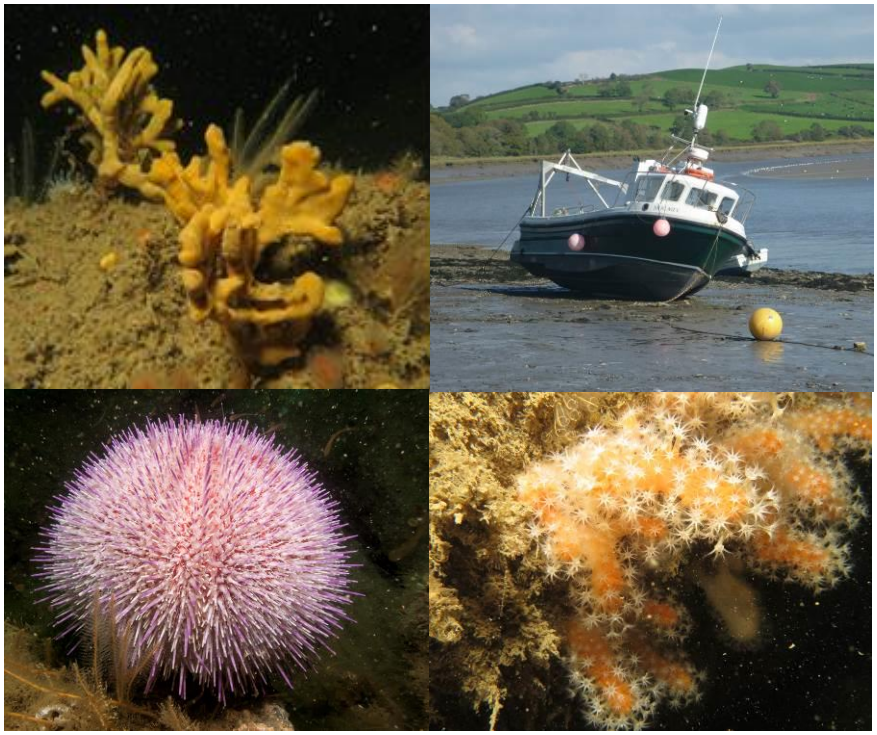
Cyfoeth Naturiol Cymru
Natural Resources Wales

# Skomer Marine Conservation Zone Annual Report 2015

Phil Newman, Kate Lock, Mark Burton, Jen Jones

NRW Evidence Report No.149



# Contents

## Synopsis

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.

## Crynodeb

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 grynodebau adroddiadau sydd wedi eu cyhoeddi, wedi eu cynnwys yma.

## Introduction and Foreword

Skomer MCZ team were grateful for a relatively calm season in 2015 with far better underwater visibility. The weather gods also smiled on us at specific times when we really needed good conditions. These included our latest (largely nocturnal) adventures into the Cleddau and Three Rivers and perhaps just as importantly, to make a good impression on our new Director for Operations South, Gareth O'Shea, who is now under the impression that we spend our days in sunshine surrounded by dolphins!

Our "big" projects in 2015 were the 4-yearly sponge species survey and the sea urchin and starfish volunteer diver surveys. We were able to extend Jen Jones' contract by a month to make full use of her expertise in sponge identification and we have been working with partners at Portsmouth University to take sponge identification to the genetic level for the first time. Early indications are that our list of sponge species now tops 120, with even more previously undescribed species.

Our heroic volunteer divers carried out about 130 transects and measured more than 650 urchins, over two weekends – so a huge thank you to them. Projects of this kind would be impossible without the efforts of volunteers.

Other volunteer divers helped with our core monitoring programme by supplementing our own dive team and allowing us to make more efficient use of our field time.

As mentioned above our monitoring programme has progressed well, thanks in part to good diving conditions, and in no small measure to the efforts of our volunteers. This has meant that the MCZ team has been able to respond to requests for help with work outside the site: In August *Skalmey* was in the unusual position of being the boat that hadn't broken down and was available to support the NRW's diving team from Bangor during their Pembrokeshire Marine SAC monitoring visit, when their own boat developed engine trouble.

The MCZ team also carried out grab sampling in the Daugleddau and Three Rivers estuaries during September. A huge thank you to the Towy River Boat Club for their hospitality and assistance, without which we would not have been able to carry out the work.

We were also able to help Pembrokeshire Marine SAC Officer with a project to install visitor moorings to protect eelgrass in Longoar Bay in Milford Haven.

On the theme of making friends and building relationships the MCZ have provided video footage for an NRW project to highlight Natura 2000 sites and for a National Trust project raising the profile of the Marloes area. We have also hosted visitors from RYA and Milford Haven Port Authority, we have helped local fishermen relocate lost lobster pots, spent a day with NRW's Fisheries Assessment Team testing sonar methods on eelgrass and we've even advised a round Britain windsurfer on safe landings in the area. We also assisted a yacht that had fouled a lobster pot buoy rope.

Our Marine Day was a great success in 2015, with dozens of children and parents exploring Martins Haven beach and then taking part in fishy craft activities at Marloes village hall.

# 2 Staff

## 2.1 Staffing

Phil Newman (PN), Mark Burton (MB), Kate Lock (KL) and Jen Jones (JJ) remain as MCZ staff.

Skomer MCZ team (minus MB) – photo G. O'Shea

MCZ staff are now part of a NRW Marine team of approximately 12 staff across southwest Wales, but this may change again as various business area reviews are carried out, looking at ways to improve efficiency of working throughout NRW.

Team building using a combination of marshmallow, spaghetti and hypothermia – photo C. Gjerlov

Local NRW marine colleagues Anne Bunker, Lily Pauls and Adam Leyshon supported MCZ staff when their time allowed.

Volunteers continued to play a prominent part in the work of the MCZ and without them many projects would not have been possible:

- Blaise Bullimore, John Archer Thomson, Nicki Meharg, Dai Atkins, and Rob Spray all took part in fieldwork as members of the MCZ diving team.
- Honorary Wardens (see Section 2.2) helped keep records of visitors, disturbance incidents, infringements of MCZ Codes of Conduct and records of species sightings. They also helped to keep the MCZ exhibition open for as many days per week as possible.
- The teams of volunteer divers involved in the sea urchin and starfish monitoring surveys.

Dai Atkins

Nicki Meharg (photo courtesy B. Bullimore)

Laura McQuillan

MCZ staff also hosted a work experience/placement student, Laura McQuillan, who accompanied us on non-diving work.

## 2.2 Honorary and Voluntary Wardens

The following served as Honorary Wardens (HW):
The whole Bullimore family
Sue Burton
Dr Robin Crump
Brian Dilly, dive charter operator
Kenny Gainfort, Skipper *Dale Princess*
Carl Wonnacot, crew *Dale Princess*
Andrea Hill, Ceri Rees-Powell and Clive, Martin's Haven National Trust car park attendants
Jane Hodges, MBE
Ivor Johnson, Old Mill Diving Services
Bruce Jones, BSAC
James Perrins.

## 2.3 Training

PN and JJ attended the interagency dive safety refresher training at Slapton Ley in Devon together with other divers from NRW, NE and JNCC.

In May 2015 the MCZ held its own marine safety day aboard *Skalmey*, involving volunteers as well as staff. A number of emergency drills were carried out on and in the water using MCZ safety equipment to ensure familiarity in the event of a real emergency.

Photo – B. Bullimore

Other training attended by Skomer MCZ staff included first aid refresher training, IOSH managing safely courses and on-line safety courses.

In order to comply with recent amendments to the commercial boat skipper regulations Skomer MCZ staff have attended a sea survival refresher and fire-fighting at

sea courses. MB also attended a vessel stability course, to assess whether its content was applicable to NRW boats.

Fighting fires at sea

How it's <u>really</u> done!

## 2.4 Health and Safety

Skomer MCZ staff continue to be involved with developments to NRW's health and safety procedures and policies, especially with regard to marine operations: PN represents local marine interests on NRW's Welfare, Health and Safety Forum and has also been involved in NRW's Personal Protective Equipment and Working On or Near Water task and finish groups. MB has been working with NRW safety staff on the development of safe lifting procedures for boats.

MCZ safety documents continue to be updated and Dive Project Plans and risk assessments, required under HSE Agreed Code of Practice (ACoP) for Scientific and Archaeological Diving Projects, are prepared as required for each diving project.

One accident was reported in 2015 when PN slipped and fell while loading winch equipment onto a trailer. Minor treatment was required for a cut to his eyelid.

Skomer MCZ staff received commendations from the owner of the yacht *Evenstar* when it became entangled in a pot rope south of Skomer and MCZ divers were able to free him (just before the lifeboat arrived).

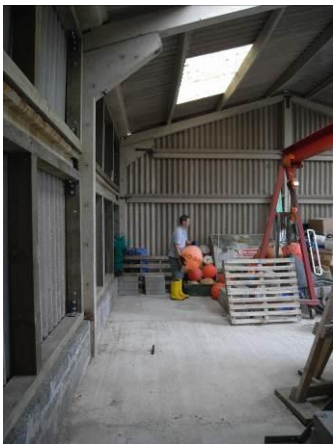
MCZ staff also went to the aid of the *Dale Princess* when it needed assistance docking in Martins Haven following a minor mechanical breakdown.

# 3 Estate

## 3.1 Buildings

*Project: ME12/01*

Most maintenance of Fisherman's Cottage continues to be carried out by a NRW contractor with minor jobs undertaken by MCZ staff in order to save time.



The sliding doors to the storage barn at Runwayskiln were extensively repaired by our NT landlords, although we are due to lose this highly important facility at some time next year when the site is redeveloped. The search is on for similar storage in the local area.

All MCZ waste handling and energy consumption continues to be monitored and audited in line with ISO 14001.

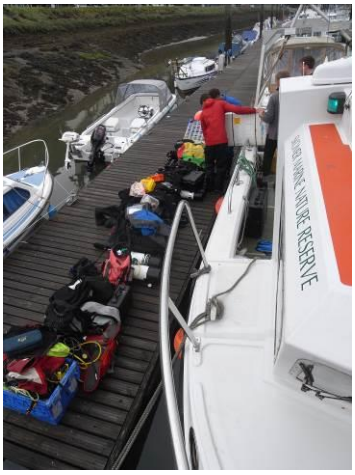
The MCZ exhibition continues to be popular with visitors (see Section 8.2).

## 3.2 Boats

*Project: MM00/01*

### 3.2.1 Boats

*Skalmey* spent 73 days at sea in 2015 and logged 284 engine hours



During this time *Skalmey* has operated mostly as the MCZ's dive support vessel, but has also supported grab sampling work (see Section 7.5) in both Milford Haven/Cleddau Rivers and the Three Rivers Estuary system (Towy, Taf and Gwendraith). In August she was able to provide support to the divers of NRW's Specialist Monitoring Team for their monitoring of Pembrokeshire Marine SAC, when their own boat broke down.

*Skalmey's* winch was retested during 2015 and MCZ staff took advice from NRW's lifting inspection contractors on legal compliance for lifting regulations with regard to boats.

Upgrades to *Skalmey's* equipment in 2015 included a new SOLAS-compliant life raft to replace the original 24-year-old raft, which will now be used as a training aid, and some highly effective LED deck floodlights to make working after dark safer.

The MCZ RIB *Morlo* spent 32 days at sea in 2015 and logged 98 engine hours.

*Morlo* was used mainly for weekend patrol work, seal monitoring, and for supporting work on intertidal monitoring sites around the MCZ.

After several trips in 2014 to support NRW staff carrying out Water Framework Directive (WFD) water sampling in the Three Rivers and Loughour estuary *Morlo* was loaned to the WFD team again in April while the new trailer for their own boat was being prepared.

Engine servicing and repairs were carried out by a local contractor and MCZ staff fitted an experimental bow “bumper” to help reduce damage to the hull and mooring ‘D’-ring when accessing intertidal sites in 2016.

One of those days when having a bow bumper would be useful

### 3.2.2 Seatime

Staff and vessel seatime are shown in Table 3.1.

## Table 3.1 Summary of Staff Boat and Seatime

| | 1997* | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Days at sea** | | | | | | | | | | | | | | | | | | | |
| Skalmey | 19 | 9 | 23 | 42 | 48 | 73 | 77 | 52 | 48 | 58 | 72 | 58 | 61 | 69 | 99 | 95 | 65 | 70 | 73 |
| SkalmeyII/Morlo | 99 | 71 | 39 | 38 | 31 | 37 | 32 | 40 | 43 | 40 | 38 | 36 | 38 | 48 | 36 | 35 | 30 | 43 | 32 |
| Total | **118** | **80** | **62** | **80** | **79** | **110** | **109** | **92** | **91** | **98** | **110** | **94** | **99** | **117** | **135** | **130** | **95** | **113** | **105** |
| **MCZ Staff seatime** (hrs) | | | | | | | | | | | | | | | | | | | |
| Skalmey | 181.55 | 70 | 195 | 492.5 | 622 | 883 | 777 | 640 | 618 | 621 | 933 | 685 | 747 | 718 | 942 | 743 | 684 | 815 | 743 |
| SkalmeyII/Morlo | 733 | 514 | 219 | 254 | 226 | 277.4 | 279 | 461 | 405 | 331 | 339 | 278 | 278 | 295 | 313 | 234 | 188 | 288 | 188 |
| Total | **914** | **584** | **414** | **746** | **847** | **1160** | **1056** | **1101** | **1023** | **952** | **1272** | **962** | **1025** | **1013** | **1255** | **977** | **872** | **1103** | **931** |
| **MCZ Staff days at sea** | | | | | | | | | | | | | | | | | | | |
| Skalmey | 51 | 14 | 42 | 96 | 129 | 225 | 205 | 154 | 158 | 165 | 202 | 170 | 189 | 183 | 279 | 253 | 178 | 211 | 193 |
| SkalmeyII/Morlo | 214 | 149 | 62 | 60 | 58 | 80 | 70 | 104 | 99 | 86 | 84 | 73 | 73 | 93 | 76 | 75 | 65 | 89 | 60 |
| Total | **265** | **163** | **104** | **156** | **187** | **305** | **275** | **254** | **257** | **251** | **286** | **243** | **262** | **276** | **355** | **328** | **243** | **300** | **253** |
| **Other Staff seatime** (hours) | | | | | | | | | | | | | | | | | | | |
| Skalmey | n/a | n/a | n/a | 274 | 197 | 204 | 88 | 76.7 | 75.25 | 233 | 257 | 107 | 225 | 390.4 | 220 | 279 | 140 | 220 | 150 |
| SkalmeyII/Morlo | n/a | n/a | n/a | 106 | 89 | 89.7 | 69 | 107 | 88 | 142.5 | 77 | 113 | 77.5 | 157 | 51 | 50 | 39 | 100 | 89 |
| Total | | | | **379** | **286** | **293** | **157** | **184** | **163** | **376** | **334** | **220** | **303** | **547** | **271** | **329** | **179** | **320** | **239** |
| **Other Staff days at sea** | | | | | | | | | | | | | | | | | | | |
| Skalmey | n/a | n/a | n/a | 40 | 36 | 23 | 21 | 15 | 18 | 30 | 26 | 26 | 57 | 94 | 48 | 83 | 35 | 57 | 50 |
| SkalmeyII/Morlo | n/a | n/a | n/a | 17 | 19 | 22 | 15 | 21 | 17 | 22 | 12 | 29 | 18 | 35 | 11 | 14 | 9 | 24 | 28 |
| Total | | | | **57** | **55** | **45** | **36** | **36** | **35** | **52** | **38** | **55** | **75** | **129** | **59** | **97** | **44** | **81** | **78** |
| **Total Staff seatime** (hrs) | | | | | | | | | | | | | | | | | | | |
| Skalmey | n/a | n/a | n/a | 766 | 819 | 1087 | 865 | 717 | 693 | 854 | 1190 | 791 | 973 | 1109 | 1162 | 1022 | 825 | 1034 | 893 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SkalmeyII/Morlo | n/a | n/a | n/a | 360 | 315 | 367 | 348 | 568 | 493 | 473 | 416 | 392 | 355 | 452 | 313 | 284 | 227 | 388 | 277 |
| Total | | | | **1126** | **1134** | **1454** | **1213** | **1285** | **1186** | **1328** | **1606** | **1183** | **1328** | **1561** | **1475** | **1634** | **1051** | **1422** | **1170** |
| **Total Staff days at sea** | | | | | | | | | | | | | | | | | | | |
| Skalmey | n/a | n/a | n/a | 213 | 242 | 248 | 226 | 169 | 176 | 195 | 228 | 196 | 246 | 277 | 327 | 336 | 213 | 268 | 243 |
| Morlo | n/a | n/a | n/a | 77 | 77 | 102 | 85 | 125 | 116 | 108 | 96 | 102 | 91 | 128 | 87 | 89 | 74 | 113 | 88 |
| Total | | | | **213** | **319** | **329** | **311** | **294** | **292** | **303** | **324** | **298** | **337** | **405** | **414** | **425** | **287** | **381** | **331** |
| **Engine hours** | | | | | | | | | | | | | | | | | | | |
| Skalmey | 43.9 | 27.5 | 83.47 | 188.03 | 181.1 | 245.3 | 284.54 | 171.07 | 150.16 | 169 | 244.38 | 168.62 | 224 | 241 | 322 | 266 | 222 | 249 | 284 |
| SkalmeyII/Morlo | 212.5 | 161 | 100.5 | 142 | 99 | 118 | 96 | 162.7 | 160 | 141.25 | 120.5 | 144.67 | 139 | 157 | 118 | 110 | 139 | 137 | 98 |
| **Total** | **256.4** | **188.75** | **184** | **330** | **280.1** | **363.3** | **380.54** | **333.8** | **310.2** | **310.25** | **364.9** | **313.3** | **363** | **398** | **440** | **376** | **361** | **386** | **382** |

*1997 includes Jan - March 98 - all subsequent years are for April to March

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.

## 3.3 Equipment

*Project: AI10/01*
Rigorous records are kept of all Skomer MCZ equipment for audit purposes. Details include purchases or disposals, and serial numbers.

### 3.3.1 Safety, diving and protective equipment

*Project: MM20/01*
See Section 3.2.1 for changes to life raft provision aboard *Skalmey.* Skomer MCZ vessels follows MCA Workboat Code requirements with regard to life raft specification and both vessels now have Solas-approved life rafts.

MCZ lifejackets are now serviced annually by contractor, with interim visual inspections by staff. Other personal protective equipment was maintained or purchased as required.

*Project: MM20/02*
Diving regulators were all serviced and cylinders tested as per HSE and UK pressure vessel requirements.

Other Skomer MCZ diving equipment was maintained by MCZ staff or by contractor.

### 3.3.2 Optical, photographic and scientific

*Project: MM20/03*
Due to the hostile nature of the environment they work in and the high cost of replacement all video and stills cameras and flashguns are serviced and repaired by contractor during the winter season, although improvised repairs are sometimes made during the field season (see shutter release lever that started life as an oil-fired boiler injector nozzle – right).

A new digital compact camera was purchased to replace one destroyed by seawater after seals failed on the waterproof housing.

It is my sad duty to report the loss (in action) of our beloved "Dangle-cam". This cheap and really quite nasty little device was used for a whole range of quite serious scientific work including surveys of eelgrass beds and other seabed habitats, to search for invasive sea-squirts in marinas up and down Wales and to allow us to assess underwater visibility before planning diving work.

The good news is that we have found a replacement that can fulfil the same role, while simultaneously destroying any credibility as serious scientists we may have had left – behold "Son of Dangle-cam":

*Project: MM20/04*
Skomer MCZ scientific instruments, including temperature/salinity/depth probes and the automatic weather station, were serviced and calibrated as necessary.
A new addition to our array of instruments is a Photosynthetically Active Radiation meter. This has been purchased to see how changes in the light available to the eelgrass bed in North Haven are reflected in the density of the bed.

### 3.3.3 Vehicles

*Project: MM00/03*
MCZ staff continue to operate the same vehicle. The Ford Ranger 4WD is used for a variety of purposes including transporting diving cylinders and other heavy items of equipment, for towing the various trailers and for launching and recovering the MCZ RIB *Morlo*.

## 3.4 Estate Work

*Project: ME01/01*
"No-anchoring" marker buoys were again deployed in North Haven to deter visiting vessels from deploying anchors in the eelgrass bed, and damaging the plants' rhizome/root structure.

The buoy marking the wreck of the Lucy was lost during 2015 and will need replacing in 2016

*Project: ME02/01*
Skomer MCZ moorings in Martins Haven and at Dale continue to be maintained, although it is planned to discontinue the use of the Dale mooring after 2015.

*Project: ME02/02*
Skomer MCZ staff continue to maintain visitor moorings in North Haven. These help protect the eelgrass bed by providing an easy alternative to anchoring for recreational and (small) commercial vessels alike. One mooring had to be repaired after a visiting yacht fouled its propeller in it and had to be cut free.

*Project: ME04/01*
Skomer MCZ staff continue to manage waste in accordance with the standards described in Section 3.1.

Where litter, including fishing rope, nets and large pieces of wood, is encountered at sea or on MCZ beaches it is recovered if considered to be a hazard to navigation or wildlife.

Neptune's Army of Rubbish Collectors (NARC) continued to carry out seabed litter clearances at a number of sites around the MCZ. NARC also liaised with a number of commercial fishermen to locate and remove lost shellfish pots, which were still catching large numbers of crabs and lobsters (see Section6.6 for details).

Both Keep Wales Tidy 'Angle bins' have now been replaced by the new MCS "big" bins, one at the end of the coast path next to Martins Haven beach and the other at the Deer Park. The bins are a means of encouraging anglers to dispose of their angling rubbish responsibly.

In conjunction with these bins 'Angling tips for Martins Haven' leaflets produced by NARC and Pembrokeshire Federation of Angling Coaches (PFAC) continue to be distributed via leaflet dispensers positioned nearby. The leaflets are designed to help anglers minimise tackle loss and thereby reduce seabed litter. Leaflet dispensers are kept topped up by MCZ staff.

## 3.5 Diving Operations

Details of diving operations are shown in Table 3.2 and Figures 3.1 and 3.2.

Underwater visibility was much improved in 2015 and most, if not all, routine diving projects were carried out. Diving commenced in early/mid-April and continued through to October, but was interrupted for a large part of September and October by grab sampling in Milford Haven and the Three Rivers. This impacted on the planned extension of monitoring to a new site at High Court Reef, which has been postponed again. Even with this interruption the number of dives carried out was higher than the MCZ average number of dives (193).

(Please note that these figures do not include the dives carried out by the volunteers on the sea urchin and starfish survey)

**TABLE 3.2 Summary of Diving Activity 2015**

| | MNR STAFF | CONTRACT & VOL DIVERS | TOTAL |
|---|---|---|---|
| Dives | 181 | 40 | 221 |
| Dive time (min) | 6534 | 1561 | 8095 |
| Dive time (hrs) | 108.90 | 26.02 | 134.92 |
| Average dive time (mins) | 36 | 39 | 36.63 |
| Diving days | | | 35 |

**Figure 3.1 Summary of MCZ Diving Activity 1992-2015**
(Including contract and volunteer divers where they are part of the MCZ diving team)

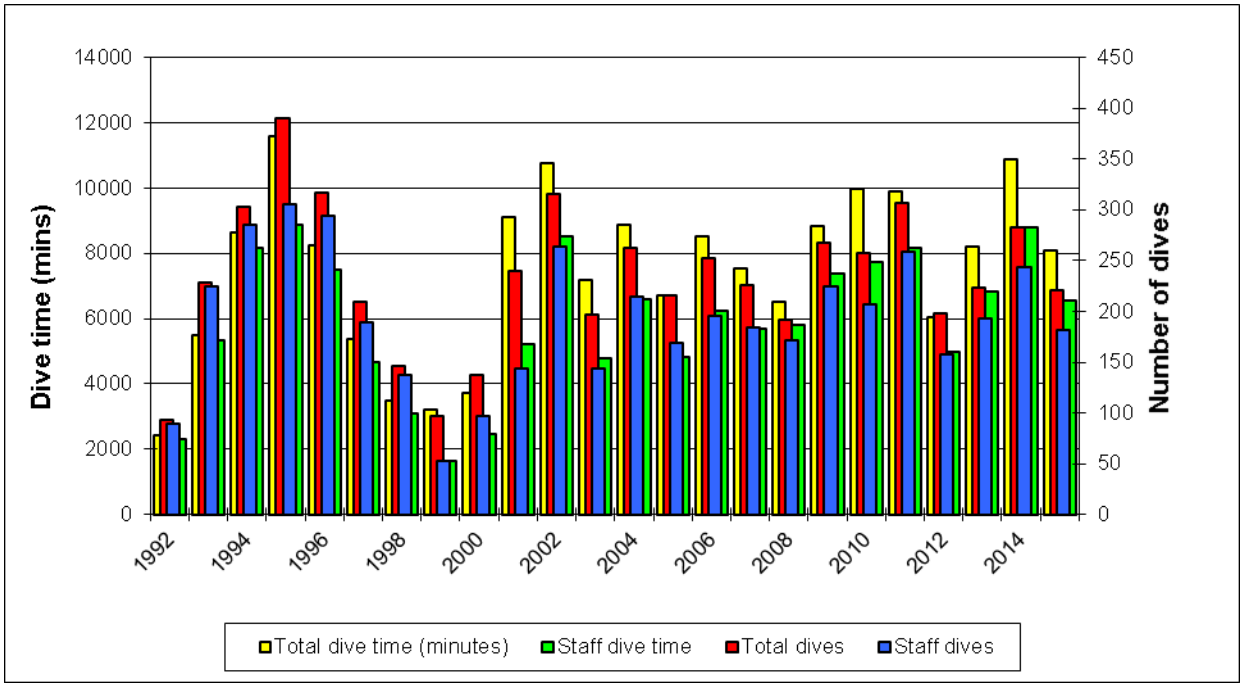
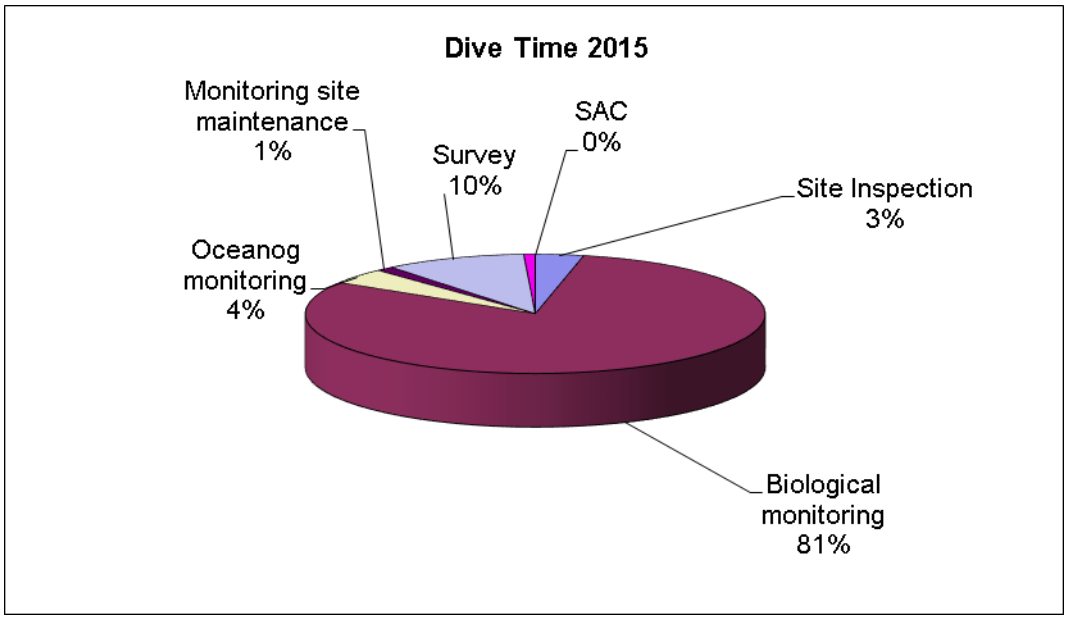
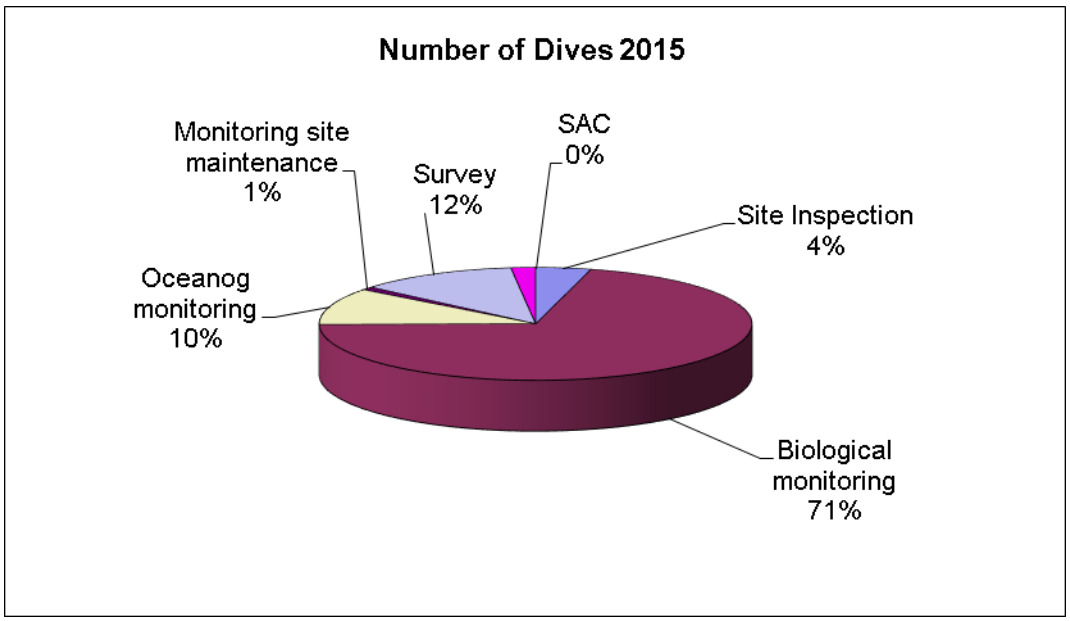


**Figure 3.2 MCZ Diving Operations 2015**
(Including contract and volunteer divers where they are part of the MCZ diving team)



# 4 Management

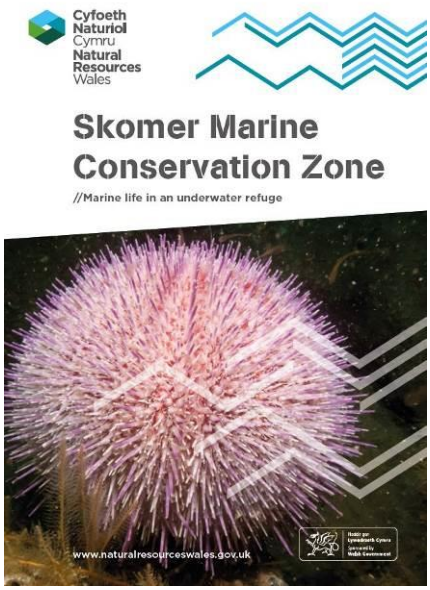
## 4.1 Wardening and Patrol

*Project: MP00/01*
Skomer MCZ staff carried out site patrols by boat on 19 Sundays and Bank Holiday weekend days between May and September 2015. 3 other Sundays were lost to rough weather and two others taken up with volunteer diver surveys, although a watching brief was maintained. A high profile presence and watching brief was also maintained on other days when routine fieldwork was carried out. The mapping of fishing effort (see Section 5.1) and sampling for water quality and plankton (see Section 7.3) were also carried out during these weekend patrols.

For sea time statistics see table 3.1. Data for all observed visitors and use of the MCZ from April 2015 to end of March 2016 is shown in Section 5.

## 4.2 Information

Stocks of the old MNR interpretative booklet "Stars, squirts and slugs…marine life in an underwater refuge" ran out at the end of 2012 and the MCZ display at Martin's Haven has been missing any written information to support the display's images and video footage (see section 8.2). This was originally considered an essential component of the interpretative function of the display.




Fortunately at the end of the 2014/2015 financial year funding was found for a reprint and reformat of the booklet and stocks arrived just in time for the 2015 season. While grateful for the provision of the booklets, MCZ staff have been disappointed with the poor quality of image reproduction in the printed form compared with the electronic proofs submitted, with images appearing very dark and colours subdued.

Skomer MCZ staff are continuing to use old stocks of MNR "User Regulations" leaflets and this, together with Pembrokeshire Marine Code maps is sufficient to provide visitors with relevant information on the byelaws and codes of conduct for the MCZ. The "Diver Safety" leaflet is printed out or supplied electronically on request.

Efforts are still being made to provide all Skomer MCZ literature electronically via the NRW website.

## 4.3 Management Issues

### 4.3.1 Dredging/beam trawling

No beam trawling or dredging was observed in 2015

### 4.3.2 Potting *Project: RH03/05 Watching brief*

Vessels operating in the MCZ in 2015/16 are listed in Section 5.1 and for fishing effort estimates see Figures 5.1 and 5.2.

Incidents of potting gear impacts on fragile seabed species continue to be recorded by MCZ staff where they are observed during monitoring dives.

MCZ staff have had discussions with local WG Marine Compliance staff regarding the number of unmarked lobster pots that have been recorded within the MCZ. The assistance that WG staff are able to give is limited given their resources, but a dialogue has at least been re-established and a reporting route set up. WG staff agreed with the MCZ approach to lost (as in completely unmarked/detached) individual pots, which is to attempt to recover them if possible, but otherwise to leave them in place, but opened to prevent “ghost” fishing.

Photo – World Animal Protection

Some lost pots were removed from the MCZ and other parts of the Pembrokeshire coast by Neptune’s Army of Rubbish Collectors (see Section 6.6 for details) working with local fishermen.

### 4.3.3 Tangle and gill netting *Project: RH03/06 Watching brief*

None observed in 2015 although a large piece of discarded trawl net was recovered from Musselwick beach close to the MCZ.

### 4.3.4 Collection of shellfish by divers *Project: RH36/01 Watching brief*

No collection of shellfish was recorded in 2015

### 4.3.5 Collection of curios *Project: RH36/01 Watching brief*

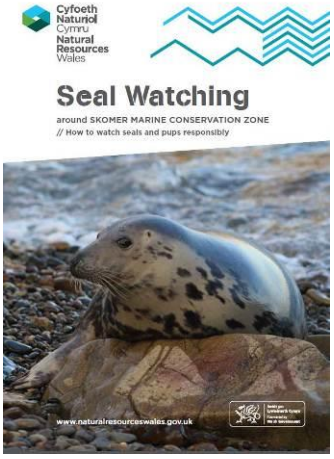
None observed in 2015.

### 4.3.6 Collection of specimens for education and research

No permits for collection of specimens were issued in 2015. Specimens of sponge were collected by MCZ staff as part of the four-yearly species survey to allow genetic analysis to be carried out (see Section 7.3).

### 4.3.7 Disturbance or entanglement of seals *Project: RH03/04 Watching brief*

Permits were issued to the Wildlife Trust South and West Wales seal workers under contract to NRW on Skomer to enable them to approach and dye-mark seal pups.




The new MCZ 'Seal Watching' leaflet has been distributed as usual via the MCZ exhibition, WTSWW staff at Lockley Lodge and the NT car park attendants.

The calm weather in late September 2015 and the subsequent popularity of South Haven as an anchorage for recreational vessels was a source of seal disturbance, with few boats observing the restricted area for anchoring at that time of year. Skomer Island staff also recorded someone taking their dog for a walk on South Haven beach in early September, when seal pups are normally present. Unfortunately MCZ staff had finished weekend patrols by this time and were busy setting up for grab sampling in Milford Haven so were not available to intervene.

Far fewer pups were born on Martins Haven beach in 2015 compared to the previous year, so disturbance issues were less of a problem.

27 different cows, and three bulls were photographed in 2015 with evidence of being entangled in fishing gear at some time in their lives, either with netting still embedded or bearing the scars left by the gear.

### 4.3.8 Disturbance to cliff nesting seabirds *Project: RH03/03 Watching brief*

Disturbance incidents in 2015 were recorded in the Wick and in North Haven, one by an angling boat and the other by kayaks.

### 4.3.9 Spear fishing *Project: RH36/01 Watching brief*

No incidents of spearfishing were recorded in 2015.

### 4.3.10 Angling *Project: RH03/08 Watching brief*

Angling debris from urchin survey marker

See Section 5 for numbers of anglers observed.

Neptune's Army of Rubbish Collectors (NARC) have made a significant and visible contribution to the clearance of seabed litter, including discarded or tangled fishing line, within the MCZ (see Section 6.6 for detail). Angling litter still continues to be a problem in the MCZ, particularly at seabed sites adjacent to popular shore angling ledges and causes problems with lobster pot ropes and even our temporary site markers when hooks embedded in the ropes present a hazard during recovery.

Efforts are continuing to encourage anglers to dispose of their discarded line responsibly via "angle bins" situated at Martins Haven (see Section 3.4).

### 4.3.11 Mooring and Anchoring *Project: RH36/01 Watching brief*

No observations were made of boats anchoring in any restricted part of the MCZ in 2015.

The day visitor moorings at North Haven continue to be maintained and are very popular with visiting boats.

### 4.3.12 General Boating *Project: RH03/02 Watching brief*

Most incident observations in 2015 regard speeding, particularly within North and South Havens, involving motor vessels and occasionally personal water craft.

### 4.3.13 Wrecks

The *Lucy* wreck continues to be a very popular dive site, the top buoy marking the wreck was maintained.

### 4.3.14 Oil *Project: RH07/01 Watching brief*

No oil pollution was observed in Skomer MCZ in 2015.

### 4.3.15 Water Quality *Project: RP63/03*

Bathing water quality data for Martins Haven continues to be collected by Pembrokeshire County Council. Results for the 2011 to 2015 period show water quality in Martins Haven to be “Excellent” according to the revised Bathing Water Directive standards.

# 5 Visitors and Use of the MCZ

## 5.1 Commercial Use

*Project: RH90/01*
Commercial fishing activity is recorded within Skomer MCZ during on-water patrols by mapping the positions of pot marker buoys with GPS and by observing fishing vessels operating in the area whenever the opportunity arises.

Pot mapping waypoints were recorded on 16 occasions between May and October 2015 and these were analysed using the GIS mapping system Arc. The summary maps for 2015 can be seen in Figure 5.1 and a graph summarising fishing effort since 1989 in Figure 5.2.

Fishing boats operating in the MCZ during 2015 were recorded (either seen directly or from presence of marked gear) as *KTJ* (M38), *Danny Boy* (M33), *Storm Child* (M83), *Warren Edwards* (M15), *Evara* (M150) and *Harvester* (M999).

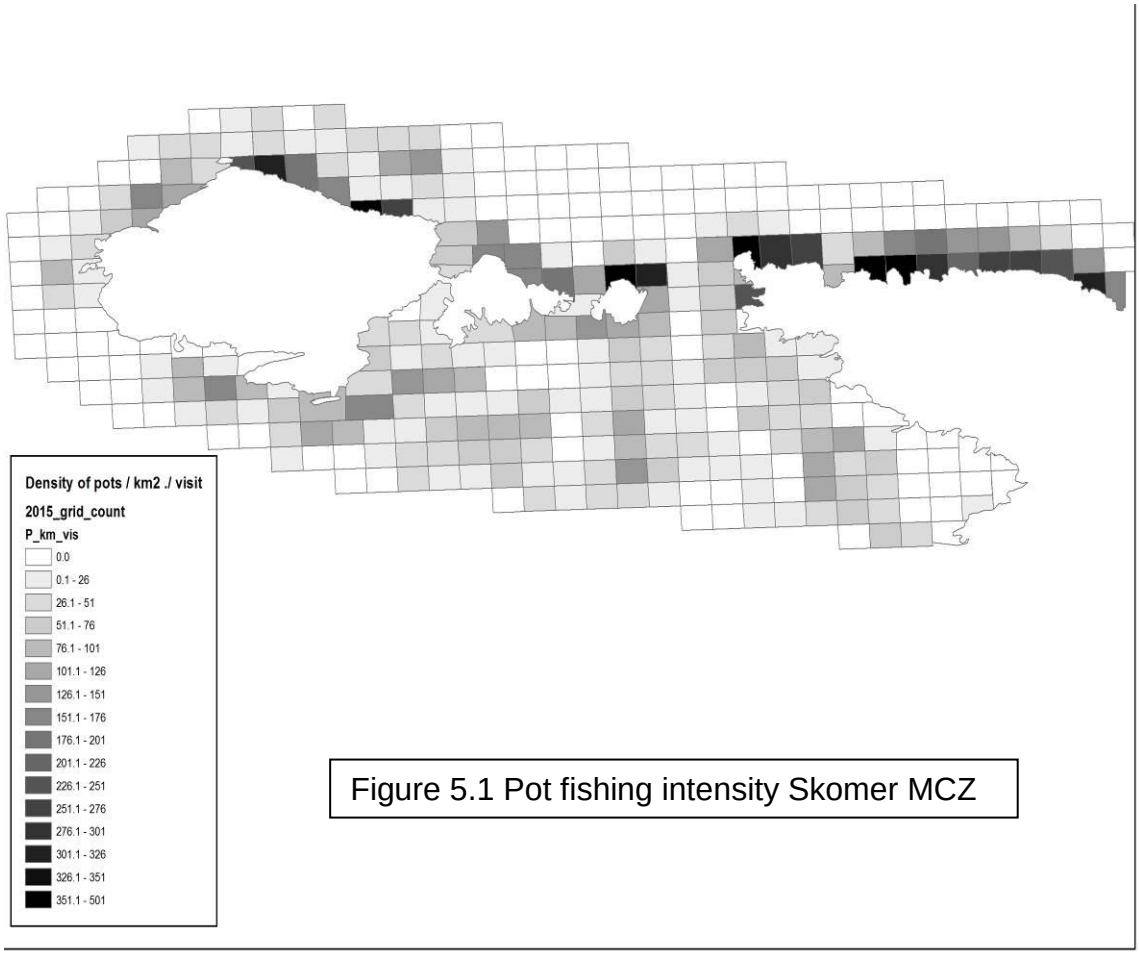
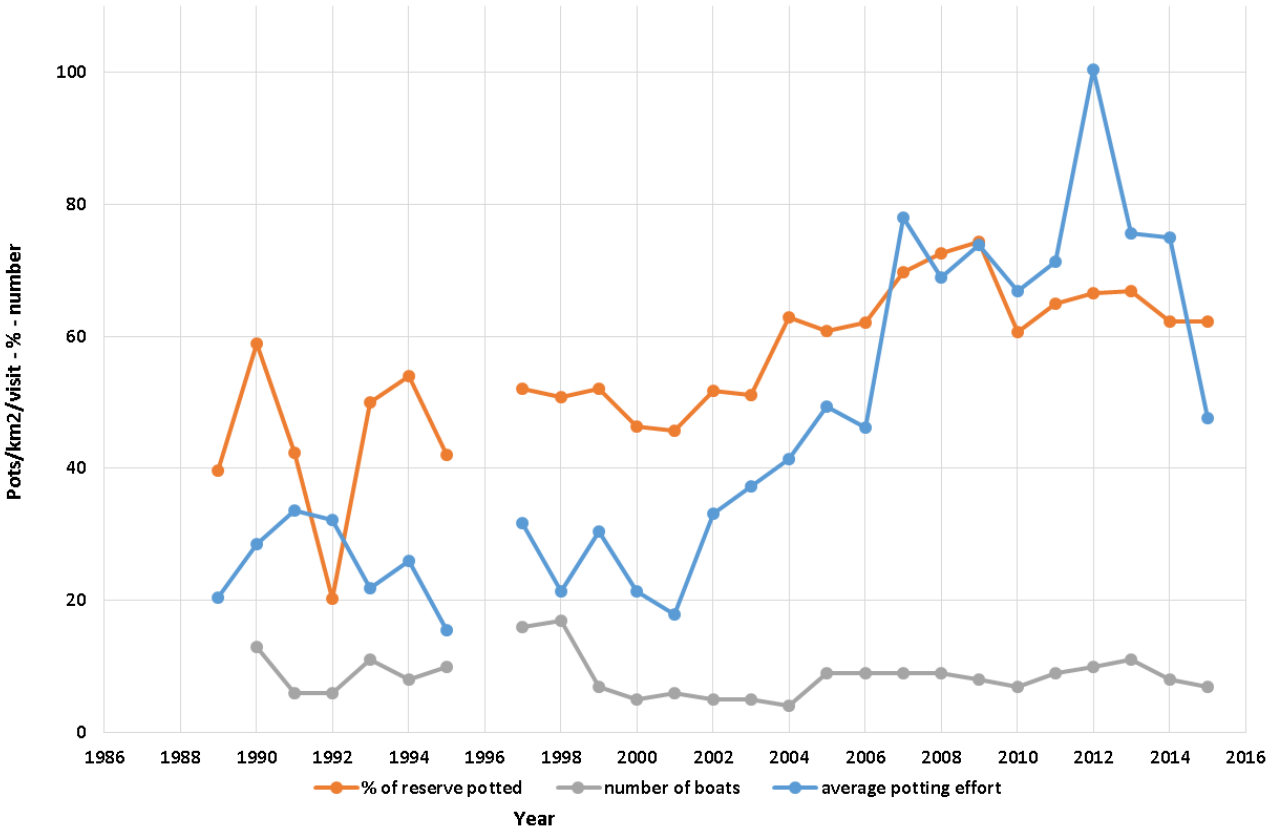



Figure 5.1 Pot fishing intensity Skomer MCZ

There has been a substantial reduction in potting activity in 2015 compared with the peak in 2011. The area covered remains similar to previous years, but now the highest concentration of effort appears to be on the north coasts of Skomer and the Marloes Peninsula.

Figure 5.2 Summary of Fishing Effort Skomer MCZ



## 5.2 Recreational Use

*Project: RH33/01*
Recreational on-water visitor numbers for 2015 are summarised for the main categories of visitor in Table 5.1 and Figures 5.3 to 5.6.

Numbers of recreational craft overall continue to gradually increase in 2015 with canoe/kayak numbers remaining high compared with pre-2009 numbers.

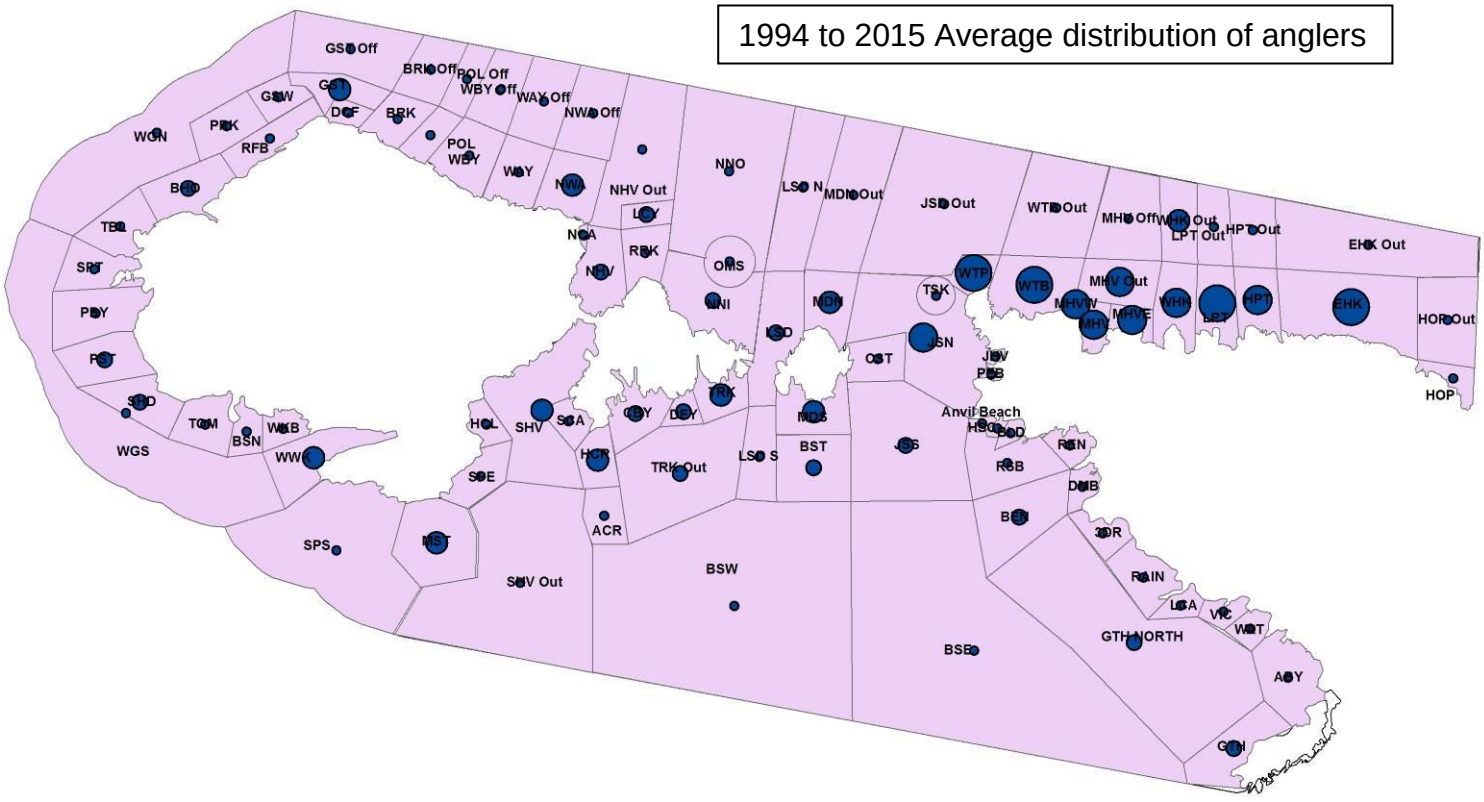
Angler numbers remain fairly low, especially with regard to shore anglers, who were again outnumbered by anglers choosing to come to the MCZ by boat (including charter boats). Local landowners have continued to restrict access across their land to what were the most popular angling sites following problems with litter and it would appear anglers are not prepared to walk the greater distance along the Coastal Path.

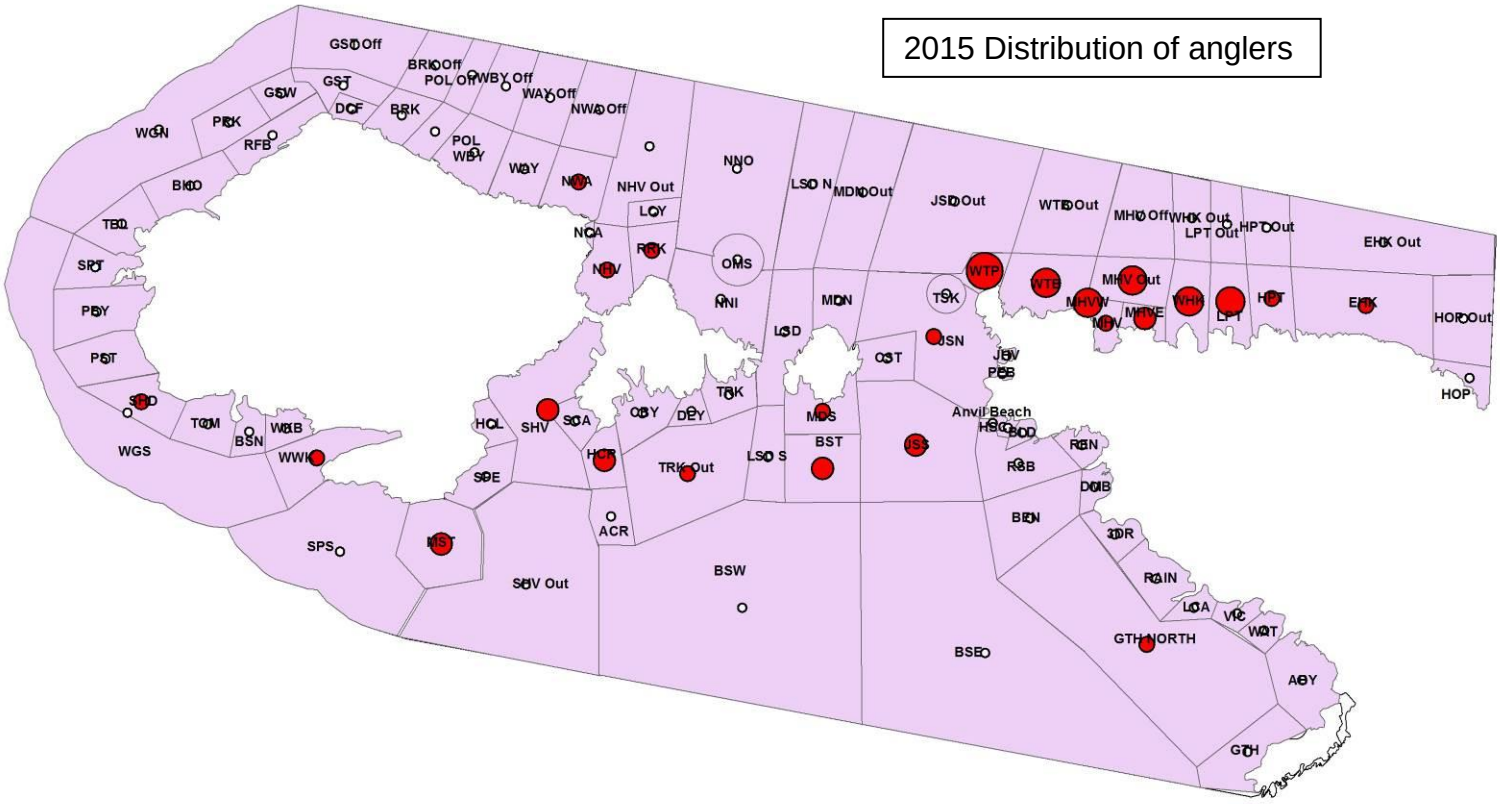
Divers appear to have been encouraged by the better visibility in 2015 as numbers have recovered somewhat from last year's all-time low.

There appears to have been a rather extended season for recreational visitors perhaps as a result of the spells of fine weather in September and October.

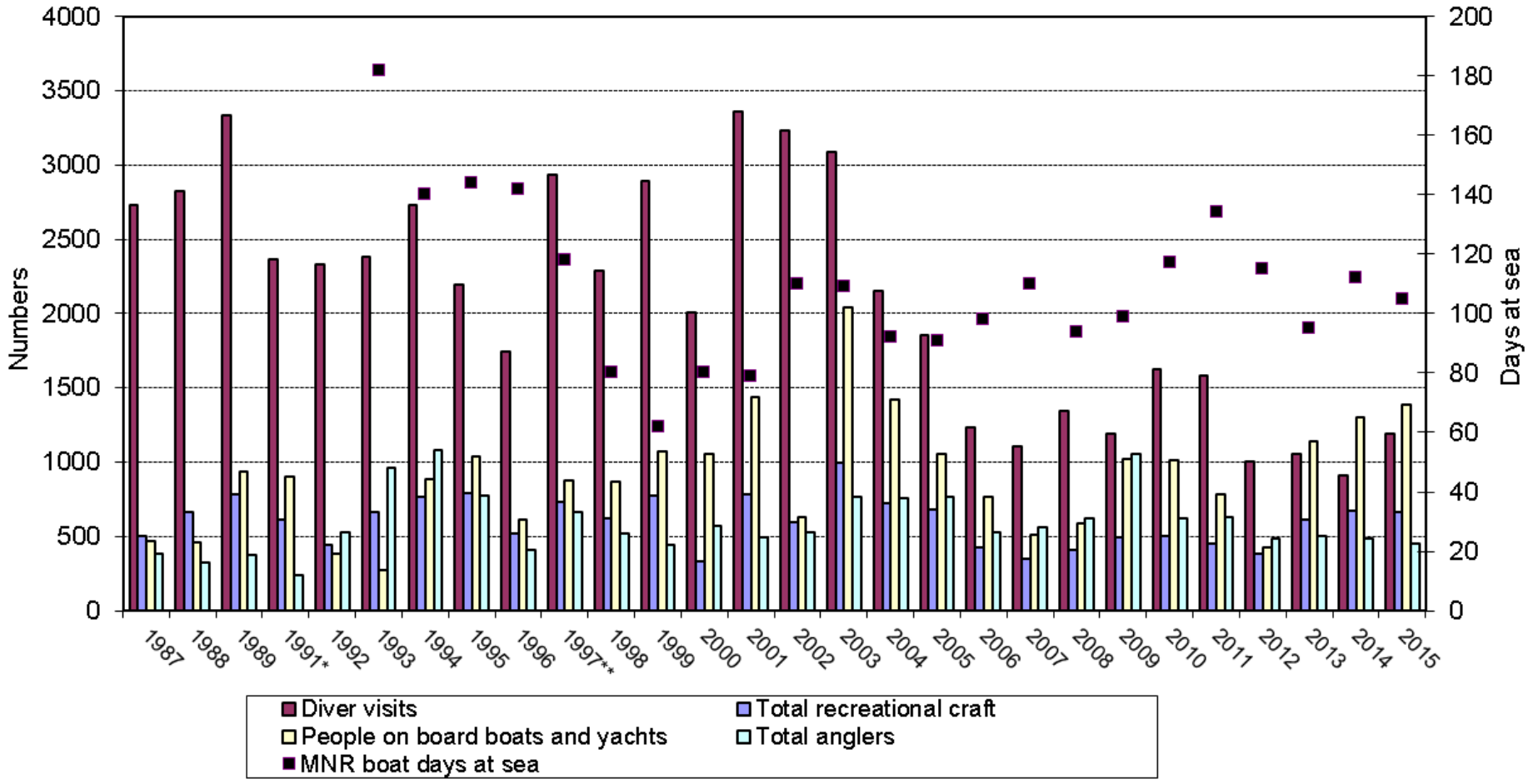
Figures do not include the routine sailings of the Dale Princess or other commercial sightseeing boats passing through the MCZ. Our thanks again to the Skomer Wardens and staff for maintaining logs of recreational boats, which contribute considerably to the data collected by MCZ staff.

MB has revisited angling records for the MCZ and mapped the data using GIS to give the following summaries:




2015 Distribution of anglers
GSD Off
BRK Off
POL Off
WBY Off
WAY Off
NWA Off
GST
GSW
DOF
BRK
PRK
WGN
RFB
POL
WBY
WAY
NWA
NHV Out
LOY
NNO
LSD N
MDN Out
JSD Out
WTB Out
MHV Off
WHK Out
LPT Out
HPT Out
EHK Out
HOR Out
BKD
TED
SRT
PBY
PST
SRD
TQM
BSN
WKB
WGS
WWK
NCA
RRK
NHV
OMS
NNI
MDN
LSD
TSK
WTP
WTB
MHV Out
MHVW
MHVE
MHV
WHK
LPT
HPT
EHK
HOR
HOP
JSN
OST
JSV
PBB
Anvil Beach
HSC
BOD
REN
RSB
DOB
BEN
IDR
RGN
LOA
VIC
WOT
GTH NORTH
AOY
GTH
BSE
BST
JSS
LSD S
TRK Out
TRK
MDS
HOL
SHV
SOA
OBY
DEY
HCR
SPE
ACR
SPS
MST
SHV Out
BSW

## Figure 5.3 Recorded Recreational Use Skomer MNR/MCZ



## Table 5.1 Recorded Recreational Use of Skomer MNR/MCZ

| | 1991 * | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 ** | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diver visits (diver days) | 2368 | 2327 | 2379 | 2730 | 2192 | 1745 | 2934 | 2287 | 2893 | 2008 | 3360 | 3234 | 3089 | 2154 | 1854 | 1230 | 1102 | 1342 | 1189 | 1629 | 1579 | 1008 | 1059 | 912 | 1190 |
| Shore dives @ Martins Haven | 34 | 436 | 678 | 848 | 537 | 482 | 814 | 817 | 500 | 537 | 537 | 539 | 522 | 666 | 458 | 470 | 411 | 468 | 293 | 428 | 368 | 347 | 242 | 291 | 237 |
| Dive boat visits | 341 | 293 | 325 | 394 | 354 | 247 | 361 | 254 | 378 | 278 | 349 | 367 | 350 | 224 | 257 | 97 | 127 | 138 | 106 | 107 | 144 | 75 | 89 | 70 | 130 |
| Total yachts | 203 | 99 | 155 | 213 | 299 | 173 | 218 | 183 | 221 | 232 | 266 | 121 | 338 | 218 | 163 | 128 | 92 | 120 | 115 | 140 | 146 | 118 | 248 | 237 | 194 |
| Total motor boats | 70 | 47 | 95 | 129 | 65 | 39 | 70 | 87 | 95 | 93 | 153 | 70 | 225 | 187 | 155 | 102 | 65 | 87 | 89 | 93 | 43 | 47 | 188 | 148 | 151 |
| Canoes | | | 91 | 27 | 74 | 62 | 84 | 98 | 79 | 63 | 48 | 38 | 80 | 108 | 110 | 101 | 68 | 68 | 184 | 163 | 121 | 140 | 176 | 221 | 193 |
| Total recreational craft | 614 | 439 | 666 | 763 | 792 | 521 | 733 | 622 | 773 | 333 | 779 | 596 | 993 | 721 | 685 | 428 | 352 | 413 | 494 | 503 | 454 | 380 | 612 | 676 | 668 |
| Total people on board boats | 905 | 380 | 273 | 883 | 1041 | 612 | 874 | 868 | 1075 | 1051 | 1435 | 626 | 2041 | 1424 | 1059 | 764 | 512 | 591 | 1022 | 1013 | 784 | 428 | 1140 | 1300 | 1391 |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shore anglers | 199 | 437 | 766 | 735 | 600 | 331 | 630 | 433 | 386 | 501 | 396 | 458 | 519 | 556 | 569 | 378 | 398 | 333 | 752 | 313 | 308 | 192 | 160 | 223 | 219 |
| Boat anglers | 43 | 93 | 199 | 347 | 173 | 81 | 30 | 89 | 60 | 72 | 55 | 70 | 243 | 199 | 210 | 150 | 168 | 290 | 306 | 309 | 322 | 291 | 346 | 263 | 231 |
| Total anglers | 242 | 530 | 965 | 1082 | 773 | 412 | 660 | 522 | 446 | 573 | 494 | 528 | 762 | 755 | 769 | 528 | 566 | 623 | 1058 | 622 | 630 | 483 | 506 | 486 | 450 |

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

Figure 5.4 Skomer MNR/MCZ 2015 SCUBA divers

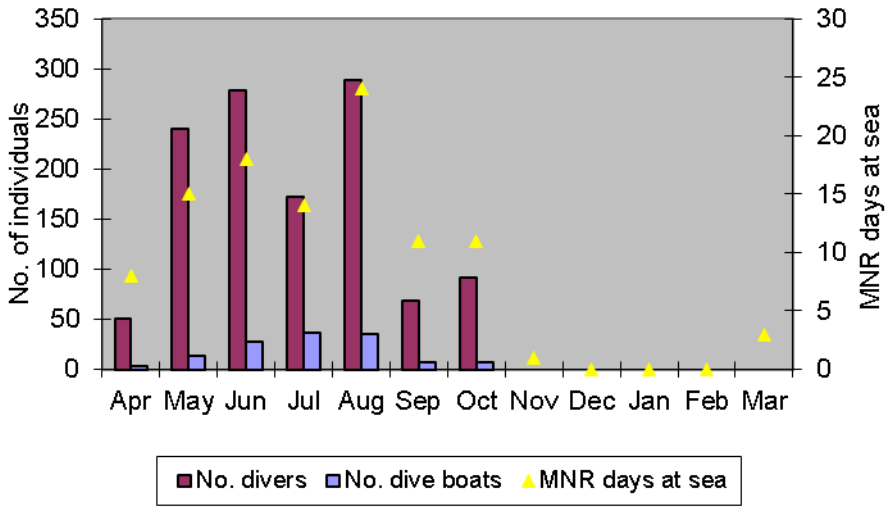



Figure 5.5 Skomer MNR/MCZ 2015 Anglers

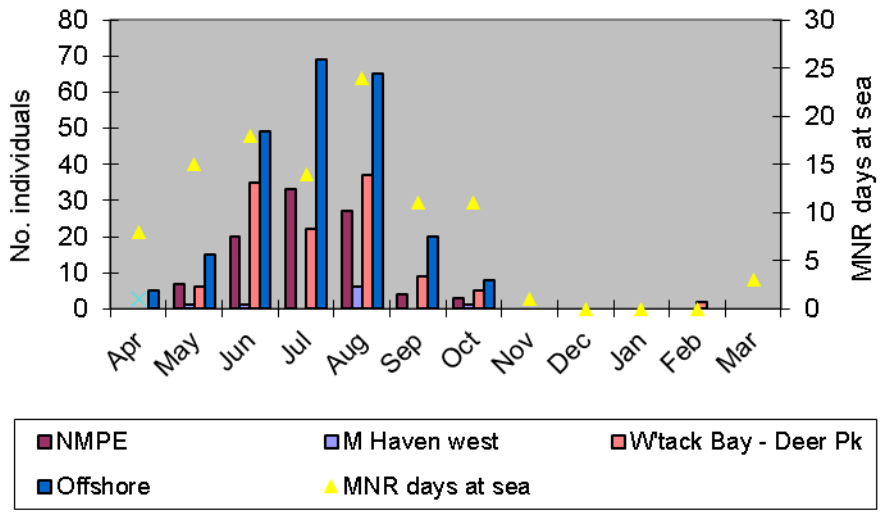
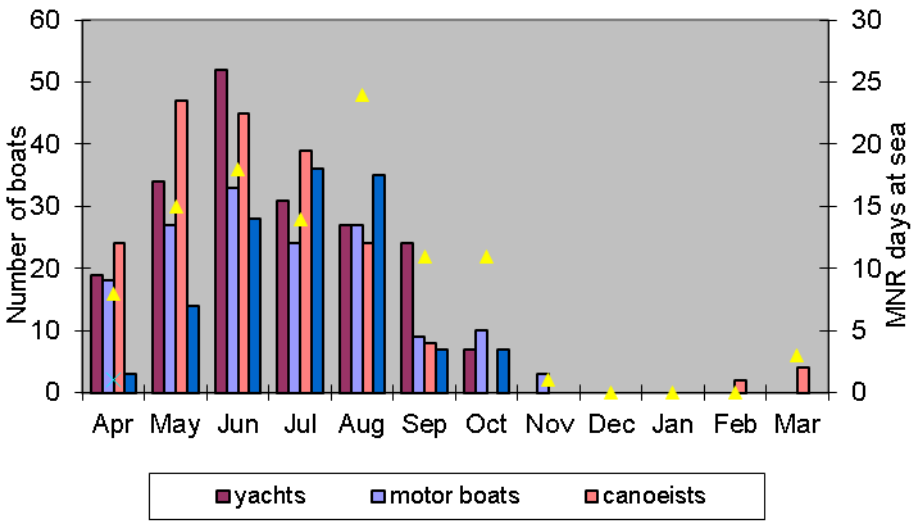



Figure 5.6 Skomer MNR/MCZ 2015 Recreational Craft



# 6 Liaison and Advisory Committees

## 6.1 Advisory Committee

*Project: ML80/01*

The annual Advisory Committee meeting, held in April 2015, was attended by 19 members as well as MCZ and other NRW staff. Dr Robin Crump continued as chairman of the main committee, and MCZ staff acted as secretariat. Updates were given on the monitoring programme, the future of Skomer MCZ and a summary of the Annual Report was presented. Morale was maintained throughout proceedings by lashings of cake from Dale and Marloes WI.

## 6.2 Wildlife Trust South and West Wales

*Project: ML30/02*

Skomer MCZ staff continued to liaise with Skomer Island NNR wardens Eddie Stubbings and Bee Buche, and their staff and with other Wildlife Trust South and West Wales staff. MCZ staff helped to support NNR staff by including the Island's boat mooring in our round of mooring inspections and maintenance.

The Trust was also the contractor for the annual seal pup monitoring project (see Section 7.2) and was the successful contender in the tendering process for seal monitoring work for the next 5 years. This does not guarantee the work will go ahead, simply that if NRW has the resources for seal monitoring the Trust is the preferred contractor. MCZ staff were also involved in redrafting the Grey seal section of the Skomer Island management plan.

## 6.3 Welsh Government Fisheries Enforcement

*Project: RH90/01*

Liaison has been maintained with staff of Fisheries Operations within WG's Marine and Fisheries Division via membership of the Skomer MCZ Advisory Committee and PN has visited the local Fishery Officers in Milford Haven to discuss issues such as exchange of information and lost or unmarked lobster pots and gaining permissions for the planned scallop surveys in 2016.

## 6.4 Pembrokeshire Coast National Park

*Project: ML40/03*

In March 2016 PN and MB attended the Field Staff Networking event organised by Ian Meopham, North Pembrokeshire Ranger, which involved staff from NRW, PCNPA and NT.

## 6.5 National Trust

*Project: ML30/03*
Skomer MCZ staff continued to liaise with National Trust. Informal liaison is maintained with Andrew Tuddenham and Matthew Thompson through the Advisory Committee and visits to Martins Haven. See also Field Staff Networking event above.

KL assisted NT staff with their video and audio promotional campaign for the Marloes Peninsula.

NT car park attendants at Martins Haven continue to serve as HW's (see Section 2.2) and assisted MCZ staff with the opening and closing of the MCZ exhibition.

## 6.6 Other Organisations and Individuals

Liaison with a wide range of other organisations and individuals has continued.

*Project: ML30/01*
*Project: ML50/01*
*Project: ML40/01*

Local community interests included MCZ neighbours at West Hook, East Hook and Treehill farms, local community council members and members of Pembrokeshire County Council staff, either through representation on the Advisory Committee or through informal meetings.
Malcolm Cullen's archive of seal data, mentioned in last year's report, has turned out to be a treasure trove for workers from Swansea University (see below).
KL assisted in a children's snorkelling event held as part of Pembrokeshire Fish Festival.

*Project: ML60/01*
MCZ staff maintain contact with the Maritime and Coastguard Agency during fieldwork and also on an informal basis. MB is an auxiliary with the local Coastguard cliff rescue team. MCZ staff were able to assist with an incident involving a yacht that had become entangled in a (very long) floating lobster pot rope (see Section 2.4)

*Project: ML80/02*
MCZ staff continue to liaise with local fishermen and have helped relocate missing lobster pots. It is MCZ policy to try to make contact with any fishermen new to the MCZ and to offer to relocate/recover lost lobster pots on the basis that neither conservation nor the industry gain by having pots ghost fishing in the area.

*Project: ML80/06*
*Project: MI20/01*
MCZ staff maintained liaison with a number of different academic establishments during 2015:

The population dynamics of Skomer MCZ's seals continue to be the subject of much work by Dr Jim Bull and other workers from Swansea University. Dr Bull's latest student is now looking at historical seal tagging data in relation to the wider distribution of seals up and down the Welsh coast.

Sponges are another hot topic of 2015: In addition to Dr James Bell's continued association with the MCZ, with sponge quadrat photos from Skomer being worked on by his PhD students at the Victoria University of Wellington, New Zealand, MCZ staff have been working closely with Dr Joanne Preston of Portsmouth University.
Her interest is in the genetic background to sponge species, but she was also involved in an investigation into the "black death" disease in some of Skomer MCZ's *Cliona* sponges, work that she presented to the Aquatic Biodiversity and Ecosystems conference in 2015.

PAR housing before we broke it

MCZ staff continue to work with Dr Richard Unsworth of Swansea University on the development of an experimental Photosynthetically Active Radiation (PAR) meter housing. The device is designed to record the amount of light available for photosynthesis by eelgrass and its housing incorporates a motorised lens cleaner to prevent fouling organisms growing over and affecting the detector. Unfortunately the housing flooded before it could be ascertained whether the "windscreen wiper" was effective.

MB and other MCZ staff carried out MarClim surveys both within the MCZ and also now at 6 other sites in Pembrokeshire, including one on Skokholm.

The MCZ's collaboration with the Institute of Oceanology at the Polish Academy of Sciences has now concluded. MCZ staff will continue to photograph existing settlement plates and recover them ashore as per the normal timetable, but no fresh plates will be deployed. When all plates have been brought ashore the seabed frames will also be retrieved. Dr Piotr Kuklinski hopes to produce more research papers from the materials collected in addition to the paper published in the Journal of the Marine Biological Association in 2014.

*Project: ML80/05*
MCZ staff continue to liaise with a wide variety of other organisations and individuals, including:
Trinity House, Pembrokeshire Coastal Forum/Pembrokeshire Marine Code – updating the current Marine Code literature, RYA, Department for the Environment, Northern Ireland – considering management of MCZs in Northern Ireland, RAS Aquaculture Research – looking into culture of crawfish, National Coastwatch Institution – looking to restart watches at the Wooltack Point lookout hut, MCS – two staff took part in the MCZ volunteer diver survey, Milford Haven Waterway Recreation Group, Pembrokeshire Scallops – planning a diver-caught scallop fishery in Welsh waters, Endurance Life (organisers of the Coastal Trail running events), MHPA's new environmental officer and WG Natural Resource Management Stakeholder Group.

## 6.7 Wider Marine Environmental Initiatives

MCZ staff continue to contribute to the work of various UK agencies to ensure commitments under EU Water Framework and Marine Strategy Framework Directives are met:

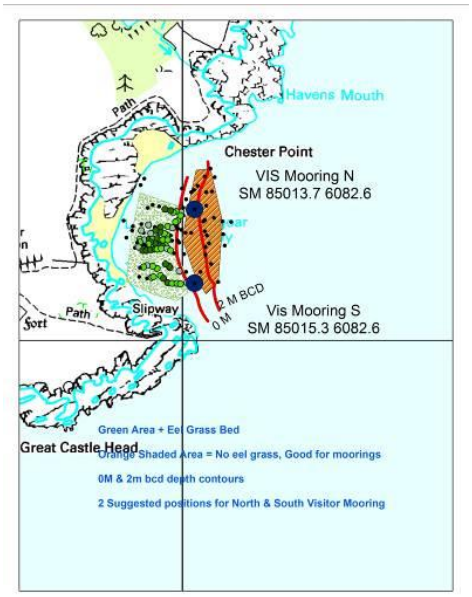
PN attended a stakeholder workshop organised by DEFRA, the Marine Management Organisation (MMO) and the Marine Biological Association looking at potential as well as existing management mechanisms for reducing physical impacts of mooring and anchoring on designated features in Marine Protected Areas (including European Marine Sites and Marine Conservation Zones). Skomer MCZ was one of the case studies presented to demonstrate practical management measures and an example of data recorded on levels of compliance.

PN has also attended meetings of NRW's internal MPA Management Working Group.

KL has continued to work with NRW colleagues on collating seal identification photographs for Pembrokeshire and ensuring their inclusion into the Sea Mammal research Unit (SMRU) database.

KL continued as the southwest Wales coordinator for the MCS Seasearch project in 2015. After uncertainty over NRW's provision of funding for the project in Wales it appears money has been made available. It is hoped that this will ensure that the many volunteer divers who have been trained up and gained valuable experience in marine surveying over the years can continue to provide reliable and consistent data for marine habitats in Wales.

MCZ staff assisted MHPA to ensure their planned visitor moorings off Longoar Bay were in the optimal position to protect the bed of eelgrass there by mapping the bed from *Morlo* using Danglecam (RIP).




MCZ staff assisted colleagues from NRW Fisheries Assessment Team in further refining sonar methods for assessing eelgrass populations for NRW's Water Framework Directive work. The work also produced a useful extent map for the eelgrass bed between detailed surveys – something that would require considerable diving effort to achieve.

## 6.8 Marine and Coastal Access Act

*Project: AS00/01*

Discussions about changes to features and conservation objectives following the transition of Skomer MNR to Skomer MCZ have continued to be suspended due to other priorities dominating the work programme of the Welsh Government department involved.

# 7 Science

## 7.1 Research and Education Subcommittee

No meetings of the research and education subcommittee were held in 2015.

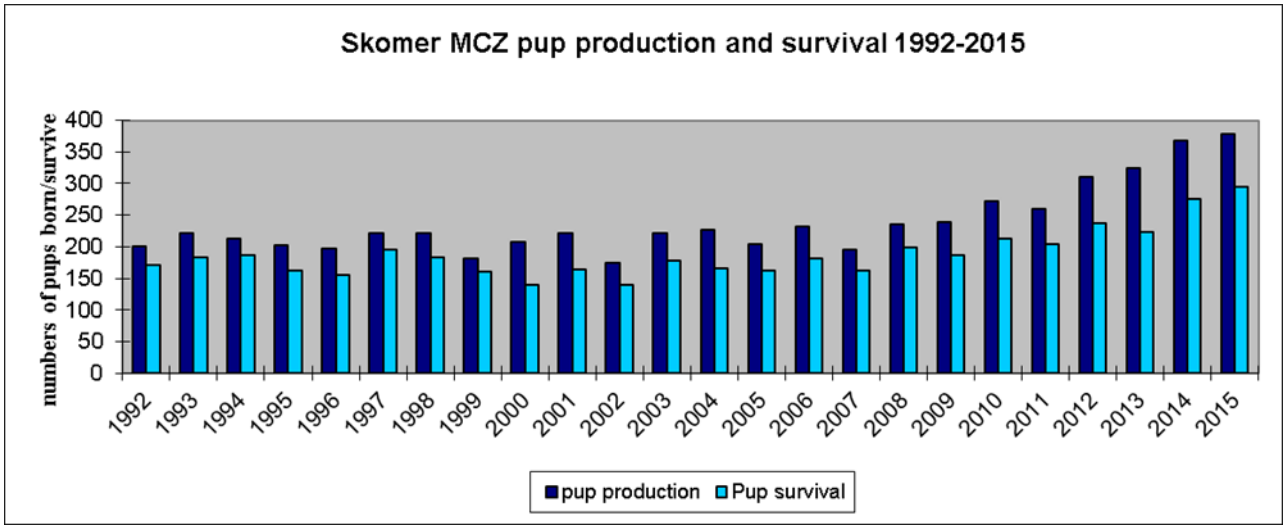
More detail on all of the research projects undertaken in the MCZ can be found in NRW evidence report no. 148 - “Skomer Project Status Report 2015/16”.

## 7.2 Contract Science

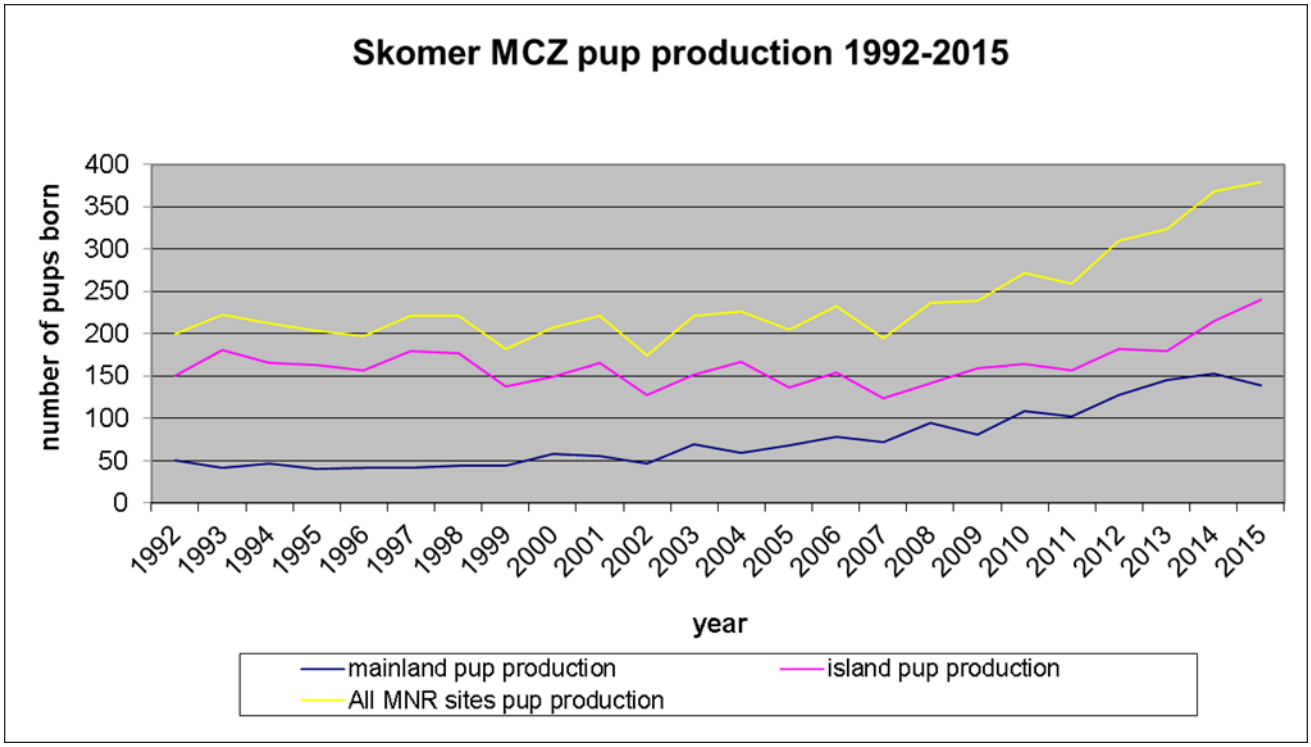
**Project code: RA03/01 Monitoring Grey Seals**

Grey seal pup production on Skomer Island breeding sites was monitored under contract by the Wildlife Trust South and West Wales and by MCZ staff on the mainland sites (See Appendix 1 for the Island report summary).

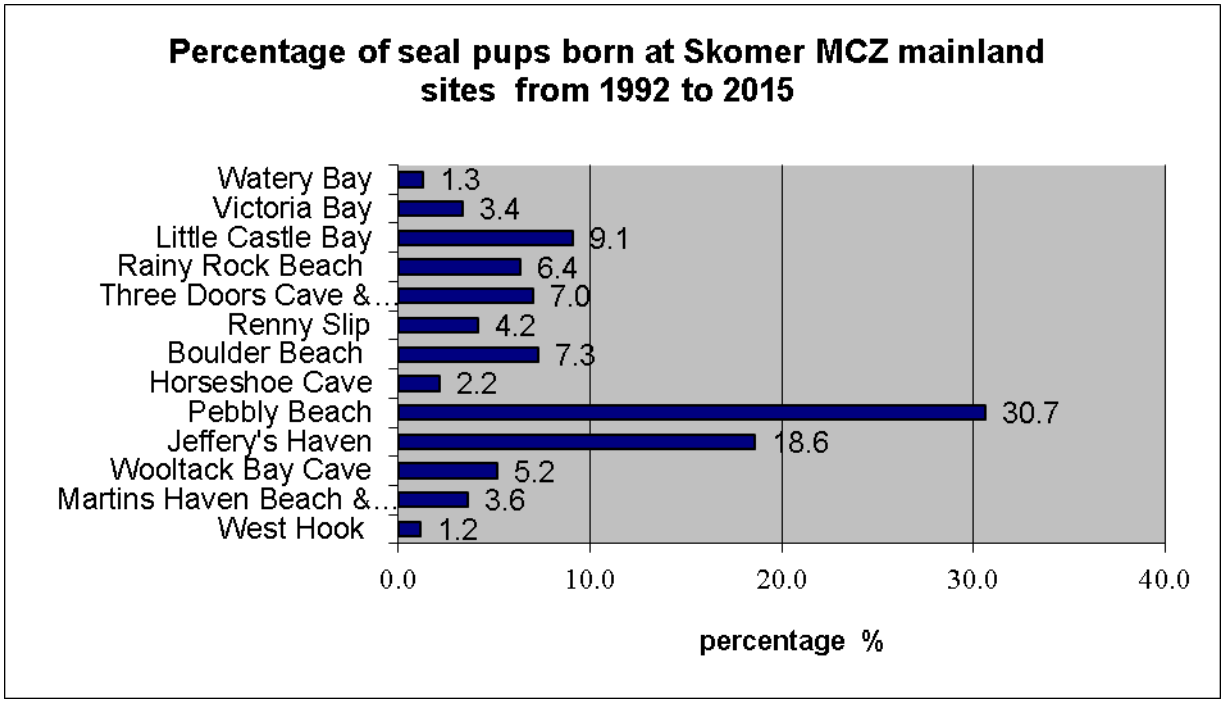
In 2015 240 pups were born at island sites and 139 pups at mainland sites giving a total 379 pups born in the MCZ with a recorded combined survival of 77.8% through to moult, which was above the annual target (70%) set for the MCZ.




Pup production from 1992 to 2008 in the Skomer MCZ remained fairly consistent with the expected natural fluctuations with an average of 208 pups. From 2009 to 2015 there has been a steady increase in pup production with the greatest increase being at the mainland sites, although in 2014 and 2015 increases at the island sites have also been recorded. Pup production for the past 3 years has shown the highest totals ever recorded with average production for 2013-15 at 357 pups.




The following graph shows the percentage of pups born at each of the mainland sites from 1992 to 2015. Pebbly beach and Jeffery's Haven, both small bays located on the southern side of the Deer Park are the most popular sites accounting for 49% of mainland pup production.

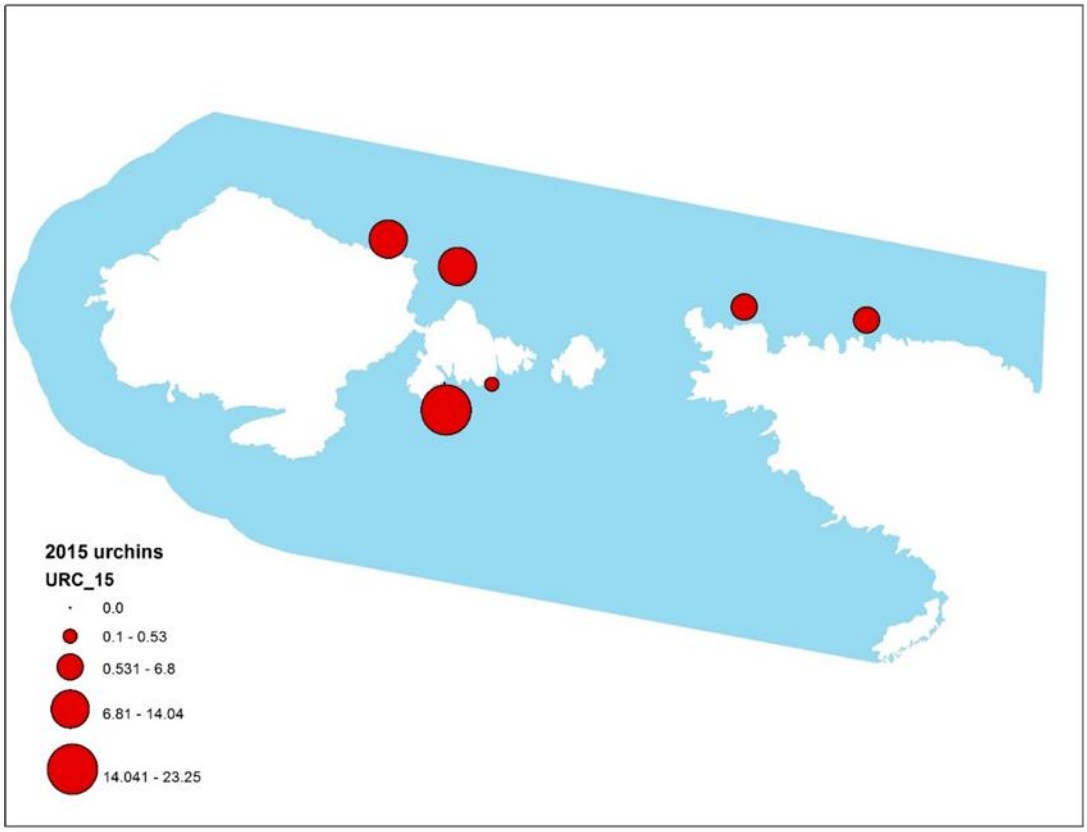


## 7.3 In-House Monitoring

**Project code: RM73/01 Monitor echinoderm populations**

In 2015 the urchin and starfish survey was completed over 4 days by a team of 29 volunteer divers. *Echinus esculentus* were counted along 30m transects at different depth zones and the diameter of each *E. esculentus* measured. *Marthasterias glacialis*, *Crossaster papposus* and *Luidia ciliaris* were also counted along these transects. The study sites were selected from the north and south coasts of the island and the north coast of the mainland. The mean densities of *E. esculentus* and *M. glacialis* were 9.7 and 2.2 per $100m^2$ respectively for the whole MCZ, but density varied between sites. A normal size frequency distribution for *E. esculentus* was found and the mean size of *E. esculentus* was found to be smaller in the 5m depth zone.

**Graduated bubble map of *E. esculentus* density in Skomer MCZ 2015.**




2015 has seen the highest occurrence of 'bald' *E. esculentus* since 2003. All records come from the Castle Bay site from transects at 10m and 15m depths. The numbers found are still very low accounting for only 1.15% of the total.

**Starfish species**
In 2015 a density of 2.17 per 100m$^2$ *Marthasterias glacialis* was recorded, 2 individual *Luidia ciliaris.* There were no records of *Crossaster papposus* in 2015 and there have been none recorded since 2003

Plankton samples collected from March to November identified Echinoderm ophiopluteus larvae in samples, with abundance peaking in August. Identification could not be made to species level, therefore presence of *E. esculentus* larvae could not be confirmed.

Chasing sea urchins can be exhausting

Full details of this work can be found in the "Skomer Marine Conservation Zone Distribution and abundance of *Echinus esculentus* and selected starfish species 2015" report (NRW Evidence Report No.158).

It should be noted that without the enthusiastic participation of the volunteer divers this project would not have taken place.

**Project code: RM44/01 Record commercial crustacean populations**

Crawfish *Palinurus elephas* is recorded in low numbers in the MCZ by MCZ staff and volunteers. These records have been entered into the online recording scheme that has been set up on the Seasearch website to gather historical and current records for this species in the UK.

No other commercial crustacean species are routinely recorded within Skomer MCZ.

**Project code: RA01/01 Record Cetaceans**

Proposals for harbour porpoise SACs , including the area of Skomer MCZ have highlighted the importance of keeping good records of cetaceans for the MCZ. With this in mind the recording carried out by the crew of the Dale Princess will be reinstated and collated along with sightings from Skomer Island staff and MCZ staff. MB has reviewed existing data and used GIS to map "hot-spots" within the MCZ.

Notable sightings in 2015 were Common dolphins, which conveniently appeared when we were hosting VIPs.

**Project code: RB01/01 Record Vagrant & Alien Species**

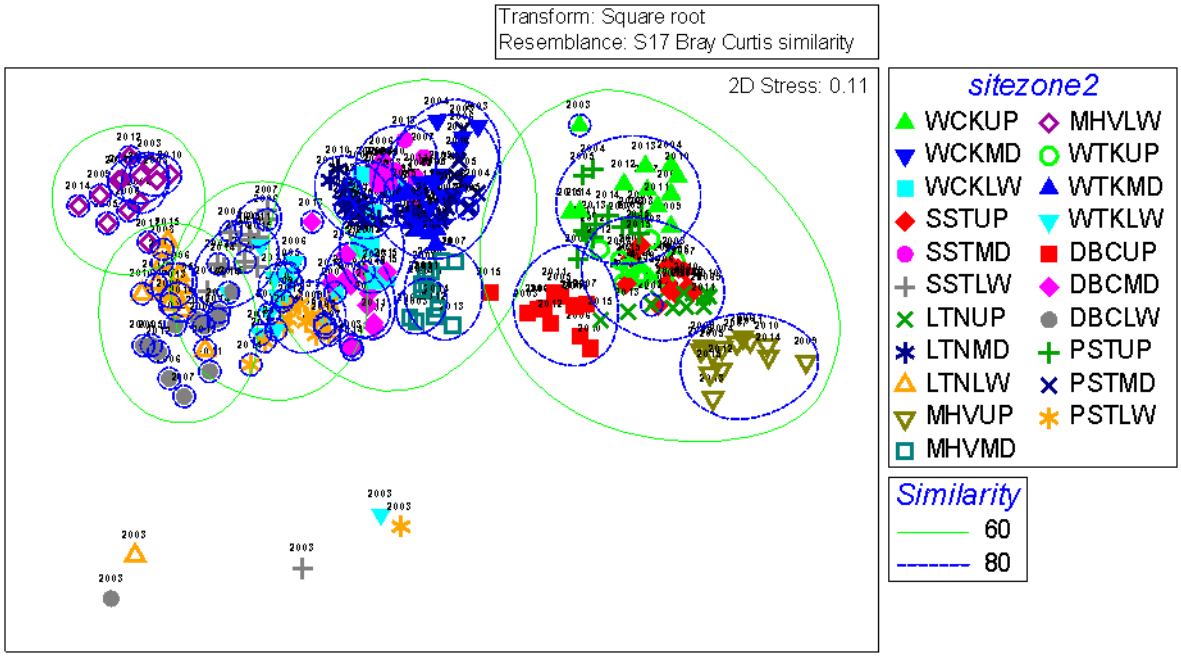
Vagrant and alien species were recorded by MCZ staff and the crew of the Dale Princess. Species recorded in 2015 included sunfish (*Mola mola*).

**Project code: RB03/01 Monitor Littoral Habitats / Communities**

Viewpoint digital photographs were taken for all sites on the Deer park, Martin's Haven and on Skomer Island.
All the permanent quadrat sites within the MCZ were surveyed in 2015.

Quadrat data for all sites and shore zone communities for different years can be analysed using the PRIMER statistics software. This visually displays how similar quadrats are to each other, with the most similar forming clumps of points on the MDS plot:

**MDS Plot of All Littoral Community Data 2003 – 2015**




In summary:

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

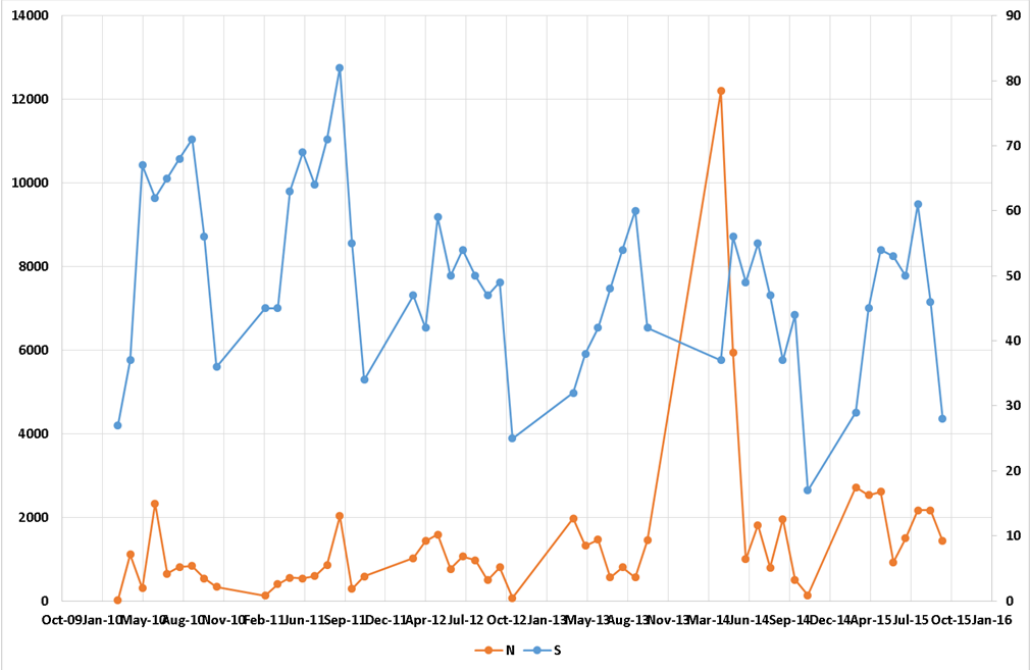
- Some sites are very variable from year to year e.g. PST Lower & WTK Lower

2015 did not show any major variations from the overall trends seen since 2004.

**Project code: RB04/01 Plankton Recording**

Samples continued to be taken in 2015 using methods replicating those used by Plymouth Marine Laboratory to allow comparison with their existing "L4" time series.
Samples were again analysed at the Sir Alister Hardy Foundation for Ocean Science and in 2015 Plymouth Marine Laboratory reviewed the Skomer data set from 2010 to 2014, standardised the species list and made recommendations on how the data set should continue.

*Zooplankton:*
**Average Species richness (S) and total number of individuals (N) 2009- 2015**




**Project code: RB06/01 Species Recording**

In 2015 Skomer MCZ's participation in the Europe-wide research project led by Professor Piotr Kuklinski from Warsaw Oceanographic Institute and the Natural History Museum in London came to an end. Remaining settlement plates will continue to be recovered from the different locations within the MCZ, but no new plates deployed.

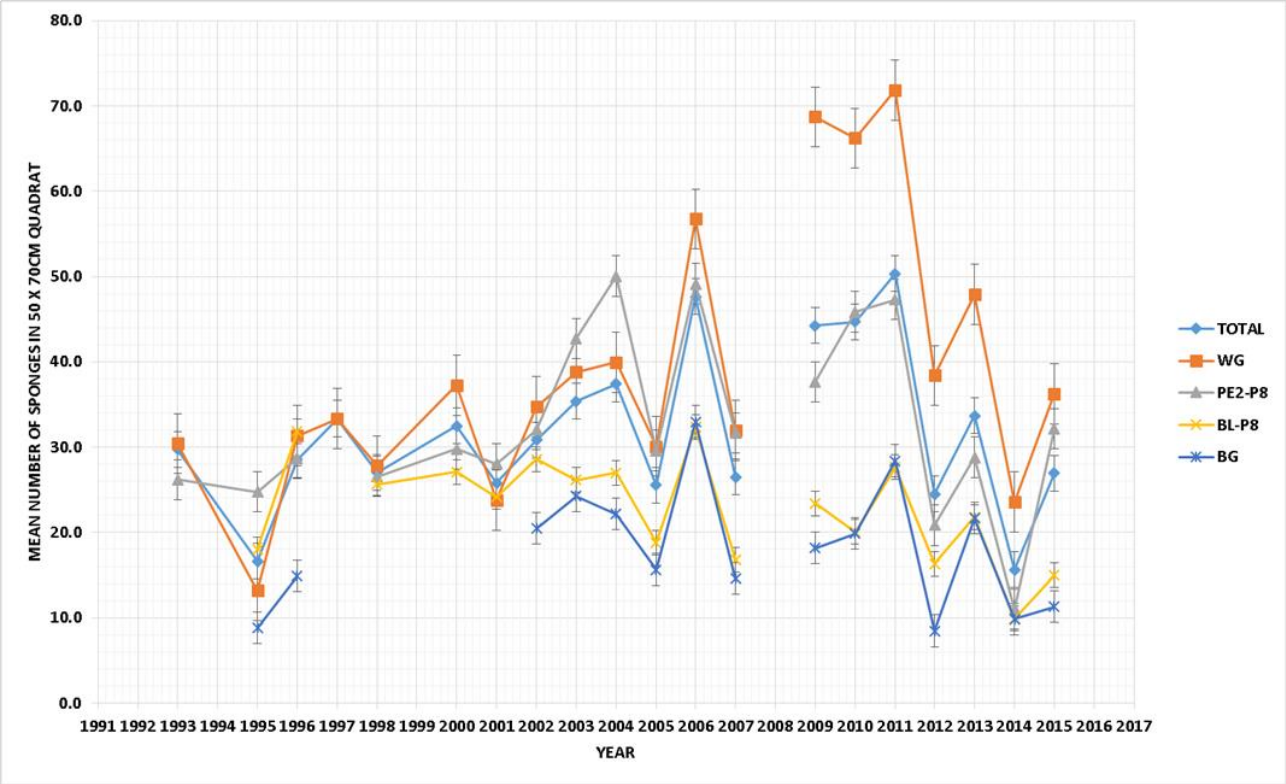
**Project code: RM13/01 Monitor Sponge Populations**

All sponge monitoring transects were photographed in 2015, including both the fixed transects quadrats and the quadrats set up for the PhD study into seasonal variation in sponge communities at Thorn rock that has been running since 2006 (see Section 6.6).

Statistical analysis of sponge data indicate that 2012 and 2014 differ from other years, but they also coincide with poor image quality caused by poor underwater visibility and heavy seabed silt loads. Thus the following results have to be viewed in this context.

Results from the fixed transect quadrats:

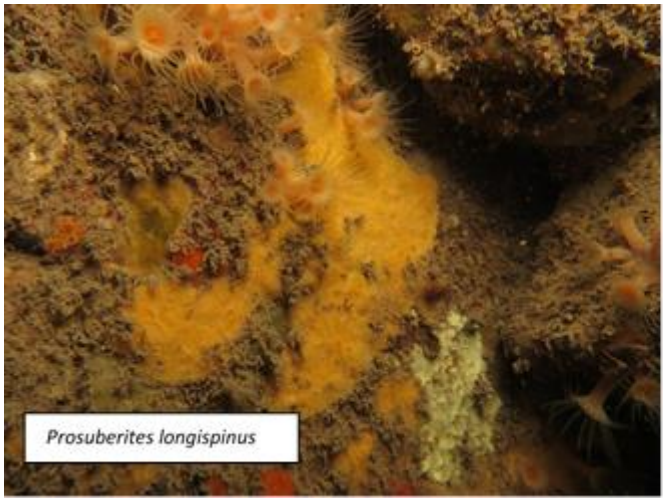
**Mean number of sponges counted at 4 sites 1992 - 2015**




In 2015 six sites were surveyed on the south side of Skomer as part of the continuing full species monitoring programme, completed every 4 years.

Two species notable by their absence were *Paratimea constellata* and *Hymeraphia stellifera*. These have consistently been found in previous surveys, however both are very small thin crusts and can be easily overlooked so it is likely they are still present. The most frequently recorded species were *Cliona celata, Dysidea fragilis, Hemimycale columella, Pachymatisma johnstonia*, and *Stelligera stuposa*.

This survey resulted in a total of 67 species/entities being recorded from 125 samples over 15 dives. Of these, two species, *Prosuberites longispinus* and *Spongosorites calcicola*, have not been recorded in previous surveys while nine are undescribed/new to science.





The Wick proved to be the richest individual site in terms of number of species found and the Thorn Rock location (4 sites) had the greatest overall diversity.

A total of 128 sponge species (31 of these still to be described to species level) have now been recorded in the Skomer MCZ.

Samples of healthy, fouled & diseased *C. celata* suffering from “black death” were sent to Portsmouth University for microbial community profiling. A summary report of results so far can be found in the Project Status Report.

**Project code: RM23/01 Monitor *Eunicella* Population**

All sites were visited and fans photographed in 2015.


In 2015 there was one confirmed loss of a sea fan, NWA13, last seen in 2013. Three other fans were absent, BHO6, SSF22 and WAY16. Their status will be checked again in 2016 and any losses confirmed. Because some fans can become so encrusted and hidden in seaweed making

it difficult to find no loss is confirmed until it can be checked the following year; for example this year SSF23 was found again after 3 years of not being recorded.

The cluster of 5 baby fans at Bull Hole are all present but very little growth has been observed since 2006 when they were first found. No anthropogenic damage to fans was recorded in 2015.

**Population survey results 1994 -2015:**

| year | Sites surveyed | Total fans recorded | Total natural fans | Total attached | New recruits (babies) | Natural fan Losses (confirmed) | Attached fan losses | Missing (to be |
|---|---|---|---|---|---|---|---|---|
| 1994 | 3 | 30 | 30 | | | | | |
| 1995 | 3 | 29 | 29 | | | 1 | | |
| 1996 | 3 | 29 | 29 | | | | | |
| 1997 | 4 | 35 | 35 | | | | | |
| 1998 | 4 | 35 | 35 | | | | | |
| 1999 | 0 | | | | | | | |
| 2000 | 5 | 50 | 50 | | | | | |
| 2001 | 5 | 52 | 52 | | | 1 | | |
| 2002 | 9 | 81 | 80 | | | 1 | | |
| 2003 | 9 | 95 | 94 | | 1 | | | |
| 2004 | 9 | 97 | 96 | | | | | |
| 2005 | 10 | 110 | 107 | 3 | 1 | 1 | | |
| 2006 | 10 | 115 | 112 | 3 | 7 | | | |
| 2007 | 10 | 117 | 114 | 4 | 1 | 2 | | |
| 2008 | 10 | 122 | 118 | 4 | | 1 | | |
| 2009 | 10 | 124 | 117 | 7 | | | | |
| 2010 | 10 | 122 | 116 | 6 | | 3 | 1 | |
| 2011 | 10 | 121 | 117 | 4 | | | 2 | |
| 2012 | 10 | 121 | 116 | 5 | | 1 | | |
| 2013 | 10 | 121 | 116 | 5 | | | | |
| 2014 | 9 | 118 | 114 | 4 | | | 1 | |
| 2015 | 10 | 121 | 119 | 2 | | 1 | 2 | 3 |
| totals | | | | | 10 | 12 | 6 | 3 |

“Attached” sea fans are those that have been reattached artificially to the seabed.

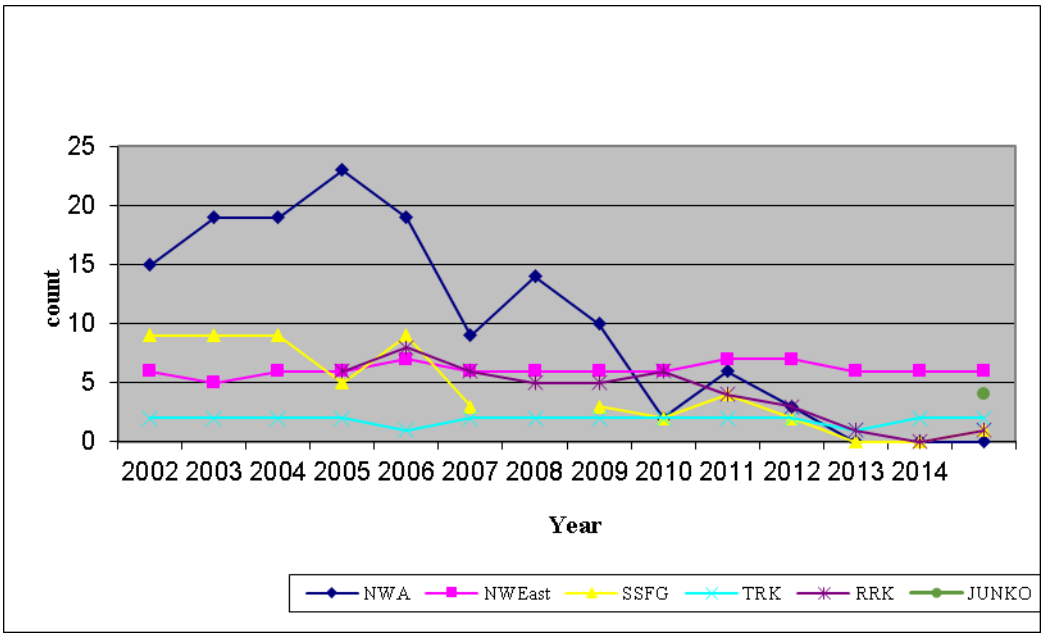
Condition assessments of sea fans were carried out again in 2015 and detailed results can be seen in Skomer MCZ Project Status Report 2015/16, but in summary necrosis has fluctuated between 38% and 55% for the last 5 years, with a reduction in 2015 of 26%, compared to an average level over 14 years of 48%; 73% of sea fans have been recorded with attached or entangled epibiota in 2015 compared with a 14 years average of 60%; no sea fans were found entangled in man-made materials in 2015 and no damaged sea fans were found (although some are missing – see above).

No *Tritonia nilsodhneri* or *Simnia patula* were recorded in 2015.

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

The frequency of *A. glomeratum* colonies decline at all sites.
In 2015 no colonies at all were seen at North wall while Sandy seafan gully and Rye Rocks had just a single colony each. Junko's reef was photographed for the first time, an average of 75 colonies were found in the 4 quadrats surveyed.

Mean frequency of *A. glomeratum* from within the quadrats 2002 to 2015

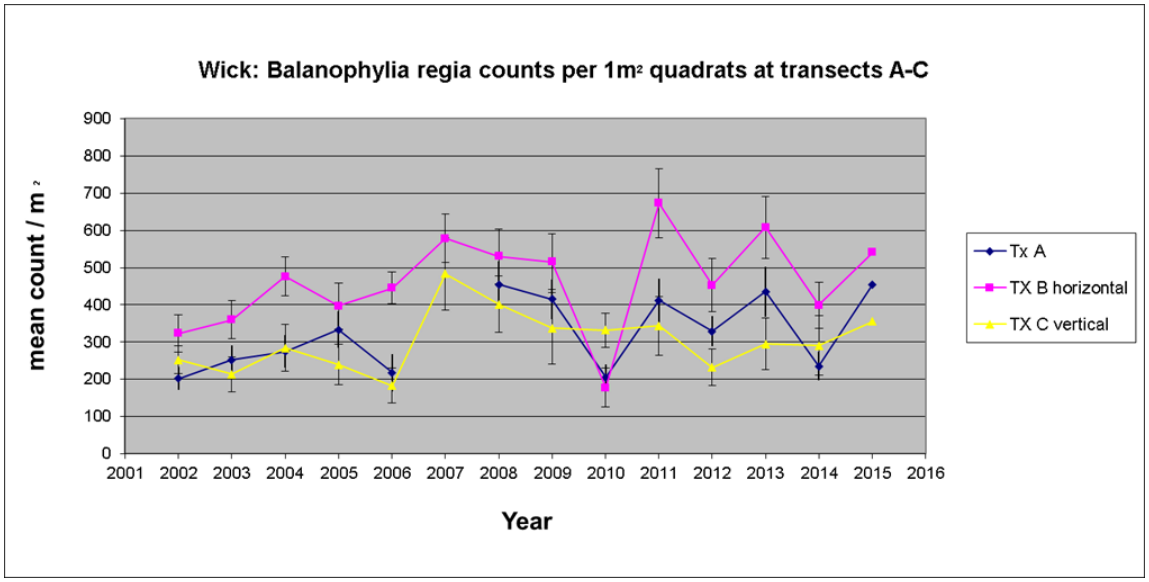



**Project code: RM23/04 Monitor Cup Coral Populations**

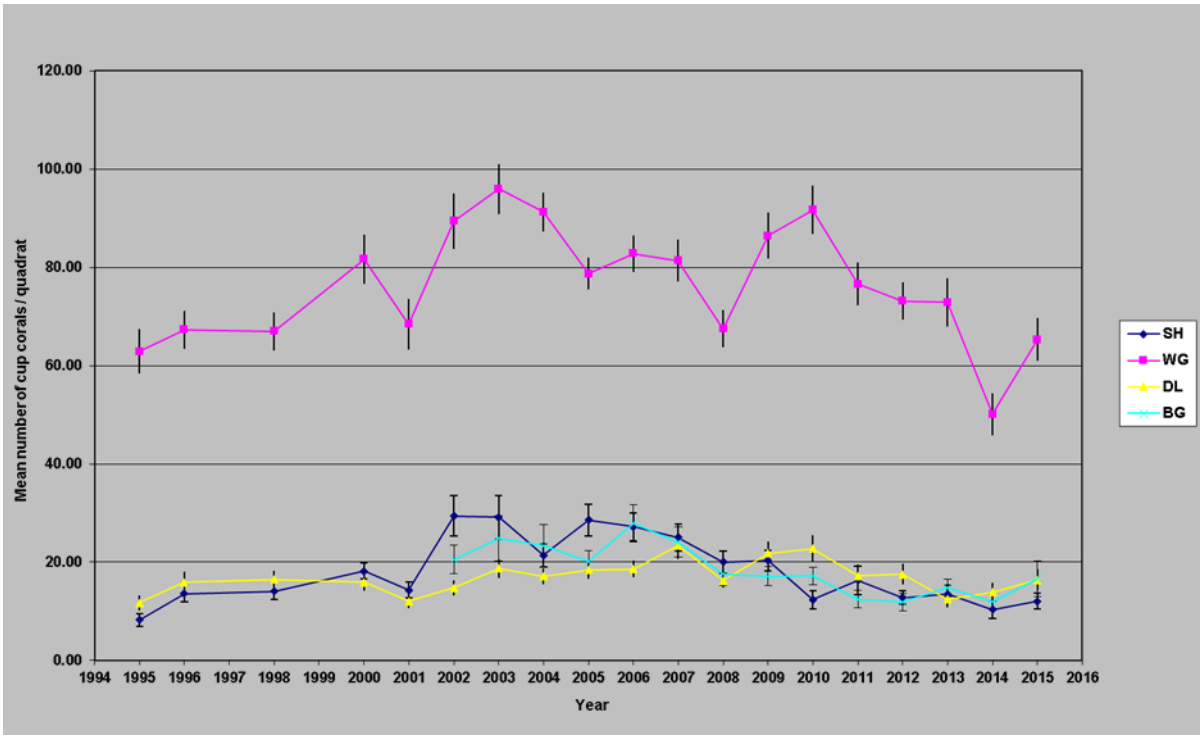
In 2015 all quadrats were completed for both Devonshire cup coral, *Caryophyllia smithii,* and the rarer scarlet and gold cup coral *Balanophyllia regia*.

Variability in numbers recorded is partly due to varying levels of surface sediment. The populations appear stable although there is no firm evidence of recruitment. The photograph quality was very poor in 2014 resulting in all sites showing a drop in numbers.

**_Balanophyllia regia_ abundance at Transects A, B and C at the Wick**




**Mean Number of _Caryophyllia smithii_ per Quadrat at Thorn Rock 1996 - 2015**



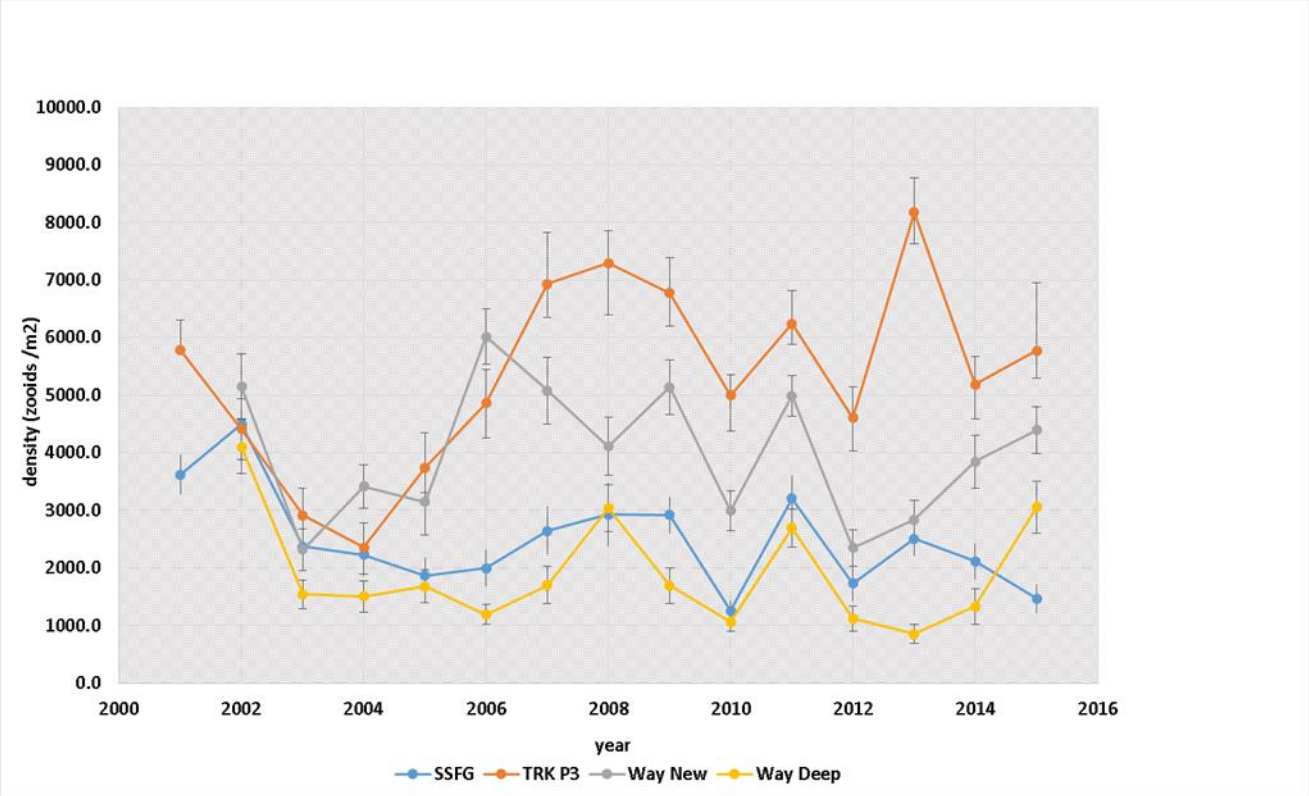

*Caryophyllia smithii* at Thorn Rock shows changes in mean abundance, this may be due to variable levels of surface sediment affecting the actual numbers visible during recording.

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

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

All the colonies are still present.
Polyp densities at the Thorn Rock P3 transect have returned to similar values seen in 2010 & 2012, Waybench sites have seen a continued increase and Sandy Sea-Fan Gully (SSFG) has continued to decline in density.

**Density of polyps (polyps /m²) 2001 – 2015**




The TRK sites all decreased compared to 2014. The other sites show a slight increase.

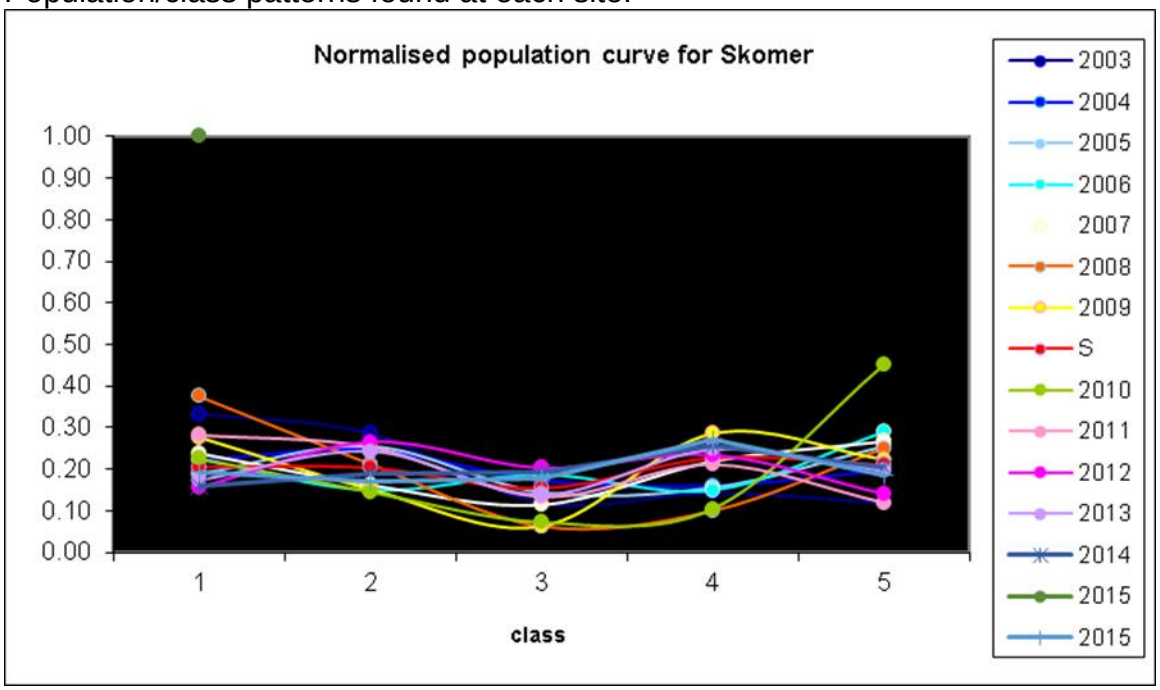
A drop in colony area (as measured by cell frequency counts) at all TRK sites occurred in 2015 compared with 2014. Other sites saw a slight increase in coverage.

**Project code: RM63/01 Monitor *Pentapora* Population**

All monitoring sites were surveyed in 2015.

The morphological classification method developed by Rob Gibbs in 2006 and revised in 2010 has continued and been applied to the 2015 data set.

Population/class patterns found at each site.




Unfortunately only by applying this method to an undisturbed area of seabed where *Pentapora* are present can an understanding be achieved of normal community functioning of *P. foliacea*. Currently there are no such areas within the Skomer MCZ.

**Project code: RP04/01 Record Meteorological Factors**

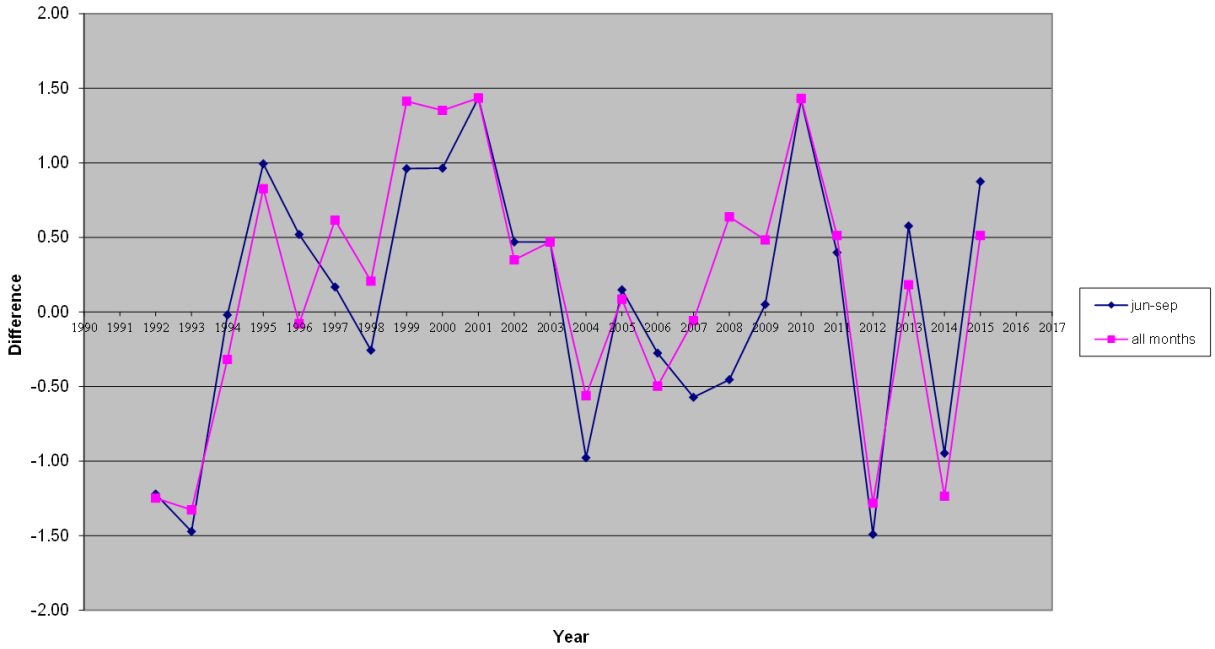
Skomer MCZ weather data is recorded via an Environmental Change Network (ECN) compatible weather station. MCZ staff are continuing their efforts to get weather data available via the internet.

The weather summary for 2015/16:

| | |
|---|---|
| Maximum temperature (ºC) | 23.9 (June) |
| Minimum temperature (ºC) | 0.4 (Jan) |
| Annual Maximum gust (knots) | 85 (Feb) |
| Direction of Maximum gust | 261.3 degrees |

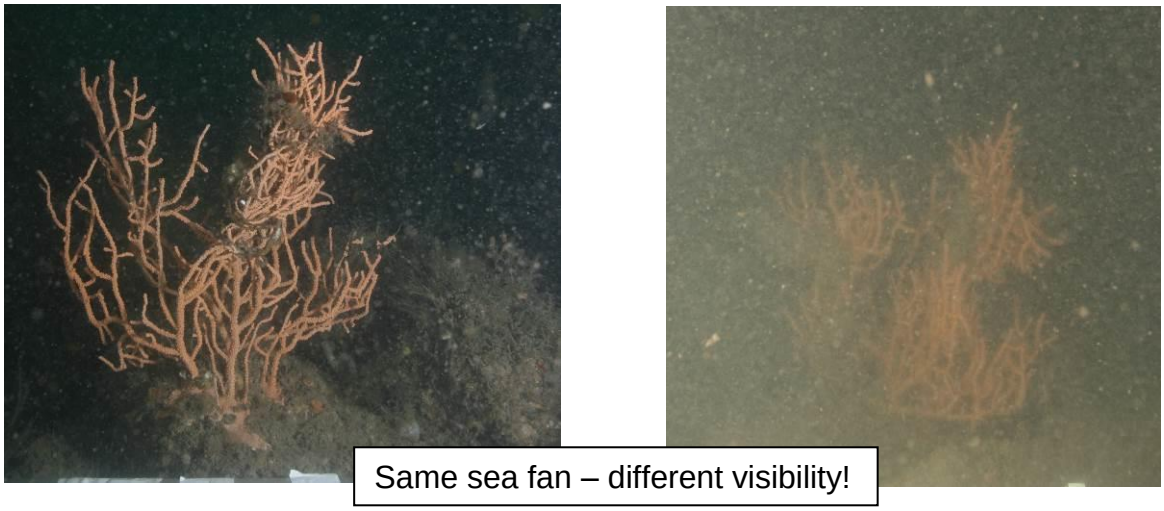
**Project code: RP63/01 Monitor Seawater Turbidity / Suspended Sediments**

Turbidity in Skomer MCZ was measured by Secchi disc at the OMS and at Thorn Rock.




23 Secchi disc measurements of water turbidity were made at OMS and 25 at Thorn Rock in 2015. The graph shows the monthly mean summary at the OMS from 1992 to 2015. Plotting the mean difference between the monthly average and the overall

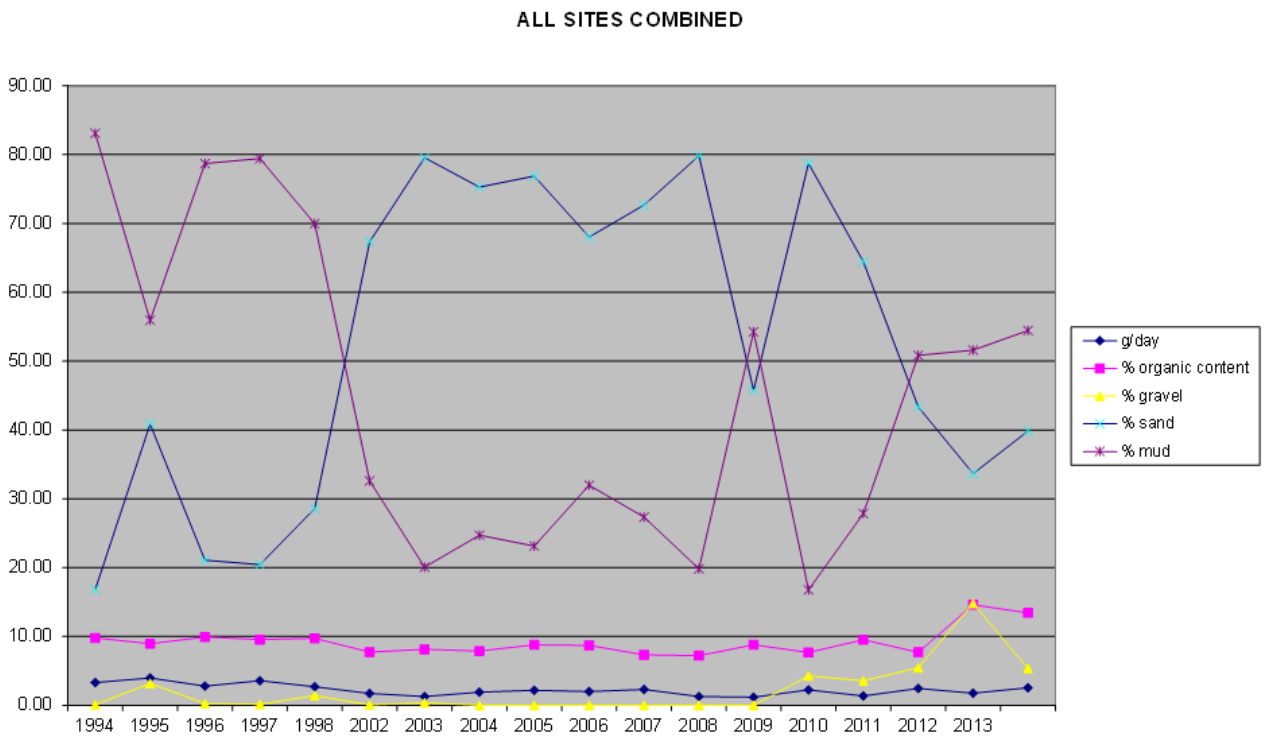
average highlights any significant fluctuations. Both 2012 and 2014 appear to have been more turbid than the previous 18 years, which would tally with diver observations for those years.



Same sea fan – different visibility!

**Project code: RP63/04 Monitor Seabed Sedimentation**

Seabed sedimentation samples were collected at Skomer MCZ using passive sediment traps at OMS and Thorn Rock between April and October 2015. Analysis of 2014 samples for dry weight, organic content, grain size analysis and metal content has been carried out by NRW's own laboratories. 2015 samples are awaiting analysis.



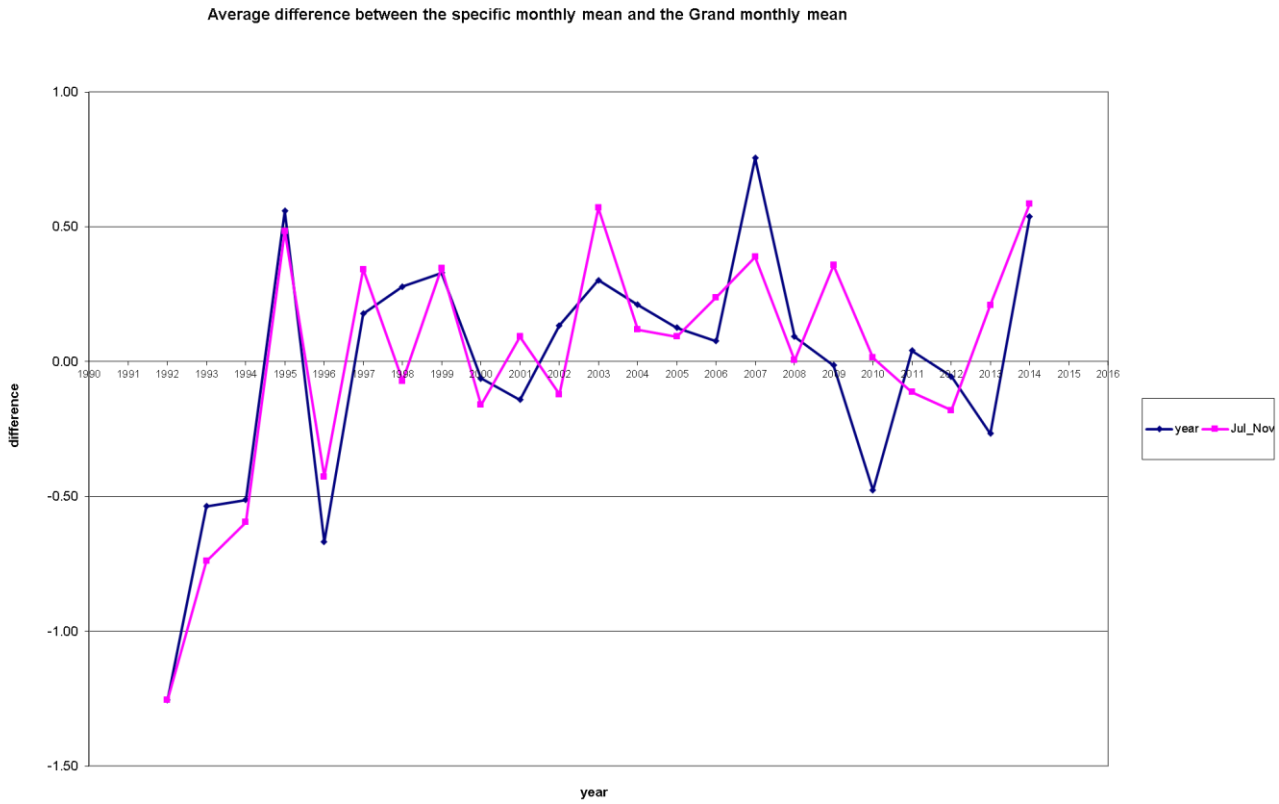
**Project code:** **RP64/01** **Record Seawater Temperature**

Seawater temperature data was collected at the Skomer MCZ Oceanographic Monitoring Site (OMS) using a Valeport Series 600 MkII conductivity, temperature, depthand salinity probe at depth intervals of 5m from the surface to just above the seabed. Profiles were recorded between April and November 2015 in conjunction with projects to measure turbidity and salinity and sample plankton populations.

Annual maximum and minimum seabed temperature records from 2000 to 2015 are as follows (data from automatic logger deployed at 19m BCD):

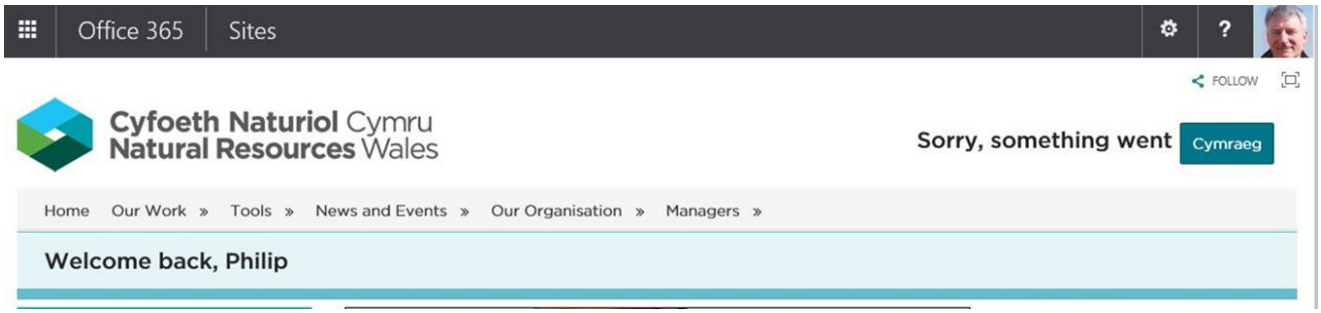
| Temperature ºC | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Minimum | 8.4 | 7.27 | 8.7 | 7.6 | 7.7 | 7.36 | 7.5 | 8.8 | 8.4 | 7 | 6.9 |
| Maximum | 16.27 | 16.3 | 15.6 | 17.1 | 16.76 | 16.4 | 16.3 | 16.3 | 16.3 | 16.8 | 16.8 |
| Year | **2011** | **2012** | **2013** | **2014** | **2015** | | | | | | |
| Minimum | 7.6 | 8.0 | 6.98 | 8.14 | 7.8 | | | | | | |
| Maximum | 15.9 | 16.6 | 16.82 | 16.72 | 15.98 | | | | | | |

**Average difference between the specific monthly mean temperature and the grand monthly mean (1992-2015)**




10 Onset Hobo temperature / light loggers have also been placed at various intertidal sites around the Reserve and at other locations in Pembrokeshire. These loggers provide a record of the temperature regime experienced by sessile organisms in the intertidal habitat.

## 7.4 Data Handling Development




The information technology infrastructure at the Skomer MCZ office at Martins Haven continues to stumble from crisis to crisis, not helped by NRW's transition to more and more on-line applications and software. NRW's network and field support staff continue to offer good support, but not much can be done with regard to internet access due to the remote location and the dependency on a telephone network last upgraded in prehistoric times.

MCZ staff continue to enter records into Marine Recorder, which was CCW's corporate database for marine data and has been adopted by NRW.

Latest MCZ reports are available via the NRW website, but efforts continue to make sure that reports, and other MCZ information are posted on-line.

## 7.5 Other Work

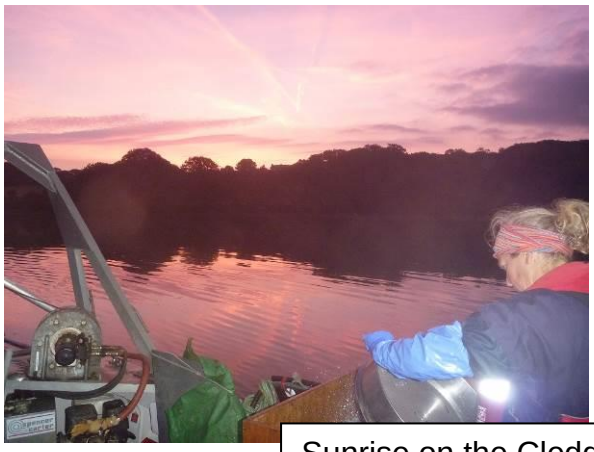
MCZ staff continue to be involved with wider initiatives, particularly those involving NRW European Directive work programmes.

Colleagues from NRW Fisheries Assessment Team returned to further refine sonar methods for assessing eelgrass populations for NRW's Water Framework Directive work. Their work also benefits the MCZ in that each survey provides interim snapshots of the extent of the North Haven eelgrass bed without having to resort to more time-consuming diving methods (see Sections 6.7 and 7.2).

MCZ staff again assisted with sampling at lagoon sites at Pickleridge, Neyland and Carew, using a variety of methods, including core, grab and sweep net sampling.

MarClim intertidal surveying and deployment of data loggers was carried out at a variety of sites within Pembrokeshire Marine SAC.

Significant parts of September and October were taken up with grab sampling work on behalf of NRW colleagues in the Specialist Monitoring Team. Extensive grab sampling surveys took place in the Eastern and Western Cleddau, Milford Haven and the Three Rivers estuary and river system, with the help of volunteer Blaise Bullimore and NRW colleagues Rob Harbour and Adam Leyshon.



Sunrise on the Cleddau – sunset on the Taf

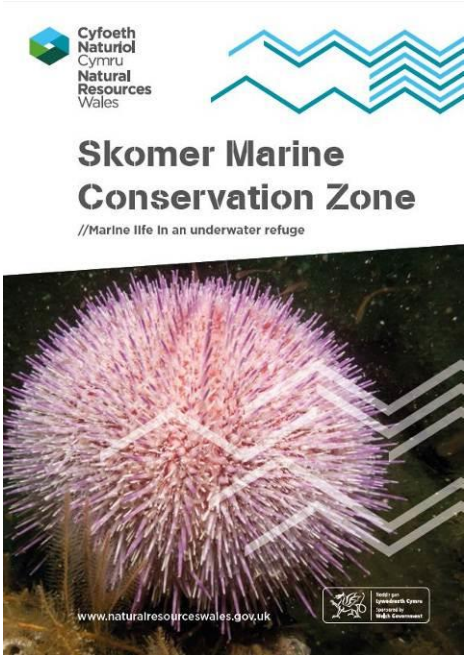
Adam and his friend "Rock"

# 8 Education and Interpretation

## 8.1 Research and Education Subcommittee

The Research and Education Committee did not meet in 2015.

*Project: M150/02*
Stocks of both the original MNR interpretative booklet “Stars, squirts and slugs…marine life in an underwater refuge” and the computer generated poster ran out before the start of the 2014 season (See Section 4.2).




In Early 2015 the cancellation of other NRW projects freed up funds for the booklet to be redesigned in a NRW format.

Due to the short time available images were supplied and drafts exchanged electronically. The result was a booklet differing very little in content from the original, but format and style were changed to fit NRW’s corporate designs. The down-side of only seeing electronic proofs was that the printed version was quite disappointing, with poor colour and brightness levels.
MCZ staff have been told that existing stocks will have to be used up before any improved reprints are undertaken.

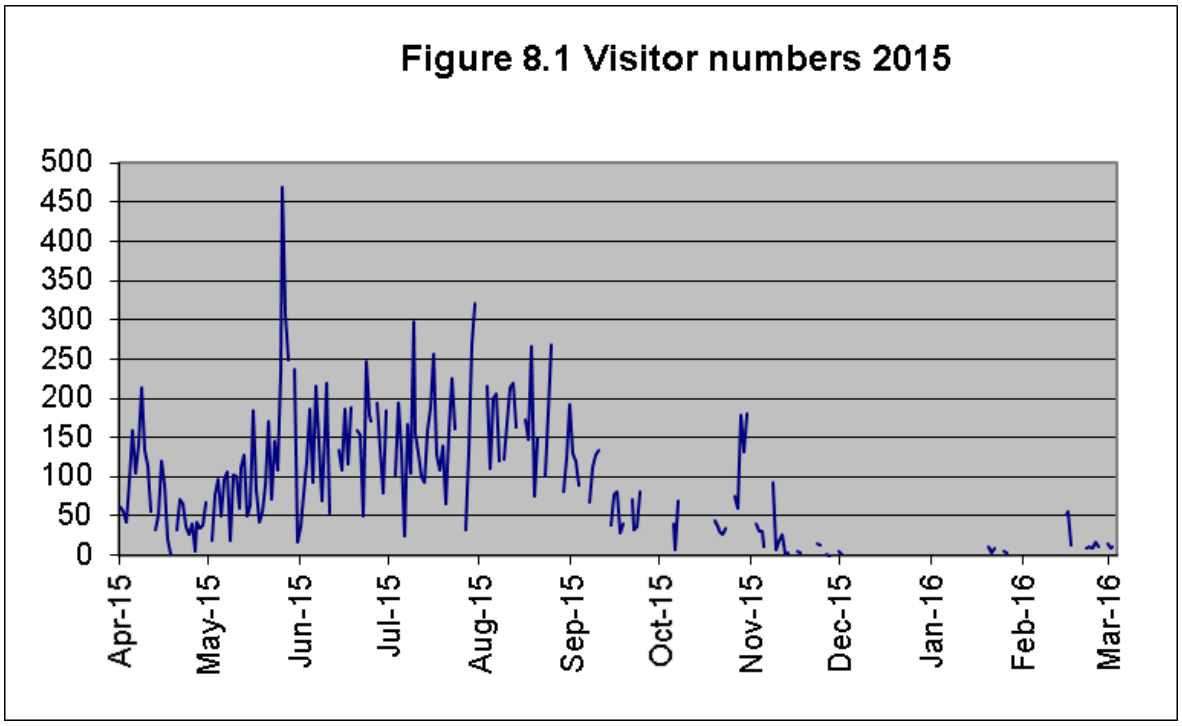
During the autumn the ‘Seal watching’ leaflet, which has also been given a corporate “facelift”, was very popular with visitors during the seal pupping season (See Section 4.4.7).

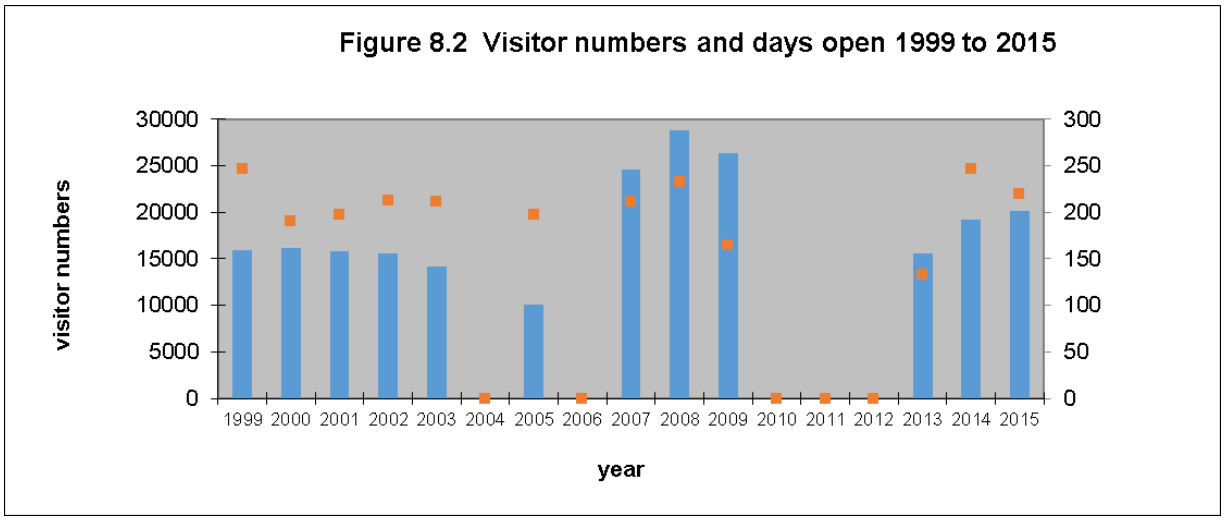
## 8.2 Fisherman’s Cottage MCZ Exhibition


*Project: M150/01*
The MCZ exhibition at Fisherman’s Cottage continues to attract significant numbers of the visiting public.

No significant changes to the videos on the interactive display have been made.

Visitors to the exhibition are counted by means of a break-the–beam sensor and logger. Results from this show that 20118 people visited the exhibition over 220 days of opening in 2015. The pattern of visitor visits over the year can be seen in Figure 8.1 and how each year compares can be seen in Figure 8.2.




## 8.3 Other Initiatives

Skomer MCZ 'Marine Day' was a popular event with the public in 2015, with many children and parents investigating the wildlife of Martins Haven beach and then using this as their inspiration for crafting marine creatures of their own back at Marloes Village Hall.

PN and MB attended a photo-monitoring workshop for Reserve Managers held in Brecon and presented some examples of the MCZ's work and the equipment used in carrying it out.

KL attended a meeting of NRW Communication staff with Reserve Managers to discuss the promotion of sites managed by NRW.

MB presented aspects of the MCZ's monitoring work to colleagues at NRW's Llanelli Laboratories.

## 8.4 Talks, Events and Articles

*Project: MI20/01*
Skomer MNR liaison with academic and educational bodies continued. This included talks to academic groups and supplying information to students (see Section 6.6).

*Project: MI00/01*
MB gave several talks to WI groups throughout Pembrokeshire in 2015.

PN gave a presentation on the work of the MCZ to the West Wales Biodiversity Information Centre's Recorders Forum in March 2016 and a short presentation to the Field Staff Networking Day organised by PCNPA.

KL helped to run a "snorkel safari" for local school children, one of many events linked to the Pembrokeshire Fish Festival in 2015. The event was run in conjunction with Pembrokeshire Marine SAC officer, and staff from West Wales.

KL also wrote an article on the 2014 eelgrass survey for the Pembrokeshire Biodiversity Partnership summer newsletter.

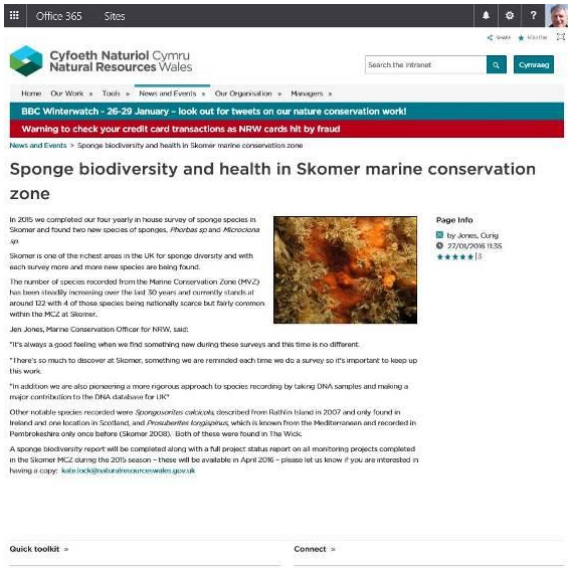
## 8.5 Media

*Project:ML70/01*
MCZ staff dealt with enquiries from the BBC regarding the use of drones for filming on Skomer.

PN was interviewed by BBC Radio Wales on the 20th anniversary of the *Sea Empress* oil spill.

NRW's internal social medium, "Yammer" also hosted photographs and short articles by MCZ staff on various subjects relating to MCZ work, including the eelgrass and sponge surveys.

News of the results of the Skomer MCZ sponge survey was the subject of a press release in 2015 and was taken up by a variety of media, including Radio Pembrokeshire, who interviewed PN.


Office 365 Sites

Cyfoeth Naturiol Cymru
Natural Resources Wales

Search the intranet

Cymraeg

Home Our Work » Tools » News and Events » Our Organisation » Managers »

BBC Winterwatch - 26-29 January – look out for tweets on our nature conservation work!

Warning to check your credit card transactions as NRW cards hit by fraud

News and Events > Sponge biodiversity and health in Skomer marine conservation zone

## Sponge biodiversity and health in Skomer marine conservation zone

In 2015 we completed our four yearly in house survey of sponge species in Skomer and found two new species of sponges, *Phorbas sp* and *Microciona sp*.

Skomer is one of the richest areas in the UK for sponge diversity and with each survey more and more new species are being found.

The number of species recorded from the Marine Conservation Zone (MVZ) has been steadily increasing over the last 30 years and currently stands at around 122 with 4 of those species being nationally scarce but fairly common within the MCZ at Skomer.

Jen Jones, Marine Conservation Officer for NRW, said:

"It's always a good feeling when we find something new during these surveys and this time is no different.

"There's so much to discover at Skomer, something we are reminded each time we do a survey so it's important to keep up this work.

"In addition we are also pioneering a more rigorous approach to species recording by taking DNA samples and making a major contribution to the DNA database for UK"

Other notable species recorded were *Spongosorites calicicola*, described from Rathlin Island in 2007 and only found in Ireland and one location in Scotland, and *Prosuberites longispinus*, which is known from the Mediterranean and recorded in Pembrokeshire only once before (Skomer 2008). Both of these were found in The Wick.

A sponge biodiversity report will be completed along with a full project status report on all monitoring projects completed in the Skomer MCZ during the 2015 season – these will be available in April 2016 – please let us know if you are interested in having a copy: kate.lock@naturalresourceswales.gov.uk

Page Info

by Jones, Craig

27/05/2016 11:55

Quick toolkit »

Connect »

KL was interviewed and MCZ videos were provided for NT's new web page promoting the Marloes Peninsula:

Video

## Skomer Marine Conservation Zone

The Marloes Peninsula is a designated Marine Conservation Zone, with a fascinating underwater world that's well worth exploring. From seals to sponges, marine biologist Kate Lock reveals what you can see offshore.

# 9 Acknowledgements

MCZ staff wish to thank all those who contributed to, or supported in any way the management of the MCZ in 2015.
Thanks to:

- Contributors to the Advisory Committee, especially Dr Robin Crump who chairs the main committee.
- Honorary Wardens;
  Eddie Stubbings, Bee Büche and Skomer Island NNR staff;
- Blaise Bullimore, John Archer Thomson, Nicki Meharg, Dai Atkins, and Rob Spray and others for diving support;
- The crew of the *Dale Princess;*
- All our Honorary Wardens for contributing to user records and Andrea, Ceri and Clive in the NT car park for making sure the exhibition was opened as often as possible.
- 'Neptune's Army of Rubbish Collectors' for organising and completing the underwater litter picks in the MCZ;
- The volunteer diving teams that were involved in the sea urchin and starfish survey and the skippers of the dive charter vessels.

With apologies to anyone omitted from above.

# 10 Appendices

## Appendix 1

Grey Seal Breeding Census Skomer Island 2015

Birgitta Büche and Edward Stubbings
Wildlife Trust of South and West Wales

NRW Evidence Report 147

### Summary

246 pups were monitored on Skomer Island in 2015, of which 240 were definitely born on Skomer and six turned up either just before the start of moult, or moulting (wanderers).

The total of 240 pups born on Skomer Island is the highest total ever recorded and 25 more than in 2014.

A total of 379 pups were born in the Skomer Marine Conservation Zone of which 139 were born on the Marloes Peninsula.

The busiest week this year was week 41 (05-11/10), the same as last year.

The most productive beaches were Matthew's Wick (42 pups) and South Haven (44 pups). In 2015 (in contrast to 2014) North Haven was the third most popular beach with 36 pups born (24 in 2014). On both Driftwood Bay and Castle Bay 23 pups were born.

178 pups are known, or assumed to have survived on Skomer in 2015, giving a survival rate of 76%, which is higher than 2014 (68%) and in line with the average of the last ten years (76%).

In 2015 the maximum haul-out of 360 animals was recorded on 16/11 on exactly the same date as the 2014 maximum haul-out (300 animals).

27 different cows, and three bulls were photographed with obvious signs of being entangled in nets at some time in their lives, often with netting still embedded.

Between mid-August and the end of November 2015 we observed 14 incidents of disturbance to seals around Skomer Island.

In 2015 over 2800 photos were taken of seals, of which 477 will be entered into the NRW Wales Seal ID database. We identified 90 seals with obvious scars by eye, of these 43 were known from previous years.

## Appendix 2

**Abbreviations**

| | |
|---|---|
| AcoP | Approved Code of Practice |
| AWS | Automatic weather station |
| BAP | Biodiversity Action Plan |
| BCD | Below chart datum |
| BS-AC | British Sub-Aqua Club |
| CEFAS | Centre for Environment, Fisheries and Aquaculture Science |
| CCW | Countryside Council for Wales |
| DTI | Department of Trade and Industry |
| DEFRA | Department of Environment, Fisheries and Rural affairs |
| EA | Environment Agency |
| EU | European Union |
| FPV | Fisheries Protection Vessel |
| FSC | Field Studies Council |
| FTA | Fixed Term Appointment |
| HSC | Health and Safety Commission |
| HW | Honorary Warden |
| JNCC | Joint Nature Conservation Committee |
| MEP | Member of the European Parliament |
| MHPA | Milford Haven Port Authority |
| MNR | Marine Nature Reserve |
| MCA | Marine Coastguard Agency |
| MCZ | Marine Conservation Zone |
| MCO | Marine Conservation Officer |
| MCS | Marine Conservation Society |
| MPA | Marine Protected Area |
| NCI | National Coastwatch Institution |
| NE | Natural England |
| NERC | Natural Environment Research Council |
| NNR | National Nature Reserve |
| NRW | Natural Resources Wales |
| NT | National Trust |
| NTZ | No Take Zone |
| OMS | Oceanographic monitoring site |
| PCC | Pembrokeshire County Council |
| PCF | Pembrokeshire Coastal Forum |
| PCNP | Pembrokeshire Coast National Park |
| PMSAC | Pembrokeshire Marine Special Area of Conservation |
| PMCG | Pembrokeshire Marine Code Group |
| POCG | Pembrokeshire Outdoor Charter Group |
| RIB | Rigid-hulled inflatable boat |
| RSPB | Royal Society for the Protection of Birds |
| RYA | Royal Yachting Association |
| SAC | Special Area of Conservation |
| SDSC | Scientific Diving Supervisory Committee |
| SNH | Scottish Natural Heritage |
| UW | University of Wales |
| WG | Welsh Government |
| WTSWW | Wildlife Trust South and West Wales |

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