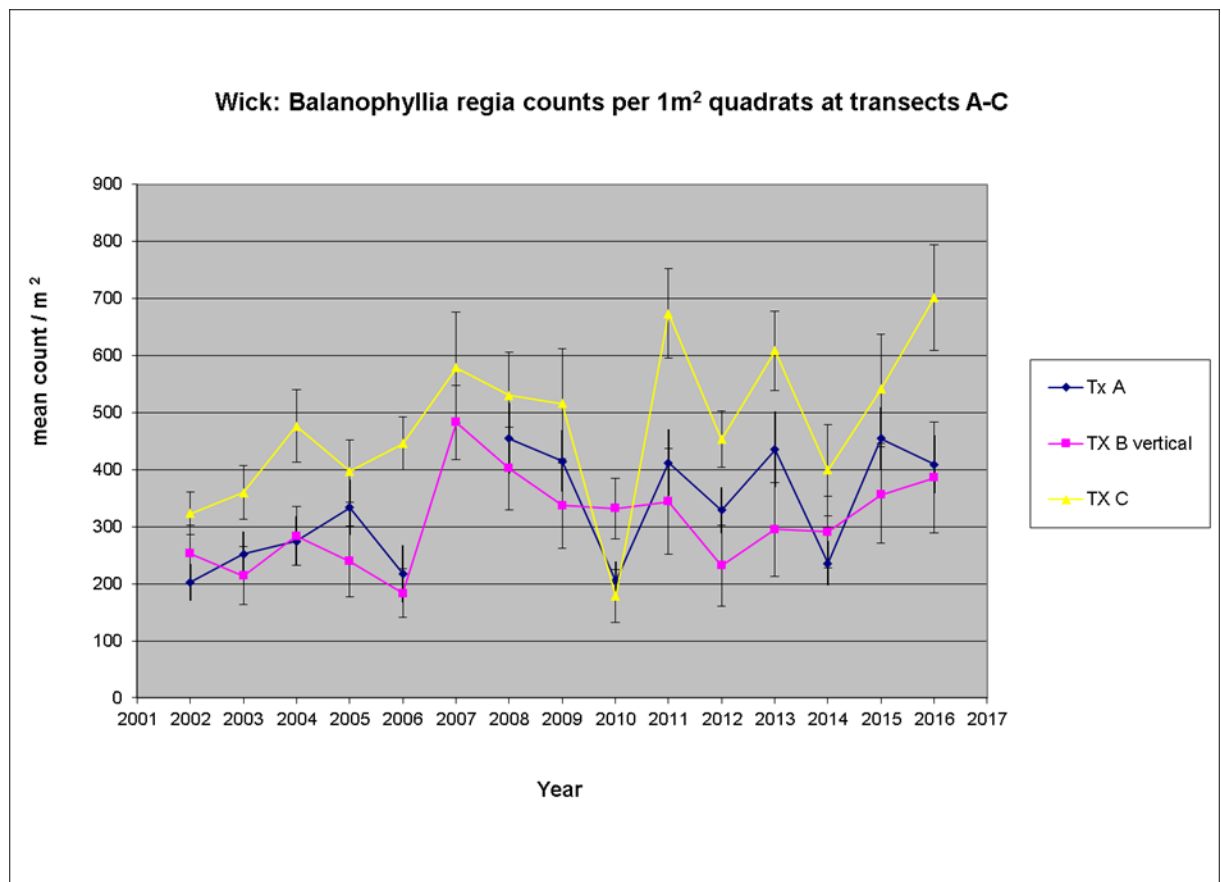


9.1.12. Project code: RM23/04 Monitor Cup Coral Populations

Quadrats were photographed for both Devonshire cup corals (*Caryophyllia smithii*) and the Lusitanian scarlet and gold cup coral (*Balanophyllia regia*), except at the Thorn Rock stereo site.



Balanophyllia regia abundance at Transects A, B and C at the Wick



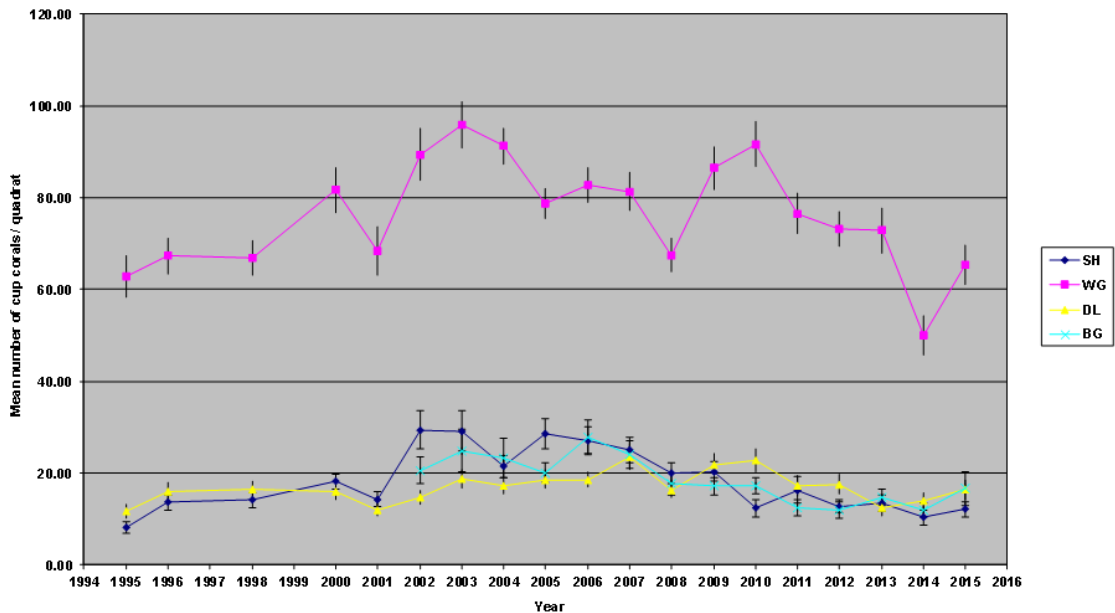
The average number/m<sup>2</sup> of *B. regia* has fluctuated at transects A, B and C. The variability is caused by dense covering of silt across the site hiding individuals and occasional very poor photographic conditions (e.g. 2010).

*Caryophyllia smithii*

Thorn Rock shows changes in mean abundance, this may be due to variable levels of surface sediment affecting the actual numbers visible during recording.

The Windy gully (WG) quadrats show significantly higher counts compared to the other sites, this is most likely due to it being the only vertical wall site where less surface sediment accumulates. The other three sites are all on horizontal rock.

Mean Number of Cup Corals per Quadrat at Thorn Rock 1996 - 2016



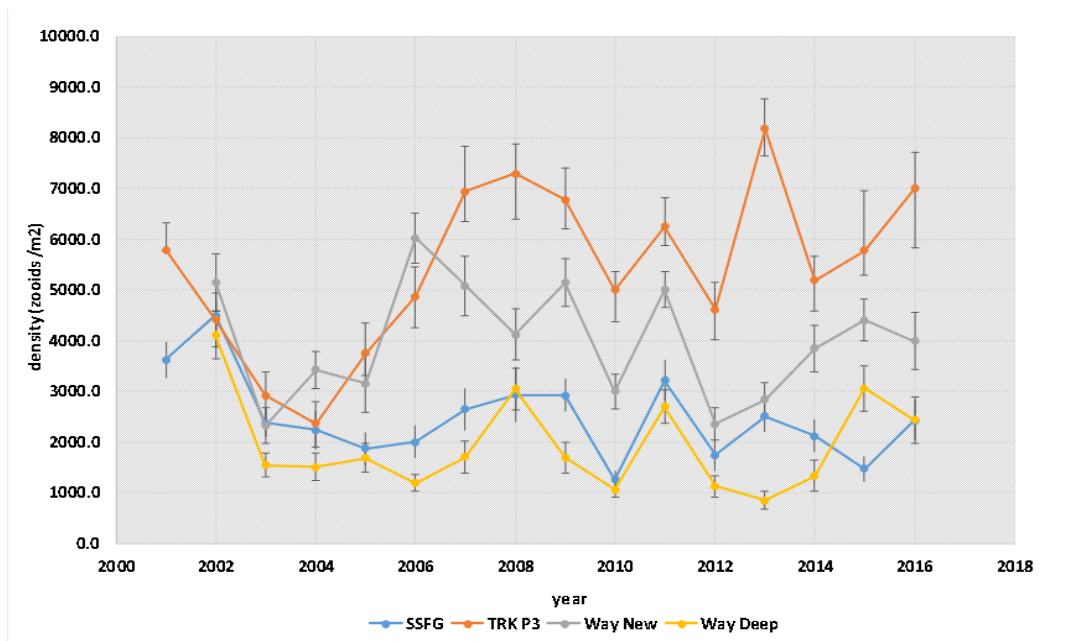
9.1.13. Project code: RM23/05 Monitor *Parazoanthus axinellae*

All monitoring sites were visited and all yellow trumpet anemone colonies were still present.

The Thorn rock sites all decreased in frequency of polyp compared to 2015, whereas other sites show a slight increase.

No significant changes in polyp density were seen at any site in 2016.



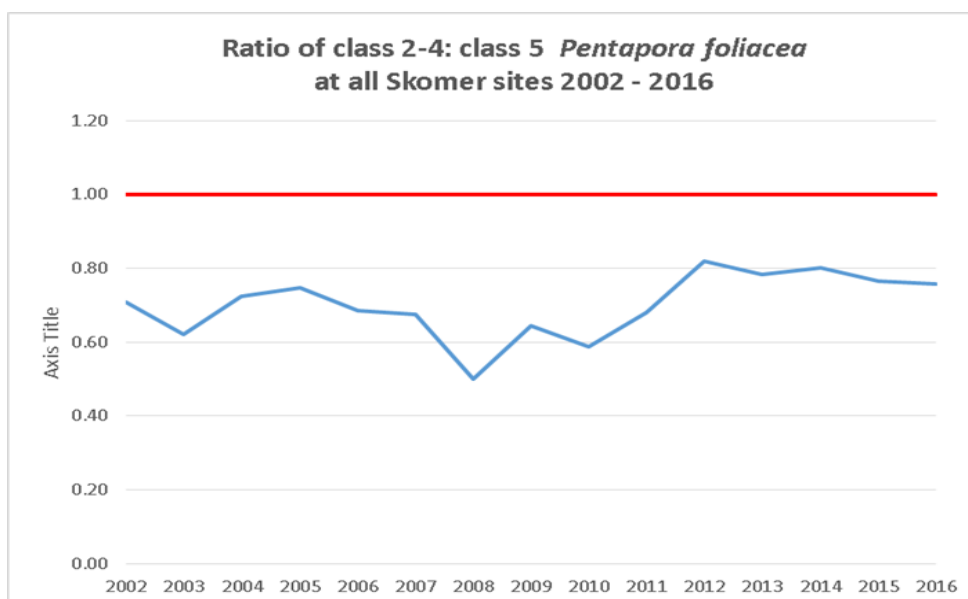


9.1.14. Project code: RM63/01 Monitor *Pentapora foliacea* Population

In 2016 all Ross coral sites were visited and photographed. The classification system developed in 2006 and revised in 2010 has been used to characterise the population at Skomer.



By comparing numbers of class 2-4 colonies, which represent healthy growing colonies, with class 5 colonies, which represent those with deterioration from either natural or anthropogenic factors, it can be demonstrated that there are more class 5 colonies than class 2-5, which might indicate a population under pressure.



However, without comparing this ratio to that for an unimpacted area of seabed, no definite conclusion can be made.

9.1.15. Project code: RM03/04 Sediment surface and burrowing fauna

Due to funding being available in 2016 and likely resource cuts in 2017, the sediment infauna monitoring was brought forward by a year.

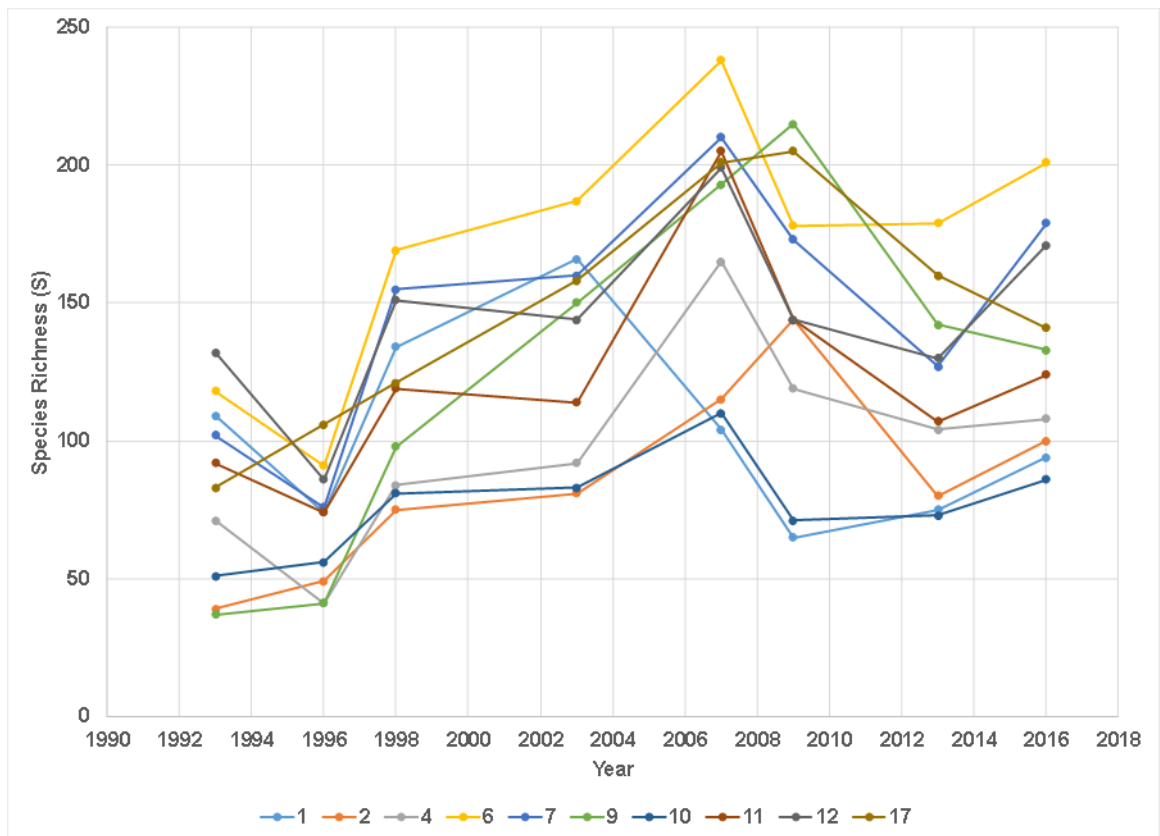
The 2016 results show a general increase in species number compared to the previous survey in 2013.



Mark taking no chances in the presence of seawater

Species have been very variable over the survey period with over 100 new species been recorded every survey. In 2016 142 new species were recorded which have not been identified in any of the previous surveys. This suggests that the infauna community in the sediment around Skomer are both diverse and dynamic.

Graph of Species richness 1993 - 2016





## 9.2. Meteorology/Oceanography

### 9.2.1. Project code: RP04/01 Record Meteorological Factors



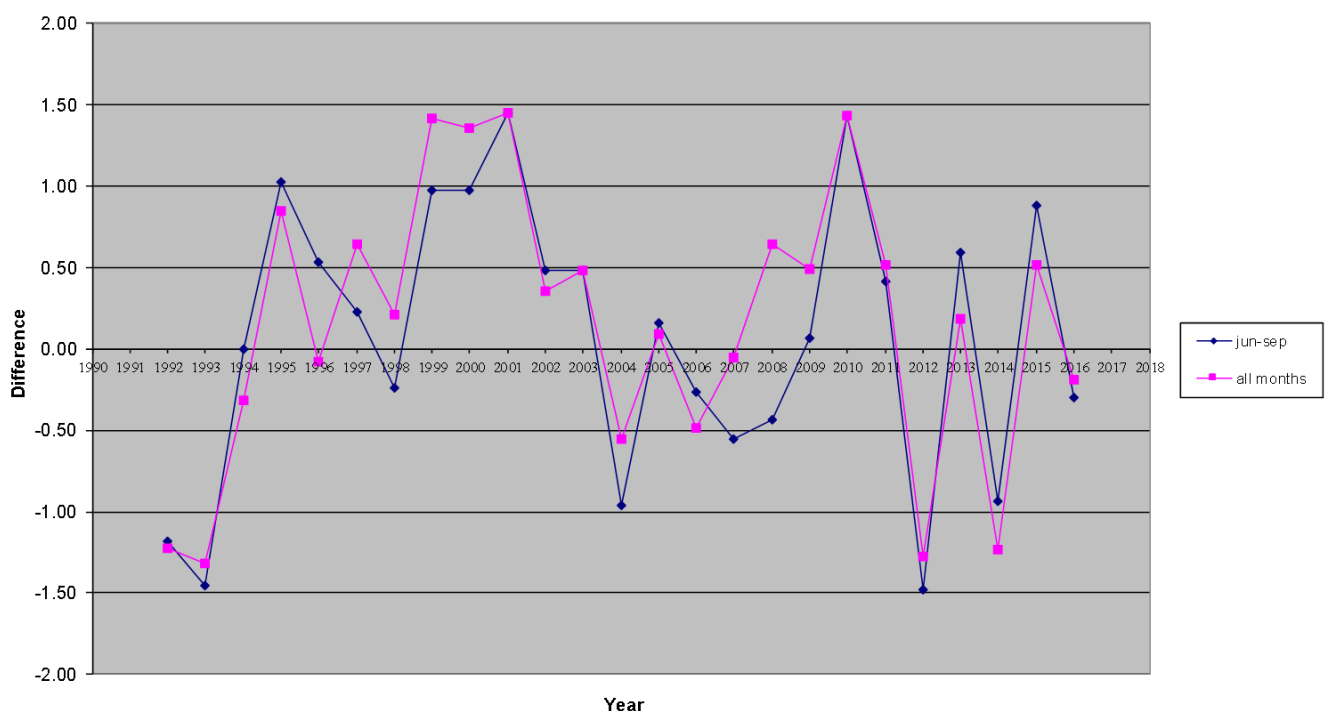
Weather data at Skomer MCZ continues to be collected via an automatic weather station, which is compatible with other Environmental Change Network sites across Wales.

The highs and lows of the weather for 2016:

Maximum temperature (°C)	26.3 (July)
Minimum temperature (°C)	0.3 (Feb)
Annual Maximum gust (knots)	74 (Nov & Feb)
Direction of Maximum gust	263.1 degrees

### 9.2.2. Project code: RP63/01 Monitor Seawater Turbidity / Suspended Sediment

Seawater turbidity was measured using a Secchi disk at Thorn Rock and OMS on 22 occasions at each site. Turbidity at Skomer MCZ in 2016 appears to be marginally below average when compared with the overall mean.

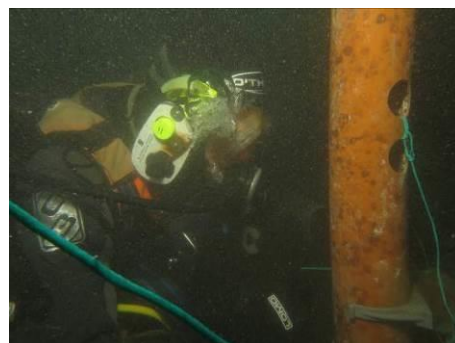


### 9.2.3. Project code: RP63/04 Monitor Seabed Sedimentation

Seabed sedimentation samples were collected at OMS and Thorn Rock sites using passive sediment traps.

Analysis of the samples is carried out by NRW laboratories for dry weight, organic content, grainsize analysis and metal content.

We are still awaiting results from samples taken in 2015 and 2016.



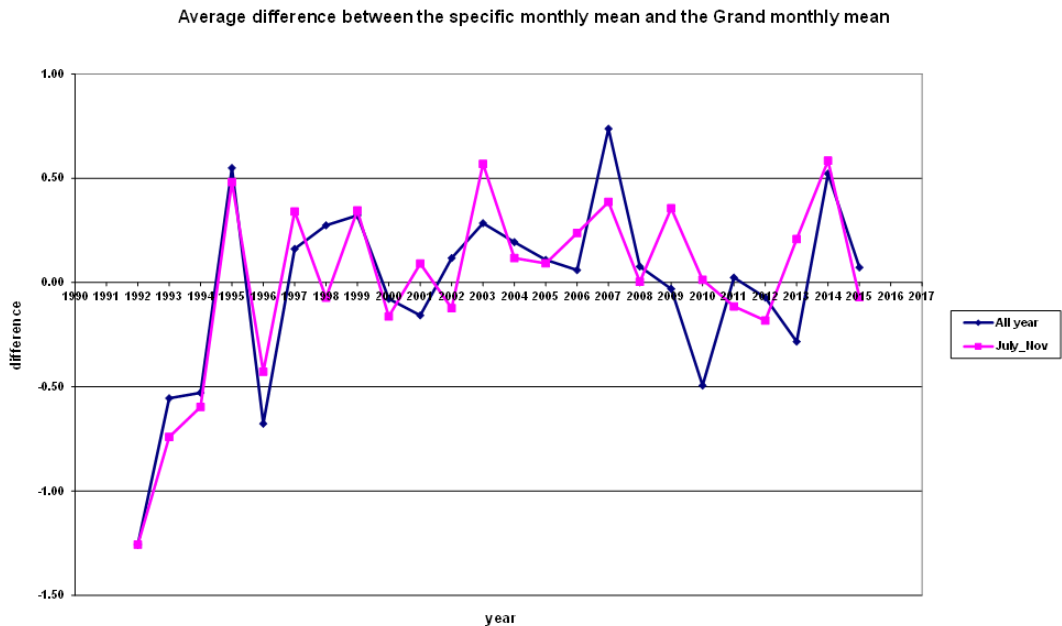
### 9.2.4. Project code: RP64/01 Record Seawater Temperature

Seawater temperature data was collected from an automatic logger located at 19m below chart datum at the OMS site and from vertical temperature, salinity profiles carried out from surface to near seabed at the same time as plankton sampling.

Maximum and minimum seabed temperature from the logger are presented below.

Year	Minimum temperature °C	Maximum temperature oC
2000	8.4	16.27
2001	7.27	16.3
2002	8.7	15.6
2003	7.6	17.1
2004	7.7	16.76
2005	7.36	16.4
2006	7.5	16.3
2007	8.8	16.3
2008	8.4	16.3
2009	7.0	16.8
2010	6.9	16.8
2011	7.6	15.9
2012	8.0	16.6
2013	6.98	16.82
2014	8.14	16.72
2015	7.8	15.98
2016	8.5	16.8

Comparison of annual mean temperatures with the overall mean indicate that 2016 was “very average”.



### 9.3. Data handling developments

Recent failure of the shared drive containing all of the Skomer MCZ data, documents and images (all fortunately backed up and retrieved) has prompted a rethink within NRW of how to best deal with our specific demands.

Most NRW systems now operate over the internet, but the line speed is so slow at Martins Haven that this “on-line” approach would not be practicable.

We are hoping for a more secure and workable solution from our information technology specialists.

Data dissemination has been helped by the availability of MCZ reports on the NRW internet site.

This includes the 2015 Sponge Diversity Survey Report by Jen Jones and completed in 2016 (see Appendix 4).

#### Monitoring and research

An extensive research and monitoring programme operates that all the marine species, communities and habitats found in the MCZ are reports are produced. Non-destructive research by third parties is of academic institutions are maintained.

#### Document downloads

-  [Skomer Marine Conservation Zone Annual Report 2014](#)  
PDF; 2.2 MB
-  [Skomer Marine Conservation Zone Nudibranch Diversity Survey 2014](#)  
PDF; 4.1 MB
-  [Skomer Marine Conservation Zone Project Status Report 2014](#)  
PDF; 2.1 MB
-  [Grey Seal Breeding Census Skomer Island 2014](#)  
PDF; 4.5 MB
-  [Skomer Marine Conservation Zone Distribution & Abundance of Zostera marina in North Haven 2014](#)  
PDF; 1.2 MB



#### 9.4. Other work

MCZ staff continue to be involved in NRW projects that take them out of the Skomer MCZ and sometimes into radically different environments. One such was in answer to a call from our colleague Paul Culyer, who is Senior Reserve Manager based at Stackpole. He was keen to get some sampling done of the rare Stonewort that lives in the Bosherton lily ponds.



This mainly involved standing on our heads in deep weed and no visibility, but between the sampling sites, where the water was clearer, the freshwater life was almost as nice as that found in seawater.

Mark continues to service a number of temperature loggers around the Pembrokeshire coast and the whole team has continued to fulfil NRW's commitment to the UK-wide MarClim project, carrying out shore surveys throughout Pembrokeshire.



MCZ staff have also continued to support the work of NRW's specialist monitoring team, carrying out lagoon sampling surveys at Pickleridge, Neyland and Carew. The team was also involved in a comprehensive grab sampling survey across St Brides Bay, managing to complete all 80 St Bride's stations and our own 12 sediment infauna sites in less than 7 days.

## 10. Education and Interpretation

### 10.1. Fisherman's Cottage MCZ exhibition

The Skomer MCZ exhibition room at Martins Haven continues to attract far more people each year than it seems possible for one little room with a telly in it (even if it is a very nice touch-sensitive screen telly).

No changes have been made to the exhibition, but the interactive display does give the MCZ team a useful resource for presenting PowerPoint presentations as well as the normal interactive video display.

Visitor numbers are comparable with previous years as shown by the results of our "break-the-beam" people counter.

Figure 10.1 MCZ Exhibition Visitor numbers 2016

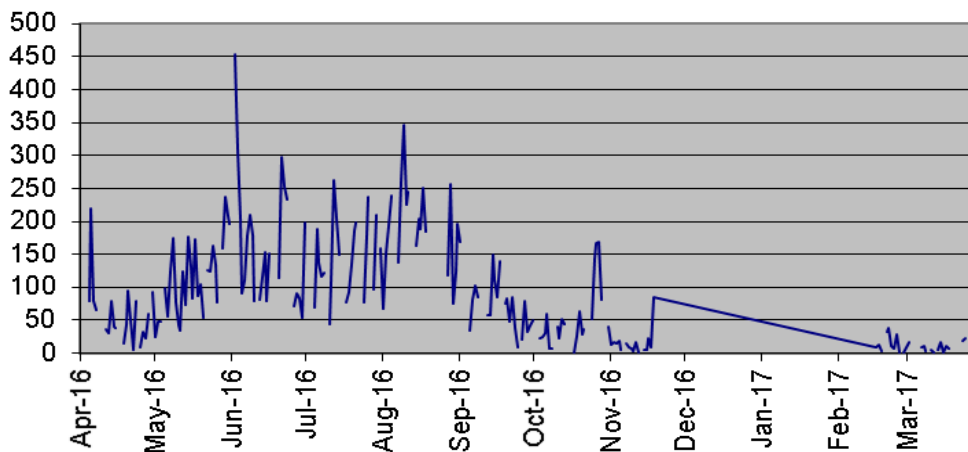
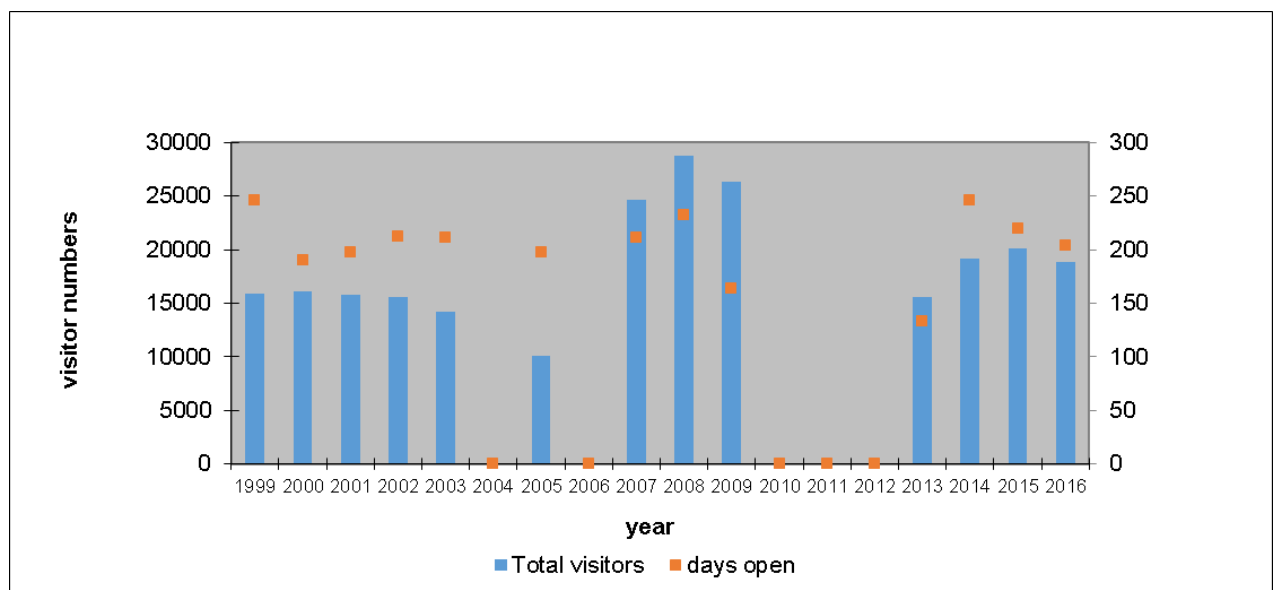


Figure 10.2 MCZ Exhibition Visitor numbers and days open 1999 to 2016



## 10.2. Other initiatives

The Skomer MCZ team hosted another Martins Haven Marine Day in August 2016. Dozens of children came to see what sea monsters we would bring them from underwater as well as what they could find for themselves on the shore.



This was followed by crafty goings on back at Marloes Village Hall, where even more sea creatures were created.



## 10.3. Talks and presentations

In April Phil gave a presentation on the long-term datasets of the Skomer MCZ at the Chartered Institute of Ecology and Environmental Management Welsh section spring seminar at Swansea University.

Mark gave talks to the Friends of Skomer and Skokholm in February and to the Hayscastle Environment Group in January. Mark is also firmly established on the Women's Institute circuit and gave several talks at meetings throughout Pembrokeshire.

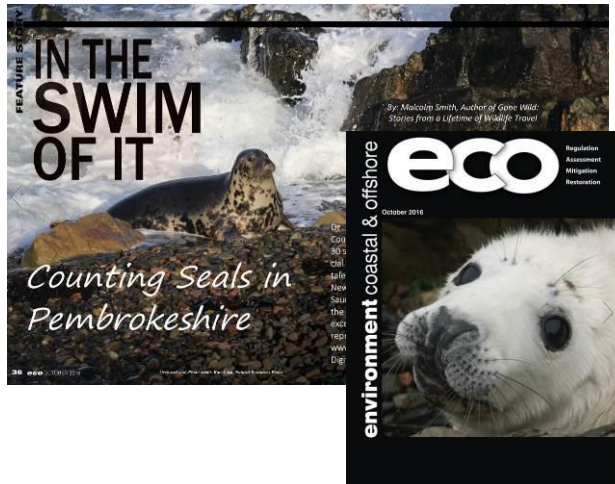
Skomer MCZ data featured in a poster presentation at a seagrass conference in Porthdinllaen.

In March Phil was asked to give a short presentation on the work of Skomer MCZ to the National Assembly for Wales Cross Party Group for Biodiversity in Cardiff Bay.



#### 10.4. Media

Skomer MCZ media exposure took many forms in 2016, with photographic contributions to a magazine article promoting our former colleague Malcolm Smith's new book, but giving prominence to the work the Skomer MCZ do with seals.



Workers from the Natural History Museum, who came to collect seaweed samples for the Museum's collection, were accompanied by the Natural History Museum's own broadcast unit, who managed to get the footage they wanted despite the diabolical weather.

The MCZ team have also launched themselves into the murky world of social media and now have their own official NRW Facebook page.

Phil and Kate also contributed a blog article for the NRW website and the team have contributed several posts on NRW's internal social media called Yammer.



## 11. Acknowledgements

Skomer MCZ staff wish to thank all those who have supported our work or contributed directly to it over the past year.

Special thanks to:

- Members of the Advisory Committee, especially Dr Robin Crump who chairs the Committee;
- All of our past Honorary Wardens and now current volunteers;
- Bee Büche and Eddie Stubbings and the rest of the Skomer Island NNR staff;
- John Archer Thomson, Blaise Bullimore and Rob Spray for diving support;
- Blaise Bullimore for the use of his photographs in this and other reports;
- The crew of the *Dale Princess*;
- Neptune's Army of Rubbish Collectors for helping to keep the MCZ (and indeed the waters of Pembrokeshire) less full of rubbish;
- Our heroic volunteer diving teams without whom we would not have been able to carry out the scallop surveys;
- Skippers of the dive charter vessels for being so patient with us!

With apologies to anyone missing from the list above.





## 12. Appendices

### Appendix 1 – Grey Seal Breeding Census Skomer Island 2016, Birgitta Büche and Edward Stubbings, Wildlife Trust of South and West Wales. NRW Evidence Report 194

218 pups were monitored on Skomer Island in 2016, of which 202 were definitely born on Skomer and 16 pups turned up either just before the start of moult, or moulting (wanderers).

The total of 202 pups born on Skomer Island is the third highest total ever recorded with 215 (in 2014) and 220 (in 2015) being the record.

A total of 345 pups were born within the Skomer Marine Conservation Zone, of which 143 were born on the Marloes Peninsula See section 4.2.

The busiest week this year was a fortnight earlier than in 2015 with 33 pups born in week 39 (26/9-2/10). See section 4.2.

The most productive beaches were South Haven (44 pups) and Matthew's Wick (39 pups). North Haven was the third most popular beach followed by Driftwood Bay which was the fourth most popular beach. See section 4.2.

146 pups are known, or assumed, to have survived on Skomer, giving a survival rate of 72% which is lower than last year's rate (76.1%) and the average of the last ten years (76%). See section 4.3.

In 2016 the maximum haul-out (on the main haul-out sites) of 224 animals was recorded on 24 November, eight days later than the maximum haul-out was observed in 2015 and 2014. See section 5.

In 2016 26 animals (22 females, three males, one immature) were photographed with obvious signs of being entangled in nets at some time in their lives. See section 6.

Between 18 August and 11 November 2016 23 incidents of disturbance to seals around Skomer Island were observed. See section 7 and Appendix 3.

In 2016 409 photos were taken which will be entered into the NRW Wales Seal ID database. Furthermore 92 seals were identified by eye, of these 46 were known from previous years.

## 12.1. Appendix 2 – Correspondence between Skomer MCZ Advisory Committee and Welsh Government.

Dear Minister

I am writing on behalf of the Skomer Marine Conservation Zone Advisory Committee in my capacity as the group's chair. The Committee is made up of around 30 members representing a range of marine interests including academic, recreational and commercial fishing and tourist operators, as well as government agencies and non-government organisations.

The committee began life in the 1970s as the Skomer Marine Reserve Committee when the area became a voluntary Marine Reserve and has continued to provide a stakeholder forum for, and advice to, the statutory nature conservation bodies throughout the evolution from voluntary reserve through statutory Marine Nature Reserve status (designated in 1990) and now to Marine Conservation Zone (designation in 2014).

Over this long period the Committee has seen many changes in fortune for the site and its staff, but concern and uncertainty over the future for Skomer MCZ has now reached the point where Committee members have tasked me to contact you directly.

Natural Resources Wales currently manage all aspects of the site (not including the Skomer Island National Nature Reserve, which is managed separately) via a small team based at Martins Haven. This includes not just the biological monitoring (which also informs reporting on the surrounding European Marine Site and is referenced in the recently released State of Natural Resources Report), but also water quality, commercial and recreational use monitoring, visitor management, community outreach and interpretation.

The Committee took great comfort from Welsh Government's June 2014 letter to NRW regarding transition of the site from MNR to MCZ which stated "The Welsh Government is committed to ensuring that there is no change to the level of protection afforded to the area as a result of this change." The letter went on to say "To deliver the commitment on the ground and ensure that there is no change in the level of protection to the area it is the Welsh Government's expectation that Natural Resources Wales will continue to maintain an effective management regime for the area as a Marine Conservation Zone."

However, NRW has recently embarked upon a series of "business area reviews" apparently driven by austerity measures and looking to eliminate any functions, including monitoring, that are not statutory requirements. In an e-mail earlier this year from NRW I was informed that "With the introduction of the Marine and Coastal Access Act and the transition to a Marine Conservation Zone, however, our statutory responsibilities to undertake these (longstanding monitoring and management work) activities have now ceased.", including presumably NRW's support and recognition of the Advisory Committee.

As you can appreciate the Committee is very concerned that the highly valued (and internationally recognised) long-term monitoring datasets established at Skomer, not to mention the management that has helped to protect and enhance the biodiversity and ecosystem services potential for the site, are under threat. Over the years the team at Skomer has also established important links within the local community, with commercial and recreational users of the site and with academic institutions around the world and to throw this investment away would appear illogical.

Also at risk is the collective experience and goodwill of the Advisory Committee, which has not even been offered representation at the Wales MPA management steering group.

The Committee is not ignoring the economic realities facing Welsh Government and NRW, but given the increasing need for evidence to satisfy reporting requirements (Marine Strategy Framework Directive reporting begins next year) and the difficulties in gathering that evidence that the State of Natural Resources Report identifies we question whether reducing Skomer MCZ to a “paper park” by removing its resources represents best value for money. For the sheer volume of work carried out by such a small team I would refer you to their latest reports at <http://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-of-land-and-seas/skomer-marine-conservation-zone/?lang=en>, particularly the annual and project status reports. The Committee are well aware, through its annual meetings and NRW reports, how much the staff at Skomer MCZ have achieved on a very limited budget and how the experience and skills of the team have contributed to efficiency savings.

There are a couple of ironies operating here:

One is that the Marine and Coastal Access Act (under which, incidentally, Welsh Government have a duty to monitor Wales’ MCZs) and the introduction of MCZs to replace the “failing” MNR designation appears to be about to remove all the good work achieved under the MNR designation and not replace it with anything else.

The other is that NRW state on page 2 of the State of Natural Resources Report that “Natural Resources Wales is an evidence based organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;
- Having a well resourced proactive programme of evidence work...”

The Skomer MCZ Advisory Committee would urge the minister to consider Skomer MCZ an essential element in the evidence gathering effort needed for all Wales MPAs as well as being Wales’ only MCZ.

**Lesley Griffiths AC/AM**  
Ysgrifennydd y Cabinet dros yr Amgylchedd a Materion Gwledig  
Cabinet Secretary for Environment and Rural Affairs



Llywodraeth Cymru  
Welsh Government

Ein cyf/Our ref: LG/06507/16

Robin Crump  
Chair  
Skomer MCZ Advisory Committee

robin.g.crump@gmail.com

2

November 2016

Dear Mr Crump

Thank you for your email of 18 October, regarding concerns raised by members of the Skomer Marine Conservation Zone Advisory Committee about the future of Skomer Marine Conservation Zone (MCZ).

I am aware Natural Resources Wales (NRW) has been undertaking a number of business area reviews to ensure it has the right structures and resources in place to effectively carry out its functions. Conducting and implementing these reviews is a matter for NRW.

I would like to assure you and your members I am committed to maintaining and enhancing the marine environment in Wales. This includes ensuring Wales contributes towards an ecologically coherent and well-managed network of Marine Protected Areas, and the seas around Skomer form a part of this network.

Regards  
Lesley Griffiths

**Lesley Griffiths AC/AM**  
Ysgrifennydd y Cabinet dros yr Amgylchedd a Materion Gwledig  
Cabinet Secretary for Environment and Rural Affairs

Bae Caerdydd • Cardiff Bay  
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0300 0604400  
[Gohebiaeth.Lesley.Griffiths@llyw.cymru](mailto:Gohebiaeth.Lesley.Griffiths@llyw.cymru)  
[Correspondence.Lesley.Griffiths@gov.wales](mailto:Correspondence.Lesley.Griffiths@gov.wales)

Rydym yn croesawu derbyn gohebiaeth yn Gymraeg. Byddwn yn ateb gohebiaeth a dderbynnir yn Gymraeg yn Gymraeg ac ni fydd gohebu yn Gymraeg yn arwain at oedi.

We welcome receiving correspondence in Welsh. Any correspondence received in Welsh will be answered in Welsh and corresponding in Welsh will not lead to a delay in responding.

12.2. Appendix 3 - Assessing the effects of fouling on the growth rate of the pink sea fan, *Eunicella verrucosa*, in Skomer Marine Conservation Zone. Final Year Project in Bioscience – Kathryn Whittey. 2016

Abstract

The UK hosts small populations of corals, some of which are at the northern end of their range. One such species is the gorgonian pink sea fan, *Eunicella verrucosa*.

This species is protected by UK habitats directive and is listed as vulnerable on the IUCN red list. Here, a 20 year time series of underwater images of a *E. verrucosa* in the Skomer Marine Conservation Zone was examined. Localised stressors on coral health have been recognised as a threat to the population viability. The aims of the study were to assess the growth rate of the *E. verrucosa* colonies, evaluate the damage from common local stressors and to infer future improvements in monitoring methodologies. A semi-automated branch counting software Strahler analysis was tested and found to be a promising method for monitoring growth in future studies.

As a measure of growth, the branch number of the corals were used as an approximation. The branches of 43 colonies, totalling 531 photographs were counted. Each photograph was analysed for damage from fouling by epibiota, necrosis and *Scyliorhinus stellaris* eggs. The collective effect of the fouling variables observed was found to have a significant negative association with growth. Overall an average negative growth rate of - 0.2% was found in the *E. verrucosa* colonies, a result which represent a decrease in growth rate and an overall loss of branches over a 20 year period. The loss of branches can be detrimental to coral health and population resilience, with colonies experiencing long term affects including reproductive and immunological impairments. This renders the coral population at further risk. Although the relatively small decline of - 0.2% over a 20 year period, on the surface does not seem extreme, the current state of the population along a health spectrum from pristine to system collapse is unknown. More importantly the on-going pressure from local and global stressors are having a deleterious effect testing and straining the population's resilience. The situation may be precarious; an increase in the effect of stressors or an additional stressor could push the population over a tipping point, beyond which they cannot recover. In light of global changes such as rising sea-water temperature and associated increase in widespread coral disease, studies assessing coral health and local risks are important. Further understanding of the risks to the Skomer *E. verrucosa* population is needed to enhance future management.



## 12.3. Appendix 4 – Skomer MCZ Sponge Diversity Survey 2015

### Synopsis

Sponges are an important feature of Skomer Marine Conservation Zone. A four yearly full species monitoring programme has been in place since 2003, but records exist from 1991. The number of species/entities recorded to date is 130, of which around 33 are undescribed or need further investigation.

In 2015 six sites were surveyed on the south side of Skomer Island as part of the continuing full species monitoring programme. A total of 67 species/entities were recorded in situ or from samples taken for microscopic identification of spicules. Of these, 11 are undescribed or need to be fully researched.

Subsamples of 53 sponges were sent to Dr. Joanne Preston, Institute of Marine Science, University of Portsmouth, for molecular research.



## Skomer Marine Conservation Zone Sponge Diversity Survey 2015

J. Jones, M. Burton, K. Lock,  
& P. Newman

NRW Evidence Report No.159



Jones et al, 19/04/2016  
[www.naturalresourceswales.gov.uk](http://www.naturalresourceswales.gov.uk)



**Cyfoeth  
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Cymru  
**Natural  
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