

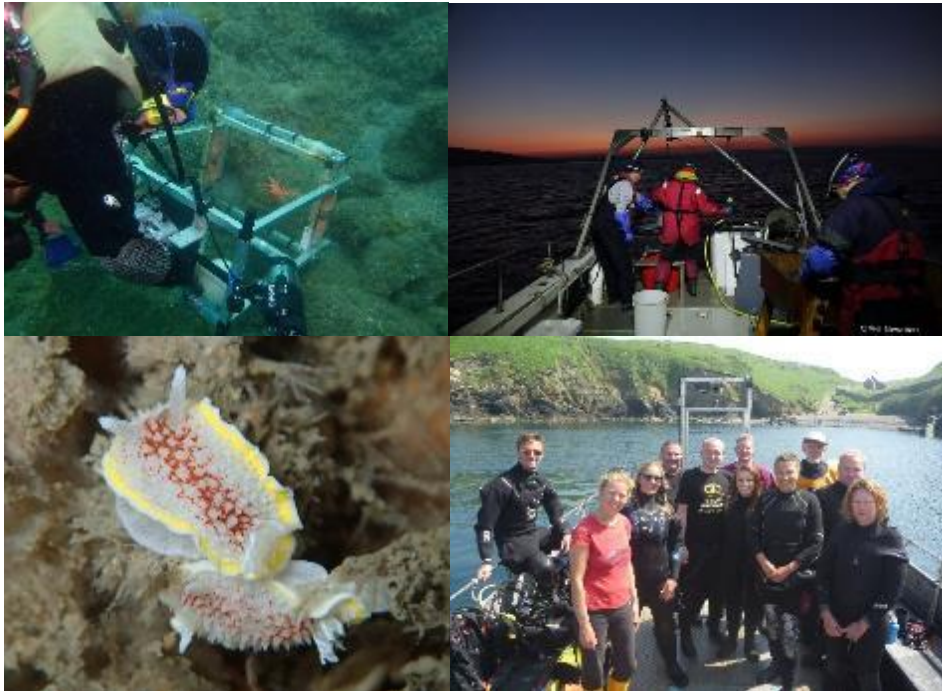


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**Natural
Resources
Wales**

Skomer Marine Conservation Zone Annual Report 2018

Phil Newman, Kate Lock, Mark Burton, Jen Jones

NRW Evidence Report 323



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. SMCZ and SMNR

The Environment (Wales) Act and the Wellbeing of Future Generations (Wales) Act provide the framework for NRW's work to pursue the sustainable management of natural resources (SMNR) as defined in the former, whilst maximising our contribution to the well-being goals set out in the latter.

Sustainable management of natural resources follows nine main principles and the work of Skomer MCZ can be shown to apply (and to have been applying for many years) these principles:

Adaptive management – the management of Skomer MCZ is not set in stone. Our monitoring programme provides the evidence we need to review our management actions and where necessary change them.

Scale – whereas the boundary of the site was decided decades ago, our extensive knowledge of the MCZ allows us to apply aspects of our management to specific and appropriate areas. For instance, we are confident that the seabed in South Haven and parts of North Haven can tolerate current and historical levels of recreational anchoring, but the rest of the site cannot. This allows us to identify areas where recreational anchoring can happen rather than try to impose a blanket ban on anchoring. Similarly we would not wish to restrict access to the coastline of Skomer without good reason when it is specific small areas that are more sensitive to disturbance at different times of year. For this reason our seasonal access restrictions are designed to protect breeding seals and birds at the most sensitive sites in the autumn and spring respectively.

Collaboration and engagement – this report demonstrates the importance we place upon liaison with academic institutions to increase our knowledge of the site by providing help with research projects. This report further documents our connections with regulatory and recreational organisations to ensure legal and voluntary measures are effective in protecting the site. The Skomer MCZ Advisory Committee is pivotal in this respect.

Public participation – without public participation we would be unable to carry out nearly as much monitoring work as we do. From teams of volunteer divers carrying out intensive surveys of species and habitats like scallops and eelgrass to individuals making up our own dive team to allow work to continue in the absence of staff, we are dependent on volunteers. Our voluntary controls would be unworkable without public support and the local community provide valuable help in safeguarding the site through their vigilance.

Evidence – gathering evidence is our bread and butter, whether we are collecting it ourselves or relying on our extensive collaborative network to provide it to us.

Multiple benefits – we are fully aware of the intrinsic value of a site such as Skomer MCZ where people can come to enjoy wildlife in as unspoilt a marine area as we are likely to have anywhere in Wales. We can only theorise on the level of benefits to the wider marine environment of larval export from communities and species deriving a high level of protection as a result of the fishery byelaws we have.

Long term – at Skomer MCZ we are in an almost unique position to be able to report on the long-term consequences of marine conservation management actions taken over two decades ago.

Preventative action – the site-based nature of the team at Skomer MCZ is a major contributory factor in the protection of the site. We are able to respond quickly to potentially damaging events and intervene. Sometimes this is by our mere presence acting as a deterrent, sometimes by educating those who might cause harm unknowingly.

Building resilience – by applying nature conservation principles we can help to build diversity, populations, and connectivity; all of which contribute to the maritime ecosystem's resilience in the face of anthropogenic change.

4. Introduction and Foreword

It appears that my wishes for a more tranquil season in 2018 were granted with some stunning weather during the summer, which made for very pleasant conditions above and below water. This persisted throughout the two-week period we had earmarked for our four-yearly sea slug survey and for the three weekends that our volunteer divers helped us survey the eelgrass bed in North Haven. A huge thank you to them and to the volunteers who helped with the sea slug survey.



Photo: Kerry Lewis

The eelgrass volunteers managed to complete all the transects (counting eelgrass at nearly 800 points across some 65 transects) within 5 days. The initial results from this are encouraging, with shoot density and the extent of the bed looking higher than previous years.



Good news on the sea slug front too with MCZ staff and volunteers finding 58 species across 16 sites within the Skomer MCZ, including 3 new species. This brings the total number of sea slug species ever recorded at Skomer to 79.



The poor old sea fans, however, continue to disappear, with several more missing and most of those posted as missing last year confirmed as losses this year.

After the battering that the seal pups took last year we were waiting with some trepidation for this year's seal pupping season. Fortunately, the storms this year appeared to have had less effect and it almost seemed as if the seals were making up for last year's losses, with preliminary results giving good numbers of seal pups being born and surviving through to their first moult.

Media interest in seals was high following last year's seal pup losses and Mark gave an interview to BBC Radio Wales, which was followed up by an article on the BBC website.



Kate “starred” in a video blog for NRW explaining the seal monitoring work we do here, and Phil appeared in another video explaining some of the other monitoring work we do.

Skomer has become a very popular venue for visits from other NRW teams as part of the programme NRW has implemented to build better connections within the organisation. We would love to think it is our irresistible charm and warm personalities that make us so popular, but I suspect it might have something to do with puffins and porpoises!



Some teams were perhaps more fortunate with the weather than others!

Other visits included Claire Pillman, NRW Chief Executive and now honorary Skomer MCZ boat skipper, and Paul Davies AM (thanks to Lizzie Wilberforce of Wildlife Trust South and West Wales for the photo).



A very busy season culminated in grab sampling expeditions up to the twiddliest (apologies for the technical jargon) reaches of the Milford Haven waterway and the Three Rivers estuary system in Carmarthen Bay, where we were treated to sunrises on the Gwendraeth and sunsets on the Tywi – sometimes in the same day! Skalmey rode out the worst excesses of storm Callum on our borrowed mooring at the Tywi Boat Club, although she was joined on the river bank by several large trees that had made the voyage downstream on the floodwaters caused by Callum’s torrential rain. Many thanks to the boat club and its members for again making us welcome.

5. Staff

5.1. 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.

At the time of this report MCZ staff were all awaiting the outcome of NRW's restructuring process and whether they needed to compete for jobs in the new Marine Monitoring Team. Skomer MCZ will be part of a new marine monitoring team, which will be one of three marine teams within an all-Wales marine service in NRW.

5.2. Volunteers

NRW's new system for the recruitment, co-ordination, support and management of volunteers, student placements, and those undertaking work experience is still not fully functional, but the payment of volunteer expenses appeared to be working well in 2018. The system should be up and running later in 2019 and MCZ staff have been involved in the scheme's transitional stages.

The MCZ depended even more heavily on volunteers in 2018 as they supported not only the four-yearly survey of the eelgrass bed in North Haven, but also the four-yearly survey of nudibranch species across a number of sites within the MCZ.

Volunteers also help to make up the MCZ's own diving team for many of our routine monitoring tasks and helped out with non-diving projects such as weekend patrol and fishing effort recording. Volunteers included regulars as well as returning work experience students from previous years and even NRW's own Chief Executive, who turned out to be a dab hand at boat driving.



5.3. Development and training

Skomer MCZ staff and volunteers took part in the annual dive safety refresher training event in April 2018. Various safety drills for diving and boat operations were practiced under the expert supervision of instructors from West Wales Dive Company to ensure that anyone working with the team is familiar with the equipment aboard *Skalmey* and how it operates.

Phil has embarked upon the *Tyfu 2* management training course, which finishes in April 2019, and was awarded full membership of the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2018.

All MCZ staff attended interview skills training intended to help staff with potential interviews under the restructuring process mentioned above.

Phil and Mark attended a plant safety day including sessions on hydraulic hose safety, the role of the banksman and trailer safety. Despite being the only staff in yellow wellies we were made very welcome.



Kate did her first aid refresher in January 2019.

The whole Skomer MCZ team was shortlisted for the “Environment Champion” award at NRW’s #TeamNRW day in 2018.



Following oil pollution incidents in the Milford Haven waterway in December and January Kate was asked to deliver Shoreline Clean-up and Assessment (SCAT) training for 28 staff from Pembrokeshire County Council, Pembrokeshire Coast National Park Authority, National Trust, NRW and Milford Haven Port Authority.

5.4. 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.

After an unblemished safety record of over 27 years the MCZ team had its first diving-related incident, when Jen suffered delayed-onset decompression illness (a “bend”) late on in the diving season. Acute pain in one shoulder two days after her last dive resulted in a four-hour drive to the recompression facility in the Wirral with Phil acting as chauffeur. Fortunately, the recompression treatment was effective, and Jen has made a full recovery.

If any silver lining is to be derived from this unpleasant cloud it is that our emergency evacuation plans proved to be effective and that our emergency oxygen supply is capable of lasting the four hours required to reach the

recompression facilities either at the Wirral or in Plymouth if emergency transport services are unavailable.

All MCZ staff took advantage of health checks offered by NRW and I am pleased to report that we are all obnoxiously fit and healthy.

A range of other unpleasant ways of hurting ourselves have been managed through recertification of all lifting equipment and through hand-arm vibration and whole-body vibration assessments.

5.5. 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.

Phil also acts as NRW's representative on the Scientific Diving Supervisory Committee, which is the HSE recognised representative body for the Scientific and Archaeological diving sector.



The amount of time Skomer MCZ staff and volunteers spent underwater increased compared to 2017, partly because of good weather at the start of the season, which gave us a good start to our field work season and provided ideal weather and underwater visibility conditions for the nudibranch survey fortnight in June. Attempts to relocate and map sites at High Court Reef were not as successful as we had hoped due to the loss of seabed markers and the diving fieldwork was superseded in September and early October by grab sampling work in Milford Haven and the Three Rivers. However, we were able to complete all planned monitoring projects.

Table 5.1 Summary of MCZ Diving Activity 2018

	MCZ STAFF	VOLUNTEER DIVERS	TOTAL
Dives	158	16	187
Dive time (min)	5643	1316	6959
Dive time (hrs)	94.05	21.93	115.98
Average dive time (mins)	36	45	37.21
Diving days			36

Figure 5.1 Summary of MCZ Diving Activity 2018

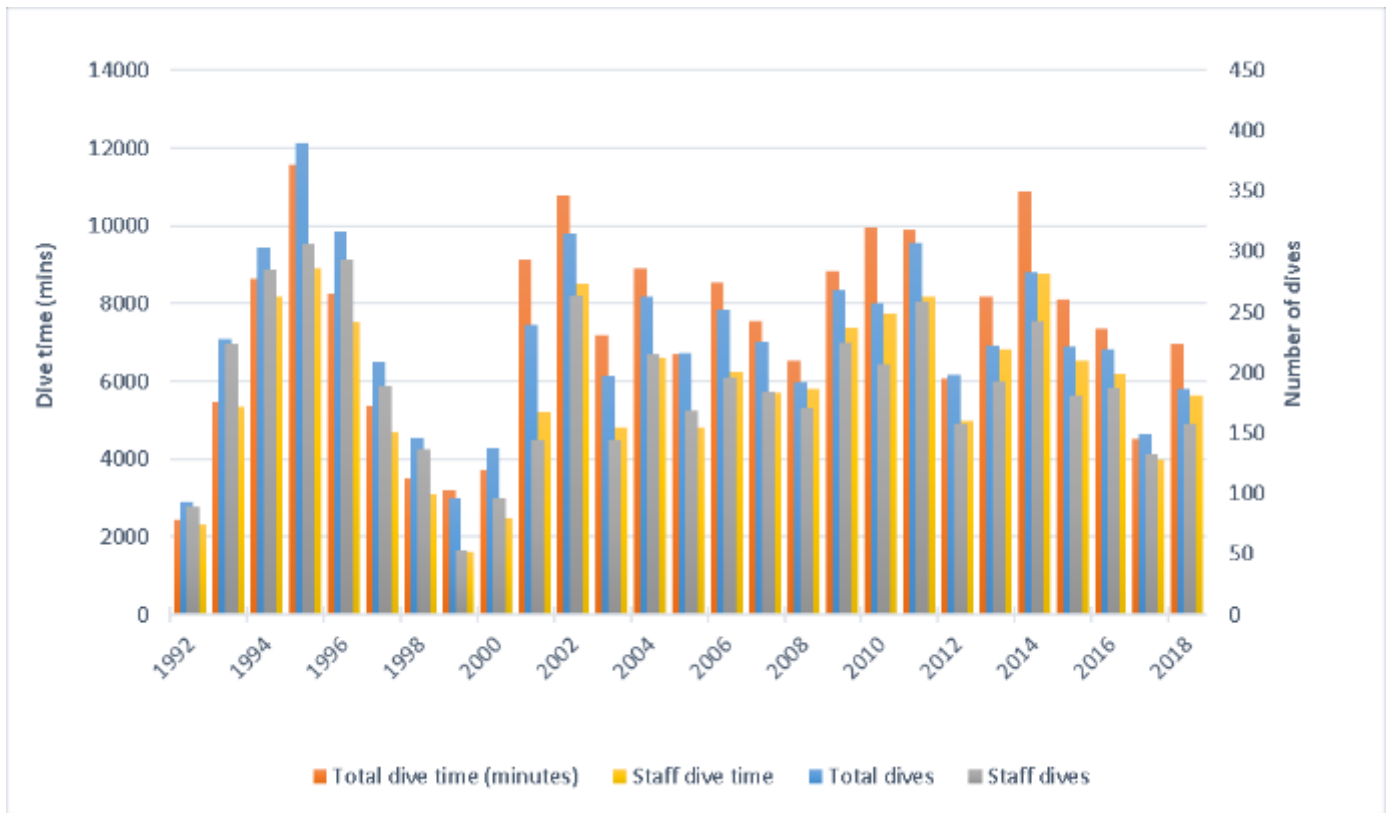


Figure 5.2 Skomer MCZ Diving Operations 2018 – dive time

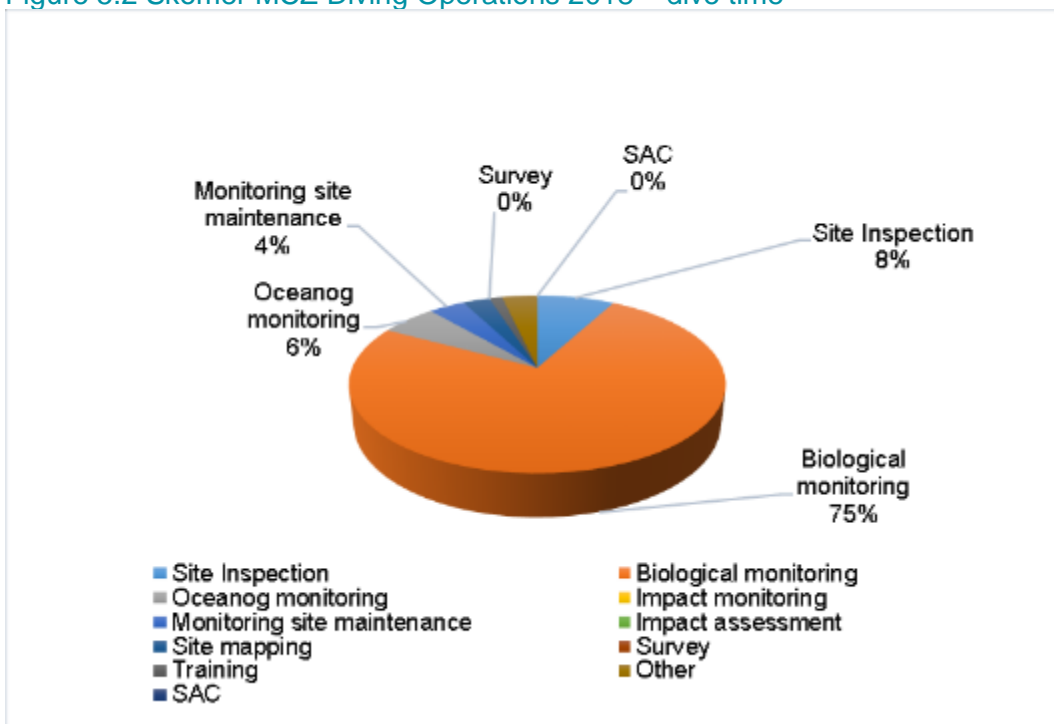
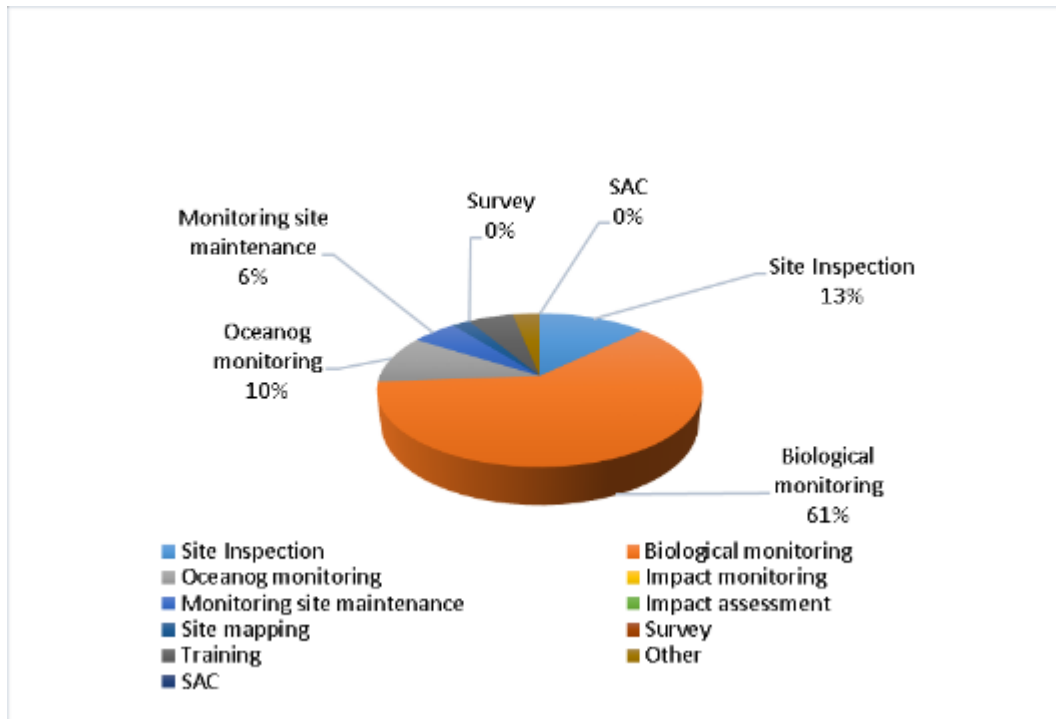


Figure 5.3 Skomer MCZ Diving Operations 2018 – number of dives



6. Estate

6.1. Buildings

MCZ staff continue to benefit from the improved storage facilities in Milford Haven, which mean we can store our bulky items of equipment more easily and lift and move items more safely. There are also the novelties of electricity and plumbing, which are a welcome change from previous facilities.



However, drainage near the site became a bit of a problem during the floods of 2018. Luckily a lot of our bulky items are designed to float!

The MCZ office and exhibition continue to be maintained by contractors and all waste handling, use of consumables and energy are monitored in accordance with ISO14001. The external environmental audit in July 2018 found no issues and NRW retained its certification to the ISO14001 environmental standard.

6.2. Boats

Skalmey spent 79 days at sea in 2018 and logged 259 engine hours. She survived a very busy diving season and the rigours of grab sampling up and down the Milford Haven waterway and Cleddau rivers without a hiccup. However, the trip round to the Tywi river proved too much for the engine water pump and *Skalmey* made a dramatic entrance to Llansteffan wreathed in her own fog bank. Fortunately, we were only metres from the jetty there and were able to limp to a safe mooring. Phil and Mark were able to fit a replacement pump on-site so very little time was lost for the grab sampling work that followed.



The MCZ rigid hull inflatable *Morlo* spent 40 days at sea and logged 129 engine hours in 2018.

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



The small inflatable tender was, as ever, very useful for our lagoon sampling efforts, especially at Carew millpond (see Section 10.4).

Table 6.1 Summary of MCZ Boat Activity 2018

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Days at sea																		
Skalmey	48	73	77	52	48	58	72	58	61	69	99	95	65	70	73	69	49	79
SkalmeyII/Morlo	31	37	32	40	43	40	38	36	38	48	36	35	30	43	32	34	36	40
Total	79	110	109	92	91	98	110	94	99	117	135	130	95	113	105	103	85	119
MCZ Staff seatime (hrs)																		
Skalmey	622	883	777	640	618	621	933	685	747	718	942	743	684	815	743	753	467	609
SkalmeyII/Morlo	226	277.4	279	461	405	331	339	278	278	295	313	234	188	288	188	219	220	246
Total	847	1160	1056	1101	1023	952	1272	962	1025	1013	1255	977	872	1103	931	972	687	856
MCZ Staff days at sea																		
Skalmey	129	225	205	154	158	165	202	170	189	183	279	253	178	211	193	198	143	208
SkalmeyII/Morlo	58	80	70	104	99	86	84	73	73	93	76	75	65	89	60	72	78	76
Total	187	305	275	254	257	251	286	243	262	276	355	328	243	300	253	270	221	284
Other Staff seatime (hours)																		
Skalmey	197	204	88	76.7	75.25	233	257	107	225	390.4	220	279	140	220	150	220	96	238
SkalmeyII/Morlo	89	89.7	69	107	88	142.5	77	113	77.5	157	51	50	39	100	89	118	55	156
Total	286	293	157	184	163	376	334	220	303	547	271	329	179	320	239	338	151	394
Other Staff days at sea																		
Skalmey	36	23	21	15	18	30	26	26	57	94	48	83	35	57	50	58	32	106
SkalmeyII/Morlo	19	22	15	21	17	22	12	29	18	35	11	14	9	24	28	36	19	39
Total	55	45	36	36	35	52	38	55	75	129	59	97	44	81	78	94	51	145
Total Staff seatime (hrs)																		

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Skalmey	819	1087	865	717	693	854	1190	791	973	1109	1162	1022	825	1034	893	973	563	847
SkalmeyII/Morlo	315	367	348	568	493	473	416	392	355	452	313	284	227	388	277	337	275	403
Total	1134	1454	1213	1285	1186	1328	1606	1183	1328	1561	1475	1634	1051	1422	1170	1310	838	1250
Total Staff days at sea																		
Skalmey	242	248	226	169	176	195	228	196	246	277	327	336	213	268	243	256	175	314
Morlo	77	102	85	125	116	108	96	102	91	128	87	89	74	113	88	108	97	115
Total	319	329	311	294	292	303	324	298	337	405	414	425	287	381	331	364	272	429
Engine hours																		
Skalmey	181.1	245.3	284.54	171.07	150.16	169	244.38	168.62	224	241	322	266	222	249	284	237	145	259
SkalmeyII/Morlo	99	118	96	162.7	160	141.25	120.5	144.67	139	157	118	110	139	137	98	105	97	129
Total	280.1	363.3	380.54	333.8	310.2	310.25	364.9	313.3	363	398	440	376	361	386	382	342	242	388

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.

6.3. Equipment

6.3.1. Safety, diving and protective equipment

All safety-critical, diving or protective equipment is serviced and maintained to regulatory or manufacturer's requirements.

6.3.2. 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.

Recent innovations at Skomer MCZ include the purchase of new compact cameras in time for the nudibranch survey. In the MCZ tradition of "belt and braces" these cameras are inherently waterproof and are then housed in a watertight housing, giving them a rather more sporting chance of survival should there be a leak.



Our communications equipment got a radical overhaul with the issue of new mobile phones to replace the sturdy, but antiquated Nokias that have survived many abuses at our hands over the years. People attempting to contact us now have a choice of four different numbers to leave messages on.

Also, Christmas came late for Mark when a shiny new plankton net arrived at Martins Haven in February.



6.4. Marine estate work



Routine maintenance of visitor moorings in North Haven was carried out with shackles checked and renewed where necessary. The moorings for our own vessels were more comprehensively upgraded after early season inspections revealed high levels of wear in the ground tackle.

The seabed frame at Thorn Rock (reported missing last year) was relocated in 2018, but unfortunately in several pieces scattered across the seabed. What caused this damage is unknown, but we were able to salvage enough of the frame to mount our sediment trap on and redeploy it on to the site.



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

7. Management

7.1. Wardening and Patrol

Skomer MCZ staff carried out boat patrols on 18 Sundays and Bank Holiday weekend days between the end of April and September 2018. Patrols were maintained even on the three Sundays when the eelgrass surveys were being carried out as supervision of this project only requires one staff member. Three days were lost to bad weather including 2 days of the August bank holiday and volunteers helped with 7 of the patrol days.

During patrols mapping of fishing effort (see Section 8.1) and sampling for water quality and plankton monitoring (see Sections 10.2.4 and 10.1.7) were carried out.

In addition to the dedicated patrol days observations of visiting recreational and commercial users are also made during routine monitoring surveys.

See Section 8 for all data relating to visitors and use of the MCZ.

7.2. Information

The MCZ information sign installed last year at Martins Haven appears to be popular with visitors (from comments overheard) and new temporary signs alerting visitors to seal pups on the beach at Martins Haven were deployed in 2018, but were either so popular someone decided to take them as souvenirs or unpopular enough to be torn down and taken away.



7.3. Management Issues

7.3.1. Dredging/beam trawling

No illegal dredging or beam trawling was recorded or reported to MCZ staff in 2018.

7.3.2. Potting

Commercial fishing vessels operating in the MCZ are listed in Section 8.1 and fishing effort records are presented in Figures 8.1 and 8.2.

7.3.3. Tangle and gill netting

No tangle or gill netting was observed in 2018.

7.3.4. Collection of shellfish by divers

The suspicious activity of two divers and MCZ staff suspicions that they were involved in the illegal collection of scallops were reported to WG Marine Enforcement staff in 2018 (see Section 9.3).



7.3.5. Collection of curios

No collection of curios was observed in 2018.

7.3.6. Collection of specimens for education and research

No permits for the collection of research samples were issued in 2018.

7.3.7. Disturbance or entanglement of seals

Incidents of disturbance to seals were recorded on several occasions during 2018: In Martins Haven a member of the public contacted the National Trust when a group of people persisted in approaching a nursing seal cow despite requests to maintain their distance (see section 9.5). Incidents of disturbance recorded on Skomer Island were mainly of a low level (raised head) in response to recreational boats, but one incident involved a commercial fishing boat setting gear close to a pupping beach and seals subsequently abandoning the beach. Hauled out seals also entered the water when disturbed by people in recreational boats.

Entanglement of seals is recorded as part of the Skomer seal monitoring contract and by MCZ staff. In 2018, 28 animals (18 females, three males and seven immature) were photographed 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. Seven of the animals were known from previous years.

Seal watching leaflets and information were given to the visiting public during the seal pup season and new signs were put up to alert the public to seal pups on Martins Haven beach (and promptly torn down and stolen – see Section 7.2).

7.3.8. Disturbance to cliff-nesting birds

Incidents of bird disturbance were reported in the Wick when a private RIB entered the seasonal exclusion zone. On another occasion a commercial fishing boat had set shellfish pots in the Wick, but after Phil spoke to the skipper he agreed not to set any more there and the pots were removed shortly afterwards.

7.3.9. Spear-fishing

One spear-fisher was encountered at Martins Haven and told MCZ staff he had been informed by the National Trust that spearfishing was permitted. Despite

pointing out that other sites suitable for spearfishing existed outside the MCZ he politely but firmly refused to comply with the code of conduct.

7.3.10. Angling

See Section 8.2 for records of visiting anglers.

Visitors to the Skomer MCZ “Places to visit” page of NRW’s website can now follow links to Neptune’s Army of Rubbish Collectors (NARC) website, where online versions of their leaflets advising anglers how best to avoid snagging and losing tackle in the Martins Haven area can be found. NARC have continued to clear seabed litter, including lost angling tackle, from the MCZ.

7.3.11. Mooring and anchoring

All vessels appear to be complying well with the no-anchoring code of conduct and there have been no reports of vessels anchoring other than in the permitted areas of North and South Haven.



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

7.3.12. General boating

Two incidents of speeding were recorded in North Haven in 2018. In both cases the boat crews were spoken to by MCZ staff.

7.3.13. Wrecks

MCZ staff and volunteer divers relocated and re-established the buoy marking the wreck of the *Lucy* in 2018.



7.3.14. Oil pollution

No oil pollution was recorded at Skomer MCZ during 2018, although staff were called out to help with Shoreline Clean-up and Assessment (SCAT) surveys following oil pollution incidents in the Milford Haven waterway in December and January.

7.3.15. Litter

Litter has been picked up from Martins Haven beach and at sea throughout 2018. MCZ staff also assisted Skomer Island Wardens with a clean-up of the Wick beach before seal pup season got underway (see Section 9.2).

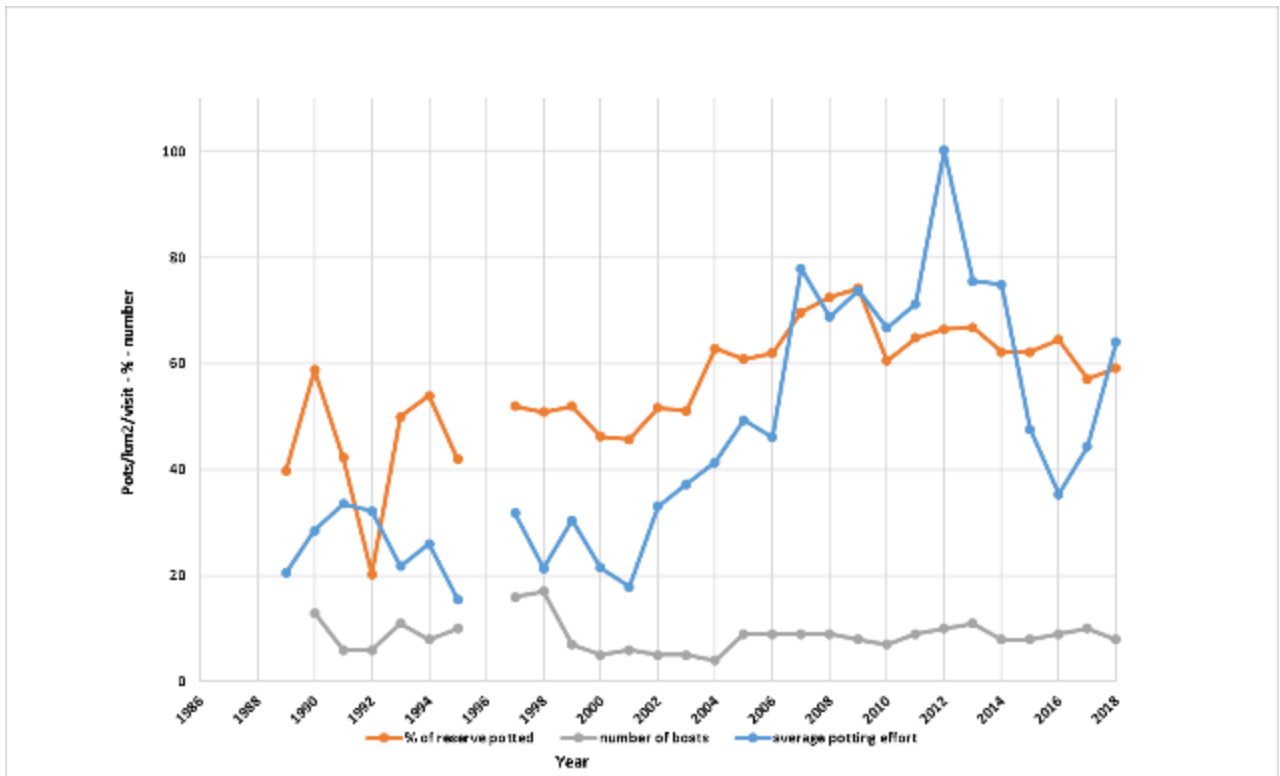


8. Visitors and Use of the MCZ

8.1. Commercial use

Fishing vessels recorded operating within Skomer MCZ during 2018 included *Warren Edwards* (M15), *Stephanie R* (M150), *Our Hazel* (M38), *Trevoise* (M680), *Martha Rose* (M75), *Lady of Lundy* (BD267), *Provider* (M888), *Calon y Mor* (M91), and *Storm Child* (M83).

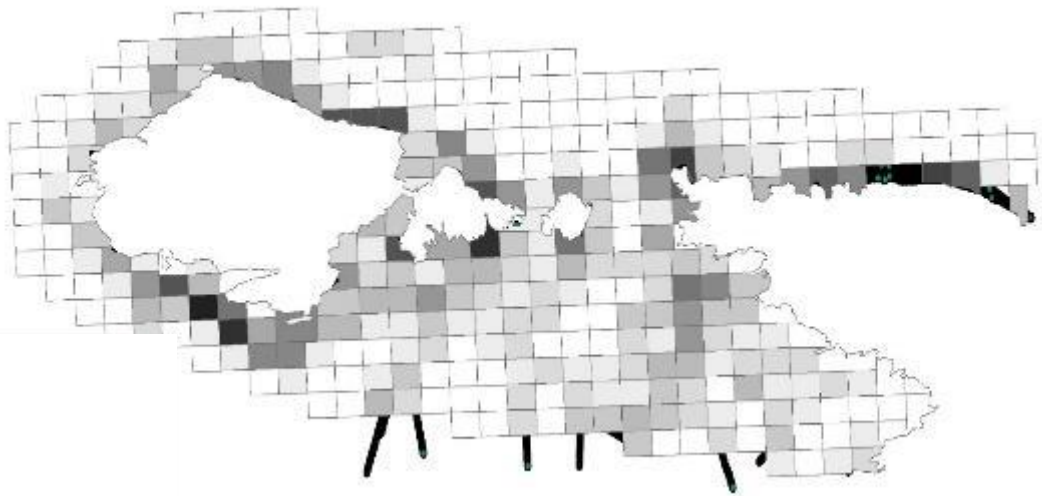
Figure 8.1 Summary of fishing effort within Skomer MCZ



Although the numbers of boats fishing in the MCZ and the proportion of the MCZ area fished remain fairly constant, fishing effort has varied considerably over the last few years. In the last two years, however, effort has increased back to levels approaching those of ten or more years ago.

Effort appears to be concentrated along the North Wall at Skomer and along the north Marloes Peninsula area, with other “hotspots” south of the Neck and near the Wick.

Figure 8.2 Pot fishing intensity within Skomer MCZ



Other commercial boating activity includes sightseeing boats and commercial charters. The data for these have until now not been analysed separately unless they were involved in diving, angling, anchoring or mooring activities, and they include boats from Dale Sailing Company, Thousand Islands, Voyages of Discovery and other Milford Haven-based operators. Given the economic importance of these operations more effort will be made to record and monitor their use of the 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.



8.2. Recreational use

Recreational use of Skomer MCZ is presented in Table 8.1 and figures 8.3 to 8.7.

The biggest increases in recreational use have been in recreational boating numbers with significant increases in yachts, motorboats and canoes/kayaks. Numbers of anglers in boats have also increased. Taken together the numbers of people coming to Skomer MCZ in recreational craft is at an all-time high, no doubt helped by the good weather conditions in 2018. It appears that only divers took real advantage of the best of the good weather in June with

numbers peaking in that month. Numbers of divers have increased compared with 2017 but remain low compared with historical figures.

Figure 8.3 Recorded Recreational Use Skomer MCZ

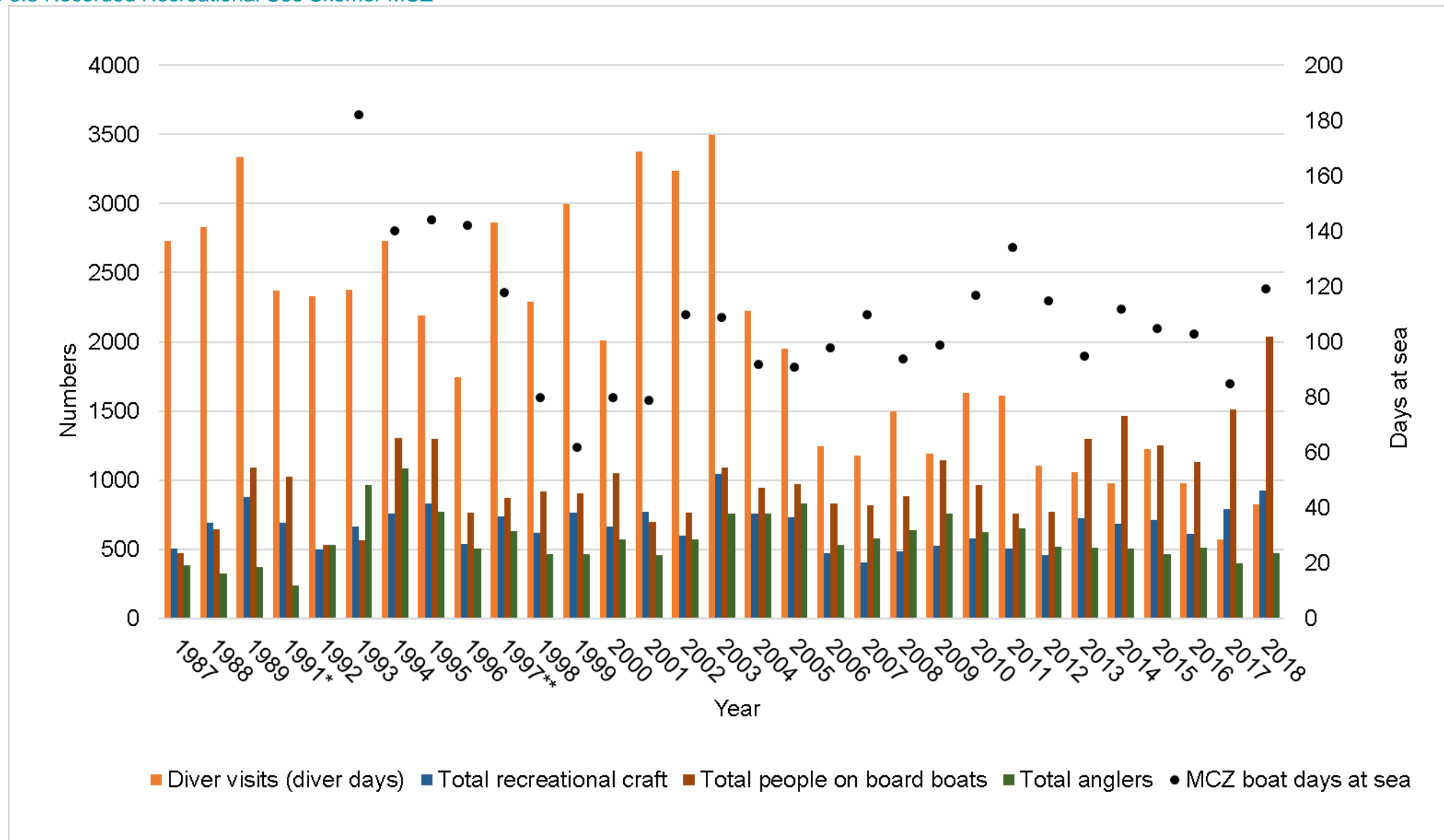


Table 8.1 Recorded Recreational Use Skomer MCZ

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Diver visits (diver days)	2287	2996	2008	3378	3234	3492	2224	1950	1244	1179	1496	1189	1632	1611	1106	1059	976	1228	980	570	827
Shore dives @ Martins Haven	817	503	537	555	575	522	666	492	474	439	478	293	428	368	347	242	291	237	313	177	162
Dive boat visits	254	380	278	349	367	389	234	258	132	152	140	92	128	149	90	89	83	134	80	79	84
Total yachts	182	223	232	252	119	335	224	188	129	92	119	115	139	132	117	247	230	218	190	180	245
Total motor boats (not angling boats)	65	66	93	119	49	190	165	114	76	59	85	73	74	29	45	127	98	98	70	177	211
Canoes	98	82	63	37	39	81	100	111	101	72	67	186	166	126	140	176	202	195	210	289	308
Angling boats	21	16		15	22	49	33	61	35	31	76	62	69	67	66	84	74	68	60	66	80
Total recreational craft (D, Y, M, C & A)	620	767	666	772	596	1044	756	732	473	406	487	528	576	503	458	723	687	713	610	791	928
Total people on board boats (Y, M, C & A) not D	917	904	1051	696	764	1093	944	975	834	817	887	1143	967	757	769	1297	1465	1253	1129	1508	2038
Shore anglers	372	354	501	396	458	519	556	569	379	398	344	448	313	321	202	160	220	219	264	144	187
Boat anglers	93	109	72	65	112	243	206	266	150	178	294	308	315	333	316	350	285	244	247	256	286
Total anglers	465	463	573	461	570	762	762	835	529	576	638	756	628	654	518	510	505	463	511	400	473

Figures are for financial year April to end of March
 As represented in Fig 8.3 data goes back to 1987, Table 8.1 has been curtailed for clarity.

Figure 8.4 Skomer MCZ 2018 Recreational Craft

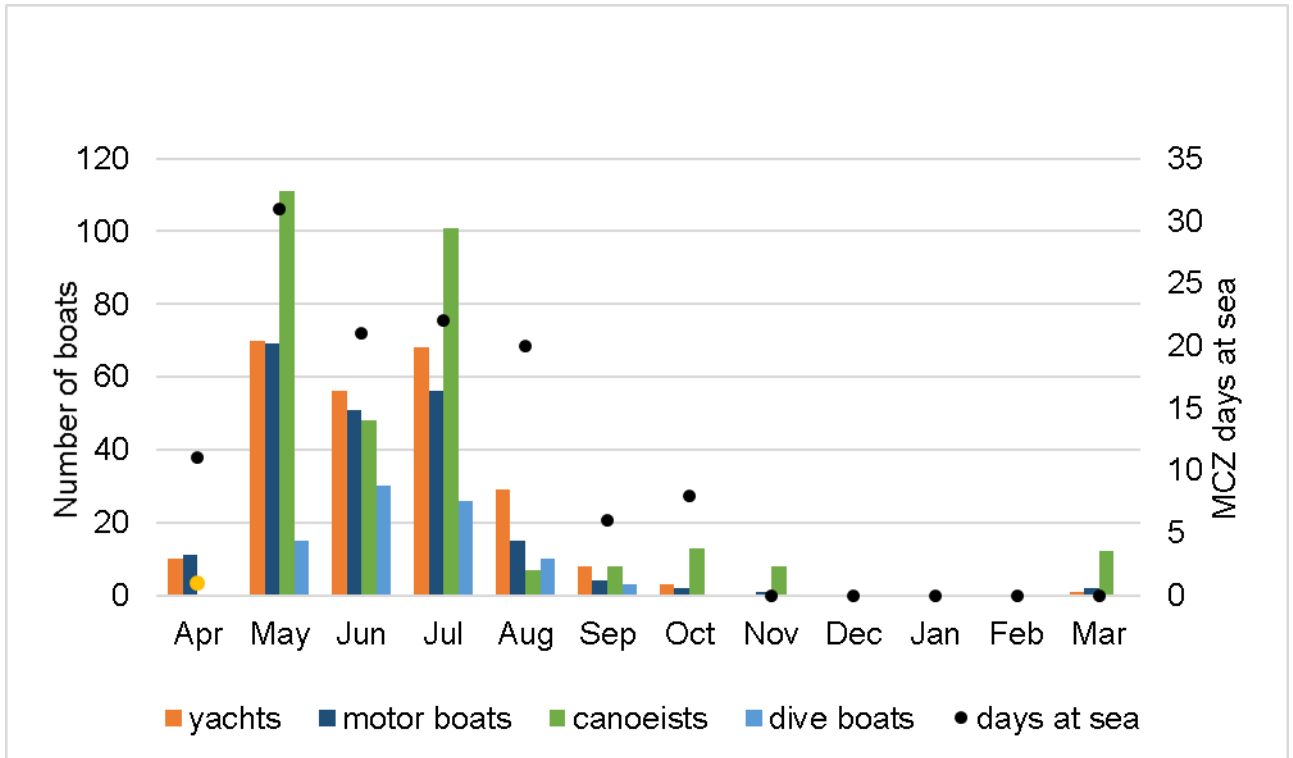


Figure 8.5 Skomer MCZ 2018 SCUBA divers

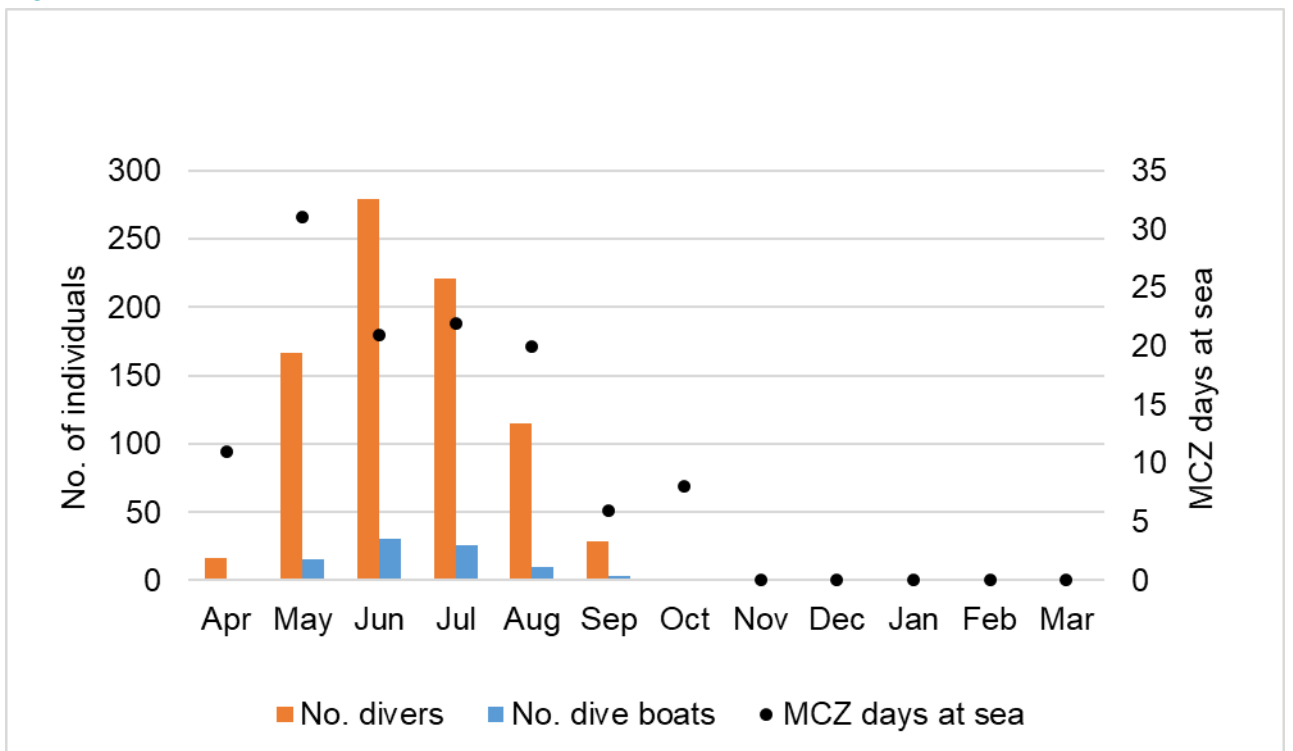


Figure 8.6 Skomer MCZ 2018 Anglers

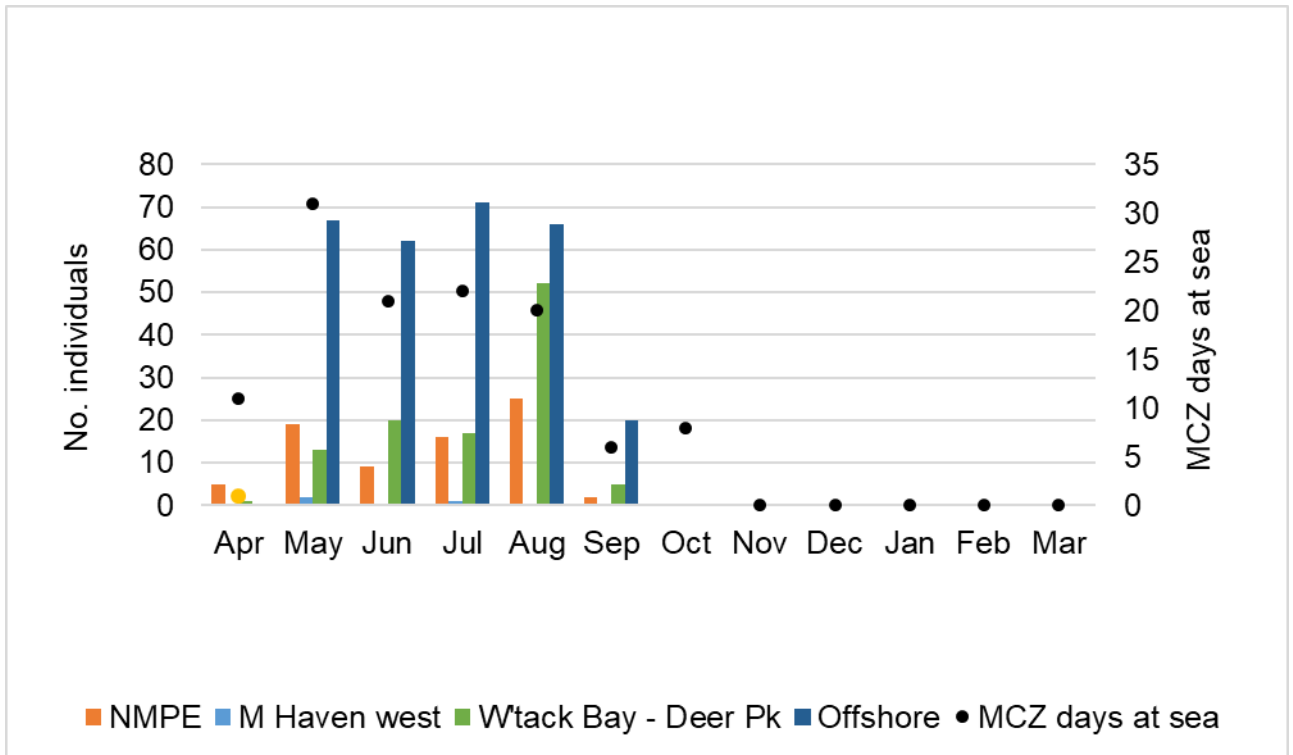
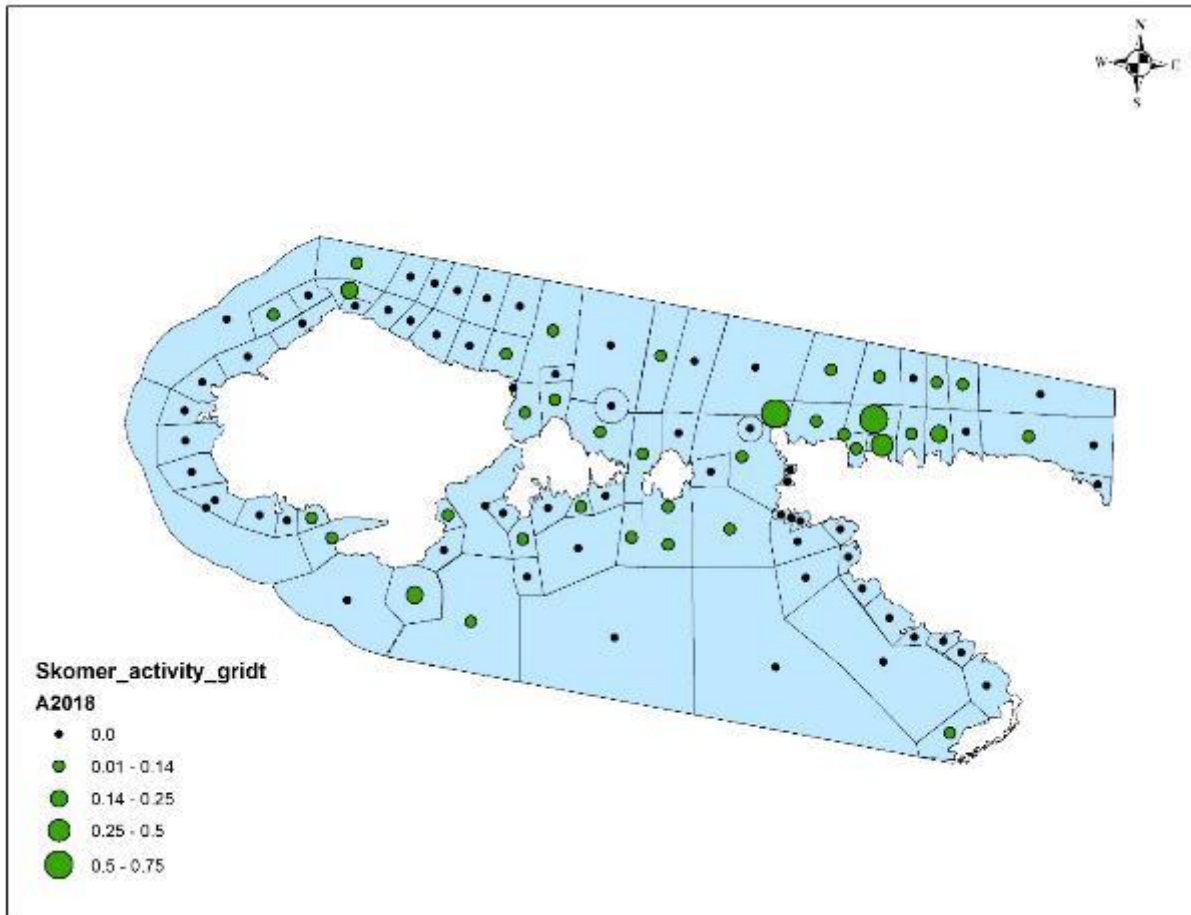


Figure 8.7 Angling intensity map



9. Liaison and Advisory Committees

9.1. Advisory Committee

Skomer MCZ Advisory Committee meeting was held in April 2018, chaired by Dr Robin Crump. 14 members attended together with 4 MCZ staff. Members discussed a range of issues and presentations were made by MCZ staff to update committee members on MCZ management and monitoring work.



Continued uncertainty about the future of Skomer MCZ dominated the meeting with the Chair taking several action points to correspond again with NRW and Welsh Government seeking reassurances from both organisations. See Annex 2 for copies of the correspondence.

A review of membership was carried out and potential new members from Welsh academic institutions and Canoe Wales were identified.

Our thanks and appreciation to Dale and Marloes Women's Institute who provided essential sustenance in the form of cake and hot drinks.

9.2. Wildlife Trust South and West Wales

2018 saw the last season of the Skomer Island NNR Wardens, Bee Büche and Eddie Stubbings, with whom Skomer MCZ staff had worked closely with over a number of years, including their very high-quality work on the seal monitoring contract, which was carried out again by Wildlife Trust South and West Wales (see Section 9.1 and Appendix 1). We wish them well in their future ventures.

In the autumn of 2018 we welcomed the new Skomer Island NNR Wardens, Nathan Wilkie and Sylwia Zbijewska and we look forward to working with them in the future.

Skalmey was pressed into service as floating bin lorry when MCZ staff helped Island assistant wardens and volunteers to clear rubbish from the Wick in advance of the seal pupping season.



Wildlife Trust staff at Lockley Lodge provided an invaluable service by opening up the MCZ exhibition at Fisherman's cottage on days when MCZ staff were off-site and this is reflected in the latest increase in visitor numbers (see Section 11.1).

MCZ staff also liaised with the wardening staff on Skokholm during MarClim surveys (see Section 10.4).

9.3. Welsh Government Marine Enforcement

Skomer MCZ staff continue to liaise with officers on fishery matters and in particular during an incident when divers were suspected of taking scallops illegally from the MCZ late in March 2019. The dive vessel in question was boarded the day after our report, but no scallops were found.



The new fishery protection vessel Rhodri Morgan was a welcome sight in the days that followed.

9.4. Pembrokeshire Coast National Park

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

9.5. National Trust

Liaison with National Trust staff continues through the Advisory Committee and also directly with e.g. Matt Thompson, local Ranger, and Mark Underhill. Phil also liaised with local NT staff over a report by a member of the public about a seal disturbance incident at Martins Haven beach.

9.6. Academia

MCZ staff continue to work closely with staff and students from a number of academic institutions.

Aberystwyth University students visited Skomer MCZ to hear about the practicalities of managing an MPA.

Swansea University continue to feature in many of the collaborative projects MCZ staff have been involved with:

Swansea University Research Fellow, Matt Perkins, contacted MCZ staff for advice on the deployment of seabed equipment for a two-year study looking at diversity and abundance of settlement on tiles of different materials.

Evie Furness, who we helped deploy miniature video cameras in North Haven in 2017, provided us with a copy of her dissertation on fish populations in

eelgrass beds and kelp areas around the country (see Appendix 3 for her abstract).

MCZ staff continue to host C-Pod acoustic logging devices for Swansea University workers studying the cetacean use of the MCZ. The logger has been deployed throughout 2018 and into 2019 and we look forward to seeing the data.

Collaboration work with Swansea University also included work on eelgrass (*Zostera marina*). Samples from Skomer featured in one paper looking at human and livestock origin nutrients affecting eelgrass beds throughout the British Isles. (see Appendix 4 for abstract).

Melanie Baker, from Leeds University, deployed miniature underwater video cameras from MCZ vessels to study fauna living on sediment seabeds.



Data from the 2016 scallop survey were examined by Sophie Cunnington, an undergraduate student from the University of York. She compared data from Skomer and other areas where scallop populations have been protected (see Appendix 5 for abstract).

9.7. Other organisations and individuals



are located at the OMS, where we can photograph them during our routine visits to the sediment traps at that site.

Skomer MCZ staff has continued to host modular glass “Sea-Hives”, although the winter storms were not kind to the one deployed at Thorn Rock. A Mk 2 version was deployed at OMS in 2018 and appears to have survived the winter. The “Sea-Hives” are designed to provide shelter to marine organisms and provide a foothold for natural habitats to re-establish in damaged seabed areas. The prototypes



Notable visitors to the Skomer MCZ included Paul Davies AM and the Chief Executive of NRW, Clare Pillman.



Within NRW, MCZ staff have fully embraced the “Doris Day” scheme, which is designed to encourage different teams to visit and “get to know” each other within the organisation. For some reason Skomer MCZ has become extremely popular as a team to visit, especially when the puffins are around. Teams as diverse as the North Wales Reserve Managers and the Environmental Crime team have

visited during the course of 2018. We also welcomed members of the sampling and collection team, two visits from the National Nature Reserves, conservation and fisheries team, and the Carmarthenshire Natural Resources management team.

We in turn were hosted by the Environmental Crime team, who put on a very interesting and entertaining range of events for ourselves and other members of the marine team.

NRW’s Fishery Assessment Team have continued to support our work in monitoring the eelgrass bed in North Haven by supplementing the volunteer diver surveys with their acoustic imaging systems (see Section 10.1.2)

The local community has continued to be very supportive of the Skomer MCZ team, helping to protect the MCZ by reporting potential incidents and by their active participation in the Advisory Committee.

MCZ experience of operating a water jet powered boat were called upon by Eastern Inshore Fisheries and Conservation Authority, who were about to commission a new vessel for their work.

Other organisations and individuals that Skomer MCZ staff have worked with include Pembrokeshire Coastal Forum with their activity mapping project, APEM and their project looking at mooring and anchoring activity, Rod Penrose, Strandings Co-ordinator (Wales) for the UK Cetacean Strandings Investigation Programme (CSIP), the National Coastwatch Institution, who maintain watches at the former Coastguard lookout on the Deer Park, Pembrokeshire County Council Planning Ecologist, Lara Lawrie and Dyfed Powys Police.

9.8. Wider marine environmental initiatives

MCZ staff were involved in shoreline clean up assessments after oil spill incidents in Milford Haven (see Section 7.3.14) and attended meetings of NRW's Marine Incident Preparedness Group.

We also assisted Sea Mammal Research Unit with their plans for satellite-tagging adult grey seals in 2019.

Kate continues to be the local coordinator for the Marine Conservation Society Seasearch volunteer diving surveys.

See also Section 10.4 for work with Milford Haven Waterway Environmental Surveillance Group. Skalmey even features on the cover of the Group's 2017 annual report and Phil was invited to an event celebrating the 25th anniversary of the Group (yes, there was cake).



Annual Report 2017

10. Science

All the following projects are reported on in greater detail in the Skomer MCZ Project Status Report 2018/2019 (NRW evidence Report number 324), which is available via the NRW website.

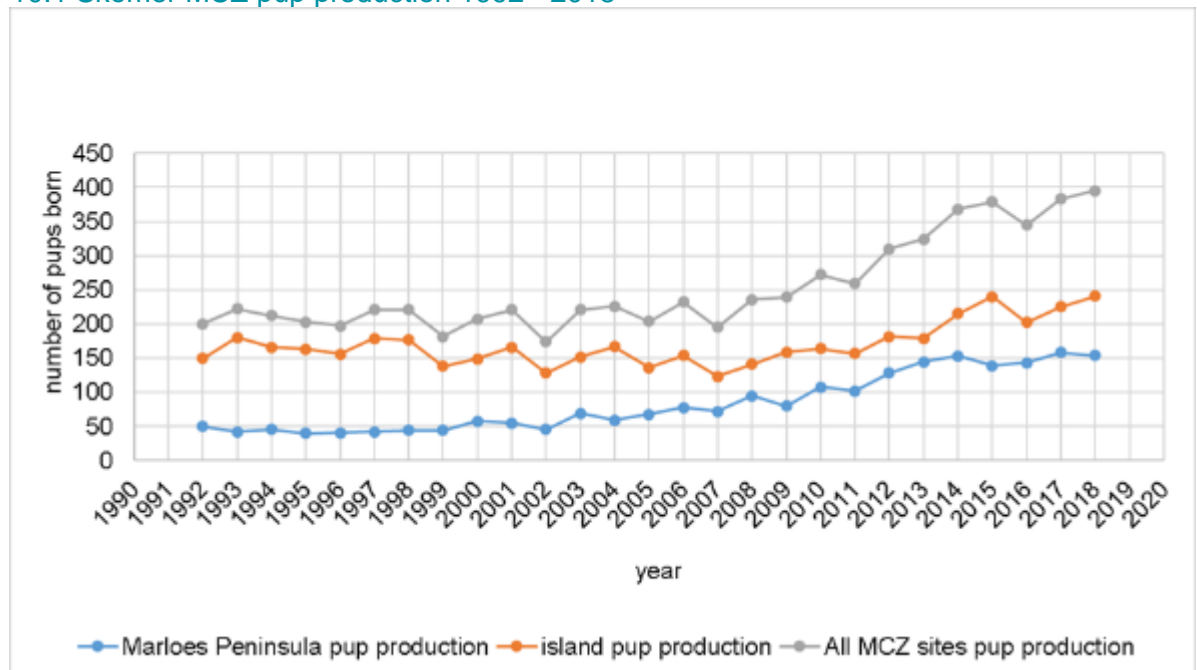
10.1. Biology

10.1.1. 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 2018 241 pups were born at Skomer Island sites and 154 pups at mainland sites giving a total of 395 pups born in the MCZ.

Figure 10.1 Skomer MCZ pup production 1992 - 2018



Pup production in the Skomer MCZ for the past 5 years has shown the highest totals recorded for the area with average production for 2014-18 at 374 pups. The pup production from 1992 to 2008 remained fairly consistent, within expected natural fluctuations, and with an average of 208 pups. Since 2009 there has been a steady increase in pup production at both the island and mainland sites.

From 1992 to 2002 Marloes peninsula contributed an average of 22% of total production. This has then gradually increased to a peak of 45% in 2013 and the average over the last five years is 40% of total production.

Over the last 23 years the peak week of seal pup production has fluctuated between weeks 38 to 40 (17th September to 7th October): In 2018 10% of

pup births occurred in August, 60% in September, 28% in October and 1% in November, and the peak week of production was week 38 (17th – 23rd September).

Figure 10.2 Skomer MCZ pup production – peak seal birth number seasonality

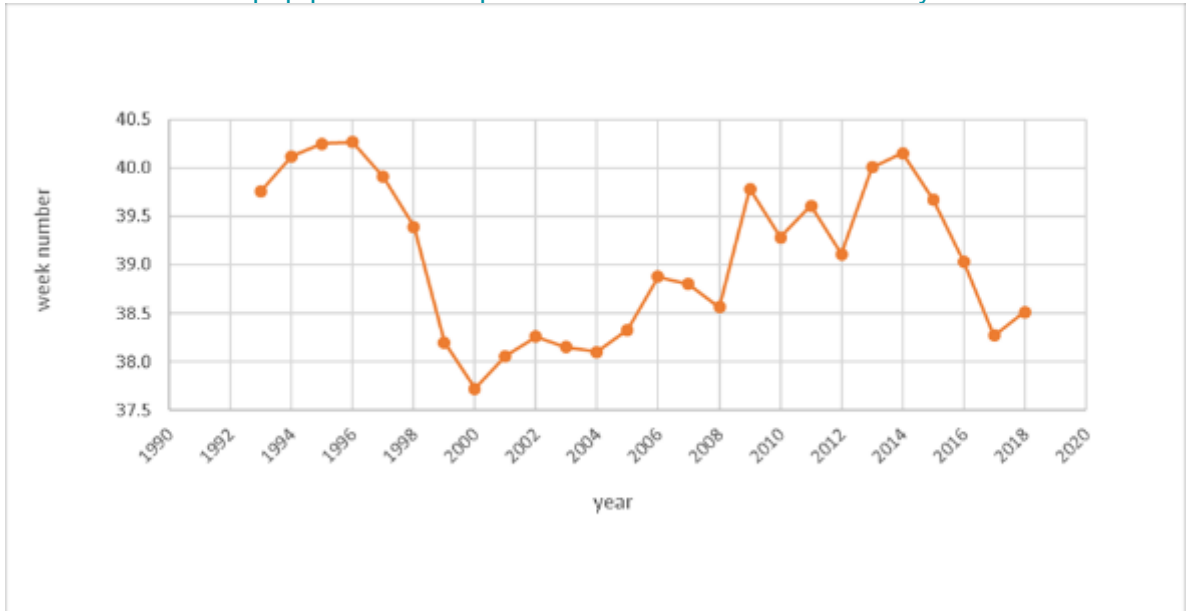
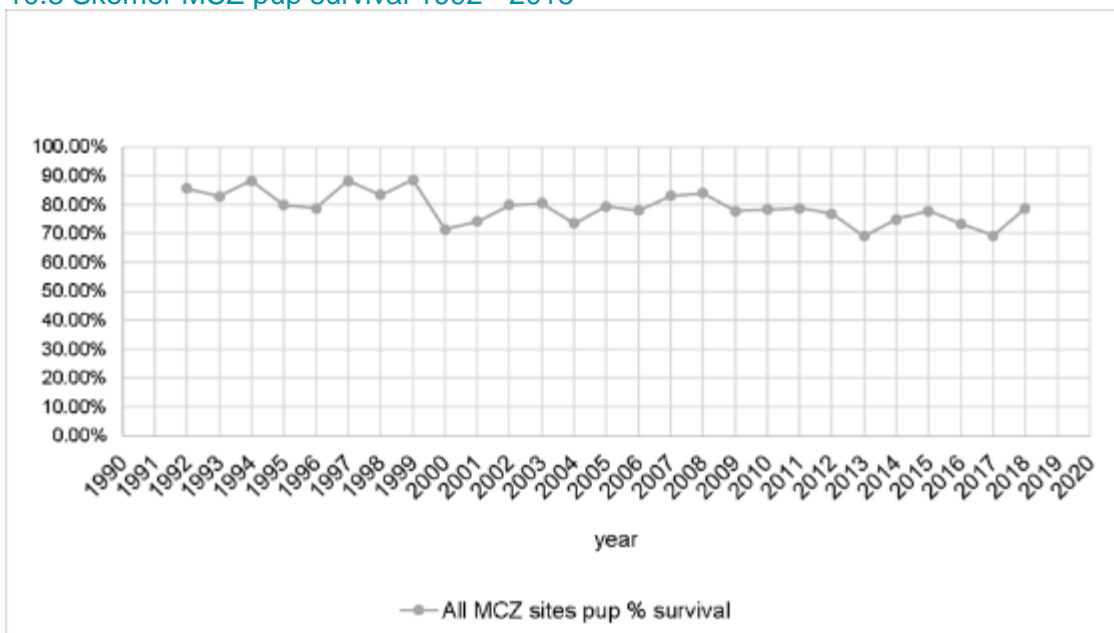


Figure 10.3 Skomer MCZ pup survival 1992 - 2018



In the Skomer MCZ pup survival from 1992 to 2018 has fluctuated between 69% and 88% with an average of 79%. The reduced survival rate of 69% in 2017 was due to the severe storms in October killing many of pups on the beaches at the time of the storms.

In 2018 pup survival through to moult was recorded as 78% for Skomer sites and 81% for Marloes Peninsula sites, with a combined survival for the Skomer MCZ of 79%.

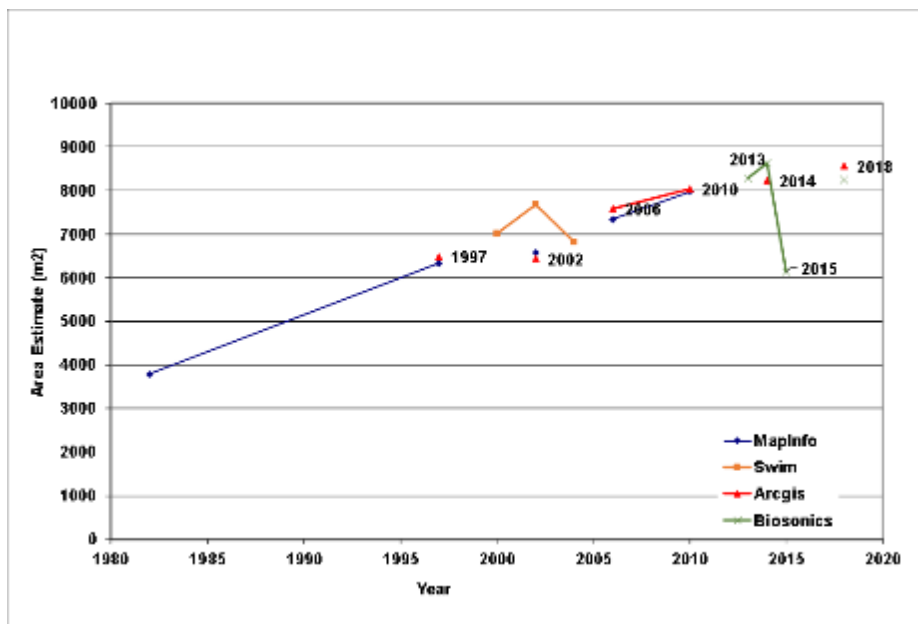
10.1.2. Project code: RF23/01 *Zostera marina*

The seagrass bed (*Zostera marina*) within North Haven, Skomer MCZ was surveyed by a group of volunteer divers over three weekends in June and July 2018. This survey repeated the methods of previous surveys to estimate the area of extent and shoot density of the seagrass bed.



Photograph courtesy of Kerry Lewis

Figure 10.4 *Zostera marina* area estimates (m²) at North Haven, Skomer.



The 2018 results show a slight increase in area of extent, 8567.6 m² compared to 8224.6m² in 2014.

Table 10.1 Estimated area of extent of *Z. marina* (m²) 1982 – 2018 *in-situ* diver surveys at North Haven, Skomer.

Year	Area Estimate m ² (from survey grid) MapInfo	Area Estimate m ² (from survey grid) ArcGIS	Area Estimate m ² (from swim)	Area Estimate (Biosonics acoustic survey 60-70 PAI)
1982	3788			
1997	6333.4	6484.2		
2000	No survey		7007.8	
2002	6569.5	6439.6	7683.20	
2004	No survey		6817.5	
2006	7336.6	7587.2		
2010	7980.6	8044.0		
2013				8290
2014		8224.6		8621
2015				6133
2018		8567.6		8244

Figure 10.5 Area of extent of *Z. marina* at North Haven, Skomer for 2014 & 2018



There was also a very encouraging increase in shoot density, 33.0 shoots / m² compared with 18.8 shoots / m² in 2014. Shoot density had been on a downward trend since 2002 but the 2018 results are the highest ever recorded.

Figure 10.6 Overall *Z. marina* shoot density (per m²) for 1997 – 2018, North Haven, Skomer. (Using comparable data from Table 10.2 - Shown with 95% S.E of mean error bars).

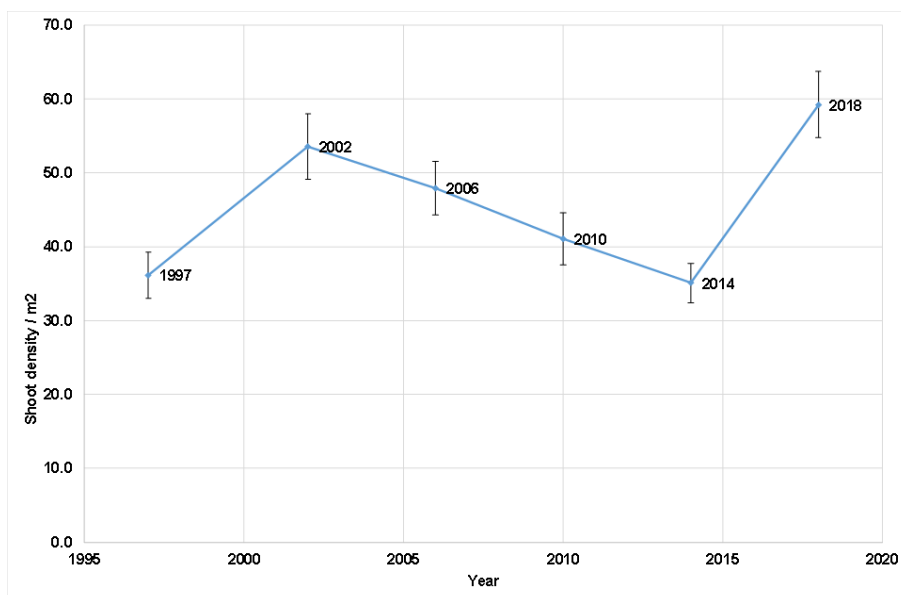
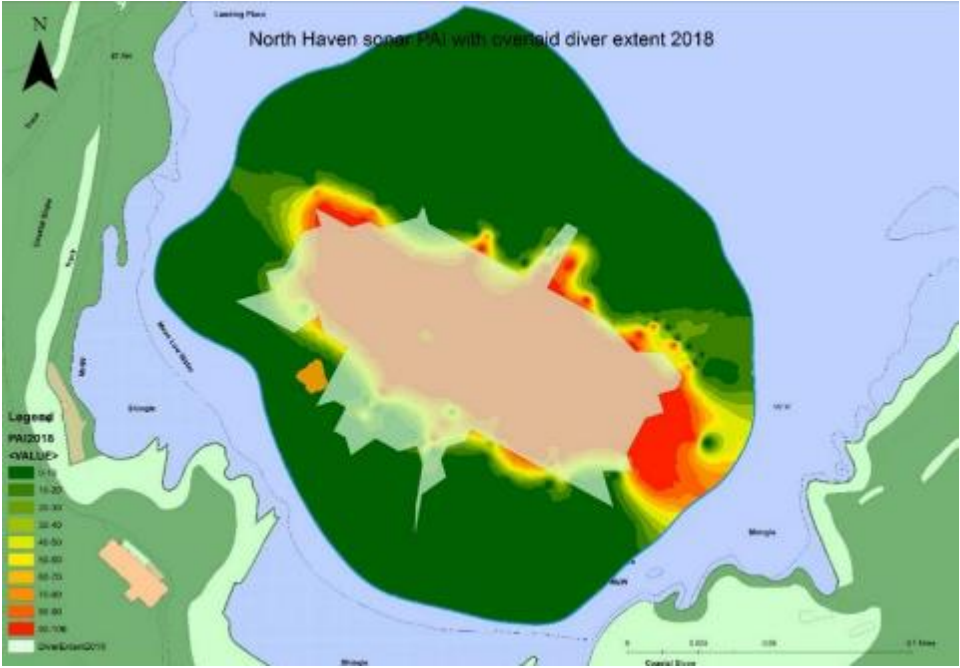


Table 10.2 Comparison of overall *Z. marina* shoot density (per m²) for all years 1997 - 2018 (Only using data from sample stations with replicates in every sampling year)

	1997	2002	2006	2010	2014	2018
Mean	36.2	53.6	48.0	41.1	35.1	59.2
Std Dev	27.3	38.5	31.4	30.6	23.3	38.7
Variance	746.0	1478.4	987.8	933.6	544.4	1498.7
95%Std error	3.1	4.4	3.6	3.5	2.7	4.5
n	289	288	289	289	289	289
min	0	0	0	0	0	0
max	104.0	156.0	128.7	182.7	104.7	162.0

NRW Fisheries Assessment Team conducted repeat surveys using a Biosonics DT-X split beam echo sounder in between 2013 - 2018. The diver survey results compare well against the Biosonics acoustic surveys. The remote acoustic method provides an efficient alternative to the diver survey for getting annual results for area of extent.

Figure 3.15 2018 Interpolated plot of *Z. marina* shoot density (from the acoustic survey) overlaid with the diver survey estimate.



The acoustic survey also looked at “bio-height”; in essence how tall the eelgrass plants are growing, which gives a visual representation of which parts of the bed are growing most. This still requires ground-truthing and calibration to ensure accuracy.

Overall the 2018 survey results are very encouraging but other studies by workers at Swansea University provide evidence that the growth of the eelgrass at Skomer may be limited due to high nitrogen and phosphorus levels.

All the results are presented in greater detail in the Skomer Marine Conservation Zone Distribution and Abundance of *Zostera marina* in North Haven 2018 report (NRW Evidence Report No 322).

10.1.3. Project code: RM54/01 Nudibranch species diversity

30 dives targeting nudibranch recording were completed at 15 sites by the Skomer MCZ team and volunteers during June 2018. Additional sites were also explored during other Skomer MCZ monitoring dives.

A total of fifty-eight species were recorded on dives during 2018, representing 84% of the nudibranch species that have been



recorded on dives in the Skomer MCZ. This is higher than in 2014 (49 species) and 2010 (54 species).

All the results are presented in greater detail in the Skomer Marine Conservation Zone Nudibranch Diversity Survey 2018 (NRW Evidence Report 321).

10.1.4. Project code: RA01/01
Record Cetaceans

MCZ staff collate all sightings of cetaceans collected by NNR staff, MCZ staff and *Dale Princess* crew.

Total numbers of harbour porpoise sightings between 2001 and 2018 is displayed below.

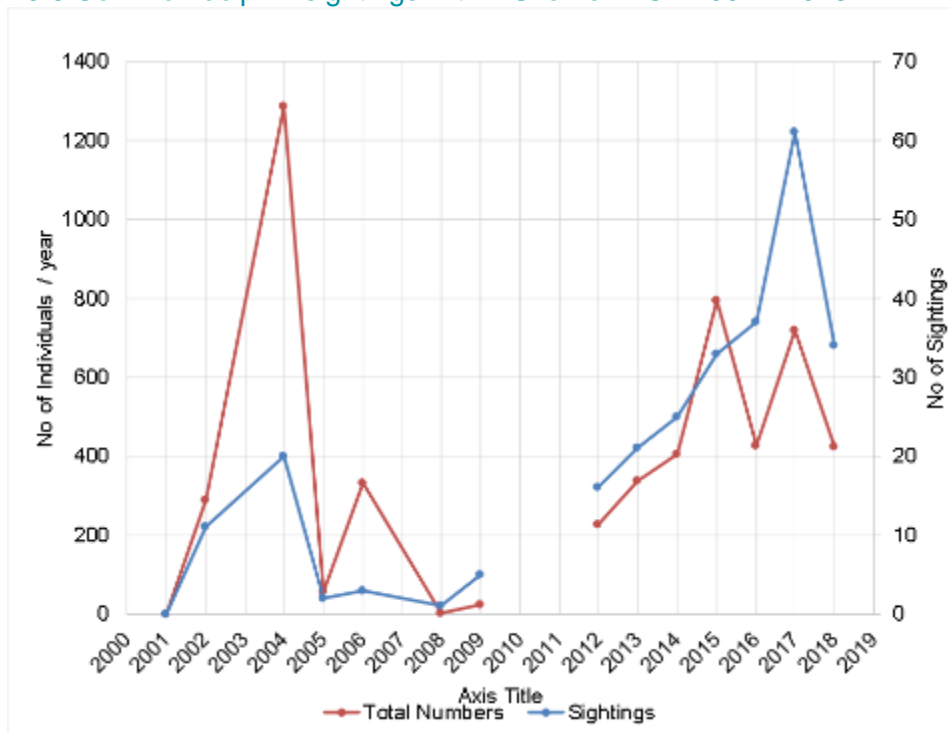


Figure 10.5 Harbour porpoise sightings Skomer MCZ 2001 - 2018



Common dolphin (*Delphinus delphis*) use the area infrequently but they can appear in large numbers. In 2018 there were fewer sightings than in 2017 with most seen off the Garland stone and Skomer head. – see Figure 10.6.

Figure 10.6 Common dolphin sightings within Skomer MCZ 2001 - 2018



Bottlenose dolphins (*Tursiops truncatus*) are not often seen within the MCZ, but in 2018 there was a sighting of 13 individuals off the Garland stone and 3 off Rye Rocks in May.

Risso’s dolphin (*Grampus griseus*) are regularly seen around Ramsey Island, 8 miles to the north but there are only infrequent sightings within the MCZ. However, there were 4 sightings in 2018 (including a pod of 8 at the Mew Stone) within the MCZ and a pod of 12 seen in St Brides Bay.

10.1.5. 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 2018 included sunfish *Mola mola*.



The alien seaweed, Wakame (*Undaria pinnatifida*) was found for the first time on Skomer and Skokholm shores during the 2018 survey. This is a non-native kelp species from Japan and China, but in recent years it has spread around the world via mariculture and shipping vectors. It first arrived in England in 1994 in the Solent and has since spread around the UK.

10.1.6. Project code: RB06/01
General Species recording

The ocean quahog (*Arctica islandica*) and ross worm, *Sabellaria spinulosa* were both recorded at a mixed sediment site north of the Marloes Peninsula. The ocean quahog is a round clam that is found in sandy and muddy seabeds. It builds up a very thick shell as it grows,



which can be used to age it: One individual has been reported to have lived for over 500 years, making it one of the longest lived individual animals ever recorded. The ross worm builds sand tubes and was found growing on old quahog shells. *Arctica islandica* is on the Environment Act (Wales) 2016: Section 7 list of habitats and species of principal importance for Wales, whilst the reef building *Sabellaria spinulosa* is on the EU Habitats Directive: Marine habitats Annex 1 reefs – biogenic reef.

10.1.7. Project code: RB03/01 Monitor Littoral Habitats / Communities

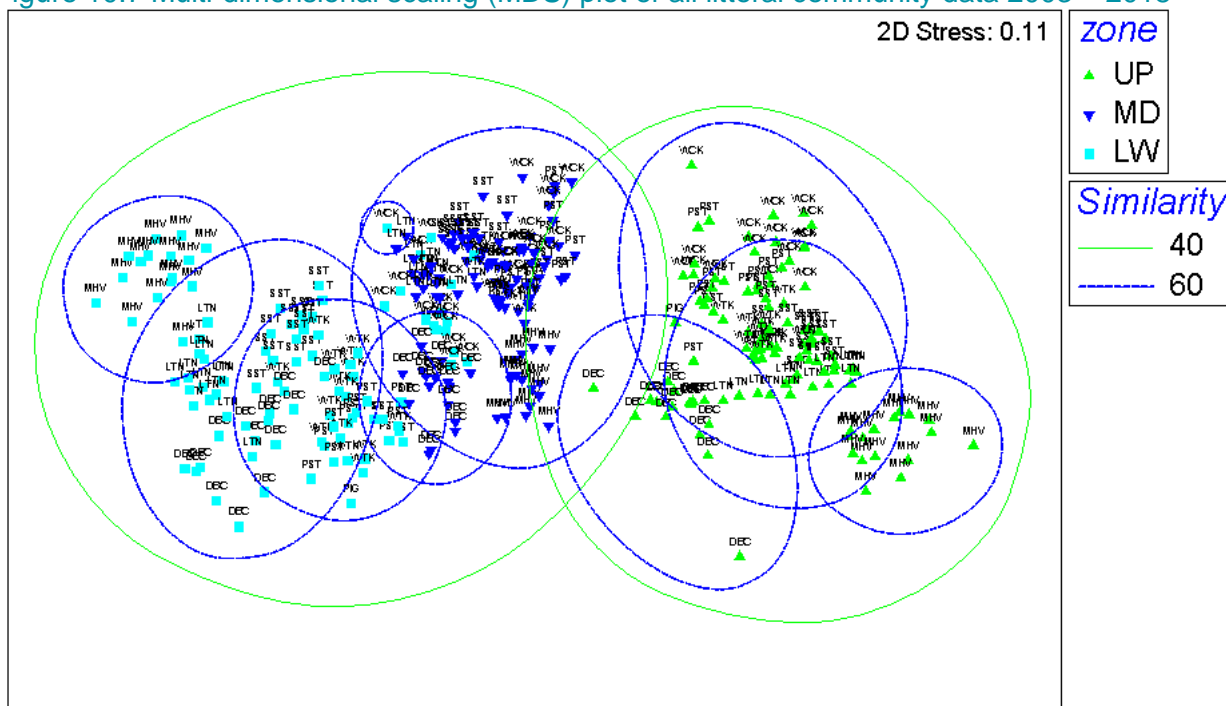
Viewpoint photographs of shore communities were taken for all sites.

All sites at which permanent quadrats were established were surveyed in 2018 except for Double cliff Upper and Middle shore.

All data from 2003 to 2018 are displayed on a multi-dimensional scaling (MDS) plot below, which represents how similar sites are to each other for each year.



Figure 10.7 Multi-dimensional scaling (MDS) plot of all littoral community data 2003 – 2018



In summary:

- Upper shores (UP) group neatly on the right.
- Lower shore sites (LW) are much more disparate and grouped on the left.
- Middle shore sites (MD) sit in between with some overlap (at 60% similarity) with the lower shores.
- Some sites form distinct clusters e.g. Martins Haven Upper, Martins Haven Lower.
- Some sites are very variable from year to year e.g. Pig Stone Lower and Wooltack Lower

2018 survey results did not show any major variations from the overall trends seen since 2004 and further statistical testing showed no significant difference between any of the years.

A range of techniques is used to assess the shore communities within Skomer MCZ:

Table 10.3 Summary of methods completed at each littoral site.

Site	Permanent Quadrats	Shore zone quadrats, Limpets, Barnacles	Lichen quadrats	MarClim	Shore clingfish
North Haven				Yes	Yes
South Haven	Yes			Yes	Yes
South Stream	Yes	Yes	Yes		
The Lantern	Yes	Yes	Yes		
The Wick	Yes	Yes	Yes		
Double Cliff	Yes	Yes			
Pig Stone		Yes	Yes		
Wooltack		Yes	Yes		
Martins Haven		Yes	Yes	Yes	Yes
Hopgang			Yes		

The MarClim project offers an opportunity to compare Skomer MCZ shores to the rest of the UK and contribute to the assessment of the effects of climate change on shore communities. Martin's Haven, North Haven and South Haven were selected as suitable sites for the project.

Another way of looking for temperature related changes in communities is to use a technique called Community Temperature Index (CTI).

The Community Temperature Index approach characterises each species by its thermal affinity, the Species Temperature Index (STI). The average of species thermal affinity across an entire community is obtained by weighting each STI value by the average abundance of that species, to give the Community Temperature Index (CTI). CTI values can be calculated for each site and averaged across all sites to give an average index for each year of the survey. Changes in annual CTI can be directly compared to annual changes in temperature, with the relationship between CTI and temperature showing the climate change response of the community.

The CTI scores derived from Marclim data for the 3 shores surveyed at Skomer show no significant change averaging a CTI of 12°C which would match the ambient sea surface temperatures (from temperature probes at Skomer MCZ) for the same period. In other words; there is no evidence of any shift in the community due to climate change.

10.1.8. Project code: RB04/01 Plankton Recording

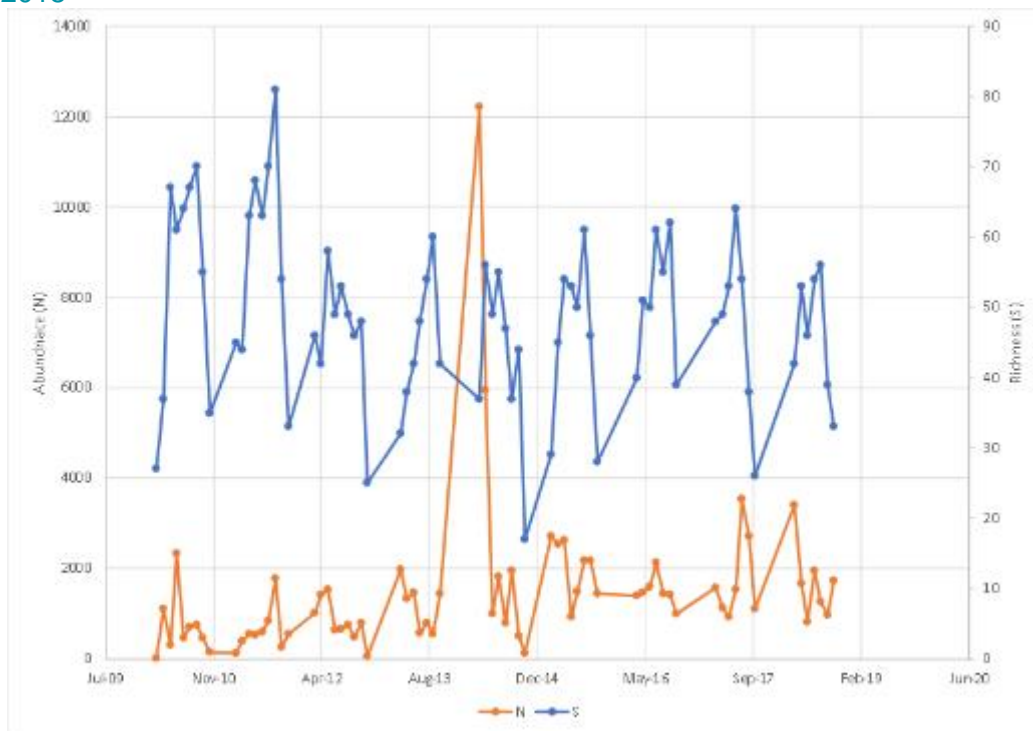
Zooplankton samples continued to be taken at Skomer MCZ in 2018 using methods recommended following a review by Plymouth Marine Laboratory in 2014.

There were some notable species recorded in the 2018 samples:

There was a change in chaetognath (arrow worm) species from *Parasagitta elegans* to *P. setosa* in July, indicating a change in water mass.

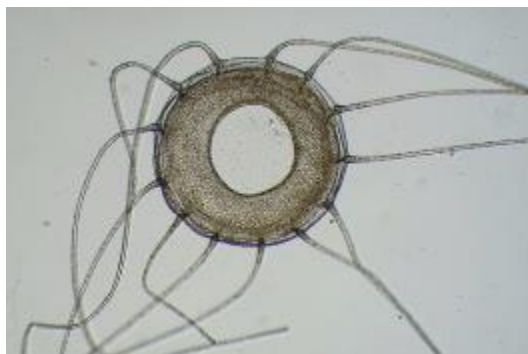


Figure 10.8 Average zooplankton species richness (S) and total number of individuals (N) 2009- 2018



Two copepod species have shown dramatic changes in distribution in the North Sea and are indicator species of changes in water temperature. *Calanus finmarchicus* is a northern species whereas *C. helgolandicus* is suited to warmer waters and has been expanding its range. The only time *C. finmarchicus* was found at Skomer was also during July, at all other times there were low numbers of *C. helgolandicus*. There was a notable intrusion of oceanic water in August/September indicated by the arrival of the pelagic tunicate *Dolioletta gegenbaurau* and the oceanic medusa *Solmaris corona*.

Figure 10.9 *Dolioletta gegenbaurau* (left) and *Solmaris corona* (photographs -D. Conway 2018).



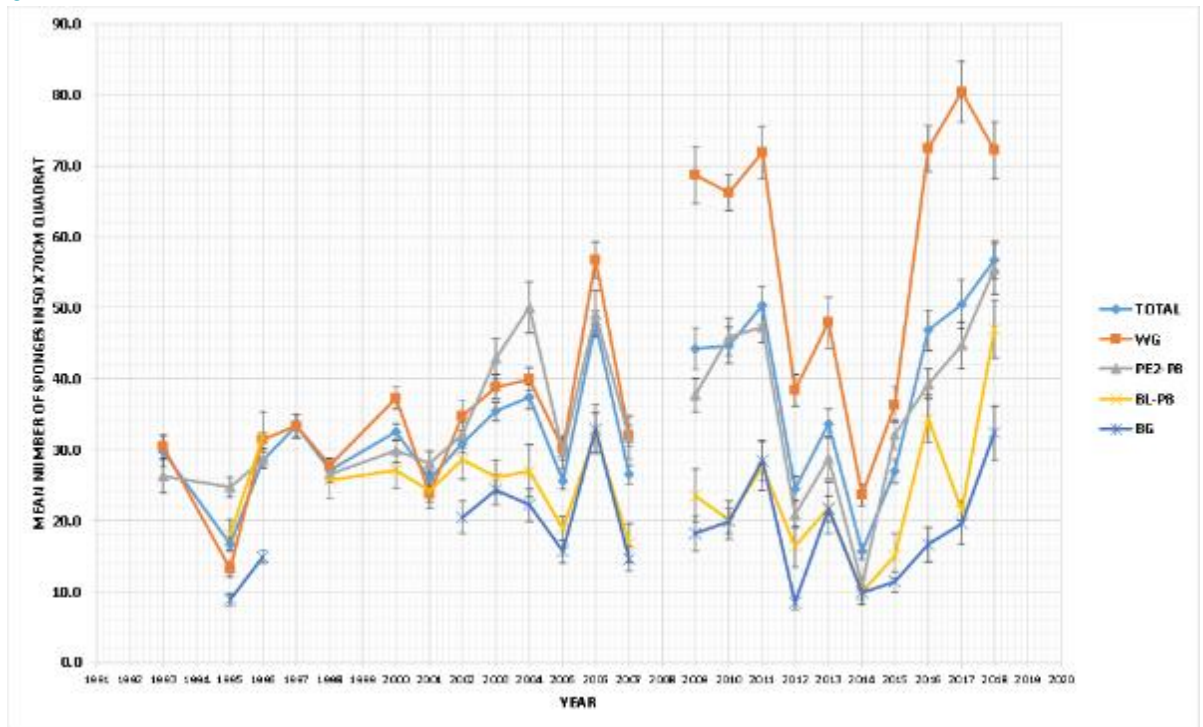
10.1.9. Project code: RM13/01 Monitor Sponge Populations

In 2018 quadrats at all sponge monitoring transects were photographed.

Improvement in image quality and resolution has meant that more sponge entities have been recorded from 2009 onwards than in previous years. However, in 2012 and 2014 there was a noticeable drop in the numbers of sponges across all transects. In 2018 all sites increased in abundance except for Windy gully. Image quality was good and there was very little silt on the seabed when the photographs were taken.



Figure 10.10 Mean number of sponges counted in each quadrat at 4 sites –Thorn Rock 1993-2017



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

The species surveys show that Skomer has a very diverse range of sponge species, one of the highest in the UK.

The sponge assemblage at Thorn Rock is a “hot spot” for sponges within the MCZ. The community at Thorn Rock is quite dynamic in terms of total number of sponges visible but the overall community structure appears stable.

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

All sea fan monitoring sites and remaining individual colonies were visited and photographed in 2018.



In 2017, 4 natural sea fans (BH25, BRKw2, RRK14 and MDS5) and 1 artificially attached fan (POL4) were missing, of these only MDS5 was found again in 2018, the others were confirmed as losses.

One sea fan lost in 2016, BH21, was reduced to a stump, however, new growth was observed in 2018 (see below) and the fan has been added back onto the total numbers in the survey. Other fans which have been lost but where a base or stump is still present are being checked for any new growth.

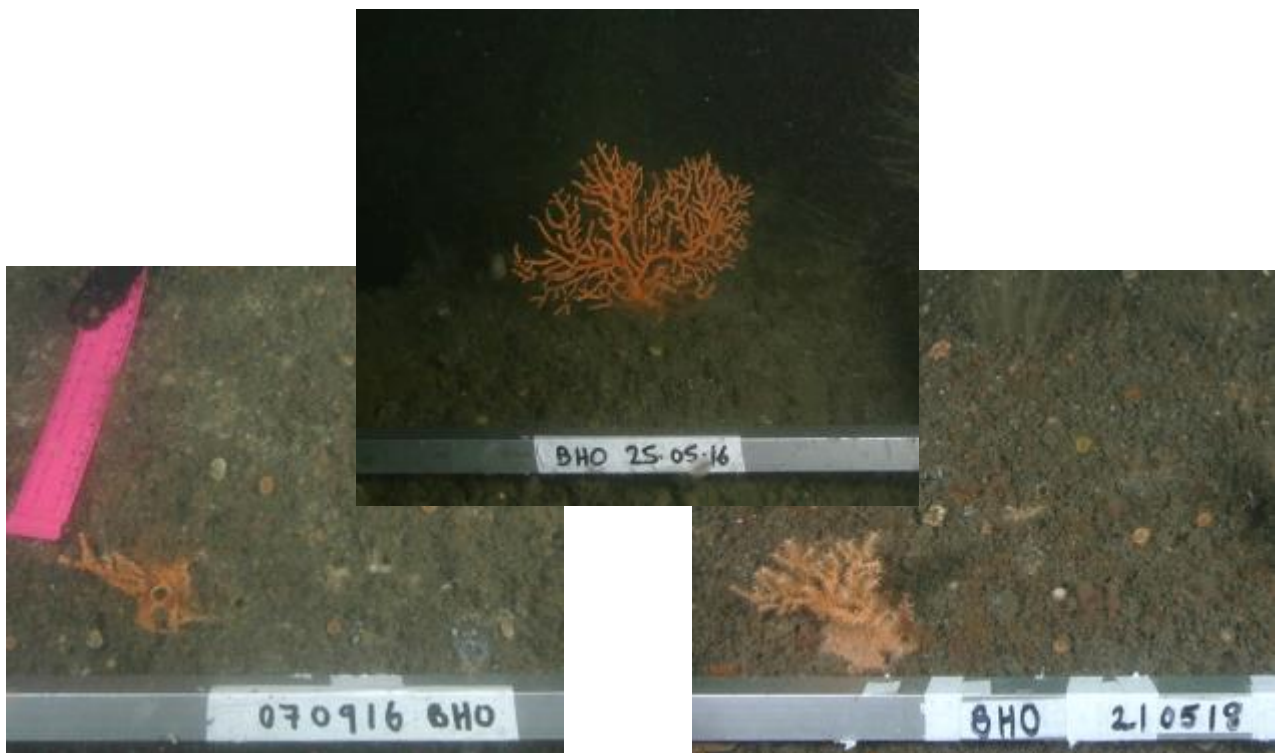


Table 10.4 Survey results 1994 -2018:

year	Sites surveyed	Total fans recorded	Total natural fans	Total attached fans	New recruits	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				
2009	10	128	121	7		1		
2010	10	126	120	6		3	1	
2011	10	126	122	4			2	
2012	10	126	121	5		1		
2013	10	129	124	5				
2014	9	124	120	4				
2015	10	125	123	2		3	2	
2016	10	118	115	3	1	9		
2017	10	114	112	2		3	1	
2018	10	110	108	2	1			6
totals					11	25	6	

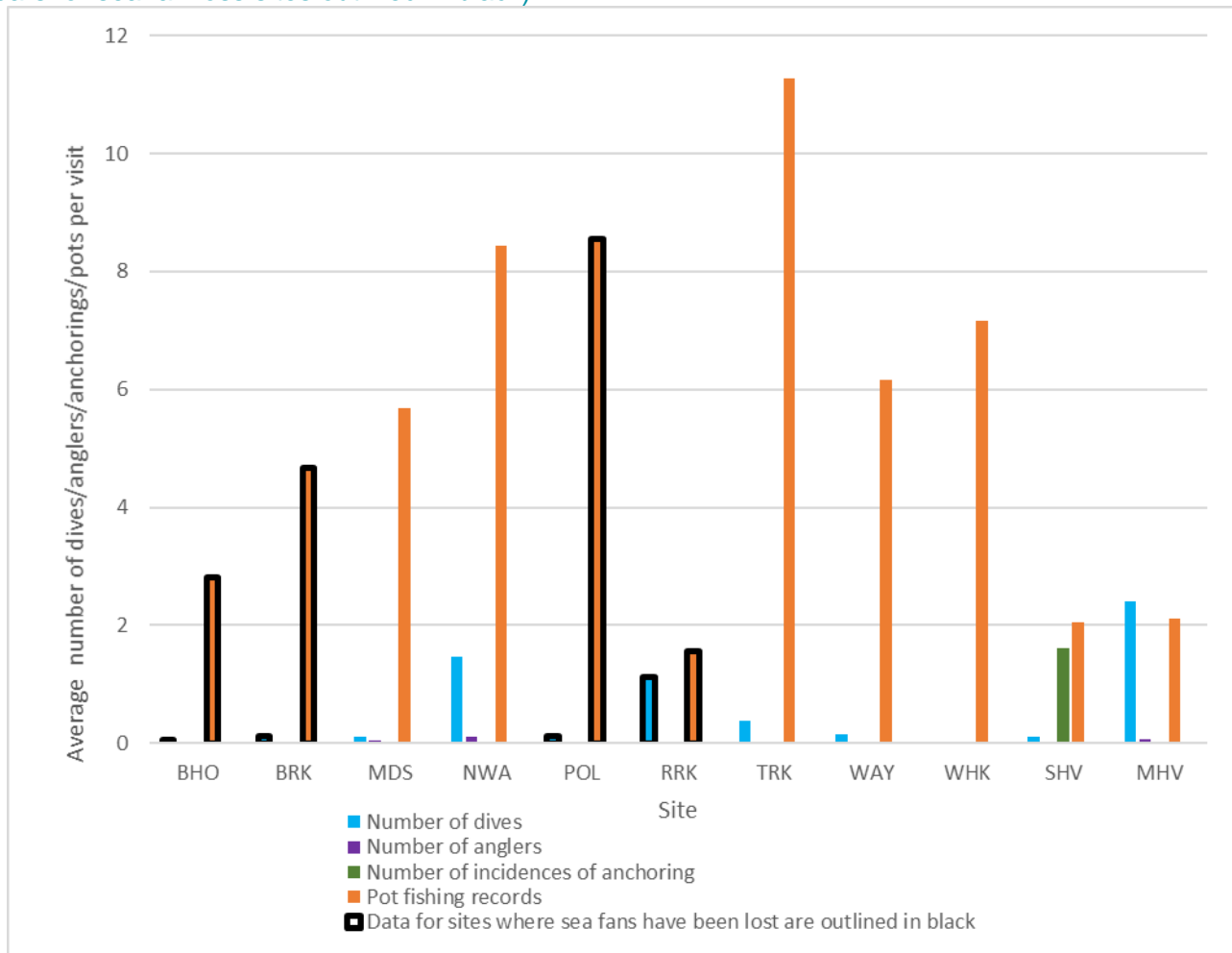
A total of 25 losses of natural sea fans and 6 of artificially attached fans have been recorded throughout the period of this project.

Five additional fans were absent in 2018, BH8, BH18, BRK7, POL8 and POL9, these will be checked, and their status confirmed in 2019. Also, only four of the group of 5 small sea fans at Bull Hole was present and this will be checked again in 2019.

Between 2015 to 2018 there has been an unusually high number of losses with 15 natural fans and 3 artificially attached fans confirmed as gone and further 5 fans absent in 2018 to be confirmed as losses.

In an attempt to understand potential causes behind the loss of sea fans at Skomer MCZ human activity data for 2017 (for which sea fan losses are confirmed) has been analysed in more detail (Fig 10.11), concentrating on those activities with the potential to make contact with the seabed or sea fans and the sites where sea fans are monitored.

Figure 10.11 “Seabed contact” activities at Skomer MCZ sea fan monitoring sites in 2017 (data bars for sea fan loss sites outlined in black).



Data presented in Fig 10.11 are corrected for differences in the numbers of days on which data were collected for different activities and at different sites to allow comparisons between years to be made. Data for South Haven (SHV) and Martins Haven (MHV) are included for context; neither are sea fan monitoring sites, but one is a highly popular (and permitted) anchorage and the other is popular with divers. Diving numbers include Skomer MCZ monitoring dives.

Of the sites that suffered losses in 2017 (BHO, BRK, RRK, and POL) most have very low levels of diving, no anchoring was recorded at any site and angling was only recorded at MDS. The activity most often recorded at all monitoring sites is lobster potting. It can be seen from the graph that lobster potting is also recorded at sites where there were no sea fan losses, but at these sites there are either very low numbers of seafans (MDS, TRK, WHK) or the seabed topography may be such that seafans are protected from “seabed contact” activities by being in gulleys or below overhanging rock formations.

It should be noted that all data is likely to be an underestimate of actual activity, but more so for commercial fishing effort, which is only usually recorded once per week between May and September.

One previously unrecorded sea fan was found at Middleholm in 2018.

In 2018 one sea fan sea slug, *Tritonia nilsodhneri*, was recorded on a sea fan at High Point, but not at one of the sea fan monitoring sites.

In terms of sea fan condition necrosis occurrence was found in 34% of the sea fans, which was lower than the average of 47% recorded for the last 17 years. Epibiota was recorded on 60% of the sea fans; this is slightly below the average of 61% recorded for the last 16 years.

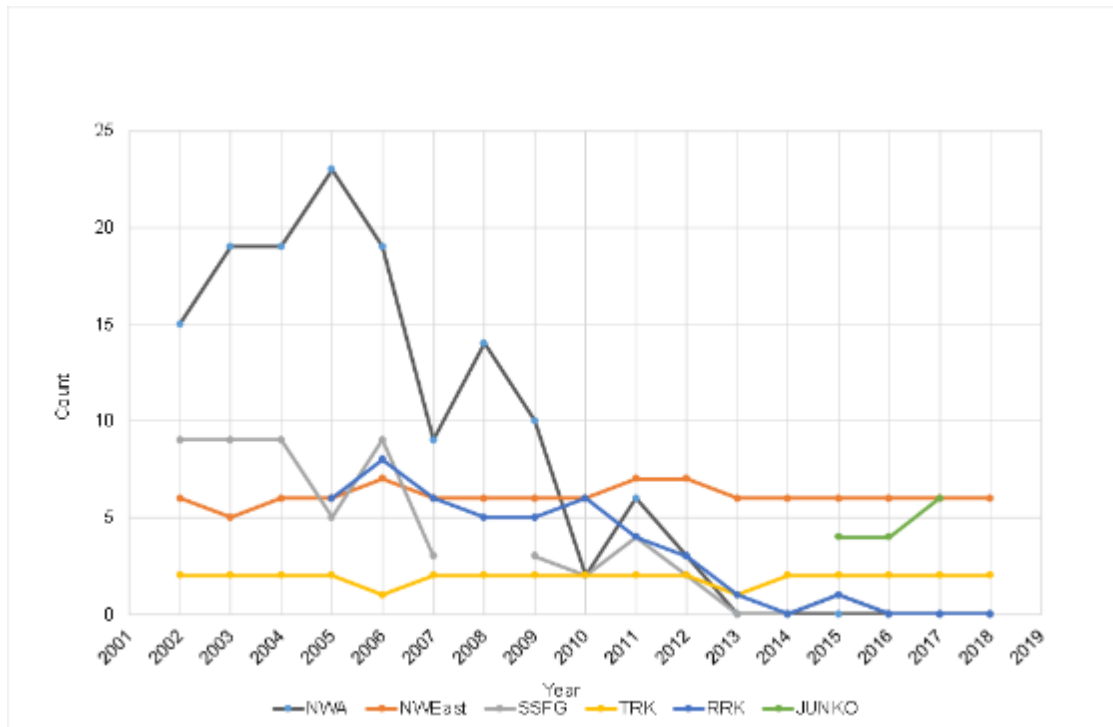
10.1.11. Project code: RM23/03 Monitor *Alcyonium glomeratum* Population

The abundance of *A. glomeratum* at the monitoring sites continues to decline at all sites except for Thorn Rock and Junko's reef, which have sizable colonies. North Wall main, Rye Rocks and Sandy sea fan gully now have no visible colonies.



The reason for this decline is unknown. There is no evidence of disease or physical damage at the monitoring sites and changes in environmental conditions are not thought to be significant enough to cause colony loss.

Figure 10.12 Number of quadrats with *A. glomeratum* present at Skomer MCZ sites 2002 – 2018.

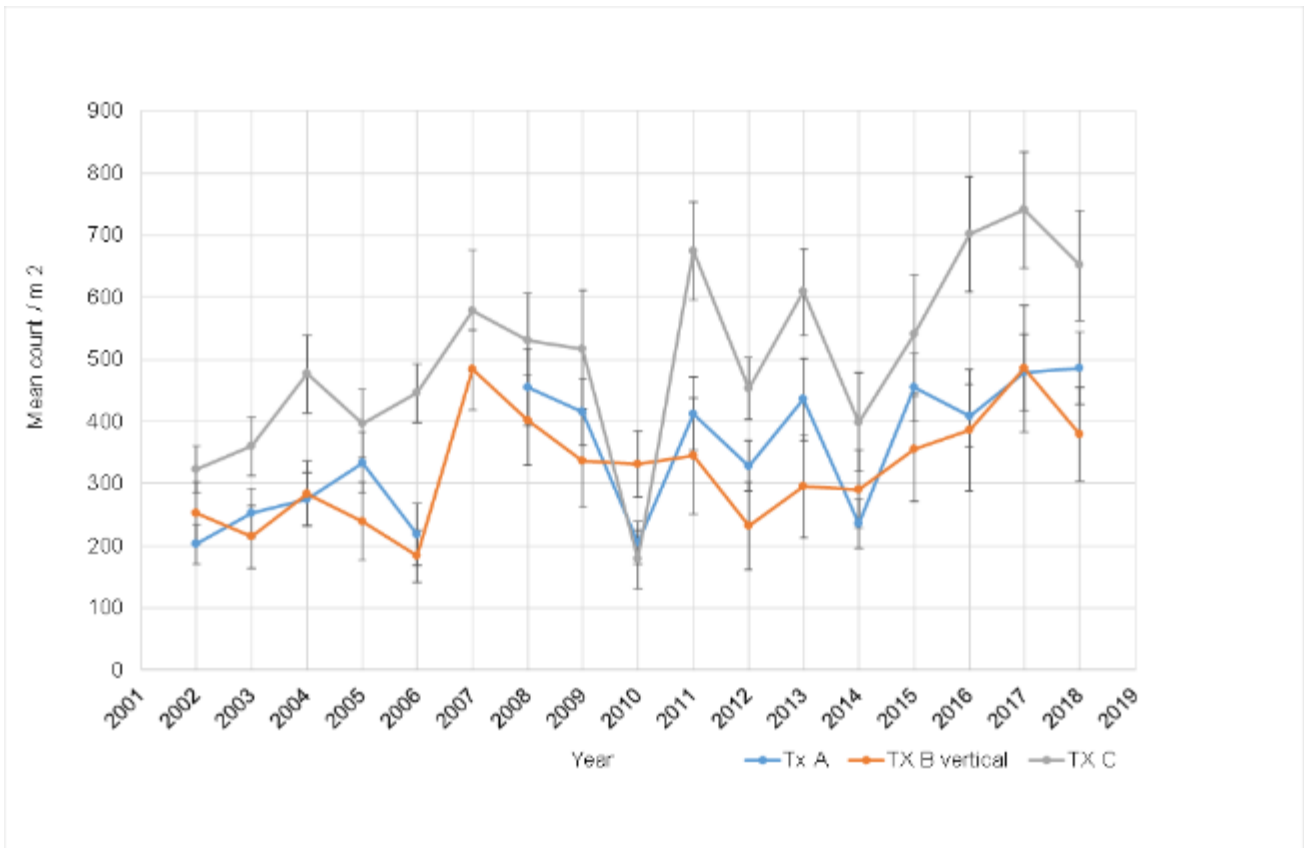


10.1.12. Project code: RM23/04 Monitor Cup Coral Populations

Quadrats were photographed for both Devonshire cup corals (*Caryophyllia smithii*) and the Lusitanian scarlet and gold cup coral (*Balanophyllia regia*).



Figure 10.13 *Balanophyllia regia* abundance at Transects A, B and C at the Wick



The average number/m² of *B. regia* has fluctuated at transects A, B and C. The variability is most likely to be caused by variations in the covering of silt across the site from year to year. Deep silt can hide individual cup corals and occasionally cause very poor photographic conditions (e.g. 2010). Some evidence of a general increase in cup coral population between 1998 and 2018 can be seen for the Wick and for Thorn Rock.

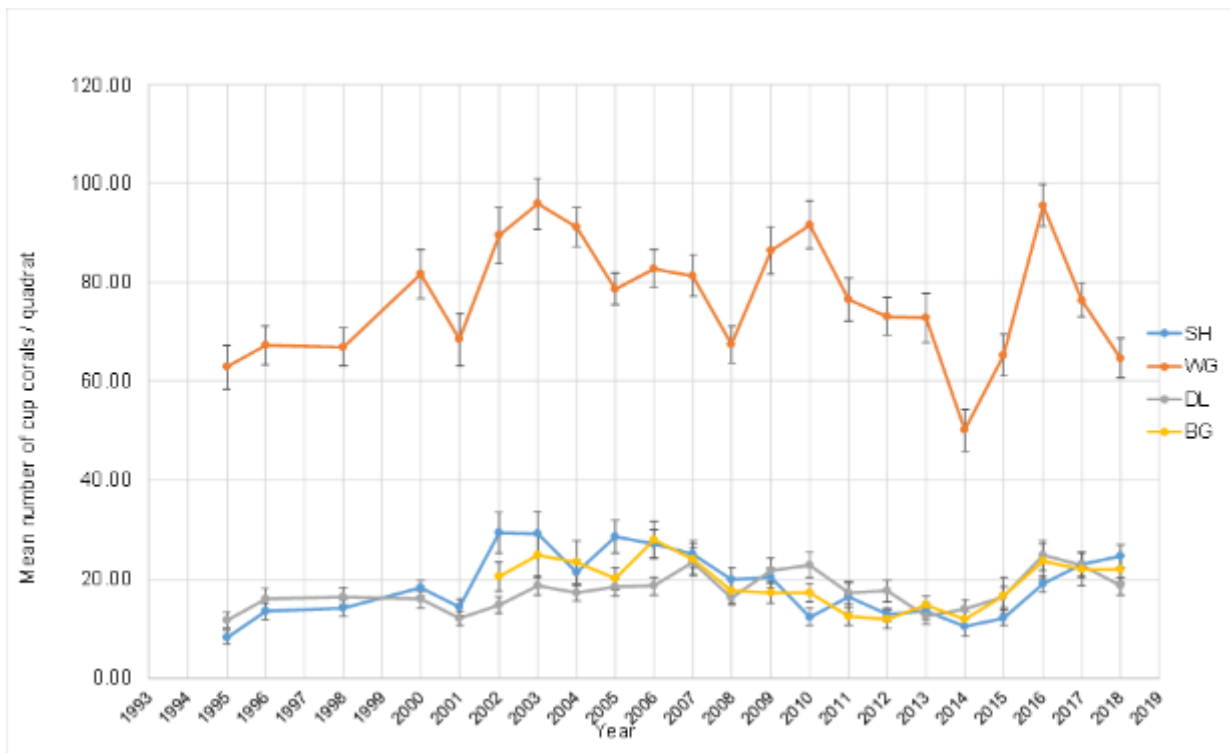
Caryophyllia smithii

The average number/m² of *C. smithii* has fluctuated at each of the Thorn Rock sites. 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.



Figure 10.14 Mean Number of Cup Corals per Quadrat at Thorn Rock 1996 - 2018



The drop in abundance in 2018 is notable as the silt levels were very low and the photograph quality was very good. It is not known how long these cup corals live and how variable their numbers are.

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

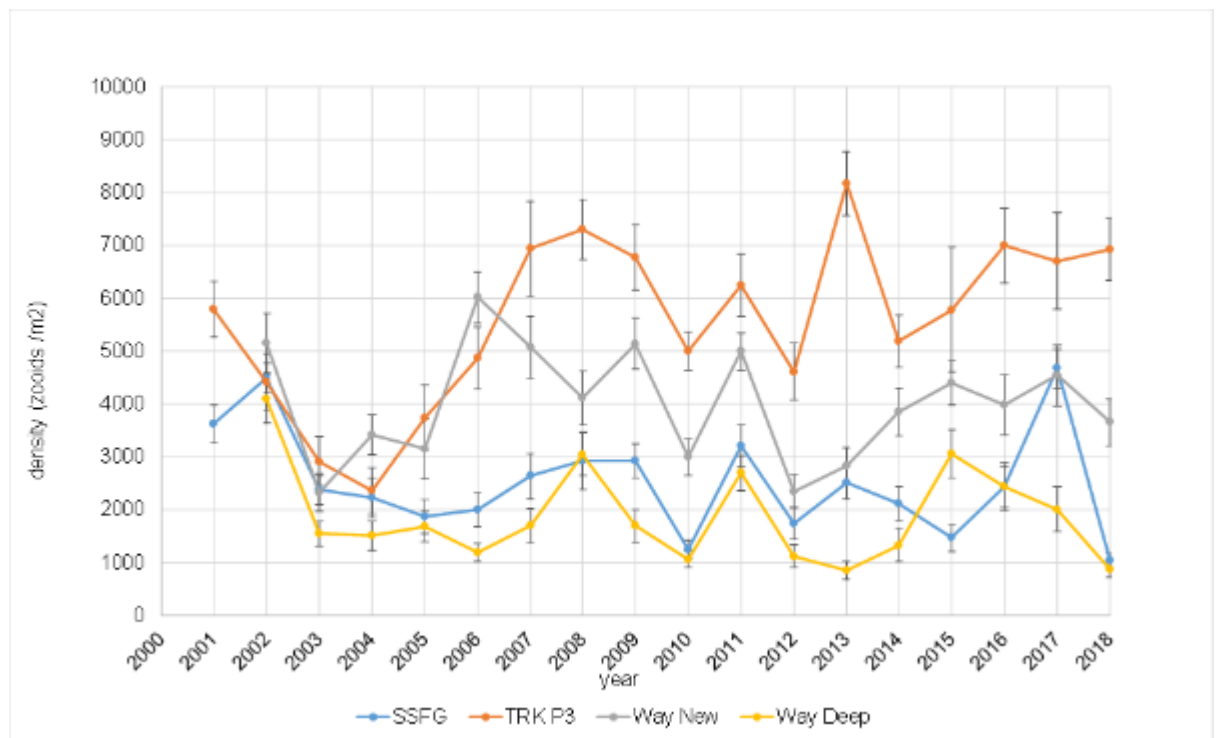
All monitoring sites were visited and all yellow trumpet anemone colonies were still present.

Thorn Rock (TRK) and Way New sites showed little change in polyp density but Sandy Seafan Gully (SSFG) and Way Deep both had a significant drop in density.

All sites except Thorn Rock mooring declined in colony coverage in 2018.



Figure 10.15 Density of polyp (numbers of polyps /m²) at Skomer MCZ sites 2001 – 2018



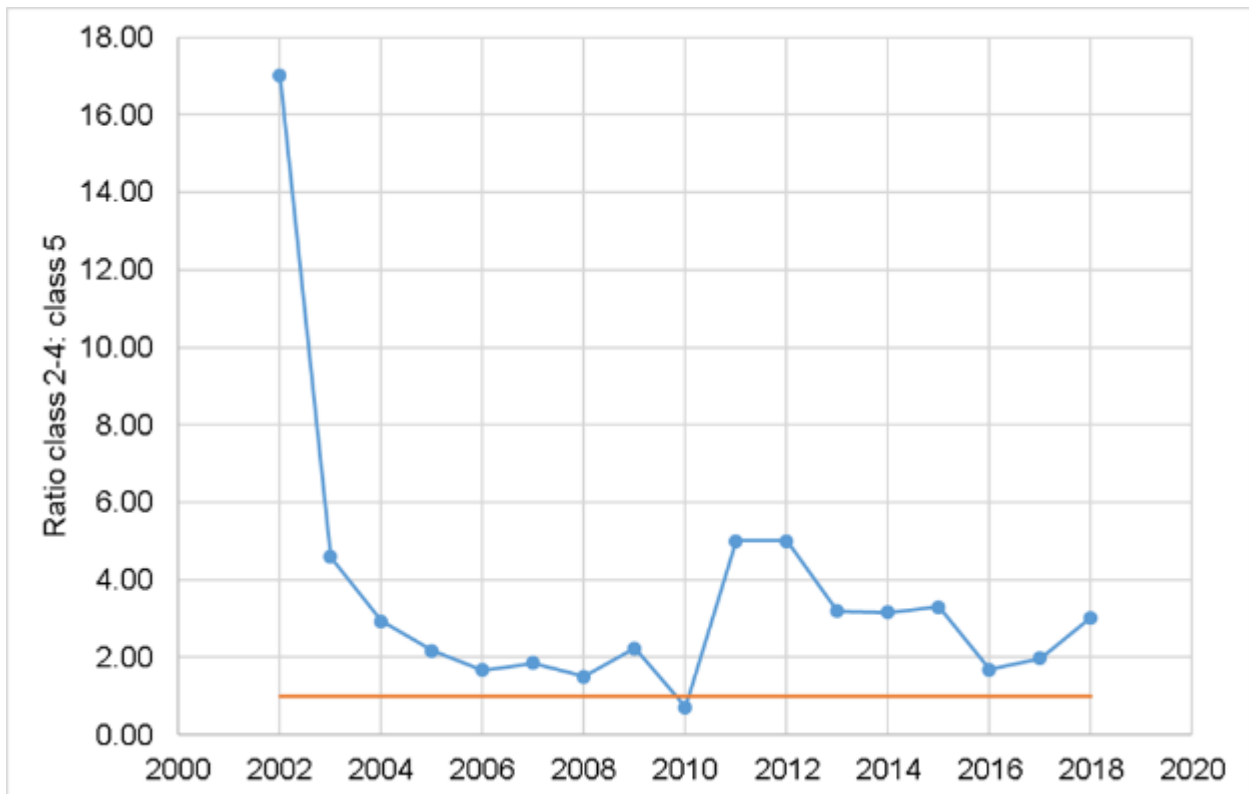
10.1.14. Project code: RM63/01 Monitor *Pentapora foliacea* Population

In 2018 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 2-4 colonies than class 5, which might indicate a population with more healthy growing colonies than degraded colonies.

Figure 10.16 *Pentapora foliacea* - ratio of class 2-4 colonies to class 5 colonies - all Skomer sites



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

10.2. Meteorology/Oceanography

10.2.1. 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 2018:

Maximum temperature (°C)	23.6 (June)
Minimum temperature (°C)	-5.5 (March)
Annual Maximum gust (knots)	82.56 (Dec)
Direction of Maximum gust	165 degrees

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

Seawater turbidity was measured using a Secchi disk 23 times at Thorn Rock and 20 times at OMS. Turbidity at Skomer MCZ in 2018 appears to be marginally above average when compared with previous years.

Figure 10.17 Skomer MCZ summary of annual mean Secchi disc data (m) with 95% S.E. bars



10.2.3. 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.

Results from samples taken in 2016 and 2017 have now been acquired:

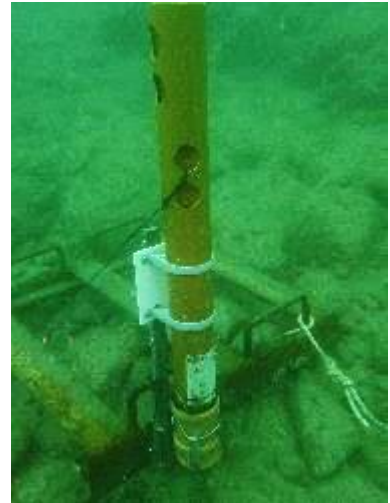
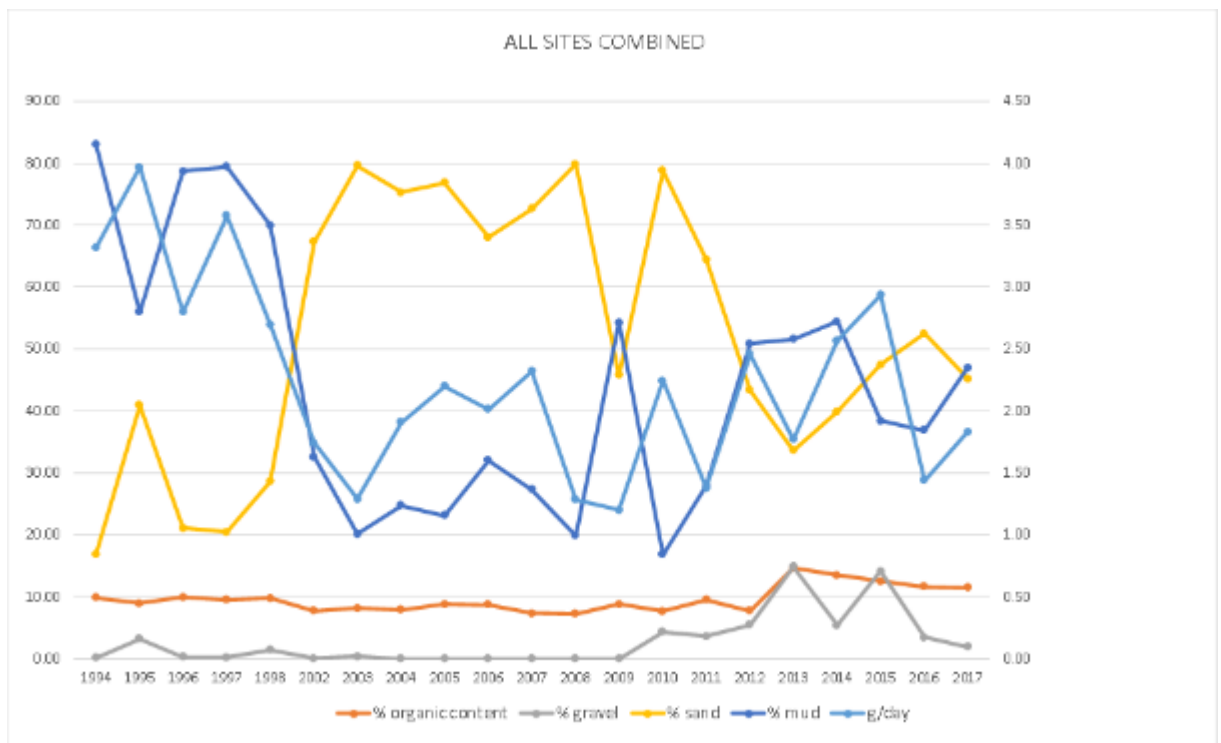


Figure 10.18 Skomer MCZ sediment trap sample total sediment, PSA and organic content analysis – OMS and Thorn Rock sites combined



In general mud-sized particles have increased as a proportion of the total sediment since 2009, whereas the proportion of sand has reduced.

10.2.4. 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 in Table 10.2.

Table 10.2 Maximum and minimum seabed temperature from OMS logger

Year	Minimum temperature °C	Maximum temperature °C
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
2017	8.3	16.4
2018	6.6	16.6

The winter for 2017 -2018 had the lowest sea temperature recorded for the last 18 years (6.6°C) with March temperatures 1°C below the average.

10.3. Data handling developments

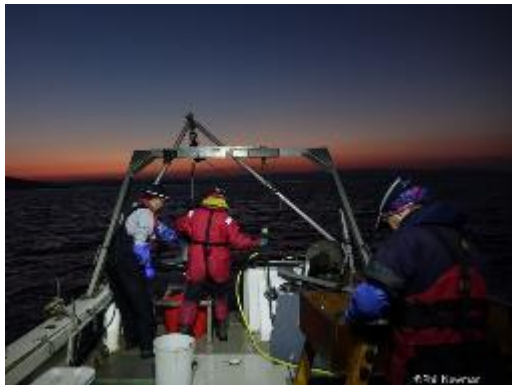
As a remote site with very poor internet connection at Martins Haven all our documents, data and images are stored on site, but with back-ups made regularly to portable hard drive for storage off-site.

MCZ reports continue to be available via the NRW internet site (go to www.naturalresources.wales and search for “marine reports”).

10.4. Other work

MCZ staff continue to be involved in NRW projects outside of the Skomer MCZ itself, especially where it is most efficient logistically for us to carry out the work or where the MCZ team have the necessary skills or equipment:

Skalmey was again used to carry out grab sampling for the Milford Haven Waterway Environmental Surveillance Group and in 2018 this was combined with grab sampling for NRW's programme of estuary monitoring.



The estuary monitoring project also includes the Three Rivers estuary system in Carmarthen Bay, so the Skomer MCZ team together with Marine Monitoring Team colleague, Matt Green, decamped to Llansteffan and the Tywi Boat Club for part of October. As in previous visits the boat club and its members very generously made a mooring and their clubhouse available to us for our nocturnal forays into the Tywi, Taf and Gwendraeth.

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.



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, including on Skokholm Island (see Section 10.1.7).

Skomer MCZ provided boat support for bird counting work at Stackpole to support NRW's Senior Reserve Manager there, Paul Culyer.

MCZ staff have also contributed to NRW's marine evidence audit and to the work towards Marine Area Statements.



11. Education and Interpretation

11.1. Fisherman's Cottage MCZ exhibition

The Skomer MCZ exhibition room at Martins Haven had record numbers of visitors with nearly 30000 people crossing the threshold in 2018. New logging equipment has meant more reliable monitoring of numbers. Good weather during the spring half term played a part in this as evidenced in Fig 11.1 below, but WTSWW staff at Lockley Lodge have also contributed by helping to ensure the exhibition is open when MCZ staff are not around.

Figure 11.1 MCZ Exhibition Visitor numbers 2018

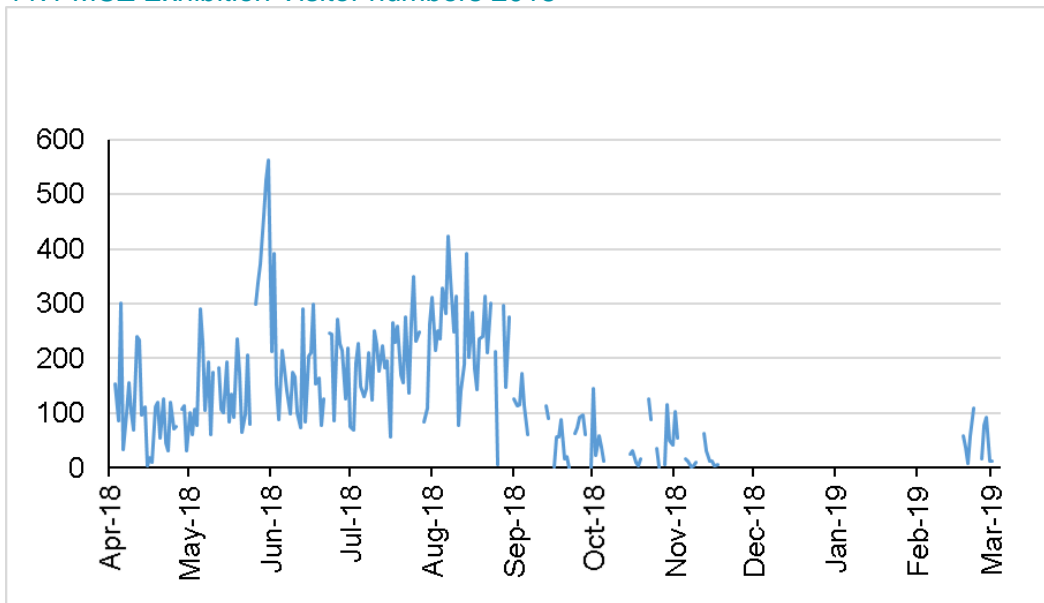
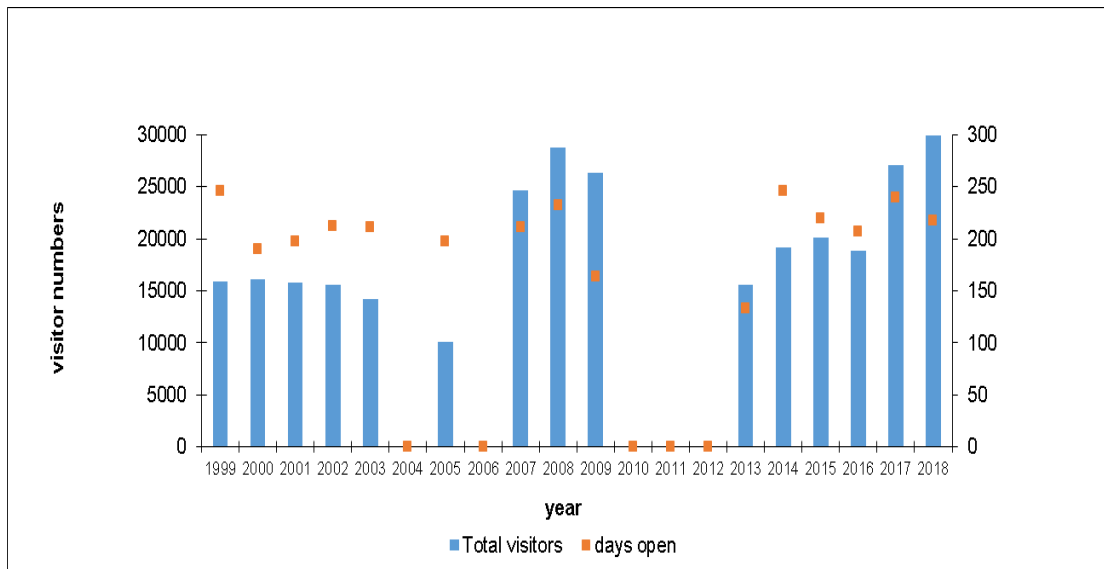


Figure 11.2 MCZ Exhibition Visitor numbers and days open 1999 to 2018



11.2. Other initiatives

For the first time in many years there was no MCZ Martins Haven Marine Day hosted by Skomer MCZ staff in 2018 due to pressures of other work.

11.3. Talks and presentations

Phil presented the work of Skomer MCZ at the meeting of NRW's designated site management forum and also at the annual conference of the Porcupine Marine Natural History Society in Cardiff.

Mark's talks continue to be much in demand with the Women's Institute, but he managed to find time (and drop his cake standards, temporarily) to give a presentation on the work of Skomer MCZ at an event at Marloes village hall.



Photo: Anne Bunker

11.4. Media



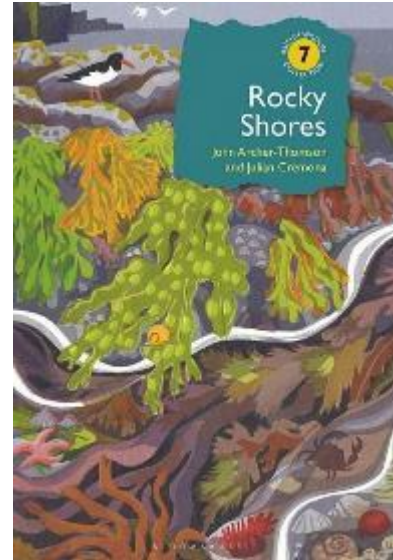
The BBC's series "Wales: Land of the Wild" featured some of Skomer MCZ's underwater video footage (a full 12 seconds) and MCZ staff helped the Worldwide Fund for Nature film unit researching a project about plastics and seabirds. Other media contacts included SubSea TV, Mark's interview with BBC Radio Wales about seal pup numbers following the previous year's storms and other enquiries from the BBC.

MCZ staff also posted various articles on NRW's internal social medium, "Yammer", and on Skomer MCZ's Facebook page, including topics such as the nudibranch

survey, shoreline clean-up assessment technique (SCAT) courses run by Kate, lagoon and crawfish surveys, grab sampling in the Three Rivers estuary system and finding the invasive seaweed, wakame, on the shore in North Haven (see Section 10.1.5). Skomer MCZ team also worked with NRW's Communications Team to produce video blogs for YouTube about our work.



Mark has been immortalised as the face of plankton sampling in a new book on rocky shores by John Archer Thomson and Julian Cremona.



And finally, a chance to blow our collective trumpet for the Skomer MCZ monitoring programme:



Communications and Management
for Sustainability

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Skomer Marine Conservation Zone – Project Status Report 2017

February 12, 2019 by jayne News No Comment

Keith Hiscock: *This is how you do it! Excellent report from the Skomer team – really helping us to understand natural (and probably not so natural) fluctuations in species and climate etc.*

Skomer marine Conservation Zone – Project Status Report (Evidence Report 251)

This is the seventeenth project status report produced by the Skomer Marine Conservation Zone (MCZ). It summarises the progress and current status of monitoring projects in the Skomer MCZ during 2017. These projects not only provide the evidence needed to report on the condition of the Skomer MCZ itself, but make an important contribution to the evidence used in assessing the condition and conservation status of the Pembrokeshire Marine Special Area of Conservation, within which the MCZ is situated. Skomer MCZ long-term data, biological as well as human use, has also been used in establishing and reporting on biological indicators for UK requirements under the Marine Strategy Framework Directive (MSFD). Specific cases where Skomer MCZ data has been used to support initiatives other than those directly linked to the MCZ are detailed in individual project summaries. The project status tables in Section 4 provide a summary of all established monitoring projects in the MCZ. Section 6 details biological projects that were worked on during 2017 and a summary of the results to date. Section 7 provides a summary of the oceanographic and meteorological surveillance projects. [To read more of this fascinating report click here](#)



12. 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 volunteers;
- Bee Büche and Eddie Stubbings and the rest of the Skomer Island NNR staff;
- John Archer Thomson, Blaise Bullimore, Jon Moore and Kerry Lewis for diving support;
- 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 eelgrass surveys;
- Skippers of the dive charter vessels for getting our volunteers to and from the survey sites safely.

With apologies to anyone missing from the list above.

13. Appendices

Appendix 1 – Grey Seal Breeding Census Skomer Island 2018, Birgitta Büche and Edward Stubbings, Wildlife Trust of South and West Wales. NRW Evidence Report 352

Summary

250 pups were monitored on Skomer Island in 2018, of which 241 were definitely born on Skomer and nine pups turned up either just before the start of moult, or moulting (wanderers).

The total of 241 pups born on Skomer Island is the highest total ever recorded with 240 (in 2015) being the second highest total.

A total of 395 pups were born within the Skomer Marine Conservation Zone, of which 154 were born on the Marloes Peninsula. See section 4.2.

The busiest period was one week earlier than in the previous year. This year the busiest week was week 38 (17/9/18-23/9/18) with 51 pups born. See section 4.2.

The most productive beaches were Matthew's Wick (51 pups), South Haven (48 pups) and North Haven (40 pups). The fourth most popular beach was Driftwood Bay (23 pups). See section 4.2.

One hundred and eighty-one pups are known, or assumed, to have survived on Skomer (the fate of six pups is unknown), giving a survival rate of 77%. See section 4.3.

In 2018 the maximum haul-out (on the main haul-out sites) of 319 animals was recorded on 13 November 2018, 25 days later than in the previous year. This is 14 more than last year's maximum count. See section 5.

In 2018 27 animals (17 females, three males and seven immature) were photographed with obvious signs of being entangled in nets at some time in their lives. See section 6.

Between 1 August and 22 November 2018 13 incidents of disturbance to seals around Skomer Island were observed and six incidents of vessels entering the voluntary no access zones recorded. See section 7 and Appendix 3 and 4.

A total of 305 photos were taken which will be entered into the NRW Wales Seal ID database. Ninety-nine seals with obvious scars were identified by eye, of these 42 were re-identified from previous years. See section 10.

Appendix 2 – Skomer MCZ Advisory Committee Correspondence

From: Robin Crump

Sent: 09 November 2018 13:26

To: Correspondence.Lesley.Griffiths@gov.wales

Cc: Correspondence.Hannah.Blythyn@gov.wales; [Louise George](#); [Clare Pillman](#)

Subject: Skomer Marine Conservation Zone

Dear Cabinet Secretary

I have been asked, in my role as Chair of the Skomer Marine Conservation Zone (MCZ) Advisory Committee, to revisit the response you gave to my letter of 18th October 2016 with regard to the future of the MCZ and its staff. At its meeting in April 2017 the Committee considered that your letter (dated 2nd November 2016) did not in any way address the issues raised, instead effectively “passing the buck” to Natural Resources Wales (see attached minutes). However, at that meeting the Committee decided to await the outcome of the Climate Change, Environment, and Rural Affairs Committee inquiry into Welsh Government’s approach to Marine Protected Area management. Unfortunately, the CCERA report conclusions, however welcome some of them were in aiming to protect the marine environment, were very general and appeared to only consider European Marine Sites.

So, on behalf of the Skomer MCZ I would like to reiterate our concerns as laid out in the 2016 letter (attached) and add further that we urge the Cabinet Secretary and your Minister (copied in to this correspondence) to ensure that NRW include provision for the management (not just monitoring) of Skomer MCZ as it draws up its new corporate structure.

Another issue brought to the Committee’s attention at our 2018 meeting was the setting up of a “task and finish group” by Welsh Government officials to identify “potential features and conservation objectives for Skomer MCZ” as well as identify new MCZs in Welsh waters. There was considerable confusion as the Committee were under the impression that Skomer MCZ already had features and conservation objectives as part of the management plan for the Marine Nature Reserve. There was also a degree of anger that the Committee, who have been advising the Skomer Marine Nature Reserve/Marine Conservation Zone for forty years or more on such issues had been excluded from these discussions. Committee members have asked me to contact the chair of the Wales Marine Advisory and Action Group to ask that representation from the Skomer MCZ Advisory Committee be invited onto the group along with a member of the NRW’s Skomer MCZ team, who have decades of experience in managing the site and creating the current features and conservation objectives.

I would urge the Cabinet Secretary and Minister to support this request to help make best use of the expertise already existing for the site.

Whatever the decision on the Committee’s role in the above deliberations, we would ask Welsh Government to honour its pledge to ensure that the site does not suffer any reduction in protection in the transition from MNR to MCZ and to reiterate that we see the continuation of the current presence of staff at the site and the continuation of what has been a highly effective stakeholder group as an essential part of that protection.

Yours sincerely,
Robin G. Crump. BA, PhD.

Lesley Griffiths AC/AM
Ysgrifennydd y Cabinet dros Ynni, Cynllunio a Materion Gwledig
Cabinet Secretary for Energy, Planning and Rural Affairs



Llywodraeth Cymru
Welsh Government

Ein cyf/Our ref LG/02195/18

Robin G. Crump

25 November 2018

Dear Mr Crump

Thank you for your letter of 9 November, regarding Skomer Marine Conservation Zone.

Marine Conservation Zones (MCZs) form part of the network of Marine Protected Areas (MPAs) in Wales. The Welsh Government has overall responsibility for ensuring the MPA network is effectively managed. However, management is a responsibility shared across a number of organisations, including Natural Resources Wales. It is for these organisations to consider its own responsibilities in relation to MPA management and to ensure it has the appropriate resources in place to meet statutory obligations.

As you have identified the existing MCZ at Skomer will need to be brought in line with the Marine and Coastal Access Act, following its transition from a Marine Nature Reserve. This will involve introducing a designating order, detailing the protected features of the MCZ and associated conservation objectives. Nature Resources Wales, as statutory nature conservation advisors to the Welsh Government, will support my officials with this work. My officials also intend to engage with you in your role as Chair of the Advisory Committee during this phase of work, which I expected to start late 2019.

In the meantime, my officials are establishing a Task and Finish Group to consider potential MCZs which will address the gaps identified in the 2016 Welsh network assessment.

I am copying this letter to Clare Pillman, Chief Executive of Natural Resources Wales.

Yours sincerely
Lesley Griffiths

Lesley Griffiths AC/AM

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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 oedl.

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.

From: Robin <robin.g.crump>

Sent: 29 January 2019 11:25

To: Pillman, Clare

Cc: Gill.bell; ycevans; peter smithies; chris jessop; Newman, Philip
<Philip.Newman@cyfoethnaturiolcymru.gov.uk>

Subject: Skomer Marine Conservation Zone

Dear Ms Pillman

I have been asked to write to you on behalf of the Skomer Marine Conservation Zone Advisory Committee following our meeting on 10th April last year (minutes attached). 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).

As I am sure you know 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 site also provides valuable data to support Welsh Government's evidence-based decision-making policy.

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."

We are aware that Natural Resources Wales has undergone considerable change over the last five years and we are grateful that NRW have managed to maintain the staff presence at Skomer and the resources to keep the MCZ's management effective.

We are, however, concerned that the current round of management and staff structural reorganisation will result in the reduction or dilution of the incredibly important work being done at Skomer by your staff. The NRW team at the MCZ succeeds in protecting Skomer's marine environment, principally because of their presence, as well as their public engagement and scientific monitoring work. I am sure you will be well aware of this as I understand you have visited the staff there.

The committee is not blind to the realities of the financial pressures facing all public services and recognise that it is inevitable that the Skomer team needs to be available for other aspects of NRW's marine work. Our annual update on the MCZ has for many years now included all the work the team does outside the MCZ, wherever their particular talents or equipment can be best utilised. However, for this team to be subsumed into an all-purpose marine team without recognition of the value of the work they do at Skomer would seem to be folly.

We would also like to draw your attention to the importance of the Skomer MCZ to the immediate community: The MCZ provides valuable skilled employment in a very rural community, with two of the staff living in the village of Marloes. The MCZ also adds status to the area and attracts both general and professional visitors who are interested in NRW's work in the MCZ, especially since the Skomer is the only MCZ in Wales. The MCZ staff engage well with the local community ensuring the

work of the MCZ reaches a wider audience by giving talks and through the Martins Haven Marine Day and seashore safaris for younger members of the community.

NRW has a world-class operation going on at Skomer and should not only be proud of the MCZ's contribution to NRW's core aims and objectives, but also what it achieves in addition to this.

Robin Crump,

Chair Skomer MCZ Advisory Committee.

On behalf of Skomer MCZ Advisory Committee, Marloes and St Brides Community Council and Marine Conservation Society.

CC. Gill Bell – Marine Conservation Society

Yvonne Evans - Marloes and St Brides Community Council

Peter Smithies - Marloes and St Brides Community Council

Chris Jessop - Marloes and St Brides Community Council

Phil Newman – Skomer MCZ Advisory Committee secretariat



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Dr Robin Crump

By Email: robin.g.crump@gmail.com

7th February 2019

Dear Dr Crump

Re: Skomer Marine Conservation Zone

Thank you for your e-mail of 29th January and for the kind words regarding the work carried out by Natural Resources Wales staff at Skomer Marine Conservation Zone (MCZ). It is encouraging to see that the team at Skomer has the support of such a diverse range of groups as represented on the Advisory Committee, not least of which the local community within which the staff work and live.

As you mention I have visited the team and the site and seen for myself some aspects of the work they undertake. Their contribution to the work of NRW in the marine environment is valued within the organisation, as well as in the wider world.

Clearly the changes in NRW internal structures that we are currently going through have given rise to some concern amongst Advisory Committee members (as reflected in the minutes of the April 2018 meeting) about the future of the team at Skomer and the work they carry out.

The aim of the re-design is to create an organisation that allows us to deliver the new purposes and duties set out for NRW within the Environment Act and the Well Being of Future Generations Act, creating new ways of working that are rooted in 'place', joined up and effective, and organised at a scale meaningful to us and our stakeholders.

As you are aware, NRW has committed to continue to manage and monitor Skomer MCZ until new arrangements for Skomer as an MCZ with conservation objectives and features etc are in place and an approach to managing MCZs in general, as part of the wider MPA network, is agreed with Welsh Government. However, in the meantime we recognise, and have publicly stated, that the level of resource we commit to managing and monitoring Skomer might change given resource constraints and the work needed across the remaining network.

Under this new structure, Skomer MCZ staff will form part of a Marine Monitoring Team within a new single Marine Service within our Operations Directorate, which is intended to provide an integrated marine service, delivering functions with respect to operational work within the marine area throughout Wales. This creates greater resilience and integration in delivery of our marine monitoring requirements in Wales in general and also provides the potential to deploy staff more widely as needed. As you have stated, the Skomer MCZ staff already contribute to wider marine monitoring requirements outside the site.

NRW current plans for Skomer MCZ are that staff will remain on site in order to continue to carry out the policing and management of site use, liaison with stakeholders, and the monitoring requirements of the MCZ. That is not to say that they will work exclusively at Skomer MCZ, but will continue to contribute to, and advise on, a variety of other projects as they have for many years.

I hope this goes some way towards reassuring the Committee that NRW's work at Skomer MCZ remains an integral part of our business.

Yours sincerely,



Clare Pillman
Prif Weithredwr, Cyfoeth Naturiol Cymru

Chief Executive, Natural Resources Wales

Cc: Gill Bell – Marine Conservation Society
Yvonne Evans - Marloes and St Brides Community Council
Peter Smithies - Marloes and St Brides Community Council
Chris Jessop - Marloes and St Brides Community Council
Phil Newman – Skomer MCZ Advisory Committee secretariat

From: Robin <robin.g.crump@gmail.com>

Sent: 09 November 2018 13:12

To: peter@pdpartnership.co.uk

Cc: Correspondence.Hannah.Blythyn@gov.wales; Corresepondence.Lesley.Griffiths@gov.wales;
Louise.George@gov.wales; Newman, Philip <Philip.Newman@cyfoethnaturiolcymru.gov.uk>

Subject: Wales Marine Action and Advisory Group and Skomer Marine Conservation Zone

Dear Mr Chairman

Firstly, apologies for contacting you via this e-mail address, but I was unable to find an address for you as Chair of the Wales Marine Acton and Advisory Group.

I am writing to you on behalf of the Skomer Marine Conservation Zone Advisory Committee. At our last meeting (see attached minutes) in April this year I was tasked to contact you with regard to the “task and finish” group being set up by Wales Marine Acton and Advisory Group to identify “potential features and conservation objectives for Skomer MCZ”.

As the long-standing “stakeholder group” for Skomer dating back to the 1970s, when the site became a voluntary Marine Reserve, through transition to statutory Marine Nature Reserve and now MCZ, our membership of about thirty organisations and individuals has built up considerable experience in advising Skomer marine staff on many aspects of the management of the site, including its current features and conservation objectives.

It was with considerable concern that we learnt that neither the Advisory Committee, nor any member of the highly experienced team of staff that Natural Resources Wales employ at Skomer, had been invited to contribute to the “task and finish” group.

I have attached a copy of the minutes of our meeting for you to get a flavour of the sentiments expressed during the meeting.

Given that our Committee has a long history and a great deal of experience of advising on the management of Skomer MNR (now MCZ), members have asked me to contact you with a view to giving the Advisory Committee some form of representation on the task and finish group. We would also strongly suggest that a member of the Skomer MCZ management staff should contribute, given the wealth of expertise and experience within that team.

We feel that these inclusions will give greater breadth of knowledge to the task and finish group and ensure a better outcome for the site.

Yours faithfully,

Robin G. Crump. BA, PhD.

From: peter davies

Sent: 09 November 2018 13:24

To: robin.g.crump

Cc: Correspondence.Hannah.Blythyn@gov.wales; Corresepondence.Lesley.Griffiths@gov.wales; Louise.George@gov.wales; Newman, Philip <Philip.Newman@cyfoethnaturiolcymru.gov.uk>

Subject: Re: Wales Marine Action and Advisory Group and Skomer Marine Conservation Zone

Robin

Many thanks for contacting but I must admit to being confused as I am not aware of such a sub group.

Where did you see the reference ?

I am though very pleased we have made direct contact

Peter

Appendix 3 – BSc Marine Biology Dissertation - A comparison of the habitat specific demersal fish assemblages found in seagrass meadows (*Zostera marina*) and kelp forests (*Laminaria* spp.) – Evelyn Furness.

Abstract

A shift in fishery management strategy is beginning to occur in response to an increasing body of research indicating the importance of full ecosystem consideration over focussed protection of a single species through legislation. Here mono baited remote underwater video stations are used on the United Kingdom's west coast from April- October 2017 to provide evidence that temperate seagrass meadows, kelp forests and mixed seagrass and kelp habitats had comparable organism abundance and species diversity, alongside evidence that each had a significantly different community composition. The data collected suggests that each ecosystem fluctuated with temporal variation, and that abundance and diversity is highest when human influence is lowest. Seagrass meadows are shown to support the highest abundance and diversity of commercially important species, including cod, pollock and flatfish. As no commercial species were found to be exclusive to one ecosystem it is concluded that fishery management strategies considering holistic seascapes can maximise benefits for diminishing fish stocks.

Appendix 4 - Tracking Nitrogen Source Using $\delta^{15}\text{N}$ Reveals Human and Agricultural Drivers of Seagrass Degradation across the British Isles. Benjamin L. Jones, Leanne C. Cullen-Unsworth and Richard K. F. Unsworth.

Abstract

Excess nutrients shift the ecological balance of coastal ecosystems, and this eutrophication is an increasing problem across the globe. Nutrient levels may be routinely measured, but monitoring rarely attempts to determine the source of these nutrients, even though bio-indicators are available. Nitrogen stable isotope analysis in biota is one such bio-indicator, but across the British Isles, this is rarely used. In this study, we provide the first quantitative evidence of the anthropogenic drivers of reduced water quality surrounding seagrass meadows throughout the British Isles using the stable nitrogen isotope $\delta^{15}\text{N}$. The values of $\delta^{15}\text{N}$ ranged from 3.15 to 20.16‰ (Mean \pm SD = 8.69 \pm 3.50‰) and were high within the Thames Basin suggesting a significant influx of urban sewage and livestock effluent into the system. Our study provides a rapid 'snapshot' indicating that many seagrass meadows in the British Isles are under anthropogenic stress given the widespread inefficiencies of current sewage treatment and farming practices. Ten of the 11 seagrass meadows sampled are within European marine protected sites. The 10 sites all contained seagrass contaminated by nutrients of a human and livestock waste origin leading us to question whether generic blanket protection is working for seagrasses in the United Kingdom. Infrastructure changes will be required if we are to develop strategic wastewater management plans that are effective in the long-term at protecting our designated Special Areas of Conservation. Currently, sewage pollution is a concealed issue; little information exists and is not readily accessible to members of the public.

Appendix 5 - The Recovery of Great Scallop (*Pecten maximus*) Populations in Skomer Marine Nature Reserve between 2000-2016. BSc Hons project
Sophie Octavia Cunnington

Abstract - Marine Protected Areas (MPAs) have been shown to benefit marine communities and fisheries management. With one third of fish stocks being unsustainably fished, the implementation of MPAs will be an important tool when developing management plans towards more sustainable fisheries. Scallops are a commercially important species which could greatly benefit from the implementation of such areas. However, few studies have been conducted to investigate the recovery of scallops in temperate climates and even fewer over long durations of time. These studies are important to highlight the benefits of protected areas as well as to educate policy makers when making future decisions about the marine environment and fisheries. This study investigated the recovery of the commercially important great scallop (*Pecten maximus*) in the Skomer Marine Nature Reserve, United Kingdom. Dive surveys were conducted within the Marine Conservation Zone (MCZ) (a type of MPA) at four-year intervals between 2000 and 2016. Surveys outside the MCZ were started in 2012. This paper found that recovery was evident. Densities and growth rates within the reserve significantly increased over the study period and were significantly higher than those in the area subject to fishing. Populations inside the reserve were shown to move towards more natural structures over time and, when compared to the fished area, population structures even suggested spillover of juveniles in 2012. These results suggest that the MCZ is enhancing the recovery of *P. maximus* within the protected area and potentially in adjacent fisheries. This paper joins a growing number of others which provide evidence for the benefits of MPAs to habitats, species and local fisheries. To examine how this MCZ is truly benefitting the local area, further investigations into *P. maximus* populations outside the reserve must be undertaken.



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