



# SKOMER MARINE NATURE RESERVE ANNUAL REPORT 2011

CCW Regional Report CCW/WW/11/3



PHILIP NEWMAN

KATE LOCK

MARK BURTON

JEN JONES

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## **SYNOPSIS**

This is the Skomer Marine Nature Reserve 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 MNR.

The report summarises all aspects of the work of the MNR 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 Gwarchodfa Natur Forol 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.

# 1 INTRODUCTION AND FOREWORD

Looking back over 2011 the MNR team have had their fair share of excitement, routine work and media exposure. This year the MNR team welcomed Jen Jones as seasonal assistant.

Jen's extensive knowledge of sponges was put to good use during the 4-yearly sponge species survey and for scoping an additional monitoring site at High Court Reef.

In addition to the routine monitoring programme and the sponge survey, the main fieldwork highlight was the urchin and starfish surveys carried out by our volunteer diver teams. A total of 139 transects were completed covering an area of 8340m<sup>2</sup>, a total of 755 urchins were counted and measured. Not bad for a couple of weekends work!



It was during a dive looking for a new urchin monitoring site that MNR staff discovered the biggest surprise of the year – an unexploded air-dropped mine of World War II vintage and containing about 700 kg of what turned out to be highly viable German high explosive! After contacting the RN Bomb Disposal via Milford Haven Coastguard the mine was floated out to mid way between

Skomer and Skokholm and disposed of – with “extreme prejudice” as they say (see cover).

Other incidents of note during 2011 included a large area of gorse just above the MNR office being set alight, either by malice or mischance and the aftermath of a local “joyriding” session being left in the Martin’s Haven car park.

On a more pleasant topic the MNR featured in the media in a variety of ways:

BBC’s Springwatch descended on Skomer in a big way during May and June with Iolo Williams reporting from Skomer, both on land and underwater. The MNR team were able to assist with underwater filming, despite rough weather and less than ideal underwater visibility.

BBC Countryfile also featured MNR work on plankton and Wedi 3, a Welsh language programme for S4C, featured footage on board the MNR boat. MNR staff also supplied underwater footage for ITV’s “Adventurer’s Guide to Britain” and for a Pembrokeshire Coastal Forum DVD on coastering.



Various newspapers took up CCW's press release on the "Sponge Biodiversity of the UK" report by workers from the National Museums of Northern Ireland, which underlined the importance of Pembrokeshire waters (especially around Skomer) for sponge species.

MNR staff took part in a number of events, including Pembrokeshire Coastal Forum's Buzz local schools beach day and diver events, the MNR's own Martin's Haven Marine Day and the Natur Countryside Fair.

Good liaison was maintained with a number of universities, with students from Aberystwyth, Swansea, Plymouth and Southampton Universities carrying out projects at the MNR or being given talks.

It is with great sadness that we learnt of the death of David (Dai) Bray this summer. Dai was a great supporter of the MNR, especially in the early years and was tireless in his efforts to represent the interests of fishermen in the south west of Wales both at a local as well as a national level.

## 2 STAFF

### 2.1 STAFFING

In 2011 the MNR staff were two full-time, Phil Newman (PN) and Mark Burton (MB) and one part-time staff, Kate Lock (KL). We were joined by Jen Jones (JJ) as seasonal assistant. Jen replaces Rob Gibbs, who left at the end of 2010 to take up teacher training. Jen has a long association with the MNR as surveyor, trainer and contractor and brings with her a wealth of diving and marine biology experience.



Local CCW marine colleagues Mike Camplin and Anne Bunker also supported MNR staff when their time allowed. Mike has recently been appointed head of CCW's marine monitoring team and so the local marine team has been joined by Lily Pauls.

As ever the MNR team would not have been able to achieve nearly as much without the help and support of our volunteers. Thanks are therefore due to all the volunteers who helped to supplement the MNR team, contributing to fieldwork (above and below water) and to weekend patrols:

- Lisa Whitfeld, Rob Gibbs (back as a volunteer), John Archer Thomson, Francis Bunker, Jon Moore, Axelle Jorcin and Blaise Bullimore for diving support,
- Honorary Wardens (see Section 2.2), who help keep records of visitors, disturbance incidents, infringements of MNR Codes of Conduct and records of species sightings. Also helping to keep the MNR exhibition open for as many days per week as possible.
- Rhys Evans, Sam Taylor, Lucas Lowe, and Michael Francois who helped with non-diving work including intertidal monitoring.
- The teams of volunteer divers involved in the urchin and starfish monitoring surveys.



### 2.2 HONORARY AND VOLUNTARY WARDENS

The following served as Honorary Wardens (HW):

The whole Bullimore family

Sue Burton

Dr Robin Crump

Nic Davies, skipper *Crowded Hour* (M1140)

Brian Dilly, dive charter operator

Kenny Gainfort, Skipper *Dale Princess*

Carl Wonnacot, crew *Dale Princess*

Barry Davies and Lionel Jewell, Martin's Haven National Trust car park attendants

Jane Hodges, PCNPA

Ivor Johnson, Old Mill Diving Services

Bruce Jones, BSAC

Steve Lewis, dive charter operator

James Perrins.



## 2.3 TRAINING

The annual MNR staff dive-safety training day was held again in April involving MNR staff and volunteer divers, and CCW HQ staff unable to attend the multi-agency training event. Training included simulated rescue operations and emergency procedures.



MNR staff took part in Operation Celtic Coast – a large scale pollution exercise taking in a large number of organisations and a simulated incident involving both oil and chemical pollutants. In the exercise MNR staff accompanied local authority staff to a number of shore locations to carry out Shoreline Cleanup Assessment Technique (SCAT) assessments. KL also attended a SCAT course at Dale Fort.

In January 2012 MB again attended a statistical workshop in Bangor, looking at a variety of MNR and other CCW datasets and KL renewed her First Aid training in March 2012.

PN attended Fire Marshal training in March 2012 and also training in the new on-line version of the Countryside Management System.

All MNR staff took part in “Eco-defensive” driver training; learning techniques to reduce fuel consumption and vehicle wear and tear during normal driving.

## 2.4 HEALTH AND SAFETY

The MNR safety documents continue to be updated: COSHH assessments and PPE assessments are added as necessary and PUWER assessments are prepared for new and existing projects.

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

One accident was recorded in 2012 when JJ injured her hand while steadying herself as Skalmey passed through rough water.



A near-miss report was submitted following the discovery of a World War II mine on the seabed within the MNR (see Introduction). Liaison with Coastguard Agency in Milford Haven and with the Royal Navy Bomb disposal team was very good: High priority was given to the selection of a suitable detonation site, not only in terms of safety to the RN divers and general public, but also the potential impacts on wildlife: After the explosion only one dead fish was found (to the disappointment of the

Dyfed Powys Police Marine Unit!) and Skomer Warden Chris Taylor observed a group of harbour porpoise moving away from the site before the explosion and then moving back again afterwards.



Other incidents in the vicinity of the MNR office included the gorse fire on the Deerpark just above the office. It is thought a carelessly thrown cigarette-end was probably responsible for the fire, which reignited several times after first being extinguished.

Martin's Haven also became the venue for "boy racers", who used the car park as a venue for some kind of demolition-derby, leaving two burnt-out cars and damaging the NT car park hut.



In the New Year the car park hut was finished off by arsonists who reduced the hut to ashes.



### 3 ESTATE

#### 3.1 BUILDINGS

*Project: ME12/01*

The Fisherman's Cottage office was treated to a facelift with all external woodwork and metalwork being repainted and repairs to the pointing of the stone walls carried out.

In view of all the incidents over recent months security at Fisherman's Cottage has been a concern. As a result the old CCTV system has been replaced in addition to the routine maintenance of the intruder alarm system.

As part of CCW's efforts to retain ISO 14001 and Green Dragon level 5 environmental management standards all MNR waste handling and energy consumption continues to be monitored and audited.

*Project: MI50/01*

The MNR exhibition at Martin's Haven continues to be popular, especially the interactive video display, which is particularly attractive to children (of all ages). Because of the way the display software works the video clips can be replaced at any time by MNR staff and despite his teacher training studies Rob Gibbs has begun creating new clips by some imaginative editing of existing MNR video footage (see Section 8.2). The new clips should be ready for the 2012 season.

#### 3.2 BOATS

*Project: MM00/01*

##### 3.2.1 Boats

*Skalmey* spent 99 days at sea in 2011 and logged 322 engine hours – a considerable increase on 2010. *Skalmey* emerged from her facelift a good deal shinier than she went in and now magically sprouts fenders every time a hard surface comes near.

As well as routine diving duties *Skalmey* was used to carry out commercial crustacean monitoring through the deployment of lobster pots (see Section 7.3).



The MNR RIB *Morlo* spent 36 days at sea in 2011 and logged 118 engine hours. *Morlo* is used mainly for patrol work, seal monitoring and for accessing intertidal monitoring sites around the MNR.

##### 3.2.2 Seetime

Staff and vessel seetime are shown in Table 3.1.

**Table 3.1 SUMMARY OF STAFF BOAT AND SEATIME**

	1995	1996	1997*	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>Days at sea</b>																	
Skalmey	68	90	19	9	23	42	48	73	77	52	48	58	72	58	61	69	99
SkalmeyII/Morlo	76	52	99	71	39	38	31	37	32	40	43	40	38	36	38	48	36
<b>Total</b>	<b>144</b>	<b>142</b>	<b>118</b>	<b>80</b>	<b>62</b>	<b>80</b>	<b>79</b>	<b>110</b>	<b>109</b>	<b>92</b>	<b>91</b>	<b>98</b>	<b>110</b>	<b>94</b>	<b>99</b>	<b>117</b>	<b>135</b>
<b>MNR Staff seatime (hrs)</b>																	
Skalmey	614.8	919	181.55	70	195	492.5	621.75	882.9	777.61	640.35	618	621	933.35	684.6	747.3	718.4	942
SkalmeyII/Morlo	644.7	352.4	732.92	514.25	219	254.15	225.75	277.4	278.7	460.9	405.25	331	339	278	277.8	295	313
<b>Total</b>	<b>1259.6</b>	<b>1271.4</b>	<b>914.5</b>	<b>584.25</b>	<b>414</b>	<b>746.65</b>	<b>847.5</b>	<b>1160.3</b>	<b>1056.3</b>	<b>1101.25</b>	<b>1023.25</b>	<b>952</b>	<b>1272.35</b>	<b>962.6</b>	<b>1025</b>	<b>1013.4</b>	<b>1255</b>
<b>MNR Staff days at sea</b>																	
Skalmey	156	223	51	14	42	96	129	225	205	154	158	165	202	170	189	183	279
SkalmeyII/Morlo	168	104	214	149	62	60	58	80	70	104	99	86	84	73	73	93	76
<b>Total</b>	<b>324</b>	<b>327</b>	<b>265</b>	<b>163</b>	<b>104</b>	<b>156</b>	<b>187</b>	<b>305</b>	<b>275</b>	<b>254</b>	<b>257</b>	<b>251</b>	<b>286</b>	<b>243</b>	<b>262</b>	<b>276</b>	<b>355</b>
<b>Other Staff seatime (hours)</b>																	
Skalmey	n/a	n/a	n/a	n/a	n/a	273.75	197.25	204	88	76.7	75.25	233.25	257	107	225	390.4	220
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	105.75	89	89.7	69	107.25	88	142.5	77	113.4	77.5	157	51
<b>Total</b>						<b>379.5</b>	<b>286.25</b>	<b>293.7</b>	<b>157</b>	<b>183.95</b>	<b>163.25</b>	<b>375.75</b>	<b>334</b>	<b>220.4</b>	<b>302.8</b>	<b>547.4</b>	<b>271</b>
<b>Other Staff days at sea</b>																	
Skalmey	n/a	n/a	n/a	n/a	n/a	40	36	23	21	15	18	30	26	26	57	94	48
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	17	19	22	15	21	17	22	12	29	18	35	11
<b>Total</b>						<b>57</b>	<b>55</b>	<b>45</b>	<b>36</b>	<b>36</b>	<b>35</b>	<b>52</b>	<b>38</b>	<b>55</b>	<b>75</b>	<b>129</b>	<b>59</b>
<b>Total Staff seatime (hrs)</b>																	
Skalmey	n/a	n/a	n/a	n/a	n/a	766.25	819	1086.9	865.6	717.05	693.25	854.25	1190.35	791.58	972.7	1109	1162
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	360.25	314.75	367.1	347.7	568.15	493.25	473.5	416	392	355.4	452	313

Total						<b>1126.5</b>	<b>1133.8</b>	<b>1454</b>	<b>1213.3</b>	<b>1285.2</b>	<b>1186.5</b>	<b>1327.75</b>	<b>1606.35</b>	<b>1183.58</b>	<b>1328</b>	<b>1561</b>	<b>1475</b>
<b>Total Staff days at sea</b>																	
Skalmey	n/a	n/a	n/a	n/a	n/a	213	242	248	226	169	176	195	228	196	246	277	327
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	77	77	102	85	125	116	108	96	102	91	128	87
<b>Total</b>						<b>213</b>	<b>319</b>	<b>329</b>	<b>311</b>	<b>294</b>	<b>292</b>	<b>303</b>	<b>324</b>	<b>298</b>	<b>337</b>	<b>405</b>	<b>414</b>
<b>Engine hours</b>																	
Skalmey	170	210	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
SkalmeyII/Morlo	187.5	95.75	212.5	161.25	100.5	142	99	118	96	162.7	160	141.25	120.5	144.67	139	157	118
<b>Total</b>	<b>357.5</b>	<b>305.75</b>	<b>256.4</b>	<b>188.75</b>	<b>184</b>	<b>330</b>	<b>280.1</b>	<b>363.3</b>	<b>380.54</b>	<b>333.8</b>	<b>310.2</b>	<b>310.25</b>	<b>364.9</b>	<b>313.3</b>	<b>363</b>	<b>398</b>	<b>440</b>

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

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

Other Staff = CCW 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: A110/01*

The Skomer MNR inventory has been kept updated, with any new purchases or disposal of equipment recorded. The inventory is checked annually by CCW Regional administrative staff.

#### 3.3.1 Safety, diving and protective equipment

*Project: MM20/01*

*Skalmey's* liferaft has had its annual inspection and a Solas-approved life raft continues to be hired for *Morlo*.

Lifejackets were inspected and inflation tested. Other personal protective equipment was maintained or purchased as required.

*Project: MM20/02*



Diving regulators were all serviced and cylinders tested as per HSE requirements.

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

MNR staff continue to use and improve diving communication equipment adapted to allow voice communication from surface to diver without the need for full-face masks. Divers are able to respond using a system of “beep” signals based on the old rope signal system. In situations where two-way voice communications are needed then full face masks are used.



#### 3.3.2 Optical, photographic and scientific

*Project: MM20/03*

All cameras and flashguns were serviced and repaired by contractor during the winter season.

The conversion to digital photography (and video) has continued to increase efficiency and has been extended to include the stereo photographic monitoring.



*Project: MM20/04*



Skomer MNR scientific instruments, including equipment intended for the Wales Marine Environmental Change Network (WMECN), were serviced and calibrated as necessary.

The data buoy has remained on station throughout 2011 and data reliability has improved. Data from the buoy is displayed on the website that hosts CCW's weather stations throughout Wales (see Section 7.3).

### **3.3.3 Vehicles**

*Project: MM00/03*

The MNR Toyota HiLux four-wheel drive pick up was exchanged for a Ford Ranger in 2011, although the Toyota can still be seen around the Pembrokeshire area as it has been given over to Sgt. Matthew Howells, who is the Dyfed Powys Police Wildlife and Environment Officer seconded to CCW. The Ford has a slightly larger load area, but is otherwise very similar to the Toyota.

All MNR trailers, including bowser and boat trailers have been serviced annually.

## **3.4 ESTATE WORK**

*Project: ME01/01*

The eelgrass bed in North Haven is protected by marker buoys and these were deployed again in 2011. One of the buoys had to be replaced after it disappeared under suspicious circumstances in 2010, but one of our volunteers was kind enough to donate materials for this purpose.

The buoys are inspected annually by Trinity House as they are classed as navigation buoys.



*Project: ME02/01*



Skomer MNR moorings in Martins Haven and at Dale were maintained with chain being replaced as necessary and regular checking of shackles taking place.

*Project: ME02/02*

North Haven visitor moorings continued to be popular with visiting vessels and were again deployed from Easter through to mid October. During the winter the buoys were replaced with pellet buoys marked 'no mooring' to discourage winter visitors from using un-maintained moorings.

*Project: ME04/01*

Skomer MNR staff continued to manage office rubbish according to CCW's environmental management scheme. Most beach rubbish continues to be dealt with by the local village warden, who also maintains the toilets at Martin's Haven. Occasional litter encountered at sea, including fishing rope, nets and large pieces of wood were recovered if considered to be a hazard to navigation or wildlife. See Section 3.1 for the MNR's green certification efforts.

Neptune's Army of Rubbish Collector's (NARC), who carried out seabed litter clearances at a number of sites around the MNR and Haverfordwest Kayak Club again cleared beaches on Skomer.

### **3.5 DIVING OPERATIONS**

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

Figure 3.1 shows an increase in the number of dives carried out by both staff and volunteers, although the total dive time has remained similar to last year. This reflects the nature of the work carried out in 2011 which consisted of more, but shorter dives. Please note that these figures do not include the 160 or so dives carried out by the volunteer urchin and starfish surveyors.

As in previous years the majority of diving was carried out for biological monitoring projects.

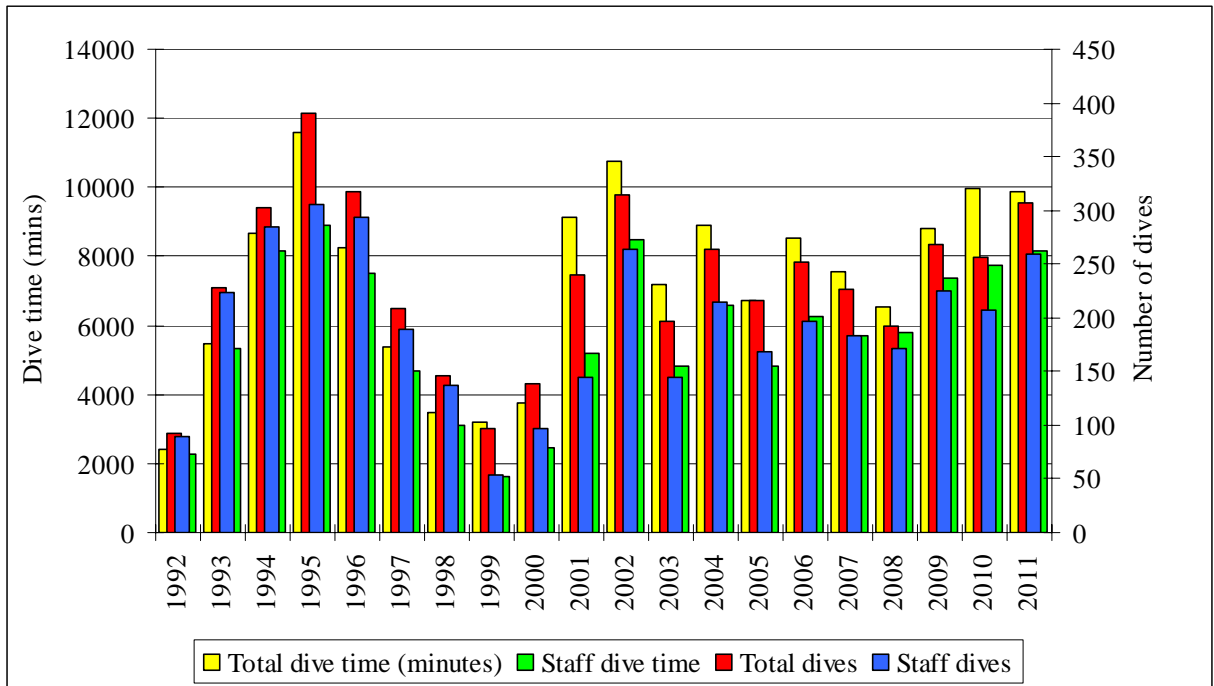
**TABLE 3.2 SUMMARY OF DIVING ACTIVITY 2011**

	<b>MNR STAFF</b>	<b>CONTRACT &amp; VOL DIVERS</b>	<b>TOTAL</b>
Dives	259	48	307
Dive time (min)	8178	1710	9888
Dive time (hrs)	136	28.50	164.80
Average dive time (mins)	32	36	32.21
Diving days			44



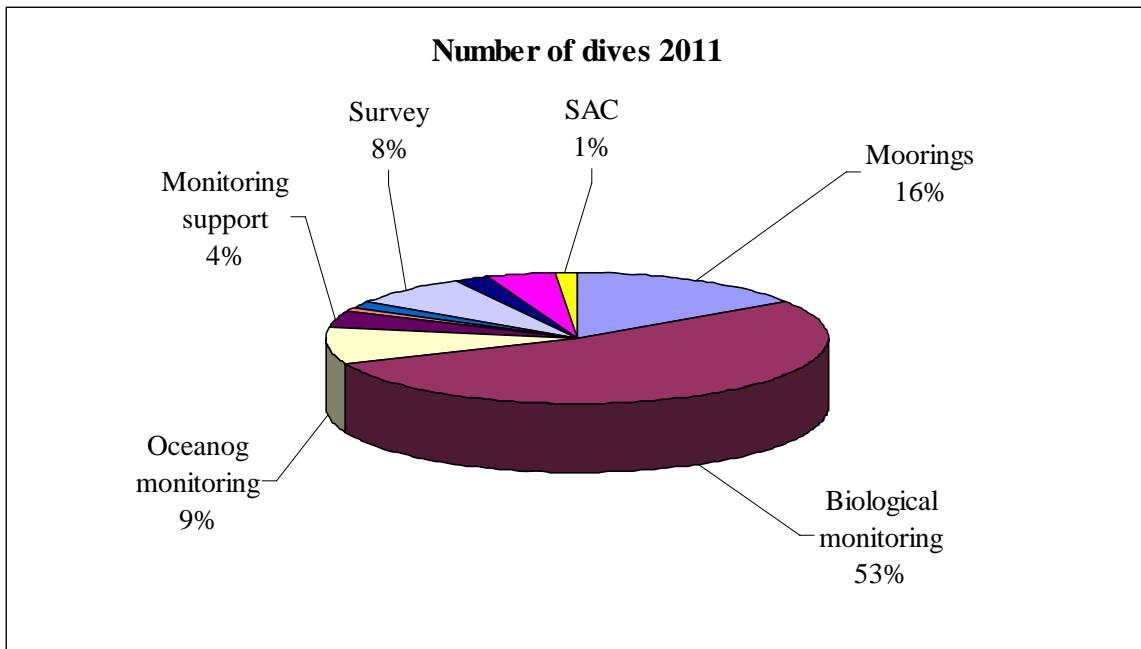
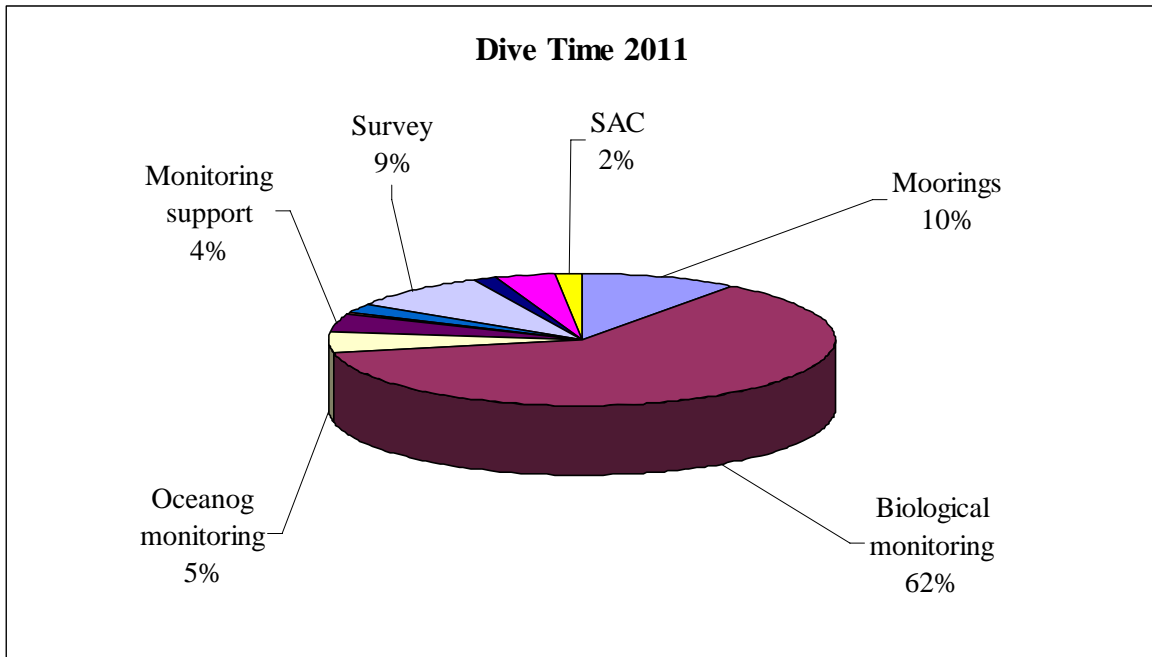
**FIGURE 3.1 SUMMARY OF MNR DIVING ACTIVITY 1992-2011**

(Including contract and volunteer divers where they are part of the MNR diving team)



### FIGURE 3.2 MNR DIVING OPERATIONS 2011

(Including contract and volunteer divers where they are part of the MNR diving team)



## 4 MANAGEMENT

### 4.1 WARDENING AND PATROL

*Project: MP00/01*

Dedicated site patrol on Sundays and Bank Holidays weekends between May and September was carried out at Skomer MNR on 22 out of a possible 25 days in 2011. One day was lost due to bad weather and two others because of commitments to supervising volunteer diving surveys. However, a watching brief was maintained during the volunteer diving surveys and at times when staff were carrying out other work on the water.

For sea time statistics see table 3.1.

Data for all observed visitors and use of the MNR from April 2011 to end of March 2012 is shown in Section 5.

### 4.2 INFORMATION



The MNR interpretative booklet “Stars, squirts and slugs...marine life in an underwater refuge” is an essential component of the interpretative function of the MNR display at Martin’s Haven. The booklet provides written information to support the display’s images and video footage (see section 8.2).

Visitors to the display are also able to obtain free copies of the MNR computer-generated seascape poster created by Mike Camplin.

The MNR “User Regulations” and “Diver Safety” leaflets continue to be distributed and are now supported by Pembrokeshire Marine Code maps with relevant information for boat users.

A laminated version of the MNR zone map is on display alongside the information on Pembrokeshire County Council’s information board posted at the top of Martins Haven Beach.



The scallop byelaw poster, originally designed jointly by the SWSFC and MNR, continues to attract attention and hopefully dissuade those who might otherwise break the scallop “no-take” byelaws.

See Section 8 for other interpretative material and for examples of the MNR in the news.

## 4.3 MANAGEMENT ISSUES

### 4.3.1 Dredging/beam trawling

No beam trawling or dredging was observed in 2011, although a beam trawler was observed to anchor near the MNR and scallop dredgers regularly pass through on their way to grounds in Cardigan Bay. An anonymous report of a vessel intending to dredge for scallops within the MNR was passed on to WG Fisheries Enforcement staff (see Section 6.3).



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

Vessels operating in the MNR in 2011/12 are listed in Section 5.1 and for fishing effort estimates see Appendix 1.



MNR staff continued to record incidents of potting gear proximity to fragile species in 2011 and a number of lost pots have also been reported by fishermen or encountered during monitoring dives. MNR staff endeavour to recover lost pots if possible, but otherwise they are left in place, but opened to prevent “ghost” fishing.

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

None observed in 2011.

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

No collection of shellfish was recorded in 2011.

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

None observed in 2011.

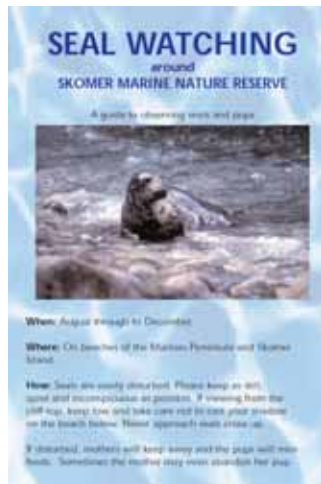
### 4.3.6 Collection of specimens for education and research

Permits for collection of specimens were renewed for Valerie Morse, Pembrokeshire Darwin Science Festival and issued to CCW Marine Monitoring team for collecting small samples of sponge.

#### 4.3.7 Disturbance to seals

*Project: RH03/04 Watching brief*

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



The MNR 'Seal Watching leaflet', containing information on seals and how to minimise disturbance whilst watching them, was distributed from the MNR exhibition, by WTSWW staff at Lockley Lodge and by the NT car park attendants.

Entanglement of adult and immature seals in fishing net continues to be recorded as part of the seal monitoring contract with WTSWW. Twenty nine seals were seen around Skomer in 2011 with evidence of being entangled in nets at some time in their lives, most commonly a deep scar around their necks, sometimes with a small amount of netting still embedded. Twenty of the seals seen were returning individuals; the other nine were previously unknown. Some of the seals appear to cope well despite their injuries, even successfully raising pups, but the potential for further injury, infection to existing wounds or getting trapped must be high.



There were no records of disturbance to seals during 2011.

#### 4.3.8 Disturbance to cliff nesting seabirds

*Project: RH03/03 Watching brief*

Two incidents were reported by Skomer Island staff in 2011 involving diving vessels. One occurred when a RIB carrying divers got too close to guillemot ledges in North Haven and the other when there was an accidental release of high pressure air by a dive boat in North Haven resulting in all the puffins taking flight.

#### 4.3.9 Spear fishing

*Project: RH36/01 Watching brief*

In July 2011 MB encountered two spearfishers in Martin's Haven, who agreed not to use their spearguns there when they were made aware of the area's MNR status.

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

See Section 5 for numbers of anglers observed.

Discarded or tangled fishing line is still being observed at a number of sites within the MNR, particularly those adjacent to popular shore angling ledges. Affected wildlife includes spider crabs and Ross corals, but many areas of kelp are thick with angling debris.

Neptune's Army of Rubbish Collectors have kept up their efforts at the MNR as well as other sites around Pembrokeshire clearing angling litter from the seabed.

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

Two yachts were seen anchoring in the North Haven eelgrass bed in 2011.

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

There were no reports of speed limit byelaw infringements in 2011.



#### **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 reports of oil pollution were received by MNR staff in 2011.

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

Bathing water quality data for Martins Haven continues to be obtained from Pembrokeshire County Council. See table below for 2011 results.



<b>Sampling Date</b>	<b>Sampling Time</b>	<b>Total Coliforms /100ml</b>	<b>Faecal Coliforms /100ml</b>	<b>Faecal Streps /100ml</b>
04/05/2011	1010	<10	<2	<2
09/05/2011	1140	<10	2	4
16/05/2011	1030	<10	<2	<2
23/05/2011	1035	<10	<2	2
01/06/2011	1050	<10	<2	<2
06/06/2011	1045	<10	<2	2
13/06/2011	1100	18	2	4
20/06/2011	1045	<10	<2	<2
27/06/2011	1050	<10	<2	<2
04/07/2011	1040	<10	<2	<2
11/07/2011	1110	<10	2	2
18/07/2011	1045	<10	<2	2
25/07/2011	1105	<10	2	<2
01/08/2011	1040	<10	2	4
08/08/2011	1110	<10	<2	<2
15/08/2011	1100	<10	<2	<2
22/08/2011	1045	<10	2	<2
31/08/2011	1045	<10	2	4
05/09/2011	1050	<10	2	<2
12/09/2011	1045	<10	11	4

## 5 VISITORS AND USE OF THE MNR

### 5.1 COMMERCIAL USE

*Project: RH90/01*

Commercial fishing activity in Skomer MNR was recorded as in previous years by recording observations of fishing vessels operating in the MNR and by mapping of pot marker buoy distribution during on-water patrols.

22 pot maps were produced in 2011 using GPS and these have been transferred to the GIS mapping system MapInfo. The summary maps for 2011 can be seen in Appendix 1 together with a graph summarising fishing effort since 1989.



Fishing boats operating in the MNR during 2011 were recorded as Crowded Hour (M1140), Lydon (M1050), Barbara Anne (M33), KTJ (SU02), PW9, PH165, BS17, M165, M1, M7 and M1094. Some of these were only seen once, with the majority of fishing effort being put in by about half of these vessels.

Potting activity appears to be reaching a plateau in terms of effort and area covered, although effort is now some 3 to 4 times higher than recorded prior to 2002.

### 5.2 RECREATIONAL USE

*Project: RH33/01*

Types and numbers of visitors recorded for 2011 are summarised in Table 5.1 and Figures 5.1 to 5.4.



“Parade” of surface marker buoys – Martin’s Haven

Recreational visitor numbers other than divers were quite low in 2011, perhaps as a result of some truly miserable weather that coincided with the main holiday period in July and August. Diver numbers are similar to 2010, although this may be influenced by MNR staff being out on the water recording for more days.

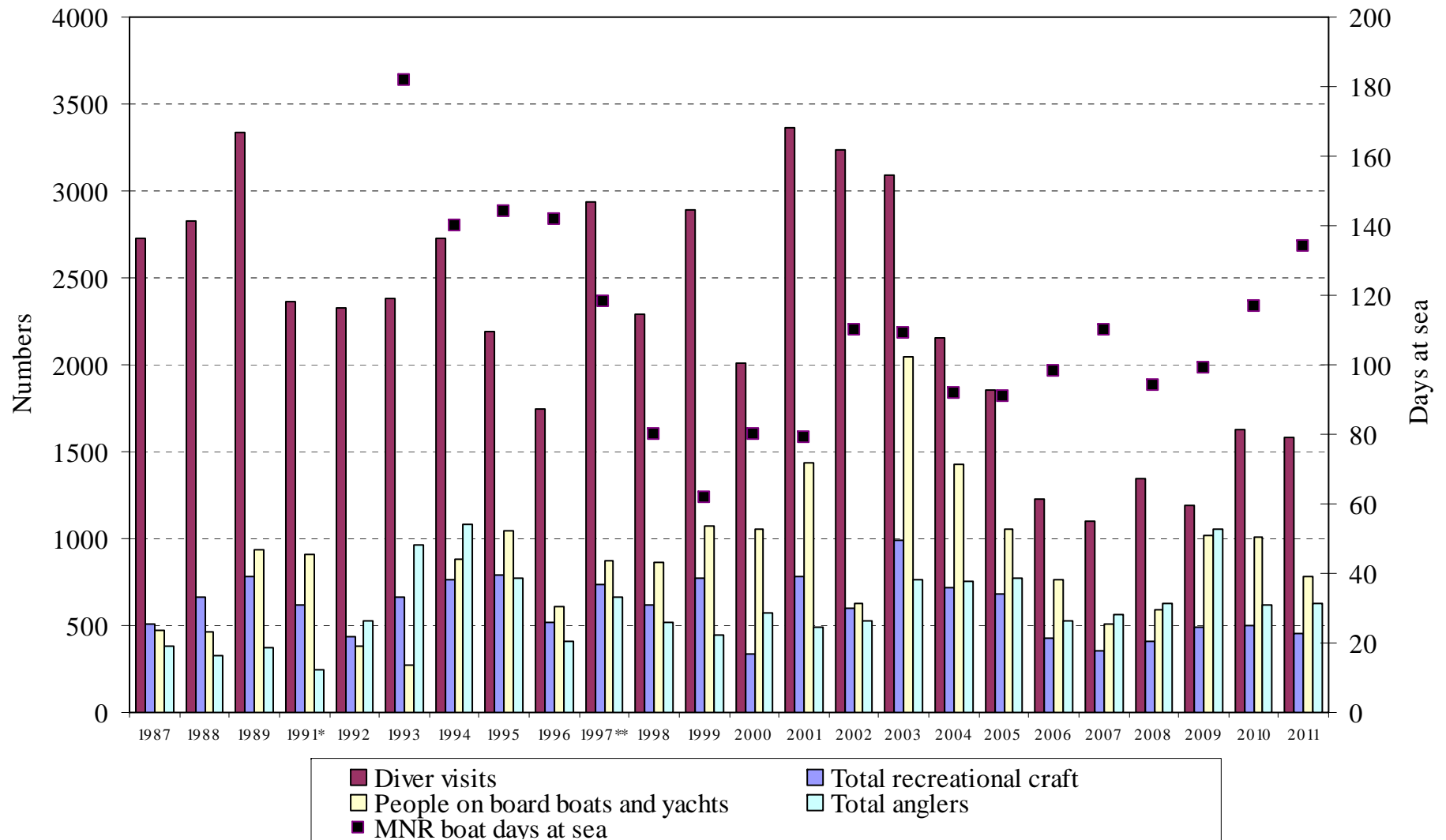
Kayaks, “sit-on-tops” and canoes suddenly became popular in 2008 but have decreased since then. Shore angler numbers remain low, but the number of anglers coming by boat has stayed high, perhaps as a result of local landowners restricting access to anglers because of littering.

Figures do not include the routine sailings of the Dale Princess or commercial sightseeing boats passing through the MNR.

MNR Honorary wardens and the Skomer Warden and staff have again passed on records, which are very useful in gaining as comprehensive a picture of the use of the MNR as possible.



**Figure 5.1 Recorded Recreational Use Skomer MNR**



**TABLE 5.1 RECORDED RECREATIONAL USE OF SKOMER MNR**

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

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

Figure 5.2 Skomer MNR 2011 SCUBA divers

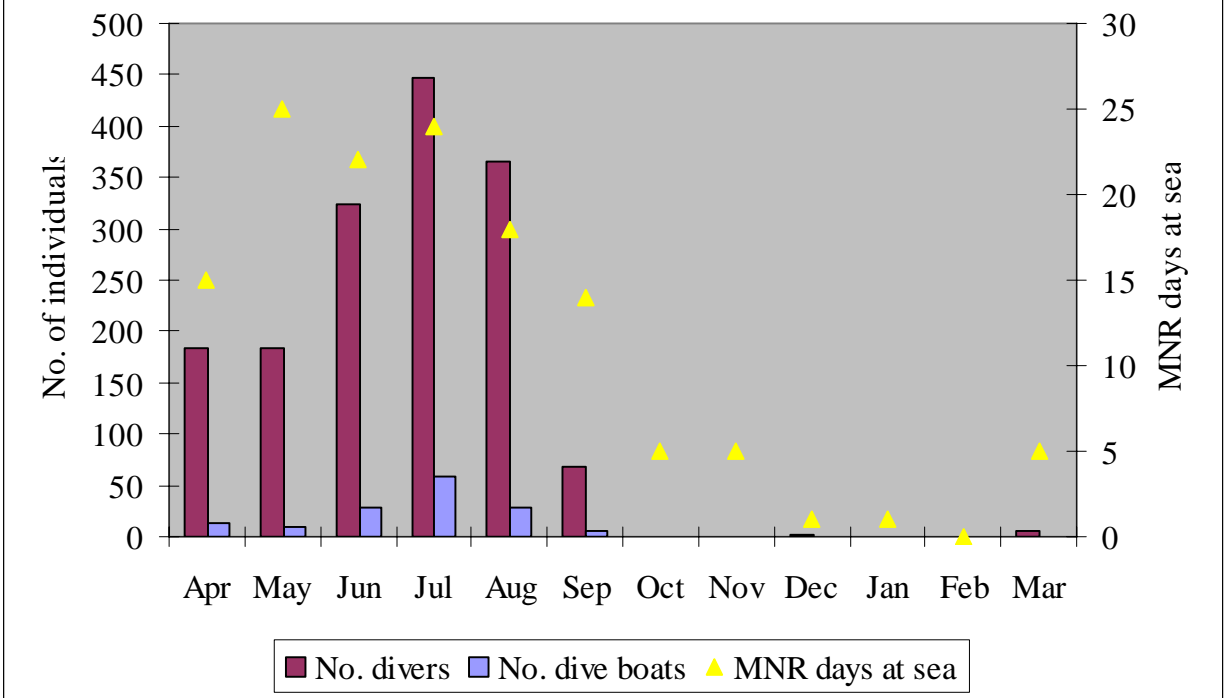


Figure 5.3 Skomer MNR 2011 Recreational Craft

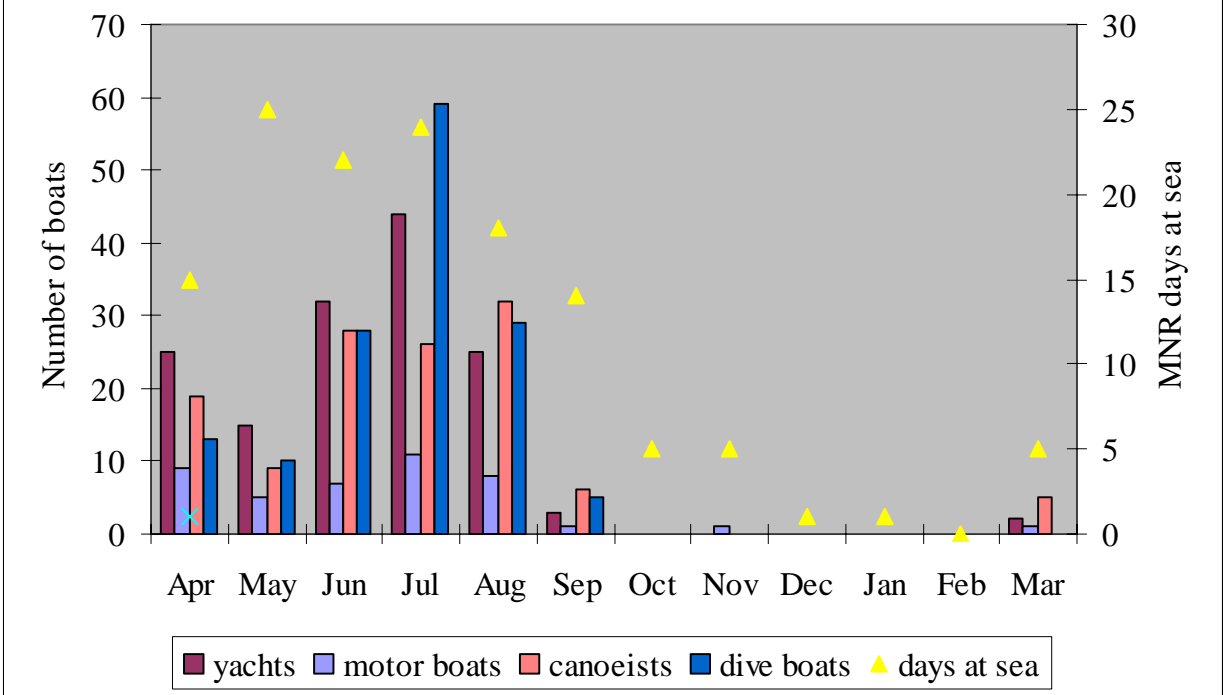
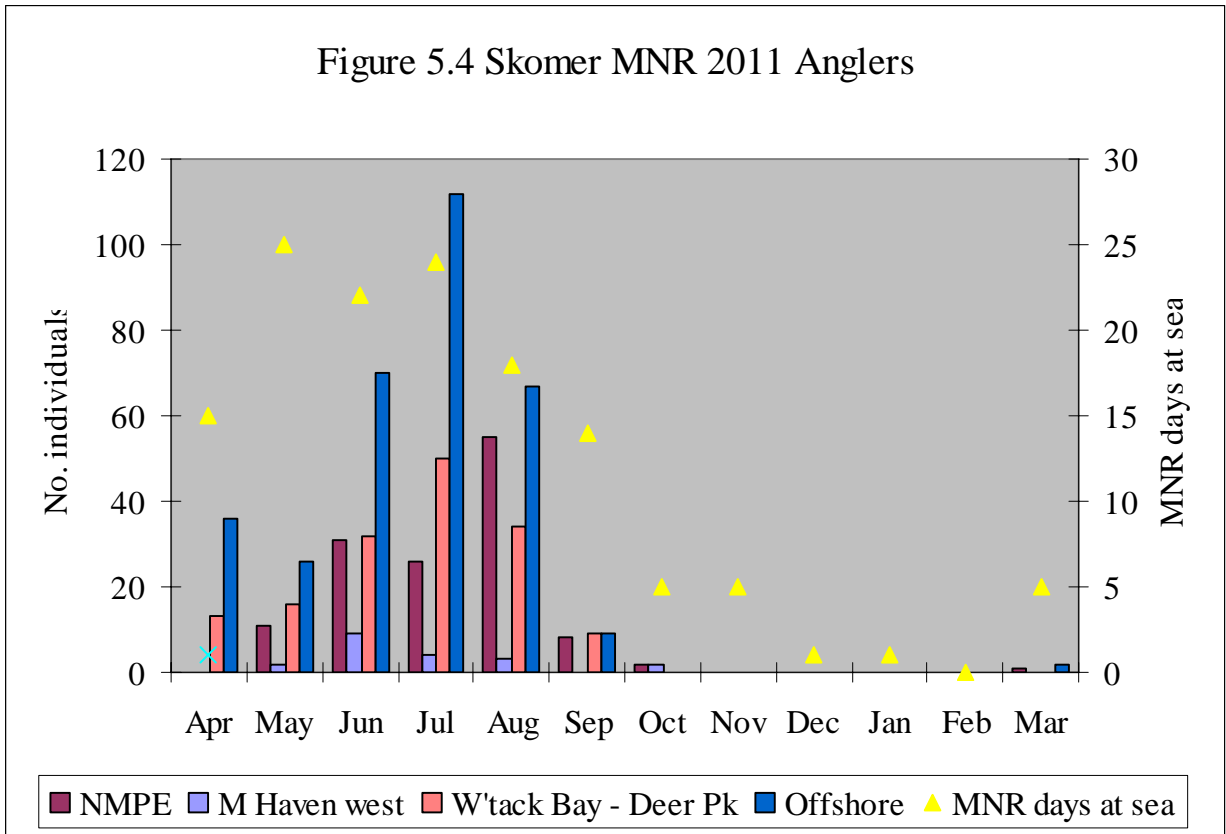




Figure 5.4 Skomer MNR 2011 Anglers



## **6 LIAISON AND ADVISORY COMMITTEES**

### **6.1 ADVISORY COMMITTEE**

*Project: ML80/01*

The annual Advisory Committee meeting was held in April 2011. Dr Robin Crump continued as chairman of the main committee, and KL and MB acted as secretariat. Presentations were given summarising the annual report and project status report.

In February 2012 Dr Chris Wooldridge of Cardiff University announced his retirement and as a consequence his retirement from the Advisory Committee. His support will be much missed and his contribution over the years, through the main committee and through the education and research committee, has been invaluable.

It was with great sadness that we learnt of the death of David (Dai) Bray in the summer of 2011. Dai was a great supporter of the MNR, especially in the early years and was tireless in his efforts to represent the interests of fishermen in the south west of Wales both at a local as well as a national level. He will be greatly missed.

### **6.2 WILDLIFE TRUST SOUTH AND WEST WALES**

*Project: ML30/02*

Liaison with Skomer Island NNR staff and Wildlife Trust South and West Wales continued throughout the year on an informal basis and via the MNR Advisory Committee.

The Trust was also the contractor for the annual seal pup monitoring project (see Section 7.2).

PN gave a talk to the Ceredigion local group of WTSWW in Aberystwyth, with an audience of over 100 made up of University students and local group members.

Issues to do with long early morning queues at Martin's Haven for Skomer boat tickets at peak times appear to have lessened and there appear to have been fewer conflicts with other visitors trying to get vehicles to the bottom of the lane to unload diving gear or kayaks. WTSWW staff have made an effort to be present earlier in the mornings when demand is expected to be high.

### **6.3 WELSH GOVERNMENT FISHERIES ENFORCEMENT**

*Project: RH90/01*

SWSFC ceased to exist as of April 2010, but liaison has been maintained with staff who are now part of Fisheries Enforcement within WG's Department for Rural Affairs and they have maintained membership of the Skomer MNR Advisory Committee. Fisheries staff have assisted the MNR with permissions to carry out experimental "catch and release" lobster potting (see Section 7.3) and dealing with anonymous reports that a scallop dredger was intending to operate within the MNR.

## **6.4 PEMBROKESHIRE COAST NATIONAL PARK**

*Project: ML40/03*

Close liaison continues with:

Jane Hodges, Advisory Committee member and HW;

Mike Howe: Head of conservation;

James Parkin: Director of Recreation, Marketing & Communications;

Ian Meopham: North Pembrokeshire Ranger and member with PN of the Pembrokeshire Marine Code working group

## **6.5 NATIONAL TRUST**

*Project: ML30/03*

Skomer MNR staff continued to liaise with National Trust. Informal liaison is maintained with Andrew Tuddenham and Richard Ellis through the Advisory Committee and visits to Martin's Haven.

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

## **6.6 OTHER ORGANISATIONS AND INDIVIDUALS**

Liaison with a wide range of other organisations and individuals has continued. Many organisations were involved in the major pollution training event, Exercise Celtic Coast (see Section 2.3)

*Project: ML30/01*

*Project: ML50/01*

*Project: ML40/01*

Local community interests included MNR 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. PCC continue to kindly supply water quality results for Martin's Haven (see Section 4.3.15). KL was also involved in Pembrokeshire Fish Week.

*Project: ML60/01*

MNR 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. Liaison throughout the unexploded mine incident was highly effective and resulted in the best outcome in terms of both public safety and environmental concerns.

*Project: ML80/02*

Liaison with local fishermen continues with MNR staff making a point of introducing themselves to fishermen new to the MNR as and when opportunity presents out on the water.

One local fisherman continued to serve as an Honorary Warden.

*Project: ML80/06*

*Project: MI20/01*

Liaison with a number of different academic establishments continued in 2011:

MNR staff heard in 2011 that the application made by Herriot-Watt University to NERC for a PhD studentship to carry out research at Skomer MNR had been unsuccessful. The student would have been “embedded” with the MNR team for much of the field season and in return for assistance with their own project (related to the protected scallop population of the MNR) would have been available to assist with MNR fieldwork.

Dr James Bell continues his connection with the MNR, with sponge quadrat photos from Skomer being worked on by his PhD students at the Victoria University of Wellington, New Zealand (see Section 7.3). Dr Bell is seeking to publish the work in the scientific press and is keen for the work to continue with future PhD students.

PN travelled to UW Aberystwyth to meet MSc students studying developments in marine legislation. The visit to Aberystwyth coincided with a request from university staff for PN to talk to undergraduates about careers in marine conservation and also with an evening talk to the WTSWW local group (see Section 6.2).

Skomer staff continue to deal with numbers of students requesting information, help with projects or provision of work placements. Students from Plymouth, Swansea, Coventry, Liverpool and Southampton Universities took part in MNR projects, used data supplied by the MNR or carried out their own work at Skomer with the support of MNR staff.



Hannah Schuster – Southampton University

Links with Plymouth Marine Laboratories have continued through the MNR and CCW's adoption of the MarClim methodology for the study of long-term trends in shore communities. MB and other MNR staff carried out MarClim surveys both within the MNR and at 5 sites in Pembrokeshire. Also linked to PML is the work MNR staff carry out to monitor plankton at Skomer (see Section 7.3).

The MNR's collaboration with the Institute of Oceanology at the Polish Academy of Sciences has continued with the maintenance of settlement plates as part of a Europe-wide research project (see Appendix 3 for project summary).

The MNR has also hosted or given talks to groups from Swansea University, Cardiff University, Pembrokeshire College and Atlantic College.

*Project: ML80/05*

MNR staff continue to liaise with a wide variety of other organisations and individuals, including:

Pembrokeshire Marine Code, UK BAP workers, WWF, JNCC, MCS, Pembrokeshire Coastal Forum, Milford Haven Environmental Surveillance Group, the Pembrokeshire Marine SAC

Relevant Authority Group, the National Coastwatch Institution, SPEEL, CEFAS, Dyfed Powys police and the Emu Ltd team carrying out hydrographic surveys in St Brides Bay.

The MNR hosted the newly-formed JNCC diving team aboard Skalmey during their 2011 Pembrokeshire-based dive training event.

PN continues to serve on the executive committee of Natur, the Welsh institute for countryside and conservation management. He and MB provided a stand and PN gave a presentation at the Natur-organised Countryside Fair at Llanerchaeron in September 2011.



## **6.7 WIDER MARINE ENVIRONMENTAL INITIATIVES**

KL continued as the southwest Wales coordinator for the MCS Seasearch project in 2011.

MNR staff have continued their involvement with the Pembrokeshire Marine Code and hosted visits from the Wales Environment Link – an umbrella group made up of members from environmental non-government organisations in Wales.

MNR staff helped the Wildlife Trusts Wales with comments on the draft of their MPA booklet “Living Seas”.

MNR staff have continued to be involved with MarClim (see Section 6.6 above).

## **6.8 MARINE AND COASTAL ACCESS ACT**

*Project: AS00/01*

PN has been increasingly involved in CCW’s work in drafting potential site maps for the suite of highly protected Marine Conservation Zones and other elements of CCW’s work for WG on the Marine Conservation Zone Project, Wales. The first of three consultation periods is due to be launched in April 2012. For the revised Project timetable see Appendix 4.

## 7 SCIENCE

### 7.1 RESEARCH AND EDUCATION SUBCOMMITTEE

No meetings of the research and education subcommittee were held in 2011.

More detail on all of the research projects undertaken in the MNR can be found in the “Skomer Project Status Report 2011/12”.

### 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 MNR staff on the mainland sites (See Appendix 2 for data, Appendix 3 for report summary and CCW Regional Report CCW/WW/11/1).



In 2011 total pup numbers for the MNR reached 260, which is 43 pups higher than the average for the last 20 years. Pup survival was 77%, which is 3% below the average. The majority of deaths were caused by abandonment or separation and by periods of bad weather. There were no signs of disease. The most prolific period was September with 42% pups born in the reserve, 33% were born in October and 18% in November/December. The last pup of the season was born on 21<sup>st</sup> December 2011.

Photo-monitoring continues to show that Skomer’s seal population is not isolated: 2011 was the fourth year an attempt has been made to photograph all the pupping cows on Skomer, but still only 58 of the identified 124 cows (47%) are known to have pupped on the island in previous years (Boyle 2011). Valuable liaison with the Cornwall Seal Group has helped in the photo identification work.

The bull seal thought responsible for killing pups in previous years returned to Skomer again in 2011. Although not actually seen killing any pups this year, at least five pups washed up in South Haven with the distinctive injuries seen in previous years. Another pup was seen alive on the rocks outside Seal Hole with similar but more superficial wounds and is thought to have survived an attack.

For detailed mainland site results see Appendix 2.

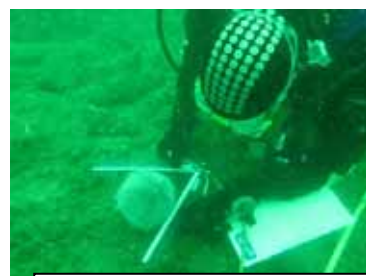


### 7.3 IN-HOUSE MONITORING

#### Project code: RF73/01 URCHIN AND STARFISH POPULATIONS



The survey was completed over 4 days by a team of 20 volunteer divers. *E. esculentus* were counted and the diameters were measured along 30m transects at different depth zones. *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 9.1 and 3 per 100m<sup>2</sup> respectively for the whole MNR, but density varied between sites. A normal size frequency distribution for *E. esculentus* was found and little variation in size range or mean density was found at different depths.



Photograph: Greg Knapman



*Echinoplutei* larvae were found in plankton samples collected during the year with abundance peaking in August. The larvae could not be identified to species level, therefore presence of *E. esculentus* larvae could not be confirmed. Late stage *Luidia spp* larvae (see photograph) were identified in September.

For more detail on this project see “Skomer Marine Nature Reserve - Distribution and Abundance of *Echinus esculentus* and selected starfish species 2011 (CCW Regional Report CCW/WW/11/04).

#### Project code: RA01/01 RECORD CETACEANS

The crew of the Dale Princess have continued to record cetacean sightings within the MNR. These records are collated along with sightings from Skomer Island staff and MNR staff.



#### Project code: RB01/01 RECORD VAGRANT & ALIEN SPECIES

Vagrant and alien species were recorded by MNR staff and the crew of the Dale Princess. Species recorded in 2011 included sunfish (*Mola mola*).

## **Project code: RB03/01 MONITOR LITTORAL HABITATS / COMMUNITIES**

Viewpoint digital photographs were taken for all sites on Skomer Island, on the Deer park and at Martins Haven.



All ten permanent quadrats sites within the MNR were surveyed.

The results in summary:

Barnacle coverage has been variable between sites over the last 8 years. In 2011 a decrease of barnacle coverage in the upper shore was found across most sites, a drop at all sites was recorded in the middle shore and a drop at all sites except South Stream lower shore. Following a huge spat fall of *S. balanoides* in March 2010, the middle and upper shores are starting to show a trend of an increasing presence of *S. balanoides* with a corresponding decreasing in *Chthamalus spp.*

The mean limpet size recorded at sites shows a stable trend at most sites, the Lantern shows the greatest fluctuations.

In the middle shore highest numbers of limpets are found on the north facing shores, but these figures tend to be the most erratic. 2007 appears to have had a dip in numbers on 6 of the sites, which all showed an increase the following year. On the middle shore the numbers have been stable for the past 3 years.

In the upper shore most sites have a low abundance of limpets. Double cliff has significantly more limpets than any other site (north facing shaded cliff) and a declining trend from 2003 – 2006.

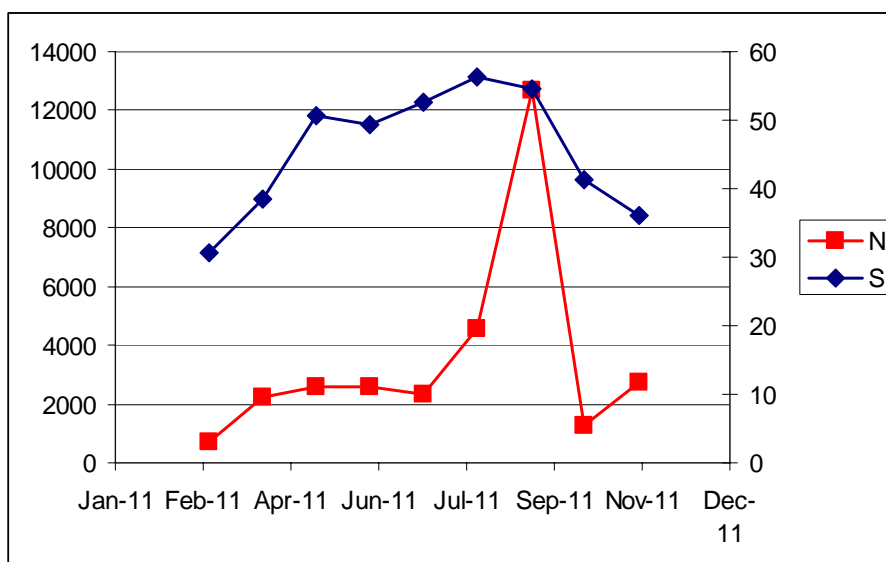
## **Project code: RB04/01 PLANKTON RECORDING**

Samples continue to be taken using a 200um zooplankton net vertically hauled from 40m to replicate the methods used by Plymouth Marine Laboratory to allow comparison with their existing “L4” time series.

In 2011 additional water samples were taken to provide a record of the phytoplankton species present. This can be used to identify species responsible for micro algal “blooms”. A second set of water samples was also taken at 1m below the surface and will be used to estimate chlorophyll content. All samples are analysed by specialist contractors.



Samples were taken from March 2011 to November 2011 with weekly samples between May and September. All the samples were sent to Plymouth Marine Laboratory for analysis.



120 entities were found in 2011. Some of these could only be identified down to the major group (e.g. bivalve mollusc) while others could be identified to species and sexed. This number also includes members of the same species at different life stages.

The spike in abundance in August was due to high numbers of *Appendicularia* (Urochordates) and *Cirripedia* nauplii (barnacle larvae).

**Project code: RB06/01 SPECIES RECORDING**

Skomer MNR continued to host to a Europe-wide research project led by Professor Piotr Kuklinski from Warsaw Oceanographic Institute and the Natural History Museum London. Settlement plates at different locations within the MNR have been maintained with a monthly programme of photography and panel exchange at each site. The panels’ colonising fauna will be examined by Piotr. This project is already established at sites in Spitzbergen, the Baltic and the Mediterranean.



Crawfish *Palinurus elephas* became a national Biodiversity Action Plan species in 2008. In 2011 it was again recorded in very low numbers in the Reserve by MNR staff and volunteers. These records continue to be entered into the online recording scheme that has been set up on the Seasearch website [www.seasearch.org.uk](http://www.seasearch.org.uk) with the aim of gaining better knowledge of the historical and current status of this species in the UK.

Other species of note in 2011 were further records of the “sponge vandal” crab *Dromia personata* and a free floating goose barnacle *Dosima fascicularis*.





A rather less welcome visitor has been recorded in the form of the invasive slipper limpet *Crepidula fornicata*, which was found on a scallop in the MNR. Next year's scallop surveyors will be briefed to record this species as part of the volunteer diver scallop survey.

Habitat descriptions and biotopes codes have been completed for faunal communities on rock and boulder at Skomer MNR monitoring sites.

Abundances for a selection of characterising and important species for each site have also been completed and this has been entered onto Marine Recorder. The descriptions, biotopes and species lists do not include algal communities or mixed sediment sites.

**Project code:** RM03/01      **MONITOR EPIBENTHIC ROCK COMMUNITIES:MESO-SCALE**

One set of stereo photographs was taken at the North Wall and one at the Thorn Rock site for epibenthic rock community photo monitoring in 2011.

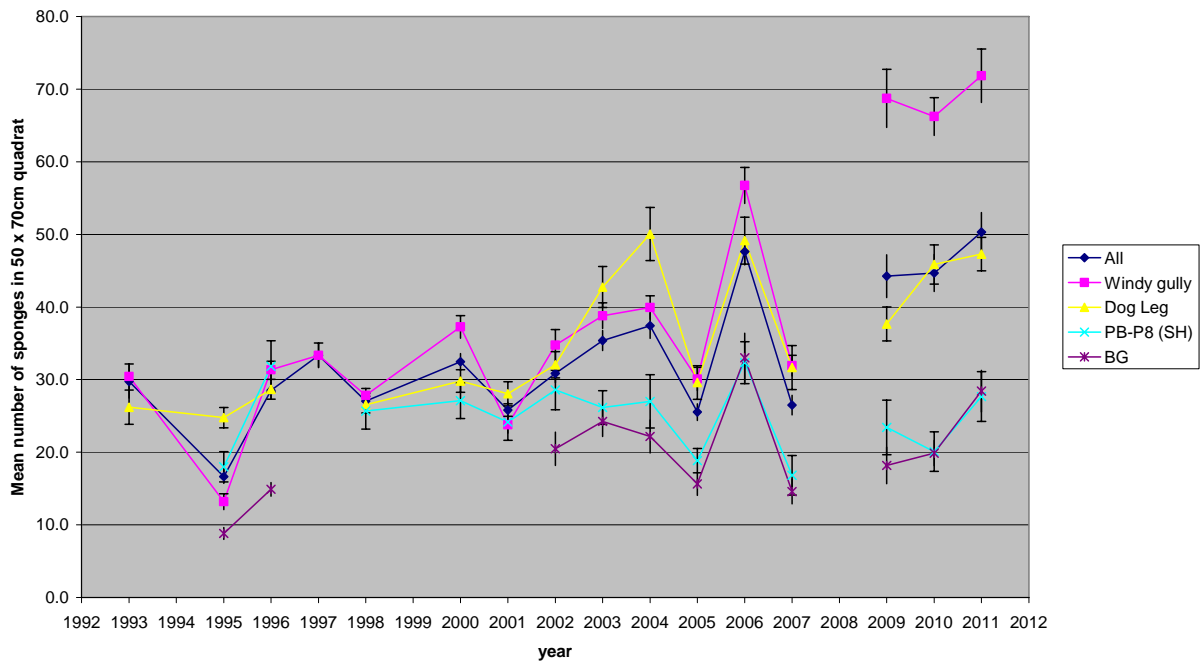
**Project code:** RM13/01      **MONITOR SPONGE POPULATIONS**

Annual sponge monitoring photographs were taken at all transects in 2011 and also of 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). The study compared Skomer data with those of other sponge assemblages in Indonesia and New Zealand. A peer-reviewed paper on the work is in preparation.





## Mean number of sponges counted at 4 sites 1992 - 2011



At least part of rise in numbers of sponges from 2009 is thought to be due to the increase in image quality of the digital cameras now used.

Also carried out by specialist contractors in 2011 was the four-yearly “inventory” of sponge species. The current total of sponges ever recorded at Skomer now stands at about 120.

### Project code: RM23/01 MONITOR EUNICELLA POPULATION



In 2011 there were 3 confirmed losses of natural fans from the 2010 season, including a “baby” fan BHO23. POL7 was not found for the second year running, however a thorough search was not made in 2011 and its status will be confirmed in 2012. One sea fan was not found for the first time in 2011, this was WAY 15, and its status will also be confirmed in 2012.

There were no new recruits in 2011. The cluster of 5 “baby” fans at Bull Hole are all present and branching can now be seen in two individuals.

There was one new fan at Rye Rocks added to the survey in 2011, this is a mature fan and therefore not considered a new recruit.

The attached fan TRK8 was confirmed missing. Although the piton is still in place the fan has not been seen since 2009. Two further attached fans were found missing, TRK9 a tiny fan which had been

attached to the Thorn Rock monitoring frame and seen only as a stick in 2011, and WHK5 where the fan and piton were both missing in 2011.

**Population survey results 1994 -2011:**

year	Sites surveyed	Total fans recorded	Total natural fans	Total attached fans	New recruits (babies)	Losses (confirmed)	Missing (to be confirmed)
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		1	
2003	9	95	94	1	1		
2004	9	97	96	1			
2005	10	108	106	2	1	1	
2006	10	113	111	2	7		
2007	10	115	113	2	1	2	
2008	10	120	117	3		1	
2009	10	121	115	6			
2010	10	120	115	5	0	3	
2011	10	119	116	3	0	3	2
totals					10	13	2

Condition assessments of sea fans were carried out again in 2011 and detailed results can be seen in “Skomer Project Status Report 2011/12”. In 2009 a large drop in necrosis was observed with records of its presence in only 12% of the surveyed sea fans however the occurrence of necrosis increased in 2010 to 54% and was 44% in 2011. The average level of necrosis for the last ten years (since 2002) is 52.6%.

An annual average of 59.6% of sea fans have been recorded with attached or entangled epibiota for the last 10 years of surveys. In 2011 this was on 63% of the sea fans. The epibiota include tangled and attached dog fish eggs, drift algae, bryozoans and hydroids. On occasion bryozoan sea fingers, *Alcyonidium diaphanum* and dead men’s fingers, *Alcyonium digitatum* have both been recorded growing on a sea fan.

*Simnia patula* was found on one fan at North Wall east during the 2011 survey. The Pink sea fan slug *Tritonia nilsodhneri* was not recorded in 2011.

**Project code: RM53/01 MONITOR SCALLOP POPULATION**

In addition to the four-yearly volunteer diver scallop survey MNR staff have been deploying scallop spat collectors to try to assess larval recruitment for the Skomer population. Collectors were put out in early 2011 and again in mid summer, but neither have had any success, despite large numbers of another scallop species *Chlamys varia* being found.



**Project code: RM23/03 MONITOR ALCYONIUM GLOMERATUM POPULATION**

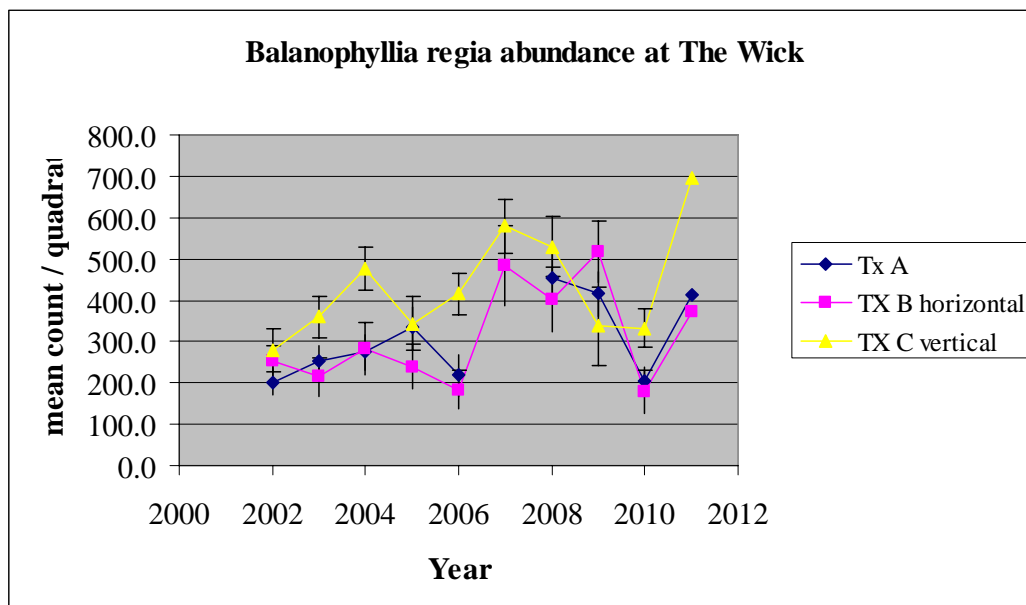


The group of large individual colonies at the North Wall stereo site has remained stable for over 10 years according to photographic monitoring and Thorn Rock and Rye Rocks also show stable colonies, whereas the North Wall main wall and North Wall east, show a decrease in density and there has been a decrease in the number of quadrats in which *A. glomeratum* is recorded at Sandy sea fan gully.

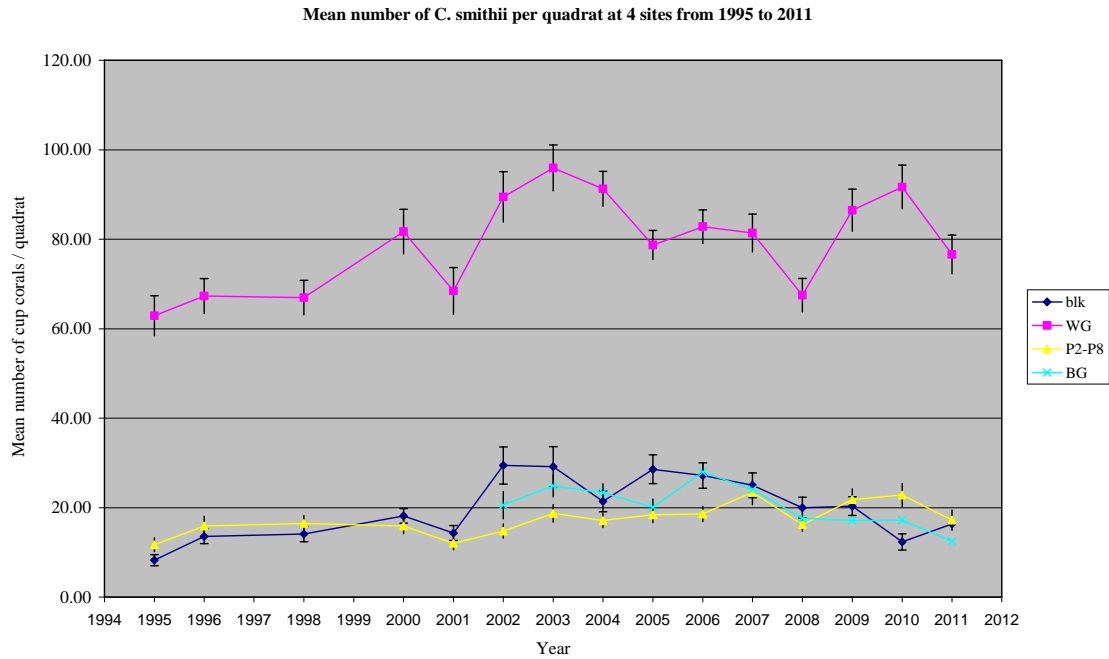
**Project code: RM23/04 MONITOR CUP CORAL POPULATIONS**

All quadrats were completed for both *Caryophyllia smithii* and *Balanophyllia regia*.

The average number of *B. regia* has fluctuated at transects A, B and C. 2007 and 2008 data shows a general increase in abundances for each transect and this remained stable in 2009 for transect A and B. In 2010 a drop in numbers at all sites was observed this is probably due to a dense covering of silt across the site and very poor photographic conditions. In 2011 the numbers increased, probably due to low silt levels making more individuals visible in the photographs.



*C. smithii* shows changes in mean abundance, which again may be due to variable levels of surface sediment affecting the actual numbers visible during recording.

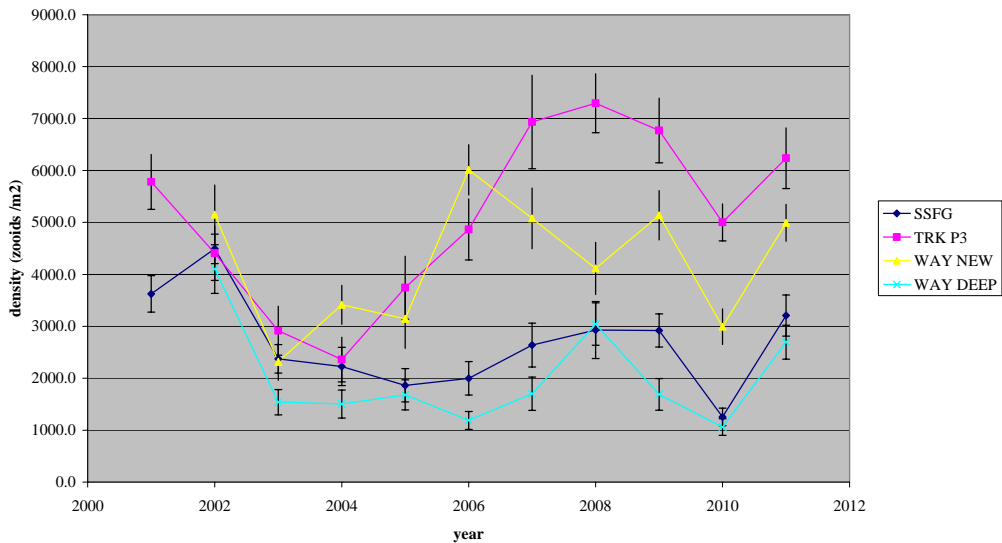


**Project code: RM23/05      MONITOR PARAZOANTHUS AXINELLAE**

All the colonies are still present.  
 The density of polyps seems very erratic, whereas the transect frequency counts (which indicate the size of the colony) are more stable.

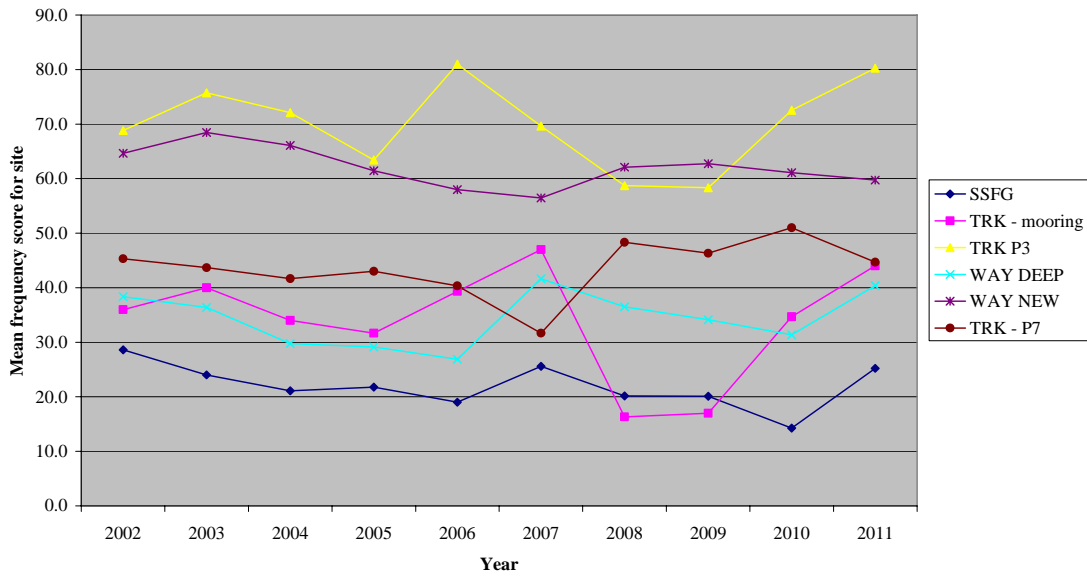


**Mean *P. axinellae* density / m<sup>2</sup>**



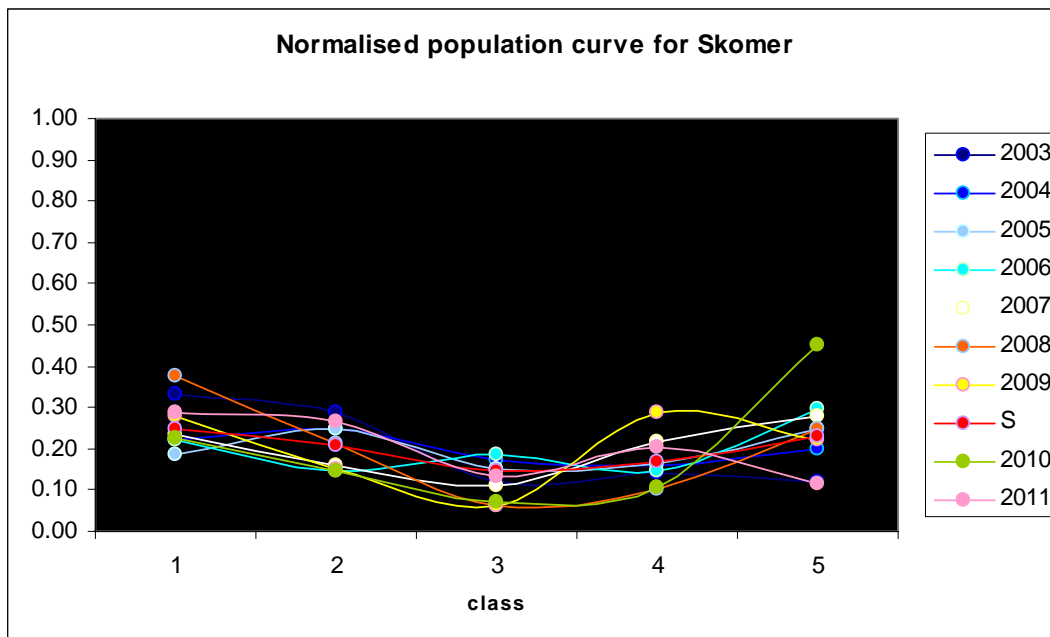


Parazoanthus transect results 2002 - 2010



Project code: RM63/01 MONITOR PENTAPORA POPULATION

The morphological classification method developed by RG in 2006 and revised in 2010 was applied to the 2011 dataset.



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 MNR.

For more details see “Skomer Project Status Report 2011/12”.

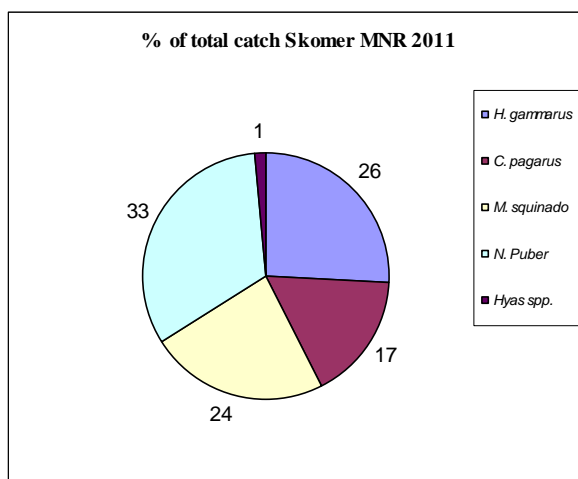
**Project code:** RM44/01      **RECORD COMMERCIAL CRUSTACEAN POPULATIONS**



After many years of false starts commercial species monitoring has finally started at Skomer MNR, with MNR staff carrying out small scale lobster potting on a “catch-and-release” basis.

Three parlour pots (20cm throat) were set at four sites: North Castle, Wooltack Bay, Renney Slip and Thorn Rock. The pots were hauled every 3 days during the sampling period. All the catch were identified and measured (crab species: carapace width, lobsters: carapace length, all species: sex). Individuals were tagged with cotton string on one leg that would last the duration of the survey and re-caught individuals were noted.

leg that would last the duration of the survey and re-caught individuals were noted.



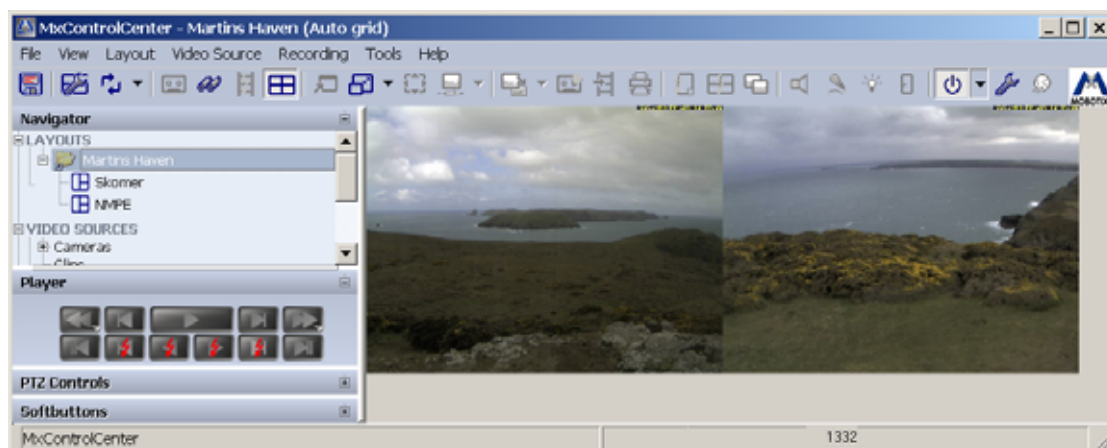
During the September deployment all *C. pagurus* & *H. gammarus* were checked for brown spot disease contributing to a Swansea university research project by M. Francoise & E. Wootton.

More details are available in the Skomer Project Status Report 2011/12.

**Project code:** RP04/01      **RECORD METEOROLOGICAL FACTORS**

A Campbell Scientific Environmental Change Network (ECN) compatible weather station with a CR1000 measurement and control system was installed in 2006. In March 2009 the Skomer MNR data was linked to the Environmental Change biodiversity Network project (ECBN), which in turn links into a UK wide project.

Data from the weather station is automatically updated onto a website (<http://environmental.change.ccw.gov.uk>), from where it can be viewed graphically or downloaded in spreadsheet format. The same page also shows images from the two new webcams mounted near the weather station in the Deer Park coastguard hut. These replaced the single camera previously used, which had suffered damage to its image sensor. One of the cameras looks towards Skomer and the other overlooks the north Marloes peninsula area of the MNR. Images from the cameras are stored on hard drive in the MNR office.



The weather summary for 2011:

Maximum temperature (°C)	21.8 (September)
Minimum temperature (°C)	-2.8 (Feb)
Annual Maximum gust (knots)	80.9 (December)
Direction of Maximum gust	261.5°

**Project code: RP63/01MONITOR SEAWATER TURBIDITY / SUSPENDED SEDIMENTS**

Turbidity was measured in Skomer MNR by Secchi disc at the OMS and at Thorn Rock and also recorded by a YSI 6600 multi-parameter sonde, mounted on the OMS data buoy 1m below surface.

59 Secchi disc measurements of water turbidity were made at OMS and 35 at Thorn Rock in 2011. The maximum reading (clearest water) between March and November was 11.8 m for OMS and 11.3 m at Thorn Rock.

By comparing the monthly mean figure with the overall mean it would appear that 2011 was more turbid than the previous 5 years.

**Project code: RP63/03 MONITOR SEA WATER CHEMISTRY**

Bathing water quality data for Martins Haven continues to be obtained from Pembrokeshire County Council (see section 4.3.15 for 2011 data).

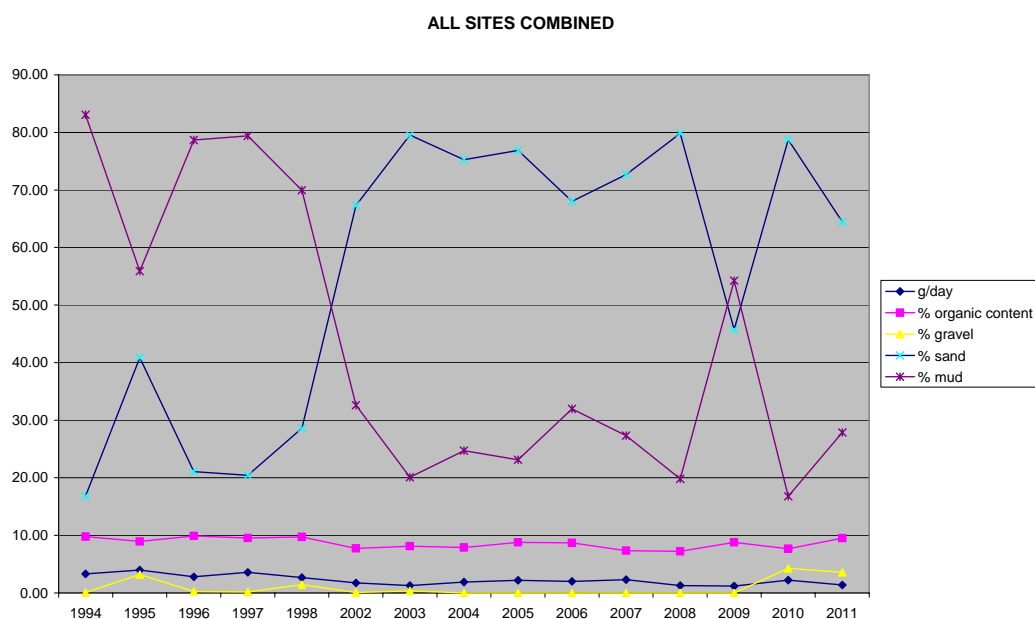
The YSI 6600 multi parameter sonde mounted on the OMS data buoy also measures seawater salinity, pH, dissolved oxygen and chlorophyll. Detailed analyses of the results are in the Skomer Project Status Report 2011/12.

**Project code: RP63/04 MONITOR SEABED SEDIMENTATION**

A total of 20 seabed sedimentation samples were collected at Skomer MNR using passive sediment traps: 10 at the OMS site and a further 9 at the second OMS-type frame at Thorn Rock.

Samples from the traps were analysed for a suite of heavy metals as well as grain size (shown below).

**Combined results for passive sediment traps 1994 - 2011**



In 2011 the sediments have a higher sand content and gravel is getting more prevalent.

Most of the metal analyses are consistent except copper (Cu). The 1995-98 average and the 2008 values for OMS are a factor of 10 higher than the rest. The most likely reason for this is the use of copper based anti-fouling paint in the collector and on near by oceanographic equipment.

**Project code: RP64/01 RECORD SEAWATER TEMPERATURE**

Seawater temperature data was collected at the Skomer MNR Oceanographic Monitoring Site (OMS) using a Valeport Series 600 MkII conductivity, temperature, depth and salinity probe at depth intervals of 5m from surface to just above the seabed. 35 profiles were recorded between March 2011 and March 2012 in conjunction with projects to measure turbidity and salinity.

Annual maximum and minimum seabed temperature records from 2000 to 2010 are as follows (data from Vemco minilog at 19m BCD):

Temperature °C	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Minimum	8.4	7.27	8.7	7.6	7.7	7.36	7.5	8.8	8.4	7	6.9	7.6
Maximum	16.27	16.3	15.6	17.1	16.76	16.4	16.3	16.3	16.3	16.8	16.8	15.9

Seawater temperatures in 2011 were not as low as the previous two years, perhaps reflecting the milder winter conditions in 2011/12, but the seawater temperature peaked in July at (15.9 °C) when normally the maximum summer temperature would be expected in Aug / September.

10 Onset Hobo temperature / light loggers have also been placed at various inter-tidal 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 inter-tidal habitat.

#### 7.4 DATA HANDLING DEVELOPMENT

The IT infrastructure at Fisherman's Cottage has seen some improvement with a proper server installed and regular back ups carried out. The new set up allows a one-step back up of all documents, data and image files to media that are then stored off-site.

MNR staff continue to enter MNR records into Marine Recorder, which is CCW's corporate database and a contract has recently been completed to enter the backlog of data from the MNR.

MNR reports are now available via CCW's website at [www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/special-landscapes--sites/protected-landscapes/marine-nature-reserves.aspx](http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/special-landscapes--sites/protected-landscapes/marine-nature-reserves.aspx).

#### 7.5 OTHER WORK

MNR staff continue to be involved with wider initiatives especially in SAC monitoring. This has included the taking of samples at lagoon sites at Pickleridge, Neyland and Carew and the deployment of data loggers at a variety of sites within Pembrokeshire Marine SAC.



MNR staff also assisted CCW Regional marine staff in carrying out photographic surveys of the seabed near the outfall for the new Pembroke Power station.



## 8 EDUCATION AND INTERPRETATION

### 8.1 RESEARCH AND EDUCATION SUBCOMMITTEE

The Research and Education Committee did not meet in 2011.

*Project: M150/02*

Both the MNR interpretative booklet “Stars, squirts and slugs...marine life in an underwater refuge” and the computer generated poster have been in great demand.

### 8.2 FISHERMANS COTTAGE MNR EXHIBITION

*Project: M150/01*

The MNR exhibition at Fisherman’s Cottage remains popular with the visiting public although, due to equipment malfunction, MNR staff are struggling to quantify visitor numbers. We hope to rectify this for the 2012 season.



Rob Gibbs, now as an Honorary Warden, has revisited the interpretative videos used in the exhibition and re-edited them. Not only does the new format allow more of the MNR’s marine life to be shown within video clips of the same length, but Rob has created a “stand-alone” interactive DVD, that can be used at other venues.

### 8.3 OTHER INITIATIVES

The MNR ‘Marine Day’ was held in July 2011 primarily aimed at local children. The event was well attended by children of all ages taking part in a “seashore safari” at Martins Haven, looking at marine creatures brought up by MNR divers followed by craft activities at Marloes Village Hall.



Just some of the sea creatures created on the day



KL assisted with the Pembrokeshire Coastal Forum “Buzz Local Coastal Schools” day.

No MNR photographic competition was held in 2011 as a planned joint competition for Skomer Island and MNR had to be cancelled by the organiser.

PN contributed an article on sea slugs to “Natur Cymru” magazine.

The MNR contributed video footage to a DVD on coasteering commissioned by the Pembrokeshire Outdoor Charter from local wildlife film maker Dave Welton. The purpose of the DVD is to make outdoor instructors and guides aware of the conservation status of the coastline, geology and wildlife they may encounter, to encourage them to act sensitively and also enable them pass on relevant information to their clients.

## 8.4 TALKS AND PRESENTATIONS

*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).

KL also helped to run “snorkel safaris” for local school children in 2011 in conjunction with Pembrokeshire Marine SAC officer, Pembrokeshire Coastal Forum and staff from West Wales Divers.

*Project: MI00/01*

PN gave a presentation to an event for divers and dive clubs organised by Pembrokeshire Coastal Forum and also to a meeting of CCW’s Council in St Davids. For other presentations see Section 6.6.

## 8.5 MEDIA

*Project: ML70/01*

The publication of the Goodwin and Picton “Sponge Biodiversity of the United Kingdom” report in 2011 (see Appendix 3 for summary) and CCW’s subsequent press release sparked considerable media attention with inevitable headlines such as “Pembrokeshire waters dubbed ‘Wales’ Great Barrier Reef” after 13 new species found”, “132 species soak up what Skomer offers”, “Sponge-tastic Survey: Sponges Like Wales!” and “Researchers absorb survey findings”.

The CCW and WG funded MCS crawfish surveys also made the Western Telegraph among other publications.



Other media coverage of the MNR included Welsh language articles in the Daily Post and on Radio Cymru and staff also assisted the makers of S4C’s programme “Wedi 3” to get marine footage.

Television interest in Skomer has also involved the MNR with an appearance by PN on Countryfile and two days spent helping the makers of Springwatch film underwater scenes with presenter Iolo Williams, despite fairly rough sea conditions and provide additional underwater footage.

MNR staff also provided underwater video for ITV's "Adventurer's Guide to Britain" when they filmed in Pembrokeshire.





## 9 ACKNOWLEDGEMENTS

The MNR staff wish to thank all those who contributed to, or supported in any way the management of the MNR in 2011.

Thanks to:

- Contributors to the Advisory Committees, especially Dr Robin Crump who chairs the main committee.
- Honorary Wardens;
- Chris Taylor and Skomer Island NNR staff;
- Lisa Whitfeld, Holly Latham, John Archer Thomson, and Blaise Bullimore for diving support;
- The crew of the *Dale Princess*;
- All our Honorary Wardens for contributing to user records and Barry and Lionel for making sure the exhibition is opened as often as possible.
- 'Neptunes Army of Rubbish Collectors' for organising and completing the underwater litterpicks in the MNR;
- The volunteer diving teams that were involved in the eelgrass survey and the long-suffering, but very patient skippers of the dive charter vessels.

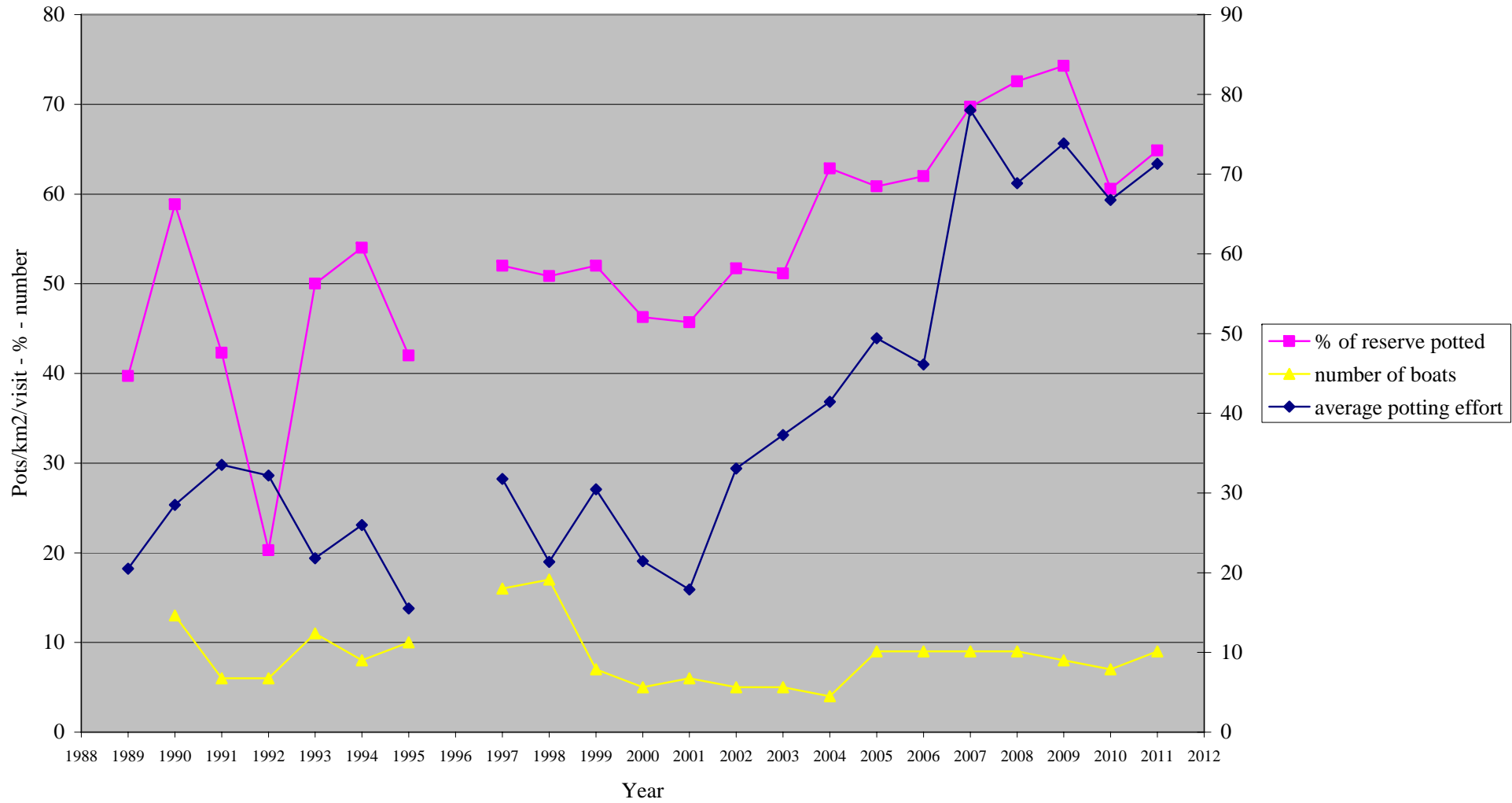
With apologies to anyone omitted from above.



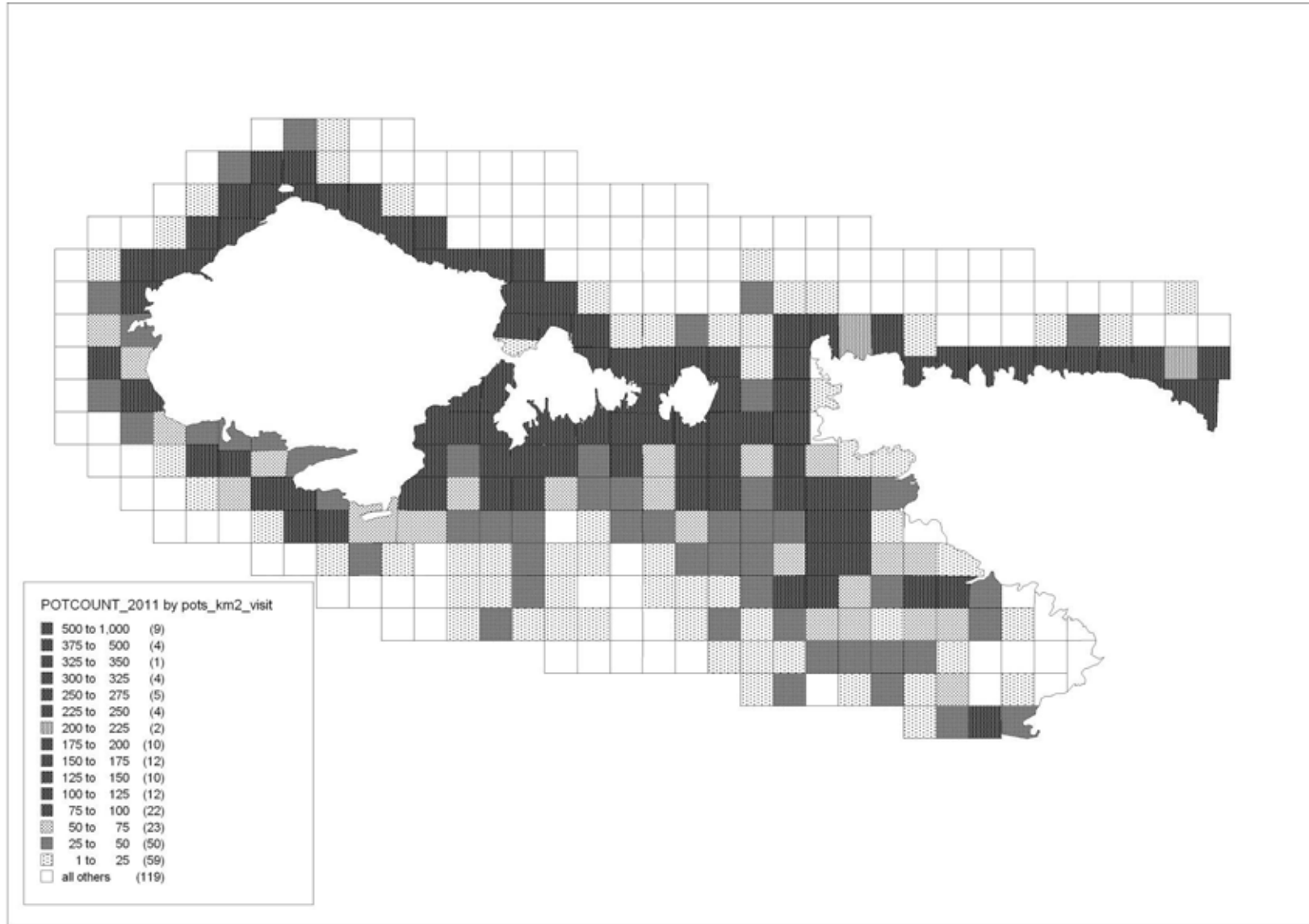
# APPENDIX 1

## FISHING EFFORT IN THE SKOMER MNR

Summary of fishing effort in the Skomer MNR



# SMNR POT FISHING DISTRIBUTION SUMMARY 2011



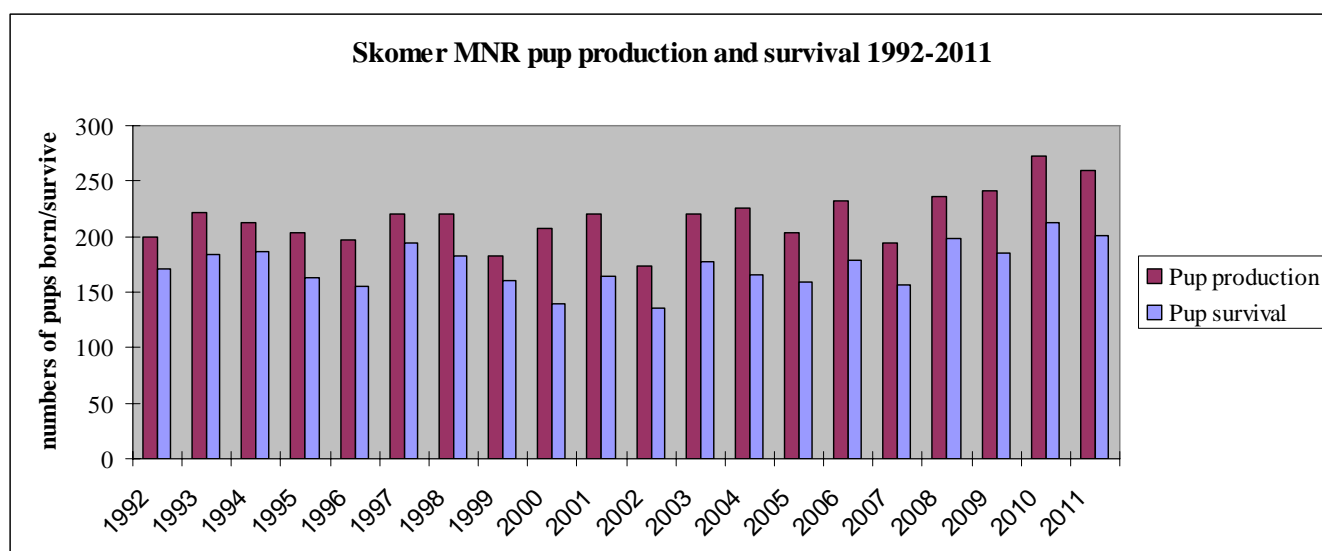
## APPENDIX 2

### SKOMER MNR SEAL WORK

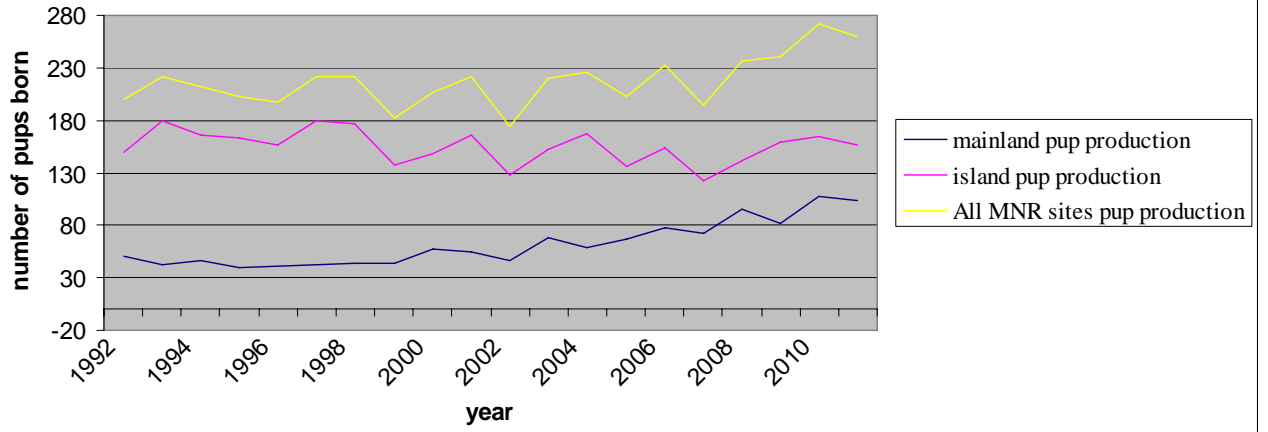
#### Seal Pup Production Skomer MNR Mainland 2011

First sighted at	No. first sighted at location	Date last checked	Seen to moult	No. Survival assumed*	No. moved after first sighted
Wooltack Bay Caves	1				1
Martins Haven Caves	3				2
Jeffery's Haven	28		13	23	
Pebbly Beach	32		26	24	
Three Doors Cave & Beach	7		2	7	
Horseshoe Cave					
Boulder Beach & Cave	6				2
Little Castle Bay	10		7	9	
Victoria Bay	4			4	
Rainy Rock Beach & Cave	6		1	3	
Renny Slip & Cave	5		3	4	
Howney stone	1				
<b>Total</b>	<b>103</b>		<b>52</b>	<b>79</b>	
Number of seal pups unaccounted for	11				
Mortality assumed	3				data up to and including pup 103
Still born	6				
RSPCA care					
total	20				

#### Skomer MNR Pup production for ALL sites:



Skomer MNR pup production 1992-2011



## APPENDIX 3

### SKOMER MNR SCIENCE REPORT SYNOPSES AND PAPERS

Grey Seal Breeding Census: Skomer Island, 2011  
D. P. Boyle

Wildlife Trust of South and West Wales CCW Regional Report CCW/WW/11/1

#### *SUMMARY*

157 pups were born on Skomer Island in 2011.

260 pups were born in Skomer Marine Nature Reserve as a whole in 2011, the second highest total ever recorded.

122 pups are known, or assumed, to have survived, giving a survival rate of 78%. This is the exact average survival rate for the last 10 years.

The busiest week this year was week 40, between 1-7 October, when 22 pups were born.

The busiest sites this year were Matthew's Wick (35 pups), South Haven (30 pups) and North Haven (27 pups).

The mean age at the onset of moult was 15 days and the mean duration of moult was 5 days. See Section 4.5.

Photo-monitoring continued in 2011 and is starting to show some really good results. 297 seals were photographed in 2011, including 124 (79%) of the pupping cows, and 172 individual seals were positively identified from previous years. See Section 5

Thanks to collaborating with other seal workers we now know a good number of Skomer seals spend the winter/spring in west Cornwall and some known cows have been found pupping at other sites in Pembrokeshire. See Section 7.

The haul-outs were slightly up in 2011. See Section 8.

Twenty-nine seals were seen in 2011 showing signs of having become entangled in fishing nets at some time in their lives. See section 9.

There were no serious instances of disturbance to seals on Skomer in 2011. See Section 10.

A further five pups were killed by the same bull that killed three pups in 2009 and 2010. See Section 11.2

**SKOMER MARINE NATURE RESERVE DISTRIBUTION AND ABUNDANCE OF  
*ECHINUS ESCULENTUS* AND SELECTED STARFISH SPECIES 2011  
CCW Regional Report CCW/WW/11/04  
K. Lock, M. Burton, P. Newman & J. Jones 2012**

*Echinus esculentus* plays a key role in the structure of subtidal communities. Large numbers were removed from Skomer MNR during the 1970s when divers targeted the population for the curio trade and a population survey were completed in 1979 and 1982. No repeat surveys were completed until 2003 when data was collected to establish the status of both the *E. esculentus* population and conspicuous starfish species. In 2007 a survey was completed following the same methods as in 2003 and also established fixed surveys sites that can be used in future surveys. This survey was completed at the 2007 sites.

The survey was completed over 4 days by a team of 20 volunteer divers. *E. esculentus*, were counted and the diameter of *E. esculentus* were measured along 30m transects completed at different depth zones. *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 9.1 and 3 per 100m<sup>2</sup> respectively for the whole MNR, but density varied between sites. A normal size frequency distribution for *E. esculentus* was found and little variation in size range or mean density was found at different depths.

Plankton samples collected from March to November identified Echinoplutei in samples with abundance peaking in August. The Echinoplutei could not be identified to species level, therefore presence of *E. esculentus* larvae could not be confirmed. Late stage *Luidia spp* larvae were identified in September.



## **Sponge Biodiversity of the United Kingdom**

A report from the Sponge Biodiversity of the United Kingdom project

May 2008-May 2011

Claire Goodwin & Bernard Picton

National Museums Northern Ireland

### **Project background**

The 'Sponge Biodiversity of the United Kingdom' Project is a National Museums Northern Ireland project, funded by National Museums, the Esmée Fairbairn Foundation, Scottish Natural Heritage, and Countryside Council for Wales. The project aims to improve the knowledge of the UK sponge fauna.

A recent project on the sponge biodiversity of Rathlin Island, a small island off the north coast of Northern Ireland, was conducted from 2005-2006 by the Ulster Museum (National Museums Northern Ireland), funded by the European Union's Building Sustainable Prosperity programme. The findings surpassed expectations: in total 128 different sponge species were recorded, including 29 species new to science, 3 others which had never been recorded from the UK before, and a further 9 species new to Northern Ireland.

As well as contributing to knowledge of Rathlin Island (a Special Area of Conservation) and providing baseline data for future monitoring, the project greatly contributed to knowledge of the UK sponge biodiversity, adding to the species currently known and providing more information on many rare taxa. Over 3,000 photos were taken during the project and for many species this was the first time they had been photographed *in situ*. These, together with descriptions of the new species and re-descriptions of some rare species, provide an important resource for other researchers and field biologists.

Sponge biodiversity is poorly recorded and it is expected that similar discoveries will be made elsewhere. There has been very little work done on the sponges of the British Isles since the 19th century. It is not possible to identify many species in the field, they are perceived as difficult to identify by many biologists, and few people are trained in sponge taxonomy. Many species are thin crusts and can form quite small patches only a few centimetres in extent; consequently, they may be unidentifiable during general marine surveys. The methodology used for the Rathlin project (SCUBA diving) sampled species from circalittoral depths (20-50m), attached to bedrock and large boulders. Sponges from these habitats appear to have been under-recorded in the past; what little information we have about UK sponges comes mainly from dredged material. Dredging does not sample bedrock (on which many of the new Rathlin species occurred) and would have sampled predominantly deepwater habitats (over 50m). The Rathlin sampling methodology enabled the researchers to focus solely on sponges, collecting 849 specimens in total; the findings of the project demonstrate the value of this approach. The Sponge UK project aimed to survey other areas which, from preliminary investigations, appeared to have similarly rich sponge populations. These included the Firth of Lorn SAC in Scotland and the north Pembrokeshire coast, south-west Wales.

## APPENDIX 4

### MCZ PROJECT WALES TIMETABLE

<p><b>STAGE 1 – Identifying the Focus Sites</b> Identified by CCW using the agreed ecological guidelines and assessment system</p>	<p>January 2011 - March 2011</p>
<p><b>STAGE 2 – Identifying the Potential Sites</b> Identified by the TAG from</p>	<p>March 2011</p>
<p><b>STAGE 3 – Developing the first iteration of Potential Sites</b> The Potential Sites are considered and may be refined by the TAG and then the Steering Group in light of social, economic and practical considerations</p>	<p>April 2011- March 2012</p>
<p><b>STAGE 4 – Consulting on the first iteration of Potential Sites</b> The Welsh Government to undertake a 12 week public consultation exercise seeking views on the site options</p>	<p>April 2012- July 2012</p>
<p><b>STAGE 5 – Developing the second iteration of Potential Sites</b> The information collected during Stage 4 will be used by the TAG and the Steering Group to inform and refine the next iteration of sites</p>	<p>August 2012 -December 2012</p>
<p><b>STAGE 6 – Consulting on the second iteration of Potential Sites</b> The Welsh Government to undertake a 12 week public consultation exercise seeking views on the site options</p>	<p>January 2013 -April 2013</p>
<p><b>STAGE 7 – Recommending Proposed Sites to Welsh Ministers</b> The TAG and the Steering Group will use the information collected during Stage 6 to inform the final recommendations to Welsh Ministers</p>	<p>May 2013 - September 2013</p>
<p><b>STAGE 8 – Consulting formally on Proposed Sites</b> Subject to the agreement of Welsh Minister the Welsh Government will undertake a 12 week period of formal consultation</p>	<p>Winter 2013</p>
<p><b>STAGE 9 – Designating process</b> Subject to the outcome of the formal consultation exercise the Welsh Ministers will designate the MCZs</p>	<p>By spring 2014</p>

## **APPENDIX 5 ABBREVIATIONS**

AcoP	Approved Code of Practice
AWS	Automatic weather station
BAP	Biodiversity Action Plan
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
EN	English Nature
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
MHWEMSG	Milford Haven Waterway Environmental Monitoring Steering Group
MNR	Marine Nature Reserve
MCA	Marine Coastguard Agency
MCO	Marine Conservation Officer
MCS	Marine Conservation Society
MPA	Marine Protected Area
NCI	National Coastwatch Institution
NERC	Natural Environment Research Council
NNR	National Nature Reserve
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
RSPCA	Royal Society for the Prevention of Cruelty to Animals
RYA	Royal Yachting Association
SDSC	Scientific Diving Supervisory Committee
SNH	Scottish Natural Heritage
SWSFC	South Wales Sea Fisheries Committee
SWWFC	South and West Wales Fishing Communities Ltd
UW	University of Wales
WG	Welsh Government
WTSWW	Wildlife Trust South and West Wales